



ROAD SAFETY COMMITTEE

Inquiry into Motorcycle Safety

Ordered to be Printed

Government Printer for the State of Victoria
December 2012

Cover Design: Mono Designs

Parliament of Victoria
Road Safety Committee
Subject: Inquiry into Motorcycle Safety
ISBN: 978-0-9807166-2-7

Table of Contents

The Road Safety Committee.....	vii
Committee Members	vii
Acronyms.....	ix
Glossary	xiii
List of Tables and Graphs	xv
Terms of Reference	xvii
Chair's Foreword.....	xix
Executive Summary.....	xxi
Recommendations	xxvii
CHAPTER 1: INTRODUCTION	1
1.1 Aim of the Inquiry	2
1.2 Reasons for conducting the Inquiry	2
1.3 Conduct of the Inquiry	3
1.4 Scope of the Inquiry	4
1.5 Issues not covered by the Inquiry	7
1.6 Report structure.....	8
1.7 Themes in the report	9
1.8 Recommendations	11
Endnotes: Chapter 1	12
PART 1	13
Chapter 2 at a glance	15
CHAPTER 2: DATA QUALITY AND ACCURACY.....	17
2.1 Introduction	17
2.2 Background	17
2.3 The role of trauma data in road safety	18
2.4 Who is responsible for collecting data on motorcycle trauma?.....	19
2.5 Is there a co-ordinating entity or role?	26
2.6 Sharing of data between agencies.....	26
2.7 Individual data issues	27
2.8 Systemic data issues.....	37
2.9 Findings	53
Recommendations: Chapter 2	58
Endnotes: Chapter 2	60

Chapter 3 at a glance	71
CHAPTER 3: TRAUMA TRENDS OVER TIME	73
3.1 Introduction	73
3.2 Data	73
3.3 Methodology	74
3.4 Trends in the rates of death or injury among motorcyclists	75
3.5 Trauma statistics and changes in 2007	85
3.6 Where and when does motorcycle trauma occur and who is involved?	85
3.7 Gender and age of motorcyclists injured or killed.....	87
3.8 Types of motorcycles ridden in admissions cases	88
3.9 Licence status of motorcyclists involved in trauma.....	89
3.10 Training and experience.....	90
3.11 Findings	90
Endnotes: Chapter 3	92
 PART 2	 95
Chapter 4 at a glance	97
CHAPTER 4: THE ACCREDITED PROVIDER SCHEME.....	99
4.1 Introduction	99
4.2 Background – Motorcycle licensing in Victoria.....	99
4.3 The audit scheme	100
4.4 Providers	101
4.5 Interpreting effectiveness and efficiency	101
4.6 The efficiency of providers in training and testing	102
4.7 Issues with the scheme	108
4.8 Findings	112
Recommendations: Chapter 4	114
Endnotes: Chapter 4	115
Chapter 5 at a glance	119
CHAPTER 5: OFF-ROAD RIDING AND MOTORCYCLE SAFETY.....	121
5.1 Introduction	121
5.2 Background – Off-road riding.....	123
5.3 Which road safety agencies are responsible for off-road safety?	124
5.4 How are road safety agencies regulating the off-road area?	126
5.5 Issues	135
Recommendations: Chapter 5	142
Endnotes: Chapter 5	143

Chapter 6 at a glance	147
CHAPTER 6: MOTORCYCLE USAGE IN VICTORIA.....	149
6.1 Introduction	149
6.2 Measuring changes in the motorcycle fleet and its characteristics	149
6.3 What does the current motorcycle fleet look like?	151
6.4 How has the fleet changed over time?.....	152
6.5 Fleet characteristics	155
6.6 Licence and permit holders changes.....	156
6.7 What is driving the increase?.....	158
6.8 The link between motorcycle usage and road safety	162
6.9 Findings	164
Endnotes: Chapter 6	166
Chapter 7 at a glance	169
CHAPTER 7: ATTITUDES.....	171
7.1 Introduction	171
7.2 Background	171
7.3 Motorcyclists and their attitudes to risks	173
7.4 Attitudes of riders and drivers towards each other.....	182
7.5 Attitudes are changing	191
7.6 Findings	191
Recommendations: Chapter 7	193
Endnotes: Chapter 7	194
PART 3	201
Chapter 8 at a glance	203
CHAPTER 8: THE TRANSPORT ACCIDENT COMPENSATION SCHEME.....	205
8.1 Introduction	205
8.2 Overview	206
8.3 The role of the Transport Accident Commission (TAC).....	207
8.4 How does the scheme operate?	207
8.5 Are motorcyclists an issue for the scheme?	209
Endnotes: Chapter 8	218

Chapter 9 at a glance	221
CHAPTER 9: THE MOTORCYCLE SAFETY LEVY.....	223
9.1 Introduction	223
9.2 Background	223
9.3 What has the safety levy been used for?.....	225
9.4 Criticisms on the effectiveness of the safety levy and levy funded projects.....	226
9.5 Associated issues with the safety levy	229
9.6 Have individual safety levy funded projects been effective?	235
9.7 Proposals.....	241
9.8 Findings	241
Recommendations: Chapter 9.....	243
Endnotes: Chapter 9	245
 PART 4	 251
Chapter 10 at a glance.....	253
CHAPTER 10: WORKING WITH NON-GOVERNMENT STAKEHOLDERS.....	255
10.1 Introduction	255
10.2 Why work with non-government stakeholders?	256
10.3 Existing approaches.....	258
10.4 Obstacles to better engagement with motorcycle stakeholders	264
10.5 Specific issues.....	269
10.6 Findings	276
10.7 A new approach	277
Recommendations: Chapter 10.....	280
Endnotes: Chapter 10	282
Chapter 11 at a glance.....	287
CHAPTER 11: COUNTERMEASURES.....	291
11.1 Introduction	291
11.2 Overview	291
11.3 Road environment treatments	293
11.4 Design and technology of motorcycles.....	302
11.5 Protective gear	313
11.6 Training.....	334
Recommendations: Chapter 11.....	341
Endnotes: Chapter 11	344

Chapter 12 at a glance.....	363
CHAPTER 12: NEW INITIATIVES	365
12.1 Introduction	365
12.2 Overview	365
12.3 New approaches to regulating motorcycle safety and the safe system.....	366
12.4 The safe systems approach to motorcycles and associated issues	369
12.5 Filtering	371
12.6 Funding motorcycle safety.....	378
12.7 Off-road riding proposals.....	384
12.8 Intelligent Transport Systems	387
Recommendations: Chapter 12.....	395
Endnotes: Chapter 12	397
Appendices	409
Appendix A: Submissions received	411
Appendix B: Public hearing witnesses	415
Appendix C: Meetings – Australia	423
Appendix D: Meetings – International	425
Appendix E: Motorcycle Safety Levy funded projects.....	429
Extract of proceedings	463
Bibliography.....	465

The Road Safety Committee

The Victorian Road Safety Committee (the Committee) is constituted under the *Parliamentary Committees Act 2003*, as amended.

The Committee comprises five Members of Parliament: four from the Legislative Assembly and one from the Legislative Council.

Section 15 of the *Parliamentary Committees Act 2003*, describes the functions of the Committee:

The functions of the Road Safety Committee are, if so required or permitted under this Act, to inquire into, consider and report to the Parliament on any proposal, matter or thing concerned with -

- (a) road trauma;
- (b) safety on roads and related matters.

Committee Members

Mr Murray Thompson MP	Chair
Mr Telmo Languiller MP	Deputy Chair
Mr Jude Perera MP	
Mr Bill Tilley MP	
Mr Andrew Elsbury MLC	

Secretariat

Ms Kylie Jenkins	Executive Officer
Mr John Aliferis	Research Officer
Ms Christianne Castro	Committee Administrative Officer

Contact Details

Address:	Parliament House, Spring St, East Melbourne, Victoria 3002
Telephone:	+61 3 8682 2846
Facsimile:	+61 3 8682 2818
Email:	rsc@parliament.vic.gov.au
Internet:	www.parliament.vic.gov.au/rsc
Twitter:	http://www.parliament.vic.gov.au/committees #rsctee

Acronyms

ABS	Australian Bureau of Statistics
ABS	Anti-lock Braking System (in chapters where the Australian Bureau of Statistics has been referred to first, Anti-lock Braking System will be used)
ACEM	Association de Constructeurs Europeens de Motocycles (The Motorcycle Industry in Europe)
ACRS	Australasian College of Road Safety
ADR	Australian Design Rules
AIHW	Australian Institute of Health and Welfare
AIS	Abbreviated Injury Score
AMC	Australian Motorcycle Council
ANCAP	Australasian New Car Assessment Program
ATC	Australian Transport Council
ATSB	Australian Transport Safety Bureau
ATV	All-Terrain Vehicle (also referred to as a quad bike)
BAC	Blood Alcohol Concentration
BITRE	Bureau of Infrastructure, Transport and Regional Economics
CARRS-Q	Centre for Accident Research and Road Safety – Queensland University of Technology
CASR	Centre for Automotive Safety Research
CBS	Combined Braking Systems
CC	Cubic capacity (engine size)
CE	Conformité Européenne (European Standard)
DECA	Driver Education Centre of Australia
DSE	Department of Sustainability and Environment
DTF	Department of Treasury and Finance
EC	European Commission
ePCR	Electronic Patient Care Record
ESC	Electronic Stability Control
ETSC	European Transport Safety Council

EU	European Union
FCAI	Federal Chamber of Automotive Industries
FEMA	Federation of European Motorcyclists' Associations
GLS	Graduated Licensing Scheme
HART	Honda Australia Rider Training
IAP	Intelligent Access Program
IHE	Institute of Highway Engineers
IMCO	Internal Market and Consumer Protection Committee
IRG	Independent Riders' Group
ITS	Intelligent Transport System
LAMS	Learner Approved Motorcycle Scheme
MAA	Motorcycle Accidents Authority of NSW
MAG	Motorcycle Advisory Group
MAIDS	Motorcycle Accident In-Depth Study
MIRI	Monash Injury Research Institute
MOU	Memorandum of Understanding
MRA	Motorcycle Riders' Association
MSSAG	Motorcycle and Scooter Safety Action Group
MUARC	Monash University Accident Research Centre, a research unit within the Monash Injury Research Institute (MIRI)
NCIS	National Coroners Information System
NSW	New South Wales
NTC	National Transport Commission
NTSB	National Transport Safety Board
OECD	Organisation for Economic Co-operation and Development
OLA	Swedish consultation method – stands for ' <i>Objective facts, List of solutions, Addressed action plans</i> '
PAEC	Public Accounts and Estimates Committee
PPE	Personal Protective Equipment
PTW	Powered Two Wheeler

RACS	Royal Australasian College of Surgeons
RACV	Royal Automobile Club of Victoria Inc
RCIS	Road Crash Information System
RTO	Registered Training Organisation
SWOV	Netherlands Institute for Road Safety Research
TAC	Transport Accident Commission
TfL	Transport for London
TIA	Transport Integration Act
TIS	Traffic Incident System
TMU	Traffic Management Unit
TOR	Term of Reference
UK	United Kingdom
UNECE	United Nations Economic Commission for Europe
US	United States
VACC	Victorian Automobile Chamber of Commerce
VACIS	Victorian Ambulance Clinical Information System
VAED	Victorian Admitted Episode Dataset
VAGO	Victorian Auditor-General's Office
VCAT	Victorian Civil and Administrative Tribunal
VCDC	Victorian Cost Data Collection
VEMD	Victorian Emergency Minimum Dataset
VISU	Victorian Injury Surveillance Unit (VISU), a research unit within the Monash Injury Research Institute (MIRI)
VKT	Vehicle Kilometres Travelled
VMAC	Victorian Motorcycle Advisory Council
VMC	Victorian Motorcycle Council
VRIS	Victorian Registration Identification System
VSTORM	Victorian State Trauma Outcome Registry and Monitoring group
VSTR	Victorian State Trauma Registry
WA	Western Australia

WRSB Wire Rope Safety Barriers

Glossary

Anti-lock Braking Systems:	Monitors wheel lock during braking and adjusts the braking force to free a locked wheel whilst maintaining optimal braking.
Electronic Stability Control:	Adjusts each wheel independently to ensure that a vehicle maintains the direction indicated by the steering system.
Government organisations	Refers collectively to VicRoads, the Transport Accident Commission and Victoria Police, the Department of Health and Victorian hospitals
Motorcycle	<p>The legal definition of a motorcycle is set out in the <i>Road Safety Act 1986</i> (Vic) and several other Victorian statutes because motorcycles are regulated under both transport and accident compensation laws.</p> <p><u>Hierarchy of definitions</u></p> <p>The starting point for defining a ‘motorcycle’ is the <i>Road Safety Act 1986</i> (the Act). In the definitions section of that legislation a motor cycle is defined as ‘... a two-wheeled motor vehicle and includes a motor cycle with a trailer, forecar or sidecar attached’. Some further clarity is provided by secondary legislation, specifically the Road Safety (Drivers) Regulations 2009 (‘the regulations’) whilst the Road Safety Road Rules 2009 sets out motorcycle offences and penalties.</p> <p>Whilst the regulations predominantly deal with motorcycle licensing requirements and restrictions, they do expand on the definition of a motorcycle in the Act. They do so by providing that a motorcycle also includes motor trikes. Motor trikes are defined as:¹</p> <p style="padding-left: 40px;">‘... a motor vehicle with 3 wheels, but does not include – (a) a motor cycle with a side car attached; or (b) a motor vehicle with 3 wheels that has a body type that is similar to, or is commonly known as, a sedan, station wagon, couple convertible, roadster, utility, tray top or van:’</p> <p>It is important to note that vehicles that do not fall within the definition of a motorcycle are regulated separately.</p>
Powered Two-Wheelers	Refers to all two-wheeled vehicles covered in this report.

Protective gear	Refers to motorcycle boots, trousers or pants, jackets, gloves and armour, but does not include motorcycle helmets.
Road safety agencies	Comprised of VicRoads, the Transport Accident Commission and Victoria Police
Road and road related area	The <i>Road Safety Act 1986</i> (Vic) defines a ‘road’ in section 3 Definitions. A road is taken to mean (a) an area that is open to or used by the public and is developed for, or has one of its main uses, the driving or riding of motor vehicles. The definition of a road also allows a road to be declared a road. The definition of a ‘road related area’ in the same Definitions section of the Act covers a number of areas that would not ordinarily be viewed as areas where a licence or registration are necessary. These include: (a) an area that divides a road, (b) a footpath or nature strip adjacent to the road, (c) an area open to the public and is designated for use by cyclists or animals; (d) an area that is not a road and that is open to or used by the public for driving or parking motor vehicles. There is also an ability to declare an area to be a ‘road related area’.
Stoppies	A stunt where a motorcycle is brought to a standstill quickly, causing the rear wheel to lift off the ground.
VicRoads	Registered business name of Roads Corporation, the statutory body that manages the Victorian arterial road network, vehicle registration and driver licences and road safety

¹ *Road Safety (Drivers) Regulations 2009*, (Vic) S.R. No.95/2009.

List of Tables and Graphs

Tables

Table 2.1	Over-representation figure	44
Table 11.1	Steps in making protective gear mandatory	331

Graphs*

Graph 2.1	Total hospital admissions 2005-06 to 2009-10	49
Graph 3.1	Total motorcycle fatalities 2001-11	75
Graph 3.2	Motorcycle fatalities per motorcycle licences and registrations 2002-11	76
Graph 3.3	Motorcycle fatalities per 1,000,000 Victorians 2001-11	77
Graph 3.4	Motorcycle fatalities as a percentage of the Victorian road toll 2001-11	78
Graph 3.5	Emergency department presentations 2000-01 to 2009-10	79
Graph 3.6	Emergency department presentations per motorcycle licences and registrations 2001-02 to 2009-10	80
Graph 3.7	Emergency department presentations per 10,000 Victorians 2000-01 to 2009-10	81
Graph 3.8	Total hospital admissions 2000-01 to 2009-10	82
Graph 3.9	Hospital admissions per motorcycle licences and registrations 2001-02 to 2009-10	83
Graph 3.10	Hospital admissions per 10,000 Victorians 2000-01 to 2009-10	83
Graph 3.11	Motorcycle casualties by day of the week 2001-12	87
Graph 3.12	Hospital admissions by type of motorcycle 2005-06 to 2009-10	89
Graph 3.13	Motorcycle serious and other injuries by licence category 2001-11	90
Graph 6.1	Total motorcycle registrations 2002-11	153
Graph 6.2	Total Australian motorcycle sales 2001-11	155
Graph 6.3	Estimated average age of motorcycles 2001-11	156
Graph 6.4	Total motorcycle licences 2002-11	157

* Note: All graphs refer to Victorian figures unless specified.

Terms of Reference

That under s 33 of the *Parliamentary Committees Act 2003*, the Road Safety Committee is to inquire into, consider and report no later than 30 June 2012* on motorcycle safety and the Committee is asked to consider:

- (a) trends over time in crash types including on-road and off-road crashes, rural/urban breakdown, experience levels of riders (where known) and types of motorcycles being ridden;
- (b) the changing face of motorcycling and in particular, patterns of motorcycle usage over time including the uptake of motorcycles as an alternative form of transport and its impact on road safety;
- (c) the attitudes of riders to safety and risk taking including drugs, alcohol, travelling at inappropriate speeds, use of protective clothing and fatigue;
- (d) riders and drivers attitudes to each other;
- (e) responsibilities for improving the safety of off-road riders;
- (f) the efficiency and effectiveness of the accredited provider scheme in the delivery and administration of motorcycle licensing;
- (g) countermeasures used in Victoria, Australia and other comparable overseas jurisdictions to reduce the number and severity of motorcycle accidents with reference to road environment treatments, behavioural change programs and the design and technology of motorcycles and protective gear;
- (h) new initiatives to reduce motorcycle crashes and injuries;
- (i) the appropriateness of the TAC premium for motorcyclists in relation to covering all riders eligible to claim on the TAC scheme;
- (j) the effectiveness of the Motorcycle Safety Levy in improving rider safety in Victoria; and
- (k) the ways government can work with non-government stakeholders to achieve motorcycle safety outcomes.

Received from the Legislative Assembly of the 57th Parliament, 10 February 2011.

* *The reporting date was extended to 13 December 2012, by resolution of the Legislative Assembly on 8 February 2012.*

Chair's Foreword

The Inquiry into Motorcycle Safety is timely having been completed following a period of record growth in motorcycle use in Victoria. That growth and the inherent vulnerability of motorcyclists requires a higher level of engagement on motorcycle safety issues from government, road safety agencies, and motorcyclists themselves.

The growth in motorcycle use will, arguably, continue over the next decade. The extent of that growth while difficult to judge, will present challenges. These challenges will be in the form of greater use of public infrastructure, more extensive interaction between different road users, and potentially, increases in trauma.

The growth of motorcycling also means that we need improved and new approaches to motorcycling safety over the next decade. But action on motorcycle safety needs to be tailored to Victorian conditions and Victorian riders. Our motorcycling culture, shaped by rural, social, recreational and commuter influences differs substantially from that in other countries and jurisdictions. That difference was most apparent when discussing off-road riding with road safety experts in northern Europe. It became clear that riding through the bush for recreation is distinctively Australian, distinctively Victorian. That is but one example of the differences between our motorcycling culture and use and those in other places. That of course, does not mean we cannot borrow good ideas from elsewhere; but those ideas need to be altered to ensure they can work here.

This report includes an extensive number of findings and recommendations. One of the most important areas we need to focus more on is the collection, use and sharing of crash and trauma data, ensuring that road safety agencies meet their road safety responsibilities, working collaboratively with the community, and focusing on the idea that road safety is a shared responsibility.

Although much of the report is focused on improving, clarifying and adding to existing motorcycle safety measures, there are also significant opportunities to improve safety by harnessing new technologies. The next decade of motorcycle safety will draw more heavily on Intelligent Transport Systems (ITS) and their associated technologies. The scope of work being undertaken in the proving grounds of Europe by the European Commission and individual countries, in designing, trialling and implementing these systems is significant. That work and its results will no doubt have ramifications for Victorian motorcycle safety and we look forward to its completion.

While technologies such as crash avoidance systems, speed monitoring and alcohol interlocks are at a formative stage, their potential is already recognizable. Technology affords us opportunities which we did not have in the past. It will allow us to prevent and reduce the impacts of crashes. It will also allow us to deal with those motorcyclists who do not operate within the law or are who are not concerned for their own safety. When these riders are injured or killed the effects are not limited to those riders alone.

New technologies may also be the key to a functioning safe system – where the road network caters for mistakes by motorcyclists and drivers because technologies, road design and other countermeasures collectively operate so that errors and risks do not end in crashes and trauma. While a road network that is forgiving remains a long term objective, technology will help deliver it.

At the end of a long Inquiry process, I am pleased to note that Victoria's motorcycle fatalities are on track for a reduction. In early December 2012, as this report was finalised, our motorcycle road toll stands at four fewer than at this time last year. The reduction reflects the work of countless road safety professionals, experts, motorcyclists, community members and government.

A reduced road toll is a positive outcome. But more can be done and needs to be done. We owe that to the victims of motorcycle trauma: to the riders and pillion passengers and their families, friends and communities. During the course of this Inquiry, injured riders and their families, and those who have lost loved ones as the result of a motorcycle crash, shared their experiences with the Committee. As one participant stated to me, *'the legacy left behind when a motorcyclist dies on Victoria's roads lies not with them but with their partners, children, parents and other family, and community. It is these people who will benefit from improvements in motorcycle safety, as well as the motorcyclists themselves'*. These contributions to the Inquiry enhanced the Committee's understanding of motorcycle trauma and helped guide its consideration of issues.

On behalf of the Committee I thank submitters, witnesses (including government agencies, organised advocacy groups and interested Victorian motorcyclists) and experts from the medical and road safety fields. These people met with, and imparted their knowledge to, the Committee in submissions and at public hearings and meetings in Victoria, interstate and overseas. Their collective contributions are reflected in the breadth and detail of this report.

I also thank my fellow Committee members for their energetic, sustained and insightful participation in this Inquiry. Their fresh ideas, bi-partisan collaboration and genuine interest in improving motorcycle safety are also reflected in this report. I also thank the Committee staff: Executive Officer Ms Kylie Jenkins, Researcher Mr John Aliferis and Administrative Officer Ms Christianne Castro for their dedication and tireless work.

Mr Murray Thompson MP
Chair, Victorian Parliamentary Road Safety Committee

Executive Summary

Introduction

Riding a motorcycle for commuting and recreation has been a longstanding tradition in Victoria. For motorcyclists, it is said to offer an enjoyable and accessible form of transport and leisure. Motorcycling, and the risks faced by riders are unique, and for many Victorians unknown. Motorcyclists are more vulnerable than other road users. In comparison to cars, heavy vehicles and public transport, motorcyclists have to brave the elements, adapt to road hazards, and be more aware of other road users. Everything it seems can be a potential risk to a motorcyclist. Unfortunately, when those risks lead to a crash, the results are invariably worse for motorcyclists than they would be for other road users. This necessitates tailored road safety strategies specifically for motorcyclists, and has been an area of investigation for this Committee over the last two decades.

The Parliament of Victoria Road Safety Committee last investigated motorcycle safety in 1998. In the intervening period, much has changed. Motorcycle usage, measured both in licences and registered motorcycles has substantially increased. These increases have been driven by a range of factors, from cost and commuting advantages through to recreation. However, the risks of motorcycling have remained. The results of those risks, borne out, were highlighted by injured motorcyclists and the families of injured and killed motorcyclists. The ongoing impact of motorcycle trauma to those who appeared before the Committee was apparent.

The Inquiry into Motorcycle Safety was wide ranging and comprehensive, and the terms of reference were varied. Some focused on the regulation of motorcycle safety, two were dedicated to statistical analyses of trauma and usage, while others dealt with the funding of measures or costs associated with motorcycle safety. Three terms of reference, dealt with in Chapters 10 to 12, were orientated towards the future, with a focus on existing and new crash and injury reduction measures as well as the role of the motorcycle community in helping to achieve these objectives.

A number of themes flow through this Report, and influenced both the Inquiry process and the Committee's investigations. The first, and arguably most important, theme was the lack of accurate and robust data, both for crashes and trauma. Many arguments, proposals and observations made in submissions and witness statements were based or justified on crash and trauma data. However, the significant data issues identified by the Committee meant much of the evidence presented to the Committee was difficult to verify. Therefore, reliance on this data for the purposes of introducing new interventions or making changes to the regulatory framework was in the Committee's view inappropriate. In the absence of conclusive data, it was not possible for the Committee to make definitive findings or recommendations. Addressing data issues is the single most critical aspect of our future response to motorcycle safety.

A continued absence of accurate and complete data would mean future interventions in motorcycle safety may not be fit for their purpose or impose a greater burden on motorcyclists than might otherwise be needed or justified.

The second theme was the Committee's reliance on robust and objective evidence in guiding its investigations. The Committee relied heavily on published research, evidence provided by submitters and witnesses to the inquiry, and meetings with local and international experts. For example, when assessing the merits of proposals made by submitters and witnesses, or in analysing arguments or statistical trends, the Committee drew on multiple sources to reach a balanced view, rather than rely on one or two sources. The Committee chose this approach to ensure that each issue raised for its consideration was investigated in the most rigorous way, and that findings and recommendations were appropriate and measured. The Committee believes that it was necessary to take this approach because its investigations consistently found an absence of rigour and data justifying positions and proposals. That approach to motorcycling safety, or the safety of any road user group, simply cannot continue if we are to realise real and sustained road trauma reductions.

The third theme was the need to balance new interventions or changes to the existing regulatory framework for motorcycle safety with the actual trauma performance of motorcyclists. The appropriateness of any regulatory response needed to be suitable for the risk, issue or problem it was intended to address.

The last theme was the potential of new technologies and new approaches to improve motorcycle safety. Technology has the capacity to drastically alter the way risks are managed for motorcyclists. While the application of new technologies to motorcycle safety remains at an emerging stage, the Committee believes that it will have an increasingly important role in motorcycle safety. Similarly, improving the way road safety agencies work with the motorcycling community, increasing the use of subsidies, incentives and education to promote and increase the use of countermeasures by motorcyclists and undertaking the research that quantifies the usefulness of any safety measure are vital for improving trauma outcomes.

These themes collectively influenced the Committee's thinking, its investigations and findings in the Inquiry report, and underpin its recommendations.

Part 1 – Data and term of reference (a)

Part 1 begins with data issues. There are substantial and systemic issues with the way motorcycle crash and trauma data is collected, shared and used by Victorian government agencies. These issues make it difficult to ascertain the extent of motorcycle trauma in Victoria. One of the most problematic areas for data collection and trauma trend analysis is the distinction between on and off-road crashes. The Committee made a number of findings and recommendations relating to data. These data issues need to be rectified as they have a wider application than motorcycle crashes alone.

In Chapter 3, trauma trends for motorcyclists in Victoria were analysed. The Committee found that they differed depending on the trauma category. Fatalities have generally decreased over the last decade but there have been overall increases in the number of motorcyclists presenting to an emergency department or being admitted to hospital. Interestingly, when compared with licence, registration and population figures, trauma rates across most trauma categories have improved over time.

Part 2 – Terms of reference (b) to (f)

The second part of the report focuses on a number of terms of reference. It begins with the accredited provider scheme, and then deals with off-road motorcycling and usage. It finishes with the two attitudinal terms of reference.

The accredited provider scheme is an efficient scheme in terms of handling motorcycle permit and probationary licence students. However, there is no way of measuring its effectiveness because the scheme, including the governance arrangements and audit structures, is not aimed at measuring its effectiveness in terms of producing safer riders. The lack of an effectiveness measure is compounded by the lack of a common training curriculum among providers.

Motorcycle use in Victoria has been growing at a rapid rate, with increases in licences and registrations. These increases potentially pose issues for road safety by increasing the number of vulnerable motorcyclists on the road, although conversely, they may also improve road safety by raising the level of awareness among other road users.

In terms of delineating responsibility for off-road riding, the Committee first assessed the legal framework that applies to all motorcyclists, including off-road, before assessing the performance of each responsible road safety agency. A notable finding by the Committee is that VicRoads has not accepted responsibility for regulating off-road motorcycle safety, as required under both the *Road Safety Act 1986* and the *Transport Integration Act 2010* relying instead on a distinction between off and on road that is artificial and based on the management of roads. The performance of the TAC and Victoria Police has been mixed, with a need for greater involvement in this area of motorcycle safety. The Committee found that the Department of Sustainability and Environment has been the government agency most involved in the off-road area, although not strictly in a road safety sense.

The attitudinal terms of reference were limited by the lack of research and surveys undertaken on motorcyclists and on the attitudes between motorcyclists and drivers. Further, the link between attitudes and crash risk remains unexplored.

The available research suggests that rider attitudes to risk generally, and specific risks such as drugs and alcohol, are healthy with high levels of awareness to general and different types of risk. Attitudes of riders and drivers towards each other appear to be improving. A key finding was that there is an ongoing need to create a shared responsibility ethos among all road users if we are to improve motorcycle safety.

Part 3 – Terms of reference (i) and (j)

The two terms of reference dealing with motorcycle compensation and the safety levy drew strongly argued submissions and witness statements. The Committee was presented with seemingly persuasive arguments both for and against increases to the accident premium paid by motorcyclists. However, the Committee found that increasing the premium paid by motorcyclists could not be justified on the available evidence, and in any case went against the purpose and structure of the accident compensation scheme.

The safety levy is a contentious charge and represents the only example of a levy applied to a specific road user group. The issues identified by the Committee with respect to the levy were multifaceted. They ranged from the oversight arrangements applied to its use, through to the effectiveness of safety levy projects and the effectiveness of the levy overall. Important findings included the absence of project evaluations and qualitative reviews which make it difficult to measure its effectiveness.

Part 4 – Terms of reference (g), (h) and (k)

Part 4 of the report, and the three terms of reference it deals with, look to the future of motorcycle safety in Victoria. The chapters share a common theme in that they deal with areas, interventions and countermeasures that could be either improved or introduced to reduce the incidence of motorcycle crashes and the subsequent trauma. The chapter dealing with non-government stakeholders stresses the importance and potential benefits of improving the depth and quality of engagement by road safety agencies. Of particular interest to the Committee was the level of consultation by the Transport Accident Commission when designing and implementing new motorcycle safety campaigns and the impact, role and usefulness of the Motorcycle Advisory Group and Road Safe groups. The Swedish OLA process was identified by the Committee as being a way of improving community engagement and advancing motorcycle safety outcomes.

The use of countermeasures to improve motorcycle safety was an important focus for the Committee. Protective gear, the use of advanced braking systems such as ABS, improved training (including on-road training) and improvements to road infrastructure (particularly by focusing on motorcyclists in the design and maintenance of roads and the use of barriers) were investigated by the Committee. Drawing on evidence provided in its meetings with overseas, interstate and local experts, the Committee identified improvements to existing countermeasures and ways to accelerate their use.

Among the findings in Chapter 11, those dealing with protective gear and training were particularly noteworthy due to the emphasis placed on them by participants. The Committee noted an Australian Standard for protective gear remained elusive. This is despite this Committee's recommendation that VicRoads create a clothing standard as part of its 1998 *Inquiry into the Review of Motorcycle Safety in Victoria*. Further, there has been a lack of progress in creating a star rating system which rates the performance

of protective gear. The creation of an Australian Standard and a functioning star rating system are necessary prerequisites for the introduction of mandatory protective gear. In terms of training, the lack of research into its effectiveness as a way of reducing crash risk did not deter the Committee from finding that on-road training should be pursued and training more generally is likely to impart a crash reduction effect. Both of these areas should be explored by road safety agencies in collaboration with researchers.

The Committee believes that new initiatives for motorcycle safety will increasingly draw on Intelligent Transport Systems (ITS) and associated technologies. While these technologies are emerging, they will offer great potential for improving motorcycle safety. The Committee also found that road safety agencies need to ensure strategies and interventions are catered to different types of motorcyclists (such as scooter and off-road riders) and should focus on using education, subsidies and incentives to promote safer motorcycling practices. One way of funding these initiatives is by following the lead of overseas and interstate jurisdictions and hypothecating fines for breaches of the road rules. The revenue from these fines would be directed into a dedicated road safety fund which would be used to improve the safety of all road users, including motorcyclists. The Committee also found that filtering, as distinct from lane splitting, could confer a safety benefit for motorcyclists, and recommended a suite of measures to investigate the safety benefits and risks of filtering.

Conclusion

The Committee's investigations have found that many of the areas covered by the terms of reference can and need to be improved. Much of this improvement is the responsibility of road safety agencies. The current situation in Victoria, in terms of motorcycle safety, is characterised by opportunities for improvement. The opportunities arise from better engaging with the motorcycle community, improving the way road safety agencies regulate motorcyclists and applying new countermeasures, new approaches and new technologies to enhance motorcycle safety. Increased motorcycle usage means that Victoria needs to take a balanced approach to regulating motorcycle safety, but act where necessary to ensure motorcycle trauma continues to reduce over time. Victoria has always been a world leading road safety jurisdiction. That also needs to be the case for motorcyclists.

Recommendations

CHAPTER 2 – DATA QUALITY AND ACCURACY

Recommendation 1:

That an independent office of road safety data be created, which will be responsible for collecting, collating, interpreting and publishing all data relevant to road safety, and, for the purposes of this Inquiry, specifically motorcycle safety. Its functions will include:

- Investigating which agencies collect data and where there are data gaps, particularly with respect to off-road riding;
- Setting standards, definitions and data collecting protocols;
- Chairing committees that include all relevant agencies and departments involved in motorcycle safety (including those that collect data);
- Setting benchmarks for the collecting and auditing of data;
- Co-ordinating the collection of data across departments dealing with health, road and environment portfolios; and
- Collecting sales, injury, registration, licensing, fatality and Transport Accident Commission insurance data.

Recommendation 2:

That an immediate program to improve inter-agency data co-operation and collaboration on motorcycle crash data be instituted by government agencies.

Collaborations through committees and other data groups should include appropriate representatives from motorcycle advocacy groups, such as those represented on the Motorcycle Advisory Group, whose experience and knowledge of motorcycle crashes could assist in the assessment of crash data.

Recommendation 3:

That a consistent methodology based on a set of universally applied definitions and categorisations be developed for motorcycle trauma victims who present, are admitted or suffer major trauma in Victoria. This methodology should be used by all government agencies and departments when compiling trauma data for road safety purposes. The guiding principle for including an injured motorcyclist in trauma statistics for road safety is to be the definition of a road or road related area found in the *Road Safety Act 1986*.

Recommendation 4:

That the Victorian Auditor-General's Office undertake a follow up audit of the agencies audited in the *Motorcycle and Scooter Safety Programs Report*, within 12 months of tabling of this report.

Recommendation 5:

That section 87(1)(d) of the *Transport Integration Act 2010* be amended to include a co-ordinating role for VicRoads in the collection of road crash and trauma data among health and road safety agencies and departments.

Recommendation 6:

That the Victorian Government initiate discussions through the Council of Australian Governments to achieve national conformity on definitions of categories used in assessing road trauma.

CHAPTER 4 – THE ACCREDITED PROVIDER SCHEME

Recommendation 7:

That the current accredited provider scheme be reviewed by an external organisation such as the Monash University Accident Research Centre or the Victorian Auditor-General's Office, to measure its current effectiveness in administering motorcycle licensing and whether it improves motorcycle safety and reduces motorcycle trauma. The review is to be initiated within 12 months of the tabling of this report.

Recommendation 8:

That VicRoads auditing include a new component focusing on the effectiveness of accredited providers, to be measured in terms of road safety outcomes.

Recommendation 9:

That accredited providers who do not offer a 'test only' option be able to access financial incentives, and that such an incentive be provided by way of a reduction in the amount paid, per student, to VicRoads by accredited providers.

Recommendation 10:

That VicRoads, design and implement a pilot training course, for pre-licence riders that includes an off-road and attitudinal component. The training course should involve selected accredited providers, and be implemented within 12 months of the tabling of this report.

Recommendation 11:

That VicRoads, in consultation with other road safety agencies and the public, develop a common training curriculum which all accredited providers are required to use.

Recommendation 12:

That an on-road training component for learner riders, and on-road testing component for probationary riders, be introduced.

CHAPTER 5 – OFF-ROAD RIDING AND MOTORCYCLE SAFETY

Recommendation 13:

That VicRoads and the Transport Accident Commission treat off-road motorcycle safety no differently to that of on-road motorcycles.

Recommendation 14:

That VicRoads and the Transport Accident Commission ensure all current and future motorcycle safety initiatives specifically include a component aimed at improving the safety of off-road riders.

Recommendation 15:

That road safety interventions, strategies and initiatives, focus on both on and off-road motorcyclists, relying on the definition of a road and road related area in the *Road Safety Act 1986* as a basis for including or excluding motorcyclists.

Recommendation 16:

That the Department of Sustainability and the Environment be involved in the monitoring of off-road safety, and be included in the design, development, implementation and consultation stages of off-road safety initiatives, strategies and countermeasures and in the gathering and sharing of off-road crash data.

Recommendation 17:

That an ongoing public education campaign be undertaken by the Transport Accident Commission to educate off-road riders of the coverage they are afforded under the Transport Accident Compensation Scheme.

CHAPTER 7 – ATTITUDES

Recommendation 18:

That road safety agencies initiate an attitudinal survey that deals with all the segments of the motorcycle community, including on and off-road motorcycles, scooter, moped and recreational riders, and that deals with attitudes to general risk taking, and specific risks including drugs, alcohol, inappropriate speeds, use of protective clothing and fatigue.

Recommendation 19:

That VicRoads and the Transport Accident Commission undertake research, including attitudinal surveys, aimed at understanding how riders and drivers can better interact with each other. Agencies must take a different approach to communicating with each group, so that riders and drivers are better educated about each other.

Recommendation 20:

That VicRoads includes motorcycle specific questions in its licence testing regime and motorcycle safety (including awareness) content in its training syllabus for learner and probationary car licence students.

Recommendation 21:

That VicRoads and the Transport Accident Commission undertake research projects focusing on the interaction between attitudes and behaviours as a way of informing road safety strategies and training and licensing materials.

Recommendation 22:

That the Transport Accident Commission focus its motorcycle safety advertising on redressing the attitude that responsibility for rider safety is solely attributable to the rider, by ensuring that campaigns dealing with motorcycles raise driver awareness and do not create negative stereotypes, perceptions or attitudes among drivers.

Recommendation 23:

That a ‘Motorcycle Safety Awareness Week’ be held annually in Victoria in conjunction with the Phillip Island MotoGP. The focus of the week is to be on how all road users can contribute to the safety of motorcyclists.

CHAPTER 9 – THE MOTORCYCLE SAFETY LEVY

Recommendation 24:

That the Victorian Auditor-General’s Office undertake a performance audit of the motorcycle safety levy including those projects funded and implemented since 2002, and its governance arrangements.

Recommendation 25:

That the motorcycle safety levy be abolished.

Recommendation 26:

That the methodology underpinning the identification of blackspots be altered to take into account the smaller number of motorcycle crashes and crash data accuracy.

Recommendation 27:

That VicRoads and the Transport Accident Commission report on the expenditure of the motorcycle safety levy in their respective annual reports. The report should include itemised information on the number of projects funded, the cost of each project, its completion date and whether the project had been evaluated and any other relevant information with respect to the motorcycle safety levy.

Recommendation 28:

That VicRoads and the Transport Accident Commission make available and publish, through a dedicated area on their respective websites, or on another appropriate website, details about all motorcycle safety levy projects, project documentation, start and completion dates and the results of any evaluations.

Recommendation 29:

That reporting on, and evaluations of, projects funded by the motorcycle safety levy not be subject to confidentiality or release restrictions which may limit public access to information on projects. It is however, appropriate for such restrictions to apply in cases where commercial in confidence requirements are imposed as part of a contractual or tender process.

Recommendation 30:

That all motorcycle safety levy funded projects have clear performance indicators that can be measured at the start, during and at the completion of the project.

Recommendation 31:

That all motorcycle safety levy funded projects be evaluated within 12 months of being completed, and the results of such evaluations be published.

Recommendation 32:

That projects that do not adhere to the *Strategic guide for expenditure of the motorcycle safety levy funding* not receive funding, under any circumstances, but particularly those projects that propose to use motorcycle safety levy funding to pay for enforcement or Victoria Police operational costs.

Recommendation 33:

That VicRoads, the Transport Accident Commission and the Motorcycle Advisory Group focus on increasing the number of off-road projects funded by the motorcycle safety levy. These projects must involve the Department of Sustainability and the Environment.

Recommendation 34:

That the Motorcycle Advisory Group be given the same oversight function over the expenditure of motorcycle safety levy funds that had previously been exercised by the Victorian Motorcycle Advisory Council.

Recommendation 35:

That VicRoads and the Transport Accident Commission report on the effectiveness of the motorcycle safety levy in future annual reports, including the demonstrable effects of the levy in improving rider safety and the effectiveness of individual projects.

Recommendation 36:

That, unless otherwise abolished, the motorcycle safety levy be linked to a specific motorcycle trauma reduction figure which, once reached, would result in the levy being abolished.

CHAPTER 10 – WORKING WITH NON-GOVERNMENT STAKEHOLDERS

Recommendation 37:

That VicRoads initiate a consultation process, based on the Swedish OLA (*Objective facts, List of solutions, Addressed action plans*) method, for motorcycle safety that involves all road safety agencies, motorcycle clubs, stakeholders and groups, and members of the broader community with a view to developing new safety initiatives. The process is to be facilitated by a third party, non-government organisation and is to be based on the process used by the Royal Automobile Club of Western Australia.

Recommendation 38:

That road safety agencies formally review their existing stakeholder arrangements and identify new stakeholder groups for inclusion in their stakeholder engagement plans, policies and approaches. As part of this review, the Transport Accident Commission and VicRoads in particular, should invite motorcycle stakeholders, clubs and groups to indicate their interest in being included in all forms of stakeholder engagement and then take steps to ensure they are included.

Recommendation 39:

That the Transport Accident Commission and VicRoads formulate a stakeholder management plan for engaging with the motorcycling community, and include the role, scope and breadth of stakeholders to be consulted for each type of engagement method.

Recommendation 40:

That VicRoads review the RoadSafe program with a view to identifying improvements for engaging, where appropriate, with all sectors of the Powered Two-Wheeler community.

Recommendation 41:

That the Transport Accident Commission consult broadly with motorcycle stakeholders, including those on the Motorcycle Action Group at the inception, design and production phase of motorcycle safety advertising and safety messages.

Recommendation 42:

That the Motorcycle Advisory Group be required to report regularly to the Minister for Roads, through its Secretariat. Agendas, and minutes of all meetings will be provided promptly to the Minister's office (as well as to the Motorcycle Advisory Group members) and a comprehensive report on the Motorcycle Advisory Group's activities and any outcomes should be submitted to the Minister on a yearly basis.

Recommendation 43:

That the Motorcycle Advisory Group be expanded to include additional representatives from the scooter and moped, off-road and accredited provider segments of the motorcycling community and the length and regularity of meetings be increased to allow for constructive engagement.

Recommendation 44:

That motorcycle advocacy groups in Victoria continue to work towards greater co-operation and co-ordination amongst themselves, particularly when engaging with road safety agencies.

CHAPTER 11 – COUNTERMEASURES

Recommendation 45:

That VicRoads and the Transport Accident Commission, in conjunction with road safety researchers, undertake a crash reporting and investigation study, using the Motorcycle Accident In-Depth Study approach as a model.

Recommendation 46:

That VicRoads update its road engineering guides to ensure they account for motorcycles. The guides, including any policies, procedures and any other documents needed in the design, building and maintenance of roads should take a safe systems approach, with a view to reducing the injury and fatality risk to motorcyclists.

Recommendation 47:

That VicRoads improve, in respect of motorcyclists, the operation of Wire Rope Safety Barriers and other roadside barriers (such as steel or concrete barriers) by utilising existing technology such as retrofitting barrier posts with cushion products, employing underrun protection rails and using other technologies to reduce the impacts of snagging or deceleration. These improvements should occur on roads that have been identified as requiring improvement based on crash statistics, or using the approach taken for identifying blackspot and blacklength roads, to ensure that funds are best utilised.

Recommendation 48:

That the Transport Accident Commission and VicRoads investigate the use of incentives and public education campaigns to increase the number of motorcycles being purchased with Anti-Lock Braking Systems.

Recommendation 49:

That VicRoads and the Transport Accident Commission provide yearly reports to the Motorcycle Advisory Group on research, advancements and evaluations of motorcycle Anti-lock Braking System, and other countermeasures both in Australia and overseas. These reports should also be made available to the public through the respective agencies websites.

Recommendation 50:

That VicRoads and the Transport Accident Commission develop educational campaigns for the use of protective clothing based on research findings with a focus on improving the usage of armour and lower body clothing and on segments of the motorcycle community that have lower rates of use.

Recommendation 51:

That the Transport Accident Commission provide a report on the development of the star rating system, including prospective timelines, to government, the Motorcycle Advisory Group and the Road Safety Committee within six months of the tabling of this report.

Recommendation 52:

That a star rating system for protective motorcycle clothing, which includes boots, gloves, jackets, pants and armour, be established within 24 months, and be fully functioning within 36 months, of the tabling of this report. It should adopt the Conformité Européenne standards for protective motorcycle gear, but also take into consideration Victorian requirements including weather patterns and must include a testing and certification regime.

Recommendation 53:

That gear that does not meet a minimum star rating (once established) should not be sold or branded as 'protective' motorcycle gear in Victoria. Clothing that does meet a minimum standard should be subject to incentives and subsidies devised by road safety agencies to facilitate its purchase by motorcyclists.

Recommendation 54:

That VicRoads and the Transport Accident Commission in conjunction with Standards Australia create an Australian Standard for motorcycle protective gear. This standard should use the European standards as a basis, but take into account Victorian and Australian specific factors.

Recommendation 55:

That VicRoads and the Transport Accident Commission investigate ways of improving motorcycle safety through behavioural change programs including changes to the car licence curriculum and road rules so that motorcyclists and the risks posed to them by other road users are highlighted. Other areas that should also be explored include school education and advertising campaigns aimed at all road users.

Recommendation 56:

That VicRoads and the Transport Accident Commission investigate the potential of simulators and virtual training software to complement motorcycle training.

CHAPTER 12 – NEW INITIATIVES

Recommendation 57:

That road safety agencies set and incorporate trauma reduction targets for motorcycles, and motorcycle segments, in motorcycle strategies and for individual interventions. Targets should be both aspirational and empirical in nature.

Recommendation 58:

That the Transport Accident Commission and VicRoads review their driver instructional materials to deal with the issue of safety features on vehicles that may affect a driver's ability to see motorcyclists.

Recommendation 59:

That the benefits and risks of filtering, as distinct from lane splitting, be reviewed with the aim of introducing filtering in Victoria. A review committee should be constituted within 12 months of the tabling of this report and its members must include motorcycle community stakeholders and advocates, transport academics, police and other government agencies. The review committee will be responsible for:

- Creating a definition that includes references to speed and the location of the rider on the road during filtering among others;
- Identifying the benefits and risks of legalising filtering;
- Undertaking research into the incidence of rear-end crashes and crashes involving motorcycles and other vehicles within the same lane;
- Formulating training requirements so that riders can safely filter;
- Implementing a trial of filtering, followed by an evaluation to allow for a realistic assessment of the risks of filtering; and
- Consulting with the public and motorcycle stakeholders.

The review committee will produce a report, with recommendations, and submit it to the Minister for Transport and the Road Safety Committee within 12 months of the committee being constituted.

Recommendation 60:

That the Transport Accident Commission's funding of enforcement be reviewed with a view to identifying whether there has been an undue reliance on enforcement, by the Transport Accident Commission, and whether these funds would be more appropriately spent on alternative programs, initiatives and activities (such as subsidising countermeasures) which can improve motorcycle safety.

Recommendation 61:

That road safety agencies incorporate subsidies and incentives in motorcycle strategies, interventions and when introducing new countermeasures. Only countermeasures that have a measurable road safety benefit, either by reducing crash risk or improving trauma rates, should be eligible for such subsidies and incentives.

Recommendation 62:

That the hypothecation of funds derived from enforcement, and their transfer to a specific road safety fund which could be used to supplement existing funding for road safety measures, including those aimed at motorcyclists, such as that in Western Australia and New South Wales, be implemented in Victoria.

Recommendation 63:

That the Department of Sustainability and Environment and road safety agencies investigate ways to increase the awareness of emergency location devices among off-road motorcyclists and assess ways to improve access to such devices, including making such devices available for a small rental fee.

Recommendation 64:

That VicRoads and the Transport Accident Commission provide yearly reports to the Motorcycle Advisory Group on research, advancements and evaluations of Intelligent Transport Systems and associated technologies, both in Australia and overseas. These reports should also be made available to the public through the respective agencies websites.

CHAPTER 1: INTRODUCTION

Every day on Victorian roads tens of thousands of people ride their motorcycles for work, social events and recreational purposes. While most Victorians who do not ride generally view all motorcycles and riders as belonging to a single group, the riding community is extremely diverse. Scooters, cruisers, super-tourers and off-road ‘bikes’ might all be termed motorcycles or powered two wheelers. However, for riders each motorcycle is different with unique handling, uses and risks.

For many riders motorcycles represent something intangible: individuality, enjoyment, freedom, a closer connection with the environment, a test of skill and excitement in the face of uncertain risk. During the Inquiry many riders spoke eloquently of what riding meant to them. The Committee heard riders describe the sights and smells of rides in rural Victoria, the exhilaration of long rides, the camaraderie of membership in a motorcycle club, the thrill of conquering off-road trails in state forests, right through to the more routine commuting to work in the busy inner city suburbs. One witness explained:

There is something about motorcycling that triggers something in your brain to make you feel more alive ... that life is better. [W]hen motorcycling with your visor up on your helmet, you smell things that you do not smell in a car ... you can smell the perfume on the woman walking down the road as you ride past. You feel the texture of the road through the tyres on the motorbike ... All those things are constantly bombarding you, and something in you says, ‘This is life at its highest’. It is a heightened awareness.¹

To a greater extent than other road vehicles, motorcycles can be both transport for the daily commute and machines of leisure. Motorcycles are flexible vehicles which are attractive due to their ability to navigate congested traffic, their lower emissions as a whole² and their frugal petrol use. Over the last decade Victoria has experienced a boom in the number of licensed riders and registered motorcycles. This has been driven by a number of complimentary factors including urbanisation, cost, increases in disposable income, environmental concerns (traffic congestion and emissions), and demographic changes.

The unique characteristics that make motorcycles attractive have a downside when it comes to safety. This is partially explained by their size in comparison to other vehicle on our roads. But the major difference is that motorcycles, in contrast to cars and other vehicles, cannot provide passive protection for riders once a crash occurs. These characteristics mean that crashes involving motorcycles carry a greater risk of injury and death for riders and pillion passengers than that for occupants of cars and other vehicles. However, it is important to note that these risks are not ignored by riders. In both public hearings and written submissions, the Committee heard riders characterise themselves as risk managers, people aware of the risks yet willing to ride in ways that mitigate them. In spite of their willingness to accept risk, when things go wrong on a motorcycle the result for rider is almost always more serious compared to other road users.

In Victoria, motorcycle trauma has decreased, in comparative terms, over the last decade. However, this conclusion is subject to a number of qualifications. Trauma trends vary for motorcyclists depending on their location when injured and the type of comparative analysis used. For example, whilst presentations to hospitals as a result of an injury are higher today than they were in 2001-02, when compared to registered motorcycles, the rate has decreased.³

Motorcycle trauma has an impact beyond the rider alone. As with all road crashes, family, friends and those that care for the injured are also affected. In Victoria, riders who are hurt are provided with publicly funded medical care and long term rehabilitation. In some instances the state transport accident compensation scheme can be accessed by injured riders and their families to cover a range of costs arising from the crash. The counterview to the enjoyment and use of motorcycles is the costs from crashes, borne collectively through the annual registration charge, and the emotional and physical cost suffered by riders and their families.

The challenge for policy makers, regulators, government and the community is how to increase the safety of motorcyclists to reduce road trauma. In trying to achieve those objectives government agencies have to be wary of using interventions that make motorcycling less attractive to Victorians or that create unnecessary barriers for those wishing to pursue motorcycling. Further, there is a real sense among the riding community that enough talking has happened and it is time to take action on motorcycle safety. Riders have stressed that action needs to be deliberate, planned, and underscored by robust, publicly available research and data.

1.1 Aim of the Inquiry

Motorcycle safety was last investigated by the Parliament of Victoria Road Safety Committee in 1998. Since 1998, the numbers of motorcycle registrations and licences have increased, as have the numbers of riders injured and killed on Victorian roads. The Inquiry's broad terms of reference reflect the level of change in the use of motorcycles and the need to deal with all aspects of motorcycle regulation. In one respect the Inquiry is an attempt to understand what is currently happening in the area of motorcycle safety and what the issues are. It is, however, also intended to identify interventions and opportunities that can make the road safer for riders. With these concurrent objectives in mind, the Committee considered the aims of the Inquiry to be twofold: firstly, to identify current safety issues and the regulation of motorcyclists and secondly, to outline ways of improving both.

1.2 Reasons for conducting the Inquiry

The Inquiry comes at a time when the popularity and use of motorcycles is at record levels. These increases in use have translated into increases in fatalities and serious injuries, but a decrease in trauma in comparative terms. Victorian motorcycle safety is, therefore, at an important juncture.

If the increases in motorcycle use continue, and regulators and governments do not have the means to understand the size of the problem, and are not in a position to create, innovate and implement appropriate road safety initiatives, then there may be an increase in the number of deaths and injuries. That outcome is not one that Victoria has been willing to accept for other road users nor is it one acceptable for motorcyclists.

The current road safety environment affords many new opportunities. Advances in medical treatment, the way we build roads, train and licence road users, manufacture vehicles and manage compliance have made the road a safer place. The Committee believes similar advances may exist for motorcyclists. Considering the difficulties that motorcycles pose in terms of road safety interventions, primarily due to their vulnerability, the Committee believes that government and regulators need to be more innovative, more heavily reliant on research and evidence, and more ambitious if we are to achieve lower trauma rates for riders. There is a need to move away from road safety interventions developed for other road users which do not deliver the same safety outcomes when applied to motorcycles. If such an approach is adopted, the community is more likely to accept the role of government agencies and collaborate with them to achieve lower trauma rates.

1.3 Conduct of the Inquiry

1.3.1 Terms of Reference

The Terms of Reference for the Inquiry were advertised in metropolitan and regional newspapers, including multicultural newspapers from the Greek, Lebanese and Italian communities among others. Advertisements were also placed on commercial and public radio stations in Melbourne and regional Victoria.

1.3.2 Submission dates

The Committee set two submission dates: 22 July 2011 for members of the public and 9 September 2011 for large government agencies, to enable them to provide a considered response to the terms of reference.

Submissions were received from a wide range of individuals and organisations such as VicRoads, the TAC, Victoria Police, the Coroners Court of Victoria, rider groups, health professionals, motorcycle representative groups and community groups. Seventy six submissions were received by the Committee (see [Appendix A](#)).

1.3.3 Evidence

This report is based on evidence received through written submissions, public hearings, research and briefings provided by experts and academics. The Committee undertook extensive public consultations, inviting over 100 witnesses to appear at five rounds of public hearings (see [Appendix B](#)). Additionally, members of the public were invited to nominate themselves as part of an ‘open forum’. The open forums allowed any member of the public to address the terms of reference with the Committee. This was in addition to the Committee requesting individuals and organisations to appear before it to give evidence.

The first open forum was held in Melbourne on Tuesday, 18 September 2011 and was extremely well-attended. For many attendees it was the first time they had been able to directly engage with a Parliamentary Committee in this way.

1.3.4 *Travel*

In early November 2011, the Committee travelled to Perth (see [Appendix C](#)) to meet with the then Minister for Policing, Emergency Services and Road Safety, members of the Western Australian Office of Road Safety and representatives from the Motorcycle and Scooter Safety Action Group (MSSAG). The Committee attended a one day forum run by the MSSAG at which motorcyclists, rider groups, regulators, police and safety experts presented and discussed motorcycle safety issues. Committee members also attended the opening of the Australasian Road Safety Research, Policing and Education Conference and took the opportunity to meet with and receive evidence from experts on road barriers and protective clothing who were in Perth to attend the conference. The Committee also met with the Secretary General of the Federation of European Motorcyclists' Associations (FEMA), Ms Aline Delhaye, who presented on the European approach to motorcycle safety with a particular emphasis on research, countermeasures and community consultation.

The Committee travelled overseas between 22 June and 11 July 2012 attending 27 meetings (see [Appendix D](#)) over 12 days with a range of relevant stakeholders including:

- Federal and local government agencies;
- Non-government organisations;
- Riders' groups;
- Research institutes;
- Training organisations;
- Industry associations, and
- Insurance companies.

1.4 *Scope of the Inquiry*

The Inquiry's terms of reference guided the Committee's investigations into motorcycle safety. They included both extremely broad references and others that were quite specific. The specific included those dealing with the appropriateness of the TAC premium, the motorcycle safety levy and the ways government could better engage with non-government stakeholders. In contrast, the terms of reference dealing with countermeasures and new initiatives were wide-ranging. Further, some terms of reference were either limited by a geographic focus on Victoria or were expanded to emphasise national and international practices. At the start of the Inquiry the Committee defined the terms of reference so that its research and investigations were targeted appropriately. The scope and ambit for each term of reference follows.

1.4.1 *Term of reference (a)*

The focus for term of reference (a) is motorcycle crash trends for the period 2000/2001 onwards. The Committee identified fatalities, hospital presentations, admissions and serious injuries/major trauma, the distinctions between on and off-road, age and gender and the location of crashes (rural and urban) as falling within this term of reference.

1.4.2 *Term of reference (b)*

This term of reference was narrowly defined with the focus being to assess the growing use of motorcycles in Victoria. The Committee explored the correlation between the factors driving increased motorcycle usage and motorcycle crashes and quantified what increased usage might mean for trauma levels in Victoria. It was felt the factors driving increased motorcycle use and the correlation (borne out by statistical analysis, coronial or police investigation, or anecdotal evidence) between increased usage and motorcycle crashes also need to be explored. Finally, the Committee tried to quantify what a growing fleet size and motorcycle use could mean for motorcycle crashes and safety.

1.4.3 *Terms of reference (c) and (d)*

Both these terms of reference were seen to be confined to a narrow scope, dealing with attitudes in a descriptive manner: firstly, in relation to the attitudes of riders to a number of issues (for example drugs and speeding) and secondly, between riders and drivers towards each other. The underlying objective was to analyse existing attitudes and how they do, or do not, inform and influence the design of regulatory interventions, crash risk and trauma outcomes.

1.4.4 *Term of reference (e)*

The central focus in this part of the Inquiry was to understand the current regulatory environment and determine what arrangements exist to deal with off-road riders, including which government agencies are responsible for their safety and what safety initiatives exist.

1.4.5 *Term of reference (f)*

The following issues were felt to fall within this term of reference: firstly, the way accredited providers are assessed in terms of performance standards; secondly, the way in which VicRoads regulates the accredited provider system; and lastly, whether the accredited provider scheme provides training and testing which results in better riders on Victorian roads. A secondary focus was identifying whether there were problems in the delivery of the services, their cost and quality control. The Committee did not interpret this term of reference as extending to deal with licensing standards (including the proposed graduated licensing scheme for motorcycles) and testing generally. However, issues that prevented providers from being effective such as the curriculum and contractual standards were included. It should be noted that the issue of testing was partially dealt with in terms of its linkage to training in term of reference (h).

1.4.6 Term of reference (g)

This term of reference had the broadest scope. Unlike other terms of reference, this one included an explicit requirement to investigate and report on countermeasures within and outside of Victoria, including those used in other jurisdictions. This term of reference considered both existing and prospective countermeasures, assessed how they have helped reduce motorcycle fatalities and injuries and whether they should be implemented in Victoria. The Committee separated the term of reference into four sections dealing with each specific area of countermeasures: road infrastructure and furniture; behavioural change programs (which extended to include training); the design and technology of motorcycles; and the design and technology of protective gear.

1.4.7 Term of reference (h)

The Committee took an expansive approach to this term of reference. A wide-ranging analysis of motorcycle safety initiatives in other States and Territories, and overseas, was undertaken to assess what could be used in Victoria. The term of reference extended to assessing existing initiatives and, where improvements were found, to recommend how these could be adopted. New initiatives in every area covered by the terms of reference were included in this section.

1.4.8 Term of reference (i)

The Committee treated this term of reference as stand-alone, with a focus on two policy issues: firstly, whether the risk profile of motorcycle riders and the cost they impose on the transport accident compensation scheme are appropriate in terms of the premiums they pay; and secondly, an assessment of the type of coverage that the scheme provides. Central to this term of reference was the policy question about whether TAC premiums, paid for by all road users as part of their registration, should be used to compensate riders who are not registered, are unlicensed or riding off-road. Specific areas of investigation by the Committee to establish whether the current approach was appropriate included: the effect of court decisions on the coverage of the scheme; the rate of occurrence of crashes involving unregistered, unlicensed or off-road riders; the proportion of motorcycle claims in relation to the total premium pool; what would occur if rider premiums were increased; and the interaction between this term of reference and term of reference (e) in the context of the scheme remaining financially viable.

1.4.9 Term of reference (j)

The Committee defined this term of reference as including the following objectives: whether the aims of the motorcycle safety levy had been achieved; the way levy funds have been used; and transparency and oversight arrangements. In terms of the oversight arrangements, the term of reference extended to include the role of the Victorian Motorcycle Advisory Council (VMAC) and its successor, the Motorcycle Advisory Group (MAG). In addition, the term of reference was defined as requiring an analysis of the effectiveness of motorcycle safety levy funded projects, whether they made a positive impact on motorcycle safety (in terms of reductions in risks, actual injuries and fatalities), and the appropriateness of the way the levy has been used.

1.4.10 Term of reference (k)

The primary focus of this term of reference was on the way that government agencies and the Victorian government interact with motorcycle groups and other rider organisations to promote motorcycle safety. Of central importance was the question of how well government is interacting with non-government stakeholders, and whether there are any examples that might be used as a model for government / community co-operation. Dealing with off-road riders was a specific focus of this term of reference, with a particular emphasis on the work of the Department of Sustainability and Environment (DSE) and Victoria Police in this area. The term of reference was seen to extend to assessing the types of opportunities motorcycle clubs and other groups interested in rider safety might provide to government.

1.5 Issues not covered by the Inquiry

1.5.1 Quad bikes

The terms of reference clearly restricted the Inquiry to motorcycle safety. This meant that quad bikes, which are also referred to as All-Terrain Vehicles (ATVs) and therefore not defined as motorcycles under Victorian legislation, did not form part of the Inquiry. These vehicles are regulated by occupational health and safety regulators, such as WorkSafe Victoria, when they are used in a workplace.

1.5.2 Crashes on private land

Motorcycle crashes that occur on private property fall outside of the scope of the Inquiry. Such crashes may be investigated under occupational health and safety laws if they occur on a working farm or if the property is considered a workplace.⁴ They can also be investigated under Coronial legislation and criminal law. But deaths that occur on private property are not included in road toll statistics due to the definition of a road fatality used by the Australian Bureau of Statistics (ABS), which requires the crash to occur on a road devoted to public travel.⁵ Further, there is no requirement for licensing or registration of motorcycles being used on private property, and similarly laws that regulate the use of motorcycles on public roads and road related areas do not extend to cover their use on private property.

1.5.3 Enforcement

The enforcement of road safety through rules, regulations and Acts plays an important role in reducing road trauma. The role of enforcement is dealt with in terms of reference (e), (g) and (h) and only where the link between enforcement and the aim of a reduced road toll for motorcyclists was clear. It has also applied where a change to current regulations and road rules, such as the introduction of new rules, may have a beneficial safety outcome. However, the Inquiry does not extend to deal with enforcement issues that relate to the enforcement practices of police or other organisations, or which could enhance the way that enforcement agencies operate.

1.6 Report structure

The report is comprised of four parts. The first deals with data issues and analyses motorcycle trauma, in terms of injuries and fatalities, to quantify what is happening on Victoria's roads. The second sets the scene for motorcycle safety in Victoria. The third covers the terms of reference related to funding (the TAC premium and the motorcycle safety levy) and community involvement in road safety. The last part identifies ways for Victoria to prevent or lessen the effects of motorcycle trauma. The 11 terms of reference are incorporated across these four parts.

Part 1 is comprised of two chapters, beginning with Chapter 2 analysing data issues identified during the course of the Committee's investigations of motorcycle trauma trends. Chapter 3 deals exclusively with term of reference (a) by examining the fatality and serious injury trends for motorcyclists. The analysis includes trauma locations, the type of riding, the time that crashes occur and the age of riders injured and killed. Comparisons based on usage statistics such as registration, licensing and population are used to measure changes in trauma trends over time. A key question in this Part is how Victorian riders have fared over the last 5–10 years and whether Victoria has, comparatively, experienced a reduction in rider fatalities and injuries.

Part 2 provides context to the Inquiry. It assesses the current state of licensing and training by accredited providers (term of reference (f)), before providing an overview of the regulatory environment, including which government agencies are responsible for motorcycle safety (and in what capacity), with a specific reference to off-road riding (term of reference (e)). Attention is then given to motorcycle usage by drawing on registration and licensing trends (term of reference (b)). The last section in Part 2 deals with the link between increased usage and its impact on road trauma and the attitudes of riders (terms of reference (c) and (d)). An important consideration in this section is the question of how attitudes impact on road safety.

In Part 3 the Committee assesses the way that motorcycle safety is funded, which incorporates both the TAC premium and the safety levy (terms of reference (i) and (j)).

Part 4 essentially deals with motorcycle safety prospectively. The Committee examines how Victoria can actively prevent or lessen motorcycle trauma. A key consideration for the Committee in this Part was the need to balance the enjoyment and use of motorcycles with risk mitigation. This is reflected in the analysis of possible road safety interventions. The discussion covers a broad range of areas beginning with how community groups and non-government organisations can help achieve lower trauma rates (term of reference (k)), an assessment of countermeasures that could be used in Victoria (term of reference (g)) and concludes with new initiatives that could be adopted to achieve trauma reductions (term of reference (h)).

1.7 Themes in the report

While considering the issues associated with motorcycle safety the Committee identified a number of key themes. These were:

- Data collection and use;
- Consultation;
- Education and training;
- Governance arrangements of road safety organisations;
- Mandating new motorcycle requirements; and
- Funding.

These themes appeared consistently in submissions, public hearings and research material. A brief explanation of each follows.

1.7.1 Data collection and use

Over the last decade, policy formulation and regulatory intervention has increasingly relied on evidence. That evidence requires appropriate data to provide policy makers and government with a strong basis on which to make regulatory changes. The ability to capture data has intensified over the last decade with the evolution of software, data capturing equipment and the expertise of researchers and government agencies. This in turn has, seemingly, made it easier to identify and use evidence to justify policy positions and implement new interventions.

In terms of motorcycle safety, data collection and analysis emerged as a key issue. This was due to inconsistent definitions used to categorise motorcycle trauma data, unclear data gathering roles for different government agencies, incomplete data collection, and the way data is analysed and strictly controlled. These issues as a whole affected the quality of data and the coverage of trauma and usage in Victoria, and hindered the Committee's ability to make definitive findings.

While it may be accepted that issues with data collection and analysis exist across public policy areas, the current data issues in motorcycle safety made it difficult for the Committee to confidently identify evidence based policy interventions that could reduce trauma rates.

1.7.2 Consultation

An inherent requirement in the analysis of road safety issues is strong evidence and thorough consultation. This is particularly important when designing appropriate, well-reasoned and justified interventions because they are applied to an entire community. The Committee found that motorcyclists have often been the target of interventions that do not appear to be strongly backed by evidence. This has occasionally meant riders perceive new rules as not being 'common sense' or being contentious and some have chosen not to comply. The Committee found a strong sense among riders that government agencies do not consult with them properly.

For some riders the ability of the motorcycling public to engage with government and regulators has been hampered by inconsistent information about who is responsible for road safety issues and governance and transparency issues with the different consultative forums run by government agencies. In some instances, riders gave evidence that they believed government agencies were biased and out of touch.⁶

1.7.3 *Education and training*

The role of education is central to changing the attitudes of motorcyclists and those of drivers towards motorcyclists and vice versa. It was also strongly identified by a cross-section of submitters as a way to ensure that new, returning and experienced riders avoid road trauma. The quality, cost, and availability of training were issues raised at the public hearings. The importance of road craft and defensive riding was, for many witnesses, central to good riding and reduced trauma.

1.7.4 *Governance arrangements of road safety organisations*

The current approach to road safety in Victoria has produced significant trauma reductions over the last decade. However, motorcycle safety has highlighted the inefficiencies and gaps in the current regulatory arrangements. In many cases, departments and road safety agencies appear to lack a coherent approach to tackling motorcycle trauma. Programs and interventions are introduced in isolation. Benefits that could be realised from sharing funding, resources and data are not realised because there is no single co-ordinating body.

1.7.5 *Mandating new requirements*

The introduction of countermeasures and new initiatives to reduce motorcycle trauma invariably led to the question of whether new requirements should be mandated. The question of mandating requirements through legislation, and enforcing them, featured in many submissions and in the evidence given at hearings. Submitters argued strongly that in many instances education, subsidisation and phased introductions could achieve the same outcomes. Unexpectedly, the question of compulsion versus persuasion was in some terms of reference characterised as a consumer choice issue. Riders felt strongly that in the absence of data and evidence, mandating new requirements would be inappropriate.

1.7.6 *Funding*

The issue of funding cut across many of the terms of reference and was a factor for every aspect of motorcycle safety. It covered the range of funding available for prevention efforts, such as non-government groups seeking to raise motorcycle safety awareness and groups trying to provide training to local riders, through to the way first responders are resourced to handle motorcycle trauma. Other funding issues were identified with the use of the motorcycle levy as well as the use of subsidies to reduce road trauma. The introduction of hypothecation regimes for road safety in Western Australia and New South Wales, as well as overseas, was also explored as a way of improving motorcycle (and road users more broadly) safety in Victoria.

1.8 *Recommendations*

A consideration for the Committee in drafting its recommendations was to ensure they had clear benefits, were evidence-based and cost effective, could be efficiently implemented and where possible used existing approaches, arrangements, systems and structures within government agencies. Many of the recommendations in this report can be implemented without additional cost, either because they clarify the operation, scope or function of existing arrangements, systems or structures, make these more efficient, or re-orientate them so that they function more effectively. A significant number of recommendations can, in the Committee's view, be achieved within existing funding and governance arrangements, thus justifying quicker implementation times and therefore improved motorcycle safety.

Endnotes: Chapter 1

¹ Mr Eric Foster, Ulysses Club, *Transcript of Evidence*, Ballarat, 16 November 2011, p. 415.

² Kopp P, *The unpredicted rise of motorcycles: A cost benefit analysis*, Transport Policy, vol. 18 issue. 4, 2011, p. 619.

³ Refer to the analysis of emergency presentations in Chapter 3.

⁴ WorkSafe Victoria, *Quad bikes on farms, A handbook for workplaces*, edition no. 2, 2009, p. 8.

⁵ VicRoads, *Australian Bureau of Statistics Definitions – Guidelines for reporting and classifying road vehicle accidents*, submitted at Public Hearing for Inquiry into Motorcycle Safety, Melbourne, 6 March 2012.

⁶ Mr Rex Deighton-Smith, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 282; Mr Rob Smith, Manager, Australian Riders' Division, Motorcycling Australia, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 625; Victorian Motorcycle Council, *Submission to the Inquiry*, September 2011, p. 17; Independent Riders' Group, *Submission to the Inquiry*, August 2011.

PART 1

Chapter 2: Data quality and accuracy

Chapter 3: Trauma trends over time (TOR a)

Chapter 2 at a glance

Overview

This chapter outlines the significant data issues associated with motorcycle trauma that exist in Victoria. It provides an outline of issues raised during the Inquiry including data quality, inconsistencies in the way data is collected and categorised, and systemic issues among government agencies and departments such as the lack of co-ordination, sharing and the integration of databases. The chapter also deals with the way data is selectively used, presented and analysed by road safety agencies.

Key findings

There are serious and ongoing issues with the collection, use and dissemination of motorcycle trauma data in Victoria. The cumulative effect of these issues is that they undermine informed decision making on road safety for motorcyclists, and it is not possible to accurately assess motorcycle trauma in Victoria due to these issues.

Recommendations

Recommendation 1:

That an independent office of road safety data be created, which will be responsible for collecting, collating, interpreting and publishing all data relevant to road safety, and, for the purposes of this Inquiry, specifically motorcycle safety. Its functions will include:

- Investigating which agencies collect data and where there are data gaps, particularly with respect to off-road riding;
- Setting standards, definitions and data collecting protocols;
- Chairing committees that include all relevant agencies and departments involved in motorcycle safety (including those that collect data);
- Setting benchmarks for the collecting and auditing of data;
- Co-ordinating the collection of data across departments dealing with health, road and environment portfolios; and
- Collecting sales, injury, registration, licensing, fatality and Transport Accident Commission insurance data.

Recommendation 2:

That an immediate program to improve inter-agency data co-operation and collaboration on motorcycle crash data be instituted by government agencies. Collaborations through committees and other data groups should include appropriate representatives from motorcycle advocacy groups, such as those represented on the Motorcycle Advisory Group, whose experience and knowledge of motorcycle crashes could assist in the assessment of crash data.

Recommendation 3:

That a consistent methodology based on a set of universally applied definitions and categorisations be developed for motorcycle trauma victims who present, are admitted or suffer major trauma in Victoria. This methodology should be used by all government agencies and departments when compiling trauma data for road safety purposes. The guiding principle for including an injured motorcyclist in trauma statistics for road safety is to be the definition of a road or road related area found in the *Road Safety Act 1986*.

Recommendation 4:

That the Victorian Auditor-General's Office undertake a follow up audit of the agencies audited in the *Motorcycle and Scooter Safety Programs Report*, within 12 months of tabling of this report.

Recommendation 5:

That section 87(1)(d) of the *Transport Integration Act 2010* be amended to include a co-ordinating role for VicRoads in the collection of road crash and trauma data among health and road safety agencies and departments.

Recommendation 6:

That the Victorian Government initiates discussions through the Council of Australian Governments to achieve national conformity on definitions of categories used in assessing road trauma.

CHAPTER 2: DATA QUALITY AND ACCURACY

Motorcyclists are dramatically over-represented, and we need to do something about it¹

2.1 *Introduction*

An overwhelming response to term of reference (a) centred on issues with road safety data and its analysis and use rather than trauma trends alone. These issues were complex and covered a wide range of problems and complaints. The Committee felt that dealing with the data issues brought to its attention was one of the most important aspects of this Inquiry. Therefore, this chapter is solely dedicated to data issues. In both submissions and in public hearings, the Committee received evidence on data quality, integrity, the way it is analysed, managed and accessed in Victoria, and the deficiencies in the current data capturing model.

Chapter 2 begins with background information on road safety data. It outlines the role of each data collecting organisation or agency involved in motorcycle trauma. The chapter then deals with the various aspects of data collection, analysis and use which have been identified as problematic or dysfunctional.

2.2 *Background*

There is a large range of statistical data collected for road safety purposes in Victoria. This is because road safety policy and regulation relies heavily on statistical data, with a particular focus on measures that track road trauma, including trauma statistics, exposure and usage statistics, enforcement data and insurance claim data. Statistical data specific to motorcycles, as with other vehicles, is collected for each of these areas with varying degrees of quality.

The collection of road safety data in all its forms is predominantly the responsibility of government organisations. Generally, data is collected by organisations that fall broadly within four groups: health focused (i.e. the Department of Health (DoH)); road safety agencies (i.e. VicRoads), other public bodies (i.e. the Coroners Court of Victoria) and research, academic and non-Victorian organisations (i.e. the Victorian Injury Surveillance Unit (VISU) and the Australian Bureau of Statistics (ABS)).

Collecting road safety data is a secondary function for some data collecting agencies which deal with road trauma patients.² That is, data is collected primarily for the regulatory task that each agency is required to fulfil and a secondary use is for road safety purposes. For example, the DoH collects data on motorcyclists injured on Victorian roads, primarily as patients being treated within the Victorian hospital system. This data can then be used for secondary purposes such as tracking expenditure, receiving compensation from the Transport Accident Commission (TAC) and identifying long term patient outcomes. Clearly, such data has a road safety use because it informs us about the trauma rate among different road users, over time. However, an agency such as VicRoads collects data explicitly for road safety, drawing on data derived from police attendances at crash scenes.

The majority of organisations involved in collecting data that has a road safety use tend to use stand-alone data sets and data systems. However, there is a limited level of data linking and sharing across databases with data being provided to research institutions and others for analysis and use in the road safety area. Generally, however, most organisations do not share a data system or link their data sets. That means that road safety data in Victoria is kept in several different databases and in different formats. Moreover, there is very little integration of data sets for road safety, or an overarching co-ordination of data sharing across all the government agencies. This is in spite of the interconnected functions many of the road safety data collecting agencies have.

2.3 The role of trauma data in road safety

Road trauma data is crucial to understanding what is happening on Victorian roads. It provides a context that helps inform our understanding of road trauma and road safety measures and guides policy development.³ Conversely, ‘sound research and policy making is dependent on high quality and up to date information’.⁴ It is also critical in developing strategies to prevent or lessen the effects of road crashes and enables government agencies to make factual statements about the scope and impact of a particular road safety issue.

The use of statistical data is prevalent in every aspect of government endeavour. Increasingly, it has become predominant among the methods used to justify decisions and implement government interventions. The role of data in road safety mirrors that of data in other policy areas. Statistical data is important for several reasons, including:⁵

- Driving evidence based policy;
- Quantifying changes in a given regulatory environment;
- Providing feedback on the success or failure of regulatory intervention;
- Giving decision makers a basis on which to make decisions;
- Helping justify new interventions;
- Enabling information sharing among other members of the public service;
- Ensuring policies are responding to the real needs of the community;
- Guiding targeted expenditure to areas where it is most needed;
- Ensuring decisions are made in a way that is consistent with our democratic and political processes, which are characterised by transparency and accountability;
- Allowing enforcement resources to be better utilised;
- Helping tailor government advertising to increase the public’s support of new measures; and
- Informing public debate.

These reasons highlight the important function data plays in road safety, and therefore, motorcycle safety. During the public hearings, the Committee received evidence about the importance of data and the way different data is used in Victorian road safety efforts.

Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, summarised the role of statistical data as follows:

It is important ... to note that Victoria has an evidence-based approach to road safety, so we do have a heavy reliance on data. That dependency exists at a number of stages through the policy development, implementation and evaluation process. We rely on time series sets of data and geospatial data that is collected to give us overall trend information, by which we understand problems and highlight issues. We then use further data to identify options for responding to those issues, and drill down more deeply into specific datasets or create datasets in order to be able to design and evaluate interventions. Sometimes data is produced for very specific purposes knowing that it is not intended to be used across a broad range of stakeholders. It is designed for an agency to work specifically on one intervention.⁶

2.4 Who is responsible for collecting data on motorcycle trauma?

Data collecting agencies fall within one of four categories: health focused entities, road safety agencies, other public bodies, and research, academic and non-Victorian organisations. Following is a list of the primary data collecting agencies, divided according to the applicable category.

Health focused entities

- Ambulance Victoria
- The Department of Health (DoH)
- Hospitals

Road safety agencies

- VicRoads
- Victoria Police
- The Transport Accident Commission (TAC)

Other public bodies

- The Coroners Court of Victoria (Coroners Court)

Research, academic and non-Victorian organisations

- The Australian Bureau of Statistics (ABS)
- The Bureau of Infrastructure, Transport and Regional Economics (BITRE)
- The Australian Institute of Health and Welfare (AIHW)
- The Victorian State Trauma Outcomes Registry and Monitoring (VSTORM) group
- The Victorian Injury Surveillance Unit (VISU)

Each of these entities collects different types of data, for different purposes and houses them in different databases. Some are primary collectors of data whilst others are secondary data users relying on data already collected. Identifying the regulatory function, the types of data collected, the purpose for collecting it, and the way it is used is useful because it helps contextualise some of the issues discussed in the next section.

2.4.1 Ambulance Victoria

Ambulance Victoria has, since 2008, been the exclusive provider of emergency ambulance services across the state.⁷ Ambulance crews are likely to be among the first responders to a motorcycle crash and are responsible for providing ‘pre-hospital care for patients experiencing medical emergencies, and medical transport by road and air to ensure both emergency and non-emergency patients access the appropriate level of health care’.⁸ According to Ambulance Victoria, ‘the overriding aim of the organisation is to improve the health outcomes of Victorians’.⁹

Ambulance crews attending a motorcycle crash (as with any other type of attendance) are required to collect patient data on the Victorian Ambulance Clinical Information System (VACIS). The VACIS essentially allows a paramedic to compile an electronic version of a patient care record (ePCR).¹⁰ The VACIS is used to record clinical and operational data for all emergency incidents.¹¹ The ePCR is intended to reflect the nature of events that occurred while the patient was being treated by Ambulance Victoria paramedics. It explains and justifies clinical decisions made for the patient during their care by ambulance officers.¹² An overview of the types of data collected by paramedics and the operation of the VACIS was provided by Dr Karen Smith, Manager, Research and Evaluation, Ambulance Victoria. She explained:

The key areas of data collection are around the event; the patient; the attending teams; any pre-existing conditions of the patient; the cause of the event and a free text description of the event by paramedics; vital signs and symptoms; a secondary survey which includes quite comprehensive injury data collection; paramedic management in terms of procedures and medications; their diagnoses; and the outcome of the patient. All the pertinent variables in the VACIS are time stamped. Most of the data is collected from drop-down menus so there is a minimal requirement for the use of free text, and there are mandatory fields for the paramedics that are specific to particular types of cases ...¹³

In some respects, the type and quality of data and information collected by ambulance officers can exceed that of others such as police officers. According to research commissioned by the Royal Automobile Club of Victoria (RACV), because ambulance officers often arrive before police, they have an enhanced ability to collect ‘more accurate information on helmet ... and protective gear’ than police officers.¹⁴

Interestingly, the VACIS is able to track multiple patient records which belong to the one patient or the one crash event. This occurs because a patient may be treated by more than one ambulance crew or an incident can involve more than one patient. A sophisticated algorithm allows the VACIS data to be searched so that patients with multiple records can be matched.¹⁵

While Ambulance Victoria collects patient data immediately after and during the transportation of a motorcycle trauma patient, once that patient has arrived at a hospital new data sets are used to track that patient through the hospital system.

2.4.2 Department of Health (DoH)

The DoH provides health services, develops health policy, funds hospitals and regulates the sector.¹⁶ In terms of trauma services, the DoH manages the public health system in Victoria, which includes the public hospitals that provide care and treatment for injured motorcyclists.

The DoH has three data collections which record information on motor vehicle crashes, including motorcycles:¹⁷

- Victorian Admitted Episode Dataset (VAED);
- Victorian Emergency Minimum Dataset (VEMD); and
- Victorian Cost Data Collection (VCDC).

The VAED contains information about admitted patients in Victorian public and private hospitals from 2005/06 onwards.¹⁸ The VEMD, which began in 1995¹⁹, is composed of data relating to emergency room presentations in one of 40 Victorian public hospital emergency departments.²⁰ The last data set, the VCDC, contains information about the costs for admitted, emergency department and outpatient cases as reported by participating Victorian hospitals.²¹ The VCDC has a compensation function because it allows the DoH to claim costs associated with injured riders from the TAC.²² Due to the nature of data captured on the VCDC, the lack of issues raised with the data contained in it and the focus of this chapter, the Committee excluded it from its investigations. The VEMD, as with the VAED, is comprised of an extensive range of data information.²³ There are 83 data fields in the VEMD²⁴ and 190 data fields in the VAED²⁵, which include diagnosis codes and compensable status among others. Both the VAED and VEMD are linked and de-identify patients for privacy purposes.²⁶ According to the DoH, the purpose of both these data sets is:

*... to enable the department to monitor morbidity, provide funding based on activity, monitor the performance of health services, undertake epidemiology and clinical research, undertake health care planning, and monitor quality indicators.*²⁷

The data in the VEMD is derived only from public hospitals. In contrast, the VAED includes data from both public and private hospitals.²⁸ Motorcycle patients who attend an emergency department located in a private hospital, but who are not admitted, are not captured in the VEMD statistics. Consequently, that means that not all motorcycle trauma patients are captured in the DoH's statistics. However, the Committee heard from Ms Frances Diver, Executive Director, Hospital and Health Service Performance Division, DoH, that this gap in the data was small:

*What we are missing, if you are looking for missing data, is patients who present to private hospitals. I do not have that data. However, the admissions to private hospitals are very low. Whilst there has been an increase in admissions to private hospitals, they are very low — 255 admissions to private hospitals in 2009-10 for motorcycle-related trauma out of 3310.*²⁹

2.4.3 Hospitals

Victorian hospitals are responsible for treating motorcycle trauma patients. That function applies to the State's major trauma centres located at The Alfred, Royal Melbourne and Children's hospitals. All public hospitals are required to compile the information that is in the VAED and VEMD.

2.4.4 VicRoads

VicRoads has a dedicated road safety function, which includes the development of policy, legislation, regulation and research. The role of data in the context of VicRoads' road safety function is an important one.³⁰ Unlike motorcycle usage statistics such as registration and licensing information which are collected by VicRoads from their own databases, VicRoads relies on data provided by Victoria Police to populate their crash databases. There are several databases kept by VicRoads, including the Accident Reporting System Lotus notes Database which is used to manage investigations of fatalities³¹, the VicRoads Road Crash Information System (RCIS) and CrashStats, which shares the same data as the RCIS but can be accessed by the public.³² Of these, the RCIS is the primary database for VicRoads road trauma data. The RCIS draws on police data gathered when they attend a crash³³ or when a crash is reported to them. The data provided by the police is contained in Victoria Police's Traffic Incident System (TIS) reports. These reports are the basis of the information used in the RCIS, however VicRoads employs analysts to ensure the quality and veracity of the data. Mr Peter Schofield, Manager, Road Safety Strategy and Community Programs, VicRoads, explained the data sharing and verification process:

That data gets sent to VicRoads in an electronic form via a secure network where it gets put into a holding bay. We have a group of experienced coders who then look at every [TIS report] ... They then code it and essentially enhance that data by geospatially locating it, adding sub-DCA codes and a few other variables. They also check the completeness of the report and make any recommended changes back to Victoria Police. On average we put in about 250 data requests to Victoria Police for either additional information that is missing or seeking clarification on data that is perhaps not quite clear enough in those reports. That is on average about 250 a month that we send back to VicPol for clarification.

Once that data has gone through that filtering process it then gets put into our RCIS query system, which allows ... the organisation to access that data for various countermeasure developments, including infrastructure and behavioural issues. It also allows us to monitor trends over time in relation to all road safety activities.³⁴

The RCIS includes a large number of variables³⁵ including the location and time of crashes, the sex and age of injured motorcyclists, the type of motorcycle ridden, the licence type and the casualty status used by Victoria Police and blood alcohol readings.³⁶ VicRoads derived motorcycle crash information may be viewed as fulfilling several purposes. In correspondence with the Committee, Mr Gary Liddle, Chief Executive of VicRoads referred to some of these purposes:

[to] identify road safety issues to enable [the] development of effective road safety engineering and behavioural countermeasures. Local Government and traffic engineering organisations are provided access to a restricted version of CrashStats to develop road safety infrastructure improvements.³⁷

2.4.5 Victoria Police

The road safety agency that fulfils the primary data gathering role is Victoria Police. This is due to police being first responders to the site of a crash and their role in investigating crashes for breaches of criminal or transport law. That role was highlighted by Mr Peter Schofield, VicRoads:

*Essentially Victoria is fortunate that we have a single source of data, which is Victoria Police, in relation to crash data.*³⁸

Crash information relating to motorcyclists is gathered by police in one of two ways. Generally, police attend the scene of a crash and produce incident, or TIS, reports.³⁹ Alternatively, motorcyclists can attend a police station and report a crash. The types of data collected by Victoria Police in TIS reports include information about the owner, details about the vehicle, crash information (i.e. was a helmet used) and any action undertaken by police.⁴⁰ At the Ballarat public hearings, Sergeant Ross Humphrey, Victoria Police, provided the Committee with a practical example of how Victoria Police use the TIS:

*We have our traffic incident system, and that is where we report all our motor vehicle collisions, and that would include motorcycles. Even if they are off-road, they are entered on that system if they are reported to us When you are talking about injury collisions, they would note what was at fault — the rider or the conditions. If they had run off the road and collided with a railing, a tree or something like that, they would note that there may have been fatigue, speed, inexperience or something like that. That is in the reporting standards. We have a method locally, and I believe it is probably statewide, where we report to our traffic inspector for the area and any serious injuries or fatalities are done on a separate report. On that pro forma we contact the local council or VicRoads and discuss with them if we find there were any treatments or road conditions that contributed to the collision or caused more injury as a result of the collision. We have a responsibility to follow up and make sure it is brought to someone's attention.*⁴¹

The Committee was informed by then Deputy Commissioner Kieran Walshe that Victoria Police do not, nor are required to, collect injury or fatality collision data for motorcyclists injured off-road.⁴² This approach extends to fatalities that are deemed to have occurred off-road and which are then excluded from the road toll statistics.⁴³ That anomaly was also noted by representatives from the Victorian Auditor-General's Office (VAGO) who stated:

*We note also that the road toll reported by Victoria Police only covers those crashes that happen on public roads and excludes crashes that happen on many tracks and unclassified roads used by off-road riders.*⁴⁴

In addition to the data contained in the TIS, Victoria Police are also responsible for providing the Coroner with fatality briefs and collating the Victorian road toll, which is the definitive statement of road fatalities in Victoria for road safety agencies.⁴⁵ The decision to include or exclude a road death from the toll rests with the Deputy Commissioner of Victoria Police, Regional and Road Policing.⁴⁶

2.4.6 *The Transport Accident Commission (TAC)*

The TAC collects data on injured motorcyclists in the course of fulfilling its responsibilities as the compensation insurer for road trauma patients. It keeps a client claims database, called Fineos, which includes injured motorcyclists.⁴⁷ This database includes only those cases that occur on-road and which meet the minimum threshold for an insurance claim to be recorded.⁴⁸ The purpose of Fineos is to manage claims, workflow and payments to claimants.⁴⁹ Whilst the primary focus of the system is to facilitate the processing and management of compensation claims, some road safety data is collected (such as injury and treatment data).⁵⁰ In addition, the TAC records data gleaned from surveys and injury data provided to it by health providers and the DoH.⁵¹ The TAC draws information from the TIS database and the RCIS and registration and licensing database.⁵² The TAC also provides the public with access to the last five years of crash data on an application that tracks trauma statistics⁵³ using data derived from the RCIS. The data collected by the TAC is used to develop its public safety campaigns and to inform its policy development and funding of initiatives for reducing road crashes.

2.4.7 *Coroners Court of Victoria (Coroners Court)*

The Coroners Court deals with motorcyclists who have died as a result of a crash. In addition to the coronial function, the Coroners Court compiles data on motorcycle crash fatalities based on data provided to it by road safety agencies.⁵⁴ The function of the Coroners Court is to independently investigate reportable deaths, with a focus on identifying the circumstance that led to the death.⁵⁵ In meeting its regulatory functions, since 2008 the Coroners Court has had a prevention unit called the Coroners Prevention Unit (the Unit), which assists Coroners with their public health and safety role.⁵⁶ The role of the Unit is quite expansive and includes:

- Reviewing reportable and reviewable deaths;
- Collecting and analysing data relating to these deaths (including trend analyses);
- Assisting coroners in the development of prevention focused coronial recommendations;⁵⁷ and
- Monitoring and evaluating the effectiveness of coronial recommendations.⁵⁸

Reportable deaths dealt with by Coroners, including those dealing with motorcycle fatalities, are compiled by the Court and kept on the National Coroners Information System (NCIS). This data is accessible but is subject to stringent conditions.⁵⁹ Data collected by the Unit includes in-depth data on all off and on-road motorcycle fatalities.⁶⁰ An overview of the way the Coroners Court and the Unit use data related to motorcycle fatalities was provided by Mr David Hogan, Team Leader, Coroners Prevention Unit, Coroners Court of Victoria:

We have developed a database which holds all data of reported deaths, including motorcyclist deaths in Victoria. This database includes items such as what you would expect around age, sex, residential and incident suburb, the intent and the mechanism of injury.

.....

*The information on rural/urban location, rider experience and motorcycle type is typically determined by coroners on a case-by-case basis as a part of their investigation. Determining whether a crash occurred at an on-road or off-road location is a bit more complex, so the criterion for inclusion in the road toll — so an on-road death — is that the incident must have occurred on a public road. The court works closely with and has had observer status on the fatality review panel, and the court assists the panel in assessing deaths for inclusion in the official road toll through the provision of coronial information.*⁶¹

2.4.8 Research, academic and non-Victorian organisations

There are several additional entities that keep motorcycle trauma data. The Victorian State Trauma Outcomes Registry Monitoring (VSTORM) group, based at Monash University, is responsible for data in the Victorian State Trauma Registry (VSTR) which tracks patients who attend a Victorian hospital and have suffered trauma.⁶² The VSTR data is collected from all hospitals in Victoria that receive trauma patients. Professor Russell Gruen, Director, National Trauma Research Institute, Alfred Health, explained the types of data collected at The Alfred and provided to the VSTR:

*The Alfred has a trauma registry that collects 170 data points. That is 170 different types of information on each injured patient who comes to The Alfred. There are about 6000 per year, with about 1200 major traumas.*⁶³

The role of the VSTR is aimed at tracking injuries, measuring the performance of the trauma system and reducing or preventing trauma injury. According to Professor Gruen this registry, and others like it, are necessary because:

*... only with good data collection can we monitor and know what is happening, make policy changes based on good information and most importantly work out whether policy changes have had any effect or not. ... [W]e need to maintain these data collection sources that allow us to monitor what is happening in our community.*⁶⁴

The availability of data in such registries was also cited as an important source for targeted research:

*... data collections like the registry become a quite useful source of detailed information. They [researchers] can go and collect all that information... Researchers love to collect lots of data, and we are very interested in a broad range of data, but it is about how you get access to that data. Do you get everybody to collect everything all the time, or do you get a basic dataset, find specialty areas where you need special data, and then give researchers access to that special data where they can go even deeper and explore variation and changes over time*⁶⁵

The VISU, also based at Monash University, provides a source of de-identified data, drawn from hospital data, which is used to undertake research into ‘the development of effective injury prevention and safety promotion’.⁶⁶ The role of the VISU is to analyse, interpret and disseminate data on Victorian injuries and deaths, including those of motorcyclists, and provide the information to government and non-government organisations and agencies.⁶⁷

The BITRE has a focus on on-road fatalities and produces data series and publications on road fatalities. It publishes a monthly bulletin, *Road Deaths Australia*, which compiles all

road fatalities by state and also provides a searchable statistical database, the *Australian Road Deaths Database*.⁶⁸ The ABS, which also focuses on on-road fatalities, produces an annual publication on causes of death which includes data on transport accidents including motorcyclists.⁶⁹

In contrast to the data compiled and used by the ABS and BITRE, the AIHW focuses on serious injury, publishing a semi-regular publication, *Serious injury due to land transport accidents*. The publication relies on data drawn from the National Hospital Morbidity database, which is derived from hospital data.⁷⁰

2.5 Is there a co-ordinating entity or role?

The nature of road trauma data, particularly the distinction between agencies with a primary (i.e. police) and secondary (i.e. hospitals) data collecting role, has created a situation where there appears to be limited organised access to and sharing of such data. That is particularly true when looking at different types of organisations, for example road safety agencies and hospitals.

There is no single agency that co-ordinates the collection of road trauma data across all agencies in Victoria. However, several committees or groups deal with this type of data including the State Trauma Committee,⁷¹ the TIS data quality group,⁷² the Australian and New Zealand Policing Advisory Agency⁷³ and the Road Fatality Review Panel.⁷⁴ These entities fulfil a number of functions. The State Trauma Committee provides information on the functioning of the trauma system including the data systems used by health organisations.⁷⁵ The TIS data quality group is composed of the TAC, VicRoads and Victoria Police and deals with issues relating to the system such as data quality and enhancements.⁷⁶ It should be noted that the TIS data quality group does not include representatives from the Department of Sustainability and Environment (DSE) which manages forest and parklands,⁷⁷ a noteworthy exclusion considering that motorcyclists are injured riding off-road in such areas.

2.6 Sharing of data between agencies

The sharing of road crash data is important because not all road safety agencies have the same data collecting capability. Although data sharing occurs among these agencies in Victoria, it varies depending on the type of agency and the way the data is used, and generally does not include the complete sharing of data. The TAC, VicRoads and Victoria Police provide reciprocal access to their data, noting the crash databases of VicRoads and the TAC are derived from data provided by the Victoria Police.⁷⁸ The TAC shares its claims data with VicRoads and provides reports to Victoria Police.⁷⁹ The DoH provides some data to the TAC when it applies to recoup costs incurred from the treatment of injured motorcyclists.⁸⁰ According to VicRoads, the data links with the TAC and Victoria Police are the only links it has with other agencies that collect trauma data.⁸¹

However, VicRoads does share data with other agencies. Mr Peter Schofield, VicRoads, explained:

We then distribute that information to a number of different sources. We supply the TAC with that data on a monthly basis. We report to the federal government on road safety performance, both for all vehicles and heavy vehicles. We also provide that information on regular dumps of data to research organisations like Monash University Accident Research Centre and Australian Road Research Board. The federal government maintains a fatality database, and that information comes from our database. Every month we report through to the department of infrastructure and regional services. The federal government publishes a monthly report on road safety performance across the country, so that fatality data comes from us. Essentially that is our data stream and how we process information we receive from VicPol and who we provide it to.⁸²

Hospital, Ambulance Victoria and DoH derived data appears to be shared with some agencies, but not VicRoads. That point was made by Ms Frances Diver, DoH:

... the department also provides an inquiry help service to respond to requests for data... We often provide information to Victoria Police or WorkSafe or the TAC.⁸³

However, the data provided does not occur in a systematic or proactive way; instead data is provided in an ad hoc and limited way by being linked to specific requests.

2.7 Individual data issues

It is clear from the Committee's investigations that Victoria's trauma data collection, in terms of motorcyclists,^{*} has a number of deficiencies. These range from issues such as data integrity and quality to systemic, foundational issues which affect the very reliability and useability of such data for a range of regulatory purposes.

Issues related to motorcycle trauma data were raised at every public hearing and in the vast majority of submissions. The impact of these issues extend to seemingly unrelated areas of motorcycle safety, such as the development and implementation of new countermeasures and new initiatives. This is due to the reliance that policy makers place on trauma and crash data to help guide and underpin the design of new motorcycle safety measures. The problems caused by these issues were highlighted by Honda Australia Motorcycle and Power Equipment (Honda Australia MPE) and the Victorian Automobile Chamber of Commerce (VACC). Each provided their viewpoint on data issues. Mr Robert Toscano, Director, Honda Australia MPE suggested:

... there is an enormous lack of and desperate need for comprehensive motorcycle usage data, for much more detailed and accurate accident reporting data and for greater knowledge and understanding of this increasing segment of road users.⁸⁴

The VACC added:

... data collection over the complex range of motorcycle usage has remained poor. Agencies lack the knowledge, and their endeavours to chase this information and data collection are poor.⁸⁵

* Note: The Committee notes that these trauma data issues may also apply to other road users.

2.7.1 Data quality

The term ‘data quality’ can appear to be vague and obscure. As part of its investigations into the quality of road trauma data, the Committee drew on the work of the ABS to define that term. According to the ABS, ‘data quality can be defined by reference to the concept of “fitness for purpose”’.⁸⁶ That is, data is ‘fit for its purpose’ if it fulfils the purpose for which it was collected.⁸⁷ The ABS has proposed a complex, multidimensional approach to defining data quality. For the purposes of this Inquiry it is sufficient to define quality by reference to the accuracy of statistics, relevance and interpretability.⁸⁸ The quality of motorcycle trauma data, including crash data, has been negatively affected by a number of factors which include gaps or changes in data classification, deficiencies in data gathering, and a lack of data generally.

Victorian trauma data is incomplete. Gaps and changes in the collection of data have made trend analyses over time difficult, if not impossible. One example of a gap in a data series was referred to by the TAC in their submission. According to the TAC, the new data collection system introduced in 2005 by Victoria Police, the TIS, created a discontinuity in the data series. Due to issues associated with that changeover, the TAC advised the Committee that comparisons of non-fatal data from 2006 on should not be compared with the previous years’ data for the purposes of trend analysis.⁸⁹ The centrality of the TIS data in terms of its use in VicRoads’ RCIS, means the warning raised by the TAC also applies to the RCIS. Such discontinuities can create an issue for meaningful analysis of road trauma over time.⁹⁰

In addition, both the AIHW and VSTR data sets are limited by the period of time they cover. The AIHW data set for ‘serious injury with a high threat to life’ ends in 2008-09, a period in which fatality, presentation and admission rates calculated using licence and registration data began their downward trend, which in some cases resulted in rates below those seen at the start of the decade. The VSTR data on ‘major trauma’ is similarly affected. The system of data collection only became fully operational across all hospitals from 2008 onwards. As a consequence there is no historical data covering all ‘major trauma’ cases that occurred in Victoria before 2008, making comparisons and assessments of trends over time difficult.

Inconsistencies or deficiencies in gathering information can have adverse effects on trauma data, particularly when dealing with causal factors in a motorcycle crash. Witnesses at the public hearings cited police TIS reports as one area where information gathering varied from case to case. The reliance on the police-generated TIS reports in a range of data sets makes such variations more concerning. Judge Jennifer Coate, State Coroner, provided an example of her experiences dealing with TIS data:

*... it is variable, the quality of the initial content of the investigation. We are doing some work on that with Victoria Police at the moment and trying to standardise the way in which that report material comes to us depending on the nature of the investigation — there is quite a lot of work going on — but we, as the investigating coroner, also have the capacity of course to ask further questions, request further information, seek directed statements from individuals, and we will often do that.*⁹¹

Several reasons were provided to the Committee to explain the level of variability in TIS reporting. The first was the subjective nature of police reporting.⁹² A practical example was provided by Acting Senior Sergeant Shane Howard:

At the start when you bring up a collision report, it asks for a description of a collision. Some police will put, 'Vehicle lost control on right hand bend and collided with tree'. I would put 'Vehicle A travelling east along Cape Otway Road, 500 metres west of whatever intersection, lost control in gravel to the left hand side, swerved onto the right hand side into the gravel', et cetera, and tell the whole picture. There are differing degrees of description used by different members, and that comes down, I suppose, to supervisors or the force as well, and how they enforce the quality of work of the members.

... And workload. It is a lot easier now...But members are still under the pump if they have four or five jobs on their plate. It is easier to write one line than to write, 'As a result of collision, rider lost helmet, suffered head trauma', et cetera. They just put one line as to how it occurred [and] tick a few boxes...⁹³

Of course, subjectivity and discretion in data gathering does not apply to all types of data. The TAC suggested that whilst some data is clearly objective, for example whether an injured person is a motorcyclist, deciding to include reference to whether a helmet was worn, or not, in a TIS report is subjective.⁹⁴

The second explanation was that TIS data does not include all the relevant data. The Committee understands TIS reports can contain incorrect collision locations and lack information gathered by police about a motorcyclist's actual experience, rather than his or her licence status. Additional information, such as the use of protective clothing (other than helmets), is rarely recorded.⁹⁵

A third possible explanation, for at least some cases, is the knowledge of attending police of motorcycles and their characteristics. For example, including information on a TIS report about whether a crashed motorcycle had an anti-lock braking system requires attending police to be able to identify whether a motorcycle was fitted with this technology. Some police may be unfamiliar with motorcycles and are therefore unable to record such data.

Variability in data gathering may also occur when police officers rely on witness accounts or statements from other emergency services to update their TIS report. An area where that may occur is the estimation of impact speed. The TAC referred to speed estimations made by ambulance officers as being crude but something that could be used particularly where police reports were silent on such matters.⁹⁶ In terms of the reliability of such data, Ms Liz de Rome, Principal Consultant and Managing Director, LdeR Consulting, explained to the Committee:

... the data [on speed] is not taken terribly seriously ... because such a range of different people can contribute ... So it's unscientific.⁹⁷

There are some significant gaps in motorcycle crash data, predominantly due to underreporting. The area with the greatest level of underreporting is off-road motorcycle crashes.⁹⁸ Motorcycle crashes that occur in environments which road safety

agencies define as off-road are recorded in one of two ways: either by police attending the crash scene or when motorcyclists who crash off-road report their crash at a police station. If the latter occurs, independent data gathering by police officers is not possible⁹⁹ and they have to rely on the information provided to them.¹⁰⁰ The TAC suggested that up to 30% of crashes are reported to police by crash victims, and that such cases created practical difficulties in terms of ensuring data quality.¹⁰¹ Further, some crashes which occur off-road may be reported as having occurred on-road by motorcyclists, with some motorcyclists moving their motorcycle onto a public road.¹⁰² A possible explanation for doing so might be the belief that TAC compensation can only be accessed for on-road crashes.

VicRoads approaches off-road crashes as falling outside its remit and therefore its data gathering efforts. That view was reached by representatives from the VAGO who noted:

*I think VicRoads said it was not relevant to the public road toll, so they were coming from a position that their concern is crashes and injuries on public roads.*¹⁰³

The extent to which VicRoads is reliant on other data sets for information was highlighted in its submission. VicRoads referred to commissioned research by the VISU on off-road crashes which used VAED and VEMD data.¹⁰⁴ The research did not rely on VicRoads own RCIS database, perhaps because of the absence of data on off-road crashes. However, even the VISU compiled data is limited in terms of off-road crash data. Specifically, ‘there is sparse information in the [VISU] data sets on both the contributory factors to off-road injury and the specific mechanisms of injury’.¹⁰⁵

The VAGO representatives at the public hearings also discussed the TAC’s approach to gathering data on off-road crashes for its claims database.

*The TAC articulated a view that said, ‘If you go to hospital with an injury, it is in the hospital’s interests for you to become a TAC claimant if you can and if you are able to do that’, so from their point of view the hospital system would funnel you down the TAC compensation route if at all possible. Therefore they concluded, ‘And if you go down that TAC compensation route, you have to have a police report’, so there is a sort of meeting in the circle. If you want to get compensated and we want you to go down that route, then you have got to, even after the event, generate a police report. So their logic was that that system would mean that most people who went to hospital would end up claiming on TAC and generating a police report.*¹⁰⁶

The underlying premise of the TAC’s view, as expressed to the VAGO, is that it is likely that an injured rider will lodge a TAC claim and that in turn helps with the accuracy and quality of its data collection. However, the underreporting of off-road riders conflicts with the conclusions reached by the TAC. The Committee heard that confusion over whether off-road riders are entitled to make a TAC claim, which often occurs whilst a rider is still in hospital, may explain the level of underreporting. Although that explanation of the reasons for underreporting off-road crashes is one of several, the TAC’s faith in the ability of hospitals to channel every injured rider who could make a claim to the TAC appears misplaced.

The approach of VicRoads and the TAC to off-road data collection extends to Victoria Police. Then Deputy Commissioner Kieran Walshe stated:

The off-road data is an issue that we are aware of, but under our requirements we are not required to collect that sort of data. ... as to who should be responsible ... it is probably a matter that needs to be worked through with the road safety executive group ... to determine how best to progress that and move forward. It is a matter about when things get reported. There is no requirement on anyone to report any collisions off-road. They generally would come to the notice of police only if there is some serious injury or fatality ... Outside of that people could have minor collisions with some minor injuries that may not necessarily be reported. There are some difficulties in there in determining what the obligations are on riders ...¹⁰⁷

The way road safety agencies define on and off-road results in crash databases are compromised because they do not track all reportable off-road crashes. This has had an impact on the way some statistical series are compiled. That point was strongly made by representatives from the DSE:

There potentially is a misreporting of how injury data is reported in terms of its geographical location; I cannot say with certainty, but I suspect there is probably an underreporting, because it can be quite difficult to know where that person got injured or even where you are picking up that person deep within the forest. I think when we are looking at data we need to look at changing the way that data is collected and the way that data is described and sorted. That is so you can meaningfully work out where that accident happened — and I mean exactly where it happened — so that you can work out the underlying land tenure. You can work out whether they were on a road or off a road, what type of bike they were on and all the demographics and information that go with that. At the moment we really are not getting that information. In some cases, I believe, it is not even being reported.¹⁰⁸

Yet another example was provided by the Coroners Court which found that only some of the off-road crash fatalities have been counted in the official road toll.

Between 2000 and 2010 the coroners prevention unit identified 68 off-road motorcyclist deaths in Victoria. About half of these deaths — exactly half actually, 34 — concerned trail bike riders in forest, park or bush settings. VicRoads has advised the CPU that 20 of the 34 trail bike rider deaths were counted in the official road toll because the deaths occurred on what were declared as public roads. The non-fatal injury toll associated with off-road riding is also significant, as identified by the recent Victorian Auditor-General's Office report.¹⁰⁹

The definitional issues with off-road crashes in terms of the road toll are linked to the ABS definitions for crash events. According to the DSE, fatal crashes that occur in state forests are not recorded in the road toll because the recording requirements only extend to fatal crashes on ABS defined roads.¹¹⁰ Therefore, it is entirely probable that the fatality statistics compiled each year, and which are used as a measure for road safety progress, may exclude fatality crashes that arguably should be counted.

There are other areas apart from off-road crashes where data gaps exist. One such area is data on motorcycle crash patients treated by the Albury Wodonga Health system, which is a joint initiative by Victoria and NSW. This data may not have been included in Victorian trauma data sets because trauma victims under the joint health system are treated in NSW.¹¹¹ A further data gap was identified by research commissioned by the RACV, which found the RCIS database lacks information about driver failure, estimated

speed, and the rider's position on the road as well as and road hazards.¹¹² Additionally, the database also has 'considerable missing information about helmet use'.¹¹³ These gaps do affect the quality of the data being collected. Inaccurate, incomplete or inconsistent data makes trauma analysis difficult and undermines the accuracy of decision making, which relies heavily on data quality. Further, a lack of crash data can reduce research opportunities on causal factors, which in turn influence measures that reduce trauma¹¹⁴ and could lead to changes to rider training.¹¹⁵

2.7.2 Access to, or sharing of, data

There is limited access to, or sharing of, data between organisations that gather and store motorcycle trauma data. Sharing data is important for two reasons: firstly, it allows each data collecting agency to verify its data set by comparing it to others. Secondly, it ensures that issues such as underreporting are identified and the reasons for that occurring are rectified. Data collected by the DoH and Ambulance Victoria is not routinely shared with road safety agencies. Further, neither road safety agencies nor the DoH share or provide access to their data on off-road crashes with the DSE. The TAC does receive some data from the DoH but only if the TAC is responsible for compensating the DoH for patient services.¹¹⁶ Data sharing occurs best between VicRoads, Victoria Police and the TAC. These road safety agencies share the raw data that Victoria Police provides in its TIS reports, VicRoads registration and licensing information and TAC reports, among others.¹¹⁷ While there is some data sharing occurring, overall it appears to be inadequate. The TAC provided an example of its ongoing applications to the DoH to access data.¹¹⁸ Similarly, despite findings made by the VAGO in February 2011 with respect to motorcycle data, Victoria Police has had similar issues to the TAC in obtaining data from the DoH:

*... basically there was an issue about underreporting of collisions and things like that. The partners [VicRoads, TAC, Victoria Police] have met since and tried to progress that particular [VAGO] recommendation. We are quite happy to be in consultation with the Department of Health and Ambulance Victoria, but to date we have had no positive replies from the Department of Health to share that information. There are obviously privacy concerns around the information that they have. There are also issues about the underreporting of those collisions with the Department of Health and the validation of information that they receive for patients that present at hospitals. Whilst we have tried to make contact with that particular area, to date we have not had a positive reply from them.*¹¹⁹

The Committee understands the DoH data requested by the TAC in early 2011 was provided in mid-2012, however there are ongoing issues with decoding the data, restricting its usefulness. One reason given for the lack of access to DoH data are the privacy rules that govern how such data is used and shared.¹²⁰ The need to balance privacy against the usefulness of motorcycle safety data for research purposes was recognised by VicRoads:

... unless we can get that data linked to a personal ID to put it into our system, aggregated data, whilst it might provide broad insights, would not be specific enough to drill down to get the maximum benefit out of that data ... In a perfect world that would be ideal, and with coronial records and Victorian Institute of Forensic Medicine results. They would all be enhancements to a system that could provide greater insight, but unfortunately we are constrained by privacy laws ...

*It is particularly noticeable when we have to link various sets of data to an individual. I really need to stress that point: it is the linking of a name to a person and to an outcome that is problematic in ... lots of areas.*¹²¹

Unlike the examples thus far, where access to data does occur to varying degrees, the DSE is generally unable to access relevant data on off-road crashes. This applies across the agencies that collect motorcycle trauma data and was well-illustrated by DSE representatives at the public hearings:

*One of the issues with injuries is that information does not come back to us. We do not keep reports; we do not get data. So as a manager of that public land and that road network ... we do not get the information that says, 'This is what is happening in the roads you manage and the public land you manage; here are the trends and maybe these are issues that need to be looked at and responded to'... So we are pretty much blindfolded in terms of what is happening there. We have not got good data.*¹²²

*It is common for us to only get this information by reading media reports and then investigating it further ourselves.*¹²³

Access to motorcycle trauma data by non-government organisations, such as universities, does occur. Victoria Police shares some of its data with MUARC subject to agreements:

*We are not in a position where we share the same datasets with MUARC across all of our datasets, but we certainly work very closely with it in a strong partnership.... To that end we have agreed to start pursuing some very simple MOUs ... that enable us to provide them with our intelligence products so they are getting the same intelligence products that we produce*¹²⁴

For other organisations such as the Coroners Court, data sharing does occur with agencies and government departments. The Committee was informed that the Coroners Court takes a collaborative approach with agencies and departments when sharing data, many of which can be found in coronial findings.¹²⁵ This extends to representatives of the Coroners Court encouraging road safety agencies to approach them for specific data.¹²⁶

The area where data sharing is most common is between the road safety agencies. This is due to the way these agencies operate and the importance of police data for the RCIS and the TAC databases. Data sharing is subject to arrangements and controls, as Mr David Shelton, VicRoads explained to the Committee:

*The exchange or access by other agencies of that data is generally managed through existing agreements. It is done with a high level of formality and quality control. That is largely necessarily to protect the privacy that is embedded in some of that data, but also to ensure that the datasets we are using are as good as they can be — that is, that the data quality has not deteriorated and we would understand at any given time what that quality is.*¹²⁷

However, the Committee was told that access to data held by VicRoads, the TAC and Victoria Police has not extended to community RoadSafe groups:

... we find it hard to get good stats. As a RoadSafe group, we are always looking to VicRoads, the TAC and the police to get a wide range of stats, but there does not seem to be any one group that is correlating all of that information... That is the key element that we would like assistance with — data. We know that there is a lot of underreporting of motorcycle crashes in particular, so I think we need better communication with some of those groups. The TAC has some data we can get hold of, the police has some data we can get hold of and then we are not allowed to use all of that information, and in particular off-road reporting of motorcycle crashes appears to be an area that needs to be looked at.¹²⁸

The Committee sought comment from VicRoads on its approach to sharing data with organisations such as RoadSafe groups. According to Mr Peter Schofield, VicRoads, such groups do have access to crash data:

We also provide an additional facility to researchers and local government with the ability to access through a confidentiality agreement private information that might be on those reports. They primarily relate to the narrative, which is the police description of the crash, and the diagram, which is a pictorial display of the crash. These days all the RCIS diagrams are electronic, so they are electronic pictures that appear for access by local government as well as in our own system.¹²⁹

Access by the public to motorcycle trauma data is limited to online, searchable databases such as CrashStats. A criticism of publicly accessible crash data is that primary data is not made publicly available for individuals to analyse, and methodologies for reaching data conclusions are based on individual judgments.¹³⁰

2.7.3 Limitations of databases and interoperability

The usefulness of motorcycle data is undermined by limitations and the interoperability of the various databases on which it is stored. One such example can be seen in the limitations of VicRoads databases, something which was brought to the Committee's attention by Mr David Shelton, VicRoads:

This is one of the issues that was really underneath what VAGO was telling us in their report, that we need to be much more agile and more intelligent in that space. Our systems are currently letting us down. We do need to do more work. We have some [results] we generated... by doing one-off studies of in-depth analysis of our data. It is a very expensive way of doing it, and you cannot get recurring up-to-date information about those different subgroups. We need to improve our data gathering to allow us to develop better countermeasures.¹³¹

The Committee experienced the effect of these limitations when requesting data on the types of motorcycle involved in crashes, and the training and experience levels of motorcyclists. These were areas which could not be assessed due, in part, to the inability of road safety agency data systems to interrogate data gathered over time. These limitations resulted in the Committee being unable to analyse trends in the types of motorcycles ridden by trauma patients and their training and experience. Researchers have also identified issues with the RCIS data set, with the two most prominent being the lag between the crash occurring and it being included on the system, and the lack of complete records prior to September 2006.¹³²

Sharing data between Victoria Police and VicRoads for the purposes of updating the RCIS database is also affected by the capability of different systems, as highlighted by a Victoria Police representative:

In respect of the data that is provided to our partner agencies, TAC and VicRoads, we provide a standard provision set of data — so it is one dataset — and then they will consume it.

*They will consume it into their application depending on the requirements they have and also depending on the capability of their system. For example, VicRoads may not be able to receive some of the data because of the age of their application. But in short we provision one set of data and they consume it based on their requirements.*¹³³

Similarly, Professor Gruen, Alfred Health, identified limitations in sharing such data but also pointed out that some sharing occurs and is useful:

*I think it can always be done better, and I would dearly love it to be done as well as it possibly can be because in Victoria I do not think I am overstating it to say that we probably have the best combination of injury care expertise and injury prevention expertise in the world. We probably do not work together optimally in bringing our respective data sources together completely, and we probably do not make it as available as it could be. But I think we do it reasonably well, and certainly our colleagues at the Monash University Accident Research Centre and the Monash Injury Research Institute are the major injury prevention research arms.*¹³⁴

Another limitation appears to be the design of databases. The example provided to the Committee in several public hearings centred on limitations with the TIS report template. The template does not accommodate additional causal factors to be added. Acting Sergeant Turner, Victoria Police, explained the way that limitation can hinder data collection:

*Generally incidents are broadly lumped together as either 'driver error' or 'driver inexperience' on the TIS accident reporting system. In the drive-error category that can be many different causes and they are put together as the one causal factor. ... There is a place for the member to put that information on TIS either in notes or at the summary at the end if they so desire, but unfortunately many members do not go into too much detail.*¹³⁵

The extent to which these limitations and interoperability issues affect the collection of motorcycle crash data is unclear. However, it could be argued that if these limitations were overcome it would allow a more complete understanding of motorcycle crashes and enable better research and analysis, on the basis that more data could be gathered, shared and scrutinised between and among agencies.

2.7.4 Understanding motorcycle crashes

Understanding the causal factors that led to a motorcycle crash, and being able to identify them, is crucial for data collection. However, some claim motorcycle crash data can be undermined by a lack of understanding by those who compile and analyse data.¹³⁶ The complaints include inadequate collection of crash scene data¹³⁷, poorly trained data collectors¹³⁸, and subjectivity.¹³⁹ It was suggested to the Committee that the nature of motorcycle crashes required knowledgeable data analysts and that a lack of such knowledge would affect the way data is treated.¹⁴⁰

One submitter suggested the data collection system at the scene itself was problematic:

*The current data collection appears to me to be a blunt instrument. We need to have a lot more detail about crashes... We do not collect good information at the scene. Part of that is because all of those things are left and they disappear. A simple way to deal with that would be to take some pictures of every single motorcycle crash, and to record the locations with GPS.*¹⁴¹

The ability to adequately record causal factors and other information following a motorcycle crash is limited by the data collection system. The TIS reports provide a useful example of the way databases can limit the collection of data. One limitation in the TIS report is having a single speed box, which was suggested as problematic because it would not allow other types of speed, such as inappropriate speed to be recorded.¹⁴² As evidenced by this example, the design and capability of the database can act to restrict or extend data collection.

2.7.4.1 Defining crash speed and motorcycle type

A related issue to that of understanding motorcycle crashes is the way speed is defined post-crash and the way vehicle information is collected, particularly the distinction between motorcycles and scooters.

Subjectivity in police reporting was seen by some participants in the Inquiry to be particularly problematic when dealing with speed. A regularly cited issue with the reporting of crash speed was the distinction between speeding and inappropriate speed.¹⁴³ The Committee sought clarification from senior representatives of Victoria Police on the way speed is defined. Superintendent Neil Paterson, Intelligence and Covert Support Division, explained the differences in characterising speed for the purposes of TIS reports:

With regard to the terms 'speed' and 'speeding' I can say that from an analytical perspective ... '[s]peeding' clearly means that a vehicle is travelling in excess of the posted speed limit. 'Speed' can be used to describe where speed was a contributing factor to the outcome, but it may not necessarily include a speed that was in excess of the speed limit.

*We generally try to steer clear a little bit now of the terms 'excessive speed' and 'inappropriate speed'. However, 'excessive speed' is generally used to describe speed in excess of the speed limit, although some police members use it to describe speed that is grossly in excess of the speed limit. 'Inappropriate speed' again is sometimes used to describe speed in excess of the legal speed limit, but generally it is used to describe any speed including a speed under the speed limit where the circumstances dictate that the speed was not suited to the prevailing conditions.*¹⁴⁴

However, based on evidence received by the Committee it is likely that the way speed is defined for the purposes of crash data varies. An example of the level of variation was provided to the Committee during the Traralgon public hearings. In response to a question about the level of reporting consistency among police officers in determining inappropriate as opposed to illegal speeds, Senior Sergeant David Watson stated that police officers were:

*[p]robably not at the same level. The highway patrol operatives are certainly more trained in regard to attending collisions, attending traffic incidents, than what the general duties members are.*¹⁴⁵

The variability and subjectivity of reporting, of which speed is one example, also applies to other crash information collected by data gatherers. When a motorcycle crash is being described for data collection purposes, the term motorcycle does not distinguish between types of motorcycles making the identification of different motorcycles for analysis difficult. The importance of being able to distinguish between different types of motorcycle is that each is ridden by riders representing a different motorcycle demographic. Being able to analyse crash data on this basis would allow regulators and decision makers to focus on the road safety performance of different motorcycle groups and target countermeasures at those with higher levels of trauma or exposure. The RCIS in particular has been identified in research commissioned by VicRoads as difficult to use due to the way scooter crashes are classified by reference to motorcycles more generally.¹⁴⁶ The limited number of scooters in contrast to motorcycles means any proportional research on scooter crashes can be greatly affected if crash data is not correctly classified by referring to scooters.¹⁴⁷

2.8 Systemic data issues

The collection of motorcycle trauma data by some government agencies for road safety purposes is of secondary importance. For health related agencies, managing patients and undertaking long term clinical research, as well as applying for TAC compensation, are the primary reasons for collecting motorcycle data. For Victoria Police, the primary reason is to ensure they have a record of attending the crash scene and to gather evidence for the laying of charges and prosecutions.

The TAC also collects motorcycle crash data but its primary function is to track claimants and to ensure their cases are being handled properly. VicRoads is arguably the only agency that collects motorcycle trauma data for road safety purposes. However, VicRoads and its RCIS database do not deal with primary data collection, that is, at the scene of the crash or during treatment. This is also the case with the Coroners Court and trauma registries which compile and sort such data after it has been collected.

When motorcycle crash data is collected as a secondary exercise it can become less useful. This may be due to useful data not being collected at the scene, either because the data gatherer is not required to collect it or because the gatherer is unaware of its potential use by others (for example road safety researchers). Where data is collected, it may fail to include ‘critical facts, be imprecise or due to the time it takes to be included in the data set, slow down trend analysis or research’.¹⁴⁸ Two examples of this occurring in practice were provided to the Committee. The first was given by Ms Frances Diver, DoH:

*In theory, capturing all that data would be helpful. What we have, I think, managed to do is have a very good dataset for major trauma rather than necessarily the dataset for absolutely all trauma. I guess the committee would need to make a decision about the benefit of the data burden — the cost of collecting data for everybody who goes to their general practice and to private EDs [emergency departments] — and the level of depth of information that would be required to be collected for all trauma as opposed to what we have focused on, which is major trauma. Major trauma is where most of the cost and burden is for patients who are affected by motorcycle-related accidents.*¹⁴⁹

This example was given in response to a question about collecting data on less serious injuries which are treated outside of the public hospital system.

The second example was given by Ambulance Victoria representatives. Responding to a question about the collection of data for other purposes at a motorcycle crash scene, Mr Tony Walker, General Manager, Regional Services, Ambulance Victoria, explained:

... I do not understand what Victoria Police's needs would be, so we would be happy to work with them if they felt there was value in it, but I do not know whether what we are collecting in that system [VACIS] would support what they are doing.¹⁵⁰

Being able to collect relevant data at the scene of a motorcycle crash is an important function for attending emergency services. However, if the relevant data is only that which aligns with the primary responsibility of those collecting it, potentially important data that is useful for broader road safety purposes can be overlooked or misunderstood.

2.8.1 Definitions

Applying definitions to categorise and sort motorcycle trauma data is arguably the most important process in the collection of that data. Definitions are heavily used by health and road safety agencies and underpin the primary data which is used to track motorcycle trends. The decision to use particular definitions and apply them to collected data can dramatically alter the usefulness and applicability of that data in statistical analysis. Given the importance of trauma data in policy making, one would expect that all agencies use consistent definitions. However, the definitions used for motorcycle trauma vary considerably.

Significant differences exist in a number of data categories which can be explained, in part, by the different purposes for which data is collected. The most obvious inconsistency exists between the DoH derived data sets and those compiled by road safety agencies. During the course of the Inquiry, the Committee received statistical evidence covering a number of trauma categories. Some of these are used by road safety agencies such as VicRoads and others are used by health services. That means that there are different data sets for trauma in Victoria based on categories of trauma.

2.8.1.1 Trauma definitions

Trauma data which includes all trauma categories, excluding fatalities is classified and reclassified at different points by each trauma care provider. That includes Ambulance Victoria, hospitals (particularly trauma centres), the DoH and the various medical-research registries that rely on data in the VAED and the VEMD.

Road safety agencies also collect trauma data. That data is collected in TIS reports which are then incorporated by VicRoads in the RCIS. Trauma data is also provided to and subject to reclassification by the AIHW, which uses a different injury definition to that used by health related organisations in Victoria. In some instances, the use of definitions by different agencies can have an overlapping effect. For example, VicRoads uses three

definitions of injured, which includes those admitted to hospital, those requiring medical treatment and those who are injured but do not require medical attention.¹⁵¹ However, the Committee also received correspondence from VicRoads that included a different set of definitions to those initially provided. The correspondence referred to three levels of crash severity: fatal crashes, serious injury crashes and other injury crashes. A ‘serious injury’ is defined as one requiring hospital admission. An ‘other injury’ is defined as one that does not require admission to hospital. Additionally, VicRoads also refers to a ‘not injured category’.¹⁵²

The DoH categorises injured riders in terms of presentations to an emergency department (kept in the VEMD) and admission to hospital (found in the VAED).¹⁵³ In turn the Victorian State Trauma Registry (VSTR) includes a major trauma category and the AIHW compiles a serious injury with high threat to life data set based on data collected by the DoH.¹⁵⁴ There are also other data sets which are compiled to analyse specific trends in areas such as motorcycle trauma. For example, the VISU analyses road trauma by reference to location, gender, age, and incidence.

Considering the number of definitions used, the Committee has provided an overview of definitions for the following categories: fatalities, emergency presentations, admissions to hospital and serious injury.

Fatalities

A road crash death is defined as the ‘death of any person within 30 days of the road vehicle accident where death is attributable to injuries sustained during the accident’.¹⁵⁵ Two additional components inform that definition: the accident has to have happened on a public road and been unintentional.¹⁵⁶ Both VicRoads and Victoria Police use a less expansive definition. They refer to death within 30 days of the traffic incident which was caused by that incident.¹⁵⁷

Emergency presentations

An emergency presentation occurs when an injured motorcyclist is brought to one of Victoria’s 38 public hospital emergency departments for treatment or observation.¹⁵⁸ Such patients may be either discharged without being admitted, or if admitted, counted as an admitted casualty. The Committee understands the DoH counts an injured motorcyclist who has been admitted after attending an emergency room in both the VEMD and VAED statistics.

Admission to hospital

When a motorcyclist has presented at an emergency department and has sustained injuries that require admission to hospital, they are captured in the VAED database. This database is drawn from both private and public hospitals.¹⁵⁹

Serious injury

The earlier trauma categories deal with well-understood trauma categories. However, there are drawbacks to using these trauma categories alone to quantify the impact of trends in motorcycle trauma. This is because each of these categories, with the

exception of fatalities, reflects a stage or process in the treatment of injury. Although the categories allude to the seriousness of injury (for example a rider who presents to an emergency room, but is not admitted, can be presumed to have less serious injuries than someone who is admitted), they tell us little about injury severity and in turn make it difficult to quantify changes in trauma severity, over time. The term ‘serious injury’ is interpreted by the public, data collecting agencies and the media in different ways. Often a serious injury is seen as denoting a life threatening or more severe injury. For statistical trauma purposes, the term ‘serious injury’ is given specific and different meanings by those agencies collecting road trauma statistics. * According to VicRoads, a serious injury is defined as an:

*Injury sustained by [a] person in a crash requiring them to be taken to a hospital and admitted. (Initially any person who is taken to hospital is counted as a serious injury and the Police check with the hospital to determine if they have been admitted or not). Those admitted remain as [a] “serious injury”. Those not admitted are reclassified as “other injury”.*¹⁶⁰

The definition of a serious injury used by Victoria Police is similar to that of VicRoads. In correspondence with the Committee, Victoria Police provided the following definition:

*Serious injury (1 – Taken to hospital and admitted 2 – taken to hospital and enquiries pending).*¹⁶¹

The definition used in medical data sets is more expansive than those of VicRoads and Victoria Police. Rather than refer to serious injury, these data sets refer to major trauma. Ambulance Victoria uses the term ‘major trauma’ which defines injuries in accordance with guidelines endorsed by the Victorian Ministerial State Trauma Committee.¹⁶² These guidelines, the ‘AV Time Critical Guidelines’, are used to identify trauma patients who have suffered major trauma. However, because major trauma does not have a single accepted definition, the Victorian State Trauma Registry (VSTR) provides one. It defines major trauma using an inclusive list of injuries and circumstances. These can then be used to decide whether a patient can be categorised as having a major trauma, which in turn is considered to be a serious injury.¹⁶³ The AIHW, which undertakes research on serious injuries caused by land transport crashes, refers to serious injuries rather than major trauma:

*Seriously injured is defined for this report as an injury which results in the person being admitted to hospital, and subsequently discharged alive either on the same day or after one or more nights stay in a hospital bed (i.e. deaths are excluded). As discharge from hospital can include transfer to home, to another acute care hospital and to another form of care (e.g. rehabilitation), a method has been used in this report to reduce over-counting of injury cases by omitting separations in which the mode of admission is recorded as being by transfer from another acute-care hospital, on the grounds that such cases are likely to result in two or more separation records for the same injury.*¹⁶⁴

Since 1998 the specialist database, the VSTR, has used the Abbreviated Injury Scores (AIS) when assessing data about patients with serious injuries. Trauma data categorised in this way is collected by the VSTR (which used the major trauma classification) and the

* **Note:** There are additional definitions for serious injuries which are used by agencies for reasons other than data collection.

AIHW which utilises a different measure to VSTR based on injuries that it has assessed as having a high threat to life.

Clearly, the definition of serious injury varies considerably between road safety and health organisations. Whilst VicRoads and Victoria Police share a definition of serious injury that appears to align with the ‘presentation’ and ‘admissions’ definitions used in the DoH databases,* there are important differences between them that have the effect of under or overstating motorcycle trauma and the seriousness of injury. However, the definitions for serious injury used by Ambulance Victoria, the DoH and the related registries are more sophisticated because they focus on injury severity. Further, the definitions used by health organisations are consistent and well-defined but because they differ from those used by road safety agencies total trauma cases can vary. That was highlighted by the DoH:

Certainly in the health system the definition of major trauma is well defined. There are particular criteria of an injury’s severity score: urgent surgery, required intensive care and threat to life or limb. There is a defined major trauma definition. I cannot tell you if VicRoads or TAC use that for any other analysis, but certainly in the health-related analysis, that is the definition of major trauma. TAC part funds the trauma registry and so it is across the detailed definitions, but that might be different from how VicRoads describes accidents. Not all accidents have injuries. If you look at VicRoads data — when I look at their submission — they have a much bigger number, but that is because not all motorcycle accidents result in an injury. Of those that have an injury, not all of them go to an emergency department, then not all of them end up being admitted and then not all of them are major trauma.¹⁶⁵

It is important to note that there are differences even among health organisations. For example, the definition of major trauma and serious injury with a high threat to life used by the AIHW differs from that used by VSTORM. The AIHW motorcycle casualties record a larger number of serious injuries than those of the VSTR which utilises the ‘major trauma’ definition. Further, there are also differences between VSTORM and the AIHW in the way they categorise riders for inclusion in their respective databases. The practical consequence is that there are fewer cases in the VSTR data set than there are in the series compiled by the AIHW.

* **Note:** The definitions of a presentation and admission are as follows: (1) a patient who presents to a Victorian hospital following a motorcycle crash and; (2) an admission is a process whereby a hospital accepts responsibility for the patient’s care and treatment. Admission follows a clinical decision based upon specified criteria that a patient requires same-day or overnight [or multi-day] care or treatment. An admission may be formal or statistical. Refer to Department of Health (Victoria), *VAED Manual - Section 2 - Concept and Derived Items*, 21st Edition, July 2011, p. 2, http://www.health.vic.gov.au/hdss/vaed/2011-12/manual/sect2_2011.pdf and Department of Health (Victoria), *VAED Manual - Section 2 - Concept and Derived Items*, 21st Edition, July 2011, p. 9-12, http://www.health.vic.gov.au/hdss/vaed/2011-12/manual/sect2_2011.pdf; refer also to the Department of Health’s *Victorian Hospital Admission Policy*, 2011, accessible at http://www.health.vic.gov.au/hdss/vaed/adm_policy_1_Jul2011.pdf respectively. The decision to admit is based on seven criteria. These criteria are based on the following type of patient categories: Type O: Patient expected to require hospitalisation for minimum of one night; Type U: Unqualified Newborn; Type N: Qualified Newborn; Type B: Day-only Automatically Admitted Procedures; Type E: Day-only Extended Medical Treatment; Type C: Day-only Not Automatically Qualified Procedures; Type S: Secondary Family Member. See Department of Health (Victoria), *VAED Manual - Section 2 - Concept and Derived Items*, 21st Edition, July 2011, p. 9, http://www.health.vic.gov.au/hdss/vaed/2011-12/manual/sect2_2011.pdf.

The definition of a road fatality appears less vexed, because VicRoads and Victoria Police define such deaths as occurring within 30 days, and as a result, of a traffic incident.¹⁶⁶ With responsibility for the road toll and coronial reports resting with Victoria Police, there are fewer concerns with respect to defining motorcycle fatalities. However, one area that is extremely problematic in the context of motorcycle fatalities, and motorcycle trauma more generally is the question of where the crash occurred. This is due to the way motorcycle crashes can be included or excluded on the basis of their location.

2.8.1.2 Location

Motorcycle crashes that occur on private land are not counted by Victoria Police or VicRoads in their crash data.¹⁶⁷ However, the area of primary concern with locational data is the way that off-road and on-road crashes are defined and then, in the case of off-road, excluded from data sets. The focus for VicRoads and Victoria Police in terms of data gathering is on crashes that occur on ABS defined roads, that is public roads.¹⁶⁸ The Committee was told:

*If it occurs on private land, it is not included in the statistics as a collision. If it occurs at a state park on a formed track, it would come under the definition of a collision as it is open to the public.*¹⁶⁹

The definition of a road related area and a road in the *Road Safety Act 1986* has the effect of extending the scope of data collection to crashes that are not considered reportable for road safety purposes by VicRoads, and to a lesser extent, Victoria Police. Ordinarily, these definitions should have been construed in a way that expanded the scope of data collection to include off-road crashes. That does not appear to have occurred, with the Committee being informed that:

*Whilst we have an act that defines a public place, just to make it clear, as far as injuries go and the reporting of whether they are classified as ABS or non-ABS, we work on a set of guidelines that define what will be reported as on-road and what will be reported as off-road. They are the guidelines that Victoria Police use and that we use ... Those are the guidelines that we have been operating under since they came out in late 1979 or 1980, I believe. That defines a road as an area within a surveyed road reserve for things like car parks and petrol stations, and whilst under the act they might be defined as a public highway, according to the ABS guidelines they are not.*¹⁷⁰

A similar distinction is made in health derived crash data. The VAED data collected by the DoH distinguishes between traffic and non-traffic crashes for motorcycle accidents, by referring to ‘traffic accidents’ as those that occur on a public highway.¹⁷¹ However, that distinction does not rely on a ‘road’ and ‘road related area’ for the purposes of defining the location of a crash. The effect of the traffic and non-traffic definitions is twofold: firstly, it makes it difficult to know whether non-traffic crashes include or exclude off-road crashes and if motorcycle crashes that occur in state forests or on roads that are not sealed are captured as traffic crashes. Secondly, because of the inconsistency between trauma definitions applied by road safety agencies and hospitals, it is difficult to determine the actual number of on-road and off-road crashes.¹⁷²

Yet another example of the differences in including off-road and on-road crash data can be seen with the serious injury data compiled by the AIHW. The AIHW includes in its reports crashes that occur on and off-road, which it refers to as traffic and non-traffic crashes. However, in the case of the non-traffic data set, the AIHW includes crashes that occur in areas that do not meet the definition of a road or road related areas, for example on farms and private land.¹⁷³ This in contrast to the Australian Transport Safety Board (ATSB) and BITRE road safety statistics which focus on, and only include, crashes on public roads.¹⁷⁴ This example illustrates the level of variation between statistical analyses of motorcycle trauma when each is based on different definitions.

2.8.2 Representations of data and statistics

The use of motorcycle crash data for road safety purposes attracted robust responses from submitters and witnesses at the public hearings. In particular, the representation of crash data in road safety messages, or to underpin a new regulatory intervention, was cited as being highly problematic. The Committee received complaints about crash data representations in several areas. Overwhelmingly, these involved the comparison of crash data with the vehicle kilometres travelled (VKT) and registration exposure measures, the selective use of statistics and comparing motorcycle crash trends with passenger vehicles.

A consistently used and often quoted data representation is the over-representation of motorcycles in trauma statistics by reference to VKT, registrations and other road users, mostly passenger vehicles. There are a number of components in such representations. The first is that motorcycles account for less than 1% of the kilometres travelled on Victorian roads.¹⁷⁵ The second is that motorcycles only account for 4% of registered vehicles in Victoria. The third is the combination of the two data sets, registration and VKT, for the purposes of comparing this data with motorcycle trauma levels. Taking this approach allows for a ratio or proportional level of trauma to be ascertained based on the available data, which in turn is then compared to trauma levels for passenger vehicles. Occasionally these representations will be linked to the cost of motorcyclist claimants to the TAC compensation fund. When these figures are used in unison, in this way, they can incorrectly or misleadingly suggest an alarming picture of motorcycle trauma and danger. An example of the way these statistics are represented was provided to the Committee by the TAC in their submission:

*Motorcyclists are especially vulnerable road users and are significantly over-represented in road trauma statistics including in TAC claims, in terms of their incidence and cost. Motorcyclists account for less than 1% of the kilometres travelled on Victoria roads (Source: ABS Survey of Motor Vehicle Use, 2008) ... and 4% of registered vehicles (Source: VicRoads) and yet they account for approximately 13% of accepted TAC claims per year and 20% of TAC claims costs (includes no-fault and common law claims) per year.*¹⁷⁶

This general statement about motorcyclists was presented to the Committee in almost every public hearing, and extensively in public submissions.

In addition to this form of crash data representation, road safety agencies and researchers¹⁷⁷ have used an equation that uses motorcycle VKT, motorcycle serious

injury rates and then compares them to the injury rates of passenger vehicles to establish that:

*Independent research shows that riders are 38 times more likely than car occupants to be killed or seriously injured on the road.*¹⁷⁸

This statement has been used by the TAC in its advertising campaigns and quoted by road safety practitioners when writing about motorcycle trauma. The table below lists references to the VKT/motorcycle trauma rate figure that the Committee was provided with, or located, during the course of the Inquiry.

Table 2.1: Over-representation figure

Organisation	Number	Date
Researcher – Diamantopoulou et al	30	1996 ¹⁷⁹
RoadSafe - Eastern Victoria	30	Unknown ¹⁸⁰
Researcher - Dr Ron Christie & Warren Harrison	16-18	2001 ¹⁸¹
University of New South Wales	37	2011(relying on 2007 data) ¹⁸²
AIHW	37	2009 (based on 2006/07 data) ¹⁸³
Motorcycle & Scooter Safety Advisory Group (WA)	23	2009 (relying on 2007 data) ¹⁸⁴
TAC	38	2009 ¹⁸⁵
TAC	37	2012 ¹⁸⁶

The table highlights the level of variation between researchers and organisations in the over-representation number for motorcycle trauma. The calculation of the motorcycle trauma rate with VKT is subject to significant variability which depends on the year being used for comparison, although even then, there are variations (for example in 2009). The source of the over-representation figure is, according to the TAC¹⁸⁷ and VicRoads,¹⁸⁸ the AIHW.

The over-representation rate has become an important statistic in measuring the performance of motorcycles in terms of roads safety outcomes. The Committee was presented with analyses of motorcycle trauma during the Inquiry, which drew heavily on the VKT derived over-representation figure of 38 times more likely to be injured than other road users, as well as usage statistics such as the proportion of motorcycles in the Victorian vehicle fleet and traffic volumes (based on VKT) to support a contention that motorcycle trauma has been increasing.¹⁸⁹ The over-representation figure was seen by many submitters and witnesses as a bellwether for motorcycle safety in Victoria. An example of this approach to measuring motorcycle trauma was given by Mr David Shelton, VicRoads:

*They are 4 per cent of our registrations and less than 1 per cent of our traffic volumes, yet in 2011 they represented 15 per cent of our fatal crashes. On that basis alone, if we are to reach a 30 per cent reduction overall in road trauma in Victoria, we are going to have to lift our socks in the motorcycle area.*¹⁹⁰

These statistical flourishes were used during the Inquiry to justify new regulatory road safety initiatives or to support the conclusion that something had to be done to arrest

the trauma increases in this road user group. A more subjective conclusion was that motorcyclists could be seen as a problem group because riders as a whole had failed to reduce their trauma rate.

The use of these statistics has drawn significant and sustained criticism from representative motorcycling groups. Among the first witness to address the issues with motorcycle trauma and usage statistics was Mr Rob Salvatore, Victorian Motorcycle Council (VMC). Mr Salvatore's evidence focused on the use of the over-representation figures by the TAC:

It is all over the news, TV, magazines and billboards: motorcyclists are 38 times more likely to be injured than a car driver... The 38-times figure — and this is not well understood — is based on an Australian Bureau of Statistics estimate of vehicle kilometres travelled which the ABS warns contains errors and inaccuracies. The ABS specifically warns that the estimate of motorcycle VKT has a relative standard error of 10 to 25 per cent and that the figure should be used with caution. Perhaps someone has not told the TAC this, because it bandies around that number quite a lot. This error results in a substantial underestimate of the distance travelled by riders, and the most recent ABS report points to an even greater relative standard error in the VKT figures for Victoria of up to 50 per cent.

To me how many kilometres are travelled by motorcyclists is a professional guess ... Statistically speaking, this 38-times number should be considered unreliable, but that has not stopped the stat[istic] from being freely used. After all the 38-times figure comes from an official report and has a level of shock value that makes it a very useful figure in negative ad campaigns.

...Some years ago it was 30 times more likely, more recently it was 34 times more likely and now it is 38 times more likely. That rising trend has been interpreted by authorities as an alarming increase in the motorcycle injury rate. Their interpretation is that motorcycling must be becoming more dangerous. At best we are not sure, but most likely that is not the case.

...The ratio should be understood to be a very cynical estimate of motorcycle safety, since a reduction in the driver injury rate will cause the ratio to rise. The fewer drivers that are injured the higher the ratio becomes. Does that tell you anything about motorcycle safety?

...The bottom line is that we need a better range of metrics to help understand what is really going on and to also depoliticise the statistics. It is time for truth to enter the statistics and for the cynical approach to be dropped.¹⁹¹

The issues created by the use of these statistics were also recognised by MUARC representatives.¹⁹² The Committee asked Professor Mark Stevenson, Director, MUARC, to comment on the use of the over-representation figure. He provided the following response:

Can I just say that that is really inaccurate? Saying it is 38 times higher per million kilometres travelled is inaccurate. We hardly ever use per million kilometres travelled as a denominator. What is probably more reliable as a rate is '10 times higher with 10 000 registered vehicles'.... I am just saying I would not use it. Looking at this now, I would never have used 38 times higher. I am an epidemiologist by training, so I guess this is what I do. You would not use that. I would place more value on a tenfold risk per 10 000 registered vehicles, but I would still have some caveats around that because registered motorcycles does not equate to one bike rider riding every day of the week. It is a time-dependent thing. We do not have exposure data ... Thirty-eight is inaccurate. I would put that on record.¹⁹³

The comments made by Mr Rob Salvatore in terms of the standard deviation with motorcycle VKT were verified by the Committee. The ABS provides caveats on the

motorcycle VKT figures for Victoria contained in its most recent publication of the *Survey of Motor Vehicle Use*.¹⁹⁴ These caveats, in the form of notes, explain there is a ‘relative standard error of 25-50%’ and suggest the motorcycle VKT figure for Victoria be ‘used with caution’.¹⁹⁵ It is important to note the ABS suggests, in the same document, that figures with a relative standard error above 50% are ‘unreliable for general use’.¹⁹⁶ In the notes for the *Survey of Motor Vehicle Use*, the ABS makes the following statement:

In this publication, estimates with [a relative standard error] between 25% and 50% are annotated with the symbol '', indicating that the estimate should be used with caution as it is subject to sampling variability too high for most practical purposes.*¹⁹⁷

The use of the VKT figure as a means of contextualising motorcycle trauma with that suffered by other road users is predicated on a figure that is subject to important caveats. However, these caveats were not raised by those submitters making the ‘38 times’ claim to the Committee, or during the evidence provided by road safety agencies that relied on that figure. Further, the TAC has not outlined the limitations of the VKT derived figures in its advertising. It is unclear why the limitations of this figure, which are clearly stated, have not been highlighted. Further it is unclear why the ABS caution has not been heeded by those who have relied on the ‘38 times’ figure for the purposes of commenting on motorcycle trauma rates. Clearly, VKT could be an important way of measuring crash exposure and trauma rates over time, but it is subject to cautionary treatment which would appear to limit its use in respect of motorcycles.

The risks of continuing to use such a statistic with its associated issues, is that it undermines confidence for policy makers and the community in terms of the rate of motorcycle crashes, relative to other road users, on the basis of VKT. The resulting analysis can offend the motorcycling community, lead to flawed conclusions and guide decision makers to initiate policy changes and introduce new regulatory interventions that may not address the underlying issue or are inappropriate.

2.8.3 Selective use of data

Comparing trauma over time can be a useful measure for tracking changes, but the advantages of this approach are tempered by several factors. These factors are: a large enough sample to contextualise changes over time, data that is consistently gathered over the time period and data that is subject to the same definitions and methodologies.

There are issues and inconsistencies with the gathering of data, and the use of definitions and data methodologies. This section focuses on the issue of analysing data and reaching conclusions by selectively using data or where the data sample makes such analysis difficult or inappropriate. One area that is particularly susceptible to these issues is fatalities.

Motorcycle fatalities are an area subject to ongoing analysis. Fatalities occupy a central place in road safety because they are the worst type of trauma. Fatalities have a

stronger political and media profile than serious injuries, despite the total costs of serious injuries to the community.¹⁹⁸

The road toll is accorded primacy among trauma categories – it is the area that road safety initiatives are focused on reducing, and generally the performance of road safety agencies and policy are framed by reductions or increases in fatality rates. However, the number of motorcycle fatalities is statistically small for the purposes of analysis. That means that fatality data is more sensitive, statistically, to small changes in the number of motorcyclists killed. That in turn can create large changes in the trend over time and may not fully represent the overall situation on our roads. The reasons for exercising caution when analysing fatality data was outlined to the Committee by Ms Liz de Rome, LdeR Consulting:

*I never do analysis of fatal[ities], because the number is so small, it is not statistically informative and I think it is misleading and you're also focusing on extreme behaviours.*¹⁹⁹

These reasons support a more cautious approach to scrutinising motorcycle fatality data. Clearly, fatality data needs to be analysed so that government and road safety agencies are aware of the trauma levels in Victoria at a given time and for road safety policy development. According to researchers, a considerable emphasis is placed on fatalities nationally, due to difficulties in comparing injury data across States and Territories.²⁰⁰ VicRoads measures their road safety performance ‘based on absolute performance’.²⁰¹ However, fatalities are a unique category of trauma data and should be subject to cautious, appropriate analysis, preferably over longer periods of time. Taking that approach means small variations between years are not used solely for conclusions as to the success or otherwise of road safety measures and community behaviour for motorcyclists.

The way data can support different conclusions was illustrated during the public hearings in Melbourne. As part of Victoria Police’s presentation to the Committee, an analysis of motorcycle fatalities for the period 2008–10 was presented. In his evidence then Deputy Commissioner Kieran Walshe, Victoria Police, stated:

*If we look at motorcycle trauma from 2008 to 2010, the point we wanted to make was that in 2010 there were 11 more deaths than there were in 2009. That really represented a 30 per cent increase on 2009 motorcycle deaths. There was one billion passenger. Motorcycle deaths made up 17 per cent of road user fatalities for 2010.*²⁰²

According to data provided by Victoria Police, there were 42 fatalities in 2008, 37 in 2009 and 48 fatalities in 2010.²⁰³ The analysis in calculating the change in fatalities from 2009 to 2010 as being 30% is correct (once rounded up). However, due to a lack of contextualisation, and the absence of caveats or clarifications, this analysis on its own could lead some to conclude that motorcycle fatalities increased substantially; for those two years, from 2009 to 2010, an increase in fatalities did occur, therefore, the analysis is not, *per se*, incorrect. However, it does not fully contextualise motorcycle fatalities.

Firstly, the diminutive size of motorcycle fatalities compared to passenger vehicle fatalities makes these fatalities highly sensitive to changes from year to year. Therefore, small changes in the number of fatalities can result in statistically significant increases or decreases. Secondly, the analysis lacked caveats or clarifications. The 30% increase was not contextualised by highlighting that the 2009 fatality total was the lowest since 2004 and the second lowest in 11 years (2000–2011). Comparing 2009 to 2010 showed there had been a large increase in motorcycle fatalities, but it did not recognise the fact that since 2005 fatalities have fluctuated between 43 and 49 deaths (the exception being 2009)*. Had this been noted, the 2010 fatalities would not have appeared to be a dramatic increase. Instead, 2009 would be seen, statistically and historically, as an unusual year for motorcycle fatalities because of the drop in fatalities, a reduction which has not been repeated in any year since then.

This example of motorcycle fatality analysis reflects the complex and difficult nature of contextualising and using crash data. It is clear that a more cautious and fulsome approach to motorcycle fatality data, and other trauma data, is important because such data forms the basis for policy development, implementation and community engagement. The failure to follow such an approach has ramifications. It has been suggested that the current approach overstates the relative risks of motorcycling and creates a:

... perceived imperative to "do something" and a consequent willingness to entertain poorly conceived policy initiatives that are unsupported by evidence ...²⁰⁴

The use of fatality statistics to reach conclusions on the road safety performance of any road user group needs to be considered carefully. The sensitivity of these statistics, particularly for motorcyclists for whom small changes in the number of fatalities can have a significant ramification, to trends over time reinforces the need for caution.

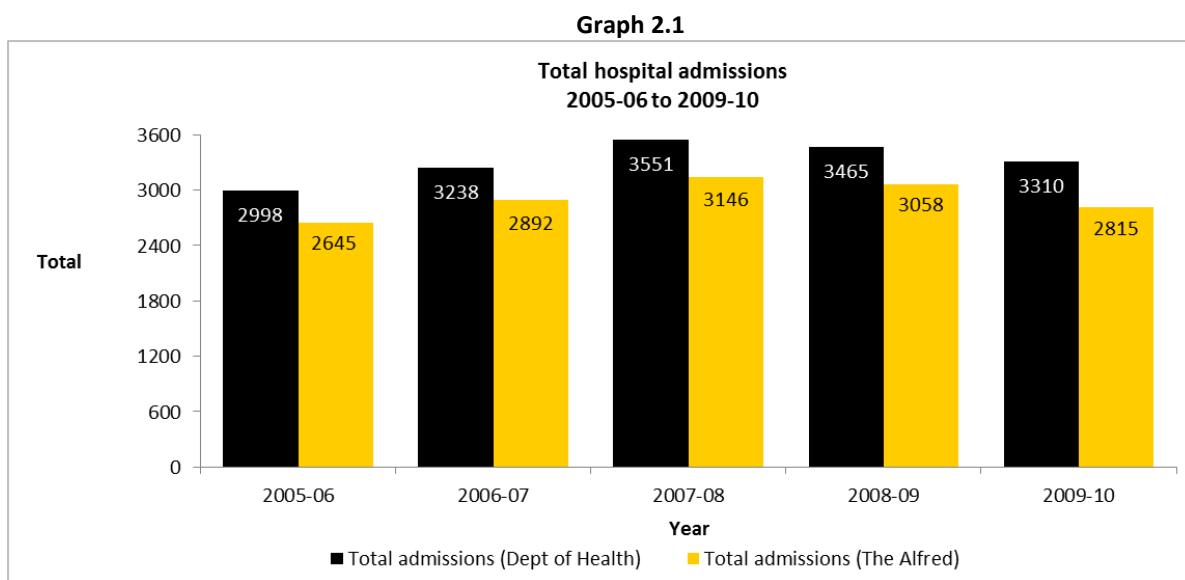
2.8.4 Inconsistencies

There are discrepancies among the trauma data sets held by road safety agencies and hospitals, and these appear to be ongoing. The reasons for these discrepancies or inconsistencies are primarily due to issues outlined throughout this chapter. Briefly, these reasons include the definitions for motorcycle trauma used by different agencies and, perhaps more importantly, the definition of a road and road related areas which restrict the collection of off-road crash data. However, discrepancies and inconsistencies also appear among groups collecting the same data.

As part of the Committee's investigations, analysis was undertaken on trauma data. This was necessitated by the inconsistencies and discrepancies identified during the course of the Inquiry. These inconsistencies are important to highlight because they reflect the lack of absoluteness of certainty in motorcycle crash data. The Committee has reproduced one graph that underlines these inconsistencies.

* Note: Refer to Graph 6.1 on page 153 of this Report.

Graph 2.1 uses data provided to the Committee by Alfred Health and the DoH. The DoH data begins in 2006. Both submitters drew their data from the VAED database, which is overseen by the DoH.



Source: The Alfred Health, *Submission to the Inquiry*, 9 September 2011, p.10; The Department of Health, *Submission to the Inquiry*, 14 October 2011, p.4.

It is clear from Graph 2.1 there are significant differences between the admissions data provided by the VISU (which was incorporated into Alfred Health's submission) and the DoH. The Committee was told that these discrepancies have occurred due to the way the data was filtered. A footnote in Alfred Health's submission outlined the methodology that was used to cleanse the data.²⁰⁵ That methodology included exclusion criteria based on the vehicle being a motorcycle and a number of exclusions including three and four-wheeled motorcycles among others.²⁰⁶ The DoH derived data was not subject to the same methodology. Although it could be argued that this inconsistency was simply a case of not applying the same methodology, and that if it had applied there would not have been an inconsistency, such an argument overlooks the potential for this data to mislead. For example, if the Committee had only received the DoH data it would have made findings based on data that included several hundred admission cases which, on the face of it, should not have been included. As a consequence, the Committee may have presented findings that supported a conclusion that motorcycle admissions had increased much more quickly over time than they had, or supported more aggressive road safety measures than required.

These issues of inconsistency also apply to fatality data. In the course of investigating fatality trends in terms of gender and age it became clear that issues with fatality data required the Committee to revisit fatality data sets. These included data sets that were publicly available and those submitted to the Committee by road safety agencies and government organisations.

These issues arose because the Committee became aware of discrepancies and inconsistencies among data sets on motorcycle fatalities. By way of example, the VicRoads CrashStats database, BITRE data and the Coroners Court data all varied in their respective fatality counts for motorcyclists over the period from 2000 to 2010. Further, it became clear that the definition of road in relation to ‘off-road riding’ has had an impact on the collection of fatality data. Specifically, it appears some data collecting agencies have not included fatalities that occurred in areas that might be described as being off-road in their fatality counts.

The potential to misrepresent the actual level of motorcycle trauma becomes acute when data is derived from primary data gatherers like the DoH who are presumed to have the most accurate data and to have cleansed it using a methodology focused on road safety. This is clearly not always the case*. These inconsistencies also appeared when comparing BITRE and Coroners Court data on motorcycle fatalities. It became clear to the Committee that these inconsistencies were due to a number of off-road crashes being included by the Coroners Court which were not included by BITRE. However, even when fatalities on private property were removed from the total, the coronial data reflected a much higher fatality total than that of BITRE. The reasons for this discrepancy appear to be due to the Coroners Court capturing fatalities that occur in areas such as forest roads and parks, whereas the BITRE data does not.²⁰⁷

Research on the incidence of on and off-road motorcycle fatalities using the NCIS and VicRoads databases reached a similar conclusion. Researchers found a small discrepancy in the fatality count between these two databases (the VicRoads database recorded three less fatalities) which they attributed to ‘difference in the definitions of motorcycle related deaths used by the NCIS and VicRoads, with the NCIS using a broader definition’.²⁰⁸

Yet another inconsistency occurred as the Committee held public hearings in eastern Victoria. In Traralgon, a presentation from VicRoads representatives included a reference to research on motorcycle crashes in the Gippsland area. That research, carried out by VicRoads, found that all recent crashes in the Eastern Region, which encompasses Gippsland, involved visiting motorcyclists. That finding was confirmed by VicRoads during the hearing.²⁰⁹ However, the Committee was presented with conflicting data at the next public hearing in Bairnsdale, which falls within the VicRoads Eastern region.²¹⁰

* **Note:** Although this example of inconsistency has focused on the DoH admissions data, this does not mean that the VISU derived data is accurate for the purposes of road safety. The VISU derived data relies on a data methodology that sorts admissions using codes that refer to traffic and non-traffic crashes. However, these codes do not align with the road safety definition of a road or road related area. The result of these inconsistencies is that there are cases included in the admissions data which should either have been counted because they meet the legislative definition of a road or road related area or excluded because they do not (for example, because they occurred on private property). The Committee was informed that off-road cases included in the admission statistics include crashes that occurred in private property. Such cases fall outside the scope of this Inquiry and road safety in Victoria.

When asked about these discrepancies, Mr Daryl Townsend, Chairman, Eastern Region Motorcycle Working Party, provided this response:

*I would challenge their definition of what a ‘visitor’ is, because to me, if we are looking at the Great Alpine Road, a visitor could be somebody who does not live in East Gippsland. I would challenge that, and I would want to go back to the police report to find out the address of the person by postcode.... I would challenge VicRoads as to what their definition of ‘visitor’ is, because it could be as simple as the data on a police report you are looking at, and you are saying ‘visitor’. If it is a road in Bairnsdale, to me a visitor is somebody who does not live in Bairnsdale. It does not mean somebody who is from outside the state.*²¹¹

The examples outlined in this section, and the inconsistencies they contain, are concerning. They lead to criticisms, such as the following:

*Data is a problem — the accuracy of data that agencies throw up. Data can be used for illumination or support. Some of the data that the agencies provide, you just do not understand where it has come from; it does not match reality. Again, the agencies are not open in providing the data to the whole motorcycle community so that we can evaluate it.*²¹²

2.8.5 Comparing across modes of transport

Comparing motorcycle trauma rates against other types of road vehicles could lead to unfavourable comparisons.²¹³ Being able to compare crash risk and safety across different vehicles and modes of transport has been a longstanding interest for road safety organisations.²¹⁴ Comparing trauma outcomes allows agencies to identify riskier transport modes or vehicle types. This can allow government agencies to allocate more resources, or make risk management decisions specific to a particular choice of vehicle or transport, such as motorcycles.²¹⁵

In terms of motorcycles, road safety agencies and researchers often contrast motorcycle trauma with passenger vehicle trauma. In some respects this seems to be an appropriate comparison. Motorcycles and passenger vehicles provide mobility for transport and leisure, and people travelling in and on these vehicles suffer trauma. However, there are reasons why comparisons across modes of transport should not be undertaken which, if ignored, may lead to inappropriate statistical comparisons.

A discussion paper released by the ATSB in 2005 canvassed the difficulties in comparing safety across modes of transport.²¹⁶ The paper referred to the limited statistical data on ‘consistent risk exposure levels’. It is important to note that in spite of these difficulties the ATSB was able to produce comparisons between different types of vehicles, including motorcycles, on the basis of VKT.²¹⁷ However, it did note that obtaining reliable, accurate and well-documented statistics on VKT was difficult.²¹⁸ Further guidance on the issues with comparing motorcycle travel and trauma with passenger vehicles and the vehicle fleet more generally were identified in a research report commissioned by the RACV.²¹⁹ Comparing motorcycles to other vehicles is clearly affected by the lack of adequate exposure data. In the absence of consistent and comparable exposure data, such comparisons are open to criticism and may cloud policy development because they are not an objective measure of trauma comparison.

At best, such comparisons indicate motorcycle crashes are more traumatic than passenger vehicles and other forms of transport, something which is well-understood due to the inherent lack of passive protection for motorcyclists.

2.8.6 Governance arrangements and co-ordination among agencies

From the evidence received by the Committee, it is clear that road safety agencies and health organisations do not co-ordinate the collection of motorcycle trauma data. Further, there is no single organisation that co-ordinates the exchange or sharing of trauma data. While road safety agencies do share amongst themselves, that data is not shared more widely. Conversely, health derived data is not shared with road safety agencies, with the exception being the TAC, so it can pay the DoH health costs incurred by hospitals treating injured motorcyclists. Further, there is no concerted, whole of government approach to data gathering, in spite of the operation of the *Transport Integration Act 2010* (TIA) which appoints certain road safety responsibilities to agencies, with a particular emphasis on VicRoads. Although the TIA does not impose an explicit data collection or co-ordination function on any agency with respect to road safety, the operation of section 87(1)(d) can be construed as imposing one on VicRoads:

87 Functions of the Roads Corporation

(1) *The functions of the Roads Corporation are to—*

- (d) *lead in the development and implementation of strategic and operational policies and plans to improve the safety of the road system for all users, including through—*
 - (i) *works to improve the safety of road and road-related infrastructure;*
 - (ii) *information and advice on the safety of motor vehicles and motor vehicle standards;*
 - (iii) *education and training to improve the safety of road user behaviour;*
 - (iv) *enforcement activities;*
 - (v) *road safety legislation, regulations, standards, guidelines and practices.*²²⁰

Considering the comments of VicRoads representatives in terms of using statistics as a basis for evidence-led policy making, and the operation of section 87(1)(d), a co-ordinating role may already exist but is not being fulfilled.

The Committee sought comments from a range of government agency and medical witnesses about their involvement in data gathering and the sharing of data across organisations. Professor Susan Liew, Director, Orthopaedic Surgery, The Alfred Hospital made the following observation about the merits of sharing data:

*It would be fantastic if everybody just got on the same page, combined forces and directed all the resources there ... of course there is a certain amount of protectiveness of data by different people for different reasons.*²²¹

The lack of a co-ordinating agency and the comprehensive sharing of data, noting the important, practical restrictions imposed by privacy legislation, are issues that overlap with the limited linking of databases between agencies.

2.8.7 *Linked data sets*

Data sets held by different agencies are sometimes shared, but do not appear to be linked. Linking databases could be a way of enabling motorcycle trauma data to be shared efficiently and appropriately, particularly if privacy concerns were dealt with. However, linking databases is an area where Victoria's road safety and health agencies could dramatically improve their performance:

*... I think one of the areas about which we can be very critical of Victoria is that we have not moved forward in developing comprehensive network data systems. We are in the 21st century and we still have ad hoc data systems. I have just been to one agency today where they are cobbling together 17 different data systems in order to paint a picture around road trauma. That is not an ideal system.*²²²

The above statement from Professor Stevenson, MUARC, is a clear indication that motorcycle trauma data, as with all road safety trauma data, is compromised by the issues raised throughout this section. These issues range from stand-alone to systemic and the combination of them makes conclusive and robust conclusions difficult to make. The goal of integrating road safety data sets (for example by integrating police and hospital databases) has been the subject of long-standing academic and regulatory interest, both in Australia and overseas.²²³ This interest has seen practical attempts to integrate road safety data sets in Australia. Recently, the Curtin–Monash Accident Research Centre completed the first stage of a West Australian project that is aimed at creating a comprehensive and integrated road safety data system.²²⁴ The project, which was sponsored by the Office of Road Safety, is a leading example of attempts to integrate road safety databases in Australia and may provide a model for Victoria.

2.9 *Findings*

Motorcycle crash and trauma data, and its analysis, fulfils several important roles in road safety. It allows governments and road safety agencies to allocate resources and develop countermeasures for specific groups of road users (for example motorcyclists) or particular problems (such as drink driving). Trauma statistics and trends can also identify groups who are either over-represented in trauma statistics or who are experiencing increased injury rates or slower reductions compared to other road users.

Victorian government organisations and other public bodies collect data, categorise and analyse it, and to varying degrees, share it for a myriad of research and policy purposes. However, there are serious issues with the collection and use of motorcycle trauma data which are wide-ranging. The data issues analysed by the Committee in this chapter affect the ability of decision makers to identify and develop appropriate interventions. These issues begin at the data gathering stage, at the crash site. They continue through the process of data processing, analysis, and publication. Statistical data is shared, but in an inefficient and limiting way.

Some agencies such as the DSE are wholly unaware of who is being injured on roads under their management. Agencies with a road safety function, VicRoads and the TAC, are secondary users of data which has been collected by police and health services. Their reliance on primary data gatherers means that any inconsistencies or errors at the gathering stage affect the accuracy of all subsequent analyses.

Data gaps, errors and inconsistencies are a consequence of underreporting and variable data collection. Underreporting, which appears to be a leading cause of data gaps, makes it difficult to assess how trauma has changed over time and identify segments of the motorcycle community who are at risk. Underreporting of less serious crashes may ‘distort analyses of the vulnerability of motorcyclists to injury’.²²⁵ Inconsistencies and gaps can reduce our ability to identify safety issues²²⁶ and analyse countermeasures such as protective gear and road engineering that can reduce crashes or injury severity. These same issues may also suggest an atmosphere of crisis where one does not exist, which in turn may negatively affect road safety policy-making.²²⁷ Alternatively, the absence of or limited usefulness of some data can lead to so-called ‘common sense solutions’ that reflect the expertise of each government agency, a point made by Mr Tony Ellis, Ulysses Club:

*The big problem is, of course, that without this information, we get suggestions saying, ‘This looks like common sense; it seems like a good idea’, but they are not backed by anything and they are usually coming from organisations or agencies and they are just based on the prevailing orthodoxy of that agency. Police recommendations will almost always be around enforcement. TAC will be about exposure and maybe injury. VicRoads will be about road surfaces and black spots. There is no real attempt to synthesise them or bring them all together.*²²⁸

When road safety agencies and government rely on statistical data that is limited by gaps and inconsistencies they risk losing the community’s support. That proposition was put by the Ulysses Club in their submission. They noted a ‘high level of cynicism amongst riders’ when improvements in trauma rates are not announced, with particular reference to statistics that indicate motorcyclists are over-represented.²²⁹ Other submitters referred to the need for a realistic picture of motorcycle trauma which could only occur with a ‘radical overhaul of the data collection system’.²³⁰

The Committee is of the view that motorcycle trauma data in Victoria lacks accuracy and is incomplete or inconsistent. That in turn leads to debates between government agencies and the motorcycling community. As a result of these data quality issues, road safety policies or initiatives justified on such data can be undermined. The consequences of these interactions between government agencies, and the motorcyclists they are regulating, was highlighted by submitters who referred to trauma data as ‘hysterical’, suggested that motorcycle statistics were treated differently to other road accident statistics²³¹ and that some research statistics were unsuitable for road safety.²³²

Others, such as Mr Tony Ellis, tried to contextualise motorcycle trauma with other types of activities:

*The other thing I would like to mention is, do we really have a serious safety problem with motorcycles? I know you have heard how the figures that were going down are going up, but why is it motorcycles that seem to have this huge emphasis on the numbers injured? Other recreational pastimes are far worse. Flinders University's accident research centre came up with some figures a few years back which showed that you have a serious injury or death every thousand hours of horseriding and every thousand hours for downhill skiing, while it is every 10 000 hours for motorcycling. Without saying that we should not be trying to make it safer — I am very much of the opinion that we can make it safer and we should — but this demonising of it has been going on. When we look at it against other recreational pastimes, it does seem to me to be somewhat unfair. I hate to use the word 'overkill', but I think there is a certain amount of it there.*²³³

Trying to deal with these issues has led some researchers to rely on evidence based research to ensure their work has credibility and legitimacy 'in the eyes of most objective road safety stakeholders, including the motorcycle lobby groups'.²³⁴ However, that only applies to narrow and limited research activities, with motorcycle statistics generally relying on primary data that is affected by data gaps and inconsistencies. Trauma statistics derived from analyses undertaken by road safety agencies, in particular, were the subject of consistent criticism during the Inquiry. The viewpoint of Mr Rob Salvatore represents that held by many submitters and witnesses:

*The first paradigm shift that I believe is needed is for there to be truth in statistics. You have heard many times that the stats are a real problem... The prevailing perception is that motorcycling is more dangerous now than it ever has been, which we attribute to the recent TAC ads, the attitude of the media, ongoing Victoria Police public statements, the continued misrepresentation of some key motorcycle statistics and of course the general lack of knowledge or awareness by the public. The common perception is simply wrong.*²³⁵

The use of motorcycle statistics, particularly selective representations and comparisons, is also problematic. In particular, the focus on fatalities may be leading to a biased view of motorcycle safety issues because it places greater reliance on a small statistical group that is incredibly sensitive to minor changes. That point was strongly made by Mr Rex Deighton-Smith:

I think that the presentation of statistics in the public debate is a real issue. That reflects the fact that I guess people who have access to them often have agendas to push, if I read the press. I frequently read articles that misuse statistics to justify more intervention in road law in a range of areas, not just in motorcycling. It comes from VicRoads and it comes from the police. Trying to put myself into the position of a politician, of a minister perhaps, it has obviously got to be tempting when you have a microphone in front of you and the police chief is saying, 'Well, we really need to do something about this', and waving around a statistic that on the face of it is telling a story. It is a bit hard to step back and say 'No'.

*It is an issue, and I guess this is why for a long time I have been an advocate for improvements to public policy processes like the regulatory impact assessment process that requires you to actually do that work, crunch the numbers and put out in public a document justifying what you are intending to do — putting that out there and enabling it to be criticised by people who have an interest in it. It is very important that we follow those sorts of good processes in getting to our end points.*²³⁶

The Committee recognises that data issues affect both the motorcycle community for whom safety policy is developed and the performance of road safety agencies. Road safety agencies rely on data to inform their expenditure and resource allocation and identify areas for policy development and research. When motorcycle trauma data is compromised by the issues raised in this section, it may also compromise the performance of these agencies.²³⁷ During the course of the Inquiry it became clear to the Committee that these data issues are not only well-understood by some in the motorcycling community but also by government agencies. Representatives from the DSE for example, when asked about what specific Inquiry outcomes they would like to see referred to the importance of data:

*I think first and foremost, the gathering of good data. We keep identifying that there are data deficiencies. There is a need to look at how that data is collected and categorised, and to get better data to inform where money gets spent to make safety interventions.*²³⁸

Victoria Police has also recognised the importance of dealing with some of the issues raised during the Inquiry. Changes made by Victoria Police, or in the process of being made, focus on data gathering and the training of police officers. Changes to the training regimen include the development of a road police and capability project that is aimed at enhancing the skills of:

*... first-on-the-scene general duties officer, or highway patrol officer, to try and get some better consistency and expertise around what is not only going into an investigation that might result in a coronial or court matter but also what feeds into the datasets.*²³⁹

The Committee was told by Superintendent Neville Taylor that this enhances the training of specialised police officers:

*... we have 39 members in our major crash investigation who are trained in primary collision scene analysis, then major crash scene analysis ... Seven of those are dedicated crash scene reconstructionists and mechanical investigation specialists. They have various degrees around engineering and science that support them in doing that role. That is our high-end capability.*²⁴⁰

In spite of changes and improvements made by road safety agencies, many of the data issues raised in this section remain unresolved. This is due partly to a lack of a co-ordinating role for an agency to guide data gathering and partly because government organisations have not done enough to rectify these issues.

Dealing with these collective data issues would provide significant benefits for motorcycling safety in Victoria and improve the performance of road safety agencies. Importantly, the Committee notes data issues are an ongoing concern for road safety agencies and governments internationally.²⁴¹ Improving data collection is a target for both the European Commission and the United Nations, as part of its Global Plan for the Decade of Action for Road Safety.²⁴² Motorcycle trauma data and its improvement were also the focus of recommendations made following the Motorcycle and Scooter Safety Summit held in Australia in 2008.²⁴³

Further, in reports tabled in 2005²⁴⁴ and 2006,²⁴⁵ this Committee identified data issues similar to those outlined in this chapter – a lack of comprehensive data or missing data. The Committee feels there are strong justifications for dealing with these data issues. Accurate, timely and complete motorcycle trauma data is critical because of the importance of statistics in policy development and government decision making. Data is used as the basis for developing, guiding and evaluating policy (evidence based), and provides decision makers with a basis for reaching conclusions on the performance of road safety measures and trauma trends.

The importance of data and the way data issues compromise its effectiveness requires significant changes to be made. With growing motorcycle use, trauma and crash data will be relied on more heavily by policy and decision makers. Allocating resources and expending road safety funds can be undermined by data affected by underreporting and inconsistencies. New interventions and public advertising are more likely to be accepted and therefore adopted if the motorcycling community is confident of the veracity of trauma data. Lastly, government decision makers must be given accurate data that is capable of allowing them to identify areas of concern and to confidently introduce changes that are evidence based.

Whilst agencies are aware of these issues, and steps have been taken to rectify some of the issues, the Committee's investigations have substantively found that each issue raised in this chapter is current. The data issues raised in this chapter have far-reaching consequences. Correcting them is critical to improving road safety for both motorcycles and other road users.

Recommendations: Chapter 2

Recommendation 1:

That an independent office of road safety data be created, which will be responsible for collecting, collating, interpreting and publishing all data relevant to road safety, and, for the purposes of this Inquiry, specifically motorcycle safety. Its functions will include:

- Investigating which agencies collect data and where there are data gaps, particularly with respect to off-road riding;
- Setting standards, definitions and data collecting protocols;
- Chairing committees that include all relevant agencies and departments involved in motorcycle safety (including those that collect data);
- Setting benchmarks for the collecting and auditing of data;
- Co-ordinating the collection of data across departments dealing with health, road and environment portfolios; and
- Collecting sales, injury, registration, licensing, fatality and Transport Accident Commission insurance data.

Recommendation 2:

That an immediate program to improve inter-agency data co-operation and collaboration on motorcycle crash data be instituted by government agencies.

Collaborations through committees and other data groups should include appropriate representatives from motorcycle advocacy groups, such as those represented on the Motorcycle Advisory Group, whose experience and knowledge of motorcycle crashes could assist in the assessment of crash data.

Recommendation 3:

That a consistent methodology based on a set of universally applied definitions and categorisations be developed for motorcycle trauma victims who present, are admitted or suffer major trauma in Victoria. This methodology should be used by all government agencies and departments when compiling trauma data for road safety purposes. The guiding principle for including an injured motorcyclist in trauma statistics for road safety is to be the definition of a road or road related area found in the *Road Safety Act 1986*.

Recommendation 4:

That the Victorian Auditor-General's Office undertake a follow up audit of the agencies audited in the *Motorcycle and Scooter Safety Programs Report*, within 12 months of tabling of this report.

Recommendation 5:

That section 87(1)(d) of the *Transport Integration Act 2010* be amended to include a co-ordinating role for VicRoads in the collection of road crash and trauma data among health and road safety agencies and departments.

Recommendation 6:

That the Victorian Government initiates discussions through the Council of Australian Governments to achieve national conformity on definitions of categories used in assessing road trauma.

Endnotes: Chapter 2

¹ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 7.

² Watson A, McKenzie K & Watson B, *Priorities for developing and evaluating data quality characteristics of road crash data in Australia*, paper presented at the Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011, p. 1.

³ VicRoads, *Eastern region motorcycle treatments overview*, submitted at Public Hearing for Inquiry into Motorcycle Safety, Bairnsdale, 14 December 2011.

⁴ Cooper J, Polak J, Shmoecker J-D & Wigan M, *Addressing gaps in the availability of travel behaviour data*, paper presented at European Transport Conference, Strasbourg, 2003, refer to Introduction.

⁵ Australian Bureau of Statistics, *A guide for using statistics for evidence based policy*, ABS, Cat. No. 1500.0, Canberra, 2010, pp. 2-3.

⁶ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 657.

⁷ Department of Health, *Ambulance services in Victoria*, viewed April 2012, <http://www.health.vic.gov.au/ambulance/>.

⁸ Ambulance Victoria, *Ambulance Victoria Strategic Plan 2010-2012*, p. 1, <http://www.ambulance.vic.gov.au/Media/docs/Ambulance%20Victoria%20Strategic%20Plan-f2b7ef6d-5ba1-48d4-80c2-91df87d1869b-0.pdf>.

⁹ Ambulance Victoria, *Ambulance Victoria Strategic Plan 2010-2012*, p. 1, <http://www.ambulance.vic.gov.au/Media/docs/Ambulance%20Victoria%20Strategic%20Plan-f2b7ef6d-5ba1-48d4-80c2-91df87d1869b-0.pdf>.

¹⁰ Correspondence from Greg Sassella, Chief Executive Officer, Ambulance Victoria, 2 March 2012, refer to attachment, *VACIS Electronic patient care record (ePCR) Documentation Guide*, p. 2.

¹¹ Correspondence from Greg Sassella, Chief Executive Officer, Ambulance Victoria, 2 March 2012, refer to attachment, *VACIS Electronic patient care record (ePCR) Documentation Guide*, p. 2.

¹² Correspondence from Greg Sassella, Chief Executive Officer, Ambulance Victoria, 2 March 2012, refer to attachment, *VACIS Electronic patient care record (ePCR) Documentation Guide*, p. 2.

¹³ Dr Karen Smith, Manager, Research and Evaluation, Ambulance Victoria, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 736.

¹⁴ Greig K, Haworth N & Nielson, *The suitability of current crash databases for analysis of motorcycle crashes*, Report No. 08/02, Royal Automobile Club of Victoria, Noble Park, February 2008., p. 28.

¹⁵ Correspondence from Mr Greg Sassella, Chief Executive Officer, Ambulance Victoria, 2 March 2012, p. 3.

¹⁶ Department of Health, *What we do*, viewed March 2012, <http://www.health.vic.gov.au/whatwedo/>.

¹⁷ Correspondence from Mr Bruce Prosser, Director, Funding and Information Policy, Hospital and Health Service Performance, Department of Health, 20 February 2012, p. 1.

¹⁸ Department of Health, *Submission to the Inquiry*, October 2011.

¹⁹ Department of Health, 'Victorian Emergency Minimum Dataset – Overview', *Victorian Government Health Information*, viewed March 2012, <http://www.health.vic.gov.au/hdss/vemd/vemdover.htm>.

²⁰ Ms Frances Diver, Executive Director, Hospital and Health Service Performance Division, Department of Health, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 40.

²¹ Correspondence from Mr Bruce Prosser, Director, Funding and Information Policy, Hospital and Health Service Performance, Department of Health, 20 February 2012, p. 3, attachment 4.

²² Correspondence from Mr Bruce Prosser, Director, Funding and Information Policy, Hospital and Health Service Performance, Department of Health, 20 February 2012, p. 3.

²³ Department of Health, *Submission to the Inquiry*, October 2011.

²⁴ Correspondence from Mr Bruce Prosser, Director, Funding and Information Policy, Hospital and Health Service Performance, Department of Health, 20 February 2012, p. 2.

²⁵ Correspondence from Mr Bruce Prosser, Director, Funding and Information Policy, Hospital and Health Service Performance, Department of Health, 20 February 2012, p. 1.

²⁶ Department of Health, 'Victorian Emergency Minimum Dataset – Overview', *Victorian Government Health Information*, viewed March 2012, <http://www.health.vic.gov.au/hdss/vemd/vemdover.htm>.

²⁷ Correspondence from Mr Bruce Prosser, Director, Funding and Information Policy, Hospital and Health Service Performance, Department of Health, 20 February 2012, pp. 1-2.

²⁸ Correspondence from Mr Bruce Prosser, Director, Funding and Information Policy, Hospital and Health Service Performance, Department of Health, 20 February 2012, p. 1.

²⁹ Ms Frances Diver, Executive Director, Hospital and Health Service Performance Division, Department of Health, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 40.

³⁰ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 657.

³¹ Correspondence from Mr Gary Liddle, Chief Executive, VicRoads, 24 February 2012.

³² Correspondence from Mr Gary Liddle, Chief Executive, VicRoads, 24 February 2012.

³³ VicRoads, *Submission to the Inquiry*, September 2011, p. 25.

³⁴ Mr Peter Schofield, Manager, Road Safety Strategy and Community Programs, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 658.

³⁵ Greig K, Haworth N & Nielson, *The suitability of current crash databases for analysis of motorcycle crashes*, Report No. 08/02, Royal Automobile Club of Victoria, Noble Park, February 2008, p. 14.

³⁶ VicRoads, *Submission to the Inquiry*, September 2011, pp. 28-31.

³⁷ Correspondence from Mr Gary Liddle, Chief Executive, VicRoads, 24 February 2012.

³⁸ Mr Peter Schofield, Manager, Road Safety Strategy and Community Programs, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 658.

³⁹ Correspondence from Deputy Commissioner Kieran Walshe, Regional and Road Policing, Victoria Police, 16 February 2012.

⁴⁰ Correspondence from Deputy Commissioner Kieran Walshe, Regional and Road Policing, Victoria Police, 16 February 2012.

⁴¹ Sergeant Ross Humphrey, Victoria Police, *Transcript of Evidence*, Ballarat, 16 November 2011, pp. 380-381.

⁴² Deputy Commissioner Kieran Walshe, Regional and Road Policing, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 24.

⁴³ Gibson J, *Road Fatality Review Panel: Do we count it or not?*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011, p. 3.

⁴⁴ Mr Ray Winn, Director, Performance Audit, Victorian Auditor-General's Office, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 14.

⁴⁵ Gibson J, *Road Fatality Review Panel: Do we count it or not?*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011, p. 2.

⁴⁶ Gibson J, *Road Fatality Review Panel: Do we count it or not?*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011, p. 2.

⁴⁷ Correspondence from Ms Samantha Cockfield, Acting Senior Manager, Road Safety and Marketing, Transport Accident Commission, 22 February 2012.

⁴⁸ Cassell E, *Further research into off-road motorcycling injuries: feasibility study report*, RSD 0453, August 2007, p. 5.

- ⁴⁹ Correspondence from Ms Samantha Cockfield, Acting Senior Manager, Road Safety and Marketing, Transport Accident Commission, 22 February 2012.
- ⁵⁰ Correspondence from Ms Samantha Cockfield, Acting Senior Manager, Road Safety and Marketing, Transport Accident Commission, 22 February 2012.
- ⁵¹ Deloitte Touche Tohmatsu, *Draft – data exploration for the Road Safety Executive Group – Phase 1 Report*, for the Transport Accident Commission, 15 February 2012, Appendix A current sharing state matrix diagram, p. 12.
- ⁵² Deloitte Touche Tohmatsu, *Draft – data exploration for the Road Safety Executive Group – Phase 1 Report*, for the Transport Accident Commission, 15 February 2012, Appendix A current sharing state matrix diagram, p. 12.
- ⁵³ Transport Accident Commission, *Crash database*, viewed March 2012,
<http://www.tacsafety.com.au/jsp/statistics/reportingtool.do?tierID=100>.
- ⁵⁴ Mr David Hogan, Team Leader, Coroners Prevention Unit, Coroners Court of Victoria, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 54.
- ⁵⁵ Judge Jennifer Coate, State Coroner, Coroners Court of Victoria, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 53.
- ⁵⁶ Judge Jennifer Coate, State Coroner, Coroners Court of Victoria, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 53.
- ⁵⁷ Judge Jennifer Coate, State Coroner, Coroners Court of Victoria, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 59.
- ⁵⁸ Coroners Court of Victoria, *Coroners Prevention Unit*, Melbourne, 2009.
- ⁵⁹ Cassell E, *Further research into off-road motorcycling injuries: feasibility study report*, RSD 0453, August 2007, p. 6.
- ⁶⁰ Cassell E, *Further research into off-road motorcycling injuries: feasibility study report*, RSD 0453, August 2007, p. 6.
- ⁶¹ Mr David Hogan, Team Leader, Coroners Prevention Unit, Coroners Court of Victoria, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 54.
- ⁶² Dr Karen Smith, Manager, Research and Evaluation, Ambulance Victoria, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 742.
- ⁶³ Professor Russell Gruen, Head, Trauma Quality Assurance, Alfred Health, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 156.
- ⁶⁴ Professor Russell Gruen, Head, Trauma Quality Assurance, Alfred Health, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 156.
- ⁶⁵ Ms Frances Diver, Executive Director, Hospital and Health Service Performance Division, Department of Health, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 43.
- ⁶⁶ Monash University, *Victorian Injury Surveillance Unit*, viewed October 2011,
<http://www.monash.edu.au/miri/research/research-areas/home-sport-and-leisure-safety/visu/>.
- ⁶⁷ Monash University, *Victorian Injury Surveillance Unit*, viewed October 2011,
<http://www.monash.edu.au/miri/research/research-areas/home-sport-and-leisure-safety/visu/>.
- ⁶⁸ Bureau of Infrastructure, Transport and Regional Economics, *Safety Statistics*, Department of Infrastructure and Transport, viewed February 2012, <http://www.bitre.gov.au/statistics/safety/index.aspx>.
- ⁶⁹ Australian Bureau of Statistics, *3303.0 – Causes of Death, Australia, 2010*, Canberra,
<http://www.abs.gov.au/AUSSTATS/abs@.nsf/second+level+view?ReadForm&prodno=3303.0&viewtitle=Cause%20of%20Death,%20Australia~2010~Latest~20/03/2012&&tabname=Past%20Future%20Issues&prodno=3303.0&issue=2010&num=&view=&>.
- ⁷⁰ Berry JG & JE Harrison, *Serious injury due to land transport accidents, Australia, 2005-06*, Injury Research and Statistics Series No. 42, Australian Institute of Health and Welfare, Canberra, 2008, p. 47.

- ⁷¹ Mr Tony Walker, General Manager, Regional Services, Ambulance Victoria, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 744.
- ⁷² Correspondence from Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, 22 December 2011.
- ⁷³ Gibson J, *Road Fatality Review Panel: Do we count it or not?*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011, p. 2.
- ⁷⁴ Victorian Auditor-General, *Motorcycle and Scooter Safety Programs*, Melbourne, February 2011, p. 6.
- ⁷⁵ Victorian Government Health Information, *Victorian State Trauma System - Terms of Reference*, October 2010, viewed March 2012 <http://www.health.vic.gov.au/trauma/stc-tor.htm>.
- ⁷⁶ Correspondence from Ms Samantha Cockfield, Manager, Road Safety, Transport Accident Commission, 23 December 2011; Deputy Commissioner Kieran Walshe, Regional and Road Policing, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 24.
- ⁷⁷ Mr Richard Wadsworth, Statewide Recreation and Tourism Coordinator, Department of Sustainability and Environment, *Transcript of Evidence*, Melbourne, 17 October 2011, pp. 80-81.
- ⁷⁸ Ms Jennifer Rebeiro, Acting Group Manager, Operations System Support Division, Victoria Police, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 715.
- ⁷⁹ ⁷⁹ Deloitte Touche Tohmatsu, *Draft – data exploration for the Road Safety Executive Group – Phase 1 Report*, for the Transport Accident Commission, 15 February 2012, Appendix A current sharing state matrix diagram, p. 12.
- ⁸⁰ Ms Samantha Cockfield, Acting Senior Manager, Road Safety and Marketing, Transport Accident Commission, 22 February 2012.
- ⁸¹ Correspondence from Mr Gary Liddle, Chief Executive, VicRoads, 24 February 2012.
- ⁸² Mr Peter Schofield, Manager, Road Safety Strategy and Community Programs, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 658.
- ⁸³ Ms Frances Diver, Executive Director, Hospital and Health Service Performance Division, Department of Health, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 37.
- ⁸⁴ Mr Robert Toscano, Director, Honda Australia Motorcycle and Power Equipment, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 112.
- ⁸⁵ Mr John Buskes, Chairman, Motorcycle Industry Division, Victorian Automobile Chamber of Commerce, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 222.
- ⁸⁶ Australian Bureau of Statistics, *1520.0 - ABS Data Quality Framework, May 2009*, viewed July 2012, <http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/1520.0Main%20Features2May%202009?opendocument&tabname=Summary&prodno=1520.0&issue=May%202009&num=&view>.
- ⁸⁷ Australian Bureau of Statistics, *1520.0 - ABS Data Quality Framework, May 2009*, viewed July 2012, <http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/1520.0Main%20Features2May%202009?opendocument&tabname=Summary&prodno=1520.0&issue=May%202009&num=&view>.
- ⁸⁸ Australian Bureau of Statistics, *1520.0 - ABS Data Quality Framework, May 2009*, viewed July 2012, <http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/1520.0Main%20Features2May%202009?opendocument&tabname=Summary&prodno=1520.0&issue=May%202009&num=&view>.
- ⁸⁹ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (a).
- ⁹⁰ Honda Australia Motorcycle and Power Equipment Pty Ltd, *Submission to the Inquiry*, September 2011, Term of Reference (a).
- ⁹¹ Judge Jennifer Coate, State Coroner, Coroners Court of Victoria, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 59.
- ⁹² Ms Jennifer Rebeiro, Acting Group Manager, Operations System Support Division, Victoria Police, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 715.

⁹³ Acting Senior Sergeant Shane Howard, Victoria Police, *Transcript of Evidence*, Geelong, 15 November 2011, p. 343.

⁹⁴ Mr Michael Nieuwesteeg, Research Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 691.

⁹⁵ Acting Sergeant John Lee, Victoria Police, *Transcript of Evidence*, Geelong, 15 November 2011, p.344.

⁹⁶ Mr Michael Nieuwesteeg, Research Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 694.

⁹⁷ Ms Liz de Rome, Principal Consultant and Managing Director, LdeR Consulting, *Meeting*, Perth, 5 November 2011, p. 10.

⁹⁸ Ms Frances Diver, Executive Director, Hospital and Health Service Performance Division, Department of Health, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 39; Commander Trevor Carter, Office of Deputy Commissioner, Regional and Road Policing, State Policing Office, Victoria Police, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 719.

⁹⁹ Sergeant Ross Humphrey, Victoria Police, *Transcript of Evidence*, Ballarat, 16 November 2011, pp. 377, 380–381.

¹⁰⁰ Mr Michael Nieuwesteeg, Research Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 692.

¹⁰¹ Mr Michael Nieuwesteeg, Research Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 692.

¹⁰² Mr Daryl Townsend, Chairman, Easter Region Motorcycle Working Party, *Transcript of Evidence*, Bairnsdale, 14 December 2011, p. 608.

¹⁰³ Mr Ray Winn, Director, Performance Audit, Victorian Auditor-General's Office, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 17.

¹⁰⁴ VicRoads, *Submission to the Inquiry*, September 2011, pp. 33-34.

¹⁰⁵ Cassell E, Clapperton A, O'Hare M, & Congiu M, *On- and off-road motorcycling injury in Victoria*, Hazard Journal, no. 64, Spring 2006, p. 16.

¹⁰⁶ Mr Ray Winn, Director, Performance Audit, Victorian Auditor-General's Office, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 17.

¹⁰⁷ Deputy Commissioner Kieran Walshe, Regional and Road Policing, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 24.

¹⁰⁸ Mr Richard Wadsworth, Statewide Recreation and Tourism Coordinator, Department of Sustainability and Environment, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 85.

¹⁰⁹ Mr David Hogan, Team Leader, Coroners Prevention Unit, Coroners Court of Victoria. *Transcript of Evidence*, Melbourne, 17 October 2011, p. 55.

¹¹⁰ Department of Sustainability and Environment, *Submission to the Inquiry*, October 2011, Term of Reference (a).

¹¹¹ Dr Mike Taylor, Emergency Department Director, Albury Wodonga Health, *Transcript of Evidence*, Wodonga, 30 November 2011, pp. 484-485.

¹¹² Greig K, Haworth N & Nielson, *The suitability of current crash databases for analysis of motorcycle crashes*, Report No. 08/02, Royal Automobile Club of Victoria, Noble Park, February 2008, p. 17.

¹¹³ Greig K, Haworth N & Nielson, *The suitability of current crash databases for analysis of motorcycle crashes*, Report No. 08/02, Royal Automobile Club of Victoria, Noble Park, February 2008, p. 25.

¹¹⁴ Donaldson B, *Submission to the Inquiry*, July 2011, Term of Reference (a).

¹¹⁵ Motorcycle Motion, *Submission to the Inquiry*, July 2011, p. 2.

¹¹⁶ Mr Michael Nieuwesteeg, Research Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 692.

¹¹⁷ Deloitte Touche Tohmatsu, *Draft – data exploration for the Road Safety Executive Group – Phase 1 Report*, for the Transport Accident Commission, 15 February 2012, Appendix A current sharing state matrix diagram, p. 12.

- ¹¹⁸ Mr Michael Nieuwesteeg, Research Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 692.
- ¹¹⁹ Senior Sergeant Jamie Chester, Road Policing Strategy Division, Victoria Police, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 729.
- ¹²⁰ Mr Michael Nieuwesteeg, Research Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 692.
- ¹²¹ Mr Peter Schofield, Manager, Road Safety Strategy and Community Programs, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 659.
- ¹²² Mr Richard Wadsworth, Statewide Recreation and Tourism Coordinator, Department of Sustainability and Environment, *Transcript of Evidence*, Melbourne, 17 October 2011, pp. 80–81.
- ¹²³ Mr Roger Pitt, Trail Bike Project Manager, Department of Sustainability and Environment, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 87.
- ¹²⁴ Superintendent Neil Paterson, Intelligence and Covert Support Division, Victoria Police, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 721.
- ¹²⁵ Mr David Hogan, Team Leader, Coroners Prevention Unit, Coroners Court of Victoria, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 60.
- ¹²⁶ Mr David Hogan, Team Leader, Coroners Prevention Unit, Coroners Court of Victoria, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 60.
- ¹²⁷ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 657.
- ¹²⁸ Mr Robert Allen, Public Officer, RoadSafe North East, *Transcript of Evidence*, Wangaratta, 29 November 2011, p. 428.
- ¹²⁹ Mr Peter Schofield, Manager, Road Safety Strategy and Community Programs, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 658.
- ¹³⁰ Newland R, *Submission to the Inquiry*, July 2011, p. 4.
- ¹³¹ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 9.
- ¹³² Greig K, Haworth N & Nielson, *The suitability of current crash databases for analysis of motorcycle crashes*, Report No. 08/02, Royal Automobile Club of Victoria, Noble Park, February 2008, p. 14.
- ¹³³ Ms Jennifer Rebeiro, Acting Group Manager, Operations System Support Division, Victoria Police, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 715.
- ¹³⁴ Professor Russell Gruen, Head, Trauma Quality Assurance, Alfred Health, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 157.
- ¹³⁵ Acting Sergeant Ralph Turner, Victoria Police, *Transcript of Evidence*, Bairnsdale, 14 December 2011, p. 588.
- ¹³⁶ Victorian Automobile Chamber of Commerce, *Submission to the Inquiry*, September 2011, pp. 11, 15.
- ¹³⁷ Independent Riders' Group, *Submission to the Inquiry*, August 2011, p. 2.
- ¹³⁸ Newland R, *Submission to the Inquiry*, July 2011, p. 4.
- ¹³⁹ Mr Rob Smith, Motorcycling Australia, *Transcript of Evidence*, Geelong, 15 November 2011, p. 311; Mr Michael Nieuwesteeg, Research Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 691; Mr Daryl Townsend, Chairman, Eastern Region Motorcycle Working Party, *Transcript of Evidence*, Bairnsdale, 14 December 2011, p. 601; Superintendent Neil Paterson, Victoria Police, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 716.
- ¹⁴⁰ Mr Daryl Townsend, Chairman, Eastern Region Motorcycle Working Party, *Transcript of Evidence*, Bairnsdale, 14 December 2011, p. 602.
- ¹⁴¹ Mr Rob Smith, Manager, Australian Riders' Division, Motorcycling Australia, *Transcript of Evidence*, Geelong, 15 November 2011, p. 310.

¹⁴² Sergeant Cameron Roberts, Victoria Police, *Transcript of Evidence*, Wodonga, 30 November 2011, p. 481.

¹⁴³ Professor Mark Stevenson, Director, Monash University Accident Research Centre, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 640; Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 14.

¹⁴⁴ Superintendent Neil Paterson, Intelligence and Covert Support Division, Victoria Police, *Transcript of Evidence*, Melbourne, 7 March 2012, pp. 716–717.

¹⁴⁵ Senior Sergeant David Watson, Victoria Police, *Transcript of Evidence*, Traralgon, 13 December 2011, p. 552.

¹⁴⁶ Christie R, *Analysis of involvement of scooters in crashes and their common crash characteristics*, for VicRoads, June 2008, pp. 52–53.

¹⁴⁷ Christie R, *Analysis of involvement of scooters in crashes and their common crash characteristics*, for VicRoads, June 2008, pp. 52–53.

¹⁴⁸ Greig K, Haworth N & Nielson, *The suitability of current crash databases for analysis of motorcycle crashes*, Report No. 08/02, Royal Automobile Club of Victoria, Noble Park, February 2008, p. 29.

¹⁴⁹ Ms Frances Diver, Executive Director, Hospital and Health Service Performance Division, Department of Health, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 41.

¹⁵⁰ Mr Tony Walker, General Manager, Regional Services, Ambulance Victoria, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 741.

¹⁵¹ VicRoads, *Guidelines for reporting and Classifying Road vehicle Accidents*, 1987, provided at public hearing, 6 March 2012, Section 6; Correspondence from Mr Garry Liddle, Chief Executive, VicRoads 24 February 2012.

¹⁵² VicRoads, *Guidelines for Reporting and Classifying Road vehicle Accidents*, 1987, provided at public hearing, 6 March 2012, Section 6; Correspondence from Mr Garry Liddle, Chief Executive, VicRoads 24 February 2012.

¹⁵³ Alfred Health, *Submission to the Inquiry*, September 2011, p. 9.

¹⁵⁴ Bureau of Infrastructure, Transport and Regional Economics, *Road deaths in Australia 1925–2008*, Information sheet 38, Department of Infrastructure, Transport, Regional Development and Local Government, Canberra, 2008, p. 7.

¹⁵⁵ Bureau of Infrastructure, Transport and Regional Economics, *Road Deaths Australia May 2011*, Department of Infrastructure, Transport, Regional Development and Local Government, Canberra, 2011, p. 8.

¹⁵⁶ Bureau of Infrastructure, Transport and Regional Economics, *Road Deaths Australia May 2011*, Department of Infrastructure, Transport, Regional Development and Local Government, Canberra, 2011, p. 8.

¹⁵⁷ Correspondence from Deputy Commissioner Kieran Walshe, Regional and Road Policing, Victoria Police, 16 February 2012; Correspondence from Mr Gary Liddle, Chief Executive, VicRoads, 24 February 2012.

¹⁵⁸ Alfred Health, *Submission to the Inquiry*, September 2011, p. 9; Ms Frances Diver, Executive Director, Hospital and Health Service Performance Division, Department of Health, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 37.

¹⁵⁹ Ms Frances Diver, Executive Director, Hospital and Health Service Performance Division, Department of Health, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 37.

¹⁶⁰ Correspondence from Mr Garry Liddle, Chief Executive, VicRoads 24 February 2012.

¹⁶¹ Correspondence from Deputy Commissioner Kieran Walshe, Regional and Road Policing, Victoria Police, 16 February 2012.

¹⁶² Correspondence from Mr Greg Sassella, Chief Executive Officer, Ambulance Victoria, 2 March 2012, p. 3.

¹⁶³ Victoria State Trauma System, *Definition of Major Trauma*, Department of Health, viewed March/April 2012, <http://www.health.vic.gov.au/trauma/definition.htm>.

¹⁶⁴ Henley G & Harrison J, *Trends in serious injury due to land transport accidents, Australia 2000–01 to 2007–08*, Injury Research and Statistics Series No. 56, Australian Institute of Health and Welfare, Canberra, April 2011, <http://www.aihw.gov.au/publication-detail/?id=10737418595>, pp. 85–86.

- ¹⁶⁵ Ms Frances Diver, Executive Director, Hospital and Health Service Performance Division, Department of Health, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 41.
- ¹⁶⁶ Correspondence from Gary Liddle, Chief Executive, VicRoads, 24 February 2012; Correspondence from Deputy Commissioner Kieran Walshe, Regional and Road Policing, Victoria Police, 15 February 2012.
- ¹⁶⁷ Senior Sergeant David Watson, Victoria Police, *Transcript of Evidence*, Traralgon, 13 December 2011, p. 551.
- ¹⁶⁸ Deputy Commissioner Kieran Walshe, Regional and Road Policing, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 24.
- ¹⁶⁹ Senior Sergeant David Watson, Victoria Police, *Transcript of Evidence*, Traralgon, 13 December 2011, p. 551.
- ¹⁷⁰ Mr Peter Schofield, Manager, Road Safety Strategy and Community Programs, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 664.
- ¹⁷¹ Department of Health, *Submission to the Inquiry*, October 2011.
- ¹⁷² Correspondence from Ms Angela Clapperton, Manager, Data Systems, Data Requests and Reports, Victorian Injury Surveillance Unit (VISU), Monash Injury Surveillance Unit, 25 July 2012.
- ¹⁷³ Berry JG & JE Harrison, *Serious injury due to land transport accidents, Australia, 2005-06*, Injury Research and Statistics Series No. 42, Australian Institute of Health and Welfare, Canberra, 2008, p. 50.
- ¹⁷⁴ Australian Transport Safety Bureau, *Mortality and morbidity in Australia due to Transport Accidents*, Canberra, 2004.
- ¹⁷⁵ Greig K, Haworth N & Nielson, *The suitability of current crash databases for analysis of motorcycle crashes*, Report No. 08/02, Royal Automobile Club of Victoria, Noble Park, February 2008, p. 14.
- ¹⁷⁶ Australian Bureau of Statistics, *9208.0 – Survey of Motor Vehicle Use, Australia*, 12 months ended October 2010, Canberra, 2011.
- ¹⁷⁷ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Introduction.
- ¹⁷⁸ Ms Melinda Congiu, Manager, Road User Behaviour, Royal Automobile Club of Victoria, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 258.
- ¹⁷⁹ Transport Accident Commission, *New TAC campaign urges riders to reduce risks*, Media release, 20th October 2009,
<http://www.tac.vic.gov.au/jsp/content/NavigationController.do?arealD=23&tierID=1&navID=63CC12CD7F00000101A5D19311EC6AC2&navLink=null&pageID=1897>.
- ¹⁸⁰ Cassell E, Clapperton A, O'Hare M, & Congiu M, *On- and off-road motorcycling injury in Victoria*, Hazard Journal, no. 64, Spring 2006, p. 15.
- ¹⁸¹ RoadSafe Eastern Victoria, *Motorcycle Crash Data – Fact Sheet*, viewed March 2012,
http://bairnsdaledistricts.ulysesclub.org/Portals/vicbair/documents/Eastern_Bike_Fact_sheet.pdf.
- ¹⁸² Christie R & Harrison W, *Investigation of motorcycle crash patterns for riders aged 17-25 in NSW and development for countermeasure strategies – A report to the Motorcycle Accident Authority of NSW*, RSCS Services, Sydney, December 2001, p. i.
- ¹⁸³ Transport and Road Safety Research Group, University of New South Wales, *Submission to the Inquiry*, October 2011.
- ¹⁸⁴ Henley G & Harrison J, *Serious injury due to land transport accidents, Australia 2006-07*, Injury Research and Statistics Series No. 53, Australian Institute of Health and Welfare, Canberra, December 2009,
<http://www.aihw.gov.au/publication-detail/?id=6442468321>, p. vi.
- ¹⁸⁵ Office of Road Safety WA, *Submission to the Inquiry*, June 2011, p. 7.
- ¹⁸⁶ Transport Accident Commission, *New TAC campaign urges riders to reduce risks*, Media release, 20th October 2009,
<http://www.tac.vic.gov.au/jsp/content/NavigationController.do?arealD=23&tierID=1&navID=63CC12CD7F00000101A5D19311EC6AC2&navLink=null&pageID=1897>.

- ¹⁸⁶ Mr Michael Nieuwesteeg, Research Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 693.
- ¹⁸⁷ Mr Michael Nieuwesteeg, Research Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 693.
- ¹⁸⁸ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, pp. 660–661.
- ¹⁸⁹ Royal Automobile Club of Victoria, *Submission to the Inquiry*, September 2011, p. 1.
- ¹⁹⁰ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 676.
- ¹⁹¹ Mr Rob Salvatore, Victorian Motorcycle Council, *Transcript of Evidence*, Melbourne, 19 October 2011, pp. 270–271.
- ¹⁹² Dr Trevor Allen, Research Fellow, Monash University Accident Research Centre, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 645.
- ¹⁹³ Professor Mark Stevenson, Director, Monash University Accident Research Centre, *Transcript of Evidence*, Melbourne, 6 March, pp. 645–646.
- ¹⁹⁴ ABS, *Survey of Motor Vehicle Use*, Canberra, 31 October 2010, p. 12.
- ¹⁹⁵ ABS, *Survey of Motor Vehicle Use*, Canberra, 31 October 2010, p. 12.
- ¹⁹⁶ ABS, *Survey of Motor Vehicle Use*, Canberra, 31 October 2010, p. 25.
- ¹⁹⁷ ABS, *Survey of Motor Vehicle Use*, Canberra, 31 October 2010, p. 30.
- ¹⁹⁸ Greig K, Haworth N & Nielson, *The suitability of current crash databases for analysis of motorcycle crashes*, Report No. 08/02, Royal Automobile Club of Victoria, Noble Park, February 2008, p. 24.
- ¹⁹⁹ Ms Liz de Rome, Principal Consultant and Managing Director, LdeR Consulting, *Meeting*, Perth, 5 November 2011, p. 4.
- ²⁰⁰ Greig K, Haworth N & Nielson, *The suitability of current crash databases for analysis of motorcycle crashes*, Report No. 08/02, Royal Automobile Club of Victoria, Noble Park, February 2008, p. 24.
- ²⁰¹ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 8.
- ²⁰² Deputy Commissioner Kieran Walshe, Regional and Road Policing, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 21.
- ²⁰³ Deputy Commissioner Kieran Walshe, Regional and Road Policing, *Parliamentary Inquiry Motorcycle Safety*, Presentation, 17 October 2011, *2008-2010 Motorcycle Trauma*.
- ²⁰⁴ Deighton-Smith R, *Submission to the Inquiry*, 22 July 2011, p. 1.
- ²⁰⁵ Alfred Health, *Submission to the Inquiry*, September 2011, p. 9.
- ²⁰⁶ Alfred Health, *Submission to the Inquiry*, September 2011, p. 9.
- ²⁰⁷ Mr David Hogan, Team Leader, Coroners Prevention Unit, Coroners Court of Victoria, *Transcript of Evidence*, 17 October 2011, pp. 54–55.
- ²⁰⁸ Mikocka-Walus A, Gabbe B, Cameron P, *Motorcycle-related major trauma: On-road versus off-road incidence and profile of cases*, Emergency Medicine Australasia, vol. 22 no. 5, 2010, p. 475.
- ²⁰⁹ Ms Alana McCallum, Community Road Safety Adviser, VicRoads, *Transcript of Evidence*, Traralgon, 13 December 2012, p. 573.
- ²¹⁰ VicRoads, *Regional Services*, 5 March 2010, viewed March 2012,
<http://www.vicroads.vic.gov.au/Home/AboutVicRoads/OrganisationalStructure/RegionalServices.htm>.
- ²¹¹ Mr Daryl Townsend, Chairman, Eastern Region Motorcycle Working Party, *Transcript of Evidence*, Bairnsdale, 14 December 2011, p. 602.

- ²¹² Mr Stuart Strickland, Industry Consultant, Victorian Automobile Chamber of Commerce, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 227.
- ²¹³ Mr Rex Deighton Smith, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 280.
- ²¹⁴ Australian Transport Safety Bureau, *Cross modal safety comparisons*, Discussion paper, 1 January 2005, p. 1, http://www.atsb.gov.au/media/36229/cross_modal_safety_comparisons.pdf.
- ²¹⁵ Australian Transport Safety Bureau, *Cross modal safety comparisons*, Discussion paper, 1 January 2005, p. 1, http://www.atsb.gov.au/media/36229/cross_modal_safety_comparisons.pdf.
- ²¹⁶ Australian Transport Safety Bureau, *Cross modal safety comparisons*, Discussion paper, 1 January 2005, p. 1, http://www.atsb.gov.au/media/36229/cross_modal_safety_comparisons.pdf.
- ²¹⁷ Australian Transport Safety Bureau, *Cross modal safety comparisons*, Discussion paper, 1 January 2005, p. 8, http://www.atsb.gov.au/media/36229/cross_modal_safety_comparisons.pdf.
- ²¹⁸ Australian Transport Safety Bureau, *Cross modal safety comparisons*, Discussion paper, 1 January 2005, p. 8, http://www.atsb.gov.au/media/36229/cross_modal_safety_comparisons.pdf.
- ²¹⁹ Greig K, Haworth N & Nielson, *The suitability of current crash databases for analysis of motorcycle crashes*, Report No. 08/02, Royal Automobile Club of Victoria, Noble Park, February 2008, p. 22.
- ²²⁰ S. 87(1)(d) *Transport Integration Act 2010* (Vic).
- ²²¹ Associate Professor Susan Liew, Director, Orthopaedic Surgery, The Alfred Hospital, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 684.
- ²²² Professor Mark Stevenson, Director, Monash University Accident Research Centre, *Transcript of Evidence*, Melbourne, 6 March, p. 643.
- ²²³ Greig K, Haworth N & Nielson, *The suitability of current crash databases for analysis of motorcycle crashes*, Report No. 08/02, Royal Automobile Club of Victoria, Noble Park, February 2008, p. 28; International Traffic Safety Data and Analysis Group, *Reporting on serious road traffic casualties –combining and using different data sources to improve understanding of non-fatal road traffic crashes*, International Transport Forum / Organisation for Economic Co-operation and Development, Paris, December 2011, p. 67; Watson A, McKenzie K & Watson B, *Priorities for developing and evaluating data quality characteristics of road crash data in Australia*, paper presented at the Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011, p. 2.
- ²²⁴ D'Elia A, Newstead S, *An enhanced Road Safety Information System for Western Australia*, Curtin-Monash Accident Research Centre, September 2011, p. iii.
- ²²⁵ Greig K, Haworth N & Nielson, *The suitability of current crash databases for analysis of motorcycle crashes*, Report No. 08/02, Royal Automobile Club of Victoria, Noble Park, February 2008, p. 25.
- ²²⁶ Honda Australia Motorcycle and Power Equipment, *Submission to the Inquiry*, September 2011, Term of Reference (a).
- ²²⁷ Mr Rex Deighton Smith, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 280.
- ²²⁸ Mr Tony Ellis, Ulysses Club, *Transcript of Evidence*, 19 October 2011, p. 298.
- ²²⁹ Ulysses Club, *Submission to the Inquiry*, September 2011, p. 2.
- ²³⁰ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 3.
- ²³¹ McAuliffe D, *Submission to the Inquiry*, July 2011, Statistics.
- ²³² Independent Riders' Group, *Submission to the Inquiry*, August 2011, p. 3.
- ²³³ Mr Tony Ellis, Ulysses Club, *Transcript of Evidence*, 19 October 2011, p. 299.
- ²³⁴ Always G & Poznanski J, *Fatal and serious injury motorcycle collisions attended by the major collision investigation group between May 2002 and April 2003*, Victoria Police, Melbourne, 2003, p. 4.
- ²³⁵ Mr Rob Salvatore, Victorian Motorcycle Council. *Transcript of Evidence*, Melbourne, 19 October 2011, pp. 269–270.
- ²³⁶ Mr Rex Deighton Smith, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 287.

²³⁷ Mr Des Pearson, Auditor-General, Victorian Auditor-General's Office, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 18.

²³⁸ Mr Richard Wadsworth, Statewide Recreation and Tourism Coordinator, Department of Sustainability and Environment , *Transcript of Evidence*, Melbourne, 17 October 2011, p. 85.

²³⁹ Superintendent Neville Taylor, Road Policing Operations and Investigation Division, Victoria Police, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 718.

²⁴⁰ Superintendent Neville Taylor, Road Policing Operations and Investigation Division, Victoria Police, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 717-8.

²⁴¹ World Health Organisation, *Global Status Report on Road Safety: Time for Action*, Geneva, 2009, pp.31–32; Organisation for Economic Co-operation and Development / International Transport Federation Transport Research Committee, *Workshop on Motorcycling Safety – Final Report*, 2008, Lillehammer, p. 39, <http://www.internationaltransportforum.org/jtrc/safety/Lillehammer2008/Lillehammer08FinalReport.pdf>

²⁴² International Traffic Safety Data and Analysis Group, *Reporting on serious road traffic casualties –combining and using different data sources to improve understanding of non-fatal road traffic crashes*, International Transport Forum / Organisation for Economic Co-operation and Development, Paris, December 2011, p 13.

²⁴³ Department of Infrastructure, Transport, Regional Development and Local Government, *Motorcycle and Scooter Safety Summit: The road ahead 10-11 April 2008*, March 2009, p.8.

²⁴⁴ Parliament of Victoria Road Safety Committee, *Inquiry into Crashes Involving Roadside Objects*, Parliament of Victoria, Melbourne, March 2005, p. viii.

²⁴⁵ Parliament of Victoria Road Safety Committee, *Inquiry into driver distraction*, Parliament of Victoria, Melbourne, August 2006, p. 24.

Chapter 3 at a glance

Overview

This chapter analyses motorcycle trauma since the early 2000s and is comprised of two sections. In the first, the Committee investigates trends for the following trauma categories: fatalities, emergency presentations, admissions, and serious injury/major trauma. Comparisons are made between trauma trends and usage measures such as licences and registrations over time and population growth to ascertain whether there has been a change in the rate of motorcycle trauma.

The second section focuses on more specific trauma trends such as the gender and age profile of injured motorcyclists, the time, location and day on which trauma occurs, the licence status of injured motorcyclists and the types of motorcycles involved in trauma crashes.

Key findings

Fatalities for motorcyclists have decreased since 2001, and have generally stayed within a range of 43 to 49 deaths since 2005. There have been large reductions in several intervening years since 2001 but these have not been sustained.

In terms of emergency presentations and admissions, the trend has seen an overall increase since 2000-01. The high point for motorcycle presentations was reached in 2006-07, with a substantial decline since then. A similar outcome was identified with hospital admissions which peaked in 2007-08 and have since declined.

Findings for the serious injuries and major trauma data, which are collected by the Australian Institute of Health and Welfare (AIHW) and Victorian State Trauma Outcome Registry and Monitoring group (VSTORM) respectively, differ. The AIHW data shows an increase in the number of seriously injured motorcyclists, while the Victorian State Trauma Registry data, compiled by VSTORM, suggests a decrease in the period from 2005 to 2010.

When compared against licence, registration and population statistics, the Committee found there has been a significant, sustained decrease in the rate of motorcycle trauma across the fatality, presentation and admission categories. However, the result for serious injuries has been mixed, with rates falling when compared with registration data, but increasing when compared against licences and population.

Overwhelmingly, motorcycle trauma involves male riders, who are fully licenced. Motorcyclists who present to hospital, or who are admitted, generally fall within the 16–29 and 30–49 age groups (for both males and females). Motorcycle fatalities generally involve riders aged above 40.

Motorcycle trauma is more likely to occur in Melbourne, and when it does, is evenly spread across the week, and at peak commuting times. In contrast, in regional Victoria trauma overwhelmingly occurs on weekends, between 10am and 4pm. Although there are significant data limitations, it appears that off-road motorcycles are involved in trauma more than on-road motorcycles, whilst scooters represent a very small proportion of admissions.

Recommendations

There are no recommendations relevant to this chapter.

CHAPTER 3: TRAUMA TRENDS OVER TIME

3.1 *Introduction*

Victoria has applied a concentrated focus over the past four decades on reducing road trauma and there have been significant reductions. These reductions have been attained through initiatives in training and licensing, education, enforcement, technology, design standards for vehicles and infrastructure and the introduction of road safety legislation. Accompanying these initiatives has been the use of trauma statistics and trends by government and road safety agencies to assess the success of road safety measures and to design new ones.

Generally, Victoria has seen a significant reduction in road fatalities and serious injuries.¹ Since the road toll was first recorded, the fatality rate has dropped from 1061 in 1971 to 288 in 2010, a reduction of 73%.² A similar reduction has been seen in serious injuries and hospital admissions. The level of reduction has varied between road user groups. Motorcyclists, including pillion passengers, have attracted scrutiny from academics and road safety agencies because they are said to be over-represented in trauma statistics and are more likely to be seriously injured than other road users. Analysing motorcycle trauma trends is important for informing our understanding of motorcycle safety and identifying road safety measures to improve motorcycle safety.

3.2 *Data*

In compiling this chapter, and recognising the issues identified in Chapter 2, data sources, figures and trends were cross-referenced against multiple data sources with the most objective, accurate data being used. The Committee assessed the quality, appropriateness and completeness of each data set provided to it. On the basis of the Committee's analysis of the data provided, which was subjected to clarifications and corrections, this chapter provides an overview of motorcycle trauma in Victoria. It should be noted that where the Committee was unable to satisfy itself as to the completeness and quality of available data it was not used.

Most of the data used in this chapter is derived primarily from hospital data. Admissions and presentations data are derived from the Victorian Admitted Episodes Database (VAED) and the Victorian Emergency Minimum Dataset (VEMD) which was compiled by the Victorian Injury Surveillance Unit (VISU) at Monash University. A similar approach was taken to fatalities. The Committee assessed fatality data from a range of sources including road safety agencies, the Bureau of Infrastructure, Transport and Regional Economics (BITRE) and then cross-checked these by analysing all Victorian coronial cases involving a motorcyclist or pillion passenger over the last 11 years.

In a number of sections where accurate data was unavailable or where the Committee had concerns about using the data, trauma trends are not discussed. Importantly, it should be noted that serious injury data that spanned a continuous period for analysis also posed a problem for the Committee.

There are two different data sets dealing with what may be termed serious injuries which in a sense compete with one another. Although the Committee has used both Victorian State Trauma Registry (VSTR) and Australian Institute of Health and Welfare (AIHW) data sets that deal with serious injuries posing a high threat to life or major trauma, analysis of trends is simply not possible due to a number of factors including gaps in the data and data availability.

3.3 Methodology

Motorcycle trauma is a general phrase referring to a number of trauma categories compiled in different data sets. Victorian road safety agencies, hospitals, Ambulance Victoria and the Department of Health (DoH) collect a range of motorcycle trauma statistics. These statistics can be analysed in a number of ways. They can be assessed on their own, over time, to identify changes in trauma numbers, or they can be analysed by comparing them against usage or exposure measures such as licences, registrations or population density over time to identify changes in trauma rates. There are advantages in comparing trauma data against other measures. The most important is that doing so can explain how motorcycle trauma has changed over time in a meaningful way that takes into account changes in the numbers of riders or the use of the motorcycle. The efficacy of taking such an approach was illustrated in the VicRoads submission:

It is important to consider that while the safety record of motorcyclists as measured by fatalities and injuries has lagged significantly behind the increasing safety of other road users, there has been a steady increase in motorcycle registrations over the last decade. This may increase the number of kilometres travelled and therefore [the] exposure of motorcycle riders.... Because of this increase in registrations and exposure, in order to gain a truer picture of the safety record of motorcycling ...it is useful to calculate the rate of fatal[ities] and [injuries] per 10,000 registered motorcycles.³

It has been suggested that using registered vehicles to assess changes over time may be more sensitive than analysing changes on the basis of licence rates^{*}. Admittedly, there are issues with relying on the registered vehicles rate. For example, some motorcyclists may present having been injured on an unregistered motorcycle. Further, it is likely that a proportion of motorcyclists own more than one registered motorcycle[†], which would again affect the accuracy of the rate. The extent to which these issues impact the analysis is difficult to assess. The Committee is of the view that the rate of emergency presentations per 10,000 registered motorcycles may provide a more useful basis for analysing long term presentation trends.

The Committee took a two staged approach to analysing motorcycle trauma. The first was to assess changes in trauma data, over time, for fatalities, emergency department presentations, admissions to hospital and serious or major injuries.

^{*} **Note:** This is due to the fact that there are almost double the numbers of motorcycle licences compared to registered motorcycles which means there are many riders who have a licence but do not have a motorcycle on which to ride. Conversely, it is said that presentation rates calculated on the basis of registered motorcycles may better reflect changes in this category of trauma because riders are generally injured on registered vehicles.

[†] **Note:** The extent to which this may impact the calculation of a presentation rate based on registered vehicles could not be confirmed by the Committee because databases holding this information do not provide for that level of analysis.

The second approach was to compare these changes against motorcycle licences, registrations, and Victorian population figures over the same time period. The reasoning for the Committee's approach was twofold: firstly, the Committee wanted to be able to measure absolute changes within each trauma category and then contextualise these figures by creating trauma rates based on exposure or usage data such as registrations. The second reason was to create a balanced view of motorcycle trauma, which was based on evidence suggesting that looking only at absolute changes could misrepresent motorcycle trauma.⁴

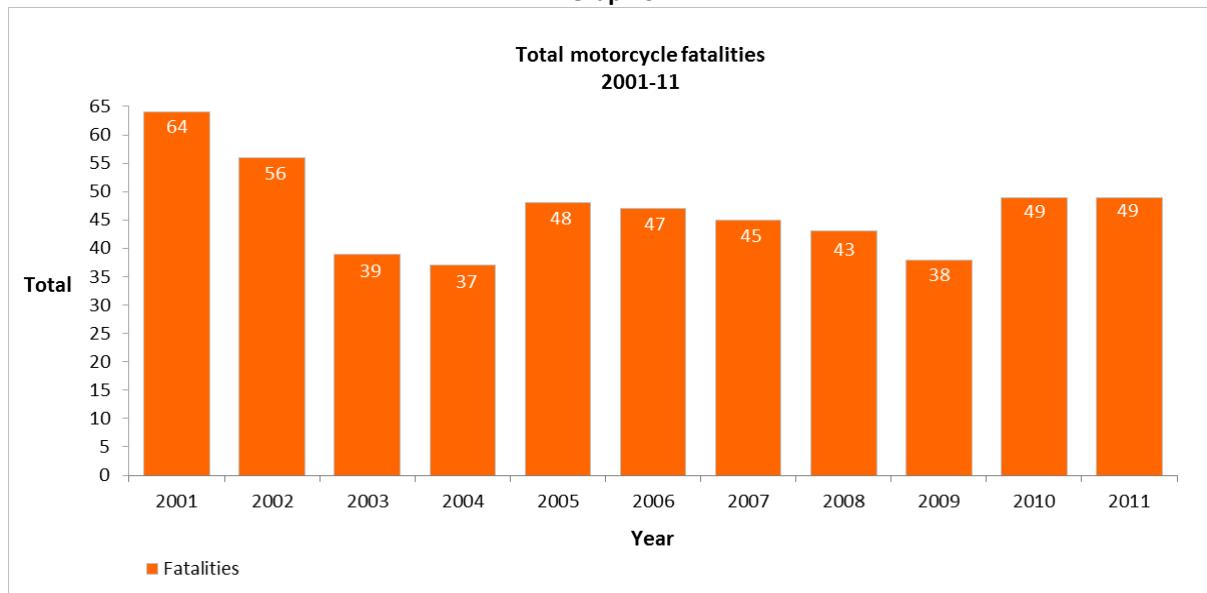
It is important to note the Committee did not use Vehicle Kilometres Travelled (VKT) to compare motorcycle trauma trends over time, due to the issues identified in Chapters 2 and 6. Further, due to the low number of pillion passengers injured or killed on motorcycles, pillion passengers have been incorporated within the motorcyclist data for each trauma category.

3.4 Trends in the rates of death or injury among motorcyclists

3.4.1 Fatalities

In the past two years, motorcycle rider fatalities in Victoria have been the third largest road user group in the overall road toll, with car drivers and passengers being first and second respectively.⁵ Since 2005, the general fatality trend for motorcyclists has remained largely static with the exception of 2009. Fatalities for motorcyclists for the period 2001 to 2011 are set out in graph 3.1. The highest yearly fatality toll for Victorians occurred in 2001, with 64 deaths and the lowest was in 2004 with 37.

Graph 3.1



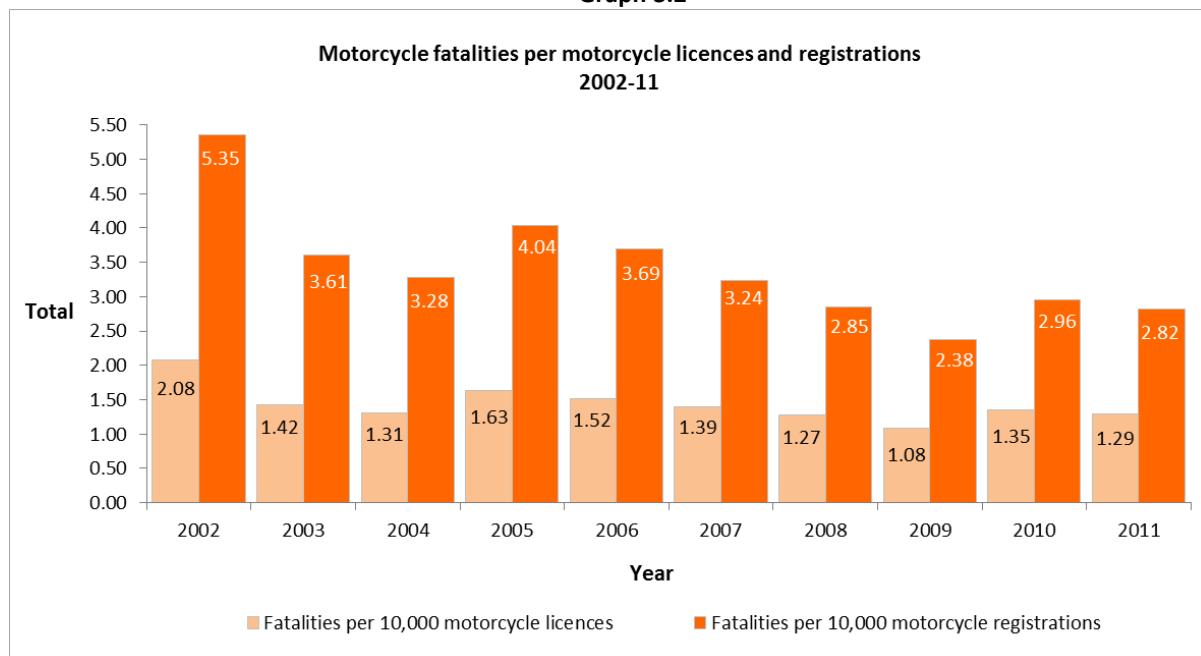
Source: Bureau of Infrastructure, Transport and Regional Economics (BITRE): *Road deaths Australia 2010 statistical summary*, Department of Infrastructure and Transport, Canberra Australia, 2011, p. 3); *Road deaths Australia 2011 statistical summary*, Department of Infrastructure and Transport, Canberra Australia, 2012, p. 3.

Graph 3.2 compares the number of fatalities with motorcycle licences (including learner permits) and motorcycle registrations. The rate of fatalities to licences has decreased over the period covered by the graph, which translates into a significant reduction in motorcycle fatalities. The rate of fatalities per 10,000 motorcycle licences from 2002 to 2011 decreased from 2.08 fatalities to 1.29. It should be noted, however, comparing fatalities to increases in licences needs to take into account that there are more licences than registered vehicles. This suggests that there are a proportion of licence holders who do not have a registered motorcycle to ride.

The downward trend in fatality rates for motorcycle licences is repeated with motorcycle registrations, for which the fatality rate decrease is substantial. When compared to VicRoads registrations, fatality statistics from BITRE and the ABS indicate a ratio of motorcycle fatalities per 10,000 registered motorcycles that has been steadily declining since 2001. The rate of change represents a reduction of just less than 50% in motorcycle fatalities per 10,000 registered motorcycles.

As with motorcycle licences, there are important considerations when using registration data as a comparator for trend analysis. In spite of those considerations, the reduction in the ratio of fatalities to registrations is clear and substantial.

Graph 3.2



Source: (1) Fatalities – *Bureau of Infrastructure, Transport and Regional Economics (BITRE): Road deaths Australia 2010 statistical summary*, Department of Infrastructure and Transport, Canberra Australia, 2011, p. 3; *Road deaths Australia 2011 statistical summary*, Department of Infrastructure and Transport, Canberra Australia, 2012, p. 3. (2) Correspondence from Mr James Holgate, Director, Road User Safety, VicRoads, 23 February 2012.

Graph 3.3 demonstrates the proportion of motorcycle fatalities to the general Victorian population over time. The ABS found the Victorian population over the period 2001 to 2011 steadily increased, from 4,854,100 to 5,574,500.⁶ When comparing the number of motorcycle fatalities over that period, the Committee identified a decrease in the number of motorcycle fatalities, from 13.18 deaths per million people to 8.79 deaths per million people, which is a significant reduction.

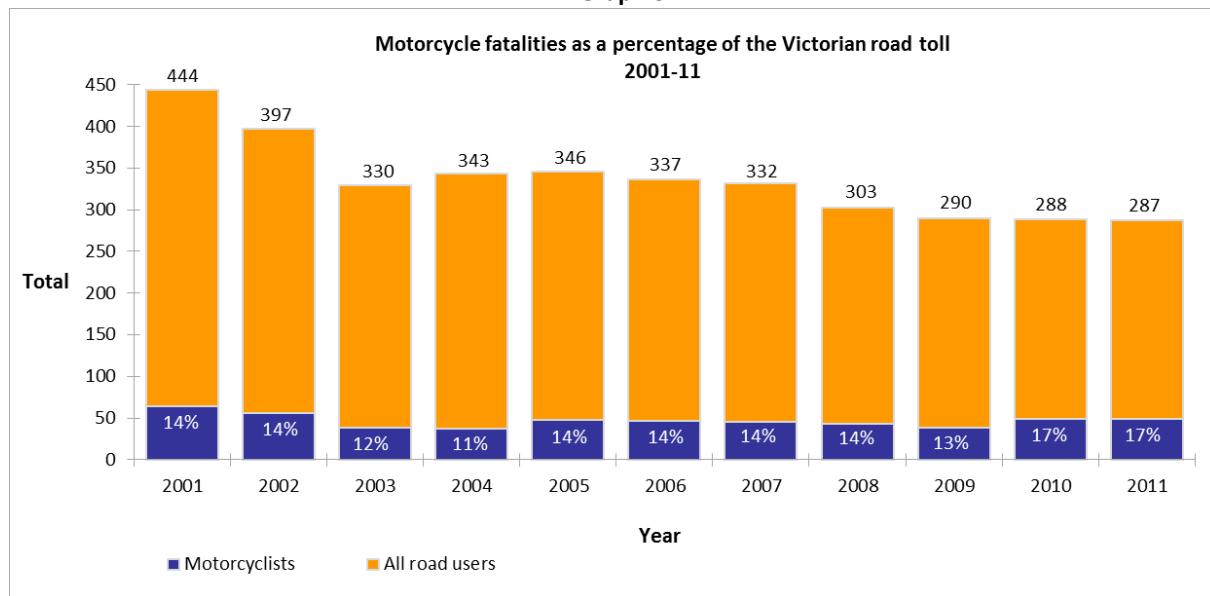
Graph 3.3



Source: (1) Fatalities – Bureau of Infrastructure, Transport and Regional Economics (BITRE): *Road deaths Australia 2010 statistical summary*, Department of Infrastructure and Transport, Canberra Australia, 2011, p. 22); *Road deaths Australia 2011 statistical summary*, Department of Infrastructure and Transport, Canberra Australia, 2012, p. 3; (2) Population – Australian Bureau of Statistics (ABS), 3101.0 - *Australian Demographic Statistics*, December Quarter years 2001- 2011⁷.

Motorcyclists represent a small proportion of the overall Victorian road toll, with the largest number of victims being those involved in passenger vehicle crashes. As can be seen in Graph 3.4 (following) the representation of motorcyclists in the road toll has not exceeded 17%. With the exception of the last two years in the data set, the involvement of motorcycles in fatal crashes has generally been static, accounting for 14% of the road toll in six of the past 10 years. The increase to 17% in the last two years is due to a decrease in the number of fatalities from other road users (predominantly in the number of driver and pedestrian fatalities)⁸ and two years of higher than average motorcycle fatalities (in 2010 and 2011 – see Graph 3.1). This change highlights the sensitivity of motorcycles fatalities statistics because small changes can have a dramatic effect on trends from year to year.

Graph 3.4



Source: Fatalities – Bureau of Infrastructure, Transport and Regional Economics (BITRE): *Road Deaths Australia 2010 statistical summary*, Department of Infrastructure and Transport, Canberra Australia, 2011, p. 2); *Road Deaths Australia 2011 statistical summary*, Department of Infrastructure and Transport, Canberra Australia, 2012, p. 2.

3.4.1.1 Findings

The Committee notes that motorcycle fatality rates based on registrations and licences in Victoria have decreased substantially since 2002 and consistently decreased over the last decade. These decreases have, to an extent, also been seen in fatality comparisons with the Victorian population, with a steady decrease from 2005 to 2009 and then an increase in 2010-2011 (shown in Graph 3.3). Similarly, there has been an increase in the proportion of motorcyclists in road fatalities which has occurred due to decreases in fatal crashes for other road users and an increase, in the last two years, for motorcyclists. Considering the proportion had not changed significantly over the preceding nine years, the more recent increase could be viewed as being an anomaly created by the sensitivities involved with motorcycle fatalities.

Although the fatality rates for registrations, licensing and population have shown marked decreases, the Committee notes that the number of fatalities as a category has remained largely unchanged since 2005 with an increase in 2010 and 2011. Motorcycle fatalities have varied from year to year. While the large decreases seen from 2001 to 2004 have not been sustained, conversely fatalities have not returned to the levels seen at the start of the decade.

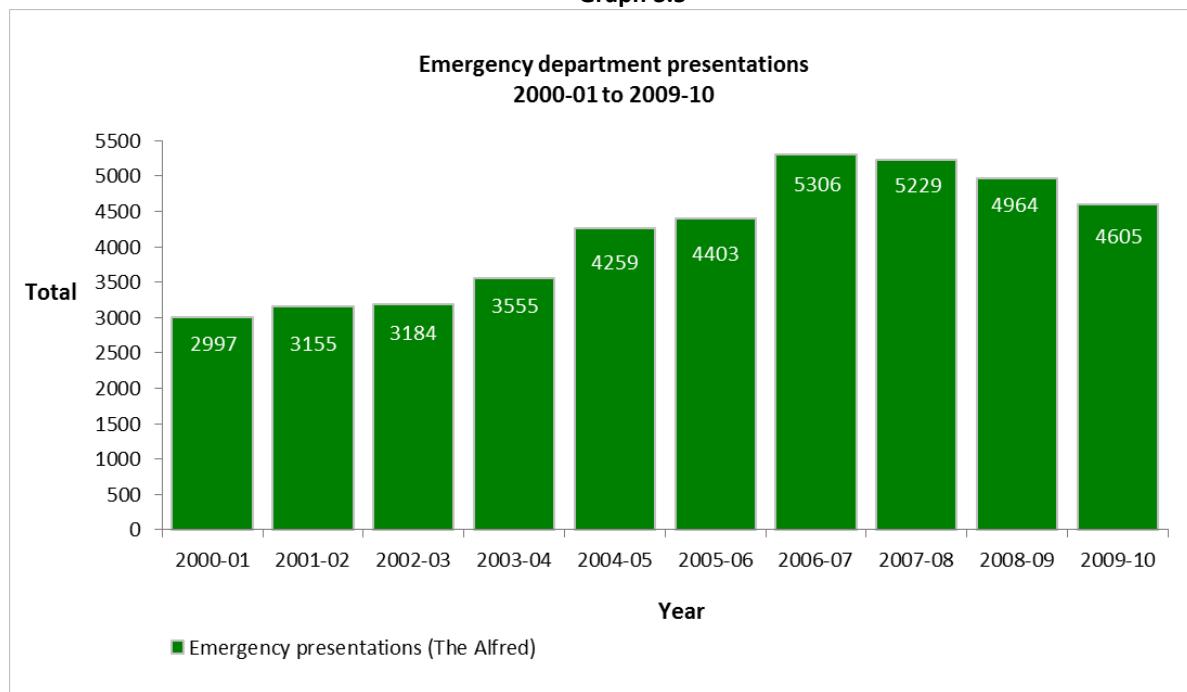
3.4.2 Emergency presentations

Injured motorcyclists are usually transferred, by ambulance, to emergency departments. However, some motorcyclists, particularly those that have minor injuries, will present to hospital without the aid of an ambulance. The severity of a motorcyclist's injury will determine which emergency department they are transferred to. Those most seriously injured will be transferred to one of Victoria's trauma centres, located at The Alfred Hospital, the Royal Melbourne Hospital and the Royal Children's Hospital.

The Committee analysed trends for emergency presentations of motorcyclists over the period 2000-01 to 2009-10. As with the fatalities, the Committee's analysis includes a comparative analysis using licence, registration and population measures.

The trend in Graph 3.5 indicates that emergency presentations increased from 2000-01 to 2006-07, before a steady reduction downward from 2007-08 on. The highest presentation total was experienced in 2006-07. In spite of the trend downwards from 2006, presentations remain at levels higher than those seen in the first part of the last decade. Although the data for 2010 shows that presentations remain above the levels seen in the period from 2001 to 2005, these increases have occurred at a time of rapid growth in motorcycle usage.

Graph 3.5



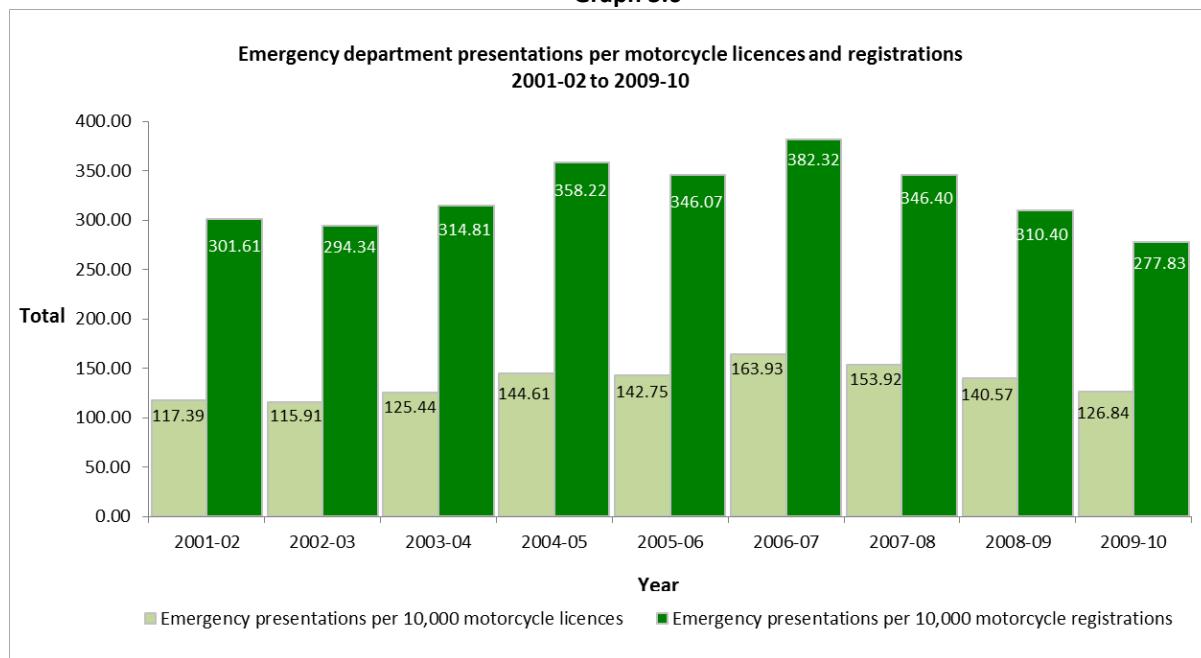
Source: Alfred Health, *Submission to the Inquiry*, September 2011, p. 10.

The number of emergency presentations per 10,000 motorcycle licences in Graph 3.6 (following) indicates presentation rates initially increased to 163.93 presentations per 10,000 licences in 2006-07, before steadily decreasing to a rate in 2009-10 of 126.84. In spite of that decline, the emergency presentations per 10,000 licences rate in 2009-10, remains above that seen in 2001-02. The Committee notes that if the current downward trend continues, the rate is likely to return to levels last seen at the start of the last decade.

Unlike the emergency presentations per licencing rate, which has remained above the 2001-02 level, the rate of emergency presentations per 10,000 registrations has fallen below the rate seen at the start of the last decade. In 2001-02, the rate for emergency presentations was 301.61, which subsequently increased to 382.32 in 2006-07 before starting a dramatic decline resulting in a rate at the end of the series below that seen in 2001.

The Committee notes that there are strong similarities in the trend for both licence and registration rates, with both categories reaching their highest rate in 2006-07 and decreasing from that year onwards. The key difference between the two is the reduction in the registration rate was more pronounced from 2007-08 on and, unlike the licence rate, continued falling to levels below those seen at the start of the data series in 2001-02.

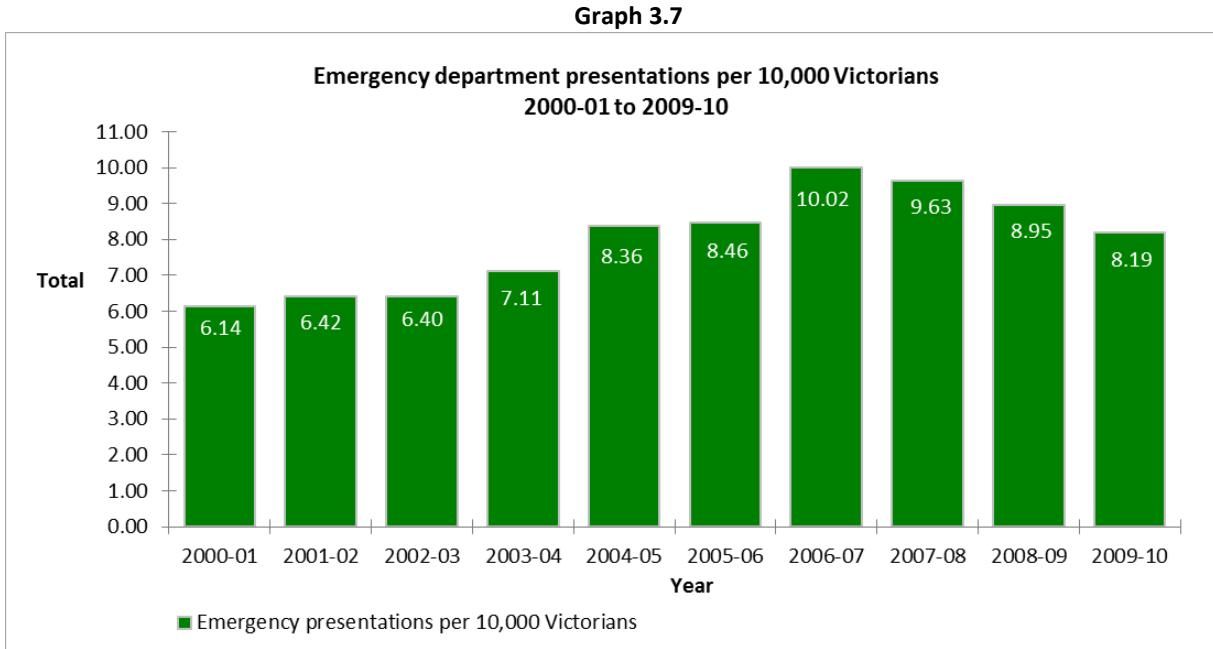
Graph 3.6*



Source: (1) Alfred Health, *Submission to the Inquiry*, September 2011, p. 10; (2) Correspondence from Mr James Holgate, Director, Road User Safety, VicRoads, 23 February 2012.

The proportion of emergency presentations for motorcyclists, when compared to the general Victorian population, has grown over time. The rate of presentations per 10,000 population set out in Graph 3.7 (following) clearly highlights this increase. There has been a similar trend in the presentations per population rate as that seen with licences and registrations – the worst year for emergency presentations was 2006-07 with a high of 10.02 presentations per 10,000 Victorians. However, since 2007-08, a steady decrease has occurred with the rate dropping below the 2004-05 rate. The lowest rate in the period analysed remains 2000-01, with 6.14 presentations per 10,000 Victorians.

* **Note:** The data for presentations is compiled by The Alfred Hospital on a financial year basis. However, the data provided by VicRoads for motorcycle licences and registrations is compiled on a calendar year basis. Although that means that the data sets do not fully align, the Committee felt this was the best possible representation of the available data. However, neither the VicRoads nor ABS registration data align with the financial year trauma statistics provided by The Alfred Hospital. As part of its analysis, the Committee also referred to ABS motorcycle registration data published in various iterations of the *Motor Vehicle Census*. For the purposes of consistency, the ABS data sets were not used as they differed significantly (they were lower) from the comparable VicRoads data, from which the ABS data is drawn.



Source: (1) Alfred Health, *Submission to the Inquiry*, September 2011, p. 10 (citing the VEMD); (2) Australian Bureau of Statistics (ABS), 3101.0 - *Australian Demographic Statistics*, June Quarter – years 2001–2011⁹.

3.4.2.1 Findings

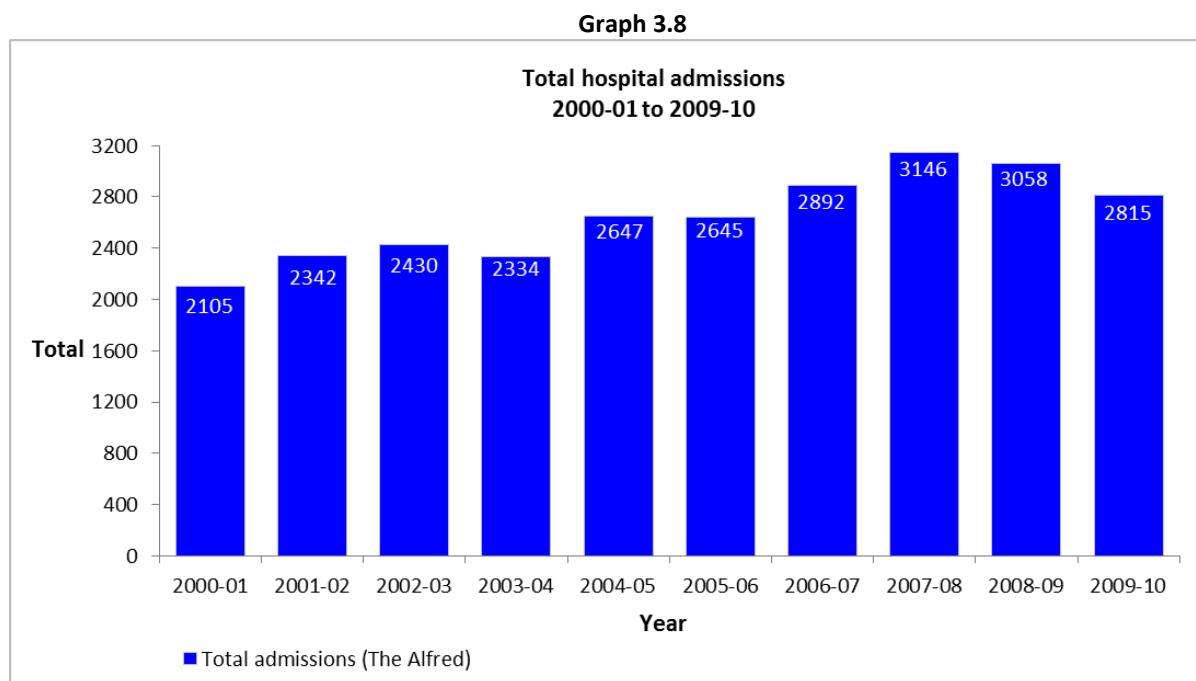
The number of motorcyclists presenting to hospital has increased over the last decade. That has also been the case with presentation rates based on comparisons with licences and population density. For both these measures and presentations generally, the data series records elevated levels for this trauma category in the period from 2001-02 (and 2000-01 for population) to 2009-10. In contrast, presentation rates on the basis of registered motorcycles have declined over the decade, with present rates being below those seen on 2000-01.

Interestingly, all three comparative rates and the presentations data share a striking similarity in terms of their trend. For each data set analysed in this section, the presentation rate steadily increased from 2000-01 for the population and 2001-02 for licences and registration rates up to 2006-07. However, all graphs exhibited a marked decrease beginning in 2007-08 which has continued, and in some cases accelerated, up to 2009-10. These decreases, for which the presentation rates per 10,000 registered motorcycles are the best example, indicate a steady reduction in this trauma category over several years.

3.4.3 Hospital admissions

Generally, injured motorcyclists who are admitted to hospital are considered to be more seriously injured than those who attend an emergency room only. However, it is important to note that an admission to hospital can include riders who have suffered a range of injuries, from those who are admitted for observation or broken bones to those admitted for life threatening injuries and paralysis. Irrespective of the range of injuries that result in an admission, this trauma category is seen as being important for measuring trends in motorcycle safety.

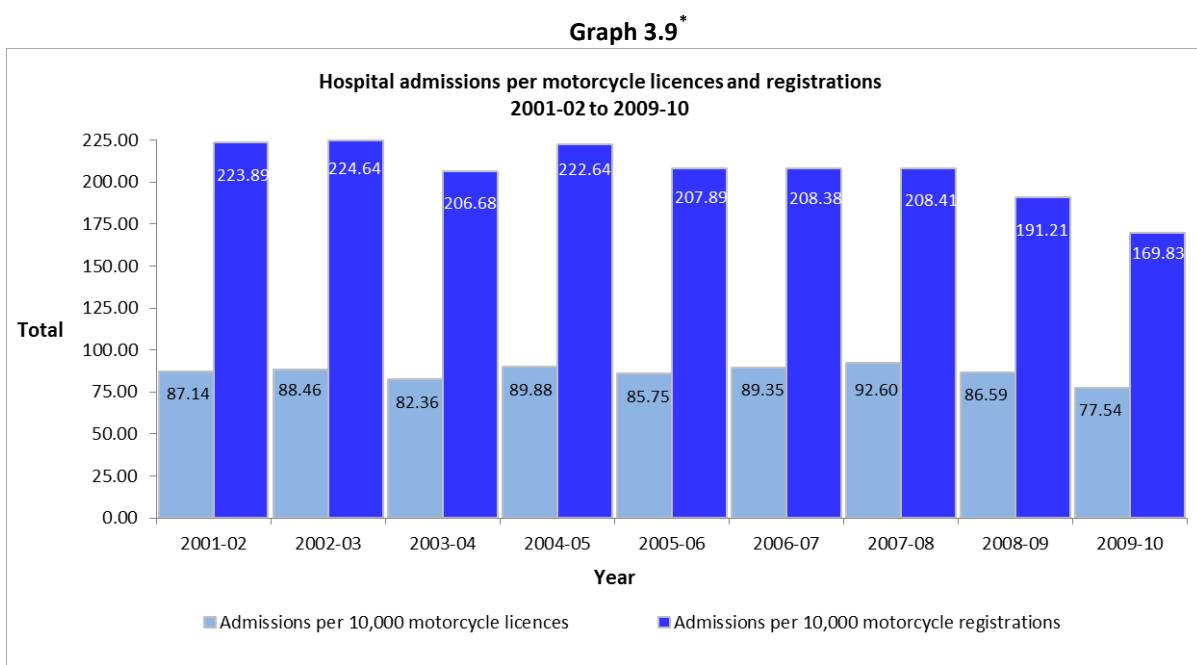
Graph 3.8 covers the total Victorian hospital admissions (for both public and private hospitals) in the period 2000-01 to 2009-10. The number of admissions in 2000-01 was 2105 motorcyclists, which by 2009-10 had increased to 2815 admissions representing a significant increase in the number of injured riders being admitted to hospitals. As with the fatality and presentation trauma categories, the trend for admissions has been one of consistent increases through the early part of the decade reaching the highest level in 2007-08. Since 2007-08 there has been a decrease, however admissions remain above the level of 2000-01 and the years prior to 2006-07.



Source: Alfred Health, *Submission to the Inquiry*, September 2011, p. 10.

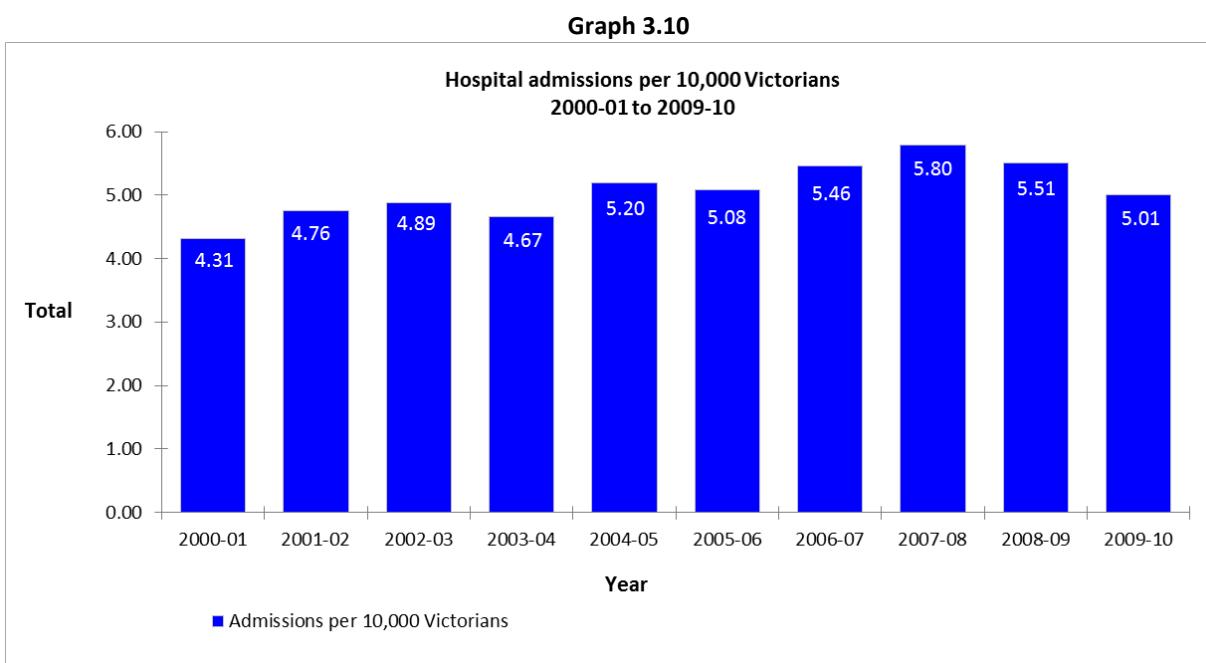
What is clearly evident in Graph 3.9 (following) is the reduction in admission rates, which drops from 87.14 admissions per 10,000 licences in 2001-02 to 77.54 in 2009-10. Unlike the trends seen in other data sets, movements in the rates of admission have been mixed, with changes occurring for almost every year and for reasons that are not apparent. That trend is particularly unusual considering the linear growth in motorcycle licences over the equivalent time period. It is notable that the years with the highest ratio of admissions to 10,000 licences were 2006-07 and 2007-08 (although 2004-05 also had a high ratio). That trend replicates those seen for the emergency presentations category.

The rate of admissions per 10,000 motorcycle registration mirrors that of licences, although the decrease has been sharper and more concentrated. The rate of admissions to motorcycle registrations has been decreasing since 2007-08, with every year since 2004-05 experiencing a rate below that seen in 2002-03. The decrease in the number of admissions per 10,000 registered motorcycles has been dramatic, dropping from 223.89 to 169.83 over a period of eight years.



Source: (1) Alfred Health, *Submission to the Inquiry*, September 2011, p. 10. (2) Correspondence from Mr James Holgate, Director, Road User Safety, VicRoads, 23 February 2012.

Despite the reductions in the rate of admissions for the registration and licence measures, the rate of motorcycle admissions per 10,000 population has increased rising from 4.31 in 2000-01 to 5.01 in 2009-10. Graph 3.10 clearly indicates a trend seen throughout this chapter; steady increases in the trauma rate up to 2007-08 before trends taper and then decline.



Source: (1) Alfred Health, *Submission to the Inquiry*, September 2011, p. 10; (2) Australian Bureau of Statistics (ABS), 3101.0 - *Australian Demographic Statistics*, June Quarter – years 2001-2011¹⁰.

* **Note:** The data for presentations is compiled by The Alfred Hospital on a financial year basis. However, the data provided by VicRoads for motorcycle licences and registrations is compiled on a calendar year basis.

3.4.3.1 Findings

Generally, the period covered in the admissions graphs reflect the trends seen in the fatality and emergency presentation sections. Admissions measured year to year and by comparison with the general population have increased in the period from 2000-01 to 2009-10. However, the rate of admissions when compared to registration and licences has decreased over the same period. On that basis, the Committee is able to conclude that there were less motorcyclists being admitted in 2009-10 following a crash than there were in 2000-01.

As with other categories of trauma discussed earlier in this chapter, the increases and decreases in admissions have generally been linear, rising from the start of the data series, before falling, sometimes below the rates seen in 2000-01. Those falls have usually begun in 2006-07 and continued through to the end of the data series.

3.4.4 Serious injuries and major trauma

The data collected by the AIHW separates motorcyclists into two crash categories: those injured in vehicle traffic crashes and those injured in other places such as off-road. The most recent data published by the AIHW covers the period from 2000-01 to 2008-09. In that period the number of motorcycle crashes arising in traffic and resulting in serious injury with a high threat to life increased from 257 to 438.¹¹

When compared with licence and registration data, the rate of motorcyclists injured with a high threat to life has changed over the period covered, has decreasing from 28.97 cases per 10,000 motorcycle registrations in 2001-02 to 27.90 in 2008-09.

However, the licence rate has shown a slight increase over the same period, with 12.40 cases per 10,000 licences in 2008-09 compared to 11.19 in 2001-02 and a low of 9.77 cases in 2003-04. Unlike other trauma category trends, the comparison of serious injuries with a high threat to life with licences has shown an unimpeded upwards trend. Nevertheless, the absence of more recent data makes it impossible to determine whether this increase has continued.

The Committee also assessed the AIHW rate of motorcyclists involved in crashes with serious injuries with a high threat to life on a population basis. The rate of motorcyclists captured in this category of trauma per 10,000 Victorians increased from 0.62 in 2001-02 to 0.79 in 2008-09. Since 2003-04 the rate has increased each year.¹²

The number of major trauma cases compiled by the Victorian State Trauma Registry (VSTR) from 2005 to 2010 also showed an increase over time, rising from 181 to 200. Although that may appear to be a minor rise, there was a spike in the series in the years 2008 and 2009 which saw major trauma cases increase to 224 cases before decreasing notably to 200 in 2010.¹³ According to the VSTR, motorcycle crashes accounted for 21.3% of all major road trauma in the period from 1 July 2005 until 30 June 2011.¹⁴

3.4.4.1 Findings

The trauma category described in this section as serious injuries covers data sets compiled by VSTORM and the AIHW. The motorcyclists captured in these data sets have suffered what the public would describe as serious, life threatening or life altering injuries. The major issue confronting the Committee in making its findings in this section is the lack of historical data in the case of the VSTORM statistics and the lack of more recent data for the AIHW statistics.

Beginning with the AIHW data, the Committee found that there has been an increase, in the period covered, of serious injuries. That increase has been significant. Conversely, the VSTR data has shown a decrease in major injuries over the period 2005 to 2010 and in the three years for which complete data is available (2008-2010). These differences may be explained by the way the respective organisations code and classify serious injury. However, the differences in both the numbers of motorcycle trauma victims and the overall trend make it difficult to make a substantive finding on this type of trauma trend.

The comparative data further illustrates the difficulty in assessing trends for this category. Although the rate of serious injuries with a high threat to life declined when compared to registration data, it increased for both licence and population measurements. Unfortunately, the Committee was unable to compare the major trauma statistics compiled by the VSTORM.

3.5 Trauma statistics and changes in 2007

Throughout this chapter, a continuous theme has been a change in trauma trends in the years between 2006 and 2008. That change has been most evident in comparative analyses where trauma categories have been compared with licence, registration and population statistics. It is unclear what event or factors are responsible for this change. The Committee was not presented with an explanation or suggestions for the changes across multiple trauma categories. Further, there was no apparent road safety intervention or policy implementation that could be identified as occurring in this period, which also experienced increases in usage measures such as licences and registrations.

3.6 Where and when does motorcycle trauma occur and who is involved?

This section deals with the location of crashes and the gender and age of motorcycle trauma victims. It also includes statistical analyses or commentary on the location of motorcycle crashes in Victoria, the trends for on and off-road crashes, the day and time at which crashes occur and the age and gender of motorcycle crash victims.

3.6.1 On and off-road

The location of road crashes for trauma purposes is subject to a range of classifications and codes. These codes are then used to distinguish on-road from off-road motorcycle crashes. The Committee received information from a number of submitters on trauma trends analysed by the location of crashes. In the previous chapter, the issue of

analysing trauma data using differing codes, classifications and definitions was found by the Committee to have made analysis of trauma data difficult and, in some circumstances, inappropriate. Identifying trauma cases that occur on and off-road is one area that suffers from these issues. Although data provided to the Committee dealt with the location of motorcycle crashes, this data suffers from a range of issues that makes its use in this chapter inappropriate.

3.6.2 Rural and metropolitan environments

Motorcycle crashes happen throughout Victoria, but there are differences in the number of crashes that occur in metropolitan and rural Victoria. According to VicRoads, between 2001 and 2010, 61% of all motorcycle crashes which led to an injured rider and 55% of all fatalities occurred in Melbourne.¹⁵ The centrality of motorcycle trauma in the Melbourne metropolitan area was also cited by the TAC, which informed the Committee that 52% of its claims in the period from 2005–2010 arose from crashes in Melbourne.¹⁶ Although the TAC claims figures do not align with the crash statistics of VicRoads, this discrepancy may be explained by the longer period covered by the VicRoads statistics.

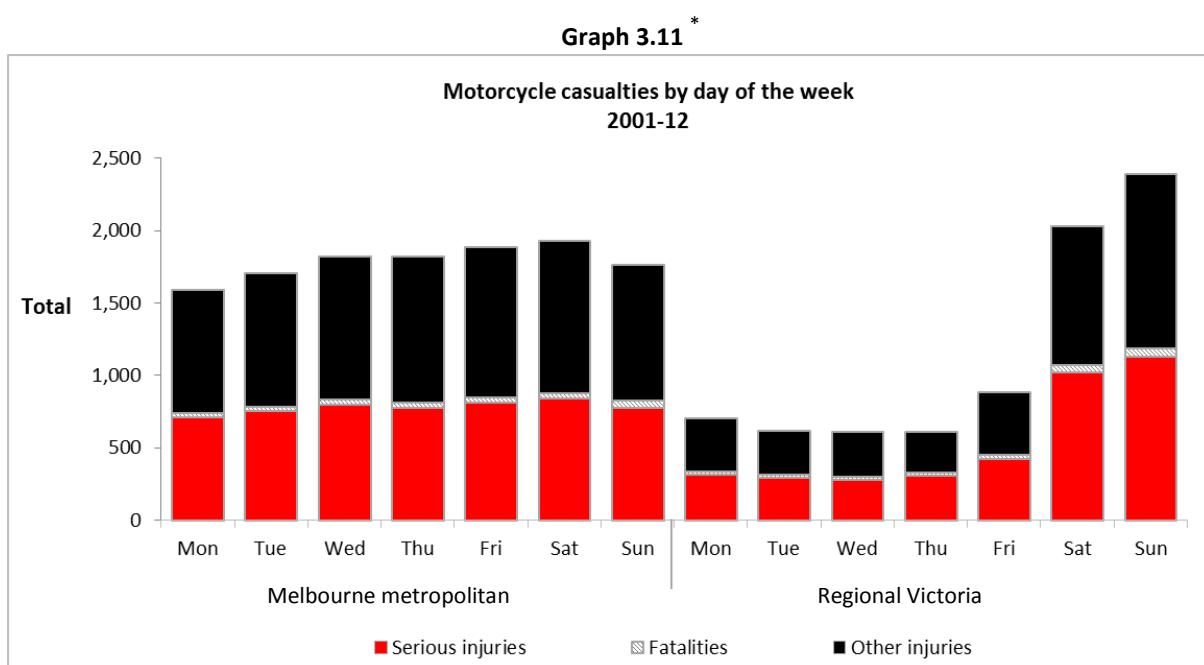
3.6.3 Time of day

According to the TAC, there are marked differences in the time of day that riders are injured in Melbourne and in the rest of Victoria. For motorcyclists injured in Melbourne, the data provided identifies a trend for injuries occurring at periods of peak travel times. The TAC suggests that motorcycle crashes in Melbourne occur during commuting periods. In contrast, riders outside of Melbourne tend to be injured between the hours of 10am and 4pm. The TAC submission proposes that this indicates collisions outside of Melbourne occur at times suggestive of recreational motorcycle use.¹⁷

3.6.4 Day of crash

Although motorcycle crashes occur every day in the week, there are statistical differences between country Victoria and the Melbourne metropolitan areas. The Committee was provided with research based on Road Crash Information System (RCIS) data. That research analysed the days on which crashes occur for both country and metropolitan areas.

Graph 3.11 (following) reflects the stark contrasts between trauma that occurs in, and outside, Melbourne. For Melbourne the data shows that trauma occurs consistently throughout the days of the week with Monday having the lowest number of trauma crashes and Saturday the highest. However, outside of Melbourne the working week generally witnesses low levels of motorcycle trauma when compared to the weekend. Saturday and Sunday trauma levels outside of Melbourne account for the vast majority of injured motorcyclists.



Source: VicRoads, Submission to the Inquiry, September 2011, p. 30; Correspondence from Mr Peter Schofield, Manager, Road Safety Strategy and Community Programs, VicRoads, 1 June 2012.

3.7 Gender and age of motorcyclists injured or killed

3.7.1 Gender

According to VicRoads, motorcyclists are overwhelmingly male, with an estimated 85% of all motorcycle licences being held by men.¹⁸ The fact that males form the majority of registered motorcycle owners and users is replicated in the trauma statistics, with males comprising the majority of trauma victims.

The statistics for fatalities, emergency presentations and admissions clearly show that motorcycle trauma is male centric. The fatality data provided by the Coroners Court[†], which covers motorcycle fatalities between 2000 and 2011, strongly indicates that motorcycling fatalities predominately involve male riders.¹⁹ In the period from 2000 to 2011, females accounted for between 2% and 15% of fatalities.²⁰ That level of variation is not unusual considering the sensitivity of fatality data, which means that small increases in the number of female fatalities from year to year can have a disproportionate impact on fatality trends.

* Note: 'Motorcycle casualties' is a phrase used by VicRoads to reflect minor and serious injuries as well as fatalities collected through its crash database. This graph and the 'casualty' data it is based on should be distinguished from other data used in other graphs throughout this chapter. The Committee used the data provided by VicRoads because it was the best available geographic or location data for motorcycle trauma.

[†] Note: Fatality information on age and gender that is specific to Victoria was not available in the BITRE publications on which the earlier fatality section of this chapter is based. Instead, and for these reasons, this section is based on data provided by the Coroners Court.

The data provided to the Committee from the VAED and VEMD provides a clear indication of the trauma picture in gender terms. The first observation is that the proportion of females to males in both admissions and presentations is static. The trend has remained largely unchanged over the period from 2005 to 2010 with females averaging between 14% and 16% for presentations and 9% to 10% of the total admissions. According to VSTR derived data^{*}, female riders who have suffered major trauma represent a small minority of major trauma cases. Females accounted for an average of 5.5% of the total number of trauma victims between 2005 and 2010, with 2009 being the worst year for female trauma victims (7.7% of the total number).²¹ Again, there are limitations in this data set, but it seems that females account for very few major trauma cases in Victoria.

3.7.2 Age

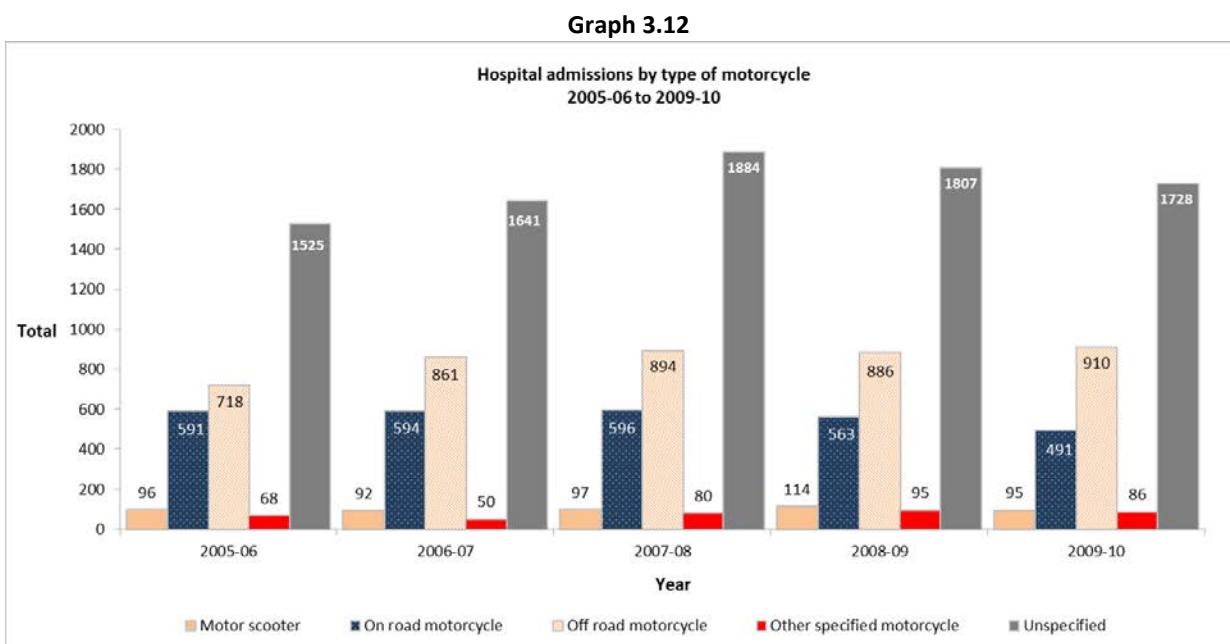
Motorcycle trauma does not distinguish between age groups. However, some age groups are more heavily represented than others. In the period 2006 to 2010 (a period for which there is available data), for both male and female riders the 16–29 and 30–49 age groups were the two groups most involved in motorcycle crashes. That was the case for the presentation, admissions and the major trauma categories²². The smallest group involved in crashes were those riders aged 50–74 for all years and all categories with the exception of the 2010 admissions data which saw this group surpass the 0–15 year age group.

The leading age group for males in the presentations and admissions categories was 16–29 over the 2005–2009 period.²³ However, in 2010 riders in the 30–49 age group marginally became the largest for admissions. That was also the case for motorcycle fatalities, with male riders over 40 years of age accounting for 47% of fatalities in 2010.²⁴ The situation is slightly different for women. In terms of presentations, between 2006 and 2010 the largest group of riders were those aged 16–29. However, trends for admissions show that from 2007 onwards the largest age cohort of women being admitted to hospital was the 39–49 age group.²⁵

3.8 Types of motorcycles ridden in admissions cases

The DoH provided the Committee with data relating to the incidence of admissions classified by motorcycle type. The statistics collected by the Department cover the period 2005 to 2010. The statistics contained in Graph 3.12 (following) indicate that the motorcycle type with the highest specified admission rate is that of off-road motorcycles. These motorcycles include motocross motorcycles and they are predominantly used on unsealed roads, parks and forests. However, the dataset provided by the DoH is of limited use due to the size of the unspecified category, which is larger than the other categories combined, making meaningful analysis impossible.

^{*} Note: The Committee encountered difficulty in analysing gender representations in serious injuries. The analysis by the AIHW of serious injuries with a high threat to life includes a breakdown of the data according to gender involvement in such cases. However, because the analysis does not extend to state by state figures, instead analysing trend Australia wide, the Committee relied on gender data for major trauma crashes compiled by VSTORM.



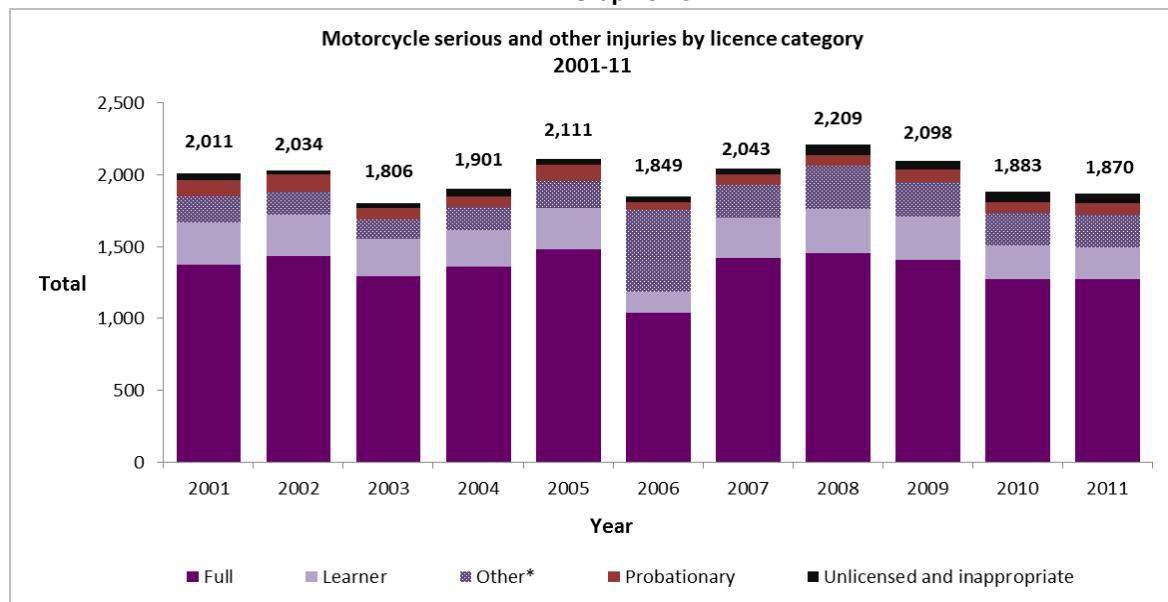
Source: Alfred Health, *Submission to the Inquiry*, September 2011; (2) Correspondence from Mr James Holgate, Director, Road User Safety, VicRoads, 23 February 2012.

3.9 Licence status of motorcyclists involved in trauma

According to VicRoads, the majority of motorcycle casualties in the period from 2001 to 2010 involve fully licensed motorcyclists.²⁶ The statistics derived from the RCIS include all motorcycle casualties and they do not distinguish between trauma types nor do they provide a breakdown of licence status and involvement in crashes over time, which limits their usefulness. Nevertheless, this data was the only data available for the Committee to analyse the licence status of those involved in motorcycle crashes.

According to VicRoads data, motorcycle fatalities overwhelmingly involve fully licensed riders. That is also the case for riders with serious and other injuries (these categories of trauma relate to VicRoads classifications) as seen in Graph 3.13 (following). Of interest to the Committee was the small proportion of probationary and conditional licence holders involved in trauma. A much larger group of trauma patients are those holding learner permits. The smallest cohort, unlicensed or inappropriate* motorcyclists, comprises only 2% of injured riders.

* Note: The reference to ‘inappropriate’ in this context relates to motorcyclists who are riding a motorcycle for which they are not appropriately licensed.

Graph 3.13

Source: Correspondence from Mr Peter Schofield, Manager, Road Safety Strategy and Community Programs, VicRoads, 1 June 2012.

3.10 Training and experience

Unfortunately, data on the training and experience of riders involved in crashes is not compiled by any of the road safety agencies or health authorities in a systematic way. Therefore, the Committee was unable to assess this aspect of term of reference (a).

3.11 Findings

The Committee analysed trauma trends by relying on the best available statistical data. What became apparent during the course of the Inquiry was the problematic and inconsistent nature of trauma data among government organisations. It is important to note that the findings of the Committee only apply to data sets produced in this chapter. Where data was incomplete or unreliable, which occurred in a number of areas such as the location of crashes, the Committee chose not to rely on it nor make findings as it considered doing so to be inappropriate.

From the available data it is clear that the trend over time for motorcycle trauma reflects three different realities. Firstly, there has been an increase in the number of motorcycle presentations, admissions and serious injuries over the last decade. However, hospital presentations and admissions have trended downwards since 2006-07 (for presentations) and 2007-08 (for admissions).

Serious injury and major trauma data unfortunately covers a limited time span, with the AIHW data covering the period up to 2008-09, the point at which admissions began their downward trend, and major trauma data from the VSTR covering the period from 2008 onwards but not the earlier period that saw an increase in trauma. The Committee, therefore, is unable to make a more fulsome determination on the longer term trends for these trauma categories.

In terms of presentation and admission rates, when compared to both licences and registrations, the trauma decline has been consistent and ongoing since 2006-07 and 2007-08 respectively. When comparing admissions data against motorcycle registrations and licences, the Committee found that the reduction has been profound. Both these measures are currently below the rate seen in 2001-02. During the same period motorcycle facilities have declined, but since the middle of the last decade have remained stubbornly static, hovering between 43 and 49 deaths over the last six years with the lowest in 2008 with 38 motorcycle fatalities.

A thesis that was consistently put to the Committee was that proportionally or on the basis of trauma rates there have been large, consistent and sustained reductions in trauma. The data in this chapter provides a compelling argument supporting this thesis, with reductions in trauma rates based on registration and licensing, and for some trauma categories, population. These rate reductions have occurred due to increases in motorcycle usage as measured by the number of licence holders and registered motorcycles on Victorian roads and population growth.

The reasons for the rate reductions is unclear, but a number of factors may provide explanations including the regulatory environment, increased safety countermeasures, enforcement, and the ability and approach taken by motorcyclists. The proportional changes in trauma were only noted by one road safety agency, VicRoads,²⁷ which provided the following observations on motorcycle fatalities and injury rates (relying on VicRoads derived data and analysis) over time:

... there has been significant improvement in the motorcycle rate per 10,000 registered motorcycles for both fatalities and all injuries between 2002 and 2010. The fatality rate has reduced by almost half...while the rate for all injuries has reduced [by 43% ...] ²⁸

That observation is one shared by the Committee based on its analysis of the available data. Nevertheless, while there have been reductions in trauma rates, an overall increase in trauma cases has occurred over the decade.

Fatalities unfortunately remain stubbornly unchanged. It appears exceedingly difficult to reduce motorcycle fatalities, which remain a small cohort within the overall motorcycle trauma number. Small variations to these numbers can have a large impact on trends.

During the course of the Inquiry, many submitters and witnesses referred to increased levels of motorcycle trauma on Victorian roads.²⁹ It is clear these submitters, which included road safety agencies and health organisations, relied on trauma statistics without comparing them to usage measures. The Committee agrees, based on the available evidence, that motorcycle trauma has increased year on year. The exception to that trend has been the fatality category. However, juxtaposed to these increases has been the reduction in trauma rates over time, which is a positive result for Victorian road safety agencies, the community and motorcyclists.

Endnotes: Chapter 3

¹ Clark B, Haworth N & Lenné M, *The Victorian Parliamentary Road Safety Committee – A History of Inquiries and Outcomes*, Report No. 237, Monash University Accident Research Centre, June 2005, p. iii; Vulcan P, Cameron M & Newstead S, *Road Trauma in Perspective*, paper presented to Vehicle Accidents their Cause – Reconstruction – Law Conference, Monash University, Department of Civil Engineering, Melbourne, 28-29 July 1995, <http://www.monash.edu.au/miri/research/reports/papers/roadtoll.html>.

² Irwin R, *Road policing – an intelligent approach*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011, p. 2.

³ VicRoads, *Submission to the Inquiry*, September 2011, p. 26.

⁴ Ms Liz de Rome, Principal Consultant and Managing Director, LdeR Consulting, *Meeting*, Perth, 5 November 2011, p. 4; Deighton-Smith R, *Submission to the Inquiry*, July 2011, p.1.

⁵ Transport Accident Commission, *Annual road toll*, 19 July 2012,

<http://www.tac.vic.gov.au/jsp/statistics/roadtollannual.do?areaID=23&tierID=1&navID=3>.

⁶ Australian Bureau of Statistics (ABS), 3101.0 - *Australian Demographic Statistics*, December Quarter, 2001 and 2011.

⁷ Australian Bureau of Statistics, 3101.0 - *Australian Demographic Statistics*, 2001-2011 series, December quarter, Canberra,
<http://www.abs.gov.au/AUSSTATS/abs@.nsf/second+level+view?ReadForm&prodno=3101.0&viewtitle=Australian%20Demographic%20Statistics~Dec%202004~Previous~03/06/2005&&tabname=Past%20Future%20Issues&prodno=3101.0&issue=Dec%202004&num=&view=&>.

⁸ Bureau of Infrastructure, Transport and Regional Economics, *Road Deaths Australia 2011 Statistical Summary*, Department of Infrastructure and Transport, Canberra, 2012, pp. 2-3.

⁹ Australian Bureau of Statistics, 3101.0 - *Australian Demographic Statistics*, 2001-2011 series, June quarter, Canberra,
<http://www.abs.gov.au/AUSSTATS/abs@.nsf/second+level+view?ReadForm&prodno=3101.0&viewtitle=Australian%20Demographic%20Statistics~Dec%202004~Previous~03/06/2005&&tabname=Past%20Future%20Issues&prodno=3101.0&issue=Dec%202004&num=&view=&>.

¹⁰ Australian Bureau of Statistics, 3101.0 - *Australian Demographic Statistics*, 2001-2011 series, June quarter, Canberra,
<http://www.abs.gov.au/AUSSTATS/abs@.nsf/second+level+view?ReadForm&prodno=3101.0&viewtitle=Australian%20Demographic%20Statistics~Dec%202004~Previous~03/06/2005&&tabname=Past%20Future%20Issues&prodno=3101.0&issue=Dec%202004&num=&view=&>.

¹¹ Henley G & Harrison J, *Trends in serious injury due to land transport accidents, Australia 2000–01 to 2008–09*, Injury Research and Statistics Series No. 66, Australian Institute of Health and Welfare, Canberra, June 2012, p. 19, <http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=10737421990>.

¹² Henley G & Harrison J, *Trends in serious injury due to land transport accidents, Australia 2000–01 to 2008–09*, Injury Research and Statistics Series No. 66, Australian Institute of Health and Welfare, Canberra, June 2012, p. 22, <http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=10737421990>.

¹³ Victorian State Trauma Outcomes Registry Monitoring Group, *Report – Victorian motorcycle collisions 1 July 2005 to 30 June 2011*, Monash University, 21 March 2012, p. 2.

¹⁴ Victorian State Trauma Outcomes Registry Monitoring Group, *Report – Victorian motorcycle collisions 1 July 2005 to 30 June 2011*, Monash University, 21 March 2012, p. 2.

¹⁵ VicRoads, *Submission to the Inquiry*, September 2011, p. 29.

¹⁶ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (a).

¹⁷ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (a).

¹⁸ VicRoads, *Submission to the Inquiry*, September 2011, p. 14.

¹⁹ Correspondence from Ms Samantha Hauge, Manager, Coroners Prevention Unit, Coroners Court of Victoria, 23 April 2012.

²⁰ Correspondence from Ms Samantha Hauge, Manager, Coroners Prevention Unit, Coroners Court of Victoria, 23 April 2012.

²¹ Victorian State Trauma Outcomes Registry Monitoring Group, *Report – Victorian motorcycle collisions 1 July 2005 to 30 June 2011*, Monash University, 21 March 2012, p. 5.

²² Victorian State Trauma Outcomes Registry Monitoring Group, *Report – Victorian motorcycle collisions 1 July 2005 to 30 June 2011*, Monash University, 21 March 2012, p. 5.

²³ Department of Health, *Submission to the Inquiry*, October 2011.

²⁴ VicRoads, *Submission to the Inquiry*, September 2011, p. 28.

²⁵ Department of Health, *Submission to the Inquiry*, October 2011.

²⁶ VicRoads, *Submission to the Inquiry*, September 2011, p. 29.

²⁷ VicRoads, *Submission to the Inquiry*, September 2011, pp. 25–27.

²⁸ VicRoads, *Submission to the Inquiry*, September 2011, p. 27.

²⁹ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (a); Victoria Police, *Submission to the Inquiry*, September 2011, p. 8. .

PART 2

Chapter 4: The accredited provider scheme (TOR f)

Chapter 5: Off-road riding and motorcycle safety (TOR e)

Chapter 6: Motorcycle usage in Victoria (TOR b)

Chapter 7: Attitudes (TOR c and d)

Chapter 4 at a glance

Overview

This chapter focuses on the provision of motorcycle training and licensing by providers operating in the VicRoads administered accredited provider scheme, which has been in operation since the early 1990s. The Committee investigated whether the scheme was efficiently providing training and licensing services and whether accredited providers were effective by reference to quality and the cost of testing and training. The Committee then assessed whether commercial imperatives had an impact on the quality of services and canvassed a number of additional matters including the use of audits and concerns with having providers act as trainers and testers.

In addition, the Committee addressed issues with the training instructors, the size of riding ranges, variable training programs, the audit system and the lack of an effectiveness measure, which made measuring effectiveness by reference to reduced road trauma and improved training impossible to quantify.

Key findings

Although the scheme efficiently processes applicants, there is no common training curriculum and it was unclear whether all instructors provide adequate training and testing procedures. It is, therefore, necessary to create a common training curriculum to ensure that a minimum standard exists among providers.

Whilst the issue of driving ranges being of variable size appears to have been dealt with by VicRoads, the Committee found that the audit regime needs to be reviewed to ensure that standards are maintained and to ensure that commercial imperatives do not undermine the delivery of training and testing. Further, there is a need for more regular audits.

In terms of measuring effectiveness, the Committee found there was no way to do so because the audit system lacks qualitative measures. A new effectiveness measure, based on the performance of the scheme in terms of road safety outcomes, should be introduced.

Recommendations

Recommendation 7:

That the current accredited provider scheme be reviewed by an external organisation such as the Monash University Accident Research Centre or the Victorian Auditor-General's Office, to measure its current effectiveness in administering motorcycle licensing and whether it improves motorcycle safety and reduces motorcycle trauma. The review is to be initiated within 12 months of the tabling of this report.

Recommendation 8:

That VicRoads auditing include a new component focusing on the effectiveness of accredited providers, to be measured in terms of road safety outcomes.

Recommendation 9:

That accredited providers who do not offer a 'test only' option be able to access financial incentives, and that such an incentive be provided by way of a reduction in the amount paid, per student, to VicRoads by accredited providers.

Recommendation 10:

That VicRoads, design and implement a pilot training course, for pre-licence riders that includes an off-road and attitudinal component. The training course should involve selected accredited providers, and be implemented within 12 months of the tabling of this report.

Recommendation 11:

That VicRoads, in consultation with other road safety agencies and the public, develop a common training curriculum which all accredited providers are required to use.

Recommendation 12:

That an on-road training component for learner riders, and on-road testing component for probationary riders, be introduced.

CHAPTER 4: THE ACCREDITED PROVIDER SCHEME

4.1 *Introduction*

In Victoria, licensing and testing for motorcyclists is provided by accredited providers who act on behalf of VicRoads in delivering these services in an arrangement that has been in place since 1994.¹ The accredited provider scheme (the scheme) fulfils a legislative function, which VicRoads previously fulfilled, for the issuing of motorcycle learner permits and probationary licences. Although the scheme is fully privatised it is audited and subject to governance arrangements which VicRoads oversees.

During the course of the Inquiry the Committee received limited criticism of the scheme as a model for the provision of licensing, testing and training services. There were some concerns raised by witnesses relating to examples of wrongdoing on the part of some providers, but these were unsubstantiated. Whilst these examples did not reflect a systemic problem with the scheme per se, they did highlight issues to be addressed including current deficiencies in the way the scheme is governed, how effectiveness is measured and how it could be improved.

This chapter is comprised of three sections. The first briefly outlines the Victorian licensing and testing regime that accredited providers administer. The second deals with the performance of providers in fulfilling their role within the scheme and the overall operation of the scheme, drawing on governance arrangements and how well the scheme meets its objectives. The last section deals more broadly with issues associated with the scheme, including governance arrangements and the way the scheme delivers training.

A number of issues raised in submissions in relation to this term of reference fell outside its scope. Issues related to the licensing and testing regime as it applies to Victorian motorcyclists are not dealt with in this chapter. Some of these issues, particularly with respect to the Graduated Licensing Scheme (GLS), did not fall within the ambit of this term of reference. However, licensing and testing, but not the GLS, will be discussed in Chapter 11.

4.2 *Background – Motorcycle licensing in Victoria*

Motorcycle permits and licences are regulated in a number of ways. These broadly relate to the age at which a licence can be granted, and licensing categories and testing. As with other types of licences, there are set age limits at which a person can be granted a motorcycle licence. Importantly, there is a distinction between a motorcycle licence and a motorcycle permit. A person must first hold a motorcycle learner permit before they are eligible to sit the licence test for the motorcycle licence.

The age limits are set out in the *Road Safety Act 1986* (Vic) (the Act), specifically section 22, which states in part:

22 Learner permits

- (1) *The Corporation may, on the application of a person over the prescribed age, grant a learner permit if it is satisfied that the applicant is qualified to hold such a permit.*
- (2) *In subsection (1), **prescribed age** means—*
 - (a) *in the case of a learner permit to drive a motor cycle, 18 years²*

A rider becomes qualified by meeting the requirements of testing and licensing set out by VicRoads and provided by accredited providers. The requirements for each licence consist of a learner permit and a probationary licence test, both of which are administered by accredited providers who are authorised to provide these services on behalf of VicRoads.³

The motorcycle licensing and testing regime in Victoria has some unique aspects which differentiate it from other jurisdictions. These include a ‘test-only’ option, for which aspiring riders do not have to undertake any training before taking the permit or licence test⁴, no mandatory education requirement for riders pre-permit or pre-licence⁵ or on-road testing.⁶ There is however, a ‘higher minimum learner and provisional licensing age requirement for motorcycles than cars’.⁷

Accredited providers under the scheme have to comply with standards for licensing and testing set by VicRoads. Once accredited, a provider can undertake training, testing and licensing in compliance with the *Accredited Provider Services Agreement*, which also sets out other legal requirements for providers.

4.3 The audit scheme

The role of VicRoads in the scheme is one of oversight and quality assurance. According to its submission, VicRoads has five responsibilities in terms of managing the scheme. These are audit and surveillance of providers, site approval, accrediting providers, tester accreditation and key personnel accreditation.⁸

With respect to the audit regime, VicRoads subjects providers to audits and where necessary can take action against a provider. VicRoads presented evidence to the Committee that compliance and equality assurance is managed by various groups within VicRoads and licensing agent services.⁹ Audits are a relatively recent addition to the scheme, having started in 2006-07.¹⁰ According to the Monash University Accident Research Centre (MUARC) researchers, providers must undergo at ‘least one scheduled compliance audit per year (with a maximum of two) by VicRoads who employ trained auditors. Further, field surveillance is conducted every three months for each provider’.¹¹

The VicRoads submission, which outlines the audit structure used, refers to 'continuous back office data monitoring, and a mixture of announced and unannounced visits about six times a year. These audits are aimed at uncovering errors (unintentional mistakes), negligence (not following procedures) and fraud (intentional deception)'.¹² Auditors review safety infrastructure, the status of applicants, the riding range or area and knowledge testing activities, training, reporting and administrative matters (confidentiality, security of forms and insurance).¹³ While accredited providers need to comply with the various requirements already outlined, they do have the freedom to set their own curriculum and training.¹⁴ The scheme is unlike other similar outsourced services, in that providers pay a fee to VicRoads for each successful candidate who passes the permit and licence tests. These fees are collected by VicRoads in addition to licensing charges to help cover the cost of administering the scheme.¹⁵

Essentially, the scheme implements the training and testing requirements set by VicRoads. The distinction between the roles of accredited providers and VicRoads are clear and set out in legislation. Under the Act, VicRoads is authorised to issue permits and licences to motorcyclists.¹⁶ The role of accredited providers is to enforce the standards and testing regime set by VicRoads. Further:

*[t]he Accredited provider scheme is a fully privatised scheme overseen and administered by VicRoads based on competitive, free market principles. VicRoads sets the standards for licensing and administers the scheme.*¹⁷

4.4 Providers

The accredited provider scheme is comprised of 14 providers, operating in 30 locations in both metropolitan and regional Victoria.¹⁸ Aspiring riders are offered training and testing on each provider's riding range. Providers vary greatly in size from small operators in regional areas to the large providers such as Driver Education Centre of Australia, Armstrong's Driver Education (Armstrong's), Motorcycle Motion and Honda Australia Rider Training.

The Committee was provided with evidence by VicRoads on the operations of the accredited providers. In 2009-10, accredited providers conducted 32,545 learner permits and licence tests. Although Victoria is unique in offering a test-only option, the vast majority of candidate students undertook training in preparation for the test.¹⁹ Specifically, 10% of licence applicants and 6% of learner permit applicants elected the test-only option.²⁰ VicRoads reported that 'pass rates for the range of tests that aspiring riders took ranged between 89 and 94 per cent during 2009-10'.²¹

4.5 Interpreting effectiveness and efficiency

Although there are many different approaches to measuring effectiveness and efficiency, generally the starting point is to set performance measures and then analyse how well these were met or exceeded after a period of time.

Governments and regulators tend to use two types of performance measures; quantitative and qualitative. Put simply, quantitative measures show how efficiently a task or output was completed whereas qualitative measures are about outcomes, that is did a scheme meet its stated outcome? It became apparent that a qualitative, or effectiveness, measure did not exist for the scheme. Providers are not measured on the road safety outcomes of their licensing tasks or their training because this is not required. That is not a reflection of the providers, their training or services; rather, it is a reflection of the scheme itself and the way it has been designed.

In contrast to effectiveness, the Committee was able to investigate the efficiency of the provider scheme in providing licensing and training services to the public. This aspect of the term of reference was defined by how well accredited providers provide licensing and testing facilities and services, adhere to their service contracts and pass the audits conducted by VicRoads.

4.6 *The efficiency of providers in training and testing*

The Committee received both general and specific commentary on the efficiency of the scheme. In terms of ensuring the probity and integrity of the scheme the Committee was pleased to hear there are ‘high levels of compliance by providers’.²² Since the scheme commenced there has only been a single instance of corruption and fraud. Importantly, that individual involved was convicted and jailed.²³ In terms of general commentary, several submitters to the Inquiry indicated that the scheme was very efficient in processing candidates through the system. Motorcycling Australia noted:

*... the current Accredited Provider Scheme ... is incredibly efficient. This can clearly be seen by the growth in motorcycling over the last 20 years. Waiting times for courses, especially at this time are short and the transition through the process does not take a long time.*²⁴

That sentiment was shared by the Victorian Automobile Chamber of Commerce (VACC) who noted the scheme was ‘very good at handling and processing numbers of students’.²⁵ The scheme appears to be well-adjusted to handling and delivering training and testing services to large volumes of motorcycle licence and permit applicants. VicRoads, in its oversight capacity, explained the scheme had undergone continuous improvement and, due to the competitive environment among providers, applicants now have cost-effective training and testing options across Victoria.

In contrast to these statements on the efficiency of the scheme, several submissions provided the Committee with alternative views. Honda Australia Motorcycle and Power Equipment (Honda Australia MPE) expressed its concerns with the entire state of the scheme:

*Honda’s worldwide experience tells us that high-quality rider training is one of the key factors in lowering the crash risk of novice riders on our roads. We at Honda in Australia have been quite vocal about the poor standard of the Victorian provider scheme over the last decade, and we have brought serious concerns to the attention of VicRoads on a number of occasions.*²⁶

4.6.1 Quality and cost of courses

The views of other witnesses and submitters focused on specific issues with the scheme. The first was that the provision of training varied dramatically in quality and cost.²⁷ That variation was seen to be a negative aspect of the scheme. The reference to cost was reiterated by other submitters.²⁸ In its submission, the Royal Automobile Club of Victoria (RACV) suggested there was evidence that variations existed among providers. The RACV, relying on research undertaken by MUARC, also indicated a concern with the consistency of licence testing procedures used by providers.²⁹

4.6.2 Testing and training

The second issue, raised only by accredited providers, related to the quality of testing and training among providers. According to one provider, a fundamental issue exists with providers (unnamed) who:

*... work from the boot of their car, deliver training on unregistered motorcycles in the car-park of local parks, and then conduct license tests on a single registered motorcycle.*³⁰

Witnesses also directed the Committee to other examples of misconduct or wrongdoing on the part of other providers. One of the complaints extended to serious breaches of contractual obligations by a provider who was passing students who had not taken the applicable test.³¹ As with the earlier statement, further evidence was not given to the Committee as to the identity of these providers or proof of their actions.

4.6.3 Profitability versus quality

A third issue and one linked to the issue of quality, related to the nexus between the need for providers to be profitable and how that affects the quality of services. That criticism was made by Honda Australia MPE, who suggested that commercial interests have overridden the provision of training and that:

*... the current system is responsible for licensing riders with inadequate skill and knowledge ...*³²

The issue of costs and profits and the potential to undermine the scheme's effectiveness is one that was visited by witnesses at public hearings. The concern arose in relation to the requirement that providers pay VicRoads a fee (at present \$14)³³ for each successful motorcycle permit or licence student. According to VicRoads, the intention of the fee is to help cover the costs of administering the scheme.³⁴ Mr David MacKenzie, a senior instructor at Motorcycle Motion, explained the way costs and profitability affect services:

*Our biggest concern with the accredited provider scheme is the continually rising cost for the applicant. VicRoads fees rise yearly, and with that the cost towards the student. Motorcycle Motion has always tried to minimise the costs to the students, but this eventually impacts on services.*³⁵

The Committee accepts this statement does not indicate that service fees and other costs reduce quality. Nevertheless, such a correlation is one that has been identified by researchers from CARRS-Q.³⁶

A central theme in the concerns raised by providers and others is the way market forces intended to create a well-functioning, cheap, and efficient scheme have also had negative consequences. The Committee was presented with evidence of the ways in which the quality and surety of the scheme have been undermined by the competitive, market based principles underpinning it. The first was that the option in Victoria for a 'test-only' has meant that those providers who refuse to offer such an option are at a disadvantage. Further, shorter training courses create a disincentive for the provision of longer and more thorough training courses by other providers. Essentially, submitters and witnesses argued that commercial imperatives and competition may have created a negative environment where training has become inferior and testing procedures are not adequately adhered to.³⁷ Motorcycling Australia went further, suggesting:

*... the standard of training being delivered ... is below what was expected at the outset and ... the training and testing has fallen to below an acceptable standard.*³⁸

The Motorcycling Australia submission listed a number of additional concerns with testing procedures. The most serious concerns arose in relation to the administration of the learner permit skill test slow ride.³⁹ The submission contended the test had been contravened by allowing the riders to idle through the course rather than ride through it, and that the turning and cornering components of the test were incorrectly carried out.⁴⁰ At the Geelong public hearing, Mr Rob Smith, Manager, Australian Riders' Division, Motorcycling Australia, elaborated how accredited providers have gradually changed the way they provide services under the current scheme, a change that Mr Smith viewed as problematic:

... a requirement was also to deliver a road craft discussion whereby basic principles of roadcraft would be taught and discussed, and this would centre around something called SIPDE, scan, identify, predict, decide and execute. The whole purpose of that, again, was to deliver something that riders could actually use in practice on the roads in traffic to keep themselves safe.

*Over time it became okay to replace the discussion with a video. The video could be as long or as short as the provider decided it should be, so the riders then often lost the opportunity to interact and ask questions about that really important grounding in strategies that they were going to take with them onto the road. We now have a training process that I believe cuts corners and fails to deliver the tactical and strategic content that it was originally designed to deliver. We now have a substandard rider emerging from the end of the process who is not as well prepared as we had originally hoped for.*⁴¹

The confluence of commercial considerations and service quality was identified as early as 2005. Researchers from MUARC, undertaking a review of motorcycle licensing and training, reported serious concerns with the intersection of commercial considerations and training services. Specifically, researchers found:

*Commercial considerations severely constrained the time available to teach both attitudinal and vehicle control skills.*⁴²

The 2005 research by MUARC built on an earlier evaluation of rider training in Victoria, which was published in 2000. The older research, *Evaluation of rider training curriculum in Victoria*, focused on the performance of accredited providers. There are several

striking observations in that research. The first was that students often spent an inordinate amount of time waiting to undertake a training manoeuvre. The researchers found that around 20% of training time was spent waiting, something which ‘severely limit[ed] the amount of time a student has to practice and receive instruction.’⁴³ The second was that attitudinal skills comprised less than 10% of the learner course time and 13% on licence courses⁴⁴. The report concluded there was:

*... widespread inconsistency among instructors in the delivery of programs ... particularly with attitudinal concepts ... lack of repeated practice due to time constraints restrict[ed] skills acquisition frequently to only just sufficient to pass the statutory test ... [and] none of the providers have developed a practical method of teaching [students] how to identify hazards while riding.*⁴⁵

In 2008 VicRoads undertook an independent review of the heavy vehicle and motorcycle accreditation schemes (the 2008 review).⁴⁶ The purpose of the 2008 review was to undertake an assessment of the ‘governance regime and the practices and processes in managing the scheme’.⁴⁷ The 2008 review included some of the issues identified earlier by MUARC. It recognised that ‘some providers focus on getting through the test rather than providing quality in the training service’⁴⁸ and concluded:

*... overall, providers were operating at different scales of service with different times recommended for pre-licence training.*⁴⁹

The 2008 review went on to state that the variation in standards in testing ranges and classrooms paralleled the level of training delivery. It also noted its findings mirrored those previously identified by VicRoads, who had attempted to address these variations through business improvement recommendations.⁵⁰ The 2008 review, however, did not contain a recommendation that addressed the concerns around quality. Instead, it recommended strengthening quality control systems and audits as a way of improving the quality of provider services.⁵¹ It is unclear whether these issues have been resolved, although witnesses at the public hearings seemed to echo these observations some seven years after the most recent MUARC research and four years after the VicRoads review. For example, the VACC cited an example of one provider teaching students how to pass the test:

*... one retailer stated his local provider ‘taught students to pass the test’ but did not necessarily impart a range of skills to train a fully competent rider.*⁵²

4.6.4 Accredited providers as trainers and testers

A fourth issue raised was the practice of having accredited providers act as both trainer and tester. Mr Ray Newland outlined the pitfalls of such an approach in his submission:

*... the test option is also conducted by accredited training providers on behalf of the licensing jurisdiction VicRoads, a situation that does not imbue public confidence in the integrity of the test only option.*⁵³

It is noteworthy that Mr Newland’s contribution on this aspect of the Inquiry refers to perceptions rather than actual problems with having both roles carried out by the

accredited providers. The Committee did not receive any evidence suggesting that providers were not capable of handling both of these roles, and one witness drew the Committee's attention to the costs of separating out the two roles, which would be borne by motorcycle students.⁵⁴ There is a secondary concern with the test-only option mentioned by Mr Ray Newland. Ms Christine Mulvihill, a research fellow at MUARC, commented:

*I think the concern that has been expressed is that they do test-only situations where you can just go in and get your test and not do training. That is a bit of a worry. You wonder if the provider is actually worried about the safety of the rider or if the rider really cares either. From that point of view, I think we should remove the test-only situation and make at least some basic training compulsory.*⁵⁵

However, there is an absence of post-crash data on the experience or training history of the motorcyclist involved which, coupled with the lack of a qualitative measure, limited the Committee's ability to assess the risk posed by the test-only option. Given the overwhelming number of novice riders undertaking training (10% of licence applicants and 6% of learner permit applicants used the test-only option⁵⁶) it is likely any impacts arising from the test-only option would be restricted to a small number of riders.

4.6.5 Accredited provider scheme audits

The last of the concerns raised with the scheme was the operation, purpose and use of audits. Essentially the commentary was that the auditing of accredited providers is focused on record keeping and fails to adequately regulate the scheme because rogue operators are able to meet the record keeping requirements but operate in a way that undermines the licensing regime. That view was strongly put by Motorcycling Australia, who stated that VicRoads in its auditor capacity had:

*Poor and ineffectual administration and auditing...A lack of a quality audit in the delivery of the training [and] ... A disproportionate focus on paperwork process.*⁵⁷

The reference to 'a focus on paperwork' was restated by Armstrong's, an accredited provider. In their submission, they suggested:

*Accredited provider audits need to focus on the effectiveness of the licencing process rather than on document control.*⁵⁸

Representatives from Armstrong's expanded on this point by detailing the failure of accredited provider contracts and audits to adequately deal with misconduct or wrongdoing:

*I think that there should be penalties applied that remove their accreditation. That would be the most severe case, but certainly VicRoads needs to ensure that penalties are established and that they are applied, because at the moment that does not seem to be the case. My colleague ... mentioned different sets of rules for different providers, and certainly that can be seen to be the case, particularly where the providers are not required to be a registered training organisation for the purpose of delivering training and licensing on behalf of VicRoads*⁵⁹.

...

Not prescribing down to the letter, but certainly there needs to be some rules within which we all operate — the standard of facility, the standard of trainer, the way that the training is conducted — not just the licence assessment or the learner permit assessment, which is all they focus on at the moment. In one of our comments we felt that the audit process for VicRoads as well needs to [be] improved and that it should not focus on documentation — it should focus on the quality of the training and licensing that is occurring.

⁶⁰

Several other witnesses expressed concern at the audit system, and provided the Committee with examples for the proposition that the audit system was failing to ensure the integrity and efficiency of the scheme. Mr Rob Smith, Motorcycling Australia, responded to a question from the Committee on the efficacy of the audit scheme by drawing on both the history and function of the audit system:

There are two issues. There is the one that the test is not being applied properly when it is being applied, and the other issue is that it is not being done at all. These are audit functions, and I believe the problem with the audit functions was that there was a preoccupation with process rather than delivery. While the paperwork got bigger and more expansive and tried to cover off more and more things, those who actually knew what they were looking at disappeared from the ranks. In the end no-one knew what it was they were looking at when they went and looked at the delivery of either training or testing.

An example of that would be that I have done some work for one of the training organisations, and in looking at the lines painted on the bitumen, it was immediately obvious that the lines had been incorrectly painted. As a result the rider was given an unfair advantage over a rider at a school where the lines were painted correctly. In other places, for example, where a rider was supposed to ride a certain distance at a low speed and use the clutch, throttle and rear brake to control the progress and the speed, the idle of the machine had been set so that all they had to do was get moving and then idle through until the end. They did not have to use the clutch, throttle and rear brake at all. The result was that it negated the skills.

The best example of actual knowledge of the substandard approach came when my wife attended to get her learners permit. On our first ride out I asked her what she knew. We had a little ride around in a car park and one thing and another. She speared across a T-intersection and mounted the curb on the other side of the road. When I asked her why, she said, 'No-one taught me to turn right slowly'. I questioned her about that, and she said, 'We didn't do that; we just never got shown how to make a right turn slowly from rest'. There is a big problem with rider training.

⁶¹

The criticisms provided to the Committee and discussed in this chapter apply to an audit system focused on record keeping and compliance with the terms of the accreditation contracts. The 2008 review findings paid much attention to auditing and suggested a number of improvements to the scheme including superimposing risk management systems over the scheme by VicRoads and using intelligence information to target providers and audits.⁶² However, the Committee heard ongoing concerns from submitters and witnesses as to the efficacy, appropriateness and usefulness of audits that apply to providers. One witness made the following comments on the need for audits to be conducted by adequately trained personnel:

You have to have an audit process conducted by people who are expert, and therein lies one of the problems to date — that is, that VicRoads has no experts in motorcycle training and testing. They could have gone to other people, and they talk to the industry regularly, but the industry is motivated by different things. It is my belief they should have had independent input into the audit process; they should have had independent input into the delivery of both the training itself and what was needed to ensure the standards. If we are going to have a new system, the very first step, in my opinion, would have been to make sure that the foundation of audit had been laid. VicRoads has just released a document, which I believe you have, outlining the new system for motorcycle licensure.

*However, within that there is no mention of the audit process; there is no mention of how the quality is going to be controlled. I believe that is like building a house by starting with choosing the tiles and the roof and then laying a slab underneath it.*⁶³

The extent of the issues with the audit structure and the way they are carried out was a constant theme during the Inquiry and appears to be an ongoing issue. However, Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, responded to these concerns by drawing the Committee's attention to changes made to the auditing regime and the impact of the proposed GLS:

*Should we introduce a new graduated motorcycling system, it will certainly improve both of those areas. It is important to understand, I think, the difference between audit and evaluation. The audit process is intended to in fact check compliance with procedure by the deliverers; that will continue to be maintained. As those procedures change, which they will have to do if we introduce a new GLS, then the auditing process will also change.*⁶⁴

The proposed changes to current practices will include mandatory training and a staged development program.⁶⁵ These proposals may deal with the training inconsistencies and the audit issues related to them, but the Committee cautions that the GLS is at present a proposal and has not yet been approved for implementation.

4.7 Issues with the scheme

During the course of the Inquiry the Committee was apprised of several issues, which were additional to those dealt with earlier. These issues were raised in both submissions and by witnesses at public hearings and included the training of instructors, training curriculum, riding facilities and the lack of an effectiveness measure.

4.7.1 Training of instructors

According to some submissions and witness statements, motorcycle instructors vary in their skills and expertise within the scheme. The Committee heard numerous concerns with the standard of instructors and the failure of the scheme to require a minimum standard of competency among instructors. The inconsistent standard of instructors was, according to one witness, supposed to have been corrected by a requirement that accredited providers be Registered Training Organisations (RTO), a requirement to have been imposed by VicRoads in 2010, but which had apparently, been deferred.⁶⁶ The reference to an 'RTO requirement' is likely to be a reference to the 2008 review of the scheme by VicRoads. The review included a recommendation that accredited providers not already an RTO attain that status by 1 July 2009.⁶⁷ That recommendation was implemented by VicRoads through the *Accredited Provider Services Agreement* which included a contractual requirement that a provider obtain and maintain an RTO status.⁶⁸ However, the Committee understands that this requirement was removed in June 2012 due to a lack of specific RTO modules for accredited motorcycle providers and a VicRoads review into motorcycle licence requirements. Nevertheless, providers are still required to have a quality system that meets Australian Quality Training Framework standards.⁶⁹

Another submission raised the failure of VicRoads to audit accredited providers in the context of instructors. It was suggested such a failure was allowing some providers to not provide ‘on the job training’ to instructors, something which leads to sub-standard training programs.⁷⁰ In contrast to this evidence, the Committee was advised that instructors must meet standards (contained in the VicRoads *Accredited Provider Services Agreement*⁷¹) to work for an accredited provider that include five years’ motorcycle experience and a certificate IV in training and assessment.⁷² The minimum requirements imposed by the *Accredited Provider Services Agreement* are a certificate IV in Training and Assessment (or equivalent) and for testers, the successful completion of the VicRoads Licence Test Administration Course and other obligations imposed by VicRoads in the *Accredited provider services agreement business procedures manual*.⁷³ It should be noted that these requirements are imposed irrespective of whether the accredited provider is an RTO. A common theme in evidence reviewed by the Committee was the pressing need to ensure instructors meet a consistent standard. That point was forcefully put by Mr David MacKenzie, Motorcycle Motion:

*... there needs to be a standard between the providers, where the information is exactly the same, and VicRoads, in consultation with industry obviously, has set what the benchmarks should be for trainers.... VicRoads should set the benchmark and train the trainers. At the moment we can train our own trainers and give them the information that is required under the VicRoads licence provider agreements.*⁷⁴

4.7.2 Training curriculum

There is no common training curriculum or standard for training among Victoria accredited providers. That means there is a significant level of diversity among providers in their training content and delivery. This was evident in both academic literature and in the evidence presented during the Inquiry. The level of variation and inconsistency was highlighted during the Wangaratta public hearings by Mr George Talbot, from Ride Smart and a member of RoadSafe North East who explained this issue is being actively considered by regulators such as VicRoads:

*... they are looking at making training uniform across all of us as accredited providers, but it is not the case at the moment...I think we have about 30 Victorian accredited motorcycle providers. Although the information is documented on what they deliver, it is on record with VicRoads that ... there is not enough uniformity ... but they are looking at perhaps coming down that road.*⁷⁵

The lack of consistency in training programs has also been cited by academics as a factor explaining the lack of success for training in reducing accident risk.⁷⁶ Evidence of the issues with inconsistencies in training was also raised by representatives from MUARC:

*The training across the providers is not consistent; it can range from a half day to a full day in some instances ... It would be good to get some consistency in terms of what basically should be delivered, but that is complicated by the fact that we do not have a really good understanding of what we should be training for. Although on the face of it you would think we should include more of the higher order stuff than is currently being included ... and also more on the attitudes and behaviours of staff.*⁷⁷

The lack of a qualitative measure is an issue that extends to the inconsistencies in training offered by providers. The lack of a qualitative measure results in an inability to

assess the different curricula used by accredited providers⁷⁸ in order to identify best practices for road safety purposes. In the absence of a practical way to measure whether one training course is better or worse, the viewpoints of witnesses and the research highlights a lack of uniformity in training which makes it impossible to identify or correct negative variations in training content.

4.7.3 Riding ranges

A criticism of the scheme levelled by some submitters related to the size of riding ranges. These ranges are the area where students learn to ride and complete the permit and licence tests. The issues raised for the Committee's appraisal were a lack of conformity among providers with the standards for riding ranges contained in the VicRoads provider contracts, and the prohibitive cost of land which restricts the ability of providers to purchase and use larger ranges. The issue with riding ranges was well-outlined by Mr David MacKenzie. In response to a question from the Committee on the size of the riding range utilised by Motorcycle Motion, he responded:

*I could not tell you what the exact land size is where we are at the moment. It is not huge. Our riders never get out of second gear. We cannot replicate the road environment, and in an industrial area the land is not cheap to buy.*⁷⁹

The cost of riding ranges was also identified as a factor in the lack of off-road riding courses, as Mr Rob Smith, Motorcycling Australia explained:

*... off-road training presents problems simply because of the cost of real estate. Certainly in rural areas there is a problem with delivery in that it is hard to find real estate that is suitable for the delivery of these programs. Anybody wanting to set up a school in the country has to buy a piece of land or rent a piece of land that either already has good quality flat bitumen laid on it and a classroom or they have to invest in it themselves. That historically has been the problem.*⁸⁰

The 2008 review also analysed issues with riding ranges. It found there were substantial discrepancies in the standards of facilities used by motorcycle providers, with a mixture of sophisticated facilities and rudimentary or borrowed facilities being used.⁸¹ The 2008 review, however, did not include a recommendation or change to existing riding range requirements so it is unclear how these discrepancies were dealt with and whether these issues continue to exist. Considering the witness statements earlier, it seems likely that the inconsistencies identified by the review are, in the opinion of some, ongoing.

4.7.4 Training courses

The Committee was informed that there are limitations in the types of training courses offered by providers. Victoria is the only state that developed a combined learner-licence, which is a four day course that allows a rider to obtain a restricted licence without the need to complete the permit component.⁸² Although this course was developed for inclusion in the training curriculum, no accredited provider has provided that course since it was created.

A similar gap exists in the provision of off-road riding courses. The Committee understands that there are currently very few training providers who offer off-road rider

training. That absence was identified by Mr Rob Smith, Motorcycling Australia, who pointed to a lack of requirements for off-road rider training, suggesting that this was not a licensing issue but a road safety issue more broadly.⁸³ The importance of providing training for those who wish to ride off-road was highlighted to the Committee by Mr Scott Harris, who suffered serious injuries as a result of an off-road crash:

The training that goes on with your licence is all to do with the road; there is nothing to do with dirt bikes. It is all about the road rules, how to ride on the road and everything to do with that side of motorbike riding, whereas there is nothing in the licence that suggests any help with trail bikes. If there are any recommendations I would make, it would be more trail-bike training and to go through with riders some of the rules that could take place in [off-road] situations ...⁸⁴

4.7.5 Measuring effectiveness

*Evaluation ... is really about testing whether as an outcome you actually get a reduction in road trauma or a greater compliance with road laws.*⁸⁵

*There is no process for evaluating the effectiveness of training in terms of producing safer riders in the longer term.*⁸⁶

The most problematic aspect of the accredited provider scheme is the lack of measures for assessing its effectiveness in delivering the objectives of motorcycle licensing*. The absence of an overarching effectiveness measure was identified in comments made by providers during the 2008 review. These included statements that ‘audits are not relevant to long term driver safety’⁸⁷ and the observation that ‘the audit must include the standard of training/testing and the applicant’s competence in the interests of road safety’.⁸⁸

Although it might be argued that the scheme is efficient in its provision of training and licensing services, those functions do not deal with the quality of the scheme. Nor do they indicate whether the scheme is providing better outcomes in terms of reducing the risks for novice motorcyclists or improving road safety in Victoria. It is noteworthy that neither the *Accredited Provider Agreement* nor the accompanying business procedures manual refer to qualitative licensing outcomes. The absence of a reference to effectiveness in these documents reflects the structure of the scheme which is predicated on the efficient provision of services and adherence to processes and guidelines. Whilst the 2008 review links ‘quality’ to how well providers deliver the services in accordance with the rules and requirements of the scheme⁸⁹, that characterisation is conceptually distinct from effectiveness and similar to measuring efficiency.

* **Note:** The purposes of licensing are set out in the *Road Safety Act 1986*. Among others, they include ensuring that people are competent in driving motor vehicles on highways and that drivers are aware of safe driving practices and road law (see sections 17(a)-(b) of the *Road Safety Act 1986*). These two purposes extend to motorcyclists which means that accredited providers who administer motorcycle licensing are therefore involved in helping promote these purposes.

Due to a lack of a qualitative measure in the provision of service, it was not possible for the Committee to discern whether scheme providers have become more efficient over time or whether competition has led to better or higher standards of quality tuition. The lack of an effectiveness measure that is linked to an overarching objective such as reducing trauma through better rider training is a serious gap that inhibits the potential of the scheme. This is because better providers are treated no differently to inferior providers, and training and testing are not subject to continuous improvement, because it is not possible to measure the effectiveness of performance.

4.8 Findings

4.8.1 Efficiency and quality of the scheme

On the basis of evidence presented to the Committee, the scheme appears to be efficient and capable of processing the permit and licence candidates. Training programs are available across providers, in rural and metropolitan areas, and the vast majority of candidates elect to pay for training before taking the applicable test. The Committee is concerned, however, with the evidence relating to the quality of the training provided and the variability between the training programs used by accredited providers. Further, it is unclear whether all instructors are adequately providing training and testing procedures. There is a clear, urgent need to develop a common curriculum that provides a minimum from which providers could tailor their courses. Such a curriculum should explicitly determine the parameters of training by referencing or defining the meaning of phrases such as ‘road craft’ and ‘attitudinal training’, which do not appear in the scheme’s contractual and business requirements.

The question of requiring accredited providers to be an RTO did not appear to be of great significance to the efficient running of the scheme. It is unclear what impact the RTO requirement had until its removal in June 2012. The Committee does not have sufficient evidence to justify the re-introduction of such a requirement nor was it convinced that doing so would deliver additional benefits.

It is apparent that the audit system used by VicRoads is adequate in ensuring that the scheme’s administrative requirements are met by providers. However, the audits should be reviewed to ensure that quality standards for both testing procedures and the delivery of tuition are maintained. The Committee agrees with the proposal by the RACV that more regular audits are needed to ensure the integrity of the scheme.⁹⁰

4.8.2 Governance measures

The Committee notes the strong evidence for the introduction of new governance measures to make the scheme more effective. The most pressing requirement of the scheme is to ensure that commercial imperatives do not dilute the delivery of training and testing services. A way of ensuring that occurs is by strengthening the audit regime.

Strengthening the audit regime must begin with the introduction of a qualitative audit that contains minimum standards. However, for such an audit to work properly there must be a common training curriculum used by accredited providers. The absence of

such a curriculum would make any qualitative audits difficult to apply. Creating such minimum requirements would also ensure that accredited providers would be assessed both in terms of processing students and in the way they deliver training content. Further, the Committee heard that there is a need to ensure that accredited providers do not allow students who are, in the instructor's view, incapable of riding safely to sit a permit or licence test. A requirement or discretion to exercise judgment in allowing a candidate to undertake a test could be examined by VicRoads. Arguably such a right already exists, although it might not be exercised with regularity.

The Committee accepts the competitive principles underpinning the scheme. It is unclear, however, whether these principles have delivered a better scheme than the one it replaced. The commercial imperative does appear to have created some negative outcomes, with some providers being accused of operating in a substandard way. The Committee was unable to verify these claims. However, the absence of off-road training from almost all accredited providers, inconsistent service or the availability of courses in all areas and the failure of any provider to offer the combined learner-liscence⁹¹ indicate that market forces and competition are subject to commercial considerations. Where that occurs, particularly in off-road riding, VicRoads must find ways of ensuring that students in regional Victoria, and those interested in undertaking off-road training and the learner-liscence course, are able to access these services.

4.9.3 An effectiveness measure

The Committee accepts the view that currently, the accredited provider scheme lacks an effectiveness measure. That is, the scheme lacks a measure for calculating the safety outcomes of training and testing. That absence has created two issues. Firstly it is not possible to measure, objectively, whether the scheme is providing better safety outcomes over time by reducing road trauma or whether the scheme is better at producing safer riders than an alternative scheme. The absence of such a measure also means it is not possible to identify best practice among providers, or to measure the impact of training or testing in terms of reduced trauma. It is critical that such a measure exist. The lack of an effectiveness measure has meant that a more comprehensive evaluation of the accredited provider scheme has not taken place, nor could one have been undertaken.

The current audit regime is not capable of measuring the effectiveness of the training provided by accredited providers, or the scheme as a whole, because its focus is on administrative compliance and identifying breaches of contractual requirements rather than the safety outcomes of accredited providers. On that basis, the Committee believes that an effectiveness measure or measures based on the performance of providers in improving road safety outcomes and reducing trauma should be developed. The Committee recognises the development of such measures would also require the current scheme to be subjected to a substantial review to allow the existing audit regime, and training curriculum, to be assessed as part of the development of an effectiveness measure for providers.

Recommendations: Chapter 4

Recommendation 7:

That the current accredited provider scheme be reviewed by an external organisation such as the Monash University Accident Research Centre or the Victorian Auditor-General's Office, to measure its current effectiveness in administering motorcycle licensing and whether it improves motorcycle safety and reduces motorcycle trauma. The review is to be initiated within 12 months of the tabling of this report.

Recommendation 8:

That VicRoads auditing include a new component focusing on the effectiveness of accredited providers, to be measured in terms of road safety outcomes.

Recommendation 9:

That accredited providers who do not offer a 'test only' option be able to access financial incentives, and that such an incentive be provided by way of a reduction in the amount paid, per student, to VicRoads by accredited providers.

Recommendation 10:

That VicRoads, design and implement a pilot training course, for pre-licence riders that includes an off-road and attitudinal component. The training course should involve selected accredited providers, and be implemented within 12 months of the tabling of this report.

Recommendation 11:

That VicRoads, in consultation with other road safety agencies and the public, develop a common training curriculum which all accredited providers are required to use.

Recommendation 12:

That an on-road training component for learner riders, and on-road testing component for probationary riders, be introduced.

Endnotes: Chapter 4

¹ VicRoads, *Submission to the Inquiry*, September 2011, p. 39.

² S. 22 Road Safety Act 1986 (Vic).

³ VicRoads, *Submission to the Inquiry*, September 2011, p. 40.

⁴ Mr Alex Stojanovic, Business Facilitator, Transport Department of NISTC, Authorised VicRoads Trainer and Assessor, Wodonga TAFE, *Transcript of Evidence*, Wodonga, 30 November 2011, p. 518

⁵ Haworth N & Mulvihill C, *Review of motorcycle licensing and training*, Report No. 240, Monash University Accident Research Centre, June 2005, pp. 4, 9.

⁶ Haworth N & Mulvihill C, *Review of motorcycle licensing and training*, Report No. 240, Monash University Accident Research Centre, June 2005, p. 9.

⁷ Haworth N & Mulvihill C, *Review of motorcycle licensing and training*, Report No. 240, Monash University Accident Research Centre, June 2005, p. 55.

⁸ VicRoads, *Submission to the Inquiry*, September 2011, p. 39.

⁹ VicRoads, *Submission to the Inquiry*, September 2011, p. 39.

¹⁰ VicRoads, *Submission to the Inquiry*, September 2011, p. 41.

¹¹ Haworth N & Mulvihill C, *Review of motorcycle licensing and training*, Report No. 240, Monash University Accident Research Centre, June 2005, p. 9.

¹² VicRoads, *Submission to the Inquiry*, September 2011, p. 40.

¹³ VicRoads, *Submission to the Inquiry*, September 2011, p. 41.

¹⁴ Haworth N & Mulvihill C, *Review of motorcycle licensing and training*, Report No. 240, Monash University Accident Research Centre, June 2005, p. 9.

¹⁵ VicRoads, *Submission to the Inquiry*, September 2011, p. 39; Correspondence from Mr Angelo Herft, Manager, Agent Services, Registration and Licensing, VicRoads, 30 August 2012.

¹⁶ VicRoads, *Submission to the Inquiry*, September 2011, p. 39.

¹⁷ VicRoads, *Submission to the Inquiry*, September 2011, p. 39.

¹⁸ VicRoads, *Submission to the Inquiry*, September 2011, p. 39.

¹⁹ VicRoads, *Submission to the Inquiry*, September 2011, p. 40.

²⁰ VicRoads, *Submission to the Inquiry*, September 2011, p. 40.

²¹ VicRoads, *Submission to the Inquiry*, September 2011, p. 40.

²² VicRoads, *Submission to the Inquiry*, September 2011, p. 41.

²³ VicRoads, *Submission to the Inquiry*, September 2011, p. 41.

²⁴ Motorcycling Australia, *Submission to the Inquiry*, August 2011, pp. 22–23.

²⁵ Victorian Automobile Chamber of Commerce, *Submission to the Inquiry*, September 2011, p. 26.

²⁶ Mr Robert Toscano, Director, Honda Australia Motorcycle and Power Equipment, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 113.

²⁷ Hangmore Motorcycle Club, *Submission to the Inquiry*, July 2011.

²⁸ Donaldson B, *Submission to the Inquiry*, July 2011.

²⁹ Royal Automobile Club of Victoria, *Submission to the Inquiry*, September 2011, pp. 3-4.

³⁰ Armstrong's Driver Education, *Submission to the Inquiry*, July 2011, Term of Reference (f).

³¹ Mr Rob Smith, Manager, Australian Riders' Division, Motorcycling Australia, *Transcript of Evidence*, Geelong, 15 November 2011, p. 308.

³² Honda Australia Motorcycle and Power Equipment, *Submission to the Inquiry*, September 2011, Term of Reference (f).

³³ VicRoads, *Submission to the Inquiry*, September 2011, p. 39.

³⁴ VicRoads, *Submission to the Inquiry*, September 2011, p. 39.

³⁵ Mr David MacKenzie, Senior Instructor, Motorcycle Motion, *Transcript of Evidence*, 15 November 2011, p. 327.

³⁶ Haworth N, Grieg K & Wishart D, *Motorcycle and scooter training and licensing (RSD-0367) – Report to VicRoads*, for VicRoads, August 2007, p. 43 & 72.

³⁷ Ms Amanda McKenzie, Chief Executive Officer, Driver Education Centre of Australia, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 97; Mr Robert Toscano, Director, Honda Australia Motorcycle and Power Equipment, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 115-16.

³⁸ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 23.

³⁹ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 23.

⁴⁰ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 23.

⁴¹ Mr Rob Smith, Manager, Australian Riders' Division, Motorcycling Australia, *Transcript of Evidence*, Geelong, 15 November 2011, p. 308.

⁴² Haworth N & Mulvihill C, *Review of motorcycle licensing and training*, Report No. 240, Monash University Accident Research Centre, June 2005, p. 11.

⁴³ Haworth N, Smith R & Kowadlo N, *Evaluation of rider training curriculum in Victoria*, Report No. 165, Monash University Accident Research Centre, February 2000, p. 21.

⁴⁴ Haworth N, Smith R & Kowadlo N, *Evaluation of rider training curriculum in Victoria*, Report No. 165, Monash University Accident Research Centre, February 2000, pp. 21–22.

⁴⁵ Haworth N, Smith R & Kowadlo N, *Evaluation of rider training curriculum in Victoria*, Report No. 165, Monash University Accident Research Centre, February 2000, p. 24.

⁴⁶ Strategic Safety Solutions, *Accredited provider scheme – heavy vehicle drivers and motorcycle riders training and assessment – Independent review, assessment and recommendations*, for VicRoads, July 2008.

⁴⁷ Strategic Safety Solutions, *Accredited provider scheme – heavy vehicle drivers and motorcycle riders training and assessment – Independent review, assessment and recommendations*, for VicRoads, July 2008, p. 2.

⁴⁸ Strategic Safety Solutions, *Accredited provider scheme – heavy vehicle drivers and motorcycle riders training and assessment – Independent review, assessment and recommendations*, for VicRoads, July 2008, p. 25.

⁴⁹ Strategic Safety Solutions, *Accredited provider scheme – heavy vehicle drivers and motorcycle riders training and assessment – Independent review, assessment and recommendations*, for VicRoads, July 2008, p. 25.

⁵⁰ Strategic Safety Solutions, *Accredited provider scheme – heavy vehicle drivers and motorcycle riders training and assessment – Independent review, assessment and recommendations*, for VicRoads, July 2008, p. 25.

⁵¹ Strategic Safety Solutions, *Accredited provider scheme – heavy vehicle drivers and motorcycle riders training and assessment – Independent review, assessment and recommendations*, for VicRoads, July 2008, pp. 3, 4.

⁵² Victorian Automobile Chamber of Commerce, *Submission to the Inquiry*, September 2011, p. 26.

⁵³ Newland R, *Submission to the Inquiry*, July 2011, p. 6.

⁵⁴ Mr Alex Stojanovic, Business Facilitator, Transport Department of NISTC, Authorised VicRoads Trainer and Assessor, Wodonga TAFE, *Transcript of Evidence*, Wodonga, 30 November 2011, p. 518.

⁵⁵ Ms Christine Mulvihill, Research Fellow, Monash University Accident Research Centre, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 650.

⁵⁶ VicRoads, *Submission to the Inquiry*, September 2011, p. 40.

⁵⁷ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 24.

⁵⁸ Armstrong's Driver Education, *Submission to the Inquiry*, July 2011, Term of Reference (f).

⁵⁹ Ms Alene McGowan, General Manager, Armstrong's Driver Education, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 102.

⁶⁰ Ms Alene McGowan, General Manager, Armstrong's Driver Education, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 103.

- ⁶¹ Mr Rob Smith, Manager, Australian Riders' Division, Motorcycling Australia, *Transcript of Evidence*, Geelong, 15 November 2011, pp. 308–09.
- ⁶² Strategic Safety Solutions, *Accredited provider scheme – heavy vehicle drivers and motorcycle riders training and assessment – Independent review, assessment and recommendations*, for VicRoads, July 2008, p. 4.
- ⁶³ Mr Rob Smith, Manager, Australian Riders' Division, Motorcycling Australia, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 622.
- ⁶⁴ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne 6 March 2012, p. 669.
- ⁶⁵ VicRoads, *Supplementary VicRoads submission to the Inquiry into Motorcycle Safety*, 2 March 2012, Discussion.
- ⁶⁶ Ms Alene McGowan, General Manager, Armstrong's Driver Education, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 107; Armstrong's Driver Education, *Submission to the Inquiry*, July 2011, Term of Reference (f).
- ⁶⁷ Strategic Safety Solutions, *Accredited provider scheme – heavy vehicle drivers and motorcycle riders training and assessment – Independent review, assessment and recommendations*, for VicRoads, July 2008, p. 42.
- ⁶⁸ Cl. 1, Part A, *Accredited Provider Services Agreement – Motorcycle training and assessment services*, VicRoads, January 2010, Version 1, p. 4.
- ⁶⁹ Correspondence from Mr Angelo Herft, Manager, Agent Services, Registration & Licensing Services, VicRoads, 13 September 2012.
- ⁷⁰ Newland R, *Submission to the Inquiry*, July 2011, p. 7.
- ⁷¹ VicRoads, *Accredited Provider Services Agreement – Motorcycle training and assessment services*, Version 1, January 2010.
- ⁷² Ms Alene McGowan, General Manager, Armstrong's Driver Education, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 107.
- ⁷³ VicRoads, *Accredited Provider Services Agreement – Motorcycle training and assessment services*, Version 1, January 2010, Schedule 7, pp. 43–44; VicRoads, *Accredited provider services agreement – motorcycle training and assessment services - Business procedures manual*, Version 2, April 2010.
- ⁷⁴ Mr David MacKenzie, Senior Instructor, Motorcycle Motion, *Transcript of Evidence*, 15 November 2011, p. 331.
- ⁷⁵ Mr George Talbot, Ride Smart, and member of RoadSafe North East, *Transcript of Evidence*, Wangaratta, 29 November 2011, p. 430.
- ⁷⁶ Haworth N, Grieg K & Wishart D, *Motorcycle and scooter training and licensing (RSD-0367) – Report to VicRoads*, for VicRoads, August 2007, p. 23.
- ⁷⁷ Ms Christine Mulvihill, Research Fellow, Monash University Accident Research Centre, *Transcript of Evidence*, Melbourne, 6 March 2012, pp. 649–650.
- ⁷⁸ Haworth N, Grieg K & Wishart D, *Motorcycle and scooter training and licensing (RSD-0367) – Report to VicRoads*, for VicRoads, August 2007, p. 40.
- ⁷⁹ Mr David MacKenzie, Senior Instructor, Motorcycle Motion, *Transcript of Evidence*, 15 November 2011, p. 330.
- ⁸⁰ Mr Rob Smith, Manager, Australian Riders' Division, Motorcycling Australia, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 623.
- ⁸¹ Strategic Safety Solutions, *Accredited provider scheme – heavy vehicle drivers and motorcycle riders training and assessment – Independent review, assessment and recommendations*, for VicRoads, July 2008, p. 24.
- ⁸² Haworth N, Grieg K & Wishart D, *Motorcycle and scooter training and licensing (RSD-0367) – Report to VicRoads*, for VicRoads, August 2007, p. 42; Haworth N & Mulvihill C, *Review of motorcycle licensing and training*, Report No. 240, Monash University Accident Research Centre, June 2005, p. 11.
- ⁸³ Mr Rob Smith, Manager, Australian Riders' Division, Motorcycling Australia, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 623.

⁸⁴ Mr Scott Harris, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 253.

⁸⁵ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne 6 March 2012, p. 670.

⁸⁶ Haworth N & Mulvihill C, *Review of motorcycle licensing and training*, Report No. 240, Monash University Accident Research Centre, June 2005, p. 9.

⁸⁷ Strategic Safety Solutions, *Accredited provider scheme – heavy vehicle drivers and motorcycle riders training and assessment – Independent review, assessment and recommendations*, for VicRoads, July 2008, p. 26.

⁸⁸ Strategic Safety Solutions, *Accredited provider scheme – heavy vehicle drivers and motorcycle riders training and assessment – Independent review, assessment and recommendations*, for VicRoads, July 2008, p. 27.

⁸⁹ Strategic Safety Solutions, *Accredited provider scheme – heavy vehicle drivers and motorcycle riders training and assessment – Independent review, assessment and recommendations*, for VicRoads, July 2008, p. 4.

⁹⁰ Royal Automobile Club of Victoria, *Submission to the Inquiry*, September 2011, p. 4.

⁹¹ Haworth N, Grieg K & Wishart D, *Motorcycle and scooter training and licensing (RSD-0367) – Report to VicRoads*, for VicRoads, August 2007, p. 42.

Chapter 5 at a glance

Overview

Improving the safety of off-road riders has been undermined by, at best, confusion, at worst, a lack of will amongst some government agencies as to who has responsibility for improving off-road safety. Part of the reason for that confusion is the contested definition of off-road motorcycling. This chapter focuses on the meaning of a road and road related area within the *Road Safety Act 1986* and the *Transport Integration Act 2010* to identify which government agencies are responsible for off-road motorcycle safety and what those responsibilities include. It also includes an analysis of the distinction between road manager and road safety responsibilities.

The Committee assessed the responsibilities of Victoria Police, the Transport Accident Commission (TAC), the Department of Sustainability and Environment (DSE) and VicRoads by reference to Victorian legislation and case law, and then measured the performance of each of these organisations in meeting their road safety responsibilities where one existed. Additionally, the issue of Victoria Police funding for off-road activities was analysed.

Key findings

The Victorian legislative definition of a road and road related area clearly impose road safety responsibilities on Victoria Police, the TAC and VicRoads. Off-road riding only falls outside of the regulatory purview of road safety agencies when it occurs on private property. However, road safety agencies have accepted their responsibilities for off-road to varying degrees: Victoria Police has met some of its responsibilities for off-road but in an ad hoc way; the TAC has tentatively begun off-road safety activities but these are strictly limited; and lastly, VicRoads has not met its legislative responsibilities for off-road, a position that remained unchanged during the course of the Inquiry. The DSE has been the most involved of all government entities, even though a legislative road safety responsibility does not apply to it.

Recommendations

Recommendation 13:

That VicRoads and the Transport Accident Commission treat off-road motorcycle safety no differently to that of on-road motorcycles.

Recommendation 14:

That VicRoads and the Transport Accident Commission ensure all current and future motorcycle safety initiatives specifically include a component aimed at improving the safety of off-road riders.

Recommendation 15:

That road safety interventions, strategies and initiatives focus on both on and off-road motorcyclists, relying on the definition of a road and road related area in the *Road Safety Act 1986* as a basis for including or excluding motorcyclists.

Recommendation 16:

That the Department of Sustainability and the Environment be involved in the monitoring of off-road safety, and be included in the design, development, implementation and consultation stages of off-road safety initiatives, strategies and countermeasures and in the gathering and sharing of off-road crash data.

Recommendation 17:

That an ongoing public education campaign be undertaken by the Transport Accident Commission to educate off-road riders of the coverage they are afforded under the Transport Accident Compensation Scheme.

CHAPTER 5: OFF-ROAD RIDING AND MOTORCYCLE SAFETY

5.1 *Introduction*

Motorcycle regulation is the responsibility of multiple government agencies. The role, powers and obligations of each agency are set out in legislation. Motorcycle regulation has two interrelated components. The first is the suite of rules and regulations that control the use of a motorcycle. The second is the regulation of motorcycle safety, both pre-crash (strategies and initiatives that aim to prevent or mitigate trauma) and post-crash (compensation and rehabilitation). In addition to these two areas, the roads that motorcycles travel on are also subject to regulation. The role of managing, maintaining and building roads is set out in a complex array of legislation that defines who is responsible, and for what, on the vast road network across Victoria.

The use of a motorcycle, like other motor vehicles, is subject to licensing, registration and vehicle standards regulation. These areas are the responsibility of VicRoads. All riders that use motorcycles on roads are required to have a licence or permit and the motorcycle must be registered. Regulating motorcycle safety involves everything from ensuring compliance with regulations to safety strategies like behavioural change programs that aim to lessen the risk of having an accident. The Transport Accident Commission (TAC), VicRoads and Victoria Police (who enforce the rules and regulations for motorcycles and fulfil a compliance and education role) have responsibilities for rider safety. Generally, this responsibility involves either the prevention or minimisation of road trauma. Once a crash has occurred, Ambulance Victoria and the Department of Health (DoH), which oversees the Victorian hospital system, provide trauma and rehabilitation services to injured riders. The TAC, as the Victorian insurer for accident victims, pays for the trauma services and compensates injured riders who have ongoing health issues.

The management of the road network is the responsibility of agencies and is set out in legislation.¹ These agencies include the Department of Sustainability and Environment (DSE), local government, toll operators and VicRoads.² Victoria has a significant road network, made up of sealed and unsealed roads that are classified according to criteria set out administratively and in legislation.³ The DSE road network covers some 40,000 kilometres of open public roads, suited to four wheel drive vehicles and trail bike motorcycles.⁴ Apart from roads that are in reserves and national and state parks (the DSE road network), there is a considerable road network that is managed by several other road managers such as VicRoads and local government.⁵

5.1.1 *Road managers and road safety responsibilities*

In terms of off-road riding, this chapter is confined to discussing the road safety, rather than road management, function. The reasons for this approach are twofold: firstly, the roads on which off-road riding, and crashes, occur are roads which would be difficult, if not impossible, for a road manager to treat in accordance with the *Road Management Act 2004*.

Off-road riding focuses on roads that are unsealed, undulating, sometimes dangerous and often surrounded by trees and other obstacles. That makes managing them, in the way described by the *Road Management Act 2004*, difficult due to cost and the fact that if they were made safer, the use of them by off-road riders would diminish. The second reason is that whilst the agencies such as VicRoads could reasonably claim that they are not responsible for roads commonly described as off-road, such as those in national and state parks, the road safety function does apply. However, that role has been exercised by some agencies in a way that is inconsistent with road safety legislation. That in turn has resulted in the absence of road safety policies and initiatives for off-road riders, a category that has experienced significant growth over the last decade.⁶ Improving the safety of this category of riders can only occur if the road safety role is exercised by agencies that are responsible for it. These two reasons are the basis for the Committee's focus on the road safety function rather than the road manager function in this chapter.

The management of roads and the safety of its users are not always exercised by each of the organisations mentioned previously. For some organisations, such as the DSE, only the road management role applies. For others like VicRoads, both a road management and road safety role exist in law. It is important to distinguish between the management of roads, including the liability of road authorities and managers, and the road safety function. Doing so helps to clarify which agency should be leading or involved in road safety. The distinction between having a road manager function and a road safety responsibility is set out in legislation. The *Road Management Act 2004* sets out general functions for several government agencies and each is given specific responsibility for roads under their control.⁷ For example, VicRoads is responsible for arterial roads and freeways. These responsibilities include maintaining and providing roads for community use, managing traffic, designing, constructing, repairing and maintaining roads under the control of the relevant road authority and managing roads in a way that minimises any adverse effects on the safe and efficient operation of the road.⁸ The road safety and road management functions, which are contained in different legislation, overlap.

The *Road Management Act 2004* makes it clear that the road manager function is not to be construed as limiting any other functions that an agency is required to meet under other legislation.⁹ On that basis, a government agency such as VicRoads may not be responsible for managing a class of roads (such as municipal roads) but it may nevertheless have a road safety function conferred on it for these roads.

Throughout the Inquiry process VicRoads, in particular, attempted to confine discussions on its responsibility for off-road riding by applying the road manager rather than the road safety function. The Committee was perplexed by VicRoads' actions in this respect because it views the legislative requirements as straightforward.

5.2 **Background – Off-road riding**

The Inquiry's terms of reference required the Committee to investigate the responsibilities of road safety agencies in relation to off-road riding^{*}. The reason for doing so was two-fold. The first was that there appeared to be limited road safety involvement off-road. The second was the purported high rates of injury and crashes off-road. The off-road riding space is one in which the distinction between road managers and road safety has been blurred, to the effect that the road safety function is not being adequately fulfilled. During the course of the Inquiry the Committee received submissions and evidence on this term of reference that highlighted that some agencies have different approaches to their road safety function based on whether the rider was on-road or off-road.

Off-road riding is a popular recreational pursuit that pits rider against difficult and technically demanding terrain. It requires different riding skills to those for on-road, different protective equipment and different motorcycles. Unlike riding on sealed roads, which may be done for commuting and leisure, off-road riding tends to be wholly recreational in nature.

Riding off-road attracts riders of all ages who are keen to test themselves against the elements and the terrain and are generally aware of the high risks involved.¹⁰ These risks include inconsistent roads, close proximity to roadside objects like trees, and obscured corners and crests. Further, roads in these areas are rudimentary and subject to the impact of the seasons which bring ice, snow and dust. Due to their size and location, roads in these areas can increase the risk of a collision with other riders. Such factors increase the likelihood of injury and death, and the remoteness of off-road areas can make it difficult for riders to contact emergency services and for these services to access the injured. However, in spite of the inherent dangers of riding off-road, the number of Victorians using motorcycles off-road is increasing.

Generally, off-road riding occurs in areas that are difficult to access by cars and motorcycles that are not built for off-road conditions. That means riding off-road takes place in state and national parks and in rural settings on trail bikes. These places can be inherently difficult for government agencies to regulate due to the terrain, limited access and large expanse. Such factors can help explain why some riders choose to ride unregistered motorcycles or not to have a valid licence. These riders are riding unlawfully, but they view the environment as affording them a level of protection.

^{*} Note: There are many different interpretations of what the term 'off-road riding' constitutes. The points of difference in the definition of 'off-road' have in turn created a confusing and inconsistent approach to regulation because no single definition is applied by regulators. The DSE submission to the Inquiry (see DSE, *Submission to the Inquiry*, October 2011, p. 2.) outlined a number of definitions used to describe off-road. One of these defined off-road as '*motorcycle riding on the open public roads in State forests, parks and reserves (legal for licensed riders on a registered motorcycle)*'. This definition was applied by the Committee, as it felt it was the most appropriate, relevant and statutorily correct definition for off-road riding.

For some riders, whose age stops them from being able to legally acquire a permit or licence, the off-road environment can be an opportunity to ride a motorcycle with a low probability of being caught by enforcement officers. This point was highlighted in the submission by the Driver Education Centre of Australia (DECA) which stated:

*... the reality is young riders who do not hold a motorcycle permit or license often ride dirt bikes in state/national parks and on private properties. Despite licensing laws being in place, enforcing such laws appears to be inadequate or impractical.*¹¹

Ascertaining which agencies are responsible for off-road rider safety was a central focus of the Committee's investigations and was characterised by consistent reference to confusing and complex legislation and its interpretation. The Committee identified the following issues: firstly, a lack of funding and resources for those agencies regulating and enforcing off-road riding; secondly, the low level of inter-departmental collaboration and co-ordination for off-road riding; and lastly, the lack of action exhibited by some agencies to accept and fulfil their responsibilities insofar as off-road rider safety was concerned. The Committee notes some agencies have taken steps to rectify the situation. However, these actions either fall short of what should be expected, or in the case of one agency, do not meet the statutory responsibilities.

5.3 Which road safety agencies are responsible for off-road safety?

The responsibilities for managing off-road rider safety are shared among several of Victoria's government agencies. This section deals with the road safety responsibilities for government agencies as defined in legislation.

5.3.1 Victoria Police

Victoria Police primarily fulfils an enforcement role in motorcycle safety and maintains a presence on Victorian roads to promote compliance with road, registration and licensing rules. Victoria Police are responsible for enforcing road rules and the various licensing, registration and vehicle roadworthiness requirements found in the *Road Safety Act 1986* and other subordinate legislation.¹²

The link between compliance and enforcement with rules and road safety is a complex one. It has been found that the link for police is their role in deterring riders from high risk behaviours that could endanger other road users.¹³ As an aside, the Committee took the view it was highly likely that both the educational and enforcement activities of police have a positive impact on motorcycle safety, particularly in terms of behavioural changes that riders make as a result of enforcement activities or the risk of being caught. The legal definition of a road and a road related area allow the police to enforce road rules and other regulations in areas that the community would consider to be off limits to law enforcement. The ability of police to operate off-road is a matter of clear legislative intent.¹⁴ As a result, riders off-road are subject to the same requirements they would have on an arterial road.

5.3.2 *The Transport Accident Commission (TAC)*

The TAC administers a ‘comprehensive, no-fault and common law damages compensation scheme for Victorians who are injured or die as a result of a transport accident.’¹⁵ The TAC collects a premium through the registration scheme (administered by VicRoads) which is used to pay for the care and rehabilitation of injured road users including motorcyclists. Injured Victorian riders hurt in a motorcycle accident are eligible to access a compensation fund and have their medical costs paid for if they meet the various requirements set out in the *Transport Accident Act 1986*. As with other agencies, the definition of a road and road related area applies to the TAC. Therefore, riders injured off-road are covered by the scheme. The practical impact is that a whole class of motorcyclists who may not have previously been viewed as being covered by the transport accident scheme are covered.

The availability of the TAC compensation and treatment schemes has been the subject of litigation in Victoria. The focus of such litigation has centred on whether an accident occurred on a road or public place, usually by reference to the definition of a road and road related area and the licence status of the driver or the registration of the vehicle. The effect of legal judgments in these cases has been to extend the circumstances in which the TAC has to compensate victims of accidents to, in some cases, areas that were considered to be private land.¹⁶

The *Transport Accident Act 1986* imposes a second responsibility on the TAC to ‘promote the prevention of transport accident and safety in [the] use of transport’.¹⁷ That responsibility has created an active role for the TAC in road safety, with the most prominent being its road safety advertising and media campaigns.

5.3.3 *VicRoads*

VicRoads is the primary road safety agency in Victoria. It occupies a central position in terms of its success in combating the road toll and its role in designing and implementing road safety strategy and interventions. VicRoads operates under several statutes which outline its role in road safety. These statutes define the road safety role, powers and responsibilities of VicRoads in three distinct areas: the regulation of vehicles and road users, improving road safety generally and the role of road manager. The focus in terms of off-road rider safety relates to the first and second areas.

Regulating road users and vehicles is a critical road safety function for VicRoads. It centres on licensing and registration under the *Road Safety Act 1986* (the Act). Licensing is considered under the Act to have a road safety purpose.¹⁸ Similarly, registering a motorcycle is intended to ensure that vehicles are designed, constructed and maintained to a safety standard and to allow them to be regulated for safety reasons.¹⁹ Both licensing and registration apply to motorcycles including those used off-road. This is because riders can only use a road lawfully if they have a valid permit or licence and their motorcycle is registered. In turn, the definitions of a road and a road related area are sufficiently broad to cover the type of riding on roads that the public would consider

off-road.²⁰ It is important to note that the definition of a road does not distinguish between roads that are sealed, unsealed, the category of road or its location (urbanised, rural, national or state park), instead distinguishing between areas and roads that are private or public. Because the licensing and registration requirements apply to motorcycles and riders on a road, and ‘road’ includes those that can be characterised as off-road, VicRoads has an off-road safety role.

The primary responsibility for VicRoads in terms of road safety is set out in the *Transport Integration Act 2010* which replaced the *Transport Act 1983*. This legislation positions VicRoads at the apex of road safety in Victoria:

87 Functions of the Roads Corporation

(1) *The functions of the Roads Corporation are to—*

- (d) *lead in the development and implementation of strategic and operational policies and plans to improve the safety of the road system for all users, including through—*
 - (i) *works to improve the safety of road and road-related infrastructure;*
 - (ii) *information and advice on the safety of motor vehicles and motor vehicle standards;*
 - (iii) *education and training to improve the safety of road user behaviour;*
 - (iv) *enforcement activities;*
 - (v) *road safety legislation, regulations, standards, guidelines and practices.*²¹

These functions are clearly reflected in the diverse road safety projects and reforms VicRoads undertakes. However, the Committee notes that the road safety obligations to ‘all road users’ include off-road riders (due to the way that the definition of a road extends to cover off-road riders). The legislative road safety role is something VicRoads readily accepts. In its submission, and by reference to the *Transport Integration Act 2010*,²² it stated:

*VicRoads as an important player in the transport network has a role in ensuring that the transport system is safe, supports health and wellbeing and is continually improved ...*²³

The submission added it is required to undertake this role:

*... in collaboration with relevant bodies including other road authorities, Victoria Police, the Transport Accident Commission ... [T]o improve the safety of the road system for road users and seek to reduce deaths and injuries.*²⁴

However, the extent to which VicRoads and other road safety agencies have shown responsibility in terms of off-road road safety has been mixed.

5.4 How are road safety agencies regulating the off-road area?

5.4.1 Victoria Police

As mentioned earlier, the primary role of Victoria Police is to enforce motorcycle and rider rules and, to a lesser extent, fulfil an educational role in motorcycle safety. Then

Deputy Commissioner Kieran Walshe outlined Victoria Police's approach to off-road riding enforcement and education in the following terms:

We have some targeted operations in some parts of the state, predominantly on the weekends and particularly, say, around holiday weekends — when there is a public holiday — where we can deploy some of our resources into those areas. We have been focusing on that around education. I know staff in the north-eastern part of the state around Benalla and up there have been actually doing that in an endeavour to try to use it as an educative program to speak to people who are engaged in off-road riding about the manner in which they do it and some of the safety. Outside of that we do use our special solo section for some off-road enforcement as well around the safety issues and that sort of thing.²⁵

Victoria Police's Special Solo Unit, comprised of riders specially trained for on and off-road riding, was cited as being 'extremely valuable in terms of maintaining a safer and more legally compliant riding environment'. They were seen by DSE to be critical because they engage those involved in risky behaviours, particularly riding unlicensed or on unregistered motorcycles.²⁶

During the public hearings, the Committee increasingly sought information on the enforcement practices of Victoria Police off-road. It became apparent that the way off-road riding is enforced differs from on-road for a number of practical reasons. The most consistent reasons given were limited resources (both in terms of officers and vehicles) and the inaccessibility of the off-road environment to conventional police vehicles. Then Acting Senior Sergeant Jamie Chester expanded on the environmental challenges faced:

... the terrain is quite inaccessible. It is in state forests and parks where normal vehicles cannot get in to patrol, so enforcement is based around those weekend activities and over holiday periods.²⁷

Similar comments were made to the Committee by Victoria Police officers working in rural areas. At the Wodonga public hearing, Sergeant Cameron Roberts referred to his experiences enforcing off-road with on-road cars and why they felt compelled to do so:

It is tricky. We scrape the front and rear of our car going over the driveway of the police station, so some of these more remote locations cause problems. We struggle to get into some of the camping areas ... but we are a bit limited ... [by] the vehicles. We like to try to get into the camping areas and do a few breath tests, because word spreads like wildfire. You only have to be in there 5 minutes, but the trouble is getting in there.²⁸

The Committee noted that overwhelmingly the evidence of front line officers and other witnesses reflected an enforcement approach that relied on targeting riders either before they entered an off-road area, for example a state park, or on their way back from riding. Police enforcement is limited to the meeting points and access areas where off-road riders are known to congregate before riding. The evidence of Senior Sergeant David Watson best highlighted the current approach and its limits:

We have been putting a lot of resources into the enforcement side of it. Unfortunately our resources do not enable us to go into the bush. We have taken on more proactive measures where we will base ourselves where the motorcycles congregate before they go into the bush and feed them educational material, check their bikes for roadworthiness, make sure that they are licensed and registered. That has had an impact on it, in cleaning out the ones that should not be there.²⁹

Limited resources and the size of off-road areas mean police can only enforce a small area of the total off-road environment. Two examples that best illustrated the difficulties imposed by large off-road areas were given at the Bairnsdale public hearings:

East Gippsland has a large proportion of state and other forest areas; [they account for] ...approximately 10 000 square kilometres ... These areas are utilised regularly by four-wheel drive groups, mountain bike riders, hunters, campers and trail bike riders. Tyranny of distance and the lack of proper equipment and resources make these areas very difficult for the police to regularly patrol and monitor. There are literally thousands of bush tracks up there ... we cannot be everywhere ...³⁰

The second example, provided by Sergeant Rod Lay, drew attention to the fact that some regions have very few sealed roads in comparison to unsealed, dirt roads and tracks:

... there are far more unsealed roads than there are sealed roads in the region by a significant amount. When I was at Yackandandah... there were maybe 100 kilometres of sealed roads in the area and 550 kilometres of dirt tracks in the adjoining forest, which was a small geographical area compared to the geographical area that contains the sealed roads. My experience here would be that it would be the same. There is a huge forest which is just full of bush tracks, and none of them are sealed and yet we have a comparatively small number of highways that flow through. In terms of those used by motorcyclists, there are only a couple ... But the forest tracks are widely used.³¹

The size of off-road areas in some of Victoria's regions is compounded by a lack of police resources. That has meant some off-road areas cannot be patrolled. In Bairnsdale, the Committee was surprised to hear that in a region that includes some 10,000 kilometres of off-road areas there was no off-road capability. As Acting Sergeant Turner observed:

There are currently two highway patrol offices — one at Bairnsdale and one at Orbost, which is further to the east. Our resources at this stage are three road cars that work out of the Bairnsdale office and two road cars that work out of the Orbost office. We currently have no motorcycles or members trained to ride motorcycles At the moment we are doing our best to expand our local experience by addressing these issues by educating relevant members on motorcycle riding standards, off-road as well as on-road, and obtaining or sourcing maybe two or more off-road motorcycles.³²

The Committee sought clarification of these comments, which drew the following response:

We do not have an off-road policing capacity at this time ... We cannot control any of the tracks up in the alpine areas.³³

That lack of resources undermines both the primary road safety function of police, enforcement, but it also means there is a limited capacity for police to get to injured riders to render assistance. The issue of limited resources, both in terms of off-road motorcycles and trained police riders, was a common theme in witness evidence from front line police officers in Geelong³⁴, Ballarat³⁵, Wangaratta³⁶, Wodonga³⁷, Traralgon³⁸ and Bairnsdale.³⁹ Although the approach to enforcement has been limited in terms of officers getting off-road, targeting these riders has become a focus for police in some regional areas for reasons including noise pollution⁴⁰, community concern and to reduce trauma.⁴¹

The Committee received evidence that limited resources have led to some police stations and officers using creative and alternative approaches to meet their road safety obligations off-road. These approaches have included both education and enforcement activities. It was impressed on the Committee that being able to get into off-road areas allows police to meet and talk with riders and, where necessary, enforce laws. A critical role in these projects has been the involvement of the DSE, which has both funded and supported these initiatives. At the Wangaratta public hearings, Sergeant Darren Wittingslow told the Committee of the lengths that officers in Benalla, and he in particular, had taken to develop off-road initiatives and the benefits these programs had brought:

I ... started a Benalla off-road motorcycle project, where I approached Suzuki Australia. They ... provided motorcycles. I approached TAC, and they provided funding to get police members trained, and I approached DSE because most of the collisions are happening in their land, and they provided funding for uniforms for police members and a trailer. In all, from a three-year project, about \$100 000 worth of sponsorship was obtained.

We have had that up and running for two and a half years now, and we are experiencing ... roughly about a 25 per cent reduction in our off-road motorcycle accidents ... so they have a really good multifaceted role that they can play up in the high country where traditionally police have not been able to get to. We also work in partnership with DSE and Parks Victoria on motorcycles. That is what we have operating at the moment in the Benalla area.

Wangaratta are currently going through negotiations to get ... a similar sort of arrangement that I have put in place in my patch, to combat the situation up in Bright and Myrtleford and all that sort of stuff. So there are some really positive things happening, and the full support of Victoria Police has come about as well, so it has been really good — a multi-agency approach to a problem that affects so many people.⁴²

Another example of a localised initiative, which began during the course of the Inquiry, involved targeting and educating off-road riders in Bairnsdale:

There is another initiative we are running, which is for both on-road and off-road motorcycles. From January through until about April to May [2012] we will be running a joint operation with the Wangaratta highway patrol, which will be targeting the alpine areas of East Gippsland and Alpine shires. It will be targeting all on-road and off-road motorcycle riding behaviour. Our intention there is to identify and apprehend offenders, educate offenders where possible, educate other motorcycle riders and also build up an intelligence database by pulling up many of the utilities we see travelling through the area with bikes or trailers on the back, finding out where they are riding and trying to get a better idea of how many are riding up there.⁴³

In addition to the significant evidence received on police enforcement and education initiatives, the accident attendance and reporting functions of Victoria Police in the off-road context elicited comments from witnesses at the public hearings. As an emergency service the police are often the first responders to an accident. This is usually the case for both on and off-road crashes. In the off-road context that can mean traversing difficult terrain to access injured riders and making the area safe for ambulance officers to treat the rider.

Unfortunately, the ability of Victoria Police to access injured riders can be hampered by the off-road environment, as evidenced by the following comment:

*With injured riders, I heard an example recently of a motorcyclist being in a remote location and somebody saying over the radio, 'That particular car is not going to get in there. You are going to need a four-wheel drive to get in.'*⁴⁴

Riders who are injured off-road are required to report their accident to police in the same way as other road users do for on-road crashes. A rider who has had an accident off-road can only access the TAC compensation scheme if they have a valid application, which requires a police report. That can only occur in the off-road context when the rider has attended a police station to report their accident. Victoria Police have experienced some difficulties in meeting these responsibilities when it involves off-road riders, but that can be explained by the behaviour of the riders:

*We find that typically when they have a collision, and it may be in a road-related area, they pick themselves up, get back to their trailer, lay down their bike and go home. They may not report that day, they may not report that week and it may not be reported at all, but there is a clear obligation to report in accordance with the requirements under the legislation.*⁴⁵

5.4.2 The Transport Accident Commission (TAC)

The TAC, in terms of its responsibilities to off-road riding, attracted cursory commentary from public submissions and in the public hearings. The Committee did not receive any information to the effect that the TAC was not fulfilling its compensatory role of covering off-road riders. During the Melbourne public hearings the Committee heard from a trail bike rider who had been seriously injured off-road. Mr Scott Harris and his parents shared their experience with the Committee and highlighted the importance of being able to access the TAC scheme. In particular, Mrs Harris emphasised the need to have off-road motorcycles registered, as a failure to do so would mean an injured rider could not access the common law compensation fund of the TAC:

... I suppose we are very fortunate in the respect that he [Scott] had a registered road bike which he was riding. It was a trail bike but because he had registered it he came under TAC. That has been the saviour of our life ... He has had the best of care.

We know of other friends Scott has made along the way that have had trauma ... and because they have not had cover they have had nowhere near the care, the specialists and the team that have helped put Scott back together and make him as great as he is today.

*It would be good if there was some way every motorbike rider ... should somehow be covered ... but if every person riding a bike, no matter where, was covered, then a lot of people's lives would probably be as good as ours has been.*⁴⁶

In terms of the TAC's road safety prevention efforts off-road, the Committee heard it was sporadic at best. In a number of public hearings reference was made to the TAC providing funding for Victoria Police off-road enforcement and education.⁴⁷

Apart from funding, very little appears to have been done by the TAC, which has focused on creating a partnership with DSE:

Traditionally, the TAC has had little involvement in the area of off-road motorcycling.

... [T]he TAC has taken a first step in working in the area of off-road motorcycling. The TAC has formed a partnership with the Department of Sustainability and Environment ... to begin collaborative work on safety related programs, including the maintenance and potential expansion of the DSE's current trail bike program.⁴⁸

In its submission the TAC stated its absence from the off-road safety area was due to its legislative responsibilities. Specifically, it distinguished between the responsibility to reduce on-road transport accidents, which arise, presumably, as a consequence of commuting activities, and the responsibility to reduce off-road riding accidents, which involve recreational riding. The Committee was confused by the TAC's attempt to distinguish on-road from off-road riding. Such a distinction does not appear in the relevant legislation. Considering the definition of a road discussed earlier in this chapter, the Committee does not agree with the TAC's assertion of a distinction between on and off-road.

The TAC also drew attention to the fact that much of its educational policy and strategy requires significant enforcement, and the absence of such enforcement off-road meant it was unclear how well its approach could work off-road.⁴⁹ Again, the Committee was unclear as to why that posed a problem for the TAC in meeting its off-road responsibilities prospectively. While the idea that TAC policies and strategies are in part reliant on enforcement has some merit, making a link between the inabilities of Victoria Police to enforce off-road and the complete lack of any TAC off-road involvement is difficult to sustain. In a dynamic regulatory environment, government agencies will always have varying levels of effectiveness, and that is sometimes due to the abilities of other agencies. However, in the view of the Committee, it does not follow that agencies should not continue to perform their functions to the highest possible standard.

5.4.3 Department of Sustainability and Environment (DSE)

Although the DSE has been found not to have a legislative road safety function⁵⁰, the significant work it has undertaken in this area cannot be ignored. The DSE has worked closely with Victoria Police, and its initiatives were lauded by both government agencies and the community during the Inquiry. The DSE has focused on educating riders, undertaking enforcement and compliance actions in collaboration with Victoria Police and upgrading facilities and infrastructure for off-road riders. The Victorian Automobile Chamber of Commerce (VACC) identified the DSE as having:

... taken the lead in managing off-road recreational riding; they are the ideal conduit between Government and the motorcycle community.⁵¹

Motorcycling Australia added:

*In recent times the Department for Sustainability and Environment has done sterling work with off-road riders.*⁵²

Sergeant Rod Lay in Bairnsdale reiterated:

*The DSE approached the problem in a very sensible manner. It conducted a series of wide community forums and investigated what the problem was, and from that intelligence they developed strategies... Their education was awesome; their intelligence gathering was awesome, and their education was awesome. They not only produced fantastic brochures... which are the best in Australia that I have seen, but they also did things like attend the Yackandandah charity bash, which was a social event I ran in the name of charity, and they have come and worked with us [Victoria Police] in a partnership approach ...*⁵³

The DSE has focused its off-road efforts through the trail bike initiative. This project was started in 2006 as part of a broader \$200 million dollar environmental sustainability action statement.⁵⁴ However, the aim of the project, which ran from 2006 to 2010, was to develop strategies to deal with increasing community concern about off-road riding in terms of protecting the environment and community amenity, not road safety.⁵⁵ The trail bike initiative took a multi-faceted approach, using education, training tips, enforcement and advertising to target off-road riders. It dealt with the environmental impacts of riding on single tracks (which is illegal)⁵⁶, enforcement of off-road areas in collaboration with Victoria Police and included community and inter-departmental consultation. The DSE also built trail bike unloading areas which could be used to interact with riders for enforcement and educational purposes.⁵⁷ The DSE partnership with Victoria Police was necessitated due to the latter's enforcement powers, something which DSE officers do not have.⁵⁸ Sergeant Rod Lay also provided an overview of the trail bike initiative from a Victoria Police perspective:

*The program morphed when the DSE started its statewide trail bike project... That was an excellent project, and I worked with the DSE in formulating strategies... Together we produced TV shows which are now podcasts on the DSE website. They show people, practically, the skills required to negotiate rough terrain, such as steep hills, up and down, and rocks and rivers, and that has an eco-bent.*⁵⁹

However, there were limitations to the trail bike initiative, which Sergeant Lay explained:

*The DSE did some wonderful stuff. It did some compliance. With the riders who I trained, they bought eight or so bikes for the state, and its plan was to work in partnership with Victoria Police to conduct joint compliance operations. However, there were a couple of problems that they came across. One was that Victoria Police was not necessarily set up to adopt that model — the special solos are 15 or so members based out of Melbourne, and yet the DSE program was rural and there were not many rural police centres that had trail bikes that could work with them. If there were, they were not necessarily well resourced. So the compliance phase of DSE's operation never reached its potential, and as a result it did not have as great an impact as perhaps it could have had on motorcycle collisions. Education is fantastic, but without some compliance aspect we do not get a decent all-over result.*⁶⁰

In addition to the trail bike initiative, the DSE has worked with Victoria Police on a local basis in enforcement and compliance actions around Benalla. The project involves a

Memorandum of Understanding that sees Victoria Police enforce off-road for 50–80 days a year.⁶¹ The DSE provides a trailer and clothing for trained police riders to patrol on those days.⁶²

With the exception of the trail bike initiative and the work with Benalla police, which the Committee recognises is focused on DSE's role as a manager for roads in reserves and state and national parks, the DSE has not undertaken road safety projects because that falls outside its responsibilities.⁶³ Mr Richard Wadsworth, Statewide Recreation and Tourism Coordinator, DSE, explained the department accepts it has:

*... a role in compliance... a little bit in the education space, providing and developing information, brochures and videos on safe riding for riders, but we probably would be looking to other agencies to provide a lead in funding for that. It has not traditionally been an area that we have put a lot of time and attention into.*⁶⁴

The compliance actions and involvement of DSE off-road have nevertheless, delivered tangible road safety benefits. The collaboration between the DSE and Victoria Police has led to more motorcyclists registering their motorcycles. The DSE cites an increase in the number of recreational motorcycle registrations⁶⁵ in the period 2006-10, from 11,051 to 20,657.⁶⁶ Such an increase may also reflect a greater number of motorcycles being purchased and ridden off-road, however it is likely motorcyclists are more aware of the risk of being caught riding an unregistered motorcycle and are choosing to register their vehicle. By registering their motorcycles riders are able to access the common law compensation fund of the TAC scheme and comply with registration rules, some of which are based on safety requirements. However, the end of the trail bike initiative's funding in 2010 has put an end to the compliance actions that were part of that initiative. The Committee was informed by the DSE that the TAC has provided new funding that will be used for:

*... developing some additional education material, codes of practice and information we are getting to retailers in terms of wearing protective gear, safe riding and those sorts of things; doing some compliance and education activities in the bush so that we can have a visible presence there, meet riders on their turf and talk to them about some of those issues; and also look at the issue of data gathering and input into what all the data needs are and how that data might be gathered. We would not lead that but we would be representing DSE and assisting that process.*⁶⁷

5.4.4 VicRoads

VicRoads has not been involved in off-road riding from a road safety perspective. The extent of VicRoads involvement is apparent in their submission to the Inquiry, which did not include or catalogue any off-road safety initiatives. VicRoads has alternated between stating that off-road riding falls outside its statutory responsibilities (by using its own definition of off-road rather than applying the legislative definition of a road and road related area) and insisting on further assessing its role.

That second point was highlighted in the VicRoads submission which explained that its current approach was limited to:

*... further explore the legal and safety issues relating to off-road riding with key stakeholders to facilitate an agreed approach to off-road rider safety.*⁶⁸

These comments replicate the VicRoads response to the Victorian Coroners Court's Inquest into the Death of Simon Peter Gardner,⁶⁹ a case that involved the off-road death of a 14 year old motorcyclist. The Inquest in March 2011, which focused on off-road rider safety, included the following comment from Coroner John Olle:

*... a major impediment to responding to off-road motorcycling injuries has been the lack of a lead agency to coordinate efforts. Off-road motorcycling safety clearly spans the jurisdiction of several state government agencies.*⁷⁰

The Coroner also recommended that VicRoads create a sub-committee of the then Victorian Motorcycle Advisory Council 'whose prime responsibility would be examining off-road motorcycling in order to develop evidence-based strategies to reduce the number of injuries.'⁷¹ In its response to the Coronial findings, VicRoads stated:

*In response to the Victorian Auditor-General's report, VicRoads is working with other agencies to clarify the scope of off-road issues and to determine any changes required to statutory obligations in this area. As you acknowledge, off-road motorcycling is a diverse activity. This work will therefore recognise the diversity of situations that are covered by the broad term 'off-road'.*⁷²

During the public hearings in Melbourne, Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, expanded on that point, describing VicRoads approach to off-road in the following way:

*... by its very nature, conceptually off-road riding is not on the road and hence not the responsibility of VicRoads. Having said that, we do have a role to coordinate many of the stakeholders in road safety who do have accountabilities in this area, and there is a lot we do for on-road road safety that can benefit off-road road safety.*⁷³

Mr James Holgate, Manager, Road User Safety added VicRoads was:

*... doing work to try to understand what off-road riding is. It is a very broad term, but it in fact covers a whole host of different situations from what is in fact on-road riding but is on a non-sealed surface — some people would consider that off-road — to a forestry trail, to a public place, to a private paddock and even to a motocross stadium or something like that. They are all off-road, and clearly the response and the responsibilities will be quite different for each of those. Part of our initial role is to try to clarify those different situations.*⁷⁴

But VicRoads also made it clear that if it was to take part in off-road riding safety there could be unforeseen consequences:

*I think a lead agency in off-road is definitely required; however, if it means it is at the expense of our focus for on-road safety, I would question whether that is going to be a good thing in the long run.*⁷⁵

The Committee could not quantify what the unforeseen consequences envisaged by VicRoads would be, but there are negative implications for road safety if VicRoads continues not to be involved, both in terms of dealing with current issues or failing to take opportunities that might improve off-road safety. An example of the way off-road safety could be improved was shared with the Committee by Sergeant Rod Lay, who discussed his experiences in trying to get VicRoads involved in trail bike projects:

*What I have noticed is that there are opportunities for improvement in the government approach to off-road motorcycling. I approached VMAC [Victorian Motorcycle Advisory Council] about five years ago and discussed this with them. To their credit, they took it on board. Speaking quite frankly, I believe that there was some resistance from VicRoads, and that they had the opinion that dirt roads were not their environment, not their responsibility, and so the strategies that I suggested at the time were resisted and did not come to fruition.*⁷⁶

On the basis of the evidence provided to the Committee, VicRoads does not appear to have been involved in off-road safety in any meaningful way. This approach was illustrated at the Wangaratta public hearings by Sergeant Darren Wittingslow, who spoke of his interaction with VicRoads:

*I am not going to quote VicRoads policy, but the conversation I have had with VicRoads is that anything that does not happen on a paved road, they really do not want to know about.*⁷⁷

The ability of government to appropriately target the community in terms of road safety rests on the ability of agencies to fulfil their statutory responsibilities. The Committee is therefore concerned with the absence of VicRoads from the off-road area and its prevarication on applying the statutory definitions of road and road related area to help it determine what its responsibilities are. The Committee is strongly of the view that VicRoads has avoided becoming involved in safety off-road and its reasons for doing so are inconsistent with its legislative responsibilities. This situation demands urgent correction. VicRoads should rely on the statutory definitions of a road and road related area when determining what responsibilities it has. If those definitions are problematic, then VicRoads has the ability to review them and suggest appropriate legislative amendments in accordance with the standard bureaucratic process.

5.5 Issues

The importance of off-road riding in the broader context of motorcycle safety cannot be underplayed. Off-road crashes are said to account for a large proportion of motorcycle trauma in Victoria.⁷⁸ On that basis the Committee felt it was of paramount importance to deal with the issues surrounding off-road riding, because continuing with the current approach would mean a continuation of the current trauma trends.

The Committee believes there are three primary issues for road safety off-road as a result of its investigations. The first is clarifying that the way government agencies have defined the term off-road does not change their statutory responsibilities. The second is the performance of agencies in meeting their road safety responsibilities. The last is the link between funding or distributing resources appropriately so that agencies can meet their responsibilities.

5.5.1 Defining off-road: Impacts on statutory responsibilities

In spite of the statutory requirements, it is clear that some agencies have not fully accepted their responsibilities for off-road riding. However, the level of involvement by each road safety agency has varied. This has occurred because of the confusing distinction between what the Committee sees as colloquial or government agency derived definitions for the term off-road and the statutory and judicial definition of a road and road related area which deals with all riding, without referring to whether it is on or off-road. The exception to this statement is Victoria Police, for whom their approach to off-road enforcement responsibility has been primarily affected by a lack of resources.

During the Inquiry, the Committee heard agencies claim that riding on roads in national and state parks and in rural areas fell outside their legislative responsibilities or made it difficult to know what they were responsible for. That confusion was compounded because the term off-road varies in its use between agencies. For example, for the TAC, the term off-road has become less applicable due to the way courts have interpreted roads and road related areas in the course of litigation by injured riders. Mr John Voyage, Principal, Maurice Blackburn, in evidence to the Committee provided an explanation of some of the intricacies that have arisen in litigation in relation to roads:

... where off-road has been an issue in cases which have gone to judgement at VCAT and on appeal in the Supreme Court ... the definition of what constitutes a road ... is very extensive. It goes on to be all sorts of things that you might not expect — a pier, for example. There are all sorts of things which people do not immediately think of as being a road. The extent of VicRoads responsibilities might overlap with other things. They might overlap with parks and many other things ...⁷⁹

VicRoads, on the other hand, has taken the approach of using the defined role of road manager to contextualise the term off-road. The practical impact has been to exclude a range of areas that motorcyclists use from their road safety responsibilities. The use of the term off-road and the way its defined has had serious implications. It has resulted in an absence of regulatory interventions but also a perception that riding off a sealed road or in parks and reserves is not within the purview of Victorian road safety agencies. The Committee's interest in this issue was first raised by the Royal Australasian College of Surgeons (the College) submission, in which the College expressed the view, in relation to motorcycle injuries, that:

Most of these injuries occur off-road and therefore outside any legislative framework. The College supports placing immediate emphasis on off-road motorcycle legislation and measures such as age restrictions, [and] mandatory helmet wearing.⁸⁰

The Committee agrees with the College's proposition of placing immediate emphasis on off-road safety. However, it notes that there is currently a sophisticated regulatory framework that applies to riders off-road. It is the very same framework that applies to riders irrespective of whether they are on a sealed or unsealed road, in a national park or in suburban backstreets in Melbourne.

However, the use by agencies of the term ‘off-road’ has a detrimental effect on the statutory definition of a road and road related area. Part of the reason for the confusion is due to the way VicRoads have approached off-road riding. Essentially, the VicRoads approach has been to focus on defining off-road in a way that falls outside their legal responsibilities. This was highlighted during the Melbourne public hearings by Mr David Shelton, VicRoads, who stated:

*... there is no real definition of off-road motorcycling, and that is one of the things that hampers us.*⁸¹

Mr Shelton also reflected:

*Unfortunately the act could probably be better worded in this area. The Road Safety Act actually refers to roads as being areas that are used by the public. Almost by definition of using the road, you are making it a public road. We believe it needs to be better defined than that to help us differentiate responsibilities. The dirt roads that you referred to earlier... I think are predominantly under the care and management of either DSE or local councils. We certainly have been working with the DSE, which, as you probably are aware, have been very active in the off-road space.*⁸²

These comments illustrate the confusion created by mixing an agency defined term, off-road, with the statutory definition of a road and road related area and the related but separate function of managing roads. A similar sentiment was expressed at the public hearings in Traralgon, in which representatives from VicRoads sought to explain their responsibilities by reference to the statutory obligations of road, rather than safety, managers:

*... VicRoads is the responsible road authority for arterial roads. I guess our local municipalities are the responsible authority for local roads. My understanding up until earlier was that the Department of Sustainability and Environment was the responsible authority for off-road.*⁸³

The assertions by VicRoads that off-road is conceptually different in the context of their road safety responsibilities or that road management obligations define VicRoads road safety responsibilities are problematic. It seems the issue for VicRoads is that the wide-ranging definition of a road and road related area has had the effect of including a range of riding activities that VicRoads is unwilling or unable to get involved in. Nevertheless, in the light of the definitional analysis, that ought not to diminish their responsibilities in the current legislative context for what they define as off-road riding.

The use of the term ‘off-road’ in its various guises has had a negative effect on motorcycle safety. It has meant that the peak road safety agency in Victoria has not been involved in any capacity in off-road safety. The absence of clearly accepted responsibilities and co-ordination among government agencies, due to the way the term off-road has been used, has according to the Centre for Accident Research and Road Safety – Queensland University of Technology (CARRS-Q) submission meant that:

*Responsibility for off-road rider safety has generally fallen upon riders (and organisers in the case of controlled events) rather than government agencies.*⁸⁴

The Committee thinks the term ‘off-road’ has some policy uses for road safety agencies. For example, it can be used to contextualise policy or to consult with the community and industry. It can help agencies target their road safety messages and initiatives and aid the riding community who often view themselves as being off-road riders. However, the current use of the term appears to be primarily to avoid accepting or fulfilling road safety responsibility. The term off-road does not have a role to play in determining whether an agency has a responsibility to riders in state and national parks, or on unsealed roads. The Committee believes road safety responsibilities, and particularly those of VicRoads, should only be determined by reference to the statutory definitions of a road and a road related area.

5.5.2 *Findings on the performance of road safety agencies*

5.5.2.1 *Victoria Police*

Victoria Police has viewed its enforcement and compliance responsibilities as covering the off-road area. The issue has been a lack of resources, both in terms of trained riders and motorcycles, and the availability of the Solo Unit due to its shared use across Victorian Police Service Areas. Victoria Police do undertake off-road enforcement in line with their normal standards of service when they are able to do so.

A limiting factor for Victoria Police is the lack of a co-ordinated approach to dealing with off-road riders. The experience of seasoned and long serving front line officers was characterised by an inability to get enough officers and motorcycles into off-road areas, and a patchwork approach where police in each area are forced to create their own strategies and seek sponsorship from the community and private businesses to fulfil their responsibilities. The Committee was impressed by the efforts of police in Benalla, Wangaratta, and Bairnsdale to get involved in off-road safety.

The Committee is of the view that Victoria Police should approach off-road riding in a consistent manner. Where individual officers have developed and implemented road safety programs for off-road, these should be used as a template for other regions across Victoria. There is no need to recreate initiatives when a successful template already exists.

5.5.2.2 *The Transport Accident Commission (TAC)*

The Committee heard from several witnesses that the TAC compensation scheme does cover injured riders who are hurt off-road. That coverage is a result of judicial rulings in litigation cases. However, in the post-accident context riders are not filing TAC claims after having crashes off-road. The Committee is unsure of the reasons leading to that outcome.

The TAC has admitted that it has undertaken very few safety initiatives in response to off-road trauma.⁸⁵ The extent of its involvement has been the funding of the DSE to further its efforts in educating and regulating off-road riding. Considering its expertise in producing education and advertising material, the Committee would expect the TAC to apply its expertise in these areas to the off-road riding community. The Committee is of

the view that doing so is directly related to the TAC's statutory requirements and it is vitally important considering the impost off-road riding accidents are having and are likely to have in the next decade on the compensation scheme.

The TAC must take a strong road safety role in the off-road area. The TAC's expertise in behavioural, advertising and educative strategies and activities should target off-road riders as a specific group within the motorcycle community.

5.5.2.3 *Department of Sustainability and Environment (DSE)*

The DSE does not have a statutory responsibility for off-road safety. In spite of that, it has managed to engage with road safety issues by educating riders on better riding techniques, providing information on environmental and legal obligations and undertaking enforcement initiatives with Victoria Police. The key to these initiatives has been a willingness to engage with the issue of off-road riding in an open and collaborative way, a fact acknowledged by other agencies.⁸⁶ The Committee congratulates the DSE on its efforts off-road and the way it has embraced this area as part of its functions. Importantly, the results garnered from the DSE trail bike initiative and their expertise should be used by VicRoads and the TAC as they move to fulfil their responsibility in the off-road motorcycle safety area.

The DSE must be involved in any initiatives that involve off-road riding. Their involvement should also extend to data gathering committees, groups or other departmental structures that deal with off-road trauma.

The DSE definition of the term off-road is accepted by the Committee as a useful starting point for an appropriate definition of off-road. The term as defined by DSE should be used by other road safety agencies in the development of road safety policy and initiatives.⁸⁷

5.5.2.4 *VicRoads*

VicRoads involvement in off-road riding safety is extremely minimal. The Committee, based on the evidence it has received, believes the agency lacks a clear policy direction and has not met its road safety responsibilities in this area. The Committee received evidence that may suggest an active effort by VicRoads to avoid involvement in the off-road area. During a public hearing in Wangaratta, the Committee was told by Sergeant Darren Wittingslow that whilst he believed that VicRoads was responsible for off-road safety

*... I have had conversations and been in meetings with them where my angst in relation to their not really wanting to know about anything that happens other than on paved roads has been quite apparent over many years.*⁸⁸

The comments from front line officers of Victoria Police, the DSE and others on VicRoads' viewpoint are notable. The Committee does not accept the VicRoads view that the drafting of the *Road Safety Act 1986* has created problems or that they are not responsible for riders in places they view as being off-road.⁸⁹

The use of agency derived definitions is an important part of policy development, and being able to identify, communicate and regulate the community. However, in terms of off-road riding, VicRoads use of their own definitions, the application of the road manager responsibilities to define road safety responsibilities and the way it has ignored the off-road environment need to be acknowledged.

The Committee appreciates the issues faced by VicRoads in interpreting both the statutory responsibilities and the case law that has seen the definition of a road and road related area expanded. In grappling with the statutory definitions and the complex legislation that deals with managing roads and safety, the Committee acknowledges that legislation needs to be consistent and easily accessed. The complexity of the statutes in this area certainly has the potential to confuse, having drawn judicial comment.* Mr David Shelton, VicRoads, commented on this issue of clarity at the public hearings:

It has generally been agreed that the current legislated roles of agencies do not satisfactorily define what each agency's specific responsibilities are in relation to road trauma that occurs off the public road network. An early step is to define those roles and responsibilities adequately and then actually develop strategies and programs to proceed.⁹⁰

However, the Committee is of the view that VicRoads in its capacity as the agency that administers this legislation is capable of defining its road safety responsibilities and must do so by reference only to the legislative definitions of road and road related area.

The significant emphasis placed by VicRoads on understanding their statutory responsibilities, which accounts for its total road safety involvement off-road, concerns the Committee. Unlike other agencies, such as Victoria Police and the DSE, VicRoads has focused on ascertaining what its legal obligations are, which appear to be clear.

The fact that the same issues assessed by the VAGO in February 2011 appear to have not been adequately dealt with during the course of this Inquiry concerns the Committee. This was highlighted by VicRoads' response at the first public hearing, which took place some eight months after the publication of the VAGO Report. At the second public hearing in March 2012, VicRoads and other agencies were again asked to provide the Committee with an update on their progress with respect to off-road riders. The response of VicRoads was the same as that given at the first public hearing – that legal advice was being sought.⁹¹ The Committee was surprised with that response given the

* **Note:** The Deputy President of the Victorian Civil and Administrative Tribunal, M.F. Macnamara, in his judgment in *Vanbenthem v Transport Accident Commission* made the following insightful observations on the confusion in this area: “one would have expected that in an era of plain English drafting in which we are said to live would have yielded a clear and certain answer as to whether the unfortunate Mr Vanbenthem is or is not entitled to compensation under the Transport Accident Act. Regrettably instead one is led through a maze of definitions in two different statutes with a level of complexity customarily associated with revenue legislation. These sorts of issues have vexed the Supreme Court and more latterly this Tribunal and its predecessors for 30 years... and in case of the latest definition of highway to be found in the Road Safety Act 1986 dating from 1998, these provisions seem to add obscurity rather than clarity ...”. See *Vanbenthem v Transport Accident Commission* [2001] VCAT 2415 (21 December 2001), per Macnamara at 4.

clear findings of VAGO⁹² some 12 months earlier that some agencies had continued to treat off-road riding as something that was outside their agency's portfolio.

If VicRoads expects motorcyclists to be registered and licensed when riding in areas that it considers off-road, and police correctly enforce these requirements by following the legislation, then VicRoads in turn has corresponding road safety responsibilities that must be met. The Committee notes the comments by VicRoads with respect to the need for a lead agency for off-road.⁹³ However, on the basis of current statutory definitions and the absence of any legislative review, the Committee strongly suggests that VicRoads is the agency responsible for that role.

The VicRoads approach has failed to progress past the point of interpreting the applicable statutes. That is in spite of the findings by the VAGO, the Coronial Inquest into the Death of Simon Peter Gardner and this Committee's interpretation of the relevant legislation which was put to VicRoads at multiple public hearings. The approach of VicRoads in dealing with this issue has been to not accept the legislative responsibility for riders which it currently deems to be 'off-road'.

VicRoads is the lead agency for road safety. That role and all that it entails should extend to off-road riding. The Committee is of the view that VicRoads' current approach has undermined attempts to co-ordinate and target off-road safety. VicRoads should act swiftly to regulate an area of motorcycling that has undergone significant increases in both usage and trauma and ensure that other road safety agencies and the DSE are involved in off-road riding initiatives.

5.5.3 *Funding off-road safety responsibility*

5.5.3.1 *Victoria Police*

Victoria Police has extremely limited resources to enforce off-road. The Committee was impressed by the dedication of regional officers who, through a mixture of creativity and hard work, have managed to deliver strong road safety results off-road. However, there is a limit to what police officers can do in the absence of appropriate resources. In some regions such as Gippsland there are no motorcycles to enforce off-road. Police are limited to patrolling vehicles on the way to forests and parks, and even that is limited.⁹⁴

The Committee was surprised to hear that some areas as large as 21,800 square kilometres in East Gippsland have no trained police riders or motorcycles. A similar refrain was heard by the Committee in Ballarat, Geelong and Wodonga. In Geelong for example, a vexing situation sees the Geelong Council provide two motorcycles for policing, but they cannot be used outside of Geelong.⁹⁵ A lack of trained personnel and motorcycles means that police cannot enforce off-road efficiently.

Recommendations: Chapter 5

Recommendation 13:

That VicRoads and the Transport Accident Commission treat off-road motorcycle safety no differently to that of on-road motorcycles.

Recommendation 14:

That VicRoads and the Transport Accident Commission ensure all current and future motorcycle safety initiatives specifically include a component aimed at improving the safety of off-road riders.

Recommendation 15:

That road safety interventions, strategies and initiatives focus on both on and off-road motorcyclists, relying on the definition of a road and road related area in the *Road Safety Act 1986* as a basis for including or excluding motorcyclists.

Recommendation 16:

That the Department of Sustainability and the Environment be involved in the monitoring of off-road safety, and be included in the design, development, implementation and consultation stages of off-road safety initiatives, strategies and countermeasures and in the gathering and sharing of off-road crash data.

Recommendation 17:

That an ongoing public education campaign be undertaken by the Transport Accident Commission to educate off-road riders of the coverage they are afforded under the Transport Accident Compensation Scheme.

Endnotes: Chapter 5

¹ S. 36 & 37 *Road Management Act 2004* (Vic).

² VicRoads, *VicRoads road network*, January 2010,

<http://www.vicroads.vic.gov.au/Home/Moreinfoandservices/RoadManagementAndDesign/TypesOfRoads/VictoriasRoadNetwork.htm>.

³ Parliament of Victoria Road Safety Committee, *Inquiry into the Country Road Toll*, Parliament of Victoria, Melbourne, May 2005, pp. 12-16.

⁴ Mr Richard Wadsworth, Statewide Recreation and Tourism Coordinator, Department of Sustainability and Environment, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 78.

⁵ VicRoads, *VicRoads road network*, January 2010,

<http://www.vicroads.vic.gov.au/Home/Moreinfoandservices/RoadManagementAndDesign/TypesOfRoads/VictoriasRoadNetwork.htm>.

⁶ Graph 6.1, p. 153 of this Report.

⁷ S. 34-35, 40 & 41 *Road Management Act 2004* (Vic).

⁸ S. 34(1)(a)-(e) *Road Management Act 2004* (Vic).

⁹ S. 34(2) *Road Management Act 2004* (Vic).

¹⁰ Centre for Accidents Research & Road Safety, *Submission to the Inquiry*, September 2011, p. 8.

¹¹ Driver Education Centre of Australia, *Submission to the Inquiry*, July 2011.

¹² *Road Safety (Drivers) Regulations 2009* (Vic); *Road Safety Road Rules 2009* (Vic); *Road Safety (General) Regulations 2009* (Vic).

¹³ Victorian Auditor-General, *Motorcycle and Scooter Safety Programs*, Melbourne, February 2011, p. 5.

¹⁴ Victorian Auditor-General, *Motorcycle and Scooter Safety Programs*, Melbourne, February 2011, p. 5.

¹⁵ Transport Accident Commission, *Submission to the Inquiry*, 'Introduction': s. 1 *Transport Accident Act 1986*.

¹⁶ The case of *Vanbenthem v Transport Accident Commission* [2001] VCAT 2415 (21 December 2001), raised the issue of accidents that occur on private land that is accessible to the public and which involve riders using unregistered motorcycles. The accident occurred on a private park in Tullamarine that was frequently used by the public to ride motorcycles. The Victorian Civil and Administrative Tribunal (VCAT) ruled in favour of the injured rider finding that the private land fell within the definition of a highway (see para 31). The Victorian Supreme Court dismissed an appeal against the VCAT judgment in 2002 (see *Transport Accident Commission v Vanbenthem VSC (2002)*; [2002] VSC 398; BC200205383). Other cases dealing with this area of law include the following: *Transport Accident Commission v Lees* [2002] VSC 397 (13 September 2002) and *Hogan v Transport Accident Commission* [2012] VSC 206 (18 May 2012).

¹⁷ S. 12(2) *Transport Accident Act 1986* (Vic).

¹⁸ S. 17(b) *Road Safety Act 1986* (Vic).

¹⁹ S. 5(a)-(b) *Road Safety Act 1986* (Vic).

²⁰ S. 3 *Road Safety Act 1986* (Vic).

²¹ S. 87(1)(d) *Transport Integration Act 2010* (Vic).

²² S. 13 *Transport Integration Act 2010* (Vic).

²³ VicRoads, *Submission to the Inquiry*, September 2011, p. 8.

²⁴ VicRoads, *Submission to the Inquiry*, September 2011, p. 8.

²⁵ Deputy Commissioner Kieran Walshe, Regional and Road Policing, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 27.

²⁶ Department of Sustainability and Environment, *Submission to the Inquiry*, October 2011, Term of Reference (e).

²⁷ Acting Senior Sergeant Jamie Chester, Road Policing Strategy Division, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 27.

²⁸ Sergeant Cameron Roberts, Victoria Police, *Transcript of Evidence*, Wodonga, 30 November 2011, p. 475.

²⁹ Senior Sergeant David Watson, Victoria Police, *Transcript of Evidence*, Traralgon, 13 December 2011, p. 548.

- ³⁰ Acting Sergeant Ralph Turner, Victoria Police, *Transcript of Evidence*, Bairnsdale, 14 December 2011, p.589.
- ³¹ Sergeant Rod Lay, Victoria Police, *Transcript of Evidence*, Bairnsdale, 14 December 2011, p. 593.
- ³² Acting Sergeant Ralph Turner, Victoria Police, *Transcript of Evidence*, Bairnsdale, 14 December 2011, p. 591.
- ³³ Acting Sergeant Ralph Turner, Victoria Police, *Transcript of Evidence*, Bairnsdale, 14 December 2011, p.591.
- ³⁴ Acting Senior Sergeant Shane Howard, Victoria Police, *Transcript of Evidence*, Geelong, 15 November 2011, pp. 339–340.
- ³⁵ Sergeant Ross Humphrey, Victoria Police, *Transcript of Evidence*, Ballarat, 16 November 2011, p. 375.
- ³⁶ Senior Sergeant Bill Gore, *Transcript of Evidence*, Wangaratta, 29 November 2011, p. 453.
- ³⁷ Sergeant Cameron Roberts, *Transcript of Evidence*, Wodonga, 30 November 2011, pp. 472–473.
- ³⁸ Senior Sergeant David Watson, *Transcript of Evidence*, Traralgon, 13 December 2011, p. 548-549.
- ³⁹ Acting Sergeant Ralph Turner, Victoria Police, *Transcript of Evidence*, Bairnsdale, 14 December 2011, p. 589.
- ⁴⁰ Sergeant Rod Lay, Victoria Police, *Transcript of Evidence*, Bairnsdale, 14 December 2011, p. 594.
- ⁴¹ Sergeant Darren Wittingslow, Victoria Police, *Transcript of Evidence*, Wangaratta, 29 November 2011, p. 431.
- ⁴² Sergeant Darren Wittingslow, Victoria Police, *Transcript of Evidence*, Wangaratta, 29 November 2011, p. 431.
- ⁴³ Acting Sergeant Ralph Turner, Victoria Police, *Transcript of Evidence*, 14 December 2011, Bairnsdale, p. 589.
- ⁴⁴ Sergeant Cameron Roberts, Victoria Police, *Transcript of Evidence*, Melbourne, 30 November 2011, p. 475.
- ⁴⁵ Superintendent Bob Stork, Road Policing Strategy Division, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 24.
- ⁴⁶ Mrs Debra Harris, *Transcript of Evidence*, Melbourne, 19 October 2011, pp. 249–250.
- ⁴⁷ Sergeant Darren Wittingslow, Victoria Police, *Transcript of Evidence*, Wangaratta, 29 November 2011, p. 431.
- ⁴⁸ Transport Accident Commission, *Submission to the Inquiry*, Term of Reference (e).
- ⁴⁹ Transport Accident Commission, *Submission to the Inquiry*, Term of Reference (e).
- ⁵⁰ Victorian Auditor – General’s Report, February 2011, *Motorcycle and Scooter Safety Programs*, Melbourne, p. 6.
- ⁵¹ Victorian Automobile Chamber of Commerce, *Submission to the Inquiry*, September 2011, p. 24.
- ⁵² Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 22.
- ⁵³ Sergeant Rod Lay, Victoria Police, *Transcript of Evidence*, Bairnsdale, 14 December 2011, p. 594.
- ⁵⁴ Department of Sustainability and Environment, *Trail Bike Initiative – Project Update July 2006*, Melbourne, August 2006, p. 1.
- ⁵⁵ Department of Sustainability and Environment, *Trail Bike Initiative – Project Update July 2006*, Melbourne, August 2006, p. 1.
- ⁵⁶ Mr Richard Wadsworth, Statewide Recreation and Tourism Coordinator, Department of Sustainability and Environment, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 78.
- ⁵⁷ Department of Sustainability and Environment, *Trail Bike Initiative – Project Update July 2006*, Melbourne, August 2006, p. 1.
- ⁵⁸ Mr Richard Wadsworth, Statewide Recreation and Tourism Coordinator, Department of Sustainability and Environment, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 83.
- ⁵⁹ Sergeant Rod Lay, Victoria Police, *Transcript of Evidence*, Bairnsdale, 14 December 2011, p. 594.
- ⁶⁰ Sergeant Rod Lay, Victoria Police, *Transcript of Evidence*, Bairnsdale, 14 December 2011, p. 594.
- ⁶¹ Sergeant Darren Wittingslow, Victoria Police, *Transcript of Evidence*, Wangaratta, 29 November 2011, p. 432.
- ⁶² Sergeant Darren Wittingslow, Victoria Police, *Transcript of Evidence*, Wangaratta, 29 November 2011, p. 431.
- ⁶³ Department of Sustainability and Environment, *Submission to the Inquiry*, October 2011, Term of Reference (e).
- ⁶⁴ Mr Richard Wadsworth, Statewide Recreation and Tourism Coordinator, Department of Sustainability and Environment, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 79.
- ⁶⁵ Department of Sustainability and Environment, *Submission to the Inquiry*, October 2011, Term of Reference (e).
- ⁶⁶ Department of Sustainability and Environment, *Submission to the Inquiry*, October 2011, Term of Reference (e).

⁶⁷ Mr Richard Wadsworth, Statewide Recreation and Tourism Coordinator, Department of Sustainability and Environment, *Transcript of Evidence*, Melbourne, 17 October 2011, pp. 79–80.

⁶⁸ VicRoads, *Submission to the Inquiry*, September 2011, p. 13.

⁶⁹ Coroners Court of Victoria, *Inquest into the Death of Simon Peter Gardner*, Coroner John Olle, case 3877/09, 15 March 2011, p. 9, http://www.coronerscourt.vic.gov.au/resources/c0266e8c-0091-40ee-8cde-5e7a9143c4a3/simonpetergardner_387709.pdf.

⁷⁰ Coroners Court of Victoria, *Inquest into the Death of Simon Peter Gardner*, Coroner John Olle, case 3877/09, 15 March 2011, p. 9, http://www.coronerscourt.vic.gov.au/resources/c0266e8c-0091-40ee-8cde-5e7a9143c4a3/simonpetergardner_387709.pdf.

⁷¹ Coroners Court of Victoria, *Inquest into the Death of Simon Peter Gardner*, Coroner John Olle, case 3877/09, 15 March 2011, p. 9, http://www.coronerscourt.vic.gov.au/resources/c0266e8c-0091-40ee-8cde-5e7a9143c4a3/simonpetergardner_387709.pdf.

⁷² VicRoads, *Response to the Inquest into the Death of Simon Peter Gardner*, 28 June 2011, http://www.coronerscourt.vic.gov.au/resources/75e722b2-758d-4b15-93c5-d5906a7bbd94/responsevicroads_gardner.pdf.

⁷³ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 4.

⁷⁴ Mr James Holgate, Director, Road User Safety, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, pp. 4–5.

⁷⁵ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 5.

⁷⁶ Sergeant Rod Lay, Victoria Police, *Transcript of Evidence*, Bairnsdale, 14 December 2011, p. 594.

⁷⁷ Sergeant Darren Wittingslow, Victoria Police, and member of RoadSafe North East, *Transcript of Evidence*, Wangaratta, 29 November 2011, p. 432.

⁷⁸ Victorian Auditor – General's Report, February 2011, *Motorcycle and Scooter Safety Programs*, Melbourne, p. viii.

⁷⁹ Mr John Voyage, Principal, Maurice Blackburn, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 239.

⁸⁰ Royal Australasian College of Surgeons, *Submission to the Inquiry*, August 2011, p. 1.

⁸¹ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 4.

⁸² Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 5.

⁸³ Mr Pas Monacella, Team Leader, Programs and Project Development, VicRoads, *Transcript of Evidence*, Traralgon, 13 December 2011, p. 571.

⁸⁴ Centre for Accidents Research & Road Safety, *Submission to the Inquiry*, September 2011, p. 7.

⁸⁵ Ms Samantha Cockfield, Manager, Road Safety, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 72.

⁸⁶ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 5.

⁸⁷ Department of Sustainability and Environment, *Submission to the Inquiry*, October 2011.

⁸⁸ Sergeant Darren Wittingslow, Victoria Police, *Transcript of Evidence*, Wangaratta, 29 November 2011, p. 432.

⁸⁹ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 2.

⁹⁰ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 2.

⁹¹ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 664.

⁹² Victorian Auditor – General’s Report, February 2011, *Motorcycle and Scooter Safety Programs*, Melbourne, p. 3.

⁹³ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 5.

⁹⁴ Victoria Police, *Transcript of Evidence*, Wangaratta, Bairnsdale and Geelong.

⁹⁵ Acting Senior Sergeant Shane Howard, Victoria Police, *Transcript of Evidence*, Geelong, 15 November 2011, p. 342.

Chapter 6 at a glance

Overview

In this chapter, the Committee analyses registration, licence and other usage measures to ascertain the level of change in motorcycling patterns over the last decade. These usage measures are then assessed by reference to statistical data to determine the extent of increases in motorcycle usage over the past decade. The reasons for this growth are then explored, focusing on a combination of factors including traffic congestion, lifestyle, commuting, cost, increasing urban density, access to alternative forms of transport and environmental concerns. The chapter then assesses the impact of these increases on road safety and identifies potential impacts and opportunities.

Key findings

During the last decade, Victoria has experienced unprecedented growth in motorcycling. Specifically, there has been a 70% increase in the number of registered motorcycles from 2001 to 2011, and a 37% increase in licensees between 2002 and 2010. Proportionally the number of motorcycles as a component of the overall vehicle fleet has similarly increased, as have specific categories of registration (recreational) and motorcycle types (scooters).

Collectively, factors such as traffic congestion, cost and lifestyle among others help explain the growth in motorcycling. Importantly, these factors have meant changes in the demographic of motorcyclists and the types of motorcycles being ridden.

Further, differences in the types of riders and motorcycles being ridden impose new complexities on road safety agencies which need to be flexible in tailoring interventions and strategies that are aimed at a more diverse motorcycling community.

The increase in usage has both positive and negative road safety implications. Seemingly, increases in the number of motorcyclists and registered motorcycles may result in greater trauma risks, but the Committee also recognises that such increases may raise the profile of motorcyclists on the road and thus improve the awareness of other road users.

Recommendations

There are no recommendations relevant to this chapter.

CHAPTER 6: MOTORCYCLE USAGE IN VICTORIA

6.1 *Introduction*

Throughout the Inquiry the Committee received both anecdotal and statistical evidence about the growth of motorcycling in Victoria. Motorcycle use has always represented a small component of the overall vehicle fleet in Victoria. That position reflects the historical predominance of car use and the rapid growth of large urban centres. However, over the last decade Victoria has experienced rapid growth in the registration of motorcycles and in the issuing of motorcycle permits and licences.

The growth of motorcycle use has been underpinned by two phenomena: the changing use of motorcycles from overwhelmingly recreational vehicles towards commuting and recreational use, and the impact of socio-economic factors such as traffic congestion, environment, cost and increasing urban density. These two phenomena have fundamentally altered the way motorcycles are used and pose challenges for policy makers in road safety. These challenges are made more difficult due to the non-homogenous nature of the motorcycle community.¹

The phrase ‘motorcycle usage’ was one the Committee sought to define. The Committee identified a number of ways to measure motorcycle use and referred to technical data relating to the fleet (size and motorcycle type) and relative and proportional increases in motorcycle use (including comparisons with other modes of transport). The structure of this chapter represents the ways the Committee decided to measure ‘usage’. The first section deals with measuring the way the motorcycle fleet has changed over the last decade and its characteristics (the types of motorcycles and their features). The second section analyses the changes in the number, age and gender of motorcyclists by drawing on motorcycle licence and permit data. The Committee also included an analysis of demographic factors and the riding habits of Victorians, as that assists in explaining why motorcycles are used, where and in what way. The focus of the chapter then turns to exploring the factors that are driving the changes in motorcycle usage. The chapter concludes with the Committee’s findings on what increased usage may mean for road safety and the challenges faced by road safety regulators and government if current increases continue.

6.2 *Measuring changes in the motorcycle fleet and its characteristics*

6.2.1 *What does usage mean?*

Before delving into the substantive parts of this chapter, the Committee felt it was important to first define the various motorcycle usage metrics. The Committee identified four ways of defining usage when dealing with motorcycles. First, the number of vehicles registered; second, the total number of people who hold current licences and permits; third, the number of vehicle kilometres travelled (VKT); and lastly, the total number of new motorcycles sold in Australia. Given the issues identified in Chapter 3 of this report, the Committee chose not to use VKT as a usage measure for this term of reference.

The remaining three ways of defining usage are also subject to certain caveats. The Committee felt it was important to draw attention to these caveats because measures of usage, particularly where they show an increase in usage, can be used to determine the likelihood of increases in road trauma, and therefore, policy formulation. Each of the measures is defined briefly below, together with the Committee's analysis of relevant weaknesses. Although all three usage measures are analysed in this chapter, the Committee notes that licences and registrations are the best source for investigating increased motorcycle use due to their robustness and accuracy.

6.2.2 Motorcycles registered by VicRoads

All motorcycles used on roads accessible by the public need to be registered or exempt from registration.² VicRoads keeps a register of vehicles (referred to as the VicRoads Registration Identification System or VRIS), including motorcycles, which contains information about the motorcycle, such as safety features (i.e. Anti-lock Braking System), engine size and the garage address.³ There are advantages in tracking usage through registration. The primary advantage is that registration data reflects the total number of motorcycles lawfully being used (or able to be used) in Victoria. Comparing the total number of motorcycles registered on the road over time provides a strong basis on which to identify changes in usage. The Committee also contextualised the increases in vehicle registration by comparing rates of registration to population figures and the proportion of motorcycles as a component of the vehicle fleet.

However, the Committee notes that using registration to measure usage, and more importantly increases in usage, is an imperfect model because it has some disadvantages. The VicRoads VRIS does not keep information on those motorcycles purchased legally but not registered. Further, registered motorcycles do not give a clear indication of the type of riding that their owners do, nor do they explain the number of trips of exposure of motorcyclists. Additionally, during the public hearings the Committee heard that motorcycle enthusiasts can own several motorcycles. This fact has been quantified by research.⁴ That in turn means that a net increase in the number of motorcycles registered does not necessarily equate to an increase in the number of motorcycles on the road. In spite of these disadvantages, registration data is extremely useful as a usage measure. The act of registering a vehicle inherently involves the vehicle's use. Therefore, changes in registration data and trends over time provide a meaningful measure of usage notwithstanding the disadvantages outlined above.

6.2.3 Permit and licence holders

Measuring changes in the number of permit and licence holders is another usage measure that enables changes in motorcycle use to be analysed. The issuing of motorcycle licences and permits is managed by VicRoads. The total number of licences and permits is, like motorcycle registrations, a meaningful measure for determining growth in the usage of motorcycles. This is particularly useful when dealing with the uptake of motorcycling by novice riders, which can be easily measured by looking at the number of permits issued over time. Unfortunately, as with motorcycle registrations, it is necessary to note the weaknesses of relying on this measure alone.

Motorcycle licences form part of the driving licence in Victoria, meaning riders have their motorcycle classification automatically renewed when they renew their car licence. As a result, a motorcycle licence holder may not use a motorcycle for a prolonged period of time – they may not even own a registered motorcycle – but would still be counted in the licence statistics collected by VicRoads. That is likely to have the effect of inflating the number of riders who are on Victorian roads.

6.2.4 Fleet characteristics

The Federal Chamber of Automotive Industries (FCAI) keeps data on new motorcycles sold in Australia. These sales statistics are a good source of information on the type of vehicles being sold (i.e. scooters, road bikes etc.). However, the FCAI statistics do not include sales of used motorcycles, so they cannot present an accurate estimate of all motorcycles currently, a point which was highlighted during the public hearings⁵. Further, they reflect overall sales patterns for vehicles across Australia, rather than by state.

In addition to sales, other changes to the fleet such as vehicle age and vehicle characteristics, such as Anti-lock Braking System increases, were also analysed by the Committee as part of its investigations into changing usage. Changes in the average age of the vehicle fleet and the growth in the number of registered motorcycles with advanced motorcycle technologies such as Anti-lock Braking Systems (which are generally fitted on newer motorcycles) and engine size are useful because they reflect a modernisation of the vehicle fleet.

6.3 What does the current motorcycle fleet look like?

6.3.1 Size of the current fleet

The Victorian motorcycle fleet has changed significantly over the last decade. At the end of 2011 the fleet was comprised of 173,967 motorcycles.⁶ The Committee requested data from VicRoads on the numbers of different types of motorcycles such as scooters and mopeds. Due to limitations in the databases used by VicRoads such data was unavailable. However, VicRoads provided research conducted by consultants that found a 166% increase in the number of scooters and mopeds being registered (between 2003 and 2007), an expansion six times larger than that seen in other motorcycle types.⁷ According to data held on the VRIS, Japanese manufactured motorcycles represent the greatest number of registrations. Four of the top five most numerous motorcycles are Japanese (Honda, Yamaha, Suzuki and Kawasaki respectively) accounting for just over 100,000 registered vehicles between them, more than 50% of the total motorcycle fleet.⁸ In terms of the size of motorcycles, the category comprising of 126 to 250 cubic capacity (cc) is the largest for registered motorcycles followed by the 501–1000cc category.⁹

6.4 How has the fleet changed over time?

6.4.1 Introduction

Motorcycles are a steadily growing component of the vehicle fleet in Victoria¹⁰, which has experienced significant changes in a number of areas over the last decade. Firstly, there has been a lowering of the average manufacturing age of motorcycles, reflecting a subtle modernisation of the fleet. Secondly, the growth of the fleet over the last decade has been sizeable, particularly in vehicle registrations but also in the size of the motorcycle fleet as a proportion of the total vehicle fleet and passenger fleet. Lastly, there have also been changes in the number of motorcycles sold, and the proportion of motorcycles to population. The common factor underpinning all the data analysed by the Committee was that motorcycle use is growing, irrespective of the usage measure, and is doing so at a rapid pace, greater than that of comparable vehicles such as passenger cars.

6.4.2 Changes in size by registration

The motorcycle fleet has grown rapidly over the last decade. In 2002, there were 104,604 motorcycles registered.* By 2011 that number had reached 173,967. That change represents a 66% increase over the last decade. By way of comparison, the growth level for passenger vehicles was 23%, representing a far more restrained increase, over time, compared to motorcycles.

The growth in the motorcycle fleet has been significant, particularly due to the nature of motorcycle use in Victoria. Given that motorcycles used on private farms do not need to be registered, the actual growth in motorcycles use may be larger than indicated by the VicRoads statistics. Similarly, a proportion of motorcycles used off-road are unregistered (and used unlawfully). The cumulative effect of these nuances in motorcycle registrations is that the actual growth levels are, at the very least, likely to be higher than that collected by VicRoads.

Motorcycles in Victoria can be registered in a number of ways. Full registration, which includes Learner Approved Motorcycle Scheme (LAMS) vehicles, allows a rider to use the motorcycle on all public roads in Victoria. However, there are a number of additional registration categories that apply to specific types of motorcycles and limit their use in exchange for a reduced registration charge.¹¹

Graph 6.1 (following) provides a comprehensive overview of VicRoads registration data, broken down by category since 2002. Although recreational registration comprises a small percentage of overall motorcycle registrations, it has shown remarkable growth since 2002. That growth, which amounts to a sixfold increase, has been accelerating since 2007. Overall registration for motorcycles has jumped from just over 100,000

* Note: It should be noted that the growth level referred to is higher than the one recorded by the VicRoads submission which reported an increase of 58% in registrations. This is because the figures cited in this report extended beyond the period assessed by VicRoads (which was from 2002 to 2010). See VicRoads, *Submission to the Inquiry*, September 2011, p. 16.

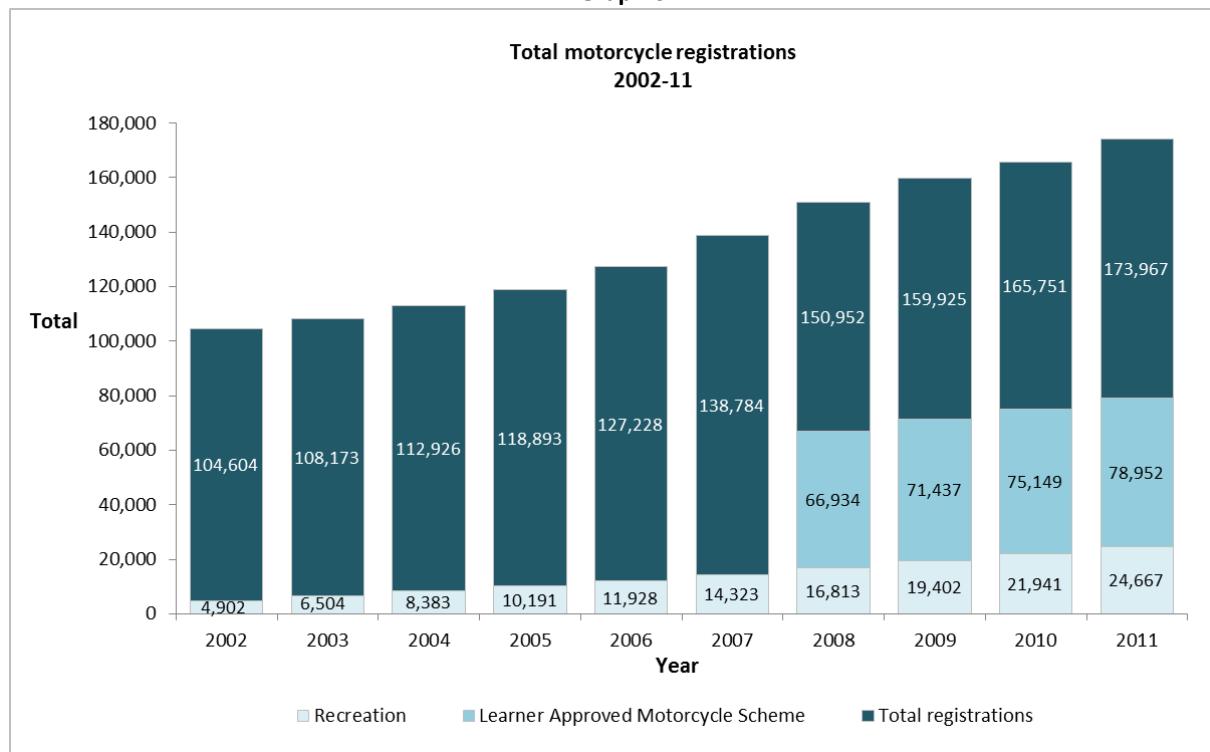
vehicles to more than 173,000 since 2002, an increase that has been consistent and linear.

Tracking the increase of recreational registration is useful in understanding the growth of off-road motorcycling (notwithstanding the incidence of unregistered off-road motorcycle use). This is because ‘recreational registration’ applies exclusively to off-road motorcycles. In terms of the growth in recreationally registered motorcycles, the Committee was advised by Mr Roger Pitt, Trail Bike Project Manager, Department of Sustainability and Environment (DSE), that:

... there are now approximately 20 000 recreationally registered motorcycles. Both from the data that we have in response to our market survey, which involved 666 riders, and also from our field observations while conducting compliance operations, we have found that approximately 60 per cent of the motorcycles that we engage are full registration and 40 per cent are recreation registration. On that basis, if we have 20 000 with recreation registration, we think there are somewhere in the vicinity of 30 000 full registration motorcycles. That makes a total group of about 45 000 to 50 000 motorcycles that are used for trail riding out of our total population of about 160 000-odd registered motorcycles in Victoria.¹²

The trend in Graph 6.1 for recreationally registered motorcycles appears to support the statements made above. In the absence of a discernible change in the factors driving recreational registration growth, this category is likely to continue increasing.

Graph 6.1



Source: Correspondence from Mr James Holgate, Director, Road User Safety, VicRoads, 23 February 2012.

6.4.3 Changes as a proportion of the overall road vehicle fleet

The motorcycle fleet represents a small proportion of the total Victorian vehicle fleet. The exact proportion of motorcycles to the broader vehicle fleet varies according to the sources used. Motorcycles are usually referred to as comprising 3–4% of the total

vehicle fleet. Statistical data provided by the ABS *Motor Vehicle Census* found motorcycles as a proportion of the total vehicle fleet comprised 3% in the period 2001–2007. In the period 2008–2011 the proportion had increased to 4%.

Considering the total vehicle fleet includes heavy vehicles, light commercial vehicles and buses, the Committee also investigated the proportional size of the motorcycle fleet compared with passenger vehicles. It did so because these vehicles are more directly comparable to motorcycles, being used predominantly for commuting and recreational purposes. The Committee found that motorcycles proportionally accounted for 4% of the total number of passenger vehicles in the period 2001–08 after which the proportion increased to 5% (between 2009 and 2011).¹³ In spite of these large increases, motorcycles in Victoria proportionally remain a small percentage of all registered vehicles (which includes both the total and passenger fleets).

6.4.4 *Motorcycle use per head of population*

The Committee gauged the growth of motorcycle use by comparing increases over time in the number of motorcycles registered relative to changes in population levels. Measuring increases in the number of motorcycles used per head of population can demonstrate whether motorcycle use kept pace with population growth or alternatively whether it increased above the population rate. The Committee plotted the rate of motorcycles registered compared with Victoria's population growth. Using population statistics for Victoria compiled by the ABS and VicRoads registration data¹⁴, the Committee found an increase in the rate of registration per 1000 people –from 21 in 2002 to 31 in 2011.

The Committee's calculations support the conclusion that motorcycle usage has outstripped population growth. The increase over the period from 2002 to 2011 constitutes a 46% increase in the rate of registrations per 1000 Victorians. On a practical level, these rates means there are more motorcycles on the road in 2011 than there were in 2002. Further, the increase since 2005 has been linear. The Victoria Police submission recognised the trend noting that 'the increase in motorcycle and scooter registrations by 58% and licences by 36% were significant considering that the Victorian population increased by 11% between 2003 and 2009'.¹⁵

6.4.5 *Trends over time in the types of bikes registered*

The Committee requested data from VicRoads on changes in the types of motorcycles being registered. In correspondence to the Committee secretariat, it was explained that the VicRoads registration databases were incapable of undertaking reports or searches of this kind.¹⁶ However, in the past VicRoads has commissioned research into such trends, the findings of which were provided in its submission. The most useful finding of the research provided was the increase in the number of scooters being registered, which represented a doubling of scooters on Victorian roads in the period 2003–2007.

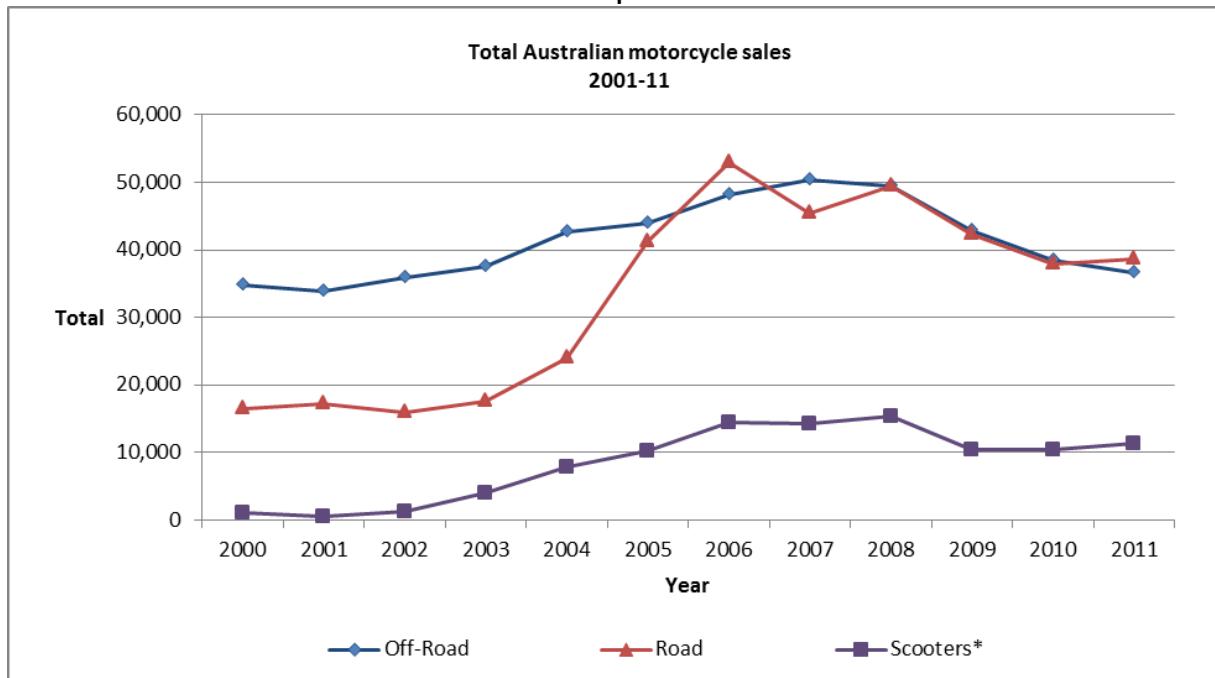
6.5 Fleet characteristics

6.5.1 New sales of motorcycles

Statistics relating to new motorcycle sales can be a useful way of not only tracking changes in the types of motorcycles that are being purchased but also of tracking the number of newer motorcycles and the accompanying technology (such as Anti-lock Braking Systems) on motorcycles. The FCAI compiles yearly data sets on the number of new motorcycles sold in Australia. Graph 6.2 below tracks the sales of new motorcycles over the last decade. The limitation of the FCAI sales data is that this is national data, not state based data. The extent to which such sales data can be applied to Victoria is difficult to ascertain, but considering population and licence numbers, a sizeable portion of these sales are likely to be Victorian.

The data in Graph 6.2 clearly reflects the continuing prevalence of off-road and on-road motorcycle sales, over scooters and mopeds. While all categories of motorcycles increased their sales over the last decade, it is clear that sales growth has plateaued or decreased since 2008 and has not yet rebounded. However, the overall growth in motorcycle sales over the period coincides with the other usage measures referred to in this chapter and again reinforces the picture of rapid growth in motorcycle use over the last decade.

Graph 6.2



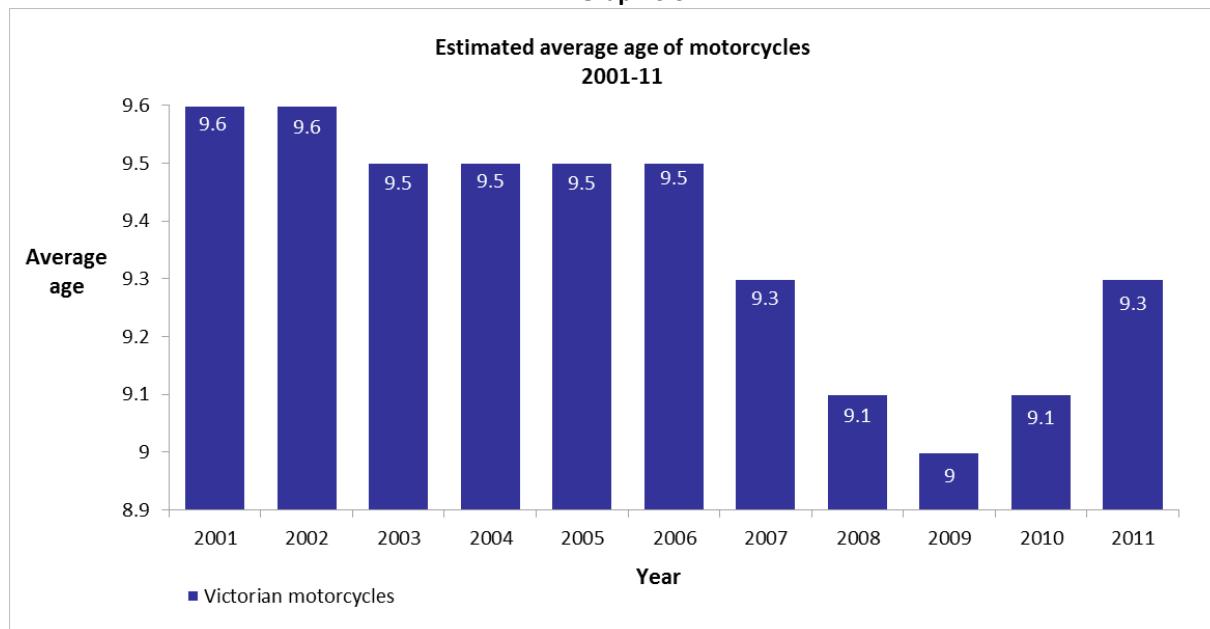
Source: (1) Correspondence from Rhys Griffiths, Motorcycle Manager, FCAI, 20 February 2012; (2) Conversation with Cameron Cuthill, 11 October 2012; (3) <http://www.fcai.com.au/news/news/2006/2/105/australian-motorcycle-sales-cruise-into-the-record-books>. *Due to data inconsistencies, 2000 to 2005 figures are indicative only. 2005 Scooter sales figure was located on FCAI website.

6.5.2 Age of the motorcycle fleet

The Victorian motorcycle fleet has over the past decade seen a decrease in the average age of motorcycles. That decrease, though slight, may have ramifications for motorcycle safety. Generally, newer motorcycles have benefited from more advanced technologies

such as motorcycle Anti-lock Braking Systems, more efficient braking systems and better handling. The renewal of the fleet over time will increase the number of motorcycles that have safety focused technology, with the attendant benefits that may deliver. Graph 6.3 (following) includes an average vehicle age for Victorian motorcycles. The average is drawn from the total age of all registered motorcycles.

Graph 6.3



Source: ABS Motor Vehicle Census (9309.0), 2001 to 2011 series.¹⁷

6.5.3 *Vehicle characteristics (engines, safety gear)*

Motorcycles have lagged behind other vehicles in terms of passive safety features. That reflects the difficulties inherent in designing, engineering and fitting passive technologies such as airbags and crumple zones on motorcycles. However, Anti-lock Braking Systems and Electronic Stability Control, which are available on passenger cars, are types of safety devices that are fitted to motorcycles. The number of motorcycles that have Anti-lock Braking Systems fitted remains small. Currently, VicRoads estimates that 'around seven percent of new motorcycles are equipped with ABS'.¹⁸ The number of registered motorcycles fitted with Anti-lock Braking Systems should continue to increase as the technology becomes more widely available, cheaper and owners update their motorcycles.

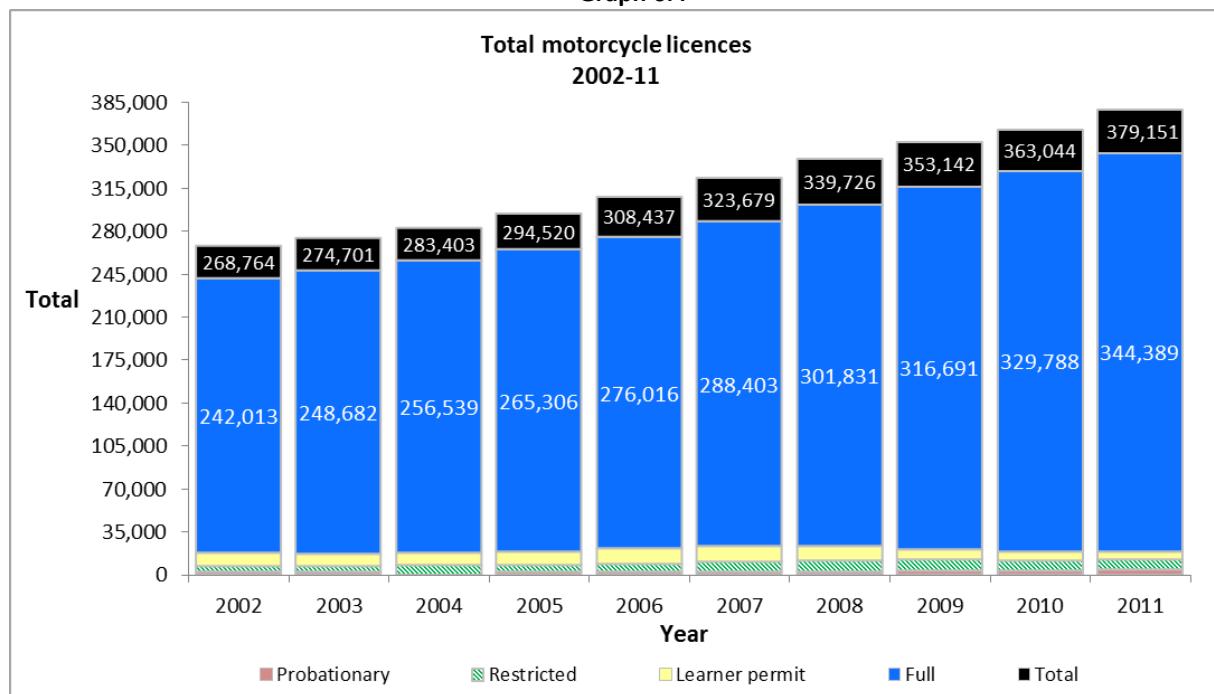
6.6 *Licence and permit holders changes*

6.6.1 *Changes in licensing*

This section deals with changes to the number of licence and permit holders in Victoria. Analysing the changes in the number of permit and licence holders, as well as the age of riders was identified by the Committee as an important method for tracking motorcycle usage over time. According to VicRoads the number of licences issued grew by 37% between 2002 and 2010¹⁹. Graph 6.4 (following), representing the period from 2002 to 2011, shows that Victorian motorcyclists overwhelmingly hold full licences, with the second largest category being those with probationary licences. In the period from 2002

to 2011 the number of licences increased by over 100,000, with most licence categories experiencing sustained growth.

Graph 6.4



Source: Correspondence from Mr James Holgate, Director, Road User Safety, VicRoads, 23 February 2012.

The number of licences in terms of a rate calculated by comparisons to population also reflects an increase in motorcycle usage. Rates for licences based on population showed an increase from 55 riders per 1000 Victorians in 2002 to 68 in 2011, a 23% increase.²⁰ The Committee received advice from VicRoads that there are ‘twice as many licensed riders and learner riders in Victoria compared to registered motorcycles’.²¹ VicRoads suggested that this disparity can be explained by the lack of a requirement for dual licence holders to renew individual licences. This means that a motorcycle licence holder does not need to ride a motorcycle, nor renew that component of their licence. Rather, they can continue to hold a motorcycle licence and only pay one renewal fee. Further information provided by VicRoads indicated that 99% of motorcycle licence holders have a current car driver licence.²²

6.6.2 Who rides motorcycles?

The Committee recognised the diversity within the motorcycle community from the onset of the Inquiry. That diversity extends to the types of motorcyclists and the machines they ride. It also influences the way motorcyclists use their bikes. The Transport Accident Commission (TAC) and VicRoads undertake surveys and research on the travelling patterns of motorcyclists to ‘refine those agencies’ understanding of motorcyclists and their travel behaviour’.²³ The findings of these studies provide a contextual basis for understanding how motorcycles are used on Victoria’s roads.

There are two broad types of riders: those who ride for recreation and those who ride for commuting purposes. The VicRoads research suggests that one-third of motorcycling

trips are for commuting and almost one-quarter occur for social or recreational purposes.²⁴ Although the Committee received evidence during the public hearings that commuting is increasingly important in driving increased usage, research undertaken in 2008 indicated that commuting is a motivational factor for only 10% of riders.²⁵

The VicRoads research also provided information on the type of motorcycles being ridden, and by whom. Generally, sports bikes were found to be the most popular motorcycles, with larger capacity engines being prevalent.²⁶ According to VicRoads, ‘motorcyclists are predominately male, accounting for 85% of licence holders as well as completing 89% of all trips for work purposes’.²⁷ The mean age of female riders was younger than male and they tended to have less experience as a group compared to male riders.²⁸ Further, the Committee was advised that three times more women rode scooters and they are twice as likely to own motorcycles with smaller engines (motorcycles with an engine capacity between 126–260cc).²⁹

The differences within the riding community also extend to demographic differences between rural and metropolitan riders. Again the VicRoads research was illustrative in identifying the differences between the two groups. It indicated that rural motorcyclists are older (47 years compared with 41 for metropolitan riders) and had greater riding experience (24 years compared with 16 for metropolitan riders). The TAC submission included research findings that corresponded or reinforced the findings of VicRoads commissioned research. The TAC has found that one-quarter of female riders ride scooters (compared with 6% of males) but only 5% ride off-road.³⁰

6.6.3 When do they ride?

The use of motorcycles is generally seasonal, with the better weather from spring to early autumn being the accepted peak³¹. The opposite is true of off-road motorcycles, which attract riders year round.³² TAC motorcycle tracker outcomes have found the largest proportion of motorcyclists’ time is spent riding recreationally. Further, those riders aged 40 and above spend more time riding recreationally than those aged 18–39. The 18–39 year cohort spends more time commuting than riding recreationally. The prevalence of recreational riding places greater importance on weather conditions, whereas traffic conditions and parking were identified by the TAC as determining factors for metropolitan commuters.³³

6.7 What is driving the increase?

The level of growth in motorcycle use reflects a number of factors, which were raised during public hearings and in submissions to the Inquiry. These include traffic congestion, cost of transport, lifestyle, affluence, changes to the urban environment and the changing demographic of riders. The Committee shares the view proffered by VicRoads that:

*[t]he perceived benefits and attractions of motorcycle riding are contributing to the growth in the number of motorcycle registrations and licences.*³⁴

It is important to recognise that increases in motorcycle usage growth levels are not driven by a single factor. Much like the disparate and diverse motorcycle community, different factors are driving increases in use for each type of motorcycle and for those obtaining a licence or a permit. The lack of common factors and the way that different factors interact is likely to mean that increased growth will continue. Further, it also means that use will not be affected by changes to factors such as costs, unless that change affects multiple factors of use. That is, motorcycle use is being driven by a robust reaction to a number of factors that is unlikely to change.

The Committee identified a number of factors that can help explain the changing face of motorcycling in Victoria. These factors are not exclusive, rather they operate together and for many new riders a combination of factors have led to them deciding to buy and use a motorcycle. The section below outlines and discusses the impact of each of these factors.

6.7.1 Traffic congestion

Victorian roads, particularly those in metropolitan centres, are increasingly congested. The reasons for congestion are complex, but can be summarised as being due to increases in population, lack of infrastructure provision in urban planning, lack of access to public transport and economic activity. For motorcyclists, congested roads can be navigated more quickly on a motorcycle than by other modes of transport.

The rise in traffic congestion may also explain the increased sales of scooters in Victoria. Scooters are traditionally a commuter focused vehicle, with an emphasis on use in the metropolitan and inner city areas. The Committee was advised by then Deputy Commissioner Kieran Walshe, Victoria Police, that scooter growth for the period 2005–2010 was 32%³⁵ and that scooters had experienced a rapid rise as a commuter vehicle.³⁶ Rising congestion, along with cost and availability of other forms of transport, are likely to be responsible for these marked increases in scooter sales. The impact of congestion was cited by other submitters to the Inquiry. Motorcycling Australia's submission points to one factor driving congestion:

*... congestion builds through increased numbers of single occupant vehicles being funnelled via high capacity freeways into a city that has low capacity urban feeders.*³⁷

For Motorcycling Australia, growth in motorcycle use for commuting purposes while small at present is likely to increase. Similarly, Honda Australia Motorcycles and Power Equipment identified congestion and cost as drivers of motorcycle use.³⁸ Traffic congestion increases the cost of driving, in terms of both fuel and maintenance. Consequently, the attractiveness of motorcycles (particularly mopeds and scooters) is likely to increase. These advantages are said to accrue more quickly for those living in urban and inner city areas, a point supported by Ms Hollie Black, General Manager, Select Scootas:

Like so many cities, Melbourne faces a future of clogged roads, high-density living, stretched public transport systems, population growth and environmental concerns. Congestion is one of the biggest

*problems facing our beautiful city. As part of the transport mix, scooters can solve many of these infrastructure problems, as they do successfully in other cities around Australia and the world over.*³⁹

6.7.2 Lifestyle

In public hearings, submissions and presentations to the Committee, the importance of lifestyle as a factor in increased usage was emphasised. Motorcyclists are passionate about riding and see it as a lifestyle choice. Research commissioned by the TAC and VicRoads validates that viewpoint, with recreation being the overwhelming reason for motorcycle usage.⁴⁰ Mr Rex Deighton-Smith eloquently expressed the role of the motorcycle in his life:

*Despite the fact that I have many sources of pleasure in my life, motorcycling is one of the ones that is right up there. I guess that sort of intangible benefit is often underplayed or not recognised in public policy, but I would underline that it is very important.*⁴¹

That sentiment was repeated often at public hearings. Lifestyle in terms of motorcycle use is synonymous with recreation. The importance of recreational use is most strongly felt among older riders. Victorian riders disproportionately include older riders (those above 40 years of age), many of whom are returning riders. For these riders, a common theme is that as they have adult children and greater disposable income, many are choosing to return to motorcycling after many years.

The importance of recreation has also been identified as the explanation for the growth in off-road motorcycling, which accounts for the majority of new motorcycle sales and is a sport increasing in popularity.⁴² Mr Roger Pitt, DSE, elaborated:

*There is no question about the fact that trail bike riding is increasingly popular. More and more people are going riding. More bikes are being sold. We have an increase in the number of very cheap bikes which sell for about \$500 or \$600, which puts a lot more people into this riding area. We also have a transfer of people who have previously been road bike riders but because of their concerns about safety they have a perception it is safer to go trail bike riding and more of those have transitioned to become trail bike riders.*⁴³

In addition to returning and older riders, and off-road motorcycling, most segments of the motorcycle community have a strong focus on recreation. From sports bikes to scooters and cruisers, lifestyle is a strong driver of motorcycle usage.

6.7.3 Commuting

Commuting has become a more prominent use of motorcycles, although it has not supplanted recreation as the main use of a motorcycle. The role of urbanisation, traffic congestion and cost factors appears to be having an impact on motorcycle sales.⁴⁴

The advantages of motorcycles in commuting for Victorians include their ability to traverse efficiently through traffic⁴⁵ and to park on public footpaths.

Commuting is a strong driver of increased motorcycle demand. Intuitively, it seems likely that the attractiveness of smaller motorcycles such as scooters and mopeds is due

to their handling characteristics and ease of use for commuting. That is something likely to continue in the foreseeable future, a point supported by then Deputy Commissioner Kieran Walshe:

*Commuter rider rates are likely to increase due to urban expansion, road congestion, public transport deficiencies and the cost of fuel.*⁴⁶

6.7.4 Cost

The cost of transport is an important issue for Victorians and a factor in the increased use of motorcycles for commuting. Unlike recreational riding, where cost is a secondary factor, commuting costs on different types of transport were repeatedly raised by witnesses as explaining increases in motorcycle use. The views of witnesses and submitters to the Inquiry were reinforced by the findings of a research project commissioned by VicRoads, *Motorcyclist exposure on Victorian Roads May 2008*, which found that one-third of riders surveyed considered cost to be the reason they were riding.⁴⁷

Motorcycles are clearly cheaper to purchase, maintain and run than other commuter vehicles. In some applications, they are likely to be cheaper than public transport options. These characteristics make motorcycles attractive to a wide cross-section of the Victorian community.⁴⁸

A paramount factor in the cost of motorcycles is fuel price. Motorcycles are far cheaper to operate in terms of fuel consumption than larger, heavier passenger vehicles, noting of course the limited capacity of motorcycles to carry more than one passenger. The relationship between increased motorcycle usage and fuel prices appears to be highly sensitive.⁴⁹

6.7.5 Increasing urban density

Victoria's metropolitan centres are undergoing rapid changes. Increasingly, metropolitan centres, and Melbourne in particular, are seeing changes to residential density. As the inner city areas have grown, with a reliance on medium and high rise apartments, a lack of space and close proximity to the city and employment has had an impact of the take-up of scooters and mopeds.

Travelling shorter distances, cheaply and quickly, in areas which lack transport or adequate linkages across the city, has been identified by the Committee as a factor in motorcycle use.

6.7.6 Lack of access to alternative forms of transport

Access to public transport and quick, efficient roads is often limited in areas of Melbourne. During the public hearings, the Committee heard a lack of access can be a motivating factor in the use of motorcycles, particularly when the cost of non-motorcycle alternatives is factored in.⁵⁰ In the absence of public transport and viable car

use, motorcycles are likely to remain a favoured commuting option for some time due to their low cost.

6.7.7 Environmental concerns

For some motorcyclists, lower greenhouse emissions are clearly a factor in using motorcycles for commuting. According to the VicRoads commissioned survey *Motorcyclist exposure on Victorian roads*, 20% of respondents indicated they chose to ride a motorcycle as they perceive it to be more environmentally friendly than driving a car.⁵¹ That perception appears to be supported by research suggesting motorcycles generally emit less greenhouse gasses than cars. This is because greenhouse gas emissions are linked to fuel consumption⁵² and motorcycles have lower fuel consumption than other vehicles.⁵³

6.8 The link between motorcycle usage and road safety

An increase in the number of motorcycles on Victorian roads and their use will have an impact on road safety. What is difficult to discern is the extent of that impact. Earlier in this chapter the Committee found all three motorcycle usage measures are increasing. That view is underpinned by the trends seen in the data collected by the ABS, road safety agencies and the FCAI. An increase in use means more people on the road and therefore, a greater possibility of motorcycle trauma. That point was stressed by the RACV:

... we found that the uptake of motorcycling has increased in recent years. There have been increases in both sales and registration. This translates into an increase in the risk profile of travel overall and this has road safety implications. The use of motorcycling for commuting purposes appears to be growing, with motorcycles seeming to be cheaper to run, cheaper to park, and more flexible in avoiding traffic congestion. These all seem likely to be contributing to the appeal of motorcycling.

*While it is recognised that motorcyclists are part of the road user system, they are more vulnerable than motorists and have a much greater risk of injury. As such, road safety efforts need to focus on improving the safety of motorcycling.*⁵⁴

The Committee notes that the relationship between motorcycle sales growth and increases in fatalities and injuries in countries including Australia, the United Kingdom (UK) and the United States (US) has been cited by road safety researchers.⁵⁵ Other research suggests that the link between motorcycle sales (and thus usage) and crashes and rider injury is not uniform across motorcycle types.⁵⁶ A rise in usage levels carries with it the potential for increases in trauma. That concern was central to the Committee's investigations. There are multiple risks to road safety posed by increased usage levels.

Firstly, increased usage may heighten current inadequacies in countermeasures, strategies and regulatory approaches. For example, a poorly structured training curriculum becomes more problematic when the number of students is quadrupled over time. Secondly, increases in the number of riders will have an impact on road trauma, one that is likely to involve an increase in the raw number of trauma victims. Lastly, increased usage is capable of undermining mid to long term road safety planning,

strategy and research, because it means that initiatives that are constrained or targeted for a small sector of road users suddenly have to achieve the same trauma outcomes for a much larger, diverse group.

There is also strong argument that an increased usage trend could have a detrimental impact by increasing trauma levels. That phenomenon has been identified by researchers in the US. They found that ‘the trend in motorcycle mortality rates over the past decades in the US has paralleled the trend in sales of new, on-road motorcycles by dealers in the US’.⁵⁷ Victorian evaluations of this argument need to be based on credible data and contextualised by reference to usage measures such as licences and registrations.

The Committee also identified positive aspects to road safety flowing from increased usage. Increases in motorcycle usage are likely to have many positive impacts when coupled with extraneous factors such as traffic congestion, motorcycle specific infrastructure upgrades, and greater interaction with motorcyclists and road safety initiatives. The cumulative effect may be a reduction of the potential for increased levels of trauma. The impact of congestion, which slows down traffic flows, and road safety measures such as lower speed limits, would be beneficial in reducing motorcycle trauma. Further, an increase in the number of motorcycles and riders would re-position these vulnerable road users so that they assume a more prominent focus for regulators when building and maintaining roads, and designing road safety measures. The Motorcycling Australia submission explained that increased usage would have positive impacts due to the operation of ‘the circle of care’.⁵⁸ According to the submission, the ‘circle of care’ is:

*... based on the fact that for every PTW [powered two wheelers] user, there are a circle of relatives and friends who know that person and consequently become more aware and caring about other PTW users. This phenomenon is best seen in places like Europe where almost every family knows someone who rides a PTW.*⁵⁹

That perspective was repeated by witnesses at public hearings. The Committee notes the view that as motorcycle riders and motorcycles become more numerous on our roads, they are likely to create a greater level of awareness among other road users and there may be some benefits for road trauma outcomes.

The Committee recognises that the changing and increased use of motorcycles is creating secondary impacts. Motorcycle riders are clearly not a homogenous group. The diversity within the group extends to the types of machines riders use. The increased impact of cost, traffic congestion and urbanisation has expressed itself in the uptake of scooters and mopeds. The use of such motorcycles and the prevalence of riders using them are likely to increase over the next decade.

Focusing specifically on different types of motorcycle users will be critical if we are to reduce the likelihood of increases in motorcycle trauma rates. The Committee contends that road safety regulators need to be aware of these differences and adapt to deal with increases in different types of riders and different types of motorcycles.

That point was made to the Committee at the public hearings in Melbourne:

*... there are some quite distinct subcultures in motorcycling, and scooters are sort of over on one side as a very distinct subculture. They do not see themselves as motorcyclists. I say this as someone who has a couple of friends who in middle age have taken up riding scooters. They do not see themselves as motorcyclists, and in fact in many cases they would not consider riding a motorcycle, but somehow they see a scooter as different.*⁶⁰

Clearly, increased usage brings with it both positive and negative aspects for road trauma reductions. The challenge posed by increased usage needs to be harnessed where it provides benefits and mitigated when it poses the threat of increased mortality and injury for Victorian Riders.

6.9 Findings

Motorcycle usage has been growing rapidly, irrespective of the data measure analysed. The experience of Victoria has been replicated in other Australian jurisdictions, to varying degrees. The remarkable changes in motorcycling have also been recognised by organised motorcycle groups.⁶¹ Currently, there are more licensed riders and motorcycles registered than at any time previously. Every measure identified and analysed by the Committee reinforces the view that motorcycle use is growing and likely to continue to do so. Importantly, growth in motorcycle sales and other research indicates that while off-road motorcycles and road motorcycles still comprise the majority of sales, scooter sales are a growing component within the motorcycle community, albeit a small one at present.

The Committee agrees with the evidence presented at public hearings and in submissions to the Inquiry that there are a number of factors that are responsible for the increased use of motorcycles in Victoria. Importantly, no one factor is responsible for the consistent growth in motorcycle use. Many of the factors overlap and their effect is cumulative – Victorians are buying and riding motorcycles and applying for licences and permits for more than one reason. These factors are underpinned by a host of socio-economic reasons which are unlikely to change in the future. There is an absence of definitive evidence determining the extent to which environmental concerns are driving usage. It appears likely that environmental concerns are a secondary factor for choosing to use a motorcycle for commuting purposes, acting together with one of the other factors above as a catalyst for some Victorians choosing to use, or increase their use, of motorcycles.

Changes in usage, both in the number of motorcycles registered and licences granted can occur quickly and can vary in their impact depending on the motorcycle segment most affected. The impact of increased motorcycle usage on road safety, and trauma in

particular, can be significant, and bring with it positive and negative repercussions. Increased numbers of motorcycles on the road can enhance public education campaigns aimed at addressing motorcycle safety and create an impetus for other road users to be aware of motorcyclists on the road. The negative impact of increased usage is the potential for more road trauma.

Endnotes: Chapter 6

¹ VicRoads, *Submission to the Inquiry*, September 2011, p. 18-19; Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 10.

² S.7 *Road Safety Act 1986* (Vic).

³ R. 38 *Road Safety (Vehicles) Regulations 2009* (Vic); Part 2 *Road Safety Act 1986* (Vic).

⁴ Ultrafeedback, *Motorcyclist exposure on Victorian Roads (RSD 457) Final Report*, for VicRoads, May 2008, p. 32.

⁵ Mr Damien Codognotto OAM, Independent Riders' Group, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 173.

⁶ Correspondence from Mr James Holgate, Director, Road User Safety, VicRoads, 23 February 2012.

⁷ VicRoads, *Submission to the Inquiry*, September 2011, p. 17.

⁸ Correspondence from Mr Bruce Gidgley, A/g Chief Executive, VicRoads, 20 October 2011.

⁹ VicRoads, *Submission to the Inquiry*, September 2011, p. 14.

¹⁰ Australian Bureau of Statistics' *Motor vehicle Census Australia 9309.0*, 31 January 2011, p. 8, viewed March 2012, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/9309.031%20Jan%202011?OpenDocument>.

¹¹ See VicRoads, *Farm Bikes*, March 2011

<http://www.vicroads.vic.gov.au/Home/Registration/WhatHasToBeRegistered/OtherVehiclesBoatsAndRegistrationIssues/FarmBikes.htm>;

VicRoads, *Club Permits*, October 2012

<http://www.vicroads.vic.gov.au/Home/Registration/PermitsModificationsAndDefects/OtherPermits/ClubPermits.htm>;

VicRoads, *Recreational motorcycle registration*, September 2012

<http://www.vicroads.vic.gov.au/Home/Registration/WhatHasToBeRegistered/OtherVehiclesBoatsAndRegistrationIssues/RecreationalMotorcycleRegistration.htm>.

¹² Mr Roger Pitt, Trail Bike Project Manager, Forests and Parks Division, Department of Sustainability and Environment, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 86.

¹³ Australian Bureau of Statistics, *Motor Vehicle Census Australia*, 9309.0, 2001 – 2011 series, Canberra, Table 1 - Motor Vehicles on Register, Type of Vehicle – Census Years.

<http://www.abs.gov.au/AUSSTATS/abs@.nsf/second+level+view?ReadForm&prodno=9309.0&viewtitle=Motor%20Vehicle%20Census,%20Australia~31%20Jan%202012~Latest~22/08/2012&&tabname=Past%20Future%20Issues&prodno=9309.0&issue=31%20Jan%202012&num=&view=&>.

¹⁴ Australian Bureau of Statistics, *3101.0 - Australian Demographic Statistics*, December quarter, 2002-11, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/second+level+view?ReadForm&prodno=3101.0&viewtitle=Australian%20Demographic%20Statistics~Mar%202012~Latest~27/09/2012&&tabname=Past%20Future%20Issues&prodno=3101.0&issue=Mar%202012&num=&view=&>; Correspondence from Mr James Holgate, Director, Road User Safety, VicRoads , 23 February 2012.

¹⁵ Victoria Police, *Submission to the Inquiry*, September 2011, p. 7.

¹⁶ Correspondence from Mr James Holgate, Director, Road User Safety, VicRoads, 23 February 2012.

¹⁷ Australian Bureau of Statistics, *Motor Vehicle Census Australia*, 9309.0, 2001 – 2011 series, Canberra, Table 1 - Motor Vehicles on Register, Type of Vehicle – Census Years, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/second+level+view?ReadForm&prodno=9309.0&viewtitle=Motor%20Vehicle%20Census,%20Australia~31%20Jan%202012~Latest~22/08/2012&&tabname=Past%20Future%20Issues&prodno=9309.0&issue=31%20Jan%202012&num=&view=&>.

¹⁸ VicRoads, *Submission to the Inquiry*, September 2011, p. 68.

¹⁹ VicRoads, *Submission to the Inquiry*, September 2011, p. 17.

²⁰ Australian Bureau of Statistics, *3101.0 - Australian Demographic Statistics*, December Quarter, 2002-11, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/second+level+view?ReadForm&prodno=3101.0&viewtitle=Australian%20Demographic%20Statistics~Dec%202004~Previous~03/06/2005&&tabname=Past%20Future%20Issues&prodno=3101.0&issue=Dec%202004&num=&view=&>; Correspondence from Mr James Holgate, Director, Road User Safety, VicRoads, 23 February 2012.

²¹ VicRoads, *Submission to the Inquiry*, September 2011, p. 18.

²² VicRoads, *Submission to the Inquiry*, September 2011, p. 18.

²³ VicRoads, *Submission to the Inquiry*, September 2011, p. 14.

²⁴ VicRoads, *Submission to the Inquiry*, September 2011, p. 14.

²⁵ VicRoads, *Submission to the Inquiry*, September 2011, p. 14.

²⁶ VicRoads, *Submission to the Inquiry*, September 2011, p. 14.

²⁷ VicRoads, *Submission to the Inquiry*, September 2011, p. 14.

²⁸ VicRoads, *Submission to the Inquiry*, September 2011, p. 15.

²⁹ VicRoads, *Submission to the Inquiry*, September 2011, p. 15; Ultrafeedback, *Motorcyclist exposure on Victorian Roads (RSD 457) Final Report*, for VicRoads, May 2008, p. 67.

³⁰ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (b).

³¹ Acting Senior Sergeant Jamie Chester, Road Policing Strategy Division, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 33.

³² Department of Sustainability and Environment, *Trail Bike Market Research 2009*, Melbourne, 2010, p. 9.

³³ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (b).

³⁴ VicRoads, *Submission to the Inquiry*, September 2011, p. 18.

³⁵ Deputy Commissioner Kieran Walshe, Regional and Road Policing, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 22.

³⁶ Deputy Commissioner Kieran Walshe, Regional and Road Policing, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 25.

³⁷ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 7.

³⁸ Mr Robert Toscano, Director, Honda Australia Motorcycle and Power Equipment, *Transcript of Evidence*, 18 October 2011, p. 113.

³⁹ Ms Hollie Black, General Manager, Select Scootas, *Transcript of Evidence*, 18 October 2011, p. 134.

⁴⁰ VicRoads, *Submission to the Inquiry*, September 2011, p. 14; Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (b); Hennessy P, Govan C & Lowery R, *TAC Motorcycle Tracker*, for the Transport Accident Commission, Sweeney Ref. 18680, Melbourne, 2010.

⁴¹ Mr Rex Deighton – Smith, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 285.

⁴² Royal Australasian College of Surgeons, *Submission to the Inquiry*, July 2011, p. 1.

⁴³ Mr Roger Pitt, Trail Bike Project Manager, Forests and Parks Division, Department of Sustainability and Environment, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 81.

⁴⁴ Mr Robert Toscano, Director, Honda Australia Motorcycle and Power Equipment, *Transcript of Evidence*, 18 October 2011, p. 112; Mr Rex Deighton- Smith, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 285.

⁴⁵ Mr Robert Toscano, Director, Honda Australia Motorcycle and Power Equipment, *Transcript of Evidence*, 18 October 2011, p. 112.

⁴⁶ Deputy Commissioner Kieran Walshe, Regional and Road Policing, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 23.

⁴⁷ Ultrafeedback, *Motorcyclist exposure on Victorian Roads (RSD 457) Final Report*, for VicRoads, May 2008, p. 31.

⁴⁸ Mr David MacKenzie, Senior Riding Instructor, Motorcycle Motion, *Transcript of Evidence*, Geelong, 15 November 2011, p. 326.

- ⁴⁹ Wilson FA, Stimpson JP & Hilsenrath PE, *Gasoline prices and their relationship to rising motorcycle fatalities, 1990-2007*, American Journal of Public Health, vol. 99 no.10, October 2009, pp. 1754-1757.
- ⁵⁰ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 9.
- ⁵¹ VicRoads, *Submission to the Inquiry*, September 2011, p. 18.
- ⁵² Kopp P, *The unpredicted rise of motorcycles: A cost benefit analysis*, Transport Policy, vol. 18 issue. 4, 2011, p. 619.
- ⁵³ Kopp P, *The unpredicted rise of motorcycles: A cost benefit analysis*, Transport Policy, vol. 18 issue. 4, 2011, p. 619; Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 7.
- ⁵⁴ Ms Melinda Congiu, Manager, Road User Behaviour, Royal Automobile Club of Victoria, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 258.
- ⁵⁵ Haworth NL, *Powered two wheelers in a changing world: Challenges and opportunities*, Accident Analysis and Prevention, vol. 44 issue 1, 2010, p. 7; Blackman RA & Haworth NL, *Implications for safety and planning of a sharp increase in moped and scooter use*, paper presented at International Conference on Safety and Mobility of Vulnerable Road Users: Pedestrians, Motorcyclists and Bicyclists, Jerusalem, 30 May-2 June 2010.
- ⁵⁶ Blackman RA & Haworth NL, *Implications for safety and planning of a sharp increase in moped and scooter use*, paper presented at International Conference on Safety and Mobility of Vulnerable Road Users: Pedestrians, Motorcyclists and Bicyclists, Jerusalem, 30 May-2 June 2010.
- ⁵⁷ Paulozzi LJ, *The role of sales of new motorcycles in a recent increase in motorcycle mortality rates*, Journal of Safety research, vol.36 issue 4, 2005, p. 361; Wilson FA, Stimpson JP & Hilsenrath PE, *Gasoline prices and their relationship to rising motorcycle fatalities, 1990-2007*, American Journal of Public Health, vol. 99 no.10, October 2009, p. 1753.
- ⁵⁸ Motorcycling Australia, Australian Riders' Division, *Submission to the Inquiry*, August 2011, p. 10.
- ⁵⁹ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 10.
- ⁶⁰ Mr Rex Deighton – Smith, *Transcript of Evidence*, Melbourne, 19 October 2011, pp. 281–282.
- ⁶¹ Motorcycling Australia, *Submission to the Inquiry*, August 2011, pp. 7–8.

Chapter 7 at a glance

Overview

This chapter deals with attitudes in two different contexts: those of **motorcyclists towards risk**, and those of attitudes between **riders and drivers towards each other**.

Motorcyclists

Using available attitudinal surveys and research, the Committee investigated attitudes towards risk generally, and the following, specific types of risks: drugs, alcohol, travelling at inappropriate speeds, the use of protective clothing and fatigue.

Key findings

Motorcyclists appear to have a healthy awareness of the risks inherent in riding a motorcycle, and numbers of motorcyclists choose to ride, in part, because of them.

The link between attitudes and crash risk is a difficult and unexplored one, with limited research available. There is very little research on rider attitudes towards fatigue, drug taking and drink riding, and inappropriate speed and protective clothing. On the available evidence, the Committee found that: rider attitudes towards fatigue involve a level awareness of its impacts; riders have positive attitudes towards not riding under the influence of alcohol because they are aware of the risks, and riders have positive attitudes towards using protective clothing.

In terms of illicit drug taking and inappropriate speeds, the Committee was unable to make conclusive findings because of limited research. On the basis of available research, attitudes towards inappropriate speeds cover a spectrum from ambivalence to recognition of the risks.

Road safety agencies require a greater evaluative understanding of attitudes to better design countermeasures as a way of altering risky behaviours on the road.

Riders and drivers

Attitudes of riders and drivers towards each other, which are based on shared experiences and perceptions of the other, are influenced by a number of factors. The chapter begins with an analysis of the characteristics of the relationship between riders and drivers and then investigates the idea of shared responsibility, research that drivers who are also motorcyclists have better attitudes, the impact of the media and Transport Accident Commission advertising in rider/driver attitudes and the role of vehicle design and driver education in shaping perceptions and attitudes.

Key findings

Attitudes of riders and drivers towards each other involve complex and seemingly interrelated ideas, attitudes, perceptions and behaviours. However, there is limited research on the attitudes of riders and drivers to each other, which makes definitive findings difficult. However, according to the available attitudinal research, rider/driver attitudes appear to be improving. Further, the Committee found that drivers who are also riders have better attitudes towards motorcyclists than those who are only drivers. There needs to be a greater focus on the concept of shared responsibility in order to improve attitudes. That could be achieved by including more specific rider information as part of driver education to improve attitudes.

Transport Accident Commission advertising and the media more generally have a role in shaping attitudes between these two road users. A way of improving attitudes would be for Transport Accident Commission advertising to focus on shared responsibility for safety for drivers and riders.

Recommendations

Recommendation 18:

That road safety agencies initiate an attitudinal survey that deals with all the segments of the motorcycle community, including on and off-road motorcycles, scooter, moped and recreational riders, and that deals with attitudes to general risk taking, and specific risks including drugs, alcohol, inappropriate speeds, use of protective clothing and fatigue.

Recommendation 19:

That VicRoads and the Transport Accident Commission undertake research, including attitudinal surveys, aimed at understanding how riders and drivers can better interact with each other. Agencies must take a different approach to communicating with each group, so that riders and drivers are better educated about each other.

Recommendation 20:

That VicRoads includes motorcycle specific questions in its licence testing regime and motorcycle safety (including awareness) content in its training syllabus for learner and probationary car licence students.

Recommendation 21:

That VicRoads and the Transport Accident Commission undertake research projects focusing on the interaction between attitudes and behaviours as a way of informing road safety strategies and training and licensing materials.

Recommendation 22:

That the Transport Accident Commission focus its motorcycle safety advertising on redressing the attitude that responsibility for rider safety is solely attributable to the rider, by ensuring that campaigns dealing with motorcycles raise driver awareness and do not create negative stereotypes, perceptions or attitudes among drivers.

Recommendation 23:

That a 'Motorcycle Safety Awareness Week' be held annually in Victoria in conjunction with the Phillip Island MotoGP. The focus of the week is to be on how all road users can contribute to the safety of motorcyclists.

CHAPTER 7: ATTITUDES

7.1 *Introduction*

Motorcyclists, like all road users, have attitudes that are formed by experience and guide their interactions with other road users. For motorcyclists, these attitudes are influenced by a range of factors, including their vulnerability on the road, risks, motivations for riding and broader social phenomena, such as image and stereotypes. The attitudes between motorcyclists and other motorists are similarly informed by shared interactions, stereotypes and experiences.

This chapter is comprised of a background section that frames the evidence and findings of the two substantive sections that address attitudes. The background includes information on the importance of attitudes, the links between attitudes and crash risk and the use of attitudinal research. In the first, the Committee considers the question of rider attitudes beginning with a discussion on the importance of attitudes and the findings of attitudinal research. The section then addresses rider attitudes to general risk, fatigue, drugs, alcohol, protective clothing and travelling at inappropriate speeds. In the second, the Committee focuses on rider and driver attitudes towards each other.

7.2 *Background*

7.2.1 *Why do attitudes matter?*

The distinction between attitudes and behaviours is an important one. Attitudes can be viewed as a precursor or motivator for behaviours. ‘Attitudes are considered to be a predisposition to behave positively or negatively towards an individual, group, event or even an object’.¹ Put simply, an ‘attitude’ is a thought or a feeling towards something, whereas ‘behaviour’ is the action’.² The focus of attitudes can be both towards other road users and oneself.³ According to the Royal Automobile Club of Victoria (RACV) there is research that indicates the causal link between attitudes and behaviours, particularly in terms of changing behaviours, is weak.⁴ It is instructive that the Coroners Court of Victoria has not found a causal link between attitudes and crash risks:^{*}

*Of the 23 fatal motorcycle crashes resulting in recommendations, none of them related to rider and driver attitudes towards each other.*⁵

Mr David Hogan, Coroners Prevention Unit, Coroners Court of Victoria explained:

*In relation to the risk-taking sort of area, in three crashes recommendations were made for site-specific improvements to reduce the speed limit or to deter speeding motorists. No recommendations were made by a coroner in regard to drugs and alcohol, protective clothing or fatigue in relation to motorcycle deaths.*⁶

In spite of the difficulties in identifying a link between attitudes and behaviours, researchers working to identify such a link do so because of the potential to improve road safety. For example, identifying and remedying negative attitudes could promote

* Note: This applies only to crashes that have involved a Coronial investigation that included recommendations.

positive behaviours on the road. In turn, positive behaviours promise a reduction in the risk factors found to cause road crashes, among them speeding, alcohol and drug intoxication and fatigue.

7.2.2 Crash risk and attitudes

The Committee accepts that there is a limited amount of research and evidence linking attitudes and crash risk for motorcyclists and between motorcyclists and car drivers. However, research commissioned by VicRoads in 2009 found that the likelihood and experience of a crash is affected by rider and driver attitudes.⁷ The VicRoads research showed that ‘more positive attitudes toward motorcyclists were associated with lower perceived risks’ by both riders and drivers.⁸ The Committee accepts the underlying logic established by the results of the VicRoads commissioned research. But in the absence of more research and stronger evidence it is difficult for the Committee to make a more conclusive statement on the interaction between attitudes and crash risks. The Committee’s position on this topic was informed by the overview on available research on the link between crash risk and attitudes provided by Ms Christine Mulvihill, a Research Fellow at Monash University Accident Research Centre (MUARC):

We know that certain behaviours are associated with crash risk in motorcycle riders, and they are all the obvious ones like drink riding, speeding, no helmet and unlicensed riding, as they are for car drivers too. What we do not understand very well, and what research is trying to go into now, is to understand the motivations and attitudes that lie behind those behaviours because you might go some way towards tackling or challenging those in motorcyclists.

There has been some research done in the UK to show that with motorcyclists the reasons why they ride will impact on their crash risk. So, for example, if you are a rider who rides primarily for pleasure, excitement and fun, you will have a higher risk than if you just ride primarily for commuting or general transport purposes. ... what we have now done in our on-road assisted rider program for novices is incorporated a component that addresses ‘Tell us why you ride’ and we give them a little questionnaire before they come onto the program. Then there is a 15-minute discussion on the side of the road about the reasons why they ride, how it makes them feel and if there are any risks associated with that.⁹

Although the relationship between attitudes and crash risk is the subject of emerging research, the Committee notes the attitudes of riders and drivers to each other and the perceptions that shape them can contribute to conflict between them.

7.2.3 Attitudinal surveys

This chapter draws heavily from the outcomes of existing attitudinal research (including published and unpublished surveys) undertaken by academics, universities, road safety agencies, rider groups and from evidence provided during public hearings and submissions. The attitudes of motorcyclists have been the subject of attitudinal research by both the Transport Accident Commission (TAC) and VicRoads. However, the Committee cautions that of those undertaken, the sample size, target group and narrow outcomes have limited the use of the survey results. Whilst attitudinal surveys are the primary method for identifying attitudes among a group, using them to infer broader trends is usually done cautiously, and with appropriate safeguards in the construction of the survey.

7.3 Motorcyclists and their attitudes to risks

7.3.1 General attitude to risks

Victorians take risks when using the road. There are always individuals within each road user group who take risks. Taking risks on the road, which has been the subject of much research both in Australia and overseas, can be explained in two ways: they are either ‘deliberate or they are lapses in judgement or concentration, and both come with a variety of justifications’.¹⁰ That explanation is persuasive, and was one, among others, applied by the Committee in understanding how motorcyclists approach risk.

During the course of the Inquiry the question of rider attitudes to risk garnered significant witness commentary. Rider attitudes are said to be different to those of other road users because they operate in an environment where risk is an accepted component of riding.¹¹ The consistent theme in evidence was that motorcyclists are not only aware of the risks involved in motorcycling but have also made a conscious decision to embrace risk by choosing to ride. The view of motorcyclists as risk takers also seems to resonate with some drivers. In the United Kingdom research into driver and rider attitudes found that drivers generally viewed motorcyclists as thrill seekers who looked to perform dangerous behaviours for deliberate pleasure.¹² The acceptance of risk as part of motorcycling was a point well-articulated by Mr Rob Smith, Manager, Australian Riders’ Division, Motorcycling Australia:

*There is no doubt that motorcycles carry with them risks, and I think I would be on pretty safe ground to say that everybody who rides a motorcycle is aware of those risks. No-one takes up motorcycling to be safer.*¹³

That point was further explored in the Motorcycling Australia submission which accepted the notion that riders are ‘highly aware of the risks associated with motorcycles’ but have ‘positive personalities that include well-developed attitudes to safety’.¹⁴ It introduced the phrase ‘risk managers’ to explain the mechanism that riders use to deal with risk.¹⁵ That phrase suggests motorcyclists are aware of risks but try to actively manage risks to their safety. Mr Rex Deighton-Smith provided an additional nuance and perspective to the question of risk seeking and riders by suggesting:

*... for many motorcyclists, the attraction of the pursuit revolves to a significant extent around the thrill involved. The obverse of thrill, in any context, is risk. Motorcyclists, or at least the enthusiast subset, tend to understand and accept these risks. It is even reasonable to argue that they seek out these risks, or at least do not act consistently to minimise them.*¹⁶

Another submission suggested that risk is inherent in many activities Victorians undertake on a regular basis, with motorcycling being no different. Citing the Australian Injury Prevention Bulletin, produced by the National Injury Surveillance Unit, it noted:

*Few people would consider horse riders as risk takers but horse riding has been cited in literature as being more dangerous than motorcycling. Like horse riding [,] motorcycling for me is a leisure-sport activity where I choose to accept some risk because of my great love of the machine and the ride.*¹⁷

This evidence collectively suggests an investigation into rider attitudes to risk should begin with an acceptance of the differences between riders and other road users. Unlike other road users, motorcyclists do embrace risks;¹⁸ they are clearly aware of their exposure on the road and see themselves as assertive and distinct to others on the road.¹⁹ The conceptualisation of motorcycling influencing rider attitudes is a conclusion well-made by Superintendent Bob Stork, Victoria Police:

*Whilst motorcycling is a very enjoyable pastime and undertaking, there is also a large extent of individualism and there is a large culture around riding motorcycles. It also links into the attitude aspect, so they are all things for consideration.*²⁰

It is important to note the acceptance of risk by riders when trying to understand rider attitudes. Doing so is necessary because risk occupies a central role in motorcycling which is not seen to the same extent in other road user groups. Further, it means that riders may be seen to have more ambivalent views to matters of safety because the risk itself may be one of the reasons they ride in the first place, a point well made in a number of submissions.²¹ Motorcyclists accept there are some among them that have extremely negative attitudes towards risk and engage in behaviour that maximises their exposure to trauma.²² According to Mr Thomas Wentworth:

*Unfortunately, motorcycles can sometimes attract a certain type of person that doesn't fully appreciate the consequences of risk-taking behaviour on the road.*²³

But those riders that gave evidence and made submissions to the Inquiry contended that these riders comprise a small minority of the wider group.²⁴ Other submitters sought to direct the Committee's attention to arguments that riders were no different to other road users in terms of risk attitudes²⁵, that 'viewing riders as risk takers was flawed, and that riders face different risks'.²⁶ The Committee also received several submissions that viewed rider attitudes as being bad or ambivalent to risk.²⁷

Much of the academic literature indicates that attitudes to risk are informed by several influences. Some of these include peer-group influence, involvement in clubs, socio-economic factors, and influences from training instructors during pre-licensing, as well as individual experiences. The type of motorcycle ridden may also have a general influence on attitudes.²⁸ The attention of road safety agencies and researchers has begun to focus on identifying why riders have certain attitudes to risk. The Committee understands one focus of research in this area has been the effect of general influences on attitudes.²⁹ These influences can also include the attitudes and behaviour of other road users, particularly car drivers.³⁰

7.3.1.1 Findings

The link between attitudes and crash risk is a difficult and relatively unexplored one. Although VicRoads suggested in its submission that riders with negative attitudes increased crash risk by 1.5 times,³¹ that number may have been arrived at by reference to behaviours and crash risk rather than attitudes and crash risk. Whilst the Committee accepts the underlying VicRoads argument that attitudes have an impact on risk,³²

during the course of its investigations the Committee found that very little research has been undertaken on attitudes and their link to behaviours, which can be linked to crash risk. This makes it difficult to make substantive findings on rider attitudes towards general risk.

Clearly, riders are more accepting of risks and seek to militate against them. There are some who have less respect for their safety, but their attitudes cannot be used to stereotype the attitudes of all motorcyclists. A greater emphasis on research and attitudinal surveys is needed to better understand rider attitudes to general risks, and the link between attitudes and behaviours.

7.3.2 Fatigue

There is limited research on the effects of fatigue on motorcyclists in comparison to the drivers of other vehicles. The lack of such research is not confined to Victoria, having also been noted by the Parliament of New South Wales Joint Standing Committee on Road Safety during its Inquiry into Vulnerable Road Users.³³ Investigations indicate rider attitudes to fatigue, rather than the effects of fatigue, are even less well-understood; there is only one study that focused on rider fatigue in Victoria. This study, *Fatigue related motorcycle crashes Rider Survey Research*, was commissioned by VicRoads in 2006 and was aimed at identifying the perceptions and attitudes of riders to fatigue.

The research found that attitudes towards fatigue are both negative and positive but stressed the difficulty of reaching conclusions in attitudinal research. The study included a surveyed group of riders and a focus group. In terms of positive findings, the focus group suggested riders felt fatigue was an issue for drivers rather than riders.³⁴ The research also found that a common response from respondents was that fatigue was self-regulated by motorcyclists because they recognised the risks inherent in riding whilst fatigued.³⁵ Most riders responded that they stopped and rested when tired (90% of respondents), but a substantial number admitted to sometimes continuing on the road to get to their destination in spite of feeling tired (just over 40% of respondents).³⁶ Riders listed fatigue as a risk factor in 70% of surveys and only 6% regarded fatigue as a low risk factor for motorcyclists.³⁷

These somewhat positive results were contrasted with other fatigue findings. The survey found that a significant number of participants were vulnerable to fatigue risks on a regular basis.³⁸ One-third of respondents agreed that after long rides they sometimes misjudged their lines through corners. Further, circadian rhythms (internal body rhythms which undergo regular variations through a 24 hour period)³⁹ appeared to cause problems for 40% of the riders interviewed and younger riders were found to experience fatigue more profoundly than older riders who seem to be aware of fatigue and seek to manage it by resting.⁴⁰ The Committee noted by the finding that over 25% of those surveyed who claimed to have either had a crash or a near miss, 20% felt fatigue was a factor. The attitudinal research also included a number of findings that suggested riders identify differences between the effects of fatigue for drivers and riders.⁴¹

The research also raised an issue with terminology, which is worth repeating because it highlights the broader issues with fatigue and attitudes to it. Researchers found focus group participants understood ‘fatigue’ to mean falling asleep, rather than the more expansive understanding of fatigue that attributes increased risk to a number of fatigue factors (tiredness, inability to react quickly enough, micro sleeps etc.).⁴² A similar finding was reached in an Australian Transport Safety Bureau (ATSB) report which found that there ‘was no consensus on the issue of fatigue’ with riders in different focus groups considering fatigue as either dangerous or positive for safety (because it heightened their awareness).⁴³ However, the Committee received evidence that riders actively managed fatigue, particularly those on club rides, by including regular rest breaks.⁴⁴

7.3.2.1 Findings

On the basis of limited research and evidence received during the Inquiry, it appears riders are generally aware of fatigue, its impacts and the importance of managing it to avoid the risk of crashes. However, it is equally clear there are limitations in motorcyclists’ understanding of fatigue, the distinctions they apply in defining it and the impact that may have on road safety.

The absence of comprehensive studies of attitudes to fatigue presented some difficulties for the Committee. Clearly, attitudinal research into fatigue has not been undertaken by road safety agencies in Victoria, with the limited exception of VicRoads. It has been suggested the lack of research reflects a number of factors, including riders, unlike other road users, can better manage their time on the motorcycle because travel is mostly recreational and therefore discretionary,⁴⁵ and fatigue does not appear to be a factor in trauma data. An additional factor cited is that crash data has not found a link between crashes and fatigue. On the point of crash data, the Committee notes VicRoads has identified the need for better data on the involvement of fatigue in motorcycle crashes⁴⁶, a position also supported by the TAC.⁴⁷ Whilst these factors may explain why fatigue has not been the target of research by road safety agencies, the Committee is strongly of the view that attitudes to fatigue, particularly its management, need to be explored further because of the known linkages between fatigue and road trauma in other areas of road safety:

The Committee concludes that further attitudinal research is clearly warranted in order to better understand attitudes to fatigue. Doing so is vital for road safety agencies to understand fatigue attitudes and to be able to design behavioural change programs that focus on attitudes to fatigue.

7.3.3 Illicit drugs

The Committee received evidence that the general ‘consensus is that motorcyclists do not take drugs and ride’.⁴⁸ This point was also made by the Ulysses Club in their submission. They suggested that anecdotally, police have suggested that the use of drugs among riders may be generally lower than for the general road user public.⁴⁹

The TAC submission, drawing on their motorcycle tracking research, appears to reinforce the points made in other submissions. Interestingly, it suggests that whilst motorcyclists reported using drugs at a marginally higher rate than that of drivers (6% of riders versus 5% of drivers), the self-reported number of motorcyclists using drugs when riding is 15% versus 25% of drivers.⁵⁰ The response of riders surveyed by the TAC was that riding under the influence of drugs was seen to be highly risky, with 82% of riders believing it put them at a high risk of having a crash.⁵¹ The research also found the perceived risk when riding after taking illegal drugs was higher among females than males (90% versus 83% respectively).⁵²

As with attitudes to fatigue, attitudes to illicit drug taking have not been the subject of any substantive research. There is a lack of academic literature and very little attitudinal research on this topic. To illustrate that point, the report by the ATSB, *Psychological and social factors influencing motorcycle rider intentions and behaviour*, completed in 2007, found that drugs were not raised by the focus groups that were addressing questions of rider impairment and risk.⁵³ The general view of witnesses and submitters to the Inquiry was that riders are acutely aware of the risks of drug riding, and have positive attitudes which reduce the likelihood of them consuming illicit drugs and then riding.

7.3.3.1 Findings

The Committee identified a lack of research and attitudinal surveys on rider attitudes towards illicit drug taking and riding. That is consistent with a lack of research on other areas such as fatigue. The outcomes of the available research and attitudinal surveys indicate that riders have positive attitudes in that they recognise the significant risks of drug riding and abstain from taking such risks in comparison to other road user groups. A greater emphasis on attitudes to illicit drug use and riding should be a focus of road safety attitudinal surveys.

7.3.4 Alcohol

The role of alcohol in motorcycle crashes is well-recognised. In evidence before the Committee, Professor Russell Gruen, Director, National Trauma Research Institute, Alfred Health, outlined the role of alcohol intoxication in motorcycle crashes:

*The other thing I have to mention is alcohol and other drugs. The combination of speed and alcohol is as potent, if not more potent, for a motorcycle rider than it is for a car driver, and unfortunately we still see a significant proportion of motorcycle riders who have been drinking.*⁵⁴

Academic research also recognises the risks of alcohol intoxication as a crash risk. In a paper presented in November 2011, researchers went further suggesting even legal doses of alcohol are sufficient to have adverse effects on riding performance.⁵⁵

A similar point was made by VicRoads in its submission, highlighting the effects of alcohol on rider vision, judgment and co-ordination/reaction time.⁵⁶ These views were also raised by the Royal Australasian College of Surgeons submission which included a proposal for further research into toughening restrictions for the use of alcohol and other drugs by motorcyclists on the basis that motorcycling requires higher levels of cognitive skill than driving.⁵⁷

Clearly, alcohol intoxication is a well-recognised crash risk. But how do Victorian riders perceive that risk? Submitters to the Inquiry argued that motorcyclists had a responsible approach to safety insofar as alcohol consumption and riding were concerned.⁵⁸ The Committee received evidence from both VicRoads and the TAC on this issue, however only the TAC had undertaken attitudinal research specifically on rider attitudes to alcohol. The TAC submission stressed that riders report drink riding at very low levels (3% report riding when they think they are close to or over the BAC level versus 9% for the general public).⁵⁹ The TAC surmised riders have good attitudes towards not drink riding because they perceive it to be highly risky, more so than other road user groups.⁶⁰ Ms Samantha Cockfield, then Acting Senior Manager, Road Safety and Marketing, TAC, reiterated that view during the public hearings in Melbourne:

*In relation to what we know about attitudes and behaviours to the most obvious risks on the road, drink-riding self-reported behaviour is very low amongst riders compared to drivers. We have only got 3 per cent of riders actually admitting or saying that they do ride and drink. A lot believe it is a very risky practice, so it is not unusual that we would see that very few actually undertake the practice.*⁶¹

The Committee also noted the TAC advice that enforcement was less of a deterrent for motorcyclists than for drivers, due to riders having fewer experiences with drink-riding enforcement.⁶² That point is an important one, because rider attitudes to drink riding are better than those of drivers even though enforcement is not as significant a factor in shaping those attitudes.

The VicRoads commissioned research into fatigue (mentioned earlier), dealt with attitudes to alcohol and riding as a secondary issue. Whilst the Committee accepts that the VicRoads survey focused on the effects of alcohol in the context of fatigue, the finding that riders in the survey identified alcohol as a risk and would not ride under the influence is useful for the purposes of this section.⁶³

7.3.4.1 Findings

The Committee was again hampered by the limited attitudinal research carried out in this area. Generally it can be assumed that riders have good attitudes towards not riding while impaired by alcohol because they recognise the risks of doing so. However, the Committee notes the VicRoads submission which provided evidence that up to 20% of motorcycle fatalities over the period 2001 to 2009 involved a BAC of 0.05 or higher.⁶⁴ Clearly, there are riders who do not have healthy attitudes towards alcohol. However, on the basis of the evidence received, this group represents a small percentage of all riders because these statistics are drawn from fatalities rather than all crash victims or, more broadly, all motorcyclists. As with the findings made earlier, there is clearly a need for more attitudinal research on this topic by road safety agencies.

7.3.5 Protective clothing

Popular perceptions and anecdotes of motorcyclists invariably include a reference to 'riders wearing little more than a helmet and minimal clothing during summer'.⁶⁵ The view of riders having poor attitudes towards the use of protective clothing was put to the Committee in both submissions and at public hearings.

A good example was provided to the Committee by Ms Elizabeth Krieg who suffered serious injuries in a motorcycle accident, but who was wearing full protective clothing. During her evidence she made the point:

*That message [to wear the gear] is not only for motorbike users but for scooter users particularly. I think they are far more at risk than riders. It seems just from looking that more riders on motorcycles wear gear than people on scooters, and that message needs to get through to scooter riders. You do see idiots on motorbikes as well — shorts, thongs, T-shirts. It scares me.*⁶⁶

The findings of attitudinal surveys indicate that motorcyclists have varying attitudes towards owning and using protective clothing. However, identifying attitudes to protective gear use is complicated by what one submission referred to as a ‘freedom of choice’ issue.⁶⁷ That is, rider attitudes towards protective gear are influenced by a range of factors including the freedom to choose whether or not to wear protective gear, and the risks posed by protective clothing worn on extremely hot days⁶⁸.

Protective clothing is a crucial safety device for motorcyclists, who are prone to severe injuries if they have come off their motorcycle. Attitudes to protective clothing have, unlike fatigue, alcohol and drug riding, attracted the attention of road safety regulators and have been the subject of focused attitudinal research.

7.3.5.1 *Protective clothing attitudinal surveys*

In its submission, VicRoads provided findings from commissioned research undertaken in 2009. In that survey, respondents reported they ‘almost always’ wore a full complement of protective gear.⁶⁹ However, VicRoads also noted that other research seemed to contradict that view. The results of research conducted in 2007 found that ‘more than half the respondents said they always wear gloves and a protective jacket, only about half said they wore motorcycle boots and less than half wore protective trousers’.⁷⁰ An additional finding of the 2007 research was that scooter riders reported wearing little, if any, protective clothing.⁷¹ That finding was also the subject of commentary by the Victorian Automotive Chamber of Commerce (VACC). The VACC suggested attitudes to protective gear use by scooter riders was different to other motorcyclists.⁷² The effect of that attitude, which could be economically based, was that scooter riders did not wear protective gear. The issue of cost was also identified by the TAC in its research⁷³ and several witnesses expressed the view that scooter riders were less inclined to wear protective clothing.⁷⁴ A counterview to scooter rider attitudes to protective gear was made by Ms Hollie Black, General Manager, Select Scootas:

Research was conducted in Queensland regarding moped riders’ view of protective clothing... They had a healthy perception of the dangers they faced being a vulnerable road user and believed that they took ample precautions to avoid as much danger as possible.

*Unfortunately a lot of people riding mopeds are doing so because of financial constraints. This is the only transport they can afford. As a result, this sometimes makes protective clothing cost prohibitive. Whilst this is unfortunate, governments could still be relaying a positive message to riders about making the best of what they can afford.*⁷⁵

The sentiment that the majority of riders have positive attitudes towards protective clothing was clearly enunciated at public hearings. A good example was the evidence provided by Ms Kat Gordon, VACC Delegate to the Motorcycle Advisory Group:

*I think you will find a lot of riders ... realise that it is not a case of, 'I just get on my motorbike and that is the end of it'... We have to remember that there is always going to be a component of cowboys and the guys that ride around in their singlets and shorts that almost become the focus of the motorcycling community, whereas they do not actually represent the broader community.*⁷⁶

Mr Adam Kostick from Maurice Blackburn went further, stating:

*I think it might be wise to add that motorcyclists are pretty aware of the fact that if they come off their bike at a high speed they would want to be wearing either the body armour or the protective clothing. You are always going to have — speaking for myself — perhaps a 10 per cent element of people who are never going to fall into that common sense bracket, be they drivers, cyclists or what have you.*⁷⁷

Attitudes towards protective clothing have also been the subject of research aimed at novice riders in New South Wales (NSW). Researchers found that a 'high proportion of those participating had sought information about protective clothing. However, a rider who did not believe in the injury reduction value of protective clothing was less likely to use it'.⁷⁸ Importantly, the research did not find evidence of 'an association between not using motorcycle clothing and other indicators for risk taking behaviour'.⁷⁹ The research concluded that the lack of association suggested that non-use of protective clothing may be a form of unintentional risk taking due to a rider underestimating what is required to be safe⁸⁰.

Research assessing attitudes to protective clothing is useful in contextualising the way attitudes towards protective gear are formed and influenced for novice riders and highlights the lack of evidence linking general attitudes towards risk and those focused on protective clothing.

7.3.5.2 Findings

The Committee notes the attitudinal research conducted by VicRoads and the TAC suggests positive rider attitudes towards protective clothing. Attitudes towards protective clothing may be informed by the important role it can have in preventing certain types of injuries in an accident. The perceived benefits of wearing protective clothing may explain the positive attitudes of riders to owning and using it. Conversely, the NSW example suggests that the lack of perceived benefits results in novice riders and possibly others choosing not to use protective clothing. As with earlier findings by the Committee, it is necessary for road agencies to continue and, where possible, expand their attitudinal research with a particular emphasis on scooter riders, who appear to have different attitudes to protective clothing use in comparison to other types of riders. The Committee also notes and endorses the finding made by the Centre for Accident Research and Road Safety – Queensland University of Technology (CARRS-Q) in its research commissioned by the TAC, the *Victoria Motorcycle Apparel Observation Study* (June 2011), that there is a need to examine how group norms and peer pressure influence the use of protective clothing by different rider groups.⁸¹

7.3.6 Inappropriate speeds

There are few more emotive and contested topics in road safety than speed.⁸² The Committee received evidence throughout the Inquiry that speed is a significant if not primary causal factor of crashes.⁸³ But a key consideration in both that evidence and in research on this area is the distinction (sometimes an arbitrary one) between excessive speed and inappropriate speed.⁸⁴ The Committee took the evidence and research into account during its investigations of attitudes to inappropriate speeds as well as concerns raised by submitters in relation to interpreting this phrase.⁸⁵ The Committee adopted MUARC's definition of 'inappropriate speed', which is:

*... travelling at a speed unsuitable (or unsafe) for the prevailing conditions and road environment, or exceeding the capabilities of the driver, or exceeding the tolerances of the vehicle and its equipment.*⁸⁶

As with other areas covered in this chapter, the lack of attitudinal research made it difficult to investigate this component of the term of reference because such research has not been undertaken. Submissions such as those of Victoria Police relied on actual speeding infringement data⁸⁷ or surveys involving self-reported behaviour, rather than attitudinal research. Unfortunately, this meant the Committee had to rely on extremely limited attitudinal research to inform its investigations, drawing on TAC and ATSB research. It chose not to rely on anecdotes and general views on attitudes to speeding given that these are contestable views rather than research findings or quantifiable conclusions.

According to the TAC, 'a third of motorcyclists think there is a high risk of having an accident if they were to speed up to 10km over the limit in a 50–60 km zone. Further, 25% of riders perceived a high accident risk as being associated with speeding by 10km over the limit in a 100km zone'.⁸⁸ The TAC motorcycle tracker findings also included some points of difference between genders on the issue of speed. Females were found to have markedly better attitudes to riding at appropriate speeds, with only 14% agreeing with a statement that 'they would ride over the speed limit if they knew they would not be caught' compared with 28% of males.⁸⁹ Younger males (aged 18–39) showed the highest agreement levels with this statement (30%).⁹⁰ Proportionally, one in four motorcyclists agreed with the statement above, which was higher than the comparable level among drivers⁹¹. However, these findings are positive because they suggest a minority of riders have negative attitudes towards travelling at speeds above the sign-posted limit.⁹² Research undertaken by CARRS-Q, on behalf of the ATSB, on attitudes towards inappropriate speeding found:

Most of the groups stated that inappropriate speeding was not acceptable. Inappropriate speeding seemed to relate to speeding in built up areas, or places that they, themselves, would not speed.

'Going quick in places I wouldn't consider going quick. Like, coming out of the city, they will just cane it out. I'm thinking, you have a lane there, you think it is clear, but there are cars on that side, and pedestrians on this side – the number of pedestrians in the city that just step out in front of you is amazing – it's just not safe for the rider or for others.' Male, Group 6.

'People doing stupid things at high speed, like passing over a blind crest (because traffic coming the other way is often doing the same thing) and you'll get cleaned up.' Male, Group 2.⁹³

That information suggests riders have, at worst, ambivalent attitudes towards speed. But in the absence of more research, the Committee could not make substantive findings on the basis of the TAC research alone. The Committee does however, note the implications of studies such as that conducted by researchers from CARRS-Q and the School of Psychology and Counselling (Queensland University of Technology), which suggest that a nexus between rider attitudes as a predictor of risky riding is an emerging area that deserves further investigation.⁹⁴

The Committee noted an interesting research finding made by MUARC researchers in *Characteristics of fatal motorcycle crashes involving excessive and/or inappropriate speed*. In that study, researchers remarked that a potential countermeasure for reducing the risk of riders having crashes involving 'inappropriate speed' was the inclusion of insight training.⁹⁵ This type of training is intended to correct circumstances where riders misread the environment or hold misconceptions about their own capabilities by drawing a rider's attention to their actual abilities.⁹⁶ That recommendation suggests that rider attitudes towards their own abilities, the abilities of the motorcycle and the riding environment may be linked to crashes involving inappropriate speed. That in turn makes the identification of rider attitudes towards their capabilities and those of the machine and the environment extremely important.⁹⁷ The Committee accepts the inherent difficulties in quantifying those linkages, but an emphasis on initiating attitudinal surveys on inappropriate speed may have benefits in the design of training courses.

7.3.6.1 Findings

The Committee was hampered by the absence of attitudinal surveys and research on the issue of inappropriate speeds. As with each of the earlier sections on fatigue, drug and alcohol riding, the lack of attitudinal research makes it extremely difficult to properly gauge rider attitudes to specific categories of risk. The Committee is comfortable concluding that the limited research on attitudes to inappropriate speeds indicates a mixture of recognition of the risks by riders (the ATSB research) and a more ambivalent attitude (the TAC research). A greater understanding of these attitudes is necessary if road safety agencies are to embark on countermeasures aimed at changing attitudes as a way of altering risky behaviours on the road.

7.4 Attitudes of riders and drivers towards each other

7.4.1 Characteristics of the relationship between riders and drivers

During its public hearings the Committee heard countless examples relating to the attitudes of both riders and drivers towards each other. That experience highlighted one problem with identifying attitudes, namely the sheer diversity of views among two road user groups that comprise a large majority of the Victorian population. The use of attitudinal surveys is one way of identifying useful, general attitudes within a road user group, albeit with the same problems that affect polls and other statistical research that

rely on the views of a cross-section of the community which are then extrapolated to reach conclusions. Both the TAC and VicRoads have undertaken such research and the Committee was able to draw on significantly more published research on rider and driver attitudes towards each other than was the case when investigating rider attitudes to risk.

It is difficult to avoid the use of anecdotes and personal experiences when discussing rider and driver attitudes. Although it is important not to use anecdotes to generalise the actions of all riders and drivers, they do have a functional use because they illustrate how attitudes may influence behaviour on our roads. A striking example was provided by Mr Doug Sunderland, a long time motorcyclist:

*Seventy-three years of riding and the moment I get on that road every one of you people in a car, bus or truck is out to kill me. That is the attitude I take. There is not a vehicle on the road that is not trying to kill me, and that is how I have survived for 73 years.*⁹⁸

Mr Sunderland added:

*I have been to 49 countries around the world and I have ridden in 19, and the drivers in this country are completely anti-motorbike. They have a pet hate against motorbikes. It does not matter whether it is a kid on a pushbike or not, we are still human beings. We deserve the same treatment as anyone else, and I get very annoyed.*⁹⁹

This attitude was by no means isolated. In explaining the inability of some drivers to see motorcyclists, Mr Collin Maxwell rued that:

*Most of the blind spot I think is in the brain, although there are blind spots in cars.*¹⁰⁰

For both riders and drivers, their attitudes are based on experiences and perceptions of the other. These can elicit extreme reactions, but the factors influencing attitudes are complex. Time pressures,¹⁰¹ congestion,¹⁰² perceptions of drivers as being adversarial and resenting the lifestyle¹⁰³ and the feeling of vulnerability that riders face when on the road were all factors raised. This point was reinforced by then Deputy Commissioner Kieran Walshe, Regional and Road Policing, Victoria Police:

*... there can be a lot of elements that underpin ... that sort of attitude around workloads, schedules, frustration of traffic, frustration of roadworks, those sorts of things — just general impatience and lack of tolerance.*¹⁰⁴

The way riders and drivers interact on the road has a direct role in the formation of attitudes and prejudices. As with any road user group, drivers and riders sometimes do inappropriate and unlawful things on the road. For riders, they can include lane splitting, filtering, wheelstands or stoppies.¹⁰⁵ For drivers, failing to do head checks, sudden lane changes and tailgating¹⁰⁶ are examples of behaviours that give rise to negative rider attitudes. These behaviours can create negative perceptions and can irritate and frustrate.¹⁰⁷ The Committee notes that the TAC qualitative research did not find that filtering was especially problematic or aggravating for drivers, although it was seen as an annoyance by a minority of participants in the survey.¹⁰⁸

One of the findings in the VicRoads research is suggestive of the link between unlawful or inappropriate behaviours and attitudes. Respondents to the VicRoads commissioned research survey reported being ‘surprised by the sudden appearance of a motorcycle and becoming angry with them’.¹⁰⁹ The research also found:

*Drivers who tend to get angry with a motorcyclist more often ... tend to think that a motorcyclist is likely to push their limits, and fail to see a potentially dangerous situation. Such drivers also tended to think riders were unlikely to concentrate fully on their environment, maintain correct lane position, abide by all the road rules, react appropriately ... or to ride more carefully in poor weather.*¹¹⁰

The VicRoads submission concluded, presumably on the basis of its commissioned research, ‘that the differing expectations, perceptions and behaviours of riders and motorcyclists, where one thinks the worst of the other, contribute to the potential for on-road conflict’¹¹¹. In contrast to the VicRoads research, and as a reflection of the difficulty inherent in attitudinal research, the TAC’s research found:

*The issue of relationships between drivers and riders was not an emotive one for either drivers or riders. There is no evidence of any ill will or animosity between the groups.... Drivers and riders who behave badly to each other are a small minority.*¹¹²

Negative perceptions created by the behaviour of riders have been identified as a point of concern for the riding community. Australian research has shown that some riders are concerned about the bad image created by other riders. According to the view of some riders participating in quantitative research by CARRS-Q and the Queensland University of Technology School of Psychology and Counselling, ‘many motorists still think of motorcyclists as ratbags’.¹¹³ In focus groups run for the purposes of that research, riders expressed anger at other riders who ‘do bad things that really annoy car drivers’ citing an experience with lane splitting and stoppies at traffic lights’.¹¹⁴

Any discussion about the attitudes of riders and drivers inevitably raises the question of awareness, or as the Committee found, a deeply seated attitude that drivers are unaware of riders on the road. The question of awareness arouses strong emotions. It has been the subject of advertising and communication campaigns aimed at raising awareness of motorcyclists on the road. Similarly, driver awareness and rider attitudes on it have been a strong focus of research by the TAC, VicRoads and more broadly academia. The evidence received during the Inquiry suggests there are two elements involved in discussing awareness. The first is that riders have strong views on driver awareness, often expressed in terms of a lack of awareness. The second is that drivers are unaware of riders but the reasons for that tend to be anchored in a range of physical, environmental and behavioural factors rather than malevolent or combative attitudes to riders. The perception that drivers lack an awareness of riders was a repeated theme throughout the Inquiry. According to one submission:

*In my experience riders often assume drivers cannot see them and ride accordingly ... There is also a fundamental difference between riders and drivers ... the vast majority of drivers ... never seek further training or actively practice driving. This leads to the reinforcement of poor driving practices such as not doing head check, tailgating, not using indicators ...*¹¹⁵

A more strongly worded submission suggested that:

Motorcycles are not seen by cars and while the reasons for this are complex, it is almost certainly not because motorcycles are smaller than cars or that they “come out of nowhere”. More simply drivers see what they want to see... There are also plenty of examples of drivers who do see bikes but decide to impose their vehicle into the bike’s space because the bike will be forced to give way.

... the view that car drivers are a serious risk to riders ... is widely held by motorcyclist[s] ...¹¹⁶

The phenomenon of looking but not seeing riders has been the subject of advertisements by the law firm Maurice Blackburn. During public hearings in Melbourne, Mr John Voyage explained the firm's recent advertising campaign based on the catchphrase abbreviated as 'SMIDSY':¹¹⁷

In the course of us putting our material together we have come across the expression SMIDSY — sorry mate, I didn't see you. Our experience is that it is an expression that huge numbers of motorcyclists are familiar with and many have had SMIDSY experiences.

...We have been surprised at the hundreds of people who have responded with their stories.¹¹⁸

The assertions made in these submissions were reinforced by the outcomes of the VicRoads commissioned research. Motorcyclists thought drivers did not actively look for them, were not always aware of what was going on around them and did not always check that their path was clear of other vehicles¹¹⁹. Those attitudes may explain the finding of the TAC qualitative research that riders think more about drivers and try to anticipate their movements.¹²⁰ It can be inferred that the attitudes of riders on driver awareness, or lack thereof, makes them more apprehensive on the road. But driver awareness when it comes to motorcycles is subject to a range of factors, which can help explain why riders are not always seen by drivers.

The Committee heard a number of additional explanations for the lack of driver awareness on the road. The first was that drivers tend to be aware of vehicles that are a physical threat to them¹²¹, so vehicles such as motorcycles, which do not pose a physical threat to cars due to their size, do not elicit the same levels of awareness. The TAC shared this view based on their research:

Just in relation to ... recent research ... done in August [2011] — we found that drivers do not think very much about riders. They do not perceive them as a threat. They do not perceive riders as a major concern in their day-to-day driving, whereas we found that riders actually reported thinking a lot about drivers, drivers' actions and what drivers are doing.¹²²

The Committee was concerned with this explanation in particular, because the lack of risk has as a consequence a lessening of awareness, which can result in driver behaviours that are dangerous to riders. Research commissioned by VicRoads also indicates that drivers recognise they have a tendency to overlook motorcyclists, believing riders were difficult to see in traffic.¹²³ Similarly, the TAC research found participants in the focus groups identified the unexpected arrival of a rider and their diminutive size as factors explaining why drivers do not see them. Further, drivers and

riders felt rider size, unpredictability, dark protective clothing and the difference in relative speed of motorcycles and other traffic also contributed to a lack of awareness.¹²⁴

7.4.2 Research on driver awareness of motorcyclists

Some of the research relating to driver awareness and motorcycles has identified physiological or environmental factors to explain the phenomenon of ‘looking but not seeing’. In the United Kingdom (UK), research conducted by the University of Nottingham for the UK Department for Transport, on the visual awareness of drivers found the physiological and psychological reasons to be complex. The researchers identified several factors that can help explain why a driver may not physically see a motorcycle even though they have looked in its direction. The research suggests the failure to see a rider may be based on more complex factors than rider perceptions of resentment or malevolence.¹²⁵ Driver attitudes to riders have a complex genesis that includes physiological and psychological factors that remain poorly understood and are the subject of ongoing research.

7.4.3 Those who drive and ride have better attitudes

There appears to be a consensus that drivers do not understand riders and the hazards they face on the road. That point was well-made by the TAC:

We also have quite good agreement between both riders and drivers that drivers do not understand what it is like to be a bike rider. They do not understand the risks that are faced or how hard it is in terms of safety, and that is, as I said, both drivers and riders reporting ...¹²⁶

Related to the TAC research finding is the strong prevailing view that those who both drive and ride have better attitudes towards both modes of transport. This view is also evident in research literature and in evidence received by the Committee.¹²⁷

As part of the Committee’s investigation into why dual use motorists have better attitudes, Mr Matthew Zammit, an injured motorcyclist, was invited to give evidence. Mr Zammit presented a compelling explanation about the impact of holding both driver and rider licences, emphasising the importance of seeing the world from a rider’s perspective:

... it would be really nice if car drivers, or anyone getting their licence to use the road, had the opportunity to sit on a motorbike for even just six months, just some time, just to see how vulnerable you feel. ... as a motorcyclist you are exposed to the elements. You are very aware of things and you watch everything, because the smallest thing can trip you up ... On a motorcycle something very small, a tennis ball or a football kicked across the road by a few kids, can trip you up. Therefore you are looking for the kids on the side of the road. Now, that makes you a better car driver as well.

I found myself becoming a better car driver once I got my motorcycle. I got my car licence 15 years ago and my motorcycle licence 10 years ago, and I saw my car driving pick up because I started thinking motorcycle.¹²⁸

Mr Zammit’s view has also been the subject of much academic research. The RACV provided an extensive list of studies that have found those who hold dual licences have the most positive attitudes towards motorcyclists.¹²⁹ Research has shown that car

drivers with less experience, specifically those with two to 10 years driving experience, have the most negative view of riders.¹³⁰ These research findings reinforce what many Victorian drivers are likely to have experienced: a greater level of interaction with road users brings with it an understanding of the issues faced by others on the road, and with it, empathy and more positive behaviours. According to the TAC, research has shown that people who have friends or family who ride are more likely to look out for motorcyclists and are less likely to have crashes with them.¹³¹ That finding was mirrored by UK research which found better observational capacity among those who have family or friends who ride.¹³² Interestingly, Ms Hollie Black told the Committee that attitudes towards motorcyclists may change depending on the type of motorcycle being used:

*The beauty of scooters is that drivers seem to be more receptive to them. People view them to be without aggression and to be less invasive and risk-inclined. They are familiar with them from overseas trips, they wind down their windows at traffic lights to talk to us, and these attributes enable them to present a positive perception of powered two-wheelers to the community overall.*¹³³

Conversely, Motorcycling Australia took the view that the prevailing perception of motorcyclists was:

*... as risk taking “temporary Australians” and regardless of behaviour, type of bike or use of protective clothing, all riders are lumped together as being undesirable and fundamentally anti-social.*¹³⁴

The idea that different motorcycles can elicit different attitudes seems intuitively correct. However, the view of Motorcycling Australia cannot be discounted, considering the VicRoads attitudinal research findings. In the absence of further research, the Committee is unable to make a finding that drivers have different attitudes to different types of motorcycles. The Committee notes, however, the need to further investigate whether types of motorcycles affect the attitude of drivers and in turn their behaviours.

7.4.4 Contributing factors

A number of factors contribute or shape attitudes. Improving, minimising or reducing these factors can have important ramifications in respect of motorcycle safety. During the public hearings, several factors were identified by participants. The first was the attitude shared by some drivers that riders are responsible for their own safety. The second was that the media and TAC advertising can have a negative effect because it can shape perceptions among the driving population of motorcyclists. The third was a lack of education about motorcycles within the community, including motorcycle-specific content in car training and licensing materials and tests.

In addition, the Committee also identified a fourth factor: the failure of road safety agencies to act on past recommendations made by this Committee which were focused on initiatives to deal with the attitudes and behaviours of drivers towards riders. This failure has to an extent contributed to road user attitudes in Victoria. Had agencies implemented those recommendations attitudes may have improved over the last decade or so.

7.4.4.1 *It is about shared responsibility*

There is a community view that riders need to avoid drivers rather than drivers looking out for riders: a point strongly made to the Committee by Mr John Lambert, Director, John Lambert & Associates:

*Drivers do not have to avoid motorcycles. Motorcycles have to avoid drivers. People might say that that is very, very hard. The reality is that when you travel on the road, on average, 1 in 100 vehicles that you see will be a motorcycle. In fact, because of a lot of recreational travel with motorbikes, if you are travelling at business times for normal work, it will be a lot lower than that.*¹³⁵

Whilst the Committee disagrees with that statement, it is, nevertheless, a reflection of one attitude in the community towards motorcycles. However, the Committee is strongly of the view that every road user has responsibility on the road. The principle of mutual or shared responsibility is a persuasive one. Then Deputy Commissioner Kieran Walshe expressed this principle as:

*... a shared responsibility on our roads — that everyone has a responsibility to behave and drive in a responsible manner. If everyone did that, used the roads the way the roads are meant to be used, we would certainly have a vast reduction in road trauma.*¹³⁶

That view also seems to have resonated with the drivers involved in the TAC attitudinal research. Research recorded a change in the attitudes of drivers over the period 2005–09, to the effect that drivers and riders are placing less responsibility on riders to be conspicuous, instead moving to either shared levels of responsibility or more responsibility on drivers.¹³⁷

7.4.4.2 *TAC advertising and the media generally*

The role of advertising and the media in shaping perceptions is a well-accepted one. But what of the role of the media and TAC advertising as far as influencing and helping form attitudes by Victorian drivers towards riders? That question was put to the Committee in a number of ways, particularly at the public hearings. Several witnesses viewed TAC commercials as creating a negative attitude among drivers, principally because they emphasised the perception that rider safety was the responsibility of riders and dangerous riding was the reason for collisions.

Because people who are not motorcyclists — people who are in their cars driving along — see those ads and think, ‘Bloody motorcyclists; they are stupid. Why do they ride?’

*... I am part of the majority [of a motorcycle forum] [who] would suggest that those ads do not do any good, because they do not reach motorcyclists and they probably alienate non-motorcyclists.*¹³⁸

Road safety advertising campaigns by the TAC are among the most recognisable in Victoria. They tend to use graphic and realistic portrayals of road trauma to educate the public about the risks on the road. These advertisements attracted the attention of submitters to the Inquiry.

One submission made the following observation:

*Motorcyclists are often portrayed by the media as dangerous risk-takers. This is supported by advertisement campaigns run by agencies such as the TAC, telling society that "It's up to motorcyclists to reduce the risks". This gives the impression that it is the rider's responsibility alone to look after [themselves], and that drivers do not have a part to play. This message is interpreted by motorcyclists to mean that the government believes that drivers don't need to look out for riders, where in fact, drivers have a huge part to play in ensuring that motorcyclists are safe on the roads. As a result, motorcyclists feel completely betrayed by the government, and this contributes enormously to the attitude of animosity towards drivers. In addition, it feeds the stereotype that riders are irresponsible, and influences drivers' attitudes towards riders in a negative way.*¹³⁹

That point was taken up and expanded upon by Motorcycling Australia which, in relation to the TAC *Motorcyclists, it's up to you* advertisement, stated:

Far from promoting safe riding, the film footage showed a rider riding in an unsafe and sometimes illegal manner resulting in a sickening crash. Apart from alienating the target demographic, this advertisement simply reinforced every negative stereotype the public has of riders.

*Worse still, it presented a highly irresponsible message in that the message "it's up to you" clearly states that a riders safety is their sole responsibility and in so doing sanctions the abdication of responsibility for poor and dangerous driving habits.*¹⁴⁰

Motorcycling Australia also had this to say about the media and its role in shaping driver attitudes:

The misrepresentation of riders extends to other areas of the media such as newspaper and talk show hosts who often present riders as being antisocial and once again risk takers ...

*The demonising of motorcycles and riders goes beyond what appear in newspaper and on the radio ... TV, shows (sic) are not averse to presenting riders as being 'bad boys' and further reinforcing prejudice. It takes just one driver who feels sufficiently outraged in order to make a move that costs the life of a rider.*¹⁴¹

However, some TAC campaigns were felt to contribute positively to attitudes. Armstrong's Driver Education, an accredited VicRoads motorcycle licence tester, drew attention to what they termed the *look bike* campaign which promoted healthy attitudes between road users.¹⁴² Other witnesses referred to advertising campaigns in South Australia and NSW as examples of positive advertising. The Committee agrees advertising and media portrayals have a powerful impact on attitudes and perceptions. In terms of the mass media, the ability of government agencies to promote a shared view of responsibility is within their control. That conclusion applies to a greater extent when it comes to road safety agency advertising which is a powerful medium through which attitudes can be changed. The focus of road safety campaigns needs to better reflect the shared responsibility and respect of road users. The TAC campaign *Vice Versa* which promoted the idea of drivers putting themselves in the shoes of riders is an excellent example of the type of advertising that can positively influence attitudes and in turn may address some of the driver awareness issues that cause negative perceptions among riders.

7.4.4.3 *Lack of education*

Driver education in terms of motorcycles was cited as a contributing factor to poor attitudes towards riders. The criticisms of driver education cover the licensing, the training and test materials, road education in schools as well as ongoing driver training and road safety advertising. That point has not been lost on regulators. VicRoads accepts the need to educate drivers by raising their awareness of motorcycles. In its submission it referred to the motorcycle safety strategy *Victoria's Road Safety and Transport Strategic Action Plan for Powered Two Wheeler 2009-13* which recognises the need to raise awareness among other road users of the need to share the road with riders. It also refers to 'enhanced driver licensing procedures to improve and highlight the extreme vulnerability of riders'.¹⁴³

The Committee believes that education can be a powerful way of countering prejudices and influencing attitudes. Increasing the use of educational material in licensing, training and advertising material can be a strong way of addressing current attitudes to motorcycles. The importance of educating young Victorians and the lack of motorcycle content during driver probationary licensing was illustrated to the Committee by two Year 12 students from Overnewton Anglican Community College. Ms Victoria Tsiolis and Ms Sarah Kimpton were Delegates at the Victorian Youth Parliament at which they presented a Bill to make protective clothing mandatory for motorcyclists.* In response to a question about their driver licensing experiences in relation to motorcyclists, they stated:

*I would have to say that I do not think there is enough for us to be aware. As a learner driver I can most definitely say that I would not be prepared to have a motorcyclist around me when I am driving, because I would not know what to do. I just feel like maybe VicRoads should have that in the test that we have to apply for to get our learners and make us a bit more aware of what to do in that situation when there is a motorcyclist around.*¹⁴⁴

*On that idea, when we go for our licence we do not know anything about motorcyclists. You go for your hazards — it is a little computer test; I do not know if everyone does — where all you do is click a button about when it is safe to drive. That is all you have got to do. A motorcyclist may come out; if a motorcyclist goes past, you have got to click then. It is not educating us about how to drive with them on the road. I think that really could be addressed as well, because it is not at all. Even in your licence test you are just driving on your roads, your residential area; it is not addressing the main hazards like cyclists and everything like that.*¹⁴⁵

The Committee holds the view that including motorcycle specific content in the driver training materials and in the testing modules would be beneficial from both an awareness point of view and as a way of improving attitudes before young Victorians drive on the road and begin forming negative attitudes towards motorcyclists. A similar viewpoint was expressed in the Driver Education Centre of Australia submission:

*Addressing the perspective of other road users will provide students with greater insight into what other road users see, reinforcing the critical message that road law does not necessarily dictate driver behaviour.*¹⁴⁶

* Note: The Bill passed following amendments by the opposing Bendigo YMCA team.

7.4.4.4 Failure to act on past Committee recommendations

The need to address driver and rider attitudes has been identified previously by this Committee. A number of recommendations were made as part of the *Inquiry into the Review of Motorcycle Safety in Victoria* in 1998 (the 1998 Inquiry) that focused on attitudes and raising awareness:

9. That the Transport Accident Commission increase the involvement of the motorcycling community in the development of car driver awareness campaigns.¹⁴⁷
11. That VicRoads and the Department of Education urgently review and act on the findings arising from the research conducted by Monash University Accident Research Centre in 1997 to ensure school age children received adequate road safety education¹⁴⁸.

These recommendations were not supported by government and therefore not implemented by the relevant agencies. Consequently, the Committee is not able to speculate as to the likely outcomes of those recommendations, in the context of changing road user attitudes, had they been implemented.¹⁴⁹ However, it is noteworthy that the Committee has found no evidence of projects or programs aimed at creating positive attitudes between riders and drivers since the 1998 Inquiry. Clearly however, such programs should be investigated as part of the suite of policy interventions that agencies use to improve motorcycle safety.

7.5 Attitudes are changing

TAC research (run over four years) has shown a change in driver and rider attitudes towards a more positive relationship between these road users. The Committee welcomes the TAC findings that attitudes have started reflecting the principle that road safety is about shared responsibility.

However, it is clear that a more fulsome analysis of attitudes is necessary to better understand the attitudes of the community. There have been only two attitudinal surveys conducted or commissioned by VicRoads and the TAC. The use of focus groups by the TAC is a useful measure for qualitative finding, but is limited in its value as an authoritative device for policy interventions. Further, the Committee strongly holds the view that the link between attitudes and behaviours needs greater attention by road safety agencies and academia. The links between attitudes and behaviours may prove to be an important mechanism for better addressing road user interaction on our roads and reducing trauma.

7.6 Findings

The Committee notes this term of reference involves complex and seemingly interrelated ideas, attitudes, perceptions and behaviours which are the subject of ongoing research. The lack of attitudinal surveys meant the Committee did not have sufficient evidence on which to be more conclusive in its findings. That was further compounded by the contrasting findings of the TAC and VicRoads research. However, this term of reference provided the Committee with an opportunity to investigate some of the issues related to attitudes. The role of contributory factors that can explain why

attitudes are formed or what shapes them is one that warrants further attention. Education, advertising and training have the potential to improve the attitudes of drivers towards riders. Victorian road safety agencies need to be more heavily involved in these areas.

The Committee is satisfied the attitudes of riders and drivers in Victoria, based on TAC research, continues to improve. Additionally, the Committee agrees with VicRoads that more work needs to be done. As with other terms of reference, a strong focus for road safety agencies must be on expanding their knowledge through research. That means better understanding the interaction between attitudes and behaviours, undertaking more attitudinal surveys and placing greater emphasis on integrating driver and rider education to ensure Victorian drivers have better levels of awareness.

The Committee believes there needs to be more information about the attitudes of Victorian car drivers and riders (gleaned through surveys carried out over a period of time), research, and improvements to driver education and training. Moreover, refocusing the TAC advertising to highlight the shared responsibilities of drivers and riders would be influential in redressing negative attitudes for both road user groups.

Recommendations: Chapter 7**Recommendation 18:**

That road safety agencies initiate an attitudinal survey that deals with all the segments of the motorcycle community, including on and off-road motorcycles, scooter, moped and recreational riders, and that deals with attitudes to general risk taking, and specific risks including drugs, alcohol, inappropriate speeds, use of protective clothing and fatigue.

Recommendation 19:

That VicRoads and the Transport Accident Commission undertake research, including attitudinal surveys, aimed at understanding how riders and drivers can better interact with each other. Agencies must take a different approach to communicating with each group, so that riders and drivers are better educated about each other.

Recommendation 20:

That VicRoads includes motorcycle specific questions in its licence testing regime and motorcycle safety (including awareness) content in its training syllabus for learner and probationary car licence students.

Recommendation 21:

That VicRoads and the Transport Accident Commission undertake research projects focusing on the interaction between attitudes and behaviours as a way of informing road safety strategies and training and licensing materials.

Recommendation 22:

That the Transport Accident Commission focus its motorcycle safety advertising on redressing the attitude that responsibility for rider safety is solely attributable to the rider, by ensuring that campaigns dealing with motorcycles raise driver awareness and do not create negative stereotypes, perceptions or attitudes among drivers.

Recommendation 23:

That a 'Motorcycle Safety Awareness Week' be held annually in Victoria in conjunction with the Phillip Island MotoGP. The focus of the week is to be on how all road users can contribute to the safety of motorcyclists.

Endnotes: Chapter 7

- ¹ Forward S, *The intention to commit driving violations – a qualitative study*, Transportation Research Part F: Traffic Psychology and Behaviour, vol. 9 no. 6, 2006, pp. 412–426,
- ² Ms Christine Mulvihill, Research Fellow, MUARC, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 649.
- ³ Crundall D, Clarke D, Ward P & Bartle C, *Car Drivers' skills and attitudes to motorcycle safety: A review*, Road safety research report No. 85, Department for Transport, London, May 2008, p. 27.
- ⁴ Royal Automobile Club of Victoria, *Submission to the Inquiry*, September 2011, p. 3.
- ⁵ Mr David Hogan, Team Leader, Coroners Prevention Unit, Coroners Court of Victoria, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 54.
- ⁶ Mr David Hogan, Team Leader, Coroners Prevention Unit, Coroners Court of Victoria, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 54.
- ⁷ VicRoads, *Submission to the Inquiry*, September 2011, p.19.
- ⁸ VicRoads, *Submission to the Inquiry*, September 2011, p.19.
- ⁹ Ms Christine Mulvihill, Research Fellow, MUARC, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 649.
- ¹⁰ Musselwhite C, Avineri E, Susilo Y, Fulcher E, Bhattachary D, Hunter A & Stockley R, *Road Safety Research Report No. 111 Understanding Public Attitudes to Road Users Safety*, for the Department for Transport, London, September 2010, p. 33.
- ¹¹ Deighton-Smith R, *Submission to the Inquiry*, July 2011, p. 3; Mr Doug Sunderland, *Transcript of Evidence*, Wangaratta, 29 November 2011, p. 420.
- ¹² Musselwhite C, Avineri E, Susilo Y, Fulcher E, Bhattachary D, Hunter A & Stockley R, *Road Safety Research Report No. 111 Understanding Public Attitudes to Road Users Safety*, for the Department for Transport, London, September 2010, p. 11.
- ¹³ Mr Rob Smith, Manager, Australian Riders' Division, Motorcycling Australia, *Transcript of Evidence*, Geelong, 15 November 2011, p. 306.
- ¹⁴ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 12.
- ¹⁵ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 12.
- ¹⁶ Deighton-Smith R, *Submission to the Inquiry*, July 2011, p. 3.
- ¹⁷ Clemens K.J.E, *Submission to the Inquiry*, August 2011, p. 2.
- ¹⁸ Haworth NL, *Powered two wheelers in a changing world: challenges and opportunities*, Accident Analysis and Prevention, vol. 44 issue 1, January 2012, pp. 12–18.
- ¹⁹ Pigot J, *Symbolic identities Masculinity Motorcycle*, Artlink, vol. 16 no. 1, 1996, p. 47.
- ²⁰ Superintendent Bob Stork, Road Policing Strategy Group, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 32.
- ²¹ Deighton-Smith R, *Submission to the Inquiry*, July 2011, p. 3; Select Scootas, *Submission to the Inquiry*, September 2011; John Lambert & Associates, *Submission to the Inquiry*, July 2011, p. 4.
- ²² Watson B, Tunnicliff D, White K, Schonfeld C & Wishart D, *Psychological and social factors influencing motorcycle riders' intentions and behaviour*, Australian Transport Safety Bureau, Canberra, August 2007, pp. 46-47.; Pask A, *Submission to the Inquiry*, June 2011.
- ²³ Wentworth T, *Submission to the Inquiry*, July 2011, Term of Reference (c).
- ²⁴ Barwon RoadSafe, *Submission to the Inquiry*, September 2011, Term of Reference (c).
- ²⁵ Hartwell Motorcycle Club, *Submission to the Inquiry*, July 2011, cover page.
- ²⁶ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 12.
- ²⁷ John Lambert & Associates, *Submission to the Inquiry*, July 2011, p. 4; Pask A, *Submission to the Inquiry*, June 2011, Term of Reference (c); Royal Automobile Club of Victoria, *Submission to the Inquiry*, September 2011, p. 2.

- ²⁸ Haworth NL, Grieg K & Nielson AL, *A comparison of risk taking in moped and motorcycle crashes*, Transportation Research Board 88th Annual Meeting, Washington DC, 11-15 January 2009, p. 2.
- ²⁹ Tunnicliff DJ, Watson J, Barry C, White KM, Hyde MK, Schonfeld CC & Wishart DE, *Understanding the factors influencing safe and unsafe motorcycle rider intentions*, Accident Analysis and Prevention, vol. 49, November 2012, pp. 6, 19–20; Tunnicliff D, Watson B, White KM, Lewis J & Wishart D, *The social context of motorcycle riding and the key determinants influencing rider behaviour: A qualitative investigation*, Traffic Injury Prevention Journal, No 12, 2011, p. 363).
- ³⁰ Tunnicliff DJ, Watson J, Barry C, White KM, Hyde MK, Schonfeld CC & Wishart DE, *Understanding the factors influencing safe and unsafe motorcycle rider intentions*, Accident Analysis and Prevention, vol. 49, November 2012, p.24.
- ³¹ VicRoads, *Submission to the Inquiry*, September 2011, p. 20.
- ³² VicRoads, *Submission to the Inquiry*, September 2011, p. 19.
- ³³ Parliament of New South Wales Joint Standing Committee on Road Safety (RoadSafe), *Vulnerable road users: Inquiry into motorcycle and bicycle safety*, Report no. 5/54, Sydney, 2010, p. 29.
- ³⁴ Reality Check Communication Research, *Fatigue related motorcycle Crashes Rider Survey Research Market Research Stages 1 & 2*, for VicRoads, November 2006, p. 5.
- ³⁵ Reality Check Communication Research, *Fatigue related motorcycle Crashes Rider Survey Research Market Research Stages 1 & 2*, for VicRoads, November 2006, p. 5.
- ³⁶ Reality Check Communication Research, *Fatigue related motorcycle Crashes Rider Survey Research Market Research Stages 1 & 2*, for VicRoads, November 2006, p. 6, 35.
- ³⁷ Reality Check Communication Research, *Fatigue related motorcycle Crashes Rider Survey Research Market Research Stages 1 & 2*, for VicRoads, November 2006, p. 32.
- ³⁸ Reality Check Communication Research, *Fatigue related motorcycle Crashes Rider Survey Research Market Research Stages 1 & 2*, for VicRoads, November 2006, p. 5.
- ³⁹ National Transport Commission, *Napping Tips – To help prevent driver fatigue*, Heavy Vehicle Driver Fatigue Reform Information Bulletin, July 2008,
http://www.ntc.gov.au/filemedia/Publications/HVDF_NappingTips_July08.pdf.
- ⁴⁰ Reality Check Communication Research, *Fatigue related motorcycle Crashes Rider Survey Research Market Research Stages 1 & 2*, for VicRoads, November 2006, p. 6.
- ⁴¹ Reality Check Communication Research, *Fatigue related motorcycle Crashes Rider Survey Research Market Research Stages 1 & 2*, for VicRoads, November 2006, pp. 9-21.
- ⁴² Reality Check Communication Research, *Fatigue related motorcycle Crashes Rider Survey Research Market Research Stages 1 & 2*, for VicRoads, November 2006, p. 12.
- ⁴³ Watson B, Tunnicliff D, White K, Schonfeld C & Wishart D, *Psychological and social factors influencing motorcycle riders' intentions and behaviour*, Australian Transport Safety Bureau, Canberra, August 2007, p. ix.
- ⁴⁴ Victorian Automobile Chamber of Commerce, *Submission to the Inquiry*, September 2011, p. 20; Heather Ellis, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 291.
- ⁴⁵ Ms Samantha Cockfield, Acting Senior Manager, Road Safety & Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 702.
- ⁴⁶ VicRoads, *Submission to the Inquiry*, September 2011, p. 23.
- ⁴⁷ Mr Michael Nieuwesteeg, Research Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 704.
- ⁴⁸ Victorian Automobile Chamber of Commerce, *Submission to the Inquiry*, September 2011, p.19.
- ⁴⁹ Ulysses Club, *Submission to the Inquiry*, September 2011, p. 4.

- ⁵⁰ Hennessy P, Govan C & Lowery R, *TAC Motorcycle Tracker*, for the Transport Accident Commission, Sweeney Ref. 18680, Melbourne, 2010.
- ⁵¹ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (c).
- ⁵² Hennessy P, Govan C & Lowery R, *TAC Motorcycle Tracker*, for the Transport Accident Commission, Sweeney Ref. 18680, Melbourne, 2010.
- ⁵³ Watson B, Tunnicliff D, White K, Schonfeld C & Wishart D, *Psychological and social factors influencing motorcycle riders' intentions and behaviour*, Australian Transport Safety Bureau, Canberra, August 2007, p. 105.
- ⁵⁴ Professor Russell Gruen, Head, Trauma Quality Assurance, Alfred Health, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 160.
- ⁵⁵ Rudin-Brown CM, Clark B, Allen A, Mulvihill C & Filtness A (MUARC), *Do drinking and riding mix? Effects of legal doses of alcohol on balance ability in experienced motorcyclists*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011, p. 9.
- ⁵⁶ VicRoads, *Submission to the Inquiry*, September 2011, p. 23.
- ⁵⁷ Royal Australasian College of Surgeons, *Submission to the Inquiry*, August 2011, p. 1.
- ⁵⁸ Wentworth T, *Submission to the Inquiry*, July 2011, Term of reference (c); Mastoris E, *Submission to the Inquiry*, July 2011, Term of reference (c); Sava T, *Submission to the Inquiry*, July 2011, Term of reference (c).
- ⁵⁹ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (c).
- ⁶⁰ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (c).
- ⁶¹ Ms Samantha Cockfield, Acting Senior Manager, Road Safety & Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 17 October 2011, pp. 65–66.
- ⁶² Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (c).
- ⁶³ Reality Check Communication Research, *Fatigue related motorcycle Crashes Rider Survey Research Market Research Stages 1 & 2*, for VicRoads, November 2006, p. 24.
- ⁶⁴ VicRoads, *Submission to the Inquiry*, September 2011, p. 24.
- ⁶⁵ Pask A, *Submission to the Inquiry*, June 2011, Term of Reference (c).
- ⁶⁶ Ms Elizabeth Krieg, *Transcript of Evidence*, Ballarat, 16 November 2011, p. 400.
- ⁶⁷ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 16.
- ⁶⁸ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 16.
- ⁶⁹ VicRoads, *Submission to the Inquiry*, September 2011, p. 21.
- ⁷⁰ VicRoads, *Submission to the Inquiry*, September 2011, p. 21.
- ⁷¹ VicRoads, *Submission to the Inquiry*, September 2011, p. 21.
- ⁷² Victorian Automobile Chamber of Commerce, *Submission to the Inquiry*, September 2011, p. 19.
- ⁷³ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (c).
- ⁷⁴ Ms Elizabeth Krieg, *Transcript of Evidence*, Ballarat, 16 November 2011, p. 400.
- ⁷⁵ Ms Hollie Black, General Manager, Select Scootas, *Transcript of Evidence*, 18 October 2011, p. 137.
- ⁷⁶ Ms Kat Gordon, VACC Delegate to Motorcycle Advisory Group, *Transcript of Evidence*, 19 October 2011, p. 229.
- ⁷⁷ Mr Adam Kostick, Community Engagement, Maurice Blackburn, *Transcript of Evidence*, 19 October 2011, p. 242.
- ⁷⁸ de Rome L, Ivers R, Haworth N, Heritier S, Du W & Fitzharris M, *Novice riders and the predictors of riding without motorcycle protective clothing*, Accident Analysis and Prevention, vol. 43 issue 3, 2011, pp. 1095–1097.
- ⁷⁹ de Rome L, Ivers R, Haworth N, Heritier S, Du W & Fitzharris M, *Novice riders and the predictors of riding without motorcycle protective clothing*, Accident Analysis and Prevention, vol. 43 issue 3, 2011, p. 1095.
- ⁸⁰ de Rome L, Ivers R, Haworth N, Heritier S, Du W & Fitzharris M, *Novice riders and the predictors of riding without motorcycle protective clothing*, Accident Analysis and Prevention, vol. 43 issue 3, 2011, p. 1101.

- ⁸¹ Watson B & Wishart D (CARRS-Q), *Victoria motorcycle apparel observation study – Final report to the TAC*, June 2011, p. 33.
- ⁸² Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 14; Wentworth T, *Submission to the Inquiry*, July 2011, Term of Reference (c).
- ⁸³ VicRoads, *Submission to the Inquiry*, September 2011, p. 22; Stephan K, Symmons M, Hillard P, Bohensky M, Muir C & Lenne M, *Characteristics of fatal motorcycle crashes involving excessive and/or inappropriate speed*, for VicRoads, October 2008, p. III.
- ⁸⁴ Victoria Police, *Transcript of Evidence*, Melbourne, 7 March 2012, pp. 716-717, 722; Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p.703; Stephan K, Symmons M, Hillard P, Bohensky M, Muir C & Lenne M, *Characteristics of fatal motorcycle crashes involving excessive and/or inappropriate speed*, for VicRoads, October 2008, p. III.
- ⁸⁵ Victorian Automobile Chamber of Commerce, *Submission to the Inquiry*, September 2011, p. 19.
- ⁸⁶ Stephan K, Symmons M, Hillard P, Bohensky M, Muir C & Lenne M, *Characteristics of fatal motorcycle crashes involving excessive and/or inappropriate speed*, for VicRoads, October 2008, p. XI.
- ⁸⁷ Victoria Police, *Submission to the Inquiry*, September 2011, pp. 9–10.
- ⁸⁸ Transport Accident Commission, *Submission to the Inquiry*, Term of Reference (c).
- ⁸⁹ Hennessy P, Govan C & Lowery R, *TAC Motorcycle Tracker*, for the Transport Accident Commission, Sweeney Ref. 18680, Melbourne, 2010.
- ⁹⁰ Hennessy P, Govan C & Lowery R, *TAC Motorcycle Tracker*, for the Transport Accident Commission, Sweeney Ref. 18680, Melbourne, 2010.
- ⁹¹ Hennessy P, Govan C & Lowery R, *TAC Motorcycle Tracker*, for the Transport Accident Commission, Sweeney Ref. 18680, Melbourne, 2010.
- ⁹² Hennessy P, Govan C & Lowery R, *TAC Motorcycle Tracker*, for the Transport Accident Commission, Sweeney Ref. 18680, Melbourne, 2010.
- ⁹³ Watson B, Tunnicliff D, White K, Schonfeld C & Wishart D, *Psychological and social factors influencing motorcycle riders' intentions and behaviour*, Australian Transport Safety Bureau, Canberra, August 2007, p. 65.
- ⁹⁴ Tunnicliff DJ, Watson J, Barry C, White KM, Hyde MK, Schonfeld CC & Wishart DE, 'Understanding the factors influencing safe and unsafe motorcycle rider intentions', Accident Analysis and Prevention, April 2011, p.24.
- ⁹⁵ Stephan K, Symmons M, Hillard P, Bohensky M, Muir C & Lenne M, *Characteristics of fatal motorcycle crashes involving excessive and/or inappropriate speed*, for VicRoads, October 2008, p. 86.
- ⁹⁶ Stephan K, Symmons M, Hillard P, Bohensky M, Muir C & Lenne M, *Characteristics of fatal motorcycle crashes involving excessive and/or inappropriate speed*, for VicRoads, October 2008, p. 86.
- ⁹⁷ Stephan K, Symmons M, Hillard P, Bohensky M, Muir C & Lenne M, *Characteristics of fatal motorcycle crashes involving excessive and/or inappropriate speed*, for VicRoads, October 2008, p. 86.
- ⁹⁸ Mr Doug Sunderland, *Transcript of Evidence*, Wangaratta, 29 November 2011, p. 420.
- ⁹⁹ Mr Doug Sunderland, *Transcript of Evidence*, Wangaratta, 29 November 2011, p. 419.
- ¹⁰⁰ Mr Collin Maxwell, Christian Motorcyclists Association Australia (Victoria), *Transcript of Evidence*, Wodonga, 30 November 2011, p. 508.
- ¹⁰¹ Mr David MacKenzie, Senior Instructor, Motorcycle Motion, *Transcript of Evidence*, Geelong, 15 November 2011, p. 327.
- ¹⁰² Victorian Automobile Chamber of Commerce, *Submission to the Inquiry*, September 2011, p. 21.
- ¹⁰³ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 19.
- ¹⁰⁴ Deputy Commissioner Kieran Walshe, Regional and Road Policing, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 33.

- ¹⁰⁵ Tunnicliff D, Watson B, White KM, Lewis I & Wishart D, *The social determinants of motorcycle riding and the key determinants influencing rider behaviour: A qualitative investigation*, Traffic injury Prevention, vol. 12 issue. 4, August 2011, p. 371.
- ¹⁰⁶ Wentworth T, *Submission to the Inquiry*, July 2011, Term of Reference (d).
- ¹⁰⁷ Wentworth T, *Submission to the Inquiry*, July 2011, Term of Reference (d).
- ¹⁰⁸ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (d).
- ¹⁰⁹ VicRoads, *Submission to the Inquiry*, September 2011, p. 20.
- ¹¹⁰ VicRoads, *Submission to the Inquiry*, September 2011, p. 20.
- ¹¹¹ VicRoads, *Submission to the Inquiry*, September 2011, p. 20.
- ¹¹² Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (d).
- ¹¹³ Tunnicliff D, Watson B, White KM, Lewis I & Wishart D, *The social determinants of motorcycle riding and the key determinants influencing rider behaviour: A qualitative investigation*, Traffic injury Prevention, vol. 12 issue. 4, August 2011, p. 371.
- ¹¹⁴ Tunnicliff D, Watson B, White KM, Lewis I & Wishart D, *The social determinants of motorcycle riding and the key determinants influencing rider behaviour: A qualitative investigation*, Traffic injury Prevention, vol. 12 issue. 4, August 2011, p. 371.
- ¹¹⁵ Sava T, *Submission to the Inquiry*, July 2011, Term of Reference (d).
- ¹¹⁶ McAuliffe D, *Submission to the Inquiry*, July 2011, 'Driver Behaviour'.
- ¹¹⁷ Mr John Voyage, Principal, Maurice Blackburn, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 234.
- ¹¹⁸ Mr John Voyage, Principal, Maurice Blackburn, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 234.
- ¹¹⁹ VicRoads, *Submission to the Inquiry*, September 2011, p.19.
- ¹²⁰ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (d)
- ¹²¹ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (d).
- ¹²² Ms Samantha Cockfield, Manager, Road Safety, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 17 October, 2011, p. 66.
- ¹²³ VicRoads, *Submission to the Inquiry*, September 2011, p.19.
- ¹²⁴ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (d).
- ¹²⁵ Crundall D, Clarke D, Ward P & Bartle C, *Car Drivers' skills and attitudes to motorcycle safety: A review*, Road safety research report No. 85, Department for Transport, London, May 2008, pp. 11, 29–34.
- ¹²⁶ Ms Samantha Cockfield, Manager, Road Safety, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 17 October, 2011, p. 66.
- ¹²⁷ Royal Automobile Club of Victoria, *Submission to the Inquiry*, September 2011, p.3 citing Magazzu D, Cornelli M & Marinoni A, *Are car drivers holding a motorcycle licence less responsible for motorcycle –car crash occurrence? A non-parametric approach*, Accident Analysis and Prevention, vol. 38 issue. 2, 2006, pp. 365–370.
- ¹²⁸ Mr Matthew Zammit, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 48.
- ¹²⁹ Royal Automobile Club of Victoria, *Submission to the Inquiry*, September 2011, p.3 citing Magazzu D, Cornelli M & Marinoni A, *Are car drivers holding a motorcycle licence less responsible for motorcycle –car crash occurrence? A non-parametric approach*, Accident Analysis and Prevention, vol. 38 issue. 2, 2006, pp. 365–370.
- ¹³⁰ Royal Automobile Club of Victoria, *Submission to the Inquiry*, September 2011, p.3
- ¹³¹ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (d).
- ¹³² Crundall D, Clarke D, Ward P & Bartle C, *Car Drivers' skills and attitudes to motorcycle safety: A review*, Road safety research report No. 85, Department for Transport, London, May 2008, p. 38.
- ¹³³ Ms Hollie Black, General Manager, Select Scootas, *Transcript of Evidence*, Melbourne, 18 October 2011 p. 134.
- ¹³⁴ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p.21.
- ¹³⁵ Mr John Lambert, Director, John Lambert & Associates, *Transcript of Evidence*, Geelong, 15 November, p. 362.

¹³⁶ Deputy Commissioner Kieran Walshe, Regional and Road Policing, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 33.

¹³⁷ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (d).

¹³⁸ Mr David Hyatt, *Transcript of Evidence*, Ballarat, 16 November 2011, p. 388

¹³⁹ Wentworth T, *Submission to the Inquiry*, July 2011, Term of Reference (d).

¹⁴⁰ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 21.

¹⁴¹ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 21.

¹⁴² Armstrong's Driver Education, *Submission to the Inquiry*, Term of Reference (d).

¹⁴³ VicRoads, *Submission to the Inquiry*, September 2011, p. 19.

¹⁴⁴ Ms Victoria Tsilis, Overnewton Anglican Community College, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 168.

¹⁴⁵ Ms Sarah Kimpton, Overnewton Anglican Community College, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 168.

¹⁴⁶ Driver Education Centre of Australia, *Submission to the Inquiry*, July 2011, Covering page.

¹⁴⁷ Parliament of Victoria Road Safety Committee, *Inquiry into the Review of Motorcycle Safety*, Parliament of Victoria, Melbourne, 1998, p. xiii

¹⁴⁸ Parliament of Victoria Road Safety Committee, *Inquiry into the Review of Motorcycle Safety*, Parliament of Victoria, Melbourne, 1998, p. xiii.

¹⁴⁹ Government of Victoria, *Government Response to the Parliamentary Road Safety Committee Report of an Inquiry into the Review of Motorcycles Safety in Victoria*, Melbourne, tabled 27 October 1998.

PART 3

Chapter 8: The transport accident compensation scheme (TOR i)

Chapter 9: The motorcycle safety levy (TOR j)

Chapter 8 at a glance

Overview

The focus of this chapter is whether the Transport Accident Commission - premium paid by motorcyclists is appropriate; that is, whether motorcyclists pay their way. In addressing this term of reference the Committee investigated the leading factors which have had an impact on the compensation scheme. These factors included: court decisions which have interpreted Victorian legislation in a way that has extended the scope of the scheme's coverage; whether the scheme recovers from motorcyclists the claims cost of rider injuries; and whether a risk based premium is more appropriate for motorcyclists.

Key findings

The Committee found that the current premium paid by motorcyclists is appropriate. The scheme's design did not envisage a cost recovery principle based on the crash risk of a given road user group, such as motorcyclists. In any case, the fact that many motorcyclists pay multiple premiums because they have multiple registered vehicles coupled with the scheme's ongoing surpluses, suggests that an increase in the premium paid by motorcyclists is unwarranted.

At present, the costs placed on the scheme by motorcyclists do not pose a danger to the scheme's ongoing viability.

Moving to a risk based premium is inappropriate given the design of the scheme and the ramifications of pricing risk for motorcyclists.

Recommendations

There are no recommendations relevant to this chapter.

CHAPTER 8: THE TRANSPORT ACCIDENT COMPENSATION SCHEME

8.1 *Introduction*

The Victorian transport accident compensation scheme (the scheme) is an insurance scheme that covers road users who are injured as a result of a crash. This type of insurance product, which deals with personal injury liability, is usually referred to as compulsory third party insurance. The scheme which is administered by the Transport Accident Commission (TAC) is funded through a premium levied on all vehicle registrations. The *Transport Accident Act 1986* (the Act) sets out the functions of the TAC and the operation of the compensation scheme. The purpose of the Act is to:

*... establish a scheme of compensation in respect of persons who are injured or die as a result of transport accidents.*¹

The scheme is universal in its application and any person injured on a road is covered by the scheme and can claim from it, irrespective of who caused the crash.

This chapter analyses the appropriateness of the transport accident premium (the premium) paid by motorcyclists. The term of reference was construed as focusing on whether motorcyclists pay their way in terms of their cost to the scheme compared with the amount of money they contribute to the scheme and whether they should pay more. The findings of the Committee are based on its investigation of the cost of motorcycle trauma on the scheme and issues identified by submitters and witnesses in the way the premium is set.

There were four broad areas in which issues were identified. These were: judicial decisions that have enlarged the scope of the scheme so more motorcyclists can claim compensation payments; the cost of treating motorcyclists being greater than the premiums they pay; premiums not reflecting the risks of motorcycling; and motorcycle claimants increasing in number. The Committee also investigated several proposals which were linked to alleviating or solving these issues. Contributors to the Inquiry who sought an increase to the TAC premium for motorcyclists tended to concentrate on the cost of motorcycle trauma and issues associated with that such as cross-subsidisation. These issues were used as evidence for a conclusion that the current charge is inappropriate. Conversely, those who opposed increases to the premium argued the design of the scheme recognises that not all road users pose the same level of risk. It was also argued that because motorcyclists often had more than one registered vehicle and paid multiple premiums, they were paying their way. An overarching element of the discussion of this term of reference was the design of the scheme and the policy objectives underpinning it.

This chapter is comprised of three sections. The first begins with an overview of the scheme in Victoria, which includes the policy basis for the scheme and the way it operates. The Committee investigations included a brief analysis of recent case law, which was necessary to contextualise the way TAC cover applies to Victorians.

The second section addresses the issues raised by submitters and witnesses in each of the four areas outlined above. The Committee also analyses proposals raised to deal with these issues. The third section gives the Committee's response to the question of whether motorcycle injury claims are unsustainable in the longer term.

8.2 Overview

The TAC oversees the scheme, which is based on a 'no-fault' principle which means that motorcyclists (like other road users) do not have to prove fault or wrongdoing by any person involved in a crash.² The design and operation of the scheme reflects a number of underlying policy objectives. Some of the features were outlined by Mr Alan Woodroffe, Senior Manager, Policy Legislation and Review, TAC:

*The underlying objective of the scheme is to provide both no-fault and common-law cover to everybody on an equitable basis, regardless of their transport choice. So the underlying theory of the scheme is to remain viable in that overall context. There are very few factors that are used in fixing premium. One is vehicle class and the other is essentially your garage address, so whether you are metropolitan, outer region or rural. There is a concession for pensioners, but aside from that those are really the only factors.*³

The universal nature of coverage and the no-fault features of the compensation scheme were designed by government to address a range of social and economic objectives arising from the use of Victorian roads. A report produced for the Victorian Department of Treasury and Finance (DTF), the *National competition policy review of Victoria's transport compensation legislation* report (the DTF report), identified several objectives which were: fairness and equity among road users; affordability; protecting the injured from significant financial losses; and providing insurance products that the market could not (or chose not to) offer.⁴ Collectively, these social and economic objectives underpin the transport compensation scheme.⁵

In addition to these objectives, there are several other policy elements that explain the design of the scheme. The first is that the role of the TAC includes defending, accepting and paying common law compensation actions. Placing responsibility with the TAC to manage common law cases, including litigation, reduces the burden of litigation, because the TAC represents and pays for the actions of a negligent person in a road crash. This means injured motorcyclists claim compensation from the TAC and not the negligent person that caused the accident. This approach differs from arrangements elsewhere, which allow an injured motorist to sue the negligent individual or their insurer. In addition to reducing the litigation burden, the scheme is designed to ensure that an injured motorcyclist will be compensated, irrespective of whether the at-fault person has the ability to pay.⁶ By removing the onus on the negligent party, injured motorcyclists are guaranteed the payment of compensation if their claim is successful.

The second element was identified in the DTF report. Its authors made the observation that the original design of the scheme marked a change in the way government dealt with transport compensation. 'That change shifted accident compensation from an insurance product to a scheme that operates in a similar way to a welfare scheme or safety net'.⁷

The report made that observation on the basis there are few exceptions to being covered by the TAC (coverage extends to those who do not pay a premium, for example pedestrians) and the TAC accepts common law liability in most cases.⁸ That conceptualisation of the scheme, as a welfare scheme, is useful because it provides a basis for understanding why the TAC premium is not based on a risk assessment for each person using the road network. To an extent it clarifies why the scheme accepts a level of cross-subsidisation (that is, some road users cost the scheme more than they pay and are covered due to the premiums paid by other road users). The DTF report refers to the use of community ratings for setting premiums so that all road users in a geographic area pay the same amount.⁹

The scheme is underpinned by a number of policy objectives and elements. These in turn are reflected in the legislative framework that created the scheme which ensures that Victorians enjoy a universal level of injury compensation arising from road accidents. However, that coverage is tempered by requirements, obligations and exclusions set out in legislation.

8.3 The role of the Transport Accident Commission (TAC)

The TAC is a ‘monopoly provider of third party insurance’.¹⁰ The insurance provided by the TAC covers the personal liability of those involved in a road accident. The TAC administers the scheme, maintains the Transport Accident Fund (from which compensation payments are made)¹¹ and pays for a claimant’s treatment costs and benefits.¹² In addition to managing the scheme, the TAC also has a role in preventing or reducing road trauma. It fulfils this role through a range of activities such as community road safety grants, funding enforcement programs, infrastructure improvements (such as black spot reduction programs) and advertising.¹³

8.4 How does the scheme operate?

The scheme operates under legislation which frames and guides its operations and the role of the TAC. There are four pieces of legislation/regulation which deal with the establishment of the scheme and the TAC: the role of the TAC, the administration of the scheme, the payment of compensation and the formulation of the charge. The applicable legislation is set out below:

- *Transport Accident Act 1986* (the Act);
- *Transport Accident Regulations 2007*;
- *Transport Accident (Administration of Charges) Regulations 2011*; and
- *Transport Accident (Impairment) Regulations 2010*.

The scheme is funded through the premium, which is included in the annual registration charge for vehicles in Victoria. The payment of this premium is a precondition to having a vehicle registered¹⁴ and is therefore compulsory. The premium increases each year in line with the consumer price index.¹⁵

The formulation for the premium is set out in the Act¹⁶ and is set by reference to a number of factors, including the garage address of the vehicle, the type of vehicle and the circumstances of the person registering the vehicle with pensioners and concession card holders paying cheaper premiums. The cost of the annual charge is set out in an annual Transport Charges Order (the Order) which updates the value of the transport accident charge at the start of each financial year.¹⁷ The Order also includes a list of the high and medium risk postcodes. The motorcycle category is comprised of general use and exempt general use motorcycles, and each of these has a number of sub-classes which are based on engine size (cubic capacity).

In addition to paying claimants, the TAC has the ability to pay an annual dividend, drawn from its funding budget, back to government. Such payments are determined by the TAC board, chairman, the responsible Minister and the Treasurer.¹⁸ In 2010-11 a dividend of \$100 million dollars was paid to the Victorian Government.¹⁹

The scheme is designed to cater for two types of compensation payments. It is important to note the distinctions between these two types of payments because each imposes different limitations on the types of services and payments injured motorcyclists can claim. These distinctions were explained by Mr John Voyage, Principal, Maurice Blackburn:

*The TAC has two schemes: no-fault and common law. They were obliged under no-fault to pay for medical, hospital, pharmacy, time off work and an impairment payment. The common law is where the person sues the negligent driver.*²⁰

No-fault payments essentially deal with the cost of treatment following a road crash. The ability to seek a common law payment (which follows the payment of a no-fault claim) is triggered when an injured motorcyclist suffers a serious injury.²¹ The TAC, in its capacity as the insurer of motorists who are at fault, is responsible for common law compensation. Accessing common law compensation requires a claimant to meet certain conditions which are set out in the Act.²²

The scheme is described as being ‘no-fault’. That phrase refers to the fact that anyone injured in Victoria (or injured interstate in a Victorian registered vehicle) is able to claim support services from the TAC irrespective of who caused the crash.²³ This aspect of the scheme distinguishes the Victorian scheme from those that operate in other Australian jurisdictions such as South Australia. In spite of the benefits of the no-fault system, its operation was criticised by some witnesses. A key criticism was highlighted by Mr Matthew Zammit, an injured motorcyclist, who contrasted the Victorian scheme with interstate schemes which use private insurers for third party insurance:

*... in those states if you cause liability to that insurance company they will up your premium. TAC give a lifetime rating 1 to everyone, blatant dangerous drivers included ...*²⁴

A conclusion that can be drawn from Mr Zammit's comments is that the Victorian scheme lacks a punitive response, consisting of increased premiums, for the at-fault party which represents a weakness of the scheme.

8.4.1 Restrictions

There are a number of restrictions that apply to claiming compensation under the Act. These include restrictions for accidents that occur as a result of organised motor vehicle racing or speed trials²⁵, where there is a failure to make a police report²⁶, where the injured rider is convicted under certain sections of the *Crimes Act 1958*²⁷ and a range of circumstances set out in section 40 of the Act.²⁸ There are also important restrictions for unregistered²⁹ and uninsured³⁰ motor vehicle accidents that occur on private land. However, even unregistered and unlicensed riders who are injured in a transport accident will be able to make a claim for treatment costs³¹ unless it is expressly excluded by the Act. The scheme can be accessed by motorcyclists who are injured on-road and off-road.

The ability of motorcyclists to access compensation for off-road riding accidents is not well-understood. Determining whether off-road riding is compensable under the Act requires careful analysis of the restrictions on compensation for unregistered and uninsured motorcycles. Compensation is available if an accident has occurred on a 'highway'.³² The link between the definition of a 'transport accident' and a 'road or road related area' in the *Road Safety Act 1986* has the effect of covering motorcyclists who are riding 'off-road' in areas such as national parks. The Committee notes that the TAC confirmed that riders injured off-road are covered by the scheme,³³ but that aspect of the scheme remains poorly understood.

An important restriction of the scheme is the limitation of common law compensation to those who have a serious injury. The threshold for an injury to be compensable is said to be high, as Mr John Voyage, Maurice Blackburn, stated:

Under the TAC scheme ... a person is forbidden from receiving common-law compensation, from suing ... unless they have what is called a serious injury, and there is a very high threshold of how serious the injury has to be.³⁴

The types of injuries that qualify an injured road user for common law compensation are serious and generally ongoing which greatly reduces the number of claimants accessing such payments. These restrictions apply to motorcyclists as they do to all road users.

8.5 Are motorcyclists an issue for the scheme?

The Committee heard a number of arguments that suggest the current premium for motorcyclists is inappropriate. The arguments made to the Committee fell into one of four categories: the impact of court decisions which have extended TAC coverage; the cost of motorcyclists to the scheme; a premium which does not reflect the risks of motorcycling and the likelihood of injury; and the impact of motorcycle trauma on the scheme's viability.

8.5.1 Court decisions have extended the coverage of the scheme

Judicial decisions in a number of TAC compensation cases over the last two decades have extended the coverage of the scheme. These cases have focused on the definition and scope of a road and road related area, and to an extent the definition of a ‘motor vehicle’. The result of these decisions is that motorcyclists, who may have previously not been covered by the scheme on the basis that they suffered their injury in areas or on vehicles which did not satisfy the requirements of the scheme (as interpreted by the TAC), are now eligible. The TAC in its submission warned that the result of judicial decisions on the definition of a road and road related area has meant that the scheme now covers a greater number of motorcyclists than previously, and that will have financial consequences on the scheme.³⁵ The cost implications caused by judicial decisions are said to be compounded by the scheme’s coverage of injured motorcyclists riding unregistered or uninsured motorcycles. The TAC noted in its submission the ‘significant costs to the scheme’ of recent cases involving severely injured riders using unregistered motorcycles.³⁶

However, there are several counterpoints to the expansion of the scheme. Firstly, it is unclear what the impact of these decisions has been in terms of increasing the scheme’s costs, due to the way that claims data is captured.³⁷ In spite of the claims data issues, it appears that riders injured in areas previously considered outside the coverage of the scheme account for a negligible proportion of claims. The TAC, relying on its own research, indicated that a random sampling of 640 claimants found that only 5% were on unregistered motorcycles.³⁸ Secondly, the TAC accepts that there is a ‘proportion of riders who may be eligible but who do not submit a claim after an accident’.³⁹ That means that many riders who are eligible to claim do not. Arguably, if these riders were to claim the issue posed by an expanded coverage of the scheme could be exacerbated.

8.5.1.1 Findings

It is reasonable to expect the scheme to align with the way motorcyclists use the road network. Further, it is appropriate for the scheme to cover motorcyclists who ride on roads and in areas that are captured within the applicable definitions found in the Act and in the *Road Safety Act 1986*. Motorcyclists who have paid their registration and are riding in areas that are accessible to the public should be covered. The decisions by Victorian courts have merely affirmed the objectives of the Act which is to compensate people who are injured or die as a result of transport accidents on the road network.

8.5.2 Do motorcycle claims exceed the amounts they contribute to the scheme?

A common refrain in witness evidence and submissions was that motorcyclists cost more than other injured claimants to treat. The central premise of this argument is that motorcyclists cost the scheme more in claims than the amount they pay through their premium. This premise relies on two related arguments. Firstly, that motorcyclists do not contribute sufficiently to cover their costs and secondly, that the impact of their failure to cover their costs requires other premium paying road users to cross-subsidise them, which is inequitable. In determining the merits of these arguments, the

Committee tried to determine what costs injured motorcyclists impose on the scheme and whether they are over-represented.

The TAC submission highlighted the cost of injured motorcyclists by providing motorcycle premium payments and expenditure costs. According to these costs, the TAC receives almost \$53 million dollars annually in premium payments from motorcyclists, which represents 3.5% of the total TAC premium revenue of \$1.5 billion dollars.⁴⁰ According to the TAC, in 2010 \$152 million dollars was paid in compensation to motorcyclists. That payment accounted for 20% of the total compensation paid in 2010.⁴¹ The Committee also noted several witnesses linked the costs of motorcyclists with the number of motorcycles in the vehicle fleet to suggest that motorcyclists were over-represented in comparison to other road users.⁴² Ms Samantha Cockfield, Manager, Road Safety, TAC, provided a similar analysis of the cost of injured motorcyclists and referred to them as being over-represented:

... we know that 4 per cent of vehicles registered in Victoria are motorcycles. Thirteen per cent of TAC's accepted claims are by motorcyclists, and about 20 per cent of TAC claims costs also relate to motorcyclists. We know that motorcyclists are extremely vulnerable and that in TAC's own claims they are over-represented. In terms of claims trends, the number of claims we have been receiving has increased over the years ...⁴³

On the basis of over-representation and overall cost, the TAC suggested that motorcyclists were the beneficiaries of cross-subsidies from the owners of other vehicles.⁴⁴ Others used these statistics to argue that such cross-subsidies were inequitable and that motorcyclists needed to 'pay their way'.⁴⁵ That point was forcefully made by Ms Melinda Congiu, Manager, Road User Behaviour, Royal Automobile Club of Victoria (RACV), who stated:

The purpose of the TAC premium is to fund the no-fault compensation scheme, but there is some disparity in pricing between motorcyclists and motorists. That disparity is not one that is reflective of the road safety risks that motorcyclists face or their burden on the TAC compensation scheme and that motorists should not have to cross subsidise motorcyclists.⁴⁶

In determining the validity of these arguments, the Committee made reference to a number of countervailing arguments. These were: data issues that affect over-representation figures; the inherent vulnerability of motorcyclists; the cost of motorcycle trauma compared to other injured road users; the policy objectives of the scheme; the concept of cost-recovery; the role of cross-subsidisation; and the way in which the TAC deals with claims for common law compensation.

In relation to the question of over-representation, the Committee referred to the deficiencies in data collection, reporting, analysis and selection addressed in Chapter 6. Specifically, the Committee noted references to over-representation can be difficult to sustain due to data gaps and the way data is analysed. Using such data is fraught with difficulty because it may not necessarily support the conclusion being presented. Therefore, the reference to over-representation by the TAC could be criticised on the basis of how that data was analysed and used. In any case, some witnesses argued that

referring to motorcyclists as being over-represented was simplistic because the risk of injury following a motorcycle crash is invariably higher than that of passengers in cars.

In terms of the overall cost of motorcyclists, it has been argued that motorcycle trauma tends to cost more than the amount paid to the scheme by motorcyclists. This is because motorcyclists are more likely to be injured in a crash, their injuries are more serious and hence their medical costs are said to be greater.⁴⁷ This argument is fundamentally based on the contention that motorcyclists are a vulnerable road user which makes their likelihood of injury greater than that of other road users, a view supported by the TAC.⁴⁸ Support for this argument can be found in the fact that motorcycles generally lack the passive safety features of passenger vehicles such as airbags and crumple zones, which lessen injury severity. Although some aspects of this argument have merit, particularly in terms of the vulnerability of motorcyclists, the proposition that motorcyclists cost the scheme more than they contribute is not supported by evidence provided to the Committee. Specifically, correspondence from the Minister for Health, the Hon. David Davis MP, indicated that the cost of motorcycle injuries in 2009-10 was 8% lower than that for other motor vehicle trauma.⁴⁹ This DoH cost estimation is instructive. It suggests the actual cost of treating admitted motorcyclists was lower than the cost of those injured in other motor vehicle crashes. Whilst motorcyclists may have lower treatment costs on average, their vulnerability means that those rider who are seriously injured can have a long term cost to the scheme, a point highlighted by Mr John Voyage, Maurice Blackburn:

*We have seen the TAC in the past say that people with spinal cord damage, quadriplegics, have a disproportionate amount of TAC payments delivered to them, that they are something like half a percent of TAC claimants but they receive — I do not remember the precise number — maybe 8 per cent of the TAC claim costs, as if they are somehow greedy or disproportionate or whatever. That is the cost of somebody who has suffered those sorts of injuries.*⁵⁰

The Committee notes that the scheme and the legislation that establishes it does not include a cost recovery objective. That is, there is no overarching policy aim that requires each road user segment, such as motorcyclists, to pay a premium that completely covers the cost of their injury claims. Although the Act does impose several objectives on the TAC to manage the scheme as ‘effectively, efficiently and economically as possible’⁵¹ and to ‘ensure the appropriate compensation is delivered in the most socially and economically appropriate manner’⁵², these objectives could not be seen as extending to include a complete cost recovery objective.

The absence of such an objective would appear to support the observation made in the DTF report of the scheme as being ‘akin to a welfare benefits scheme’.⁵³ Another aspect of the scheme that supports this argument is that the scheme covers road users who do not pay a TAC premium. Pedestrians and bicyclists are able to claim from the scheme, but do not pay a premium, a distinction that is concerning for some in the motorcycling community.⁵⁴ In spite of these concerns, it seems reasonable to conclude that the scheme’s design did not envisage that each road user group would fully cover its costs.

According to the RACV, motorcycle injury claims are cross-subsidised by other motorists. This situation is said to be inequitable and unfair due to their increased injury risk.⁵⁵ The TAC explored the question of cross-subsidisation in both its submission and in appearances before the Committee. According to the TAC, cross-subsidies have emerged over time, and have not been addressed by the scheme.⁵⁶ The TAC submission included a cross-subsidisation table that attempted to calculate the subsidies enjoyed by different road users groups. That table highlights a range of cross-subsidies throughout the scheme. Importantly, the TAC cautioned that the table was indicative only, and that the scheme was based on a no-fault system. Further, it stopped short of suggesting that cross-subsidies were problematic or inequitable.⁵⁷ In countering the argument of cross-subsidisation, the Committee heard that motorcyclists generally pay multiple premiums. Mr Stuart Strickland, Industry Consultant, Victorian Automobile Chamber of Commerce (VACC), suggested that multiple premium payments by motorcyclists:

*... is not commonly understood motorcyclists own multiple motorcycles. I have three registered in the garage at the moment, plus another three vehicles, so I am contributing quite well to TAC funding.*⁵⁸

Ms Heather Ellis supported that viewpoint adding:

*As most motorcyclists also drive cars and therefore pay car registration, they are already paying double in registration fees. In fact it is not uncommon for a couple who are also motorcyclists to pay up to four or more registrations per household per year in Victoria. That is two cars and two or more motorcycles which are all used recreationally.*⁵⁹

To an extent, the TAC also acknowledged the possibility of multiple premium payments. Responding to a question on whether this situation was occurring and how it might affect arguments about cross-subsidisation, Mr Alan Woodroffe, TAC, responded:

*One of them might be that, with multiple vehicle ownership, a person who has five vehicles is paying five premiums, and obviously you can only drive one vehicle at a time, so there are four idle vehicles, all of which you have paid a premium for. There is a cross-subsidisation effect there, but we do not note that, and it is not a component part of the premium collection process. When you are talking about cross-subsidies it is quite dangerous to say how much or how little the cross-subsidy is, because the premium itself only uses a couple of factors; but on those couple of factors the actual cost to pay for motorcycle injuries is much higher than the amount of premium collected. On the raw, simple facts you would say that there is a cross-subsidy to motorcycle riders.*⁶⁰

One witness, Mr Michael Czajka, from the Independent Riders Group (IRG), highlighted a different aspect of the argument about motorcyclists paying multiple registrations. He did so by referring to unlicensed and unregistered motorcyclists:

*I can also address the motorcycle costs ... A lot more is paid out than is paid in, at least apparently. When you take into account that motorcyclists own cars as well, we are actually paying two registrations. Virtually every motorcyclist has a car and is paying car registration, which brings the payout ratio down to about 2 to 3. In 2001, 35 to 37 per cent of motorcycle fatalities were unlicensed to ride motorcycles.... Of these unlicensed motorcyclists, most were licensed to drive cars and paid car registration. When you start to adjust for those considerations, you realise that motorcyclists are actually paying their way on accidents*⁶¹
...

The Committee requested data from VicRoads on the number of multiple registrations (and hence multiple premiums) held by motorcyclists to quantify the argument made by the IRG and the VACC. Unfortunately, that data could not be provided due to the limitations of the VicRoads databases. Nevertheless, the argument that motorcyclists pay multiple premiums and thus contribute an amount greater than that calculated by the TAC is persuasive particularly when one considers the VicRoads licence data that shows that 99% of motorcyclists also have a current driver's licence.⁶²

8.5.2.1 Findings

The argument about motorcyclists paying multiple premiums, and thus covering their injury costs was well-articulated during the Inquiry. If motorcyclists are paying more than one premium, then the motorcycle claims statistics provided by the TAC are unlikely to reflect the extent to which cross-subsidisation occurs. Ironically, motorcyclists could be said to be cross-subsidising themselves through their payment of secondary premiums on other vehicles registered by them. However, in the absence of any statistical evidence it is difficult to verify the extent to which this is occurring, if at all. The absence of a cost recovery objective in the scheme, and the way premiums are calculated, suggests that the scheme was designed to cover injured motorcyclists in spite of the amount they pay to the scheme. It could be argued that the conceptualisation of the scheme as 'welfare-like' would support the conclusion that cross-subsidisation is necessary and appropriate for Victorian road users covered by the scheme.

The Committee is satisfied that the scheme is currently operating in its intended manner. The extent to which cross-subsidisation is occurring is unclear, but it is reasonable to presume that such cross-subsidisation is an inherent aspect of the scheme.

8.5.3 Motorcyclists need to pay a premium that reflects their level of risk

The idea that the premium needs to reflect the risk of the road user was cited as being necessary for the scheme to be viable into the future. The RACV outlined the reasons for reflecting the risks of motorcycling in the calculation of the premium:

I do not think we are proposing something in place of the TAC premium. I guess it is about just having something that is reflective of the motorcyclist's risk and the burden on the TAC premium. It is about having something that is more representative of the burden they place on that scheme.

*Some of the motorcyclist premiums are much cheaper than the motorist premiums, and some are a little bit more. We would like to see the premium being more reflective of what the risk is — something that seems a little bit more fair and comparable.*⁶³

At present the premium paid by motorcyclists does not reflect the risks of riding. That is because the premium itself is not based on the risk of a given mode of road transport, nor is it based on the risk attributes of the person paying it (such as gender, age and experience).⁶⁴ That is the case for all road users that pay the premium, not just motorcyclists.

However, the strong view of Mr John Lambert, Director, John Lambert & Associates, was that motorcyclists should pay a premium that reflects their risk:

*I believe the TAC charge should be changed to what it always should have been. ... a charge that recovers the costs of trauma associated with a certain group of vehicles, and without any cross-subsidy. If you take the figures I have given, where the fatalities are 4.6 times greater for motorcycles and the serious injuries are 5.5 to 7 times more, then the TAC charge for motorbikes in the 125 cc to 500 cc range should be about \$1500 a year and for the larger bikes should be perhaps \$2500 per year.*⁶⁵

A proposal to increase the premium so that it reflects risk factors, other than those currently included, led to considered debate at public hearings. Calculating the premium in this manner led to a range of responses which the Committee grouped into four issues. The first issue was that sufficient motorcycle crash data is not currently available to allow risk assessments to be made on individuals or types of motorcycles. The second was that calculating risk would alter the very nature of the scheme, in which all road users are treated equally. The no-fault system would be undermined because fault would be a necessary component of establishing the risk profile of each motorcyclist. Such a change would therefore have to apply to all road users, not just motorcyclists, and would greatly complicate the calculation of the premium. The third issue was that it would create an inequity because one vulnerable road user group, motorcyclists, would be penalised whilst others who do not pay a premium would be exempt (bicyclists and pedestrians). The last issue was that pricing risk could lead to a premium that was too expensive for motorcyclists to pay. It would, in effect, become a barrier to entry for aspiring motorcyclists and a burden on existing motorcyclists. Such an outcome was felt to be contrary to the scheme which provides coverage irrespective of the mode of road transport used. The extent to which a risk based premium would reduce the affordability and accessibility of motorcycling was illustrated by Mr John Lambert when he was asked about the potential costs of a risk based premium:

*... if you were thinking of going on a motorbike and you knew that you were going to be paying a \$1500 TAC charge, you probably would not start because that would tell you it is dangerous, and that would be one advantage ...*⁶⁶

*The positives are that anyone who decides to consider buying a motorbike would have a message that this is a risky activity they are deciding to go into, and the levy is the cost of that risk. Then if you have a system whereby they can reduce the cost by reducing the risk — that is, if they are willing to wear protective clothing, the cost will be \$200 less; if they are willing to have a speed limited motorbike, it will be less, or whatever — you then have a situation where you can actually take action to reduce the risk. Reducing the risk would reduce the TAC charge, and in that way we would get real action.*⁶⁷

The Committee also sought comment from the TAC about the impact of a premium that reflected the risk of motorcycling. In response, Mr Alan Woodroffe, TAC, remarked:

*In terms of cross-subsidisation, if you are looking at pure cost recovery for a large motorcycle, the premium would probably have to more than double; but, as I said, that is looking at it in a very narrow framework of focus. There are also affordability issues. If the TAC covers people whether they pay or do not pay, which it essentially does, most of its benefits are payable even if they are unregistered.*⁶⁸

In terms of the potential effect of a doubling in the value of a motorcycle premiums Mr Woodroffe added:

I cannot say whether it would stop people from riding. Obviously there is a balance you need to strike to ensure that premiums remain affordable, because if they become too expensive then people will make choices either not to register or not to pay the TAC premium at all. Given the level of coverage we provide regardless of registration, you need to make sure that the premiums remain affordable.

... The TAC has never used premium per se as a vehicle to try to make people choose particular modes of transport. I do not think that is really part of our role. Theoretically, could you make premiums so high that people choose other modes of transport? I assume you could, but it is not something we have ever considered.⁶⁹

It could be argued that motorcyclists already pay a premium that reflects some of the risks. Currently, a general use motorcycle in a high risk zone with an engine capacity greater than 500cc pays \$539 dollars. By comparison, a goods vehicle over two tonnes which is not a prime mover or owned by a primary producer pays \$657.80.⁷⁰ A passenger vehicle pays \$449.90. These costs suggest that at least one category of motorcycle incurs an amount greater than that of a passenger vehicle currently.

Using price mechanisms to guide consumer choices is an accepted policy instrument for driving change. However, pricing motorcycle risk, if that were possible, would have undesirable effects. It would seriously reduce the affordability of riding. It could also lead to motorcyclists avoiding payment of the premium which would compound the problem, a risk recognised by the TAC.⁷¹

8.5.3.1 Findings

Including risk in the calculations of the premium, or for that matter trying to recover the total cost of motorcycle claims, is currently unnecessary. The policy objectives of the scheme run counter to such an approach. Moreover, such changes would affect all road users, not just motorcyclists. The Committee feels that such a change falls outside the scope of this Inquiry because it would fundamentally alter the no-fault aspect of the scheme. Further, the risk of calculating a premium to include risk or cost recovery would create an untenable cost in terms of the premium imposed on motorcyclists. Imposing such a cost, for example the doubling of the premium referred to by the TAC above, would act as a deterrent on motorcycle use and future usage levels.

The current lack of robust data on risk factors and cross-subsidisation would seriously undermine actuarial efforts to calculate risks. For these reasons, the Committee finds that the manner in which the current premium is set fulfils the broader objectives of the scheme and does not warrant changing. Increasing the value of motorcycle premiums should only occur if the scheme is financially threatened by the cost of motorcycle claims. Alternatively, a change to the nature of the no-fault scheme may necessitate a change to risk based premium calculations. In the absence of such a change, the Committee remains unconvinced of proposals made by submitters on this issue.

8.5.4 The sustainability of the scheme

In its submission, the TAC warned that whilst the scheme was ‘currently in good health’ growing motorcycle use and increasing levels of motorcycle injury could jeopardise its viability.⁷² It is important to note that motorcycle injuries which cost the TAC \$152 million dollars accounted for 20% of the total claims paid by the TAC.⁷³ In spite of these costs, the TAC was able to pay a dividend of \$100 million dollars to the Victorian government in the 2010-11 financial year.⁷⁴

These financial results reflect improvements in road safety, increased premium payments as the vehicle fleet has grown, and the ability of the TAC to manage the scheme. The Committee is impressed by these results. They appear to suggest a scheme that is working well, and fulfilling its policy objectives. Motorcyclists may well be the subject of cross-subsidisation and they are more vulnerable to injury in comparison to other road users. However, the premium currently levied on motorcyclists appears to be proportionate and appropriate.

An important reason for the Committee’s position is that a change to the TAC premium for motorcyclists in the way that some submitters proposed would undermine the policy objectives underpinning the scheme and could not be made without requiring broader policy changes for the entire scheme. That is, the premium itself reflects the policy basis for the scheme. The Committee was unable to justify a finding that the premium was inappropriate on the basis of the evidence provided. The TAC itself did not propose such a change, a position which helped guide the Committee’s investigations.

Endnotes: Chapter 8

¹ S. 1 *Transport Accident Act 1986* (Vic).

² Transport Accident Commission, *Annual Report 2005*, October 2005, Melbourne, 2005, p. 5.

³ Mr Alan Woodroffe, Senior Manager, Policy Legislation and Review, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 69.

⁴ PriceWaterhouseCoopers & Minter Ellison, *National competition policy review of Victoria's transport compensation legislation*, for the Department of Treasury and Finance, Victoria, 20 December 2000, p. 26.

⁵ PriceWaterhouseCoopers & Minter Ellison, *National competition policy review of Victoria's transport compensation legislation*, for the Department of Treasury and Finance, Victoria, 20 December 2000, p. 26.

⁶ Government of South Australia, *South Australia's Compulsory Third Party Insurance Scheme 2012 Green paper*, 2012, p. 3, http://www.treasury.sa.gov.au/CTPg.reenpaper/downloads/ctp_green_paper.pdf.

⁷ PriceWaterhouseCoopers & Minter Ellison, *National competition policy review of Victoria's transport compensation legislation*, for the Department of Treasury and Finance, Victoria, 20 December 2000, p. 36.

⁸ PriceWaterhouseCoopers & Minter Ellison, *National competition policy review of Victoria's transport compensation legislation*, for the Department of Treasury and Finance, Victoria, 20 December 2000, p. 36.

⁹ PriceWaterhouseCoopers & Minter Ellison, *National competition policy review of Victoria's transport compensation legislation*, for the Department of Treasury and Finance, Victoria, 20 December 2000, pp. 103–104.

¹⁰ Ms Samantha Cockfield, Manager, Road Safety, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 64.

¹¹ S. 27 *Transport Accident Act 1986* (Vic).

¹² Transport Accident Commission, *Annual Report 2011*, 29 August 2011, Melbourne, 2011, p. 14.

¹³ Transport Accident Commission, *Annual Report 2011*, 29 August 2011, Melbourne, 2011, pp. 16–19, 22; Mr John Voyage, Principal, Maurice Blackburn, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 240.

¹⁴ S. 109(1)–(3) *Transport Accident Act 1986* (Vic).

¹⁵ Transport Accident Commission, *Annual Report 2011*, 29 August 2011, Melbourne, 2011, p. 32.

¹⁶ S. 110 *Transport Accident Act 1986* (Vic).

¹⁷ *Transport Accident Charges Order (No. 1) 2012* (Vic).

¹⁸ Transport Accident Commission, *Annual Report 2011*, 29 August 2011, Melbourne, 2011, p. 32.

¹⁹ Transport Accident Commission, *Annual Report 2011*, 29 August 2011, Melbourne, 2011, p. 32.

²⁰ Mr John Voyage, Principal, Maurice Blackburn, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 240.

²¹ Transport Accident Commission, *Annual Report 2011*, 29 August 2011, Melbourne, 2011, p. 20.

²² Part 6 *Transport Accident Act 1986*.

²³ Transport Accident Commission, *Annual Report 2011*, 29 August 2011, Melbourne, 2011, p. 20.

²⁴ Mr Matthew Zammit, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 50.

²⁵ S. 41 *Transport Accident Act 1986* (Vic).

²⁶ S. 39 *Transport Accident Act 1986* (Vic).

²⁷ S. 39(3) *Transport Accident Act 1986* (Vic).

²⁸ s. 40, *Transport Accident Act 1986* (Vic).

²⁹ S. 41A *Transport Accident Act 1986* (Vic).

³⁰ S. 41B *Transport Accident Act 1986* (Vic).

³¹ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (i).

³² Note: The link between a ‘highway’ and eligibility for compensation has been subject to judicial interpretation (see *Vanbenthem v Transport Accident Commission* [2001] VCAT 2415 (21 December 2001). It arises because of the definition of a ‘transport accident’ in the *Transport Accident Act 1986*. A ‘transport accident’ is defined as an incident directly caused by the driving of a motor car or vehicle, among others (s. 3(1) *Transport Accident Act 1986*). The *Transport Accident Act 1986* in turn defines a motor vehicle by reference to the definition of a motor vehicle in section 3(1) of the *Road Safety Act 1986*. Under the *Road Safety Act 1986*, a motor vehicle (a motorcycle is a motor vehicle) is defined as one that is intended to be used on a highway. In turn, the *Road Safety Act 1986* defines a ‘highway’ as a road or road related area (s. 3(1) *Road Safety Act 1986*).

³³ Mr Alan Woodroffe, Senior Manager, Policy Legislation and Review, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 711.

³⁴ Mr John Voyage, Principal, Maurice Blackburn, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 234.

³⁵ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (i).

³⁶ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (i).

³⁷ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (i).

³⁸ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (i).

³⁹ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (i).

⁴⁰ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (i).

⁴¹ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (i).

⁴² Mr Alan Woodroffe, Senior Manager, Policy Legislation and Review, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 711.

⁴³ Ms Samantha Cockfield, Manager, Road Safety, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 65.

⁴⁴ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (i).

⁴⁵ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (i).

⁴⁶ Ms Melinda Congiu, Manager, Road User Behaviour, Royal Automobile Club of Victoria, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 261.

⁴⁷ Maurice Blackburn, *Submission to the Inquiry*, September 2011, p. 7.

⁴⁸ Ms Samantha Cockfield, Manager, Road Safety, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 65.

⁴⁹ Correspondence from the Hon. David Davis MP, Minister for Health, 13 January 2012.

⁵⁰ Mr John Voyage, Principal, Maurice Blackburn, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 236.

⁵¹ S. 11(a) *Transport Accident Act 1986* (Vic).

⁵² S. 11(b) *Transport Accident Act 1986* (Vic).

⁵³ PriceWaterhouseCoopers & Minter Ellison, *National competition policy review of Victoria’s transport compensation legislation*, for the Department of Treasury and Finance, Victoria, 20 December 2000, p. 5.

⁵⁴ RoadSafe Barwon, *Submission to the Inquiry*, September 2011, Term of Reference (i); Chmiel M & Lyster D, *Submission to the Inquiry*, July 2011, p. 6.

⁵⁵ Royal Automobile Club of Victoria, *Submission to the Inquiry*, September 2011, p. 6.

⁵⁶ Mr Alan Woodroffe, Senior Manager, Policy Legislation and Review, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 17 October 2011, pp. 69–70.

⁵⁷ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (i).

⁵⁸ Mr Stuart Strickland, Industry Consultant, Victorian Automobile Chamber of Commerce, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 226.

⁵⁹ Ms Heather Ellis, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 291.

⁶⁰ Mr Alan Woodroffe, Senior Manager, Policy Legislation and Review, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 711.

⁶¹ Mr Michael Czajka, Independent Riders Group, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 177.

⁶² VicRoads, *Submission to the Inquiry*, September 2011, p. 18.

⁶³ Ms Melinda Congiu, Manager, Road User Behaviour, Royal Automobile Club of Victoria, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 265.

⁶⁴ Mr Alan Woodroffe, Senior Manager, Policy Legislation and Review, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 17 October 2011, pp. 73–4.

⁶⁵ Mr John Lambert, Director, John Lambert & Associates, *Transcript of Evidence*, Geelong, 15 November 2011, p. 355.

⁶⁶ Mr John Lambert, Director, John Lambert & Associates, and Road Safety Consultant, *Transcript of Evidence*, Geelong, 15 November 2011, p. 363.

⁶⁷ Mr John Lambert, Director, John Lambert & Associates, and Road Safety Consultant, *Transcript of Evidence*, Geelong, 15 November 2011, p. 356.

⁶⁸ Mr Alan Woodroffe, Senior Manager, Policy Legislation and Review, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 711.

⁶⁹ Mr Alan Woodroffe, Senior Manager, Policy Legislation and Review, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 17 October 2011, pp. 73–74.

⁷⁰ *Transport Accident Charges Order (No. 1) 2012 (Vic)*.

⁷¹ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (i).

⁷² Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (i).

⁷³ Mr Alan Woodroffe, Senior Manager, Policy Legislation and Review, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 711.

⁷⁴ Transport Accident Commission, *Annual Report 2011*, 29 August 2011, Melbourne, p. 32.

Chapter 9 at a glance

Overview

This chapter deals with the motorcycle safety levy and its effectiveness at increasing motorcycle safety. The Committee evaluated motorcycle safety levy funded projects and analysed a number of issues, with a focus on the oversight mechanisms for the expenditure of motorcycle safety levy funds.

Key findings

Generally, projects funded by the motorcycle safety levy lack evaluation measures or performance indicators and evaluations tend to be limited in their scope because qualitative measures do not exist. The absence of qualitative reviews and evaluations meant the Committee was unable to assess whether motorcycle safety levy funded projects as a whole have improved motorcycle safety. The absence of robust measures for these evaluating projects is concerning. Of those projects evaluated, the infrastructure program appears to have been the most successful.

The Committee is circumspect about the use of trauma trends in measuring the effectiveness of the motorcycle safety levy given the significant data issues that were covered in Chapter 2.

Motorcycle safety levy funds have been used for enforcement projects and to pay for operational enforcement costs contrary to the *Strategic guide for expenditure of the motorcycle safety levy funding*.

The scarcity of off-road projects is troubling given the increase in off-road motorcycling and the lack of involvement, by road safety agencies, in off-road road safety.

Recommendations

Recommendation 24:

That the Victorian Auditor-General's Office undertake a performance audit of the motorcycle safety levy including those projects funded and implemented since 2002, and its governance arrangements.

Recommendation 25:

That the motorcycle safety levy be abolished.

Recommendation 26:

That the methodology underpinning the identification of blackspots be altered to take into account the smaller number of motorcycle crashes and crash data accuracy.

Recommendation 27:

That VicRoads and the Transport Accident Commission report on the expenditure of the motorcycle safety levy in their respective annual reports. The report should include itemised information on the number of projects funded, the cost of each project, its completion date and whether the project had been evaluated and any other relevant information with respect to the motorcycle safety levy.

Recommendation 28:

That VicRoads and the Transport Accident Commission make available and publish, through a dedicated area on their respective websites, or on another appropriate website, details about all motorcycle safety levy projects, project documentation, start and completion dates and the results of any evaluations.

Recommendation 29:

That reporting on, and evaluations of, projects funded by the motorcycle safety levy not be subject to confidentiality or release restrictions which may limit public access to information on projects. It is however, appropriate for such restrictions to apply in cases where commercial in confidence requirements are imposed as part of a contractual or tender process.

Recommendation 30:

That all motorcycle safety levy funded projects have clear performance indicators that can be measured at the start, during and at the completion of the project.

Recommendation 31:

That all motorcycle safety levy funded projects be evaluated within 12 months of being completed, and the results of such evaluations be published.

Recommendation 32:

That projects that do not adhere to the *Strategic guide for expenditure of the motorcycle safety levy funding* not receive funding, under any circumstances, but particularly those projects that propose to use motorcycle safety levy funding to pay for enforcement or Victoria Police operational costs.

Recommendation 33:

That VicRoads, the Transport Accident Commission and the Motorcycle Advisory Group focus on increasing the number of off-road projects funded by the motorcycle safety levy. These projects must involve the Department of Sustainability and the Environment.

Recommendation 34:

That the Motorcycle Advisory Group be given the same oversight function over the expenditure of motorcycle safety levy funds that had previously been exercised by the Victorian Motorcycle Advisory Council.

Recommendation 35:

That VicRoads and the Transport Accident Commission report on the effectiveness of the motorcycle safety levy in future annual reports, including the demonstrable effects of the levy in improving rider safety and the effectiveness of individual projects.

Recommendation 36:

That, unless otherwise abolished, the motorcycle safety levy be linked to a specific motorcycle trauma reduction figure which, once reached, would result in the levy being abolished.

CHAPTER 9: THE MOTORCYCLE SAFETY LEVY

9.1 *Introduction*

The motorcycle safety levy (the safety levy) has attracted both significant criticism and praise from motorcyclists. The safety levy was introduced in October 2002¹ and has been used to fund motorcycle specific projects aimed at enhancing motorcycle safety and reducing trauma.² According to VicRoads, the establishment of the safety levy was a response to increasing numbers of injured motorcyclists.³ Generally, road safety agencies have highlighted the importance of the safety levy in funding projects which previously would not have been undertaken.⁴

The focus of this chapter is on the effectiveness of the safety levy in the decade since it was implemented. The chapter also includes an analysis of several associated issues raised in submissions and public hearings. The structure of this chapter is broken down into four sections. The first provides a background of the safety levy, the role of the Victorian Motorcycle Advisory Council (VMAC) and the Motorcycle Advisory Group (MAG) and a brief analysis of the projects funded by the safety levy. The second section analyses issues raised by submitters and witnesses with oversight arrangements, criticisms of the way the safety levy funds have been used and the question of whether the safety levy is discriminatory. The third section focuses on answering the question of effectiveness and investigates specific safety levy funded projects which have been evaluated. In the last section the Committee responds to proposals made during the Inquiry to abolish, maintain or increase the safety levy.

9.2 *Background*

The safety levy is an Australian first. As far as the Committee is able to establish, the safety levy is the only charge directly imposed on a specific road user for road safety purposes. The safety levy is included as part of the TAC premium on new motorcycle registrations and registration renewals⁵ and is collected by the TAC. On that basis it is an additional cost for motorcyclists, a factor that may explain some criticisms of the safety levy. It should be noted that not all motorcyclists are required to pay the safety levy. There are exceptions for the following types of motorcycle registrations: special purpose vehicles, recreationally registered motorcycles, motorcycles used solely for primary production operations and veteran, vintage, or classic motorcycles which are used under a club permit.⁶

The initial value of the safety levy was \$50, and was payable on each registered motorcycle.⁷ Because the safety levy is subject to consumer price indexation, that amount has since increased to \$63.80 in 2012.⁸ The Committee understands the initial charging regime has been altered so that motorcyclists are only charged one safety levy, irrespective of the number of motorcycles they have registered.⁹ The revenue generated by the safety levy each year amounts to about \$5 million.¹⁰ According to VicRoads, the safety levy has generated a total of \$44.7 million in revenue from its implementation in 2002 until the end of 2011.¹¹

Projects funded by the safety are said to be ‘over and above’¹² other motorcycle safety projects funded and run by VicRoads, the TAC and Victoria Police.¹³ Safety levy funds need to be used on projects which are subject to the *Strategic guide for expenditure of the motorcycle safety levy funding* (the Guide). The Guide sets out the following objectives that need to be met for a project to be approved:

- ‘Significantly improve the safety of riders by addressing the key issues in rider safety;
- Where the expected benefits to riders exceed the cost of the program; and
- Would not otherwise be funded from other road safety budgets’.¹⁴

Projects which meet one or more of these requirements tend to be allocated in areas that focus on:

- Engineering in road design, technology and Intelligent Transport Systems (ITS);
- Rider and driver education;
- Enhanced information analysis for decision making and policy implementation; and
- Communications with riders.¹⁵

There are a number of stages that a proposed project must complete before the use of safety levy funds is approved. The first stage is the application of the Guide, which stresses the importance of spending safety levy funds in a way that maximises improvements in rider safety. The Guide sets out a number of considerations to be used in assessing prospective projects and provides instructions on how to estimate a project’s benefits to riders.¹⁶ The Guide was developed by the Monash University Accident Research Centre (MUARC) in consultation with road safety professionals and the VMAC.¹⁷ One of the important aspects of the Guide is that it restricts the use of funds for enforcement projects. Where enforcement projects are approved they should have a research, development and evaluation character.¹⁸

The second stage previously involved the VMAC which scrutinised proposed projects. The VMAC had an oversight function and the allocation of safety levy funds were subject to its approval or, alternatively, advice provided to the responsible minister.¹⁹ The VMAC was comprised of motorcycle and government representatives and was established in 1998 to:

... provide the Victorian Government with strategic advice on motorcycling matters through the Minister for Transport. The structure and wide ranging membership of the current Council seeks to ensure that advice provided to the Minister for Roads and Ports is contemporary, well informed and represents the views of the motorcycling community.²⁰

Among its functions, the VMAC had carriage of assessing, vetting or supporting (by recommendation) all projects which met the Guide’s requirements and which should have received safety levy funding. The VMAC’s advice and recommendations on projects to be funded by the safety levy were submitted to the responsible Minister.²¹

It is important to note that the project assessment function undertaken involved road safety agencies because of their membership of VMAC. Importantly, the role of VMAC in terms of safety levy funding has changed following its disbandment and replacement with the MAG. The role exercised by the VMAC in relation to safety levy funded projects has been extinguished.²² Presumably the consequences of this change are that proposed projects may be presented to the responsible Minister without the vetting that was previously applied by the VMAC, relying instead on the recommendation of VicRoads.

The last stage for a prospective safety levy funded project was ministerial approval. During the VMAC's existence, the Minister for Roads and Ports was responsible for deciding which projects would be funded.²³ Although the Minister received advice from the VMAC on the merits or otherwise of safety levy funded projects, he or she exercised final approval power over proposed projects.

9.3 *What has the safety levy been used for?*

Since its inception, the safety levy has been used to fund a total of 202 projects.²⁴ These projects have fallen into a number of areas including:

- Motorcycle technology;
- Training and licensing;
- Rider and driver education;
- Crash research and information; and
- The trialling of new programs.²⁵

A list of all safety levy funded projects is included in Appendix E. Generally safety levy funded projects have targeted education, research and development, and road improvements. In its submission, VicRoads provided the following statistics on the number of projects falling under each area and the total expenditure:

- 54 education or research and development projects costing \$15.7 million dollars; and
- 148 road improvement projects with a value of \$27 million dollars.²⁶

During the public hearings, Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, presented additional information on the types and numbers of projects funded by the safety levy:

To date that pattern has essentially been along the lines of: education programs, about 14 per cent of those allocations; engineering and on-road projects, about 73 per cent; enforcement at 5 per cent; improved information for decision making at 5 per cent; and communications relating to motorcycling and the levy at 2 per cent.²⁷

Whilst there have been many projects, clearly the majority, both in number and expenditure, have involved infrastructure upgrades. The two most prominent

infrastructure projects are the *Motorcycle Blackspot Program* and the *Making roads motorcycle friendly*.

9.3.1 The Motorcycle Blackspot Program

The *Motorcycle Blackspot Program* identified 148 blackspot locations (predominantly on high risk roads such as the Great Ocean road and at certain intersections) where multiple motorcycle crashes had occurred. A necessary precondition of any such project was that the location represented a specific and significant safety problem for riders.²⁸ Subject to engineering assessments and ministerial approval, locations were treated to reduce or mitigate the risks to motorcyclists posed by the blackspot.²⁹ The types of upgrades that VicRoads undertakes were outlined by Mr Wayne Moon, Senior Program Development Engineer:

*... improving the site distance and visibility by, for example, removing or limiting the growth of vegetation... skid-resistant surfacing and removal of rutting and uneven surfaces; good and consistent delineation – guide posts, signage et cetera; removal or relocation of roadside furniture such as signposts that form a hazard to a rider; use of appropriate warning signs; and suitable clearance angles and removal of obstructions. If it is relatively blind around a curve, we can typically remove that wedge of vegetation.*³⁰

An example of an infrastructure upgrade based on an analysis of motorcycle crashes was provided by VicRoads representatives in Traralgon:

*... there is a project that we scoped a couple of years back which is about to commence in February [2012]... Again, it is on a motorcycle black length ... Bunurong Road. It is between Inverloch and Cape Paterson, which [is] a very popular motorbike route. There is some beautiful scenery and some nice curves in the road. It generated I think five motorbike crashes within a five year period, which is what we would use as the window to look [at treatments].*³¹

9.3.2 Making roads motorcycle friendly

Although related to the blackspot program in the sense that both deal with infrastructure, the focus of *Making roads motorcycle friendly* was on ‘better communicating the needs of motorcyclists to road designers and those maintaining the network’.³² The project developed a seminar targeting local engineers, VicRoads staff and construction contractors to ‘increase the likelihood that the road environment was not designed or left in a manner that posed an increased risk to the safety of riders’.³³ By informing and educating those involved in road design, construction and maintenance the project aimed to raise awareness of the specific needs of motorcycle riders.³⁴ Other infrastructure projects include trials of cushioned wire rope safety barriers, treating routes that are used by high concentrations of motorcyclists and improving signs and signals. VicRoads representatives also stressed safety levy funds were not used to fund normal road maintenance, which was funded separately through an annual maintenance budget.³⁵

9.4 Criticisms on the effectiveness of the safety levy and levy funded projects

During the course of the Inquiry, the Committee was presented with a number of criticisms of the safety levy. The Committee’s attention was drawn to the lack of an overall qualitative evaluation of the safety levy program and of evaluations of many

individual projects. Due to the lack of evaluations, some submitters felt it was extremely difficult to assess the effectiveness of projects. Others complained that updates on safety levy projects provided with registration renewal documents did not indicate whether the projects were 'good value for money'.³⁶ One submitter, the Rural City of Wangaratta and the RoadSafe Alliance group, suggested there was a need for regulators administering safety levy funded projects to include before and after performance indicators to enable qualitative evaluations of the projects.³⁷ Such an indicator was necessary to ensure that the impacts of a project could be measured over time and definitively.

In addition to criticisms of the scarcity of qualitative measures for these projects, some submitters rejected the proposition that safety levy projects had been effective. The Victorian Motorcycle Council (VMC) claimed 'motorcyclist's report that the safety levy has provided no tangible evidence of a safety benefit and that this constituted a failure of the safety levy to meet the needs and expectations of its end users'.³⁸ Criticisms were also levelled at the infrastructure projects. The Victorian Automobile Chamber of Commerce (VACC) commented much of the safety levy funds had been spent on road rectifications which had arisen because planners and engineers had not considered motorcycles during the design phase.³⁹ Mr Mark Collins, the National Rider Training Manager, Honda Australia Rider Training, added to these comments:

*I question the value of rider levy money being spent on road fixes, and I question the benefits that have been reported to date on how effective those fixes have been. If you measure something six months after you have fixed it, of course there is a honeymoon period and you will have a great effect. Over a longer period of time we need to continue measuring those fixes as to whether they have been good. In that respect, if 80 per cent of that money raised has been spent on normal road fixes, I have a question mark there.*⁴⁰

Participants in the Inquiry also questioned the trauma reduction impact of safety levy funded projects. The claim that the safety levy in combination with road safety interventions can explain the reduction in motorcycle fatalities in Victoria during a period which saw fatalities in the rest of Australia rise,⁴¹ was strongly contested. Mr John Lambert, Director, John Lambert & Associates, suggested there was no indication that Victoria with its safety levy had reduced its fatality rate at a greater rate than the rest of Australia, and asserted that the opposite could be true with Victoria performing worse than the rest of Australia.⁴² He added that 'expenditure for motorcycle black spots only comprised about three percent of VicRoads' total safer Infrastructure and black spot expenditure (under all programs including Federal programs).'⁴³

In terms of infrastructure projects, some submitters questioned whether these should have been funded by the safety levy, with one example being engineering treatments on the Great Ocean road. The Ulysses Club, in both its submission and evidence, criticised the lack of non-safety levy spending on motorcycling stating that 'there had been very limited spending on motorcycle safety outside of the safety levy and spending that should have been carried out using normal VicRoads budgetary processes had instead been taken from the safety levy'.⁴⁴ The Committee sought information from

VicRoads on its non-safety levy funded motorcycle programs to quantity these remarks. According to VicRoads, from 2003 to 2011, it sponsored 22 projects worth \$3.7 million.⁴⁵ That is a smaller amount than the total safety levy fund which amounts to over \$44 million.⁴⁶ However, it is worth noting that the non-safety levy funded projects are in addition to other types of road safety and infrastructure spending which benefits all road users including motorcyclists.

In spite of the criticisms raised by the Ulysses Club, generally the results of the infrastructure projects were seen to be positive.⁴⁷ The Committee was informed that infrastructure projects funded by the safety levy have had a positive effect for all road users. According to the VMC, ‘analysis conducted by VMAC has showed that the safety of all road users has improved as a result of the motorcycle road and blackspot treatments funded by the safety levy’.⁴⁸ Although that sentiment was supported by representatives from TAC, Ms Samantha Cockfield, Manager, Road Safety, TAC, stressed the primary focus for safety levy funded projects were motorcyclists:

*My understanding is that in terms of benefits most of the projects would certainly have the most benefit to riders. A lot of projects we undertake have side benefits that accrue to other groups than the group they are specifically aimed at... but nearly every program we run has some side benefit. I do not think you could say that would be an unusual outcome for road safety programs, that more than one road user group actually benefits from a program.*⁴⁹

The Committee also heard that the safety levy would be better accepted if it was used for programs that benefit motorcyclists, such as better targeted and less adversarial safety awareness programs, subsidised training, targeted driver awareness campaigns, better data collection/analysis and improved rider representation’.⁵⁰ Ms Hollie Black, General Manager, Select Scootas, stressed the need for the safety levy to be spent solely on motorcycle initiatives:

*... [monies] raised from the levy need to be used solely for motorcycle safety initiatives. Having spent six years on VMAC and having a clear understanding regarding the lack of evidence-based research available, I believe that funds should immediately be directed towards more research.*⁵¹

In contrast, others commented that ‘the motorcycle safety levy has resulted in many positive outcomes and enabled projects which have supported powered two wheeler safety which may not have otherwise happened’.⁵²

9.4.1 Findings

There are clearly many issues with measuring the effectiveness of the safety levy. Many submitters and witnesses felt it improved rider safety because it funded projects which otherwise would not have happened. Others were opposed, citing serious reservations about the way effectiveness had been measured, if at all. The Committee accepts that intuitively, many of the projects appear to be beneficial and may have improved motorcycle safety. However, the majority of projects have not been evaluated. There are of course some projects for which performance measures based on measuring motorcycle safety improvement are difficult to design or unnecessary. For example, projects within the enhanced information for decision making and education areas such

as research studies, communications projects and updates to rider handbooks are focused on increasing the knowledge base or better communicating motorcycle safety. However, the Committee is concerned that some projects lack evaluation measures or performance indicators whilst others have not evaluated the existing environment at the start of the project, making it difficult to measure the effect of the project over time. In such cases, the result has been evaluations that tend to be limited in their scope because qualitative measures do not exist. The absence of qualitative reviews and evaluations meant the Committee was unable to assess whether safety levy funded projects as a whole have improved motorcycle safety. The Committee rejects the reasoning in some evaluations that any project which has a motorcycle safety component must therefore be improving safety. The absence of robust measures for evaluating projects is troubling considering the strong opposition of many motorcyclists towards the safety levy and its objective of arresting trauma rates and improving safety.

The Committee is circumspect about the use of trauma trends in measuring the effectiveness of the safety levy. Considering the significant data issues covered in Chapter 2, the Committee cannot agree with the view that changes to trauma trends are attributable to the safety levy, a position bolstered by the lack of evidence supporting such a link.

Safety levy funds have been used for enforcement projects and to pay for operational enforcement costs. That appears to run contrary to the Guide. The Committee believes that these clear and precise guidelines that guide how the safety levy is to be expended form an integral component of the framework underpinning its use. Deviating from these guidelines is problematic because it can be seen as undermining the allocation of safety levy funds and the probity with which they are treated.

The Committee is concerned with the lack of projects focusing off-road. There have only been three projects that could be defined as off-road. The Committee views the scarcity of such projects as troubling considering the increased usage of off-road motorcycling and the lack of involvement, by road safety agencies, in off-road safety.

9.5 Associated issues with the safety levy

During its investigations, the Committee was made aware of a number of associated issues with the use of the safety levy. Although not strictly linked to the effectiveness of the safety levy, these are important issues which the Committee felt justified investigation and inclusion in this chapter. These issues were: whether the safety levy was equitable; oversight arrangements; access to information about safety levy projects; and financial accountability.

9.5.1 Equity

A consistent theme throughout the Inquiry was that the safety levy was inequitable. In support of that proposition, participants cited the fact that no other road user group is required to pay a safety levy; that projects funded through the safety levy should have been funded through the ordinary expenditure of funds by road agencies; and that

motorcycle safety was the responsibility of all road users and therefore paying for its improvement should be shared equally by all who use the road.⁵³ The Committee heard that some in the motorcycle community view the safety levy as discriminatory and road treatment funding should be planned, and paid for, from general VicRoads funding.⁵⁴

The VMC added:

*Motorcyclists welcome road improvements that have made roads safer. However, these treatments should be funded in an equitable manner. Road treatments that benefit all road users equally should be funded by all road users equally.*⁵⁵

Others pointed to the fact that no other road user group has been forced to improve the infrastructure network through a safety levy.⁵⁶ The policy principle of targeting one group due to its trauma profile was felt by some to be an ‘antibike tax which was discriminatory’.⁵⁷ Ms Kat Gordon, Delegate to the MAG, VACC, provided a useful summary of the reasons why motorcyclists feel the safety levy is inequitable:

I think two-thirds of it [the levy] is used to improve road conditions, which benefits all road users. So we are looking at accident black spots. A lot of times from my personal experience they are caused by trucks carving up corners of roads and you end up with potholes. So it is not motorcyclists who are causing the damage to the roads, although we are crashing on those parts of the roads, but the levy that we are having to pay is used to partly fund repairing the roads, which benefits all road users.

*I think it is one of those things that is a bit of a thorn in the sides of motorcyclists. In 2007 Tasmania looked at imposing a safety levy on motorcyclists and actually chose to impose it on all road users to fund ongoing key initiatives in the Tasmanian road safety strategy. I guess part of it for motorcyclists is that we do not believe we should be discriminated against with the levy but also that our levy is not going towards things that are specifically motorcycle related.*⁵⁸

In contrast to these views, other submitters, whilst agreeing with the sentiment that the safety levy might be inequitable, took the position that the safety levy was useful. Motorcycling Australia made the point that ‘in spite of the ethics of a discriminatory tax that penalises the vulnerable for being vulnerable, the safety levy has achieved much’.⁵⁹

9.5.2 Oversight arrangements

As mentioned previously, safety levy expenditure is subject to three overlapping oversight arrangements. A focus for many submitters and witnesses were the changes made to one of those oversight mechanisms, the VMAC. The advisory role of VMAC in terms of the safety levy involved its members providing advice to the responsible Minister on proposed safety levy funded projects. In 2011, the VMAC was replaced with the MAG, a change that removed the oversight function of its members. The Committee sought comment from VicRoads on the impact of the changes to the VMAC and received the following response:

*In terms of how the terms of reference differ in other ways from the Motorcycle Advisory Group, the Victorian Motorcycle Advisory Council had a specific role on behalf of the minister to review and endorse programs and projects under the motorcycle levy. That role does not exist in the Motorcycle Advisory Group. The Minister still holds the approval power for expenditures under that levy, and we still have discussions with the motorcycle advisory group and will indeed keep them up to speed as to what is happening with the levy.*⁶⁰

Clearly removing the oversight and advisory function of VMAC and having that responsibility referred to VicRoads constitutes a significant change. However, Mr David Shelton explained these changes were necessary and appropriate:

*The key reason that that function of the group has been removed is to provide greater flexibility for overall program management and to address a few areas where we believe there is very sound reason for us to be doing some work and seeking the approval of the minister to use the motorcycle levy. We have actually had difficulty in getting that endorsement in a couple of areas in the past.*⁶¹

The Committee also heard that in many respects these changes had not altered some of the functions that the VMAC had previously carried out. Then Deputy Commissioner Kieran Walshe drew particular attention to stakeholder involvement through MAG in the use of levy funds:

*The motorcycle advisory group is a forum to exchange ideas between stakeholders, to advise on trends in motorcycling, to contribute to the development of strategies and action plans, and to provide advice to VicRoads regarding the motorcycle levy, expenditure and project and program guidelines. This is the reformation of an advisory group for motorcycles, made up of stakeholders. Again, it is to provide advice to VicRoads ...*⁶²

However, some submitters opposed the changes to the VMAC on the basis that support for the safety levy had been predicated on the VMAC having an oversight role. The Ulysses Club submission stated:

*The terms of reference for the new Motorcycle Advisory Group which replaces VMAC have been disappointing. The Group has gone from advising the Minister to advising VicRoads (as requested). The ability to review and provide advice on the levy spending has also vanished and the proportion of active riders on the group has actually diminished. The transparency and accountability for use of the levy funds has been seriously reduced by this move.*⁶³

The changes to VMAC and the limitations of the newly formed MAG were therefore felt to be contrary to the spirit in which the safety levy had been instituted. Some felt that having the safety levy overseen by VMAC, riders and industry was necessary⁶⁴ and others felt that the only way a discriminatory safety levy could stay was if it was administered by an independent, government appointed Committee⁶⁵ akin to VMAC.

9.5.2.1 Findings

In making its findings, the Committee drew on the evidence and material relating to the oversight arrangements that applied to the expenditure of safety levy funds. The use of both stakeholder and community representatives on the VMAC was a model that, in the Committee's view, achieved several outcomes. Firstly, it provided the responsible Minister with advice based on the best available information which also drew on the views, supposedly, of community and stakeholder representatives. Secondly, it provided the motorcycling community with a mechanism through which they could be meaningfully involved in the expenditure of the safety levy and its administration. Thirdly, the VMAC structure allowed for robust debate and assessments of proposed projects which would have aided decision making at both the VMAC and ministerial levels.

The Committee notes the disbandment of the VMAC and the MAG's constitution have altered the oversight arrangements put in place to oversee the expenditure of the safety levy. These changes have removed the administration of the safety levy and decision making in relation to it from the MAG. The advantages of more efficient and timely decision making, mooted by VicRoads representatives, cannot be quantified. What can be quantified is a number of projects using safety levy funds were approved by the VMAC.⁶⁶ On that basis, the Committee questions the changes which VicRoads felt were necessary to improve the approval process for safety levy funded projects. The Committee is concerned changes have made it easier for VicRoads to expend safety levy funds on projects without the same level of oversight that applied during the VMAC era. Further, the Committee believes these changes have meant the Minister is less likely to receive advice that is based on a wide range of views, including those from community and stakeholder representatives, on proposed projects seeking safety levy funding. Lastly, these changes have ended the collaborative approach to assessing safety levy funding for projects.

Considering the issues identified with off-road riding, particularly the lack of involvement by road safety agencies and the limited ability of the DSE to be involved in that area from a safety perspective, coupled with the small number of off-road projects, having the MAG include a member from DSE is important and would prove advantageous.

9.5.3 Access to and reporting on the safety levy

Concern about access to information on the expenditure, use and benefits of safety levy funded projects, as well as the results of these projects and their evaluations were a recurring theme expressed by Inquiry participants. Criticisms received by the Committee included: a lack of information about the benefits of the safety levy; the way funds were used⁶⁷ including a lack of transparency;⁶⁸ a 'lack of accountability for other motorcycle projects that the safety levy was supposed to add to, rather than replace',⁶⁹ and the imposition of confidentiality restrictions on safety levy funded research.⁷⁰

In support of the contention that motorcyclists were unaware of the use of safety levy funds due to a lack of publicity, Mr Rod Bennett, Chairperson, RoadSafe Barwon, stated:

... [motorcyclists] posed the question: we are paying this money and we do not mind paying the money, but what benefit are we getting from it? There does not seem to be any great promotion of any activities that are being done. Our understanding is that a lot of that money has been pooled and has not been spent yet. All of that money is coordinated through VMAC. They are the comments that are coming back to us. The promotion that we have seen locally is generally on project signs where it might be a typical state government project sign and will have at the bottom, 'Funded by your motorcycle levy', but we do not see many of those.⁷¹

The Committee understands information about safety levy funded projects is included in the documentation that is supplied to motorcyclists as part of annual registration renewal and online at the *Arrive Alive* website.⁷² The information available on that website whilst useful often does not include in-depth reports on safety levy funded projects, project documentation such as the methodology being used or the

assessments of VMAC or the involvement of MAG. Mr David Shelton, VicRoads, acknowledged:

*It is probably worth noting, though, that we have for some time, I think, struggled to meet the expectation of some motorcyclists in terms of the level of detail that is actually available on our website.*⁷³

Evaluation reports are scarce, and at least one report, the CARRS-Q *Evaluation of the VicRoads Community Policing and Education Project: Final Report*, in its draft form was not publicly released. A final version was released publicly, but lacked the recommendations of the draft report. The Committee sought comment from VicRoads about this anomaly and was told the recommendations were not pertinent to the purpose of the report (which was to evaluate) and reflected the views of CARRS-Q rather than VicRoads.⁷⁴

There are also issues with the reporting on the use of safety levy funds. The Committee was told that safety levy funded reports need to be made public⁷⁵ and that there was no independent committee of experts who audit the use of safety levy funds.⁷⁶ Another issue cited was neither the TAC nor VicRoads provided detailed information on the spending of safety levy funds, the aims, objectives and outcomes for each project in any publicly available documentation including in their respective annual reports.⁷⁷ The TAC, responding to the Committee's questions about the lack of financial reporting agreed that it was reasonable to expect more information and that they could work with VicRoads on 'making that information more transparent to the community'.⁷⁸ Although the Committee felt that this response was constructive, it was concerned by the TAC's explanation of the way safety levy funds are accounted for between the TAC, which collects the safety levy funds, and VicRoads, which spends them.⁷⁹ Ms Samantha Cockfield, TAC, explained the existing audit requirements:

... [the] TAC has a number of programs and funding arrangements with VicRoads, so I suppose we have fairly tight arrangements about the way we actually disperse funds to them. In some ways it is fairly simple. VicRoads sends us an assigned invoice to say they have undertaken a range of works associated with the motorcycle levy. They attach documentation as to what that work has been, and we pay an invoice.

*...in general[,] government and to some degree ourselves as agencies are trying to keep administration around these issues to a minimum. We are really talking about funding between two government agencies which both have internal and external audit processes placed on them. When we ask the director of finance — and that is not his title but for all intents and purposes I will call him the director of finance — to sign off to say that VicRoads has expended the money ... we believe him.*⁸⁰

Further, the Committee also sought a response from VicRoads on the way it accounts for safety levy funds in its annual reports. In its response, VicRoads pointed to several references in its annual report relating to safety levy funded infrastructure projects⁸¹ and individual safety levy projects.⁸² However, VicRoads acknowledged that the safety levy funds are 'not specifically identified' in the annual report's financial statements. Instead there are references in the annual report to the total amounts received by VicRoads in TAC grants and TAC funding for motorcycle safety initiatives⁸³, which include safety levy funds. Additionally, the Committee sought a response from VicRoads on why

there was no itemised reporting or information available on the safety levy in one central location:

*... there is no specific reason for that at all. There is information on the VicRoads website about which projects are being funded under the levy. As I said earlier, the level of detail there is I think something that we need to address to satisfy motorcyclists.*⁸⁴

9.5.3.1 Findings

The Committee agrees with the view that information on the safety levy, its expenditure and the outcomes of projects are not adequately reported by VicRoads and the TAC nor made available for public consumption in a way that meets the community's expectations. Further, the current arrangements do not, in the Committee's view, meet the expectations of government agencies expending public money. There is, therefore, a clear need for the TAC and VicRoads to appropriately report the expenditure of safety levy funds. Such reporting should include a level of financial rigour that meets the motorcycling community's expectations for transparency and responsiveness, a need accentuated by the imposition of a user based safety levy which other road users do not pay. The Committee's expectations for both VicRoads (as the government entity receiving safety levy funds following ministerial approval) and the TAC (as the agency providing those funds) are to have the annual reporting of safety levy expenditure clearly identified and distinct from other types of expenditure or funding. Such reporting would need not to be onerous in size or complex in its nature. However, it should identify the name of projects, their cost, completion dates and whether an evaluation had been undertaken.

Designing an appropriate reporting structure for safety levy funds in the VicRoads and TAC annual reports should begin with the application of 'better-practice reporting elements' identified by the Victorian Parliamentary Public Accounts and Estimates Committee (PAEC) report, *Review of the 2009-10 and 2010-11 Annual Reports*.⁸⁵ Further guidance is provided by the model template for grants and transfer payments found in the Department of Finance and Treasury's *Model report of operations for government Departments*.⁸⁶ This model template sets out best practice disclosure reporting for government departments which have provided financial assistance to companies and other organisations. The Committee believes the model template for grants and transfer payments could be applied in annual reports by the TAC to catalogue safety levy payments, and by VicRoads in receiving them. Such disclosure statements are already used by government departments to track grant and transfer payments, including payments between departments in annual reports.⁸⁷ The Committee sees no reason why such an approach should not be adopted by the TAC and VicRoads.

In addition to disclosure reporting, the Committee also believes both the TAC and VicRoads should report on the effectiveness of the safety levy as part of the annual reporting arrangements. During its investigations, the Committee identified a preferred model that could be used for the purposes of reporting on the safety levy's

effectiveness. The model, which was recommended in part three of the PAEC *Report on the 2010-11 Budget Estimates*, was recommended to address Sustainability Victoria's reporting of a landfill levy.⁸⁸ The PAEC recommended Sustainability Victoria report on the effects of the landfill levy in annual reports, including the demonstrable effects of the levy and the effectiveness of the programs funded by the levy. The Committee believes the landfill levy reporting model should be applied to the reporting of safety levy programs. It would require VicRoads and the TAC to report on the demonstrable effects of both individual projects and the safety levy as a whole. The Committee recognises that such reporting can only occur if the safety levy as a whole, and individual projects, are evaluated.

In addition to publishing safety levy details in annual reports, it is appropriate that the motorcycling public be able to access all available information on projects it has funded. The Committee deems the application of confidentiality or restricted release caveats to evaluations of safety levy funded projects to be unjustified and inappropriate. Concerns about comments of independent contractors, or the risk that such commentary can be attributed to road safety agencies, can be dealt with through the use of disclaimers. In any case, recommendations made as part of an evaluation report into a safety levy funded project are important because they are invariably linked to the findings of that evaluation. On that basis, the Committee would expect final reports of evaluation projects to be publicly available. Failure to do so could create distrust between motorcyclists and road safety agencies and diminish informed public discussion on motorcycle safety matters.

9.6 Have individual safety levy funded projects been effective?

The Committee received information from a number of submitters, including road safety agencies about the importance, effectiveness and value of safety levy funded projects. VicRoads presented a number of reasons supporting its conclusion that the safety levy had been effective and successful. According to VicRoads, 'since the implementation of the safety levy motorcycle fatalities have decreased in Victoria whilst increasing across the rest of Australia'.⁸⁹ VicRoads cites research as the basis for its conclusion that trauma has been reduced by safety levy projects. Moreover, VicRoads stated the motorcycle safety levy had also enabled projects to be completed which would not have otherwise been funded. Collectively, motorcycle safety levy funded projects are said to have allowed key motorcycle issues to be dealt with and enhanced existing projects undertaken by VicRoads, the TAC and Victoria Police.⁹⁰ The Committee's attention was also drawn to VicRoads' statement that the funding of research projects in particular was important due to the role they play in providing or disproving countermeasures or interventions.⁹¹

In terms of evaluations, the VicRoads submission referenced positive findings of the Victorian Auditor-General's Office (VAGO) and several evaluation reports into specific safety levy funded projects. These evaluations, it is claimed, have shown that 'safety levy projects are beneficial, making a positive contribution to the safety of Victoria's motorcyclists'.⁹² However, the Committee understands that the VAGO audits focused on

individual projects and did not assess the policy objectives and outcomes of the safety levy funded projects as a whole.

9.6.1 *The effectiveness of infrastructure projects*

Infrastructure projects funded by the safety levy were the most popular example of successful programs provided by submitters and witnesses. This emphasis was not unusual considering the high visibility of such projects and their cost. Ms Melinda Congiu, Manager, Road User Behaviour, RACV commented:

*One of the most important initiatives funded by the levy has been the road improvements at over 119 black spot locations. We strongly support the motorcycle black spot program and believe it has improved rider safety by reducing the number of motorcycle casualties at those locations.*⁹³

In addition to the evidence of witnesses and submitters, the Committee sought qualitative measures on the effectiveness of these infrastructure projects. The RACV cited noteworthy reductions in trauma as a result of the motorcycle blackspot program. These included a 24% reduction in injuries at all sites treated, a 40% reduction at the 54 blacklength sites and the prevention of more than 24 injury crashes per year in Victoria.⁹⁴ In spite of the trauma reductions attributed to the infrastructure projects, there is some criticism of the methodology used to identify infrastructure that has seen a high number of crashes. The Committee identified two issues with the current methodology. Firstly, there are significant limitations in the accuracy of road crash data, making identification of crash prone areas within the road network difficult to identify. Secondly, the threshold for the number of crashes needed to justify a road or area being designated a blackspot appears to be inconsistent, with some projects being approved based on three crashes over five years and others being approved after 10 crashes in the same period.⁹⁵ Based on the available evidence it is unclear whether these crashes all had the same injury severity. Accordingly, it is not possible to definitively make a link between road trauma reductions and safety levy funded infrastructure projects using this methodology.

9.6.1.1 *Findings*

Infrastructure projects have arguably been the most beneficial, visible and expensive of all safety levy funded projects. Although the Committee notes trauma statistics are subject to a range of limitations, the reductions following infrastructure improvements are significant and encouraging. Performance indicators were included in these projects which have subsequently allowed a methodical review of the effectiveness of these projects. However, the Committee feels it is necessary to revise the blackspot methodology to take into account limitations with the accuracy of crash statistics. Having a clear, sophisticated methodology that takes into account factors such as injury severity, numbers of crashes and linking these to an appropriate infrastructure upgrade would be highly beneficial because it would improve identification of problem areas within the road network. The Committee, based on the evidence received, was unable to confirm that the existing methodology takes these factors into account. A review of the current methodology, with a view to improving it, is therefore necessary.

9.6.2 The effectiveness of Operation Yellow Flag, Black Flag *

The most prominent of the non-infrastructure projects was the VicRoads Community Policing and Education Project. This project was a joint initiative involving Victoria Police, who named the project *Operation Yellow Flag, Black Flag*⁹⁶, that ran from 2009 to 2010⁹⁷ and concluded in June 2011.⁹⁸ The project aimed to improve motorcycle safety through the ‘integrated use of police-led education and traffic law enforcement’.⁹⁹ The project was based on a 2004 United Kingdom (UK) program, *Red Card/Yellow Card* which was designed and run by the Thames Valley Police.¹⁰⁰ The Victorian equivalent borrowed many aspects of the UK program but not the use of the UK diversionary program¹⁰¹, which gave riders the option of undertaking rider training (which they would pay for) in lieu of an enforcement fine.¹⁰²

The education component of the *Operation Yellow Flag, Black Flag* involved police discussing motorcycle awareness with both riders and drivers during roadside stops and handing out a brochure titled *Sharing the Road – Tips for Drivers*.¹⁰³ In 2010, over 20,000 riders and drivers were intercepted and given these education pamphlets.¹⁰⁴ With motorcyclists, the use of protective clothing and defensive riding was emphasised. The enforcement component focused on deterring high-risk behaviours for both drivers and riders. Those engaging in behaviour that put motorcyclists at risk were intercepted and given a copy of *Sharing the Road*. Any offences detected by police were dealt with on the roadside. Enforcement activities were undertaken in a visible, well publicised and repetitive way to reduce identified high risk behaviours such as excessive speed, failing to give way and riding while impaired.¹⁰⁵

In addition to the education and enforcement components, the project also included five statewide police operations over two years and, beginning in 2010, a subsidised training scheme.¹⁰⁶ The training scheme involved an eight hour training session, administered by the Driver Education Centre of Australia. The training could be accessed by riders who were invited by police officer to attend on the basis that doing so would be beneficial. Some 150 places were funded.¹⁰⁷ The program also involved a number of reporting and communication components including a motorcycle awareness program for 100 non-rider officers of Victoria Police’s Traffic Management Unit (TMU).¹⁰⁸

Generally, safety levy funded projects have either been evaluated by road safety agencies (for example the infrastructure projects discussed earlier) or not at all. In contrast, the *Community Policing and Education Project* was subjected to an external evaluation by the Centre for Automotive Safety Research (CASR), University of Adelaide. The evaluation assessed the project’s effectiveness based on a number of measures including process evaluations, analysis of crash data, on-road speed surveys, online survey of motorcyclists and roadside traffic observations.¹⁰⁹

* Note: *Operation Yellow Flag, Black Flag* is also known as the VicRoads Community Policing and Education Project. In this section the two will be used interchangeably and denote the same levy funded program.

The results of the CASR evaluation (in terms of improving motorcycle safety rather than assessments of the way the program was run) were:¹¹⁰

- A reduction in the number of traffic offences in 2008-09 and 2009-10 compared to the two previous years, with the majority in the speeding offences category;
- Increases in offences for hand-held mobiles, as a result of police trying to reduce driver distraction;
- A decline in the rate of hand held mobile phone use in regional Victoria by drivers possibly as a result of the deterrent effect of police enforcement;
- No evidence of a sustained reduction in motorcycle speeds on regional roads, but no increase in speeds either, which was in contrast to cars;
- Positive findings in roadside observations with an increase in the proportion of riders in metropolitan Melbourne wearing full body protection following a targeted operation. The level increased from 17% (before the operation) to 24% (just after the operation) to 38% (three weeks after the operation). The most marked improvement was among riders of sports bikes;
- Conspicuousness of riders remained a problem, with no improvement in the proportion of motorcyclists judged to be conspicuous (on the basis of retro-reflective or brightly coloured jackets or helmets); and
- There were very few perception changes for riders according to online survey responses. The only marked difference was in the number of riders perceiving an increase in enforcement fines and in the risk of detection for committing traffic offences.

In addition to these findings, the CASR evaluation also included a number of findings based on the responses of police to the awareness training given to TMU members to enhance general police motorcycle enforcement.¹¹¹ The evaluation concluded, based on police responses to the awareness training, there was a need for a greater police motorcycle presence and that the additional program funding for police overtime was essential to the success of the program's police operations.¹¹² Senior police officers commented that positive relationships had been formed with VicRoads and communications between these two organisations were good.¹¹³ However, police respondents indicated that educational interventions might have been overused.¹¹⁴

The Committee, as part of its investigations into the effectiveness of this program, was interested in the success or otherwise of the subsidised training scheme introduced in 2010. Unfortunately the CASR evaluation did not include a review of the use of the subsidised training scheme. Considering the importance of the rider training component in the UK program on which the *Operation Yellow Flag, Black Flag* was based, the Committee sought information from Victoria Police on how well that aspect of the program had gone.

Superintendent Neville Taylor, Road Policing Operations and Investigation Division explained:

*There was very little take-up on the vouchers [given to participants to access training] ... The demographic was mainly around young female riders, which was not consistent with the demographic of those involved in the motorcycle trauma. There were some learnings out of that about its effectiveness.*¹¹⁵

On that basis, it is reasonable to conclude that few of the 150 subsidised rider training courses were taken up, and those that did were not motorcyclists who police would have targeted for training. It is unclear why subsidised training was not more widely accessed. Based on the available evidence it is reasonable to conclude this component of the program was not effective.

9.6.2.1 Findings

The Committee views the findings of CASR as supporting a conclusion that this program was unsuccessful in improving rider safety. There were no reductions in speed levels and other findings such as improvements in rider perceptions and declining traffic offences attributed to the program are contestable because they are based on weak causal links between the effect (reduced traffic violations) and the cause (the program), rather than evidence. For example, if traffic violations had increased after the program ended that would support the hypothesis that the reduction had been due to the program. Alternatively, if offences had continued decreasing the program may not have been the cause of the initial trend. In the absence of evidence it is not possible to confidently link these results with the program.

The Committee also identified a number of issues of concern with this program. The first was that the program involved the expenditure of safety levy funds for enforcement efforts which ran contrary to the Guide, which recommends that funding for operational costs be met from other sources.¹¹⁶ The education component of the project should be viewed as a secondary aspect of the program with the primary emphasis being policing operations aimed at reducing traffic violations. In the Committee's view, a program primarily focused on enforcement was not the intended aim of the expenditure of the safety levy.

The second issue identified by the Committee is that CASR evaluated the project by reference to driver distraction outcomes. The evaluation credited enforcement activities that reduced mobile phone usage among drivers with improved motorcycle safety outcomes. The link made by the evaluators appears to have been that an increase in traffic fines for drivers using mobile phones resulted in less driver distraction and therefore an increased awareness of motorcyclists. That in turn would be beneficial for motorcyclists by reducing driver distraction. However, police enforcement activities merely resulted in drivers being fined for using mobile phones. There was no evidence that drivers were more aware of motorcyclists because they were not using their mobile phones, nor was there any evidence that crash risks or actual crashes were reduced.

Clearly, it is important to reduce driver distraction, but doing so did not translate into an improvement in safety for motorcyclists that could be, or was, quantified.

The third issue was that unlike the UK *Yellow Card/Red Card* program, the Victorian *Operation Yellow Flag, Black Flag* did not link the advanced rider training courses to enforcement activities. The UK program involved an innovative approach to motorcycle enforcement which saw police offer motorcyclists who had broken traffic rules the option of undertaking advanced rider training at their own cost or receiving the traffic fine and possibly penalty points (the UK equivalent of demerit points) if they went to court.¹¹⁷ The aim of this approach was to get riders into advanced rider training to increase their skills and, ultimately, reduce crash exposure and trauma. The Victorian program did not follow this approach, relying instead on a subsidised program of training made available through vouchers given to riders. The Committee sought explanations for the omission of the diversionary approach. Superintendent Neville Taylor explained:

I cannot say a lot in relation to the development of it ... I certainly know that with the development of this program in Victoria the aim of it was very much around the interaction of enforcement with education intervention. The training program initially was something that came through during the program.

*As I said, it was a partnership with training providers in that as a part of the education intervention it was coupled with a reward scheme about providing vouchers for training. As I said earlier, the interesting part of the evaluation of that was that whilst that was completed from the handout, there was very little take-up on it from the riders themselves.*¹¹⁸

The Committee was unable to further clarify why the UK approach was not applied to the Victorian program. However, the Committee asserts that the failure of the subsidised training program was due in part to its inclusion halfway through *Operation Yellow Flag, Black Flag* being run and the fact that it was not linked to enforcement. The Victorian program lacked the critical component of the UK program in giving riders the option of fines or training paid for at their own expense.

In the Committee's view, the failure to follow that approach may explain the low number of riders who took up the vouchers for advanced rider training. It also highlights again the fact that this program could be viewed as primarily an enforcement operation that included a minor education component. Further, there were very few improvements in motorcycle safety and it is particularly disappointing that the subsidised training places were not taken up, nor was an analysis of that failure undertaken. Accordingly, this project does not appear to have been effective in advancing the aims of the safety levy.

9.6.3 *Unevaluated projects*

The safety levy has, apart from infrastructure projects, also funded a range of other measures aimed at improving the safety of motorcyclists. These include the development of a new motorcycle knowledge test, research into protective clothing, the development of an on-road coaching, and an assisted rides, program, and a range of education and research projects.¹¹⁹ Although these projects do not appear to have been

subjected to a qualitative or formal evaluation, they clearly have an important, and in the Committee's view, potentially beneficial impact on motorcycle safety. In particular, those projects focused on research into motorcycle safety related areas could be viewed as having expanded the research and knowledge base of regulators, which is crucial in developing evidence based policy to improve rider safety.

9.6.3.1 Findings

There are a number of unevaluated projects. Some of these projects will be evaluated once they are completed. The Committee believes that whilst projects which are research or education based were not evaluated, they nevertheless can be viewed as having had a positive impact on motorcycle safety by increasing the knowledge base. However, the extent to which this has been achieved is not possible to quantify without proper evaluation, which they should have been subject to.

9.6.4 Off-road projects

The Committee notes that very few projects have focused on the off-road motorcycling area. During public hearings, VicRoads representatives confirmed to the Committee that of the 202 safety levy funded projects, only three focused on off-road motorcycling.¹²⁰

9.6.4.1 Findings

Off-road projects funded through the safety levy are not only scarce in number, but those that have been completed do not appear to have been subjected to evaluation. Considering the increased use of motorcycles off-road and the involvement of motorcyclists in off-road crashes, the limited number of off-road projects is surprising. Although no explanation was provided about the lack of such projects, it may well be explained by the Committee's findings on the reticence of VicRoads, and the performance of other road safety agencies, to be involved in off-road motorcycle safety.

9.7 Proposals

The Committee received three broad proposals with respect to the safety levy. These were its abolition,¹²¹ increasing the amount levied on motorcyclists,¹²² and retaining it. Allowing a wider range of activities, such as accredited providers accessing funds to improve their training methods¹²³ and paying for motorcycle facilities where riders could train were also proposed.¹²⁴ It was suggested that support among the motorcycling community would be greater if the safety levy was better focused towards riders. The VMC submission took that approach recommending that 'rider centred safety levy programs could achieve an improvement in the relationship and dialogue between riders and the government'.¹²⁵

9.8 Findings

During the Inquiry the motorcycle safety levy was presented as being both a maligned component of the regulatory environment and a necessary and useful addition to motorcycle safety. The Committee feels the underlying premise of the safety levy, that is, promoting and advancing motorcycle safety through targeted projects, funded through a safety levy, and reducing motorcycle trauma, remains important. It does not agree that the safety levy should be increased at the present time, partially based on

the general reduction in the rate of motorcycle injuries in the last decade and on the lack of any evidence justifying such an increase. However, the Committee feels the safety levy can only be justified if it is subject to the oversight arrangements which originally applied to its use and if the projects it funds are evaluated appropriately. Nevertheless, the safety levy remains a discriminatory approach to road safety focusing on one road user group.

In terms of extending the safety levy to other areas, such as funding training, improving courses and funding motorcycle facilities where riders can practise and train, the Committee cautiously accepts that there may be some merit in these proposals, but any such changes need to be subjected to a process of evaluation. The process of determining whether these proposals should be funded through safety levy funds needs to be assessed by reference to the Guide and the ministerial approval process.

Retaining the safety levy is conditional on the following: firstly, the approval of projects needs to involve a body that has an advisory capacity and is able to assess projects from a range of perspectives including those of the motorcycling community. Secondly, projects that are paid for through safety levy funds need to accord, strictly, with the Guide and include clear, measurable performance indicators. Thirdly, safety levy funds need to be accurately traced, with formal, regularly published reporting of projects, including their outcomes. Lastly, if the motorcycle injury rate continues to decline, the Committee believes the continued payment of the safety levy would be unnecessary and inappropriate.

The Committee accepts that deciding whether the objectives of the safety levy have been met, in terms of the level of trauma reduction, is fraught with difficulty. The lack of accurate trauma data increases the difficulty of making a definitive determination. Considering the importance of such decisions, the Committee feels the safety levy should be tied to a clearly identified trauma reduction figure and once that reduction has been accomplished, be abolished. The Committee also feels it is necessary to undertake a comprehensive review of the safety levy, including an evaluation of both individual projects and the way it operates more generally.

Although there appears to have been significant and sustained use of safety levy funds over the last decade or so, the Committee was informed ‘the initiatives funded by the safety levy have ceased and discussions between VicRoads and road safety partners on the future uses for the safety levy and oversight are occurring’.¹²⁶ This provides an opportunity for the issues identified by the Committee to be addressed.

Recommendations: Chapter 9

Recommendation 24:

That the Victorian Auditor-General's Office undertake a performance audit of the motorcycle safety levy including those projects funded and implemented since 2002, and its governance arrangements.

Recommendation 25:

That the motorcycle safety levy be abolished.

Recommendation 26:

That the methodology underpinning the identification of blackspots be altered to take into account the smaller number of motorcycle crashes and crash data accuracy.

Recommendation 27:

That VicRoads and the Transport Accident Commission report on the expenditure of the motorcycle safety levy in their respective annual reports. The report should include itemised information on the number of projects funded, the cost of each project, its completion date and whether the project had been evaluated and any other relevant information with respect to the motorcycle safety levy.

Recommendation 28:

That VicRoads and the Transport Accident Commission make available and publish, through a dedicated area on their respective websites, or on another appropriate website, details about all motorcycle safety levy projects, project documentation, start and completion dates and the results of any evaluations.

Recommendation 29:

That reporting on, and evaluations of, projects funded by the motorcycle safety levy not be subject to confidentiality or release restrictions which may limit public access to information on projects. It is however, appropriate for such restrictions to apply in cases where commercial in confidence requirements are imposed as part of a contractual or tender process.

Recommendation 30:

That all motorcycle safety levy funded projects have clear performance indicators that can be measured at the start, during and at the completion of the project.

Recommendation 31:

That all motorcycle safety levy funded projects be evaluated within 12 months of being completed, and the results of such evaluations be published.

Recommendation 32:

That projects that do not adhere to the *Strategic guide for expenditure of the motorcycle safety levy funding* not receive funding, under any circumstances, but particularly those projects that propose to use motorcycle safety levy funding to pay for enforcement or Victoria Police operational costs.

Recommendation 33:

That VicRoads, the Transport Accident Commission and the Motorcycle Advisory Group focus on increasing the number of off-road projects funded by the motorcycle safety levy. These projects must involve the Department of Sustainability and the Environment.

Recommendation 34:

That the Motorcycle Advisory Group be given the same oversight function over the expenditure of motorcycle safety levy funds that had previously been exercised by the Victorian Motorcycle Advisory Council.

Recommendation 35:

That VicRoads and the Transport Accident Commission report on the effectiveness of the motorcycle safety levy in future annual reports, including the demonstrable effects of the levy in improving rider safety and the effectiveness of individual projects.

Recommendation 36:

That, unless otherwise abolished, the motorcycle safety levy be linked to a specific motorcycle trauma reduction figure which, once reached, would result in the levy being abolished.

Endnotes: Chapter 9

¹ Victorian Motorcycle Advisory Council, *Annual Report 2008-2009*, 2009, p. 3; Government of Victoria, *Victoria's Road Safety Strategy: The motorcycle safety levy*, viewed June 2012, http://www.roadsafety.vic.gov.au/initiatives/safer_road_users/the_motorcycle_safety/the_motorcycle_safety_levy.html.

² Government of Victoria, *Victoria's Road Safety Strategy: The motorcycle safety levy*, viewed June 2012, http://www.roadsafety.vic.gov.au/initiatives/safer_road_users/the_motorcycle_safety/the_motorcycle_safety_levy.html.

³ VicRoads, *Submission to the Inquiry*, September 2011, p. 42.

⁴ VicRoads, *Submission to the Inquiry*, September 2011, p. 47.

⁵ VicRoads, *Submission to the Inquiry*, September 2011, p. 42.

⁶ Government of Victoria, *Victoria's Road Safety Strategy: The motorcycle safety levy*, viewed June 2012, http://www.roadsafety.vic.gov.au/initiatives/safer_road_users/the_motorcycle_safety/the_motorcycle_safety_levy.html.

⁷ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 667.

⁸ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 667.

⁹ Ms Kat Gordon, Delegate to VicRoads Motorcycle Advisory Group, Victorian Automobile Chamber of Commerce, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 226; Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 667.

¹⁰ Mr David Shelton, Executive Director, Road Safety and Network Access, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 667.

¹¹ Mr David Shelton, Executive Director, Road Safety and Network Access, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 667.

¹² Ulysses Club, *Submission to the Inquiry*, September 2011, p. 9.

¹³ Government of Victoria, *Victoria's Road Safety Strategy: The motorcycle safety levy*, viewed June 2012, http://www.roadsafety.vic.gov.au/initiatives/safer_road_users/the_motorcycle_safety/the_motorcycle_safety_levy.html.

¹⁴ Monash University Accident Research Centre, *Strategic guide for expenditure of the motorcycle safety levy funding*, May 2004, p. 2.

¹⁵ Victorian Motorcycle Advisory Council, *Annual Report 2008-2009*, 2009, p. 11.

¹⁶ Monash University Accident Research Centre, *Strategic guide for expenditure of the motorcycle safety levy funding*, May 2004, pp. 5, 7.

¹⁷ Monash University Accident Research Centre, *Strategic guide for expenditure of the motorcycle safety levy funding*, May 2004, p. 2.

¹⁸ Monash University Accident Research Centre, *Strategic guide for expenditure of the motorcycle safety levy funding*, May 2004, p. 5.

¹⁹ Victorian Motorcycle Advisory Council, *Annual Report: 2008-2009*, 2009, p. 11.

²⁰ Victorian Motorcycle Advisory Council, *Annual Report 2008-2009*, 2009, p. 4.

²¹ Victorian Motorcycle Advisory Council, *Annual Report 2008-2009*, 2009, p. 11.

²² Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, pp. 3-4.

²³ Victorian Motorcycle Advisory Council, *Annual Report 2008-2009*, 2009, p. 4.

²⁴ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 667.

²⁵ Government of Victoria, *Victoria's Road Safety Strategy: The motorcycle safety levy*, viewed June 2012, http://www.roadsafety.vic.gov.au/initiatives/safer_road_users/the_motorcycle_safety/the_motorcycle_safety_levy.html.

²⁶ VicRoads, *Submission to the Inquiry*, September 2011, p. 43.

²⁷ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 667.

²⁸ VicRoads, *Victoria's road safety strategy – FAQs*, March 2012, http://www.roadsafety.vic.gov.au/initiatives/safer_road_users/the_motorcycle_safety/faqs.html.

²⁹ VicRoads, *Victoria's Road Safety Strategy – Motorcycle blackspot projects*, viewed June 2012, http://www.roadsafety.vic.gov.au/initiatives/safer_road_users/the_motorcycle_safety/motorcycle_blackspot_projects.html.

³⁰ Mr Wayne Moon, Senior Program Development Engineer, VicRoads, *Transcript of Evidence*, Traralgon, 13 December 2011, p. 560.

³¹ Mr Wayne Moon, Senior Program Development Engineer, VicRoads, *Transcript of Evidence*, Traralgon, 13 December 2011, pp. 563–564.

³² VicRoads, *Victoria's Road Safety Strategy – Engineering technology projects*, viewed June 2012, http://www.roadsafety.vic.gov.au/initiatives/safer_road_users/the_motorcycle_safety/engineering_technology_projects.html.

³³ Clarkson E & Beer K, *Making roads motorcycle friendly*, <http://casr.adelaide.edu.au/rsr/RSR2010/ClarksonE.pdf>

³⁴ Clarkson E & Beer K, *Making roads motorcycle friendly*, <http://casr.adelaide.edu.au/rsr/RSR2010/ClarksonE.pdf>.

³⁵ Mr Pas Monacella, Team Leader, Programs and Project Development, VicRoads, *Transcript of Evidence*, Traralgon, 13 December 2011, p. 569.

³⁶ Pask A, *Submission to the Inquiry*, June 2011, Term of Reference (j).

³⁷ Rural City of Wangaratta and the RoadSafe Alliance Group, *Submission to the Inquiry*, September 2011, Term of Reference (j).

³⁸ Victorian Motorcycle Council, *Submission to the Inquiry*, September 2011, p. 16.

³⁹ Victorian Automobile Chamber of Commerce, *Submission to the Inquiry*, September 2011, p. 35.

⁴⁰ Mr Mark Collins, National Rider Training Manager, Honda Australia Rider Training, Honda Australia Motorcycles and Power Equipment Pty Ltd, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 118.

⁴¹ Fotheringham N, *The motorcycle safety levy: Providing an integrated program to improve motorcyclist safety*, 2007, p. 1, <http://casr.adelaide.edu.au/rsr/RSR2007/FotheringhamN.pdf>

⁴² John Lambert & Associates, *Submission to the Inquiry*, July 2011, pp. 9–10.

⁴³ John Lambert & Associates, *Submission to the Inquiry*, July 2011, p. 10.

⁴⁴ Ulysses Club, *Submission to the Inquiry*, September 2011, p. 9; Mr Tony Ellis, Ulysses Club, *Transcript of Evidence*, Melbourne, 19 October 2011, pp. 298–299.

⁴⁵ Correspondence from Mr James Holgate, Director, Road User Safety, VicRoads, 22 May 2012.

⁴⁶ Mr David Shelton, Executive Director, Road Safety and Network Access, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 667.

⁴⁷ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 29.

⁴⁸ Victorian Motorcycle Council, *Submission to the Inquiry*, September 2011, p. 15.

⁴⁹ Ms Samantha Cockfield, Manager, Road Safety, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 71.

⁵⁰ Victorian Motorcycle Council, *Submission to the Inquiry*, September 2011, p. 16.

⁵¹ Ms Hollie Black, General Manager, Select Scootas Pty Ltd, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 137.

⁵² Select Scootas, *Submission to the Inquiry*, September 2011.

⁵³ Victorian Motorcycle Council, *Submission to the Inquiry*, September 2011, p. 16; Hartwell Motorcycle Club, *Submission to the Inquiry*, July 2011, Term of Reference (i); Tame J, *Submission to the Inquiry*, February 2012, pp. 12-13.

⁵⁴ Independent Riders' Group, *Submission to the Inquiry*, August 2011, p. 10; Victorian Automobile Chamber of Commerce, *Submission to the Inquiry*, September 2011, p. 35.

⁵⁵ Victorian Motorcycle Council, *Submission to the Inquiry*, September 2011, p. 16.

⁵⁶ Honda Australia Motorcycle and Power Equipment, *Submission to the Inquiry*, September 2011, Term of Reference (j).

⁵⁷ Independent Riders' Group, *Submission to the Inquiry*, August 2011, p. 10; Victorian Automobile Chamber of Commerce, *Submission to the Inquiry*, September 2011, p. 35.

⁵⁸ Ms Kat Gordon, Delegate to VicRoads Motorcycle Advisory Group, Victorian Automobile Chamber of Commerce, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 226.

⁵⁹ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 29.

⁶⁰ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, pp. 3-4.

⁶¹ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 4.

⁶² Deputy Commissioner Kieran Walshe, Regional and Road Policing, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 22.

⁶³ Ulysses Club, *Submission to the Inquiry*, September 2011, p. 10.

⁶⁴ Select Scootas, *Submission to the Inquiry*, September 2011, Term of Reference (j).

⁶⁵ Ms Hollie Black, General Manager, Select Scootas Pty Ltd, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 137.

⁶⁶ See Appendix E: Motorcycle Safety Levy Funded Projects, p. 429.

⁶⁷ Independent Riders' Group, *Submission to the Inquiry*, August 2011, p. 10; Australian Motorcycle Trail Riders Association, *Submission to the Inquiry*, July 2011, Term of Reference (j).

⁶⁸ Oxford Systematics, *Submission to the inquiry*, September 2011, Term of Reference (j).

⁶⁹ Oxford Systematics, *Submission to the inquiry*, September 2011, Term of Reference (j).

⁷⁰ Mr Damien Codognotto OAM, Independent Riders' Group, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 176: Mr Tony Ellis, Ulysses Club, *Transcript of Evidence*, 19 October 2011, p. 302: Professor Marcus Wigan, Principal, Oxford Systematics, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 126.

⁷¹ Mr Rod Bennett, Chairperson, RoadSafe Barwon, *Transcript of Evidence*, Geelong, 15 November 2011, p. 349.

⁷² VicRoads, *Victoria's Road Safety Strategy – Approved Projects*, November 2012, <http://www.roadsafety.vic.gov.au/levyprojects>.

⁷³ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 667.

⁷⁴ Correspondence from Mr James Holgate, Director, Road User Safety, VicRoads, 5 September 2012.

⁷⁵ Select Scootas, *Submission to the Inquiry*, September 2011.

⁷⁶ Oxford Systematics, *Submission to the inquiry*, September 2011, Term of Reference (j).

⁷⁷ Mr James Holgate, Director, Road User Safety, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 668.

⁷⁸ Mr Alan Woodroffe, Senior Manager, Policy, Service and Review, and Ms Samantha Cockfield, Acting Senior Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 698.

⁷⁹ Mr Alan Woodroffe, Senior Manager, Policy, Service and Review, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 697.

⁸⁰ Ms Samantha Cockfield, Acting Senior Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 697.

⁸¹ Correspondence from James Holgate, Director, Road User Safety, VicRoads, 22 May 2012, referring to the VicRoads, *Annual Report 2010-11, 2011*, pp. 16, 17.

⁸² Correspondence from James Holgate, Director, Road User Safety, VicRoads, 22 May 2012, referring to the VicRoads, *Annual Report 2010-11, 2011*, pp. 17, 19.

⁸³ Correspondence from James Holgate, Director, Road User Safety, VicRoads, 22 May 2012, referring to the VicRoads, *Annual Report 2010-11, 2011*, pp. 64–65, 69.

⁸⁴ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 668.

⁸⁵ Parliament of Victoria Public Accounts and Estimates Committee, *Review of the 2009-10 and 2010-11 Annual Reports*, Parliament of Victoria, Melbourne, February 2012, pp. 13–21.

⁸⁶ Department of Treasury and Finance, *2011-12 Model Report for Victorian Government Departments Model financial statements and report of operations guidance for reporting period ending 30 June 2012*, March 2012, [http://www.dtf.vic.gov.au/CA25713E0002EF43/WebObj/2011-12ModelReport/\\$File/2011-12ModelReport.pdf](http://www.dtf.vic.gov.au/CA25713E0002EF43/WebObj/2011-12ModelReport/$File/2011-12ModelReport.pdf).

⁸⁷ Department of Sustainability and Environment, *Annual Report 2011*, Melbourne, 31 August 2011, p. 180.

⁸⁸ Parliament of Victoria Public Accounts and Estimates Committee, *Report on the 2010-11 Budget Estimates Part Three*, Parliament of Victoria, Melbourne, September 2010, p. 94.

⁸⁹ VicRoads, *Submission to the Inquiry*, September 2011, p. 42.

⁹⁰ VicRoads, *Submission to the Inquiry*, September 2011, p. 47.

⁹¹ VicRoads, *Submission to the Inquiry*, September 2011, p. 47.

⁹² VicRoads, *Submission to the Inquiry*, September 2011, p. 47.

⁹³ Ms Melinda Congiu, Manager, Road User Behaviour, Royal Automobile Club of Victoria, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 261.

⁹⁴ Government of Victoria, *Victoria's Road Safety and Transport Strategic Action Plan for Powered Two Wheelers 2009-2013*, Melbourne, 2009, p. 3.

⁹⁵ VicRoads, *Presentation to the Committee*, Traralgon, 13 December 2011.

⁹⁶ Baldock MRJ, Kloeden CN, Lydon M, Ponte G, Raftery SJ & Grigo JAL, *Evaluation of the VicRoads Community Policing and Education Project: Final Report*, Centre for Automotive Safety Research, December 2011, p. 1.

⁹⁷ Superintendent Neville Taylor, Road Policing Operations and Investigation Division, Victoria Police, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 722.

⁹⁸ Victoria Police, *Submission to the Inquiry*, September 2011, p. 13.

⁹⁹ Baldock MRJ, Kloeden CN, Lydon M, Ponte G, Raftery SJ & Grigo JAL, *Evaluation of the VicRoads Community Policing and Education Project: Final Report*, Centre for Automotive Safety Research, December 2011, p. 1.

¹⁰⁰ RideTech, *DriveTech (UK) and Thames Valley Police join forces to improve motorbike safety*, Media Release, 10 March 2004, http://www.drivetech.co.uk/pdfs/pressrelease_040310.pdf.

¹⁰¹ Duck N & Cavallo A, *The Repeat Speeders Trial: Victorian Trial of Intelligent Speed Assist Technology & the Speed Behaviour Program*, 2011, <http://casr.adelaide.edu.au/rsr/RSR2011/1APaper%20094%20Duck.pdf>.

- ¹⁰² ROSA Project, *European Handbook on Good Practices in Safety for Motorcyclists*, March 2011, http://ec.europa.eu/transport/road_safety/pdf/projects/rosa_handbook_training_en.pdf; RideTech, *DriveTech (UK) and Thames Valley Police join forces to improve motorbike safety*, Media Release, 10 March 2004, http://www.drivetechn.co.uk/pdfs/pressrelease_040310.pdf.
- ¹⁰³ Baldock MRJ, Kloeden CN, Lydon M, Ponte G, Raftery SJ & Grigo JAL, *Evaluation of the VicRoads Community Policing and Education Project: Final Report*, Centre for Automotive Safety Research, December 2011, p. 83.
- ¹⁰⁴ Victoria Police, *Submission to the Inquiry*, September 2011, p. 13.
- ¹⁰⁵ Baldock MRJ, Kloeden CN, Lydon M, Ponte G, Raftery SJ & Grigo JAL, *Evaluation of the VicRoads Community Policing and Education Project: Final Report*, Centre for Automotive Safety Research, December 2011, p. 1.
- ¹⁰⁶ Baldock MRJ, Kloeden CN, Lydon M, Ponte G, Raftery SJ & Grigo JAL, *Evaluation of the VicRoads Community Policing and Education Project: Final Report*, Centre for Automotive Safety Research, December 2011, pp. 1–2.
- ¹⁰⁷ Baldock MRJ, Kloeden CN, Lydon M, Ponte G, Raftery SJ & Grigo JAL, *Evaluation of the VicRoads Community Policing and Education Project: Final Report*, Centre for Automotive Safety Research, December 2011, p. 2.
- ¹⁰⁸ Baldock MRJ, Kloeden CN, Lydon M, Ponte G, Raftery SJ & Grigo JAL, *Evaluation of the VicRoads Community Policing and Education Project: Final Report*, Centre for Automotive Safety Research, December 2011, p. 2.
- ¹⁰⁹ Baldock MRJ, Kloeden CN, Lydon M, Ponte G, Raftery SJ & Grigo JAL, *Evaluation of the VicRoads Community Policing and Education Project: Final Report*, Centre for Automotive Safety Research, December 2011, p. iii.
- ¹¹⁰ Baldock MRJ, Kloeden CN, Lydon M, Ponte G, Raftery SJ & Grigo JAL, *Evaluation of the VicRoads Community Policing and Education Project: Final Report*, Centre for Automotive Safety Research, December 2011, p. iii.
- ¹¹¹ Baldock MRJ, Kloeden CN, Lydon M, Ponte G, Raftery SJ & Grigo JAL, *Evaluation of the VicRoads Community Policing and Education Project: Final Report*, Centre for Automotive Safety Research, December 2011, pp. 9–10.
- ¹¹² Baldock MRJ, Kloeden CN, Lydon M, Ponte G, Raftery SJ & Grigo JAL, *Evaluation of the VicRoads Community Policing and Education Project: Final Report*, Centre for Automotive Safety Research, December 2011, p. 10.
- ¹¹³ Baldock MRJ, Kloeden CN, Lydon M, Ponte G, Raftery SJ & Grigo JAL, *Evaluation of the VicRoads Community Policing and Education Project: Final Report*, Centre for Automotive Safety Research, December 2011, p. 10.
- ¹¹⁴ Baldock MRJ, Kloeden CN, Lydon M, Ponte G, Raftery SJ & Grigo JAL, *Evaluation of the VicRoads Community Policing and Education Project: Final Report*, Centre for Automotive Safety Research, December 2011, p. 10.
- ¹¹⁵ Superintendent Neville Taylor, Road Policing Operations and Investigation Division, Victoria Police, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 722.
- ¹¹⁶ Monash University Accident Research Centre, *Strategic guide for expenditure of the motorcycle safety levy funding*, May 2004, p. 5.
- ¹¹⁷ ROSA Project, *European Handbook on Good Practices in Safety for Motorcyclists*, March 2011, http://ec.europa.eu/transport/road_safety/pdf/projects/rosa_handbook_training_en.pdf; RideTech, *DriveTech (UK) and Thames Valley Police join forces to improve motorbike safety*, Media Release, 10 March 2004, http://www.drivetechn.co.uk/pdfs/pressrelease_040310.pdf.
- ¹¹⁸ Superintendent Neville Taylor, Road Policing Operations and Investigation Division, Victoria Police, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 723.
- ¹¹⁹ VicRoads, *Victoria's Road Safety Strategy – Approved Projects*, November 2012, <http://www.roadsafety.vic.gov.au/levyprojects>.
- ¹²⁰ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 669.
- ¹²¹ Millar R, *Submission to the Inquiry*, July 2011, Term of Reference (j); Ellis H, *Submission to the Inquiry*, July 2011, Term of Reference (j).
- ¹²² John Lambert & Associates, *Submission to the Inquiry*, July 2011, covering email.
- ¹²³ Motorcycle Motion, *Submission to the Inquiry*, July 2011, pp. 10–11.

¹²⁴ Mr Stuart Strickland, Industry Consultant, Victorian Automobile Chamber of Commerce, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 227.

¹²⁵ Victorian Motorcycle Council, *Submission to the Inquiry*, September 2011, p. 16.

¹²⁶ Victoria Police, *Submission to the Inquiry*, September 2011, p. 13.

PART 4

Chapter 10: Working with non-government stakeholders (TOR k)

Chapter 11: Countermeasures (TOR g)

Chapter 12: New initiatives (TOR h)

Chapter 10 at a glance

Overview

This chapter deals with the way road safety agencies (particularly the Transport Accident Commission (TAC) and VicRoads) engage with motorcycle stakeholders such as the Motorcycle Advisory Group and the RoadSafe groups. As a result of the Committee's investigation, possible improvements to the way road safety agencies and motorcycle stakeholders engage are suggested. The chapter also examines the extent to which the TAC consults with motorcycle stakeholders in the development of road safety advertising.

Key findings

The current approach used by road safety agencies to engage with motorcycle stakeholders is not meeting that community's expectations. However, there are multiple obstacles to better engagement as well as an onus on motorcycle stakeholders to be better organised amongst themselves and to engage more appropriately with existing structures to advance their issues.

In terms of individual issues, the TAC has not maximised its engagement with motorcycle stakeholders when developing and promoting its road safety advertising, and the function and role of RoadSafe groups needs to be reviewed. The Motorcycle Advisory Group could fulfil an important stakeholder function if its membership was expanded to include representatives, particularly from the off-road, accredited provider and moped/scooter segments of the motorcycling community. Applying the Swedish OLA (*Objective facts, List of solutions and Addressed action plans*) consultation process in Victoria would improve the advancement of motorcycle safety and the participation of motorcycle stakeholders.

Recommendations

Recommendation 37:

That VicRoads initiate a consultation process, based on the Swedish OLA (*Objective facts, List of solutions, Addressed action plans*) method, for motorcycle safety that involves all road safety agencies, motorcycle clubs, stakeholders and groups, and members of the broader community with a view to developing new safety initiatives. The process is to be facilitated by a third party, non-government organisation and is to be based on the process used by the Royal Automobile Club of Western Australia.

Recommendation 38:

That road safety agencies formally review their existing stakeholder arrangements and identify new stakeholder groups for inclusion in their stakeholder engagement plans, policies and approaches. As part of this review, the Transport Accident Commission and VicRoads in particular, should invite motorcycle stakeholders, clubs and groups to indicate their interest in being included in all forms of stakeholder engagement and then take steps to ensure they are included.

Recommendation 39:

That the Transport Accident Commission and VicRoads formulate a stakeholder management plan for engaging with the motorcycling community, and include the role, scope and breadth of stakeholders to be consulted for each type of engagement method.

Recommendation 40:

That VicRoads review the RoadSafe program with a view to identifying improvements for engaging, where appropriate, with all sectors of the Powered Two-Wheeler community.

Recommendation 41:

That the Transport Accident Commission consult broadly with motorcycle stakeholders, including those on the Motorcycle Action Group at the inception, design and production phase of motorcycle safety advertising and safety messages.

Recommendation 42:

That the Motorcycle Advisory Group be required to report regularly to the Minister for Roads, through its Secretariat. Agendas, and minutes of all meetings will be provided promptly to the Minister's office (as well as to the Motorcycle Advisory Group members) and a comprehensive report on the Motorcycle Advisory Group's activities and any outcomes should be submitted to the Minister on a yearly basis.

Recommendation 43:

That the Motorcycle Advisory Group be expanded to include additional representatives from the scooter and moped, off-road and accredited provider segments of the motorcycling community and the length and regularity of meetings be increased to allow for constructive engagement.

Recommendation 44:

That motorcycle advocacy groups in Victoria continue to work towards greater co-operation and co-ordination amongst themselves, particularly when engaging with road safety agencies.

CHAPTER 10: WORKING WITH NON-GOVERNMENT STAKEHOLDERS

10.1 *Introduction*

For government agencies, the aim of working with non-government stakeholders is ultimately to improve outcomes. That can be achieved through a number of ways including engagement, consultation and collaboration. A recurring theme throughout the Inquiry has been the issue of consultation and community engagement. For many submitters and witnesses, consultation and engagement were paramount. Much of the criticism levelled at VicRoads and the Transport Accident Commission (TAC) focused on the way motorcyclists, motorcycle representative groups and industry are consulted with or given the opportunity to engage with road safety agencies.

On the basis of evidence provided to the Committee, there appear to be differing views about the relationship between the motorcycle community and specific groups and individuals within it and road safety agencies. Some witnesses and submitters viewed these relationships as being constructive whilst others viewed them as being antagonistic, closed and defensive. These negative views, particularly those of the motorcycle advocacy groups, were formed from their experiences of the safety agencies' approach to involvement with stakeholders. Despite the level of mistrust between some government and non-government stakeholders, almost all submitters and witnesses stressed the need for better engagement, consultation and collaboration.

The focus of this chapter is on the way road safety agencies and government can better engage, consult and collaborate with people and organisations that have an interest in motorcycle safety.^{*} The chapter is comprised of three sections. The first provides an overview describing the types of stakeholders involved in motorcycle safety in Victoria, the types of mechanisms used to engage with non-government stakeholders and the benefits that can be realised by working with these stakeholders. The second section investigates the existing arrangements and relationships road safety agencies currently have with stakeholders, and criticisms and related issues raised during the Inquiry. Among these were the TAC's road safety advertising, the creation and role of the Victorian Motorcycle Advisory Group[†] (MAG) and the general approach of road safety agencies to stakeholder engagement. This section ends with a discussion of the obstacles faced by both stakeholders and road safety agencies in trying to improve stakeholder arrangements and relationships. The last section focuses on a new approach for improving the way road safety agencies work with non-government stakeholders.

^{*} **Note:** This chapter does not focus on formal consultation processes used by road safety agencies when developing policy, such as those utilised as part of the Regulatory Impact Statement process.

[†] **Note:** The Committee's focus when dealing with the MAG and its predecessor, the Victorian Motorcycle Advisory Council (VMAC), are limited to its function as a stakeholder group.

10.2 Why work with non-government stakeholders?

Victorian road safety agencies currently employ a range of methods and mechanisms to work with non-government motorcycle stakeholders. These agencies engage with such stakeholders for a range of reasons including policy development, implementing initiatives and influencing the motorcycle community to further improve safety.

10.2.1 Who are non-government stakeholders?

There are a number of motorcycle stakeholders with whom road safety agencies have contact. These include motorcycle advocacy groups, motorcycle manufacturers and retailers, peak industry groups, motorcycle clubs, training providers, road safety advocates, community road safety groups and individuals with an interest in motorcycle safety.

10.2.2 What does working with non-government stakeholders mean?

Stakeholder consultation and collaboration are a challenging and dynamic area for road safety agencies and for government more generally. The phrase ‘working with non-government stakeholders’ refers to a number of interactions that government agencies can have with stakeholders. There are variations in the terminology and definitions used to describe such interactions, for example they may be referred to as stakeholder management, public consultation¹ or collaboration and consultation.² Generally, interactions move across a scale from informal consultation (ad hoc or discretionary contact between stakeholders and government), being informed or notified (where government agencies provide objective information about an issue or proposal), to consultation (which provides an opportunity to provide feedback), to involvement (where government agencies work with the public to ensure concerns and aspiration are well understood) and then collaboration (shared partnerships and decision making).³ There is an additional category of interaction, empowerment, which places final decision making in the hands of the public, through mechanisms such as ballots,⁴ but that is not used in the motorcycle safety area, or any other area of road safety.

Each of these interactions has its own mechanisms, which serve a particular purpose. In the motorcycle safety area, agencies such as the TAC and VicRoads utilise most of the interactions described earlier, but have different methods for engagement. A non-exhaustive list of the types of interactions that road safety agencies have with motorcycle stakeholders, and the methods used, includes:

- Informal consultation – incidental contact;
- Informing – fact sheets and websites (for example the TAC’s Spokes website);
- Consultation – focus groups, surveys, public comment and public meetings;
- Involvement – workshops and deliberate polling (for example TAC and VicRoads Anti-lock Braking demonstration day⁵); and
- Collaboration – advisory groups, committees, partnerships, consensus building and participating in decision making (for example MAG and Local Community Road Safety Groups (RoadSafe groups)).

10.2.3 What are the benefits of working with non-government stakeholders?

Working with non-government stakeholders can be challenging and difficult but it has important benefits. These benefits vary depending on the method being used, but are said to ‘enable better planned and informed policies, projects, programs and services that are mutually beneficial’.⁶ According to the Organisation for Economic Co-operation and Development (OECD), consultation increases the level of transparency which can help improve the quality of regulation and can enhance voluntary compliance with rules and policies, because it allows the public to prepare for changes and through their involvement, creates a sense of legitimacy and shared ownership that gives affected parties the motivation to comply.⁷ The Victorian Department of Education’s *Community Sector Collaboration and Consultation framework*, lists a number of additional benefits arising from better collaboration and consultation, among which are the following:

- Higher quality and better informed decision making;
- Improved policy and program development and implementation;
- Greater participation and community ownership of initiatives;
- Better engagement with community interests;
- An opportunity for the community to contribute to policy and program development; and
- Improved access to decision making processes.⁸

The methods used by government agencies have an effect on the outcomes of stakeholder interactions. For example, advisory groups or committees are likely to have a greater impact than informal consultation⁹ because they allow a greater level of participation for stakeholders.

The benefits of working with non-government stakeholders also apply to the motorcycle safety area. Engaging with motorcycle groups, advocates and clubs through advisory committees and focus groups can facilitate access to segments of the motorcycling community that are difficult for road safety agencies to otherwise access. Other benefits include reducing mistrust and disengagement, drawing on motorcyclists’ expertise in designing, moderating, improving and implementing new safety initiatives and communicating with riders. Benefits are also said to extend to those undertaking research, a point conveyed by Professor Mark Stevenson, Director, Monash University Accident Research Centre (MUARC):

... now there is a movement in the much broader research community that recognises it is very, very important; if you want to get policy and practice changes to occur, then you need to have a broad constituency supporting what you are looking at and actually conveying the evidence. I think having consumers on board means they get to understand the process that we are going through, and that it is not researchers cooking the books or creating an outcome that is adverse to what they perceive is the case. It is actually bringing them on the journey with you, rather than being adversarial and indicating, ‘This is what the results are, and you need to adhere to it’. I think that is clearly the movement now across all areas.¹⁰

Arguably the most important benefit of interactions between road safety agencies and motorcycle stakeholders is the potential to reduce trauma. Engagement with stakeholders may lead to greater acceptance of safety measures which may then influence rider behaviours so that risk is reduced and compliance increased because stakeholders feel a shared responsibility for road safety.

10.3 Existing approaches

Working with non-government stakeholders to advance government policies and initiatives has been well-entrenched in Australia,¹¹ and by association Victoria. Engagement with the motorcycle community has been ongoing since at least 1998, with the creation of the Victorian Motorcycle Advisory Council (VMAC), a stakeholder group with which road safety agencies have had significant interactions. It should be noted that VicRoads and the TAC both have a range of standing groups and use other forums including working groups, committees and focus groups as well as social media (such as Facebook and Twitter) to interact with motorcycle stakeholders.

This section is comprised of two parts. The first outlines existing approaches to stakeholder engagement by Victoria Police, the TAC and VicRoads. In the second, specific issues raised during the Inquiry are analysed. These issues fall into three categories: the general approach of VicRoads and the TAC to stakeholders, obstacles to better stakeholder engagement and lastly, specific examples of stakeholder engagement by the TAC (in relation to road safety advertising) and VicRoads (the VMAC/MAG and community road safe groups) identified as being problematic.

10.3.1 How are road safety agencies currently interacting with stakeholders?

10.3.1.1 Victoria Police

Although Victoria Police is an enforcement agency, it does engage with motorcycle stakeholders. Engagement takes place through informal consultation and the provision of information, usually undertaken in an ad hoc way with a focus on local areas and issues or as part of stand-alone police operations. However, police officers also engage with motorcycle stakeholders through their membership on RoadSafe groups and the MAG. The Committee was provided with a number of examples of the way Victoria Police interacts with motorcyclists and motorcycle stakeholders. In Wangaratta, Senior Sergeant Bill Gore provided an example of engaging with motorcyclists as part of an operation in the alpine area around Mount Hotham:

... we also spent time stopping and talking to these guys. Part of the operation is that if we see 20 or so motorcyclists having a cup of coffee, we will pull up and have a cup of coffee with them, explain our crash data and explain our problems and get ideas from them.¹²

In Traralgon, Senior Sergeant David Watson, spoke of interactions with motorcycle retailers as part of promoting safer riding:

We do engage with the motorbike shops. When they [motorcyclists] go into purchase a motorbike or whatever is for their motorbike we try to leave as much information there for them also ... in regard to the initiative that is being promoted.¹³

While these examples highlight local consultation with stakeholders, at the Wodonga public hearing the Committee heard about a local motorcycle group which had included motorcycle stakeholders from both New South Wales and Victoria:

*We have the Snowy motorcycle group that I was a part of ... We met up in Tumbarumba. This has not existed for a couple of years now. That was a group consisting of Victoria Police, New South Wales police, community members and shires. We all got together in relation to discussing what we were having go wrong in the high country. We brought the Victorian and New South Wales issues together and worked out that we have a lot of commonality there.... We developed brochures and education, which we tried to get into some of the retail outlets and cafes up in the high country where these people ride. As a result of that, I brought a PDF back to RoadSafe North East, and we developed a brochure through them. There were similar things, safe riding tips, clothing, maps and basically just food for thought for motorcyclists, but unfortunately in just a pamphlet we have not been able to tell them everything they need to know.*¹⁴

The Committee notes that the enforcement role of Victoria Police has an impact on the types of interactions it can have with motorcycle stakeholders. That role mean some of methods used by the TAC and VicRoads to interact with stakeholders, such as standing groups and partnerships to design or inform policies or interventions, are inappropriate for use by Victoria Police.

10.3.1.2 The Transport Accident Commission (TAC)

The TAC undertakes a wide range of stakeholder interactions, from simply informing through published material to formal consultation through reference groups which allow stakeholders to be involved in the formative stages of new projects and interventions. The importance of engaging with motorcycle stakeholders was emphasised by the TAC in its submission and by its representatives at public hearings. Ms Samantha Cockfield, Manager, Road Safety, TAC stated:

*The TAC has long held the belief that road safety is not owned by government agencies and has tried with all its programs, not just motorcycle safety, to engage with relevant stakeholders. In relation to motorcycling specifically, we have been talking to retailers and some industry groups. We have held demonstration days, particularly around ABS braking, where we have invited a whole range of stakeholders, both government and non-government. Whenever we are holding reference groups for specific products like our Ride Smart going online, we will have industry reps or relevant representatives from, in this case, rider training groups.*¹⁵

Speaking about the demonstrations day held in conjunction with VicRoads, Ms Cockfield explained:

It was around ABS [anti-lock braking systems]. We worked with Bosch Australia, which is a component maker particularly of ABS braking systems... They [Bosch] have very good demonstration, information and animation in terms of video et cetera. We engaged with them, and I believe for that day they engaged with a number of motorcycle importers.

*Other examples include our stand down at the MotoGP, and we have engaged with BMW at times because they have ABS on a range of bikes, and with Honda. We try to talk either through the FCAI [Federal Chamber of Automotive Industries] or directly to importers about things like ABS on bikes. ... When people from any manufacturer have come to us and asked to speak to us, we have been happy to hear from them and talk to them.*¹⁶

In addition to demonstration days and reference groups, the TAC undertakes programs and utilises groups and public consultation forums on a number of issues within the motorcycle safety area. These include the motorcycle retailers program (providing retailers with counter stands, posters and brochures aimed at assisting riders to make informed decisions about the purchase of protective gear), protective clothing seminars (aimed at educating retailers about what constitutes good protective clothing), safety seminars run with the Australasian College of Road Safety (covering topics such as Anti-lock Braking Systems and crash barriers) and the creation of a reference group for the protective clothing pilot testing program.¹⁷ The TAC provided the Committee with additional information on the testing program and seminars during the Melbourne public hearings:

*Our protective clothing testing program reference group has stakeholders outside government on it. We have recently held protective clothing seminars which were open to all involved in the motorcycle safety area. A lot of non-government stakeholders did turn up to them.*¹⁸

The TAC also uses social media and an online presence through its *Spokes* website to engage with motorcycle stakeholders. The use of Facebook enables the TAC to interact with a range of motorcyclists. An example of the potential for engagement through interactions on social media was the release in 2012 of the motorcycle safety advertisement, ‘Reconstruction’.¹⁹ The Committee noted that the Facebook page was heavily used by motorcyclists to voice their views about the advertisement, something which would have allowed the TAC to track the market penetration and response of the motorcycling public to the advertisement.²⁰

10.3.1.3 VicRoads

VicRoads has a diverse range of interactions with stakeholders, some of which are longstanding. As with the TAC, the VicRoads approach includes the provision of information, consultation through public meetings, and collaborations and partnerships with motorcycle stakeholders among others. VicRoads has a standing relationship with industry groups such as the Victorian Automotive Chamber of Commerce (VACC), which involves regular contact,²¹ while the MAG and RoadSafe groups represent high level engagement with stakeholders based on collaboration and partnerships. In addition, notes on consulting with motorcyclists are included in the *Motorcycle Notes* series, produced by VicRoads, which deal with matters of road design, maintenance and safety for motorcyclists.²²

In its submission, VicRoads distinguished between its partnerships and strategic collaborations. The RoadSafe groups (consisting of registered statewide and local groups²³), and the Victorian Community Road Safety Alliance (the Alliance), which collectively represent the Victorian Community Road Safety Partnership,²⁴ are referred to by VicRoads as its partnerships. There are some 41 RoadSafe groups in Victoria, located in Melbourne, regional metropolitan areas and rural areas.²⁵ These groups are described as consisting of road users, local government, state government agencies and members of the local community operating as a partnership.²⁶

The RoadSafe groups, which have to apply for registration and then funding from the Alliance,²⁷ represent a collaborative approach to road safety by providing decision makers with information about local community needs and developing and implementing road safety programs.²⁸ VicRoads notes how important these groups are in contributing to long term safety goals by:

*... influencing safe road user behaviour through the development and implementation of community road safety programs and initiatives.*²⁹

The responsibilities of RoadSafe groups can be viewed as being autonomous from VicRoads in that they prepare and implement their own three year road safety plans, albeit following approval by the Alliance.³⁰ VicRoads noted that these groups, which are responsible for local initiatives, are its responsibility and are part of its attempt to increase the participation of local communities in addressing local road safety issues. The Alliance, a VicRoads advisory group, aims to develop partnerships that support local communities to address local road safety issues.³¹ The Alliance is comprised of members from the community, government (including VicRoads which provides secretarial services) and local government.³²

In contrast to the RoadSafe groups and partnerships, VicRoads characterises its relationship with the MAG and its predecessor VMAC as a ‘strategic collaboration’.³³ According to VicRoads, VMAC influenced the future agenda of motorcycle safety and its broad membership provided advice representing the views of the motorcycling community.³⁴ The provision of advice by the MAG currently extends to trends in motorcycling, the development of policies, guidelines and action plans and some safety levy matters but not the assessment of projects seeking safety levy funding.³⁵ The MAG has, according to VicRoads, been established to ‘provide strategic policy and program advice to VicRoads on issues associated with motorcycle use’.³⁶ The MAG has a smaller membership than its predecessor,³⁷ but includes two representatives from the motorcycle and scooter industry and from the RACV, as a road user group, and eight members chosen by VicRoads due to their involvement in motorcycling.³⁸

10.3.2 Issues with the existing approach

Although existing interactions between Victoria Police, the TAC and VicRoads and motorcycle stakeholders appear to be wide-ranging and substantial, submissions and witness statements reflected a high level of dissatisfaction with them. Some submitters expressed consternation, others concern, and many criticised the approach of the TAC and VicRoads during stakeholder consultation and collaboration. Submitters from peak industry groups and industry participants stressed their interest in being more involved. However, the Committee also received evidence from participants who were supportive of existing arrangements. The focus of witnesses and submitters was on the TAC and VicRoads, with very little comment about the performance of Victoria Police. Accordingly, the Committee’s investigations, in terms of issues, focused on the approach and activities of these two agencies.

10.3.2.1 *The general approach of the Transport Accident Commission (TAC) and VicRoads*

VicRoads and the TAC have a number of interactions with motorcycle retailers, clubs, manufacturers and industry. Submissions and evidence from these participants supported the view that the TAC and VicRoads do provide a level of engagement, a point highlighted by Mr Michael McKenna, Manager, Motorcycle Industry Division, VACC:

*We do meet bimonthly with VicRoads' registration and licensing division. We also meet under the auspices of a licensed federal tester group which meets quarterly with VicRoads to discuss issues that will affect the actual trade. So if there is any new procedure or policy that VicRoads wish to implement, they will come to us with this from time to time; whether they listen to what we have to say is a totally different question.*³⁹

However, these groups stressed that there was a need for greater inclusion by the TAC and VicRoads when dealing with motorcycle safety. Mr Robert Toscano, Director, Honda Australia Motorcycles and Power Equipment (Honda Australia MPE), provided a case in point:

*... we ask to be included much more in all aspects of powered two wheeler transport safety discussions. We can help. We want ... to utilise our experience and draw on Honda's and other industry members' international experience. We offer our expertise and experience particularly in the appropriate application of safety technology. That is one of our strong points. We request an input at the planning stage, not after strategies and schemes have already been decided.*⁴⁰

However, some industry participants expressed frustration at existing stakeholder engagement. Mr Mark Collins, National Rider Training Manager, Honda Australia Rider Training (HART), reflected on the limited opportunities afforded to stakeholders by the TAC and VicRoads:

*.... the amount of information coming our way and the opportunities to comment on that information before a decision is made or a direction is taken is minimal, so we are frustrated in that respect in that we do not often get to have input at the critical period ...*⁴¹

A similar sentiment was shared with the Committee by Mr Stuart Strickland, Industry Consultant, VACC, who suggested there is a need for:

*Mandatory dialogue between agencies and the motorcycle community on all regulations issues affecting motorcycles. Agencies employing motorcyclists with a working knowledge of the three key areas of motorcycling — road, off road and agricultural — with whom the motorcycle community can have sensible dialogue. Trying to have sensible dialogue with VicRoads or the TAC is just frustrating ...*⁴²

Another witness, Mr Graeme Blore, was forthright in his views of the TAC, stating:

*The lack of co-ordination and consultation with motorcyclists on equal terms, rather than treating them as inane idiots who are having mid-life crises, is an indictment. I strongly object to my taxes and other people's taxes being used in such a negative manner.*⁴³

Similarly, a representative from the Independent Riders Group (IRG), Mr Damian Codognotto, suggested:

*The TAC is not meeting our needs, and we are a legitimate part of the Victorian community.*⁴⁴

As well as stakeholders having issues with existing relationships, the difficulty in making initial contact with road safety agencies was also raised by motorcycle related organisations such as the motorcycle-tailored first aid provider, Accident Scene Management Australia:

*We organised a day in Melbourne [to train our instructors] and we invited VicRoads, the TAC, the police ... Terry Mulder and Peter Ryan's office. It was just an information day on the programs we had. We got a letter back from Peter Ryan and Terry Mulder saying it was a really good program and they gave us some contacts. The police rang us and said they could not attend because it might be seen as being that they favour the course. ... We had no reply from ... the TAC or from VicRoads.*⁴⁵

The Ulysses Club also outlined its attempts to involve road safety agencies in a motorcycle exhibition which they believed would allow agencies to interact with a large number of motorcyclists and motorcycle groups:

*... we had 276 official registrations for our show ... We had 43 trade sites from various aspects of the motorcycle industry and we had 2500 people go through the gate ... I think a perfect opportunity was missed by the bureaucracy of the state to participate in this show. ... we got onto some contacts through the Motorcycle Council of NSW. They came on board and gave us a whole heap of brochures relating to protective clothing and a few stickers for the top of the helmet. We are eternally grateful to the Motorcycle Council of NSW and the RTA for providing funding, stickers and banners et cetera. My point there being that we got nothing from Victoria in that respect.*⁴⁶

The submission from RPS Industries highlighted the potential benefits of industry and government consultation. It cited the need for government to work with private businesses, with a focus on close relationships that involved the sharing of information, knowledge and statistics for the purposes of developing new innovations that have the potential to reduce road trauma.⁴⁷ The submission contended that such interactions should occur as a priority if national road safety strategy outcomes were to be achieved.⁴⁸ In contrast to the examples cited above, the RACV was wholly supportive of the approach of the road safety agencies to stakeholder engagement:

*[The] RACV believes the most successful road safety interventions are those that have been developed on the best available evidence and in consultation with the relevant stakeholders and that the Victorian model of road safety reflects this approach. We believe it should continue.*⁴⁹

A different perspective to that of the RACV was provided by Mr Tony Ellis, Ulysses Club:

*I would like to see a change in attitude towards motorcycling at some of the agencies. I think we have seen it with VicRoads. They are much easier to deal with and have improved, to be honest. There are things I will disagree with them about and things I will vehemently disagree with them about, but they have improved. The TAC I do not believe has improved all that much. Victoria Police — it depends who you are talking to. Some of the people who have been along to the VMAC meetings have been good. Some of the individual police that I have dealt with over the years have been wonderful, at all levels. Others are very closed minded.*⁵⁰

On the whole, the majority of submitters and witnesses viewed the approach of road safety agencies as one requiring significant improvement. One submitter went so far as to characterise the existing approach as ‘patronising and necessary of a move towards genuine sharing with stakeholders’.⁵¹

10.4 Obstacles to better engagement with motorcycle stakeholders

Engaging with motorcycle stakeholders is made more difficult by the diverse and fragmented nature of the motorcycling community, questions about whether existing stakeholders are truly representative of Victorian motorcyclists and the ability of road safety agencies to understand the community with whom they are engaging. These obstacles collectively reduce the potential of working with stakeholders in reducing motorcycle trauma.

In Chapter 6, the Committee noted the diversity within the motorcycling community and the differences between types of riders, from those who ride scooters to those who ride off-road and performance motorcycles. In the Committee’s experience, these segments of the motorcycling community may not be well represented by their own advocacy groups, and where such groups exist they may be difficult to engage with.

Off-road riders are one segment of the riding community that is extremely difficult to engage with for reasons explained by Mr Roger Pitt, Trail Bike Project Manager, Department of Sustainability and Environment (DSE):

*... among all the trail bike riders, we calculate that only about 4 or 5 per cent are members of a club or an association. Because it is an informal, unstructured recreation, about 95 per cent are not members of any affiliated or organised groups. It is a very loose knit organisation, so it is not really very easy to maintain those channels of communication. We do so through engagement with riders on web based chat forums.*⁵²

Mr Richard Wadsworth, Statewide Recreation and Tourism Coordinator, DSE, added:

*It is primarily a recreational activity that people do with friends, family and whatnot. It is not through a club structure so much. It has fairly low representation.*⁵³

The example provided by the DSE could also be applied to other segments of the motorcycle community such as scooter and moped riders whose views are not as vigorously pursued by organised advocacy groups, even although there are organised clubs that cater for these segments.⁵⁴ In the Committee’s view, it appears motorcyclists are more likely to be members of social clubs rather than advocacy clubs. Admittedly, some clubs fulfil both functions, such as the Ulysses Club, but most do not. This dynamic within the motorcycling community in terms of stakeholder engagement, adds additional complexity.

Whilst there are several well-known motorcycle representative or advocacy groups in Victoria such as the Victorian Motorcycle Council (VMC), and the IRG, as well as motorcycle clubs (such as the Ulysses Club), they, like stakeholder groups in other areas of regulation, differ in their views, generally work alone, are sometimes uncoordinated,

and often disparate. Additionally, there is no peak Victorian representative or advocacy group through which motorcycling clubs and advocacy groups can collectively deal with government. That situation stands in contrast to the motorcycling industry (which has peak consultative groups such as the VACC) and national motorcycle advocacy groups such as the Australian Motorcycle Council (AMC). The situation in Victoria in terms of motorcycle advocacy could be characterised as fragmented. The lack of a peak advocacy group, combined with a lack of co-ordination and co-operation, hinder engagement efforts by road safety agencies.

However, the Committee notes that there appears to be some movement towards co-ordination and co-operation among motorcycle advocacy groups. The Committee understands the Australian Riders' Division of Motorcycling Australia has entered into a formal agreement with other advocacy groups (specifically the VMC, the AMC and the Motorcycle Riders Association Victoria) to champion a national proposal for filtering. Another example of closer collaboration by motorcycle groups was evident during public hearings held in August 2012, at which representatives of the VMC and Motorcycling Australia appeared together before the Committee. While these attempts at collaboration and co-ordination are welcomed by the Committee, more needs to be done by these advocacy groups to facilitate better engagement with road safety agencies.

In terms of existing stakeholder engagement, the Committee believes that existing advocacy groups on which road safety agencies rely for motorcycle issues are not as well placed as they could be to fulfil that role. The focus of the Committee's investigations on this issue was the reliance of road safety agencies on the RACV as a representative advocacy group for motorcyclists. The RACV is represented on the MAG, on Roadsafe groups and is a member of the Alliance. Its involvement on MAG and the Alliance is noteworthy, because no motorcycle advocacy group sits on the Alliance,⁵⁵ the RACV's motorcycle membership is small and its expertise in terms advocating for motorcyclists is limited. Mr Michael Case, Acting General Manager, Public Policy, RACV, explained to the Committee that 0.1% of its two million members were motorcyclists.⁵⁶

Whilst there is no doubt the RACV brings significant road safety expertise to these groups, it is arguably not an appropriate proxy in terms of engaging with the broadest number of motorcyclists. Road safety agencies should balance the need to have accessible, well organised road safety advocacy groups, such as the RACV, with the need to include stakeholders who are truly representative of the motorcycling community. Further, road safety agencies should try to engage with other stakeholders who may not be readily associated with motorcycle safety, such as the Victorian Farmers Federation,⁵⁷ but who represent those who use motorcycles.

The ability to engage with motorcyclists is obviously tied to the ability of agencies to understand motorcyclists and their viewpoints. Some participants in the Inquiry suggested strongly that road safety agencies did not understand motorcyclists and that

made engaging with them more difficult. Mr Stuart Strickland, VACC, provided an overview of his experiences:

... one of the frustrations that I have always had, being around the motorcycle industry for a long time, is the complete inability of the agencies to understand what motorcycling is all about. There are 17 different categories of motorcycling and you can talk to people within the 17 categories and they are all thinking differently, so one solution does not fit all.

With the agencies, it is just appalling. When you are talking to them, they just do not understand motorcycling. They do not employ people. Okay, you can employ someone who rides a road bike. So what? What about off road, mini bikes, agricultural — all these other areas where motorcycles are used? They just do not understand, and these people are creating legislation for motorcyclists.⁵⁸

However, other witnesses noted:

All these agencies do not want anyone to crash; they do not want anyone to be injured... Great steps could be made forward but only together. Motorcyclists are the best people to address motorcycling issues because it is so complex.⁵⁹

That point was reiterated in the submission from Mr David McAuliffe, which drew attention to the unique nature of motorcycling as an important factor in understanding safety issues:

Many of the issues relating to motorcycling are unique to riding. I sincerely believe that it is difficult for non-riders to make sound judgments concerning the safety issues of riders without experiencing the issues facing riders first hand.⁶⁰

Another witness, Mr Rob Salvatore, VMC, urged road safety agencies to better utilise motorcyclists when dealing with motorcycling issues:

.... riders should be intrinsically involved in any future motorcycle safety programs. The authorities struggle to understand motorbikes ... They predominantly do so as a result of sifting through flawed statistics recorded after the event. Their programs can and do put riders offside as a result. Why then do they not create working partnerships with riders? It is time to break the old patterns and encourage a paradigm shift in road safety that takes full advantage of motorcycling's unique characteristics and of the expertise of riders.⁶¹

Mr Salvatore acknowledged that riders also have a role to play in improving road safety by improving their skills:

Motorcyclists are not perfect; they make mistakes and show errors of judgement, but the evidence suggests that as riders become better motorcyclists, by taking additional training courses, developing riding networks and communities, sharing tips and skills, and looking out for each other, they reduce their intrinsic risk and their fatality rate. The lion's share of rider improvements has been achieved by the best safety device a motorcyclist can employ — that is, themselves. Motorcyclists therefore have a key role to play, and this needs to be formally recognised.⁶²

The extent to which road safety agencies understand motorcyclists and their viewpoints in terms of motorcycling issues is difficult to assess. However, it is clear the function of road safety agencies, which is to reduce road trauma and create a safer road environment, extends to motorcyclists. The key to achieving greater safety outcomes

does not necessarily require road safety agencies to have the same level of knowledge that motorcyclists and motorcycle advocacy groups do, but to engage with them in a way that maximises the exchange of information, ideas, co-operation and collaboration. In addition, the Committee agrees that in order to better achieve that outcome, road safety agencies need to engage with as many of the segments that make up the diverse motorcycling community as possible to understand their needs and points of view.⁶³

10.4.1 Findings

Victorian road safety agencies employ a number of strategies to engage with motorcycle stakeholders. These range from informal interaction by Victoria Police on the roadside through to the collaborative approach in bodies such as MAG. However, with few exceptions, the views presented to the Committee by most submitters and witnesses stressed that the current level of engagement does not meet their expectations and may not be delivering the potential benefits of working with motorcycle stakeholders. Further, participants in the Inquiry, from the motorcycle industry to motorcycle advocacy groups, stressed their interest in being included and more involved in dealing with issues affecting motorcyclists for which the TAC and VicRoads have responsibility.

The Committee is not satisfied that the current approach of road safety agencies in terms of engaging with motorcycle stakeholders is meeting that community's expectations. Further, even if road safety agencies believe their engagement is working, the views conveyed to the Committee by motorcycle stakeholders of a failure by these agencies to engage constructively suggests a difference in the perception of consultation between agencies and stakeholders that limits the potential motorcycle safety benefits better engagement could deliver.

The Committee recognises that there are multiple obstacles to better engagement. The diverse nature of motorcycling and the fragmented, sometimes disconnected motorcycle advocacy groups make engagement difficult. Overcoming these obstacles is challenging.

New representative groups covering segments of the motorcycling community which currently have limited representation, such as off-road and scooter and moped riders, are likely to be created in the future as riders take an interest in safety matters and policy changes that impact them. However, these groups, which are mostly voluntary in nature, and created at grass roots levels by enthusiasts, take time to develop. The period between being created and moving from a social club to one that includes advocacy can be time consuming. However, while there are few groups representing the views of off-road and scooter and moped riders, there remain opportunities for road safety agencies to overcome that obstacle by engaging with riders who do not belong to formal groups through information sessions, public forums and collaborative approaches with other groups or organisations that have existing links with these riders, such as the DSE and the VACC.

The fragmented nature of formal motorcycling groups presents a different type of obstacle to stakeholder engagement to that of diversity within the community. The lack of a central, unified organisation or group that acts as a peak consultative body is a situation that needs to be addressed by existing motorcycle advocacy groups. The Committee notes and is pleased by moves to redress this situation, but stresses more needs to be done by these organisations if they wish to further their involvement in motorcycling issues.

The Committee feels the current focus by road safety groups on a few, large stakeholders is not conducive to informing the greatest number of riders within the motorcycling community or working with the largest possible number of stakeholders to address motorcycle safety issues. In particular, the Committee believes undue reliance has been placed on the relationship between road safety agencies (in particular VicRoads) and the RACV. That reliance may be an obstacle to better engagement with other motorcycle stakeholders because the RACV lacks a motorcycle specific membership and appears to have limited engagement with existing motorcycle advocacy groups. Further, the RACV is more representative of drivers and has expertise in safety issues associated with passenger vehicles.

Opportunities to expand the membership of groups such as MAG, and to work with a broader range of stakeholders, have not been taken up by agencies. That situation needs to be rectified if agencies are to obtain the best possible feedback from a broad cross-section of the motorcycling community. Diversifying the types of stakeholders relied on for consultation and engagement, on matters of motorcycle safety, must be a key focus for road safety agencies.

The extent to which road safety agencies understand the motorcycling community was difficult for the Committee to determine. Although the view that agencies did not understand motorcycling or the concerns of this community was expressed strongly, such a view involves a subjective judgment. On that basis, the Committee does not believe it is necessary or possible to determine the extent to which road safety agencies understand the motorcycling community as a whole, or its different issues and viewpoints, nor the extent to which this creates an obstacle to better engagement. Instead, the Committee believes better engagement, revolving around a greater emphasis on consultation and collaboration by road safety agencies, could improve the existing understanding of motorcycling by road safety agencies. Arguably, the extent to which road safety agencies fully, partly or otherwise understand the motorcycling community does not matter if the level of engagement with stakeholders is such that it enables agencies to rely on them for feedback, guidance and advice on motorcycling issues which they might otherwise not have. To that end, it is important for road safety agencies to grasp opportunities for greater engagement when presented to them.

Collectively, these issues and obstacles reduce the potential benefits that could result from working with stakeholders to reduce motorcycle trauma. Rectifying them is critical

to realising the benefits of closer working relationships and consultation with non-government motorcycling stakeholders.

10.5 Specific issues

In addition to general criticisms about the efficacy, depth and quality of interactions between road safety agencies and motorcycle stakeholders, the Committee identified three specific examples illustrating the lack of engagement with stakeholders. These examples, on which many submitters and witnesses focused, were: the way the TAC consults on motorcycle safety advertising; the effects of disbanding the VMAC and replacing it with the MAG; and the effectiveness of the road safety groups as a mechanism for engaging with motorcycle stakeholders and addressing motorcycle safety issues.

10.5.1 TAC advertising

A recurring criticism by motorcycle stakeholders was the lack of engagement by the TAC when formulating new motorcycle safety advertising. In particular, evidence received by the Committee identified both the lack of engagement with motorcycle stakeholders, groups and clubs and the failure of the TAC to recognise the important role such stakeholders could play in the design of safety messages to ensure that motorcyclists would react to the road safety message. Some also alluded to the benefits of drawing on motorcyclists' expertise to bolster the authenticity of advertisements.⁶⁴ This point was explained by Mr John Karmouche:

The one issue I would like to raise with the committee is the issue of connecting with motorcycle riders. I believe this is something government bodies are doing particularly badly, and I cite the TAC as the first example. The way the TAC is doing it is by designing a message — and the message is one that I think most riders agree with — but they are communicating it in the wrong way. They are not communicating it rider to rider. As a motorcycle rider everything I know I have learnt from other riders. I respect what other riders have to say. If you do not ride a motorcycle, I tend not to respect your opinion .⁶⁵

Similarly, Mr Shaun Lennard, Chairman of the AMC, referred to:

... the need for safety messages to be conducted in conjunction with riders and rider groups. The problem is, and we have had some examples with one or two of the TAC's messages, that with perhaps the best intention if a message is developed which riders just turn off from straightaway or think, 'That doesn't apply to me', then the effect is lost.⁶⁶

During the course of the Inquiry, the TAC produced and televised a new motorcycle safety advertisement titled *Reconstruction*. The advertisement involved a vehicle turning into a T-intersection and colliding with a motorcyclist who was travelling along the intersecting road at a speed higher than the posted speed limit. The message was that had the motorcyclist been travelling at the speed limit he would have had time to avoid the collision. The way the TAC engaged with motorcycle stakeholders in producing and screening this road safety advertisement, and the response of motorcyclists, provides a good case study for assessing the concerns and criticisms provided to the Committee. In producing the advertisement, the TAC did not consult with motorcycle advocacy groups or clubs, nor did it use the MAG, of which it is a sitting member, to

develop the advertisement or seek feedback. However, the TAC explained to the Committee it had informed the MAG members a new commercial had been produced.⁶⁷ The Committee sought comment from the TAC on why it had not utilised the MAG in developing and testing the road safety message in the *Reconstruction* advertisement or sought feedback from it, given the number of motorcycle stakeholders and advocates who sit on that group. Mr John Thompson, then Senior Manager, Road Safety and Marketing, TAC explained:

I do not believe we consulted with them to inputting them into the campaign. We certainly made them aware we were making a campaign

...

*It is VicRoads advisory group, and we advise VicRoads on our activities. ... It is not our committee. We do not run it; we are a participant in it, but we are more than happy to ... discuss any of the projects we do and are involved in, and if we can get useful input through that process, we would welcome it.*⁶⁸

The apparent lack of consultation with motorcyclists and representative groups in the development and production of the advertisement led to a significant backlash from motorcyclists when the advertisement was aired. The TAC's Facebook page was a focal point for motorcyclists critical of both the TAC's efforts at engaging with motorcyclists and the advertisement's message to slow down.⁶⁹

The Committee convened a public hearing in August 2012, to discuss the advertisement with both the TAC and representatives from Motorcycling Australia and the VMC. Interestingly, motorcycle representatives raised a number of concerns which they suggested the TAC could have dealt with had they consulted. In terms of the technical aspects of the advertisement, the VMC representatives drew attention to the use of ABS and the dynamic performance of the motorcycle under heavy braking. The road safety message was also criticised and labelled 'prejudicial and deplorable' as motorcyclist representatives felt the advertisement should have focused on both the speeding motorcyclist as well as the driver who was in breach of the road rules because they had failed to give way to the oncoming motorcyclist.⁷⁰

It is noteworthy that some in the motorcycling community were sufficiently concerned with the TAC *Reconstruction* advertisement that they produced an alternative version. In correspondence to the Committee, Mr Peter Baulch, Chairman, Victorian Motorcycle Council (VMC) provided a link to the alternative advertisement⁷¹ which was subsequently viewed by the Committee. The alternative *Reconstruction* advertisement was uploaded on YouTube⁷² and while it used the images from the TAC advertisement, it applied a voice over which emphasised the need for the motorcyclist (in this scenario) to use road craft to reduce the risks of crashing and the failure of the car driver to take steps to increase his visibility. The YouTube clip included an analysis of the driver's failure to proceed with caution in a situation that involved reduced visibility and the motorcyclist's survival reactions which caused him to fixate on the car and lock the rear wheels. Importantly, it also made a number of suggestions which may have prevented the crash from occurring such as having the rider cover the brake lever, counter steering and using controlled braking to avoid the collision despite the car driver's failure to see

the motorcyclist.⁷³ The Committee notes that this alternative advertisement took a shared responsibility approach, focusing on the actions of both car driver and motorcyclist as well as identifying ways to improve the safety performance of the motorcyclist, something which should be commended.

In response, the TAC clarified the technical issues identified by motorcyclists could be explained by reference to the safety requirements when using stunt men and the use of computer animation. In terms of the safety message, the TAC claimed its own research indicated that speed was a significant factor in motorcycle crashes and therefore justified the production of an advertisement aimed at highlighting the risks of riding above the speed limit.⁷⁴ In spite of the TAC's explanations, the criticisms following the launch of the advertisement reflect the expectations of motorcyclists to be consulted with, and the results of this failing to occur.

The limited opportunity for engagement given to the MAG members, motorcycle advocacy groups and motorcyclists generally led to considerable media coverage focusing on the reaction of motorcyclists rather than the importance of the safety advertisement. From the Committee's interactions with participants at the August 2012 public hearings, it was clear some of those present felt the TAC *Reconstruction* advertisement and the safety message it contained could have benefited from the involvement of motorcyclists.

Some of the benefits motorcycle stakeholder engagement can deliver were outlined in a paper from the Motorcycle Riders Association Victoria titled *Connecting with motorcycle riders* which was provided to the Committee. The paper, aimed at the TAC, is useful because it sets out the risks of failing to better consult with motorcyclists.

Specifically, it refers to the sensitivity of riders to their 'portrayal by the media and authorities' and their rejection of safety messages broadcast by the TAC.⁷⁵ In terms of improving the TAC's engagement, the paper highlighted the importance of understanding what it was like to ride a motorcycle and stressed the need for the TAC to engage with motorcyclists using language in advertisements that they would relate to.⁷⁶ Additionally, it recommended the TAC utilise expert riders and involve clubs in developing and communicating road safety messages in advertising.⁷⁷

10.5.2 RoadSafe groups

RoadSafe groups, both local and statewide, are an important link for community engagement on road safety issues. However, the involvement of motorcyclists in these groups appears to be extremely limited. The lack of representation from a wide range of motorcycle clubs and advocacy groups reduces the usefulness of these groups as a way of engaging on motorcycling issues. Ms Jenny Tame outlined her experiences as a motorcyclist involved with Roadsafe groups:

... the community consultation to date has not been satisfactory ... the eastern committee, for example ... has been driven by internal requirements and is really not open to our input as riders. For example, I was a member, and we have stepped off that through frustration. They seemed much more concerned about the

*colour and the format of their display trailer ... than they were about listening to what we were concerned about as the real issues we face as riders. There were just too internally focused and not really receptive.*⁷⁸

Clearly, the issues raised by Ms Tame relate to the level of engagement she experienced during her time in a RoadSafe group. However, the Committee was interested in the broader question of involvement by motorcyclists and their representatives in such groups. The Committee requested information from VicRoads on the extent of the involvement of motorcyclists and was informed that although membership lists were not held by VicRoads it was aware that RoadSafe groups included members who were riders, and in some instances members who were also involved in motorcycle clubs such as Ulysses.⁷⁹ Furthermore, VicRoads highlighted the fact that at least one member of a RoadSafe group was also a member of the MAG and that a number of registered RoadSafe Community Road Safety Councils included members of motorcycle groups or organisations.⁸⁰ Engaging with motorcyclists through RoadSafe groups was not felt to be an issue by VicRoads. The Committee noted, however, in its interactions with representatives from RoadSafe groups at public hearings and during its investigations, that the formal involvement of motorcycle advocacy groups on RoadSafe groups was largely absent. Although these groups included members who were also involved in motorcycle clubs and advocacy groups, there appeared to be a narrow level of involvement overall. Such a conclusion was supported by the experiences of Mr Rod Bennett, Chairperson, RoadSafe Barwon:

*Our ability to liaise with the different riders through our group is mixed. We have a lot of success liaising with the HOGs, the Harley owners groups and the Ulysses motorbike groups. They are well regulated and well formulated within themselves and they are very proactive in terms of safety and responsibility. It is the ones that we do not catch, as part of that net if you like, that we seem to be having the bigger issues with.*⁸¹

The difficulties of engaging with motorcyclist more broadly were also cited by Mr Robert Allen, Public Officer, RoadSafe North East who stated that:

*One of the challenges that we face as a community road safety council is involving the community. It is one of the things that is put on us to have better local government involvement. The process we are going through at the moment, particularly with motorcycles as the key focus is that there are a lot of things happening and a lot of people doing things, but it is very disjointed. I would personally like to see some group, organisation, body or whatever to be in charge of motorcycle safety, and they pull all our groups in to work towards the one aim.*⁸²

On the basis of these comments, and the Committee's investigations, it appears that the potential to engage with motorcyclists through RoadSafe groups is somewhat limited.

10.5.3 The Motorcycle Advisory Group (MAG)

The MAG and its predecessor VMAC were among the most regularly cited issues the Committee dealt with in the Inquiry. Almost without exception, submitters and witnesses who addressed this term of reference invariably commented on the MAG, its effectiveness as an instrument for engaging with motorcycle stakeholders and the changes that occurred when the MAG replaced the VMAC. The issues resulting from this replacement included a reduction in the number of members that sit on the MAG, the

limited use of it to date for engaging with motorcycle stakeholders, and the inability of the new body to report directly to the responsible minister, thus providing a direct link between motorcyclists and the government, as had been the case with the VMAC. The role, scope and functions of the MAG were outlined for the Committee by then Deputy Commissioner Kieran Walshe, Victoria Police:

The motorcycle advisory group is a forum to exchange ideas between stakeholders, to advise on trends in motorcycling, to contribute to the development of strategies and action plans, and to provide advice to VicRoads ... This is the reformation of an advisory group for motorcycles, made up of stakeholders.⁸³

The advisory function of the MAG and the way it interacts with VicRoads was explained by Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads:

The new Motorcycle Advisory Group is essentially a mirror group for a number of advisory groups that report through to the VicRoads Chief Executive. It is designed to provide strategic engagement and guidance for our thinking and policy development. It is also, in the case of motorcycling, used to provide similar advice to other road safety partners, so they are at the table and active parts of that process. As such, it is an advisory group.

We essentially take to that group issues on which we feel they can help us provide some thinking, and we are similarly very open to that group actually setting some of the agenda items for us on things we may not be aware of.⁸⁴

Mr Shelton provided the following additional information on the membership of the MAG and the main differences between it and the VMAC:

The membership of the group was hand selected to largely reflect the sorts of skills we believe we need at the table — people who actually have a good knowledge of motorcycling but a knowledge that can be taken and used to implement new countermeasures and a knowledge that might take our organisation to a different way of thinking about motorcycling.

Skills that help us in that area include collaborative skills and the ability to work as a group. Certainly in the discussions with the Motorcycle Advisory Group we are very much looking for a collaborative approach to trying to find solutions to what is a very difficult challenge... The new group differs in other ways in that we have attempted to provide a greater proportion of motorcyclists and road users and the manufacturing, retail and marketing side of motorcycling as well. To do that we have actually reduced the number of bureaucrats at the table, which I think will actually also assist discussion.⁸⁵

The issue of membership on the MAG was among the first raised by participants. The reduction in the number of places available for motorcycle stakeholders was clearly a concern for some who felt it weakened the level of engagement and breadth of motorcycling views.

Mr Tony Ellis, a member of both the VMAC and the MAG remarked:

In fact, there were more riders, as it turns out, on the old VMAC than there are in the new MAG, despite the promise of increased representation.⁸⁶

The impact of the reduction affected Honda Australia MPE which, as both a manufacturer and one of the largest providers of motorcycle training and testing in

Victoria, was not provided with a place on the MAG. Reflecting on the changes, Mr Mark Collins, HART, stated:

*Unfortunately we have been left off the new VMAC [MAG], and we are a little bit disappointed. We feel we have a lot to offer that committee and the Victorian government. The committee had a lot of potential. We had a lot of interesting projects on the go, but in some ways I felt that there was an agenda and we were just passengers on a train, and that the train was already headed in a direction.*⁸⁷

Also left out of the MAG's membership were Ms Hollie Black from the Australian Scooter Federation and representatives from MUARC.⁸⁸ It is worth noting that neither the VMAC nor the MAG included a representative from an off-road motorcycling club or advocacy group. Further, the MAG does not include accredited providers. This is in spite of the potential identified by one submitter for 'accredited providers to be consulted with to improve motorcycle training and to standardise the training and testing regime'.⁸⁹ However, the changes to VMAC and the creation of the MAG were seen to be positive by some. Representatives from the RACV were supportive of the changes, stating:

*[The] RACV is part of the Victorian government's motorcycle advisory group which aims to provide the state government with strategic advice on issues relating to motorcycling in Victoria. The group has recently been restructured to ensure the quality and efficiency of advice on motorcycling issues. We believe it is a key conduit between the roads and the peak bodies reporting to community and/or stakeholder groups.*⁹⁰

Notably, support for the creation of MAG was also provided by the VMC in its submission.⁹¹ Although similarly supportive of the MAG, the submission from Motorcycling Australia cautioned that while the change was an 'excellent step' it was essential government representatives changed the way they viewed the advice provided by motorcycle stakeholders on the MAG.⁹² The submission also suggested that any new advisory group needed to be transparent and accountable for riders to support its work.⁹³

The submission from Mr Rex Deighton-Smith also welcomed the creation of the MAG, although on a slightly different basis to those outlined earlier. The view put to the Committee was that the VMAC was comprised of members who were appointed on an *ex officio* basis and therefore represented a narrow viewpoint of individual stakeholder groups.⁹⁴ During the public hearings, Mr Rex Deighton-Smith expanded on his criticisms of VMAC:

*Underlying my comment about VMAC was the concern that it seemed to be, if you like, a corporate endeavour. People, as I understood it, were appointed to that body *ex officio*, so there was no ability for an organised interest to be represented. Potentially it is a group of people, each with their own barrow to push, around a table. That sort of concerns me a little bit if I am part of the group that is allegedly being spoken for. Again, going back to my public policy experience, I would generally say that a consultation that is closed or restricted is less to be preferred than consultation that is open more broadly. The idea of, however you configure a body, having the possibility to have a more open representation on it was what I was looking for. I believe it is important that whatever is there is able to advise the minister rather than VicRoads. I think that is very important.*⁹⁵

Mr Deighton-Smith suggested that having a group comprised of such representatives meant there was only a partial motorcycling perspective based on the interests of these individuals rather than those of the motorcycling community more generally.⁹⁶ Interestingly, he cautioned that motorcycle representative groups had a small membership relative to the size of the motorcycling community.⁹⁷ The suggestion that relatively few motorcyclists are members of such clubs is supported by surveys conducted by the TAC and MUARC. Although motorcycle clubs offer a way for road safety agencies to interact with motorcyclists, the surveys conducted in 2002⁹⁸ (by MUARC) and in 2010⁹⁹ (by Sweeney Research on behalf of the TAC), found that about one in five Victorian motorcyclists sampled was a member of a motorcycle club.

The second issue identified by the Committee was the concern by motorcycle stakeholders about the quality of engagement available to them on the MAG. The Committee heard from Mr Tony Ellis that the new body had severed many of the links to the previous work of the VMAC:

At the first meeting of MAG there were almost no references back to any of the projects that VMAC were undertaking. There was just nothing. There has not been any real continuity...¹⁰⁰

A current member of the MAG, Mr Stuart Strickland, VACC, brought to the Committee's attention the limited meetings scheduled for the MAG, thus questioning the level of engagement that could occur in the available time:

With four meetings a year of 2 hours duration, what is going to happen within that time?¹⁰¹

The Committee noted the concerns of Mr Strickland, which were also reiterated by representatives from the VMC.¹⁰²

While the change from the VMAC to the MAG did not *per se* remove the ability of VicRoads and the other road safety agencies from engaging with stakeholders, it was heavily criticised by some because it removed the link between stakeholders and the responsible minister. Mr Rob Salvatore, VMC, provided an overview of these concerns:

MAG reports to VicRoads, as opposed to reporting directly to the minister, so the concerns and insights of motorcyclists may never actually make it to the minister.... and the advisory group has no stewardship over the TAC motorcycle levy, leaving the levy in the hands of VicRoads to administer. One has to question whether the priorities of VicRoads would reflect the safety priorities of riders and hence what messages would be relayed back to the minister ...¹⁰³

The changes from the VMAC to the MAG and the resulting issues identified by Inquiry participants are concerning given the importance of the MAG as arguably the premier motorcycle engagement mechanism for road safety agencies, and in particular VicRoads.

The Committee noted that while there were many points of difference in the evidence received about the MAG, there seemed to be an underlying concern about the future of consultation with motorcycle stakeholders, a point put to the Committee by Professor Marcus Wigan, Principal, Oxford Systematics:

To consult, under the conditions of even VMAC, was basically something you really could not do, and under the new terms of the MAG cannot be done. If you read the terms of reference ... you will see that the consultation aspect has basically been obviated. Even membership is at the pleasure and whim of... the executive of VicRoads. How much unwelcome advice or unwelcome commentary is going to survive in that environment for long? ¹⁰⁴

10.6 Findings

10.6.1 The Transport Accident Commission (TAC)

Based on its own investigations and the evidence provided by participants, the Committee feels that the TAC has not maximised its engagement with motorcycle stakeholders when developing and promoting its road safety advertising. The use of focus groups alone without reference to a broader cross-section of the motorcycle community, and the failure to better utilise the expertise, knowledge and views of the MAG members is a situation that should be rectified. In the Committee's view, developing road safety messages in consultation and possibly in collaboration with motorcycle stakeholders carries with it the potential for greater acceptance of safety messages. Such an outcome can be achieved through improved advertising that is more authentic because of the involvement of motorcyclists and less likely to lead to conflict with motorcycle stakeholders.

10.6.2 RoadSafe groups

Currently, RoadSafe groups do not appear to have many motorcycle representatives or members from a diverse cross-section of the motorcycle community. Although the Committee heard criticisms from some motorcyclists about the approach of RoadSafe groups to motorcycling, as well as the difficulties faced by these groups in trying to engage with motorcyclists, there are clearly advantages from expanding the number of motorcycle stakeholders on RoadSafe groups. One advantage would be the ability to understand motorcycling safety issues from the perspective of that road user group.

The function and role accorded to these groups by VicRoads necessitates a review of the way they currently perform, specifically in terms of the way they engage and include motorcyclists. It remains unclear why there are not greater numbers of motorcycle stakeholders on these groups, but undertaking such a review may identify issues or obstacles that need to be addressed. The Committee also believes that motorcycle stakeholders need to be more proactive and engage with these groups, perhaps as members, as part of increasing their engagement.

10.6.3 The Motorcycle Advisory Group (MAG)

Determining whether the VMAC or the MAG was a better vehicle for motorcycle stakeholder engagement is complex. There was significant support and criticism of the

change to the MAG. Clearly, the change from the VMAC to the MAG has resulted in a different interaction for stakeholders. The main point of difference is that the MAG is an advisory group for VicRoads, in contrast to the VMAC which provided advice to the responsible minister. Further, the issues raised by submitters and participants in terms of the reduced representation, limited engagement opportunities and the lack of a direct ministerial link, were felt to collectively have weakened the collaborative approach and engagement for motorcyclists.

In spite of these issues, the Committee believes that the MAG can fulfil an important stakeholder role. Clearly the reduction in the number of positions available on the MAG, in comparison to the VMAC, has meant fewer places available for motorcycle representatives and that situation needs to be redressed by an expansion in the number of members. Similarly, representation on the group needs to include, where possible, representatives from the off-road, accredited provider and moped and scooter segments of the motorcycling community. Actively seeking nominations from such groups needs to be a priority for VicRoads.

The current approach of staggered meetings over the year and the limited time provided to members appears likely to undermine stakeholder engagement by limiting the extent and quality of discussion and collaboration. This situation needs to be rectified to ensure motorcycle stakeholders and road safety agencies have the ability to better consult with each other and identify opportunities for collaboration.

10.7 A new approach

As part of the Inquiry, the Committee identified an additional mechanism that could improve the way stakeholders and road safety agencies interact. The OLA approach, created in Sweden, is an acronym for *Objective facts, List of solutions and Addressed action plans*.¹⁰⁵ Essentially it is a way of creating a collaborative approach to road safety on the basis that ‘the involvement of motorcycle groups (in this instance) and other stakeholders offers potential for designing more effective interventions’.¹⁰⁶

The OLA process of engagement is said to recognise that many stakeholders can contribute towards a safer road transport system. The collaborative approach in OLA involves ‘system designers working together with user groups, other professionals and a diverse range of stakeholders to identify agreed problems to share ideas about possible actions and to create a process for partners to publicly state what actions they are going to take.’¹⁰⁷ In describing its use of the OLA process, the Swedish National Road Administration made the following remarks:

*As an authority we have mainly worked with legislation as a tool to improve traffic safety by putting demands on other actors. By moving to a "softer" and "open" process many new possibilities have opened up. This is a dramatic change in the culture of an authority and provides a real challenge.*¹⁰⁸

The OLA approach to stakeholder engagement has been successfully used in Western Australia (WA) to drive motorcycle safety initiatives. Mr Iain Cameron, Executive Director, Office of Road Safety WA, outlined their use of the OLA process (see below). The OLA approach appears to have been successful in both WA and Sweden in better engaging and partnering with motorcycle stakeholders. By analysing safety issues and identifying problem areas, and then focusing on solutions and implementing them, motorcycle stakeholders have in effect become part of the road safety decision making process and part of the solution rather than antagonists.

Case study – The OLA process in Western Australia

Background

As a response to increased motorcycle trauma, the Office of Road Safety on behalf of the Royal Automobile Club of WA convened the Motorcycle and Scooter Safety Action Group (MSSAG) in 2009. The Office of Road Safety convened four public forums to ‘identify discuss and commit to a range of road safety initiatives to reduce motorcycle trauma’.¹⁰⁹

Approach

The approach taken at the public forums relied on the OLA framework and applied the safe systems approach to road safety.¹¹⁰ According to the Office of Road Safety more than 100 participants from motorcycle and scooter community, government members, agencies, interested members of the community, academics and road safety experts took part in the forums.

The first forum ran over two days and was in effect a literature review, which involved the ‘gathering of objective data, statistics, relevant research, and behavioural studies’.¹¹¹ In the second, ‘participants focused on planning and developing solutions, with a final list of solutions to be implemented by stakeholders, including motorcyclists, covering immediate and long term objectives based on the issues identified at the first forum. The last two forums focused on finalising the new safety interventions and reviewing the progress of the MSSAG’.¹¹²

Benefits

A large number of new interventions were identified by participants and included projects aimed at improving infrastructure, graduated licensing and delivering safety messages to motorcyclists respectively.¹¹³ However, in terms of engagement, the Committee noted the close and collaborative links between those who had attended the forums including motorcycle advocates, representative groups and government agencies.

The Committee’s impressions were supported by correspondence it received from Main Roads WA. According to Main Roads:

*“One of the most significant outcomes of the MSSAG process for Main Roads WA was an improved level of understanding between motorcycle and scooter riders and ourselves. The motorcyclist and scooter riders gained a better appreciation of the issues, based on evidence. For our part we gleaned a better understanding of what the important areas to be addressed from the motorcycle and scooter riders’ perspective ... While our MSSAG commitments did not address every single concern raised they were designed to respond to the broad thrust ... Overall the level of awareness of this vulnerable group has increased within Main Roads”.*¹¹⁴

The Committee believes the OLA process could be used in Victoria to enhance stakeholder engagement by creating a partnership model that does not appear to exist in the relationships between road safety agencies and motorcycle stakeholders, nor in the consultative forums such as the MAG or RoadSafe groups. The OLA process can facilitate creating a closer liaison with stakeholders so that ideas can be submitted and discussed to achieve informed outcomes.¹¹⁵ It is also invaluable in terms of working with non-government stakeholders because it creates partnership in the design and implementation of new safety strategies using a whole of government and community approach. Arguably, OLA would go some way to achieving the level of engagement referred to by Mr David Beck, and reflected in the comments of many of the participants in the Inquiry:

*As far as information is concerned, I think there should be more communication between the police, local motorcycle clubs and also local government. They are all stakeholders in the safety environment, and I think there should be some way of having a particular group set up to facilitate that coming together of those particular groups within the community to aim for improvements.*¹¹⁶

10.7.1 Findings

The OLA process is clearly an additional mechanism that would supplement the existing approach of road safety agencies to stakeholder engagement. In the Committee's view it offers a partnership model that existing mechanisms do not, and would greatly enhance the advancement of motorcycle safety and the participation of motorcycle stakeholders in it.

Recommendations: Chapter 10

Recommendation 37:

That VicRoads initiate a consultation process, based on the Swedish OLA (*Objective facts, List of solutions, Addressed action plans*) method, for motorcycle safety that involves all road safety agencies, motorcycle clubs, stakeholders and groups, and members of the broader community with a view to developing new safety initiatives. The process is to be facilitated by a third party, non-government organisation and is to be based on the process used by the Royal Automobile Club of Western Australia.

Recommendation 38:

That road safety agencies formally review their existing stakeholder arrangements and identify new stakeholder groups for inclusion in their stakeholder engagement plans, policies and approaches. As part of this review, the Transport Accident Commission and VicRoads in particular, should invite motorcycle stakeholders, clubs and groups to indicate their interest in being included in all forms of stakeholder engagement and then take steps to ensure they are included.

Recommendation 39:

That the Transport Accident Commission and VicRoads formulate a stakeholder management plan for engaging with the motorcycling community, and include the role, scope and breadth of stakeholders to be consulted for each type of engagement method.

Recommendation 40:

That VicRoads review the RoadSafe program with a view to identifying improvements for engaging, where appropriate, with all sectors of the Powered Two-Wheeler community.

Recommendation 41:

That the Transport Accident Commission consult broadly with motorcycle stakeholders, including those on the Motorcycle Action Group at the inception, design and production phase of motorcycle safety advertising and safety messages.

Recommendation 42:

That the Motorcycle Advisory Group be required to report regularly to the Minister for Roads, through its Secretariat. Agendas, and minutes of all meetings will be provided promptly to the Minister's office (as well as to the Motorcycle Advisory Group members) and a comprehensive report on the Motorcycle Advisory Group's activities and any outcomes should be submitted to the Minister on a yearly basis.

Recommendation 43:

That the Motorcycle Advisory Group be expanded to include additional representatives from the scooter and moped, off-road and accredited provider segments of the motorcycling community and the length and regularity of meetings be increased to allow for constructive engagement.

Recommendation 44:

That motorcycle advocacy groups in Victoria continue to work towards greater co-operation and co-ordination amongst themselves, particularly when engaging with road safety agencies.

Endnotes: Chapter 10

- ¹ Rodrigo D & Andrés-Amo P, *Background Document on Public Consultation*, Organisation for Economic Co-operation and Development, 2006, p. 1.
- ² Department of Education and Early Childhood Development, *DEECD – Victorian Community Sector Collaboration and Consultation framework*, Melbourne, 2011, p. 1,
<http://www.eduweb.vic.gov.au/edulibrary/public/commrel/policy/vcscf.pdf>.
- ³ Rodrigo D & Andrés-Amo P, *Background Document on Public Consultation*, Organisation for Economic Co-operation and Development, 2006, pp. 1-2; Department of Education and Early Childhood Development, *DEECD – Victorian Community Sector Collaboration and Consultation framework*, Melbourne, 2011, p. 2,
<http://www.eduweb.vic.gov.au/edulibrary/public/commrel/policy/vcscf.pdf>; International Association for Public Participation Australasia, *IAP2 Public Participation Spectrum*, 2004,
<http://www.iap2.org.au/sitebuilder/resources/knowledge/asset/files/36/iap2spectrum.pdf>.
- ⁴ International Association for Public Participation Australasia, *IAP2 Public Participation Spectrum*, 2004,
<http://www.iap2.org.au/sitebuilder/resources/knowledge/asset/files/36/iap2spectrum.pdf>.
- ⁵ Ms Samantha Cockfield, Manager, Road Safety, TAC *Transcript of Evidence*, Melbourne, 17 October 2011, p. 73.
- ⁶ Department of Education and Early Childhood Development, *DEECD – Victorian Community Sector Collaboration and Consultation framework*, Melbourne, 2011, p. 2,
<http://www.eduweb.vic.gov.au/edulibrary/public/commrel/policy/vcscf.pdf>.
- ⁷ Rodrigo D & Andrés-Amo P, *Background Document on Public Consultation*, Organisation for Economic Co-operation and Development, 2006, p. 2.
- ⁸ Department of Education and Early Childhood Development, *DEECD – Victorian Community Sector Collaboration and Consultation framework*, Melbourne, 2011, p. 3,
<http://www.eduweb.vic.gov.au/edulibrary/public/commrel/policy/vcscf.pdf>.
- Rodrigo D & Andrés-Amo P, *Background Document on Public Consultation*, Organisation for Economic Co-operation and Development, 2006, p. 5.
- ¹⁰ Professor Mark Stevenson, Director, Monash University Accident Research Centre, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 642.
- ¹¹ Beach S, Brown K & Keast R, *Together Now: Stakeholders in Government Agencies*, paper presented at International Research Society for Public Management Conference, Brisbane, 2008, p. 3.
- ¹² Senior Sergeant Bill Gore, Victoria Police, *Transcript of Evidence*, Wangaratta, 29 November 2011, p. 451.
- ¹³ Senior Sergeant David Watson, Victoria Police, *Transcript of Evidence*, Traralgon, 13 December 2011, p. 549.
- ¹⁴ Sergeant Cameron Roberts, Victoria Police, *Transcript of Evidence*, Wodonga, 30 November 2011, p. 474.
- ¹⁵ Ms Samantha Cockfield, Manager, Road Safety, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 70.
- ¹⁶ Ms Samantha Cockfield, Manager, Road Safety, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 73.
- ¹⁷ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (k).
- ¹⁸ Ms Samantha Cockfield, Manager, Road Safety, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 70.
- ¹⁹ Transport Accident Commission, *Current Motorcycle Campaign*, 2012, viewed August 2012,
<http://www.tacsafety.com.au/jsp/content/NavigationController.do?areaID=13&tierID=2&navID=BF7673AE7F00000101C2E8A4A4EBD88F&navLink=null&pageID=1556>.
- ²⁰ Transport Accident Commission, *Motorcycle riders targeted in new TAC campaign*, posted 26 April 2012,
<https://www.facebook.com/TransportAccidentCommission>.

²¹ Mr Michael McKenna, Manager, Motorcycle Industry Division, Victorian Automobile Chamber of Commerce, *Transcript of Evidence*, Melbourne, 19 October, p. 223.

²² VicRoads, *Consultation for Motorcycle Measures*, Motorcycle Notes, No.2, Kew, 2000, <http://www.vicroads.vic.gov.au/NR/rdonlyres/322B0D1B-A200-4B56-BDF1-B16D96700D13/0/tr1999056.pdf>.

²³ Correspondence received from Mr John Matta, Manager - Program Management, Road Safety & Network Access, VicRoads, 28 September 2012.

²⁴ VicRoads, *Submission to the Inquiry*, September 2011, p. 50.

²⁵ VicRoads, *Victorian Community Partnership Program: Registered Groups*, viewed 14 September 2012, <http://www.vicroads.vic.gov.au/Home/SafetyAndRules/AboutRoadSafety/StrategyAndPrograms/VictoriaCommunityRoadSafetyPartnershipProgram/RegisteredGroups.htm>.

²⁶ VicRoads, *Victorian Community Road Safety Partnership Program: Statement of requirements for local community groups 2010*, Kew, 2010, p. 3.

²⁷ VicRoads, *Victorian Community Road Safety Partnership Program: Statement of requirements for local community groups 2010*, Kew, 2010, p. 3.

²⁸ VicRoads, *Victorian Community Road Safety Partnership Program: Statement of requirements for local community groups 2010*, Kew, 2010, p. 3.

²⁹ VicRoads, *Victorian Community Road Safety Partnership Program: Statement of requirements for local community groups 2010*, Kew, 2010, p. 9.

³⁰ VicRoads, *Victorian Community Road Safety Partnership Program: Statement of requirements for local community groups 2010*, Kew, 2010, p. 9.

³¹ VicRoads, *Submission to the Inquiry*, September 2011, p. 50.

³² VicRoads, *Submission to the Inquiry*, September 2011, p. 50.

³³ VicRoads, *Submission to the Inquiry*, September 2011, p. 50.

³⁴ VicRoads, *Submission to the Inquiry*, September 2011, p. 50.

³⁵ VicRoads, *Submission to the Inquiry*, September 2011, p. 51.

³⁶ VicRoads, *Submission to the Inquiry*, September 2011, p. 51.

³⁷ Victorian Motorcycle Advisory Council, *Annual Report: 2008-2009*, 2009, p. 3; Government of Victoria, *Victoria's Road Safety Strategy: The motorcycle safety levy*, viewed June 2012, http://www.roadsafety.vic.gov.au/initiatives/safer_road_users/the_motorcycle_safety/the_motorcycle_safety_levy.html; and VicRoads, *Motorcycle Advisory Group*, viewed September 2012, <http://www.vicroads.vic.gov.au/Home/Moreinfoandservices/Motorcycles/MotorcycleAdvisoryGroup/>.

³⁸ VicRoads, *Submission to the Inquiry*, September 2011, p. 51.

³⁹ Mr Michael McKenna, Manager, Motorcycle Industry Division, Victorian Automobile Chamber of Commerce, *Transcript of Evidence*, Melbourne, 19 October, p. 223.

⁴⁰ Mr Robert Toscano, Director, Honda Australia Motorcycle and Power Equipment Pty Ltd, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 114.

⁴¹ Mr Mark Collins, National Rider Training Manager, Honda Australia Rider Training, Honda Australia Motorcycles and Power Equipment Pty Ltd, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 120.

⁴² Mr Stuart Strickland, Industry Consultant, Victorian Automobile Chamber of Commerce, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 227.

⁴³ Mr Graeme Blore, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 196.

⁴⁴ Mr Damien Codognotto OAM, Independent Riders' Group, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 176.

⁴⁵ Mr Phil Lemin, Executive Director, Accident Scene Management Australia, *Transcript of Evidence*, Wangaratta, 29 November 2011, p. 464.

⁴⁶ Mr Rex Beard, President, Albury-Wodonga branch, Ulysses Club, *Transcript of Evidence*, Wodonga, 30 November 2011, p. 496.

⁴⁷ RPS Industries, *Submission to the Inquiry*, July 2011, p. 5.

⁴⁸ RPS Industries, *Submission to the Inquiry*, July 2011, p. 5.

⁴⁹ Ms Melinda Congiu, Manager, Road User Behaviour, Royal Automobile Club of Victoria, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 261.

⁵⁰ Mr Tony Ellis, Ulysses Club, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 302.

⁵¹ Professor Marcus Wigan, Principal, Oxford Systematics, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 126.

⁵² Mr Roger Pitt, Trail Bike Project Manager, Forests and Parks Division, Department of Sustainability and Environment, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 87.

⁵³ Mr Richard Wadsworth, Statewide Recreation and Tourism Coordinator, Department of Sustainability and Environment, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 88.

⁵⁴ For example, the Hartwell Motorcycle Club, *Submission to the Inquiry*, July, 2011. and Lambretta Club of Australia Incorporated, *Submission to the Inquiry*, October 2011.

⁵⁵ Government of Victoria, *Victorian Community Road Safety Alliance: Terms of Reference*, 2010, <http://www.roadsafety.vic.gov.au/files/initiatives/communityroadsafe/CRSP%20terms%20of%20reference.pdf>.

⁵⁶ Mr Michael Case, Acting General Manager, Public Policy, Royal Automobile Club of Victoria, *Transcript of Evidence*, Melbourne, October 19, 2011, p. 264.

⁵⁷ Victorian Automobile Chamber of Commerce, *Submission to the Inquiry*, September 2011, p. 36.

⁵⁸ Mr Stuart Strickland, Industry Consultant, Victorian Automobile Chamber of Commerce, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 226-227.

⁵⁹ Mr Stuart Strickland, Industry Consultant, Victorian Automobile Chamber of Commerce, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 228.

⁶⁰ McAuliffe D, *Submission to the Inquiry*, July 2011.

⁶¹ Mr Rob Salvatore, Research Analyst, Victorian Motorcycle Council, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 270.

⁶² Mr Rob Salvatore, Research Analyst, Victorian Motorcycle Council, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 272.

⁶³ Mr Stuart Strickland, Industry Consultant, Victorian Automobile Chamber of Commerce, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 227.

⁶⁴ Motorcycle Riders' Association Victoria, *Connecting with Motorcycle Riders*, Melbourne, 2010.

⁶⁵ Mr John Karmouche, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 194.

⁶⁶ Mr Shaun Lennard, Chairman, Australian Motorcycle Council, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 207.

⁶⁷ Mr John Thompson, Senior Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 31 August 2012, p. 784.

⁶⁸ Mr John Thompson, Senior Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 31 August 2012, p. 784.

⁶⁹ Transport Accident Commission, *Motorcycle riders targeted in new TAC campaign*, posted 26 April 2012, <https://www.facebook.com/TransportAccidentCommission>.

⁷⁰ Victorian Motorcycle Council, *Motorcycle Riders Universally Outraged at TAC's "Reconstruction" Ad Campaign*, Media Release, Melbourne, 27 April 2012, <http://victorianmotorcyclecouncil.org.au/index.php?mact=News,cntnt01,detail,0&cntnt01articleid=5&cntnt01returnid=57>.

⁷¹ Correspondence to the Committee, Mr Peter Baulch, Chairman, Victorian Motorcycle Council (VMC), 8 May 2012.

⁷² Gunderd, *TAC motorcycle reconstruction ad alternative voice-over*, YouTube, 5 May 2012, http://www.youtube.com/watch?v=3_0Xs3mVUME.

⁷³ Gunderd, *TAC motorcycle reconstruction ad alternative voice-over*, YouTube, 5 May 2012, http://www.youtube.com/watch?v=3_0Xs3mVUME

⁷⁴ Ms Samantha Cockfield, Manager, Road Safety & Marketing, and Mr John Thompson, Senior Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 31 August 2012, p. 777.

⁷⁵ Motorcycle Riders' Association Victoria, *Connecting with Motorcycle Riders*, Melbourne, 2010.

⁷⁶ Motorcycle Riders' Association Victoria, *Connecting with Motorcycle Riders*, Melbourne, 2010.

⁷⁷ Motorcycle Riders' Association Victoria, *Connecting with Motorcycle Riders*, Melbourne, 2010.

⁷⁸ Ms Jenny Tame, *Transcript of Evidence*, Traralgon, 13 December 2011, p. 581.

⁷⁹ Correspondence received from Mr John Matta, Manager - Program Management, Road Safety & Network Access, VicRoads, 28 September 2012.

⁸⁰ Correspondence received from Mr John Matta, Manager - Program Management, Road Safety & Network Access, VicRoads, 28 September 2012.

⁸¹ Mr Rod Bennett, Chairperson, RoadSafe Barwon, *Transcript of Evidence*, Geelong, 15 November 2011, p. 348.

⁸² Mr Robert Allen, Public Officer, RoadSafe North East, *Transcript of Evidence*, Wangaratta, 29 November 2011, p. 436.

⁸³ Deputy Commissioner Kieran Walshe, Regional and Road Policing, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 22.

⁸⁴ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 3.

⁸⁵ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 3.

⁸⁶ Mr Tony Ellis, Ulysses Club, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 298.

⁸⁷ Mr Mark Collins, National Rider Training Manager, Honda Australia Rider Training, Honda Australia Motorcycles and Power Equipment Pty Ltd, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 121.

⁸⁸ VicRoads, *Motorcycle Advisory Group*, viewed September 2012, <http://www.vicroads.vic.gov.au/Home/Moreinfoandservices/Motorcycles/MotorcycleAdvisoryGroup/>.

⁸⁹ Motorcycle Motion, *Submission to the Inquiry*, July 2011, p. 11.

⁹⁰ Ms Melinda Congiu, Manager, Road User Behaviour, Royal Automobile Club of Victoria, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 261.

⁹¹ Victorian Motorcycle Council, *Submission to the Inquiry*, September 2011, p. 16.

⁹² Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 29.

⁹³ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 30.

⁹⁴ Deighton-Smith R, *Submission to the Inquiry*, July 2011, p. 5.

⁹⁵ Mr Rex Deighton-Smith, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 283.

⁹⁶ Deighton-Smith R, *Submission to the Inquiry*, July 2011, p. 6.

⁹⁷ Deighton-Smith R, *Submission to the Inquiry*, July 2011, p. 6.

⁹⁸ Haworth N, Mulvihill C & Symmons M, *Motorcycling After 30*, Report No. 192, Monash University Accident Research Centre, Clayton, 2002, p. 33.

⁹⁹ Hennessy P, Govan C & Lowery R, *TAC Motorcycle Tracker*, TAC, Sweeney Ref. 18680, Melbourne, 2010.

¹⁰⁰ Mr Tony Ellis, Ulysses Club, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 298.

¹⁰¹ Mr Stuart Strickland, Industry Consultant, Victorian Automobile Chamber of Commerce, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 227.

¹⁰² Mr Rob Salvatore, Research Analyst, Victorian Motorcycle Council, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 273-274.

¹⁰³ Mr Rob Salvatore, Research Analyst, Victorian Motorcycle Council, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 273-274.

¹⁰⁴ Professor Marcus Wigan, Principal, Oxford Systematics, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 126.

¹⁰⁵ Swedish Transport Administration, *OLA – Systematic Collaboration for Safer Road Traffic*, viewed August 2012, <http://www.trafikverket.se/Om-Trafikverket/Andra-sprak/English-Engelska/Road-Safety/OLA--Systematic-Collaboration-for-Safer-Road-Traffic-/>.

¹⁰⁶ European Safer Urban Motorcycling, *OLA Process for Developing Road Safety Projects*, Swedish National Road Administration, 2009, <http://www.local-transport-projects.co.uk/files/BP2%20016%20OLA%20Process.pdf>.

¹⁰⁷ European Safer Urban Motorcycling, *OLA Process for Developing Road Safety Projects*, Swedish National Road Administration, 2009, <http://www.local-transport-projects.co.uk/files/BP2%20016%20OLA%20Process.pdf>.

¹⁰⁸ European Safer Urban Motorcycling, *OLA Process for Developing Road Safety Projects*, Swedish National Road Administration, 2009, <http://www.local-transport-projects.co.uk/files/BP2%20016%20OLA%20Process.pdf>.

¹⁰⁹ Correspondence from Mr. Iain Cameron, Executive Director, Office of Road Safety, Government of Western Australia, 7 September 2011.

¹¹⁰ RoadWise, *Motorcycle Safety*, West Australian Local Government Association, November 2011, viewed April 2012, <http://www.roadwise.asn.au/resources/resources/motorcyclesafety>.

¹¹¹ RoadWise, *Motorcycle Safety*, West Australian Local Government Association, November 2011, viewed April 2012, <http://www.roadwise.asn.au/resources/resources/motorcyclesafety>.

¹¹² RoadWise, *Motorcycle Safety*, West Australian Local Government Association, November 2011, viewed April 2012, <http://www.roadwise.asn.au/resources/resources/motorcyclesafety>.

¹¹³ Correspondence from Mr Iain Cameron, Executive Director, Office of Road Safety, Government of Western Australia, 7 September 2011.

¹¹⁴ Main Roads WA, *Submission to the Inquiry*, September 2011, p. 1-2.

¹¹⁵ Hartwell Motorcycle Club, *Submission to the Inquiry*, July 2011, Term of Reference (k).

¹¹⁶ Mr David Beck, *Transcript of Evidence*, Wodonga, 30 November 2011, p. 510.

Chapter 11 at a glance

Overview

This chapter addresses four countermeasures, categorised by reference to roads, motorcycle design, protective gear and behavioural interventions. The Committee focuses on specific countermeasures within each of these four categories. For roads, the focus is on segregating motorcyclists from other road users, engineering practices and roadside barriers. The investigation into vehicle design section centres on Anti-lock Braking Systems, while the analysis of protective gear addresses both its effectiveness and the absence of performance and manufacturing standards. The section on behavioural countermeasures addresses improvements to training by reference to on-road, additional and simulated training. In each section, the Committee responds to proposals for mandatory use or the creation of new interventions. Additionally, the chapter includes an overview section that discusses the impact of unlicensed and unregistered riders and the lack of crash data on the development and suitability of countermeasures and which may reduce their overall effectiveness.

Key findings

The potential benefits of these countermeasures can be undermined by riders who ride unlawfully, but that should not have an effect on their introduction. A functioning and complete data set would provide an evidence based approach to develop or implement countermeasures. The Committee believes there is merit in using the European Motorcycle Accident In Depth Study as a model for a Victorian crash reporting and investigation system.

Road environment treatments

Allowing motorcycles to access bus lanes could improve motorcycle safety and allow more efficient movement. The Committee notes the growing emphasis by VicRoads on developing engineering practices that include a focus on motorcyclists. Roadside barriers are an important safety device for road users but they can be dangerous for motorcyclists. However, barriers could be improved by using padding on the posts and other engineering treatments. Applying technology that reduces the consequences of barrier impacts should be accelerated, particularly in areas of high motorcycle use.

Motorcycle design

There is limited research and evaluation of new technologies such as airbags, crumple zones and stability control on motorcycles. While ABS have great potential to reduce trauma, it is unnecessary to mandate their use. Promoting and educating riders of the benefits of ABS could help increase the number of motorcycles fitted with this technology, which is currently low. The mandatory use of advanced braking systems, including ABS, on motorcycles sold in Europe will have positive ramifications for Victorian riders by reducing the costs involved and increasing availability.

Protective gear

Protective gear has important and proven injury reduction benefits. However, there are limitations. Mandatory use of protective gear is not supported for a number of reasons, two of which are the lack of an Australian Standard to ensure minimum performance levels and existing good usage levels among Victorian motorcyclists. A star rating system would help promote the use of better performing protective gear and influence consumer choice. However, there has been a lack of progress on developing such a system. Education campaigns and subsidies and incentives could increase usage levels.

Clothing can help other road users to be more aware of motorcyclists because it can increase visibility. However, the type of clothing that is required to increase visibility is dependent on the environment. There is no single approach to increasing visibility. Reflective or fluorescent clothing can improve visibility in dense traffic or night environments, whereas darker clothing is more useful in rural areas. Further, increasing awareness levels is also dependent on other road users.

Training

The idea that improved and additional training for motorcyclists could improve their skill levels and thus reduce their crash risk is, intuitively, persuasive. However, there is a lack of evidence supporting its use. Training may well be beneficial in reducing crash risk, but research is needed to confirm those benefits.

There is great merit in conducting training, particularly pre-licence, on the road. Riding a motorcycle in normal riding conditions provides a richer and more useful learning experience, particularly for novice riders. Improving training through technology, by using simulators and software applications, is an emerging area of interest.

Recommendations

Recommendation 45:

That VicRoads and the Transport Accident Commission, in conjunction with road safety researchers, undertake a crash reporting and investigation study, using the Motorcycle Accident In-Depth Study approach as a model.

Recommendation 46:

That VicRoads update its road engineering guides to ensure they account for motorcycles. The guides, including any policies, procedures and any other documents needed in the design, building and maintenance of roads should take a safe systems approach, with a view to reducing the injury and fatality risk to motorcyclists.

Recommendation 47:

That VicRoads improve, in respect of motorcyclists, the operation of Wire Rope Safety Barriers and other roadside barriers (such as steel or concrete barriers) by utilising existing technology such as retrofitting barrier posts with cushion products, employing underrun protection rails and using other technologies to reduce the impacts of snagging or deceleration. These improvements should occur on roads that have been identified as requiring improvement based on crash statistics, or using the approach taken for identifying blackspot and blacklength roads, to ensure that funds are best utilised.

Recommendation 48:

That the Transport Accident Commission and VicRoads investigate the use of incentives and public education campaigns to increase the number of motorcycles being purchased with Anti-Lock Braking Systems.

Recommendation 49:

That VicRoads and the Transport Accident Commission provide yearly reports to the Motorcycle Advisory Group on research, advancements and evaluations of motorcycle Anti-lock Braking System, and other countermeasures both in Australia and overseas. These reports should also be made available to the public through the respective agencies websites.

Recommendation 50:

That VicRoads and the Transport Accident Commission develop educational campaigns for the use of protective clothing based on research findings with a focus on improving the usage of armour and lower body clothing and on segments of the motorcycle community that have lower rates of use.

Recommendation 51:

That the Transport Accident Commission provide a report on the development of the star rating system, including prospective timelines, to government, the Motorcycle Advisory Group and the Road Safety Committee within six months of the tabling of this report.

Recommendation 52:

That a star rating system for protective motorcycle clothing, which includes boots, gloves, jackets, pants and armour, be established within 24 months, and be fully functioning within 36 months, of the tabling of this report. It should adopt the Conformité Européenne standards for protective motorcycle gear, but also take into consideration Victorian requirements including weather patterns and must include a testing and certification regime.

Recommendation 53:

That gear that does not meet a minimum star rating (once established) should not be sold or branded as 'protective' motorcycle gear in Victoria. Clothing that does meet a minimum standard should be subject to incentives and subsidies devised by road safety agencies to facilitate its purchase by motorcyclists.

Recommendation 54:

That VicRoads and the Transport Accident Commission in conjunction with Standards Australia create an Australian Standard for motorcycle protective gear. This standard should use the European standards as a basis, but take into account Victorian and Australian specific factors.

Recommendation 55:

That VicRoads and the Transport Accident Commission investigate ways of improving motorcycle safety through behavioural change programs including changes to the car licence curriculum and road rules so that motorcyclists and the risks posed to them by other road users are highlighted. Other areas that should also be explored include school education and advertising campaigns aimed at all road users.

Recommendation 56:

That VicRoads and the Transport Accident Commission investigate the potential of simulators and virtual training software to complement motorcycle training.

CHAPTER 11: COUNTERMEASURES

11.1 *Introduction*

Countermeasures offer the potential for improvements in motorcycle safety. The pursuit of countermeasures is an important part of ongoing attempts to reduce trauma. This chapter addresses countermeasures the Committee believes can reduce the number and severity of motorcycles crashes. It is comprised of four sections: road environment treatments, the design and technology of motorcycles, protective clothing and training. The chapter also includes an overview section which deals with two additional issues; the reach of countermeasures to those riding unlawfully and the availability of crash data. The Committee feels these issues are imperative to an informed and broad discussion of countermeasures and their applicability to motorcyclists in Victoria.

11.2 *Overview*

The impact of unlawful riding and inadequate crash data on countermeasures is significant. The inability to extend the use of countermeasures to all motorcyclists means it can be difficult to fully realise potential reductions in trauma. Unregistered and unlicensed riders are less likely to rely on countermeasures to reduce their risks. Given road safety is focused on reducing trauma and crashes more generally, a group of riders who sit outside the regulatory system make it difficult to realise that aim. The Committee is aware that the motorcycling community views such riders as being outside of the norm, sometimes labelling them as ‘unriders’. Nevertheless, this group of riders does get hurt riding unlawfully. That in turn means that expectations from countermeasures, in terms of their potential benefits, need to be tempered. That does not of course mean that these riders cannot be identified or convinced of the need to ride responsibly.

Victorian crash data poses a different type of problem to assessing the potential of countermeasures or recommending their introduction. The lack of a complete and adequate crash data set makes it difficult to categorically establish the factors leading to motorcycle crashes. Not being able to identify these factors makes it difficult to judge the usefulness of countermeasures or provide an evidentiary basis for their introduction. In Chapter 2, the Committee noted data issues in Victoria make it difficult to properly quantify motorcycle trauma. These issues also extend to the gathering of crash factors such as the use of protective gear, infrastructure issues that may have led to the crash, training and human error.

The Committee notes that crash data and research based on it has been undertaken in Victoria by road safety agencies and researchers. In the Committee’s view, this research is extremely useful: it expands the knowledge of motorcycle crashes, highlights issues that require intervention and can guide the expenditure of public funds. The Committee is aware, for example, of the Motorcycle Case Control Study, currently being undertaken by VicRoads and researchers from the Monash University Accident Research Centre (MUARC) which is aimed at understanding risk factors in motorcycle crashes.¹

Although there has been a significant amount of research undertaken in Victoria, it has often been for a specific purpose, type of injury, motorcycle user group (such as off-road), and period of time. The approach among road safety agencies has been to focus on limited areas of interest, rather than the systematic collection of data about motorcycle crashes. While that targeted focus has a role to play in the development of targeted interventions and expanding our knowledge of motorcycle safety, the Committee believes it is vital that Victoria compiles information about motorcycle crashes in a holistic, systematic way. The value of systematically collecting data was recognised by submitters and witnesses. The Victorian Automobile Chamber of Commerce (VACC) for example, proposed data be collected at crash sites to improve our understanding of the impact of road design and furniture.² The value of collecting data in such a way is highlighted by the European Motorcycle Accident In-Depth Study (MAIDS).

11.2.1 *Motorcycle Accident In-Depth Study*

The MAIDS is a data set based on motorcycle crashes that occurred between 1999 and 2000.³ The study was, like many other European motorcycle projects, a joint venture involving a number of partners and organisations.⁴ Although it was co-funded by the European Commission (EC), it was managed and run by the *Association des Constructeurs Européens de Motocycles* (ACEM) (commonly referred to as the Motorcycle Industry in Europe). Unlike limited in-depth studies carried out in Victoria and elsewhere, the scope, breadth and complexity of the MAIDS is unique because it involved both exposure (control) and crash cases, a large number of variables were analysed (making it possible to analyse everything from rider behaviour to the performance and involvement of protective gear) and it included multiple European Union (EU) countries.⁵ During the course of the MAIDS, 921 motorcycle crashes (including moped and scooters crashes) were analysed from five EU countries: France, Germany, Netherlands, Spain and Italy. The study relied on an Organisation for Economic Co-operation and Development methodology for on-scene, in-depth, motorcycle accident investigations. Some 2000 variables were coded for each accident.⁶ Importantly, much like a clinical trial, the study also included a control or exposure group of 923 riders that were not involved in crashes. According to the study's final report the purpose of this control group was:

*... essential for establishing the significance of the data collected from the accident cases and the identification of potential risk factors in PTW accidents.*⁷

The MAIDS investigators 'undertook a full reconstruction of each crash, with vehicles inspected and witnesses to the accident being interviewed. Where possible, investigators gained access to the medical records for the injured riders and passengers. From the collective data, all the human, environmental and vehicle factors which contributed to the outcome of the accident were then identifiable'.⁸ This allowed investigators to identify risk factors for motorcyclists and reach conclusions on whether particular types of riders or motorcycles were over-represented in crashes.⁹ The MAIDS appears to have been driven by three intersecting circumstances or factors.

The first was the increasing use of European roads, both in terms of traffic and the use of motorcycles. That increase was seen to be a precursor for higher rates of road trauma particularly for motorcyclists. The second was that addressing future road safety issues for motorcyclists would have to be based on scientific evidence for best outcomes to be achieved. The last factor was the lack of detailed information about the casualties and crashes associated with powered two wheelers in Europe.¹⁰ The study's outcomes have helped to develop public policy for motorcyclists, design new countermeasures and identify areas deserving of further research.¹¹

11.2.2 Findings

The Committee acknowledges that potential benefits of countermeasures may be offset by riders who sit outside the regulatory space. This should not mean, however, that countermeasures are not investigated and implemented where appropriate. The lack of a complete data set on motorcycle crashes, which includes crash factors, is also limiting. The Committee believes there is merit in using the MAIDS as a model for Victorian crash reporting and investigation. The development of future countermeasures and their implementation would be greatly assisted by an evidence based approach using real-world crash data and analysis.

11.3 Road environment treatments

Treating specific road features that have a strong association with crash occurrence, and crash rates such as road alignment, width, roadside and median treatments and with intersection design and type¹² can help reduce crashes and trauma. The relationship between road features and crash occurrence is particularly important to motorcyclists because the quality, design and maintenance of roads has a greater effect on motorcyclists and their safety than it does on less vulnerable road users. Safer infrastructure has been recognised as an important component in the safe systems approach which underpins Victorian and Australian road safety strategies. That approach, which is set out in the *National Road Safety Strategy 2011–2020* (National Road Safety Strategy), emphasises the reliance on a safe system that is built around an inherently safe road transport system. The idea behind the safe system is that the transport system should be forgiving and crashes should not result in death or injury.¹³

There is a concerted focus on infrastructure improvements for motorcyclists in Victoria. That focus can be seen in Victoria's *Road Safety Strategy: Arrive Alive 2008–2017* (Victoria's Road Safety Strategy),¹⁴ in actions which form part of motorcycle safety strategies,¹⁵ as well as in the infrastructure programs run by VicRoads and those funded by the Traffic Accident Commission (TAC). In its submission, the TAC outlined its role in the safer roads infrastructure program. This program is funding over \$650 million dollars of treatments over the 2008–2017 period, with a focus on intersection and run off road crash types.¹⁶ An important component in the improvement of infrastructure for motorcyclists has been the use of the motorcycle safety levy to fund¹⁷ upgrades to areas with either high motorcycle use or a significant number of motorcycle crashes.

In addition, VicRoads has emphasised the importance of motorcycles by changing its engineering practices and using trials to test improvements to existing infrastructure, signs and roadside barriers.

The Committee identified three areas which hold promise as countermeasures that improve roads. Some of these are already in operation in Victoria but may need to be more widely implemented or have their development accelerated. Alternatively, some countermeasures exist in other jurisdictions but could be implemented in Victoria. The first is separating motorcycles from other vehicles, either by allowing them to use dedicated bus lanes or, in the case of Malaysia, using dedicated motorcycle lanes. The second involves the idea of building infrastructure around the most vulnerable road users, achieved by adopting motorcycle specific engineering standards and practices, and possibly by placing a disproportionate emphasis on vulnerable road users such as motorcyclists. The last area of interest is improving roadside barriers, in particular wire rope safety barriers (WRSB). These barriers are an ongoing concern for motorcyclists, and ways of improving them were identified both in Victoria and overseas.

11.3.1 Separating motorcyclists from other road users

Segregating motorcyclists from other road users has been identified as a way of reducing motorcycle trauma. While it is impractical to formally segregate motorcyclists from other road users on all roads, the use of bus lanes and dedicated motorcycle roads were identified by the Committee as countermeasures that could improve safety.

11.3.1.1 Bus lanes

The use of bus lanes to accommodate motorcycles is a relatively new idea. In Europe, pilot programs using bus lanes for motorcycles have been run in Stockholm and London.¹⁸ According to VicRoads, motorcycles are also able to use bus lanes in the Australian Capital Territory and New South Wales.¹⁹

Victoria

In its submission, VicRoads outlined the Victorian trial of motorcyclists using bus lanes. The trial, which ran for six months, commencing in November 2011, was operated on a southbound bus lane of Hoddle Street in Melbourne. Motorcyclists were able to use the bus lane during peak commuting periods, between 7.00am to 9.30am, Monday to Friday.²⁰ At present, VicRoads is conducting an evaluation of the trial to determine whether motorcycles should have access to bus lanes more generally.²¹ However the Committee understands that during the trial VicRoads found it was operating satisfactorily. Access to the bus lane on Hoddle Street is said to continue until the completion of the evaluation.²²

London

A trial allowing motorcyclists to use bus lanes was initiated in London in 2009, which allowed motorcyclists (and cyclists) to use the majority of bus lanes on the Transport for London Road Network. When the trial was reviewed, two important issues were identified: motorcycle speeds had increased and there were indications that collisions had also.²³ Consequently, a new trial was initiated to address these issues, which

incorporated speed enforcement measures. Following a review of the two trials, the body responsible for roads in London, Transport for London (TfL), concluded:

*The two trials have shown reduced journey times and environmental benefits with no significant safety issues thrown up for motorcyclists and other vulnerable road users.*²⁴

Additionally, TfL made the following findings based on the two trials:

- ‘Collision rates in bus lanes in the second trial decreased by 5.8 per cent for motorcyclists and by 8.5 per cent for cyclists when compared with the first trial;
- There was no significant change in the collision rates for pedestrians in bus lanes between the two trials; and
- When comparing the second trial with the period before motorcyclists were permitted access to bus lanes, there was a significant (11.6 per cent) decline in overall cycling collision rates in bus lanes and no significant change in collision rates in bus lanes affecting motorcyclists or pedestrians’.²⁵

On the basis of its findings, the TfL moved to allow motorcycles to use the majority of bus lanes on a permanent basis, beginning on 23 January 2012. During discussions with the Committee, Mr Tom Duckham, Delivery Planning Manager – Motorised Travel, and Mr Peter Sadler, Researcher, from TfL, confirmed that despite initial concerns that the trial could result in an increase in crashes and trauma, this had not been the case.²⁶

11.3.1.2 Motorcycle only lanes

Malaysia has had exclusive motorcycle lanes since the 1970s.²⁷ These lanes are separate to those used by other vehicles. Malaysia also has non-exclusive motorcycle lanes which allow other road users to enter the lane. Research into the effectiveness of the motorcycle exclusive lanes suggests this countermeasure offers substantial potential for reducing crashes and trauma. An analysis of the impact of exclusive lanes found crashes were reduced by 39% and that this was ‘a highly successful countermeasure’.²⁸ The benefits of the motorcycle exclusive lanes were evident when traffic flows exceeded 15,000 motorcycles per day, per lane.²⁹ Researchers concluded the findings supported the notion of motorcycle segregation, particularly in countries with high motorcycle use in Asia.³⁰ However, researchers cautioned that these lanes did not reduce the potential for crashes among motorcyclists.³¹ The Committee asked Professor Mark Stevenson, Director, MUARC, about the potential of the approach used in Malaysia. In response, Professor Stevenson stated:

*... the major problem they have there [Malaysia] is the interaction when they come off those motorcycle lanes: they are interacting with all road users and the whole issue then becomes the large trauma at the intersections.*³²

11.3.1.3 Findings

The use of bus lanes appears to hold promise as a countermeasure for improving motorcycle safety, and the efficient movement of traffic. The Committee notes TfL only

allowed bus lane access following two comprehensive trials and their evaluation. While the evaluation of the Victorian trial was not available for the Committee to analyse, its results are highly anticipated. Without wishing to pre-empt the findings, if the trial shows that the use of bus lanes was effective, the Committee believes it should be implemented more broadly.

In terms of segregating motorcyclists from other road users, the Malaysian approach seems to offer injury reduction benefits. However, its applicability to Victoria appears limited. This is predominantly because of the vast difference between the numbers and use of motorcycles in Malaysia compared with Victoria and the costs of creating exclusive motorcycle lanes. Further, the comments of Professor Stevenson suggest that there may be ancillary issues caused by exclusive lanes, for instance crashes that happen when riders exit or enter these lanes. The use of bus lanes, which can be accessed by a range of road users, appears to be better suited for Victorian conditions.

11.3.2 *Designing, building and maintaining roads with motorcyclists in mind*

There is a growing emphasis on motorcycles in the engineering standards and practices used in Victoria. VicRoads has developed a large number of materials dealing with engineering practices with motorcyclists in mind, including:

- Guidelines aimed at local government that provide advice and resources for addressing ‘loss of control’ motorcycle crashes;³³
- A *Motorcycle Notes* series that ‘provides practical advice on motorcycle specific aspects of road design, maintenance and safety’ for engineers and planners;³⁴ and
- A guide for road design, construction and maintenance, *Making Roads Motorcycle Friendly*.³⁵

In terms of engineering guides, VicRoads uses the Austroads *Guide to Road Design*³⁶ and produces its own supplements to that guide. One of the supplements, *Roadside Design, Safety and Barriers*, includes factors that road engineers need to consider when designing barriers so motorcyclists are taken into account.³⁷ Additionally, VicRoads has developed a safety levy funded seminar, *Making Roads Motorcycle Friendly*, to provide information to those involved in road design, construction and maintenance.³⁸

The VicRoads submission noted, following a review of the effectiveness of *Making Roads Motorcycle Friendly*, that participants had found the seminars useful and informative. The review concluded that it had also been successful in educating those involved in road design, construction, maintenance and reinstatement works as they apply to motorcyclists.³⁹ During the public hearings in Traralgon, VicRoads representatives provided information about typical road treatments, which included improved sight distance, suitable road surfaces, restricting or relocating roadside furniture and using appropriate barriers among others.⁴⁰

11.3.2.1 European approaches

Road design in the EU is underpinned by a legislative framework. Directive 2008/96/EC introduced in 2008 focuses on a number of infrastructure safety management procedures including road safety impact assessments and audits.⁴¹ The Committee notes that the Directive is aimed at ensuring that safety, including that of motorcyclists, is integrated in the design and use of roads.

The European Transport Safety Council (ETSC) has referred to a number of treatments and areas of road design that may correct the ‘shortcomings of infrastructure’.⁴²

According to the ETSC, road design and engineering in the context of motorcyclists should be focused on a number of areas including the curvature of roads, intersection design, the appropriateness of roadside barriers (using barriers that reduce injury to motorcyclists), ensuring that roads have appropriate grip, the use of signs and road markings and the use of road safety audits.⁴³

The Committee discussed the motorcycle specific guidelines developed by the UK Institute of Highway Engineers (IHE) with Mr Tony Sharp, Immediate Past President of the IHE. Mr Sharp explained the guidelines were developed in response to the disproportionate number of motorcyclists killed or seriously injured, and with the objective of ‘improving safety through engineering and integration’.⁴⁴ The guidelines set out ‘practical guidance for transportation professionals on providing a safer environment for motorcycles, mopeds and scooters’.⁴⁵

11.3.2.2 Criticisms

The Committee noted a number of observations and concerns raised by participants about the Victorian approach to road building and maintenance. A consistent theme was the idea of placing vulnerable road users at the centre of engineering and design requirements for roads. Motorcycling Australia’s submission suggested motorcyclists be treated as vulnerable road users, along with cyclists and pedestrians. In spite of the work undertaken by VicRoads to improve road engineering design and practices, and the motorcycle safety levy funded projects, Motorcycling Australia felt the existing approach was primarily designed to accommodate those at least risk such as car drivers.⁴⁶ That view was shared by Mr Daryl Townsend, Chairman, Eastern Region Motorcycle Working Party, who stated:

The other thing that we have found in our dealings with VicRoads ... Any innovation in road safety — the guardrails or wire rope barriers — has been designed for cars; there is no real initiative that has come out from somebody saying, ‘This is a great motorcycle safety initiative’.

They have said, ‘The guardrail is a problem for motorbikes; we’ll put in a rub rail and call it an initiative’. It is an initiative, but every fundamental principle that relates to any road infrastructure and environment is based on cars. I know the number of licensed riders and riders on the road probably dictates that; we have a lower priority, but I also think that is part of the problem.

*When people look at reviewing black spots for motorcycles they are generally looking at the problem through motor car eyes. They need to open up their processes to scrutiny by motorcyclists so that they can be challenged. You only have to get it wrong a little bit and you miss the point, and all that effort of doing a black spot initiative can be wasted.*⁴⁷

The Motorcycling Australia submission referred to motorcyclists as being the green frog of the road environment. The submission noted that the green tree frog is a sensitive organism and its health is directly related to the health of its surroundings, to its environment. The analogy of green tree frogs to motorcyclists was based on the idea that motorcyclists are the best indicators of the overall health of the road environment.⁴⁸ The submission goes on to suggest that a ‘sick road environment would therefore affect the most sensitive road users most profoundly, and the healthier the environment is for vulnerable road users the healthier it is for all road users’.⁴⁹ The VACC also supported the idea that roads modified to be motorcycle friendly also conferred a benefit to other road users.⁵⁰ However, some submitters felt the way road management responsibilities are defined in Victoria meant many of the issues with existing infrastructure were the responsibility of local councils rather than VicRoads.⁵¹ Other submitters noted there were limits to making roads motorcycle friendly. Mr Rod Bennet, RoadSafe Barwon, noted:

The current state government policy is to make the road network road safe or road friendly, whatever you want to call it. I know that over \$15 million has been spent on the Great Ocean Road specifically targeting motorcycle safety. That is one road. There is no way you can afford to make every road in Victoria totally motorbike friendly or safe...⁵²

In addition to cost, there are also issues of balance in designing, building and maintaining roads with motorcyclists in mind. Building and maintaining roads in the context of safety requires balancing countermeasures that improve safety for one group with the risks posed by that improvement to others. The need to balance the safety of competing countermeasures for different road users was recognised by RPS Industries. In their submission, they observed it was not possible to remove all roadside furniture. Instead, a way of balancing the needs of different road users could be to replace rigid furniture with flexible or improved furniture.⁵³ However, the submission from Maurice Blackburn suggested infrastructure decisions that result in greater risk of serious injury to motorcyclists should not be made.⁵⁴

The issue of designing, building and maintaining roads with motorcyclists in mind involves balancing the need to improve the safety of a vulnerable road user, the motorcyclist, with the needs of other road users who occupy the same road network. The vulnerability of motorcyclists and the difficulty posed by providing a balanced safety benefit to all road users has been noted by the Swedish Transport Administration in its current motorcycle strategy. The strategy states, ‘there are still questions concerning how safety improvements in the road environment can also be adapted to motorcyclists’.⁵⁵

11.3.2.3 Findings

The Committee notes the growing emphasis by VicRoads on developing engineering practices that include a focus on motorcyclists. There are benefits in developing infrastructure from a starting point that identifies the most vulnerable road users and seeks to address their safety needs. While there is a need to balance those requirements with the safety needs of other road users and find solutions that deliver

improved safety outcomes for all, the Committee believes a renewed focus on motorcyclists in engineering standards and practices can help achieve that balance.

11.3.3 Roadside barriers

Roadside safety barriers have been used in Victoria for many decades. Road safety research has shown roadside safety barriers reduce run off road fatalities for car occupants⁵⁶ and ‘significantly reduce the risks of both casualty and serious casualty crashes’.⁵⁷ They are used to prevent vehicles from veering off the road into oncoming traffic, from crashing into roadside obstacles (such as trees, light posts, culverts etc.) or from driving into ravines and gullies.⁵⁸

The primary reason for installing roadside safety barriers is to reduce the impact obstacles can have on vehicles. Barriers can slow down or impede the movement of a vehicle so that its occupants do not suffer a deceleration serious enough to result in severe injuries or death.⁵⁹ The way a barrier slows down a vehicle or prevents it colliding with an obstacle depends on its construction. In Australia, three types of roadside safety barrier are used: steel beam barriers (of which there are several types), concrete barriers and WRSB.⁶⁰ The type of barrier used depends on environmental and engineering factors. Concrete barriers are used in areas where there is little room for barriers which deflect the vehicle. WRSB, which absorb the impact of a vehicle by deflecting the force, need more space than steel or concrete barriers.

Barrier systems installed in Victoria need to conform to Australian standards (AS/NZS 3845, 1742.3 and 5100.2) and minimum safety criteria (engineering standards).⁶¹ Each state road regulator has its own road guidelines which set the engineering standards for each barrier, including its location and use.⁶² While these barriers are important safety countermeasures, there are concerns about their effects on motorcycle safety. Those concerns have been recognised by engineers and road builders in Victoria and overseas and are an area of interest for researchers.⁶³

11.3.3.1 Wire rope safety barriers (WRSB)

WRSB are a leading type of flexible barrier in Australia and Victoria, and have been used in Victoria since at least the mid-1990s. They are generally installed on freeway and highway median strips and are made up of frangible (breakable) posts with three to four medium to high tension cables. WRSB have ‘limited effectiveness on the inside of curves and cannot be used on smaller radius curves’.⁶⁴ These limitations appear to have a practical impact insofar as motorcycle crashes are concerned, because recreational riders tend to focus on roads with curves. Therefore, roads where WRSB has been installed appear less likely to be those with high levels of recreational motorcycle use and increased crash risk.

In contrast to other types of barriers which are rigid, WRSB absorb the energy of a vehicle by allowing the cables to restrain an errant vehicle and then redirect it alongside the barrier (but not back into traffic). Due to the way WRSB use space behind the barrier

to deflect vehicles, they are not used in situations where large deflections would result in contact with objects or oncoming vehicles behind the barrier.

11.3.3.2 WRSB, their effectiveness and motorcycle safety

The use of WRSB in relation to motorcycles has been contentious and attracted more scrutiny than other types of barriers. The approach of the organised motorcycle community has generally been to question, contest and condemn the use of WRSB, which are commonly referred to by the phrases ‘cheese cutters’⁶⁵ and ‘slice and dice barriers’.⁶⁶ During the course of this Inquiry, the Committee heard that WRSB were universally disliked by motorcyclists⁶⁷ and would not have a positive impact on rider safety.⁶⁸ The Victorian Motorcycle Council (VMC) noted that while WRSB worked at stopping cars and light vehicles, there was growing evidence suggesting they were unsafe for motorcyclists.⁶⁹ Other submissions used WRSB as an example of infrastructure built without motorcyclists in mind. The submission from Maurice Blackburn restated motorcyclists’ claims that installing these barriers reduced the amount of run-off area in the case of a crash, something which had resulted in ‘substantial injury and even death for motorcyclists’.⁷⁰

Riders, the motorcycle media and submissions received by the Committee all refer to the possible effects of these barriers on riders. It is worth noting that a common theme among motorcyclists’ generally, and submissions to this Inquiry, is that research into the effectiveness of wire rope safety barriers has either not been done, not been completed or withheld from the community.⁷¹

11.3.3.3 Are WRSB a problem?

In spite of the apparent issues with WRSB, the low number of motorcycle crashes in Victoria and Australia involving these barriers does not allow conclusive analysis to be made as to their risk to motorcyclists, nor is there sufficient research on their effects for motorcycles generally to draw conclusions. The view of some road safety experts is that it is unclear whether changes to barriers would reduce motorcycle fatalities without compromising other road safety objectives such as protecting vehicles and their occupants.⁷² Similarly, a leading academic in this field, Professor Raphael Grzebieta from the University of New South Wales, advised the Committee that safety barriers were involved in fewer motorcycle crashes, fatalities and serious injuries than other fixed objects.⁷³ That view stands in contrast to an earlier Australian research paper published in 2000, which referred to Canadian and US data showing that whilst motorcycle crashes into crash barriers represented a small proportion of all motorcycle crashes, they were responsible for a disproportionate number of rider fatalities.⁷⁴

The Committee’s research on this issue identified a number of published and unpublished peer reviewed articles, which included the following findings:

- Of the 1462 motorcycle fatalities in Australia and New Zealand between 2001 and 2006, less than 6% of Australian fatalities involved a roadside barrier. Of the 6% of fatalities, wire rope safety barriers accounted for 7.8% of deaths⁷⁵—that is 3 cases;

- Research suggests that the majority of crashes that involve a motorcycle fatality were caused by W beam barriers;⁷⁶
- The average fatality rate for riders hitting roadside barriers in Victoria between 2001 and 2006 was 2 cases per year;⁷⁷
- Where a motorcycle rider does collide with a wire rope safety barrier, the deceleration tends to be much higher compared to concrete barriers;⁷⁸
- Concrete barrier simulations indicate that a rider hitting them upright will sustain survivable injuries due to lower deceleration but the rider is exposed to risks when catapulted over the barrier;⁷⁹
- Simulations of wire rope safety barrier collisions showed that irrespective of the angle or speed, riders are unlikely to clear the barrier very cleanly, with their extremities caught between the wires. As a result riders in the simulation suffered catastrophic decelerations and possible high injury risks due to secondary impacts on the road;⁸⁰ and
- The results of simulations undertaken by Professor Grzebieta and DEKRA Accident Research (on behalf of the German Federal Highway Research Institute) showed that ‘while flexible barriers have advantages over concrete for cars, the opposite may be true for riders’.⁸¹

On the basis of the available research, it appears that WRSB do not factor greatly in crash statistics involving motorcyclists. However, they may present different risks to riders which are serious. The shared elements of all crash barriers, the posts and the capacity to cause deceleration, arguably present the greatest concern. That conclusion appears to be supported by European research which found barrier support posts were particularly aggressive, multiplying the injury severity by a factor of five compared to the average motorcycle crash.⁸² The Committee raised the question of barriers and their impact on motorcyclists with Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, who explained that:

What we have done in barriers generally is to have a look at what are the types of collisions with barriers that actually cause the most trauma. The results of that work have indicated that it is the upright posts on barriers that cause a problem for motorcyclists, and that is irrespective of barrier type. The response to that has been to trial and implement technologies like rub rail, which actually protects against collisions with upright barriers.⁸³

These comments suggest that improving the posts of barriers, including WRSB, would be beneficial for motorcycle safety.

11.3.3.4 International jurisdictions

The experience of European countries with WRSB has been mixed. The Committee understands that since 2006 Norway, the Netherlands and Denmark appear to no longer install wire rope safety barriers on any road.⁸⁴ They do, however, use other roadside barriers. In contrast, Sweden continues to use these barriers⁸⁵, with one analysis suggesting a motorcycle fatality reduction of 40–50%.⁸⁶ The Swedish Transport Administration has suggested that improving all guard rails, not specifically WRSB, could potentially prevent five motorcycle fatalities each year.⁸⁷ There has also been interest in

WRSB within the European Union. A paper released in December 2008, by EuroRAP (the European Road Assessment Programme), found clear evidence to justify new guidance on crash barrier design and recommended changes to crash barriers to make them safer for riders.⁸⁸ But on the question of WRSB it found ‘limited research does not warrant the inference that they are more or less dangerous than other types of barrier on the market’.⁸⁹

11.3.3.5 How can barriers be improved?

In Victoria, this Committee, in the 2005 *Inquiry into Crashes Involving Roadside Objects*, recommended that VicRoads undertake research into crash barriers and cushions to develop more appropriate barriers and testing standards.⁹⁰ That recommendation was supported in part, with VicRoads directed to develop a best practice barrier proposal for consideration by Austroads.⁹¹ There has also been a significant level of work to improve the safety outcomes of WRSB. Overseas, France has completed a program retrofitting lower rails to prevent riders hitting crash barrier support posts at vulnerable sites.⁹² The Committee is also aware that VicRoads started a pilot study in Gippsland in May 2011⁹³ that involves wrapping the posts of WRSB in a protective material.⁹⁴ The trial appears to be using a type of material similar to that produced by RPS Industries, which recommended WRSB posts be clad in rubberised materials or made from flexible rubber. Research projects both in Germany and Australia⁹⁵ (which trialled modified barriers) and other commentators, suggest a number of improvements including:

- Softer posts made of rubber or breakable materials; and
- Covering the posts and the cables with material that reduces snagging (i.e. underrun protection boards, rub rails, and stack cushions etc.).⁹⁶

Submitters to the Inquiry also made suggestions for improving WRSB. The VMC suggested consideration be given to EU research recommending rub rails and other kinds of sliding barriers (barriers that stop riders from sliding under them in a crash) be used.⁹⁷

11.3.3.6 Findings

Research suggests WRSB are not in and of themselves problematic for motorcyclists, rather hitting the posts of any barrier is likely to cause injury and possibly death. In spite of that research, the Committee believes more can be done to improve the operation of barriers for motorcyclists, particularly in relation to the use of padding on posts. However, there is a recognised cost implication in taking this approach and it may not be appropriate to apply these improvements across all barriers. That is particularly important considering the likely impact of such improvements on overall motorcycle trauma numbers given the available research suggests the number of motorcyclist fatalities is small.

11.4 Design and technology of motorcycles

Road safety can be improved through the design of vehicles and the use of technology. The introduction of vehicle countermeasures such as seatbelts, airbags and electronic

stability control (ESC) are examples of technologies aimed at reducing the likelihood of a crash or minimising trauma. Achieving road safety improvements through vehicle design and the use of technology is reliant on a number of factors including vehicle standards rules which set out manufacturing requirements, research and design efforts led by manufacturers and consumer demands for safer vehicles.

The use of technology and improved design also has the potential to improve motorcycle safety. However, the development of motorcycle countermeasures, unlike cars and heavy vehicles, can be made more difficult by the design of motorcycles, their handling characteristics and the adaptability of technologies from passenger and heavy vehicles to motorcycles. In spite of these limitations, there are existing countermeasures such as motorcycle airbags, crumple zones, stability control and braking systems such as Anti-lock Braking Systems (ABS) and combined braking systems (CBS) which may reduce the number and severity of motorcycle crashes. Of these, ABS were identified by the Committee as being the most important countermeasure at present for motorcyclists, and on that basis this section applies a concentrated focus on this braking system. While countermeasures such as airbags and traction control are addressed in this section, their limited availability, and a lack of research made it difficult for the Committee to assess their potential.

11.4.1 Types of vehicle countermeasures

During the Inquiry, the Committee received evidence about the growing use, availability and application of technological countermeasures on motorcycles. These included motorcycle airbags, crumple zones, stability control and braking systems such as ABS and CBS. Safety countermeasures fall into one of two categories: ‘active which are designed to avoid crashes and passive which protect vehicle occupants during a crash. Active technologies can also be beneficial even in a crash by reducing the intensity of the crash’.⁹⁸ In terms of the motorcycle countermeasures outlined in this section, stability control and braking systems can be described as being active while airbags and crumple zones are passive.

11.4.1.1 Motorcycle airbags

Motorcycle airbags are designed to protect a rider from frontal collisions.⁹⁹ While motorcycle airbags do exist, they are described as an emerging countermeasure¹⁰⁰ available on very few motorcycles.¹⁰¹ The TAC noted that airbags on motorcycles may be effective in crashes that involve speeds of less than 70km/h and in which the rider remains seated.¹⁰² It cautioned, however, that the effectiveness of motorcycle airbags is uncertain as no evaluation has been undertaken. That conclusion is also shared by the Swedish Transport Administration which also suggests more research is needed.¹⁰³

While the ETSC suggests some research has shown airbags may be effective, it concluded the development of airbags for motorcycles will be a ‘protracted task’.¹⁰⁴ The Centre for Automotive Safety Research (CASR) analysed the benefit to cost ratio of fitting motorcycle airbags and found that a substantial reduction in the cost of these airbags would be needed to justify the potential benefits of this countermeasure.¹⁰⁵

11.4.1.2 Stability control

Stability control is a relatively new technology for motorcycles and appears to be quite limited in terms of its availability.¹⁰⁶ Sometimes referred to as traction control, it ‘prevents a vehicle from swerving when accelerating on a loose surface by reducing engine output until the vehicle can move without the wheels skidding’.¹⁰⁷

The Committee investigated automatic stability control systems for motorcycles in its *Inquiry into Vehicle Safety* in 2008. It noted BMW’s development of Automatic Stability Control (ASC) which is a combination of Anti-lock Braking and traction control. The technology prevents uncontrolled spinning by reducing acceleration in order to maintain traction.¹⁰⁸ The Committee found there was a lack of research into the effectiveness of traction stability control.¹⁰⁹ That situation appears not to have changed in the period since the Committee’s 2008 report, a conclusion also reached by CASR.¹¹⁰ However, the Swedish Transport Administration has concluded that traction control is ‘considered to be effective in situations where the rear wheel of a motorcycle skids or where a rider is doing a wheelie’.¹¹¹ The Swedish motorcycle strategy, *Improved safety for motorcycle and moped riders – Joint strategy for the period 2010–2020, version 1.0* (the Joint Strategy) has quantified traction control as having the potential to save five lives annually.¹¹²

11.4.1.3 Anti-lock Braking System (ABS)

ABS works by monitoring wheel rotation during braking and applying maximum braking force without causing the wheel to lock,¹¹³ while allowing the rider to maintain steering control of the motorcycle. It is usually engaged under heavy braking when ‘sensors detect an impending wheel lock’¹¹⁴ and ‘is aimed at reducing the likelihood of going into a skid during severe braking, and the need for a rider to balance front and rear braking effort in order to maintain control’.¹¹⁵ The ABS achieves maximum braking by applying and adjusting brake pressure on and off in cycles. There are a number of benefits in having a motorcycle fitted with ABS in addition to allowing maximum braking while retaining control of the motorcycle. The first is that it allows a rider to fully apply the brakes without requiring hesitant or careful braking, which may cause the motorcycle to become unstable.¹¹⁶ The ability to maximise braking is important because the ability to correctly apply the brakes in an emergency situation was cited as being an issue for motorcyclists. Mr Rob Smith, Manager, Australian Riders’ Division, Motorcycling Australia, raised the issue of rider skill and the ability to apply correct technique to maximise braking in an emergency situation, when there is no ABS fitted:

ABS is without doubt one of the most important steps forward in motorcycle safety in recent times. The reason for that is that, regardless of how skilled a rider is, when the moment of truth comes it rarely comes announced. No one is going to run out and say, ‘Get ready to do an emergency stop because you’re going to die if you don’t’. You have to respond instantly at the time. Human beings, being what they are, respond usually through reaction, and when they react they grab the brakes.

The only people I know who can do a controlled emergency stop in a true emergency situation at any time are rider trainers or people who practise regularly. If you do not practise, you do not have that capability, and most riders do not practise. For them ABS will be significant. When I talk about practising, rider trainers practise their emergency stopping every single day, and hence they have a very high level of

*capability. I try to practise an emergency stop every week, and I do multiple emergency stops. I would probably do a reasonable job, but I could not guarantee it, so I think ABS is a great thing in that situation. We know that a lot of riders are seasonal, so they go through an entire winter period, which may be six to eight months or whatever, without practising anything at all. The ramp up process to get back to where they were takes time and practice, and a lot of people just do not do that.*¹¹⁷

A similar sentiment was expressed in the Motorcycle Motion submission, which noted that ABS was important because in emergency situations, riders are unable to apply the brakes correctly.¹¹⁸ The ETSC found that in an emergency situation, the average motorcyclist is unable to use more than 56% of their braking capacity.¹¹⁹ Research suggests that even when riders are taught the correct technique for emergency braking, that skill has not been shown to be effective in reducing crash rates or have provided mixed results at best.¹²⁰

The second benefit of ABS is it improves stopping distances and deceleration when compared to non-ABS fitted motorcycles. According to the TAC, ABS can reduce stopping distances by 5–10% and deceleration by 18–35%.¹²¹ Improvements in stopping distance and deceleration are also noted by other researchers,¹²² with one researcher finding that average stopping distances with ABS were 5–7% better than non-ABS equipped motorcycles, on both dry and wet roads.¹²³

11.4.1.4 Combined Braking System (CBS)

In a CBS, the front and rear brakes are linked, which means a motorcyclist engaging a brake lever will activate both brakes. This is in contrast to conventional braking systems in which the rear and front brakes are controlled separately.¹²⁴ When discussing the difference between ABS and CBS, Mr Jacques Compagne, Secretary-General, ACEM, explained that CBS provide more efficient braking as they are used constantly, whereas ABS was characterised as being focused on emergency braking.¹²⁵ Research from the United States (US) has found that the advantages of CBS are in shorter distance braking, which usually involves braking that would rely on the rear brake alone. The advantages of CBS in this scenario accrue because the system utilises both brakes, including the more powerful front brake.¹²⁶

11.4.2 Countermeasures: use and regulatory approaches

Motorcycles sold in Victoria include models fitted with airbags, crumple zones, traction control and braking systems such as ABS and CBS. While the Committee did not receive evidence on the number of motorcycles fitted with many of these countermeasures, it was provided with information about the use of ABS on Victorian motorcycles. The Committee was advised that the number of motorcycles fitted with ABS is small, with VicRoads estimating that ‘around seven percent of new motorcycles are equipped with ABS’.¹²⁷ Further, according to the submission of Mr Ray Newland, the number of motorcycle models that could be purchased with ABS as an option in Victoria doubled between 2007 and 2010.¹²⁸

In Victoria, the importance of ABS and traction control has been recognised by Victoria Police, with ABS having been a requirement for police motorcycles and in use for about

10 years.¹²⁹ The TAC also drew the Committee's attention to its efforts to promote the use of ABS among riders, through demonstration days held in conjunction with VicRoads and Bosch and at motorcycle events such as the MotoGP.¹³⁰

In terms of promoting the use of vehicle countermeasures, Victoria's Road Safety Strategy includes a specific action to encourage motorcycle manufacturers to develop new technologies that help prevent crashes and reduce trauma, including motorcycle airbags and integrated braking systems.¹³¹ Victoria also has a motorcycle specific strategy, *Victoria's Road Safety and Transport Strategic Action Plan for Powered Two Wheelers 2009–2013* (PTW Action Plan), which includes actions for promoting countermeasures. Specifically, it outlines actions for promoting the purchase of motorcycles with ABS, integrated braking systems and other safety features such as the development of airbag protection.¹³²

In this Committee's *Inquiry into Vehicle Safety* in 2008, the importance of ABS on motorcycles led to the following recommendation:

4. That VicRoads require the fitment of Anti-lock Braking Systems to new motorcycles as a pre-requisite for registration from 2011¹³³.

This recommendation was not supported for several reasons including the lack of an international standard for the mandatory fitting of ABS and the continuing development and refinement of the technology by motorcycle manufacturers.¹³⁴ In its submission to this Inquiry, VicRoads pointed out that neither the Australian Design Rules (ADR) nor does the United Nations Economic Commission for Europe (UNECE) require the mandatory fitting of ABS and there is at present no UNECE regulation for this technology.¹³⁵

11.4.2.1 Nationally

Of the countermeasures discussed, some have been the subject of interest in national road safety strategies. The *National Road Safety Action Plan 2009 and 2010* (the Action Plan), included an action to 'promote to riders the safety advantages of ABS, linked braking and traction control on motorcycles, and encourage the motorcycle industry to increase the availability of motorcycles with these features'.¹³⁶

In 2011, the Australian Transport Council (ATC) released the National Road Safety Strategy which included steps for improved safety regulations for new vehicles, which included the preparation of a Regulatory Impact Statement for the mandatory fitting of ABS to new motorcycles.¹³⁷ In Western Australia (WA) the Motorcycle and Scooter Safety Action Group (MSSAG) identified the following as future actions: working with manufacturers to increase the number of motorcycles fitted with ABS; offering subsidies or incentives for ABS equipped motorcycles (such as reduced insurance premiums and import duty taxes); and the mandatory use of ABS (to be achieved through amendments to the ADR and in consultation with the Commonwealth government).¹³⁸

11.4.2.2 Europe

The approach to countermeasures in Europe has been driven by both industry and government. While countermeasures such as motorcycle airbags and traction control are areas of interest, improved braking performance has assumed a central focus. At a pan-European level, the increased availability of ABS was initially driven by industry, which set self-imposed targets for increasing the supply of motorcycles equipped with advanced braking systems¹³⁹ such as ABS. The ACEM set a voluntary commitment in 2004 to increase by 50% the number of new motorcycles that included the option of an advanced braking system by 2010.¹⁴⁰ The target of 50% was met, and in 2008 was extended so that 75% of motorcycles supplied by members of the ACEM would include the option of advanced braking systems by 2015.¹⁴¹

While the ACEM set out to increase the supply of motorcycles equipped with improved braking systems, the EC introduced a draft legislative proposal in 2010, the *Proposal on the approval and market surveillance of two- or three-wheel vehicles and quadricycles* (the draft proposal), to make ABS and CBS mandatory for certain types of motorcycles in 2016¹⁴² and on all new motorcycles sold after 2017.¹⁴³ The EC took this approach as part of the focus on motorcyclists as a key road user group in its EU Road Safety program. Ostensibly, the reason for highlighting motorcycle safety was the over-representation of motorcyclists in trauma statistics.¹⁴⁴

The draft proposal applies to motorcycles in different ways. Low-performance motorcycles with an engine capacity up to 125cc, such as mopeds, which are sold, registered and entering service need to be equipped with either ABS or CBS or both at the discretion of the manufacturer.¹⁴⁵ Larger capacity motorcycles, above 125cc would have to be fitted with ABS.¹⁴⁶ Motorcycles primarily intended for off-road use and designed to travel on unpaved surfaces (referred to as enduro or trial motorcycles), however, are exempted from the draft proposal.¹⁴⁷ According to the accompanying impact assessment for the proposal, the reason for this exemption was:

*Enduro and trial motorcycles are primarily designed for off-road use and are therefore incompatible with ABS and indeed coupling braking devices: being able to intentionally lock the wheels is essential in certain off-road conditions.*¹⁴⁸

The European Parliament's Internal Market and Consumer Protection Committee (IMCO) also analysed the proposal. It proposed changes which would have seen ABS mandated on all motorcycles with an engine capacity larger than 51cc.¹⁴⁹ However, these changes were not agreed to and the existing draft proposal was scheduled for a vote in the European Parliament on 19 November 2012.* The Committee understands a review clause has been included as part of the draft proposal, which will assess the effectiveness of advanced braking systems and ABS in particular, and if it is found to be

* Note: The draft proposal was overwhelmingly approved by the European Parliament on 20 November 2012. See Association de Constructeurs Européens de Motocycles, *Motorcycle Industry welcomes vote of the European Parliament on the Type Approval Regulation*, Media release, 20 November 2012, <http://www.acem.eu/index.php/media-corner/press-releases/126-motorcycle-industry-welcomes-vote-of-the-european-parliament-on-the-type-approval-regulation>.

cost-effective the ABS requirement will be extended to all motorcycles with a cubic capacity up to 125.¹⁵⁰ In response to the Committee's request for information on the introduction of mandatory ABS and CBS systems, Mr Malcolm Harbour, Chairman, IMCO, informed the Committee that the introduction of these measures in 2017 was supported by data that showed braking countermeasures would improve rider safety.¹⁵¹

The initial approach to increasing the use of braking countermeasures in the EU was market driven and led by industry. Its replacement with a legislated requirement for the use of advanced braking systems, with an emphasis on ABS, reflects the value placed by the EC on braking countermeasures to reduce motorcycle crashes and trauma.

11.4.2.3 Sweden

The Swedish Transport Administration's Joint Strategy deals with motorcycle initiatives including vehicle countermeasures. ABS features prominently in the Joint Strategy as a measure that could save motorcyclists lives. According to statistics compiled by the Swedish Transport Administration, ABS will reduce fatalities and serious injury risks by 50%, and 70% at intersections.¹⁵² Further, it has quantified the potential lives saved due to motorcycles fitted with ABS as being 21 deaths per annum.¹⁵³ Interestingly, the Swedish Transport Administration has also identified traction control as a measure that will reduce motorcycle fatalities.¹⁵⁴ The Committee understands an estimated 62% of motorcycles have ABS in Sweden.¹⁵⁵ The expectation in Sweden is that the entire motorcycle fleet will be fitted with ABS before the EU directive mandating ABS comes into effect in 2017.

In addition to the activities of Sweden's road safety regulators, the Committee understands the private sector is also helping move riders towards purchasing ABS equipped motorcycles. Swedish insurance companies are supportive of ABS on motorcycles, introducing premium discounts for those who own ABS equipped motorcycles. One insurer, Folksam, has introduced a premium discount of 15% for motorcycles with ABS brakes and another insurer, Länsförsäkringar, has included mechanical damage in its motorcycle insurance, with a view to repairing, among other things, ABS brakes.¹⁵⁶ It appears the increase in ABS use on motorcycles in Sweden has been achieved, in part, through education and promotional activities as well as incentives provided by insurance companies.

11.4.3 Potential advantages of ABS as a countermeasure for reducing crash risk and improving crash outcomes

In terms of improving safety outcomes for motorcyclists, the crash and injury reduction benefits of ABS are not definitively proven. Evidence provided by submitters and witnesses, as well as research undertaken by the Committee, support that contention. The TAC submission noted the benefits appear to be positive based on available research (although it also suggested that this was an emerging area of research), with estimates of reductions from 17–38% in injury crashes and 37–53% in serious injuries and fatalities.¹⁵⁷

The potential of ABS was further discussed with the Committee by Ms Samantha Cockfield, Manager, Road Safety, TAC:

*I certainly think that the evidence to date is that for on road riding ABS is successful in reducing crashes, and in particular injury crashes. That being the case, the more bikes we have on the road with ABS — and when I say 'on the road', I mean that at this point the evidence to the TAC points to on road use — the better crash outcomes we are likely to see in Victoria.*¹⁵⁸

The benefits of ABS are supported by research. A Swedish study which analysed in depth crash data between 2005-08 to investigate the potential of ABS as well as estimate its effectiveness in crash reduction in Sweden, found that ABS had the potential to reduce fatalities by 30%.¹⁵⁹ That research also found the overall effectiveness of ABS on all crashes involving personal injuries was 38% and 48% for fatal and severe crashes.¹⁶⁰ The injury severity of crashes involving ABS equipped motorcycles was lower compared to motorcycles not fitted with such technology.¹⁶¹ Other research from the US found that the rate of fatal crashes per 10,000 vehicles was 37% lower for ABS equipped motorcycles.¹⁶² The potential benefits of including ABS on motorcycles in NSW have been quantified by CASR. According to their analysis, which relied on the Swedish research, the use of ABS on motorcycles in NSW would reduce injury crashes by 8,260 per year, with an overall reduction of 39%.¹⁶³ While there is research supporting the potential of ABS, the Committee also noted issues with the available research and for some stakeholders, such as the RACV, the potential of ABS has not been definitively proven. Ms Melinda Congiu, Manager, Road User Behaviour, RACV, provided the Committee with an outline of the potential of ABS but also the need for more research:

*Regarding the design and technology of motorcycles, RACV is supportive of technology that improves the safety of motorcycles and motorcycling. Research has found that motorcycles with anti lock braking systems, also known as ABS, do have the potential to reduce fatal motorcycle crashes compared to motorcycles without ABS. ... We are supportive of encouraging the uptake of ABS on motorcycles, but we would like to see more research on its effectiveness in reducing the road toll and crash risk. We also believe that mandating ABS technology should only be considered if there is strong research in support of its effectiveness and if there are investigations into how this would apply to different categories of motorcycles.*¹⁶⁴

That sentiment was also shared by Ms Amanda McKenzie, Chief Executive Officer, Driver Education Centre of Australia (DECA):

*... I do not know whether it is a kind of scientific view, but I think ABS can assist to some degree. But probably there has not been enough research from our point of view to be able to then make an informed decision about whether we go down that particular path and say that that should happen.*¹⁶⁵

While these witnesses drew attention to the need for more research, VicRoads noted conflicting research on ABS,¹⁶⁶ citing recent research from the National Highway Traffic Safety Administration in the US that found ABS was not statistically significant in affecting motorcycle crash risk.¹⁶⁷

Mr David Shelton, VicRoads, discussed that conflicting research:

*There is quite a bit of international debate about ABS at the moment. Importantly, there has been some research in America that seems to be concluding that maybe the American crash experience is a little bit different to the European crash experience and questioning what the benefits of ABS might be ... It will be very important for us to make sure we understand the overall benefits of ABS, because it is quite a costly technology if one was to mandate it. But equally, there is some research that tells us it could also be a very high return technology to have on motorcycles.*¹⁶⁸

The VMC submission also cautioned that research into the benefits of ABS needs to be balanced by the possibility of bias because riders who are risk averse tend to buy ABS equipped motorcycles, so safety outcomes from this group may already be better than the general motorcycle population.¹⁶⁹

11.4.4 Proposals

There are several vehicle countermeasures that could improve motorcycle safety. Of these, the Committee focused on ABS, due to both the importance placed on it in other jurisdictions such as Sweden and the EU and the proposals made for its compulsory use on Victorian motorcycles.

Motorcyclists who the Committee met with during the Inquiry supported ABS as a countermeasure. While participants generally noted its importance in improving safety and accepted its potential use,¹⁷⁰ several submissions suggested that Victoria mandate the use of ABS on motorcycles.¹⁷¹ One submitter suggested that Victoria align the implementation of compulsory ABS with the EU in 2017¹⁷², while others suggested a phased implementation that would see ABS mandated on larger motorcycles.¹⁷³ As part of these proposals, one submitter cited the introduction of traction control on cars in Victoria in 2011 as a precedent for mandating vehicle technologies and design.¹⁷⁴ The Committee received a range of responses to these proposals. VicRoads suggested compulsion could be justified if there was a strong safety case.¹⁷⁵ The VMC did not support mandatory non-switchable ABS.¹⁷⁶

There are a number of arguments against mandating ABS on motorcycles in Victoria. The first is the ability of Victoria to influence design requirements for motorcycles. The design of motorcycles, as with other vehicles, is dictated by ADR, which are national manufacturing standards set at a federal level.¹⁷⁷ The introduction of mandatory ABS in Victoria therefore faces two obstacles. Firstly the ADR, which include a motorcycle braking rule, would need to be amended by the Federal Government.¹⁷⁸ Secondly they would apply to all new motorcycles sold in Australia, a situation which could affect other jurisdictions. The setting of standards and the way Victoria is involved in that process was outlined by Mr David Shelton, VicRoads:

*... our position is to encourage its use [ABS], and we are working with the commonwealth on whether or not there is a need to regulate in this space. If there is, it is most likely to be done through commonwealth law.*¹⁷⁹

However, Mr Shelton also explained that while Victoria was committed to setting standards through a national process, it had in the past chosen to implement Victoria-specific design changes:

*We are committed to a national vehicle standard setting process. We sit at the table with many other stakeholders and with the commonwealth to inform that process. However, as you would be aware, where it believes it is appropriate and necessary Victoria has chosen to implement its own regulations to bring in new safety standards, most recently the ESC in cars. Our starting point is to work with the commonwealth to make sure we can bring them in as soon as possible.*¹⁸⁰

Mr Ray Newland emphasised the need to take a national approach:

*I do not see any use in having that particular mandating [ABS] in Victoria. If you are going to do it, it would have to be across Australia. You cannot have it mandated in this state when across the bridge at Albury it is not. To then suddenly say, 'Now I don't have to have this' is ludicrous. We need a national approach to these things.*¹⁸¹

The second argument against mandating ABS that participants cited was a design change for motorcycles in Victoria would have limited impact on manufacturers. This was due to the size of the motorcycle market in Australia with larger markets such as those in North America and Europe driving changes in designs and technologies.¹⁸² The VACC also noted the size of the Australian market in its submission. The availability of ABS on motorcycles is being driven by markets with a high volume of recreational motorcycle sales such as Europe and North America. The VACC suggested changes to design and technology needed to be based on the 'world market' rather than local markets.¹⁸³ Further, Australia did not have the sales volume to be able to dictate design features even if they could benefit local riders.

The third argument outlined to the Committee was that regulatory intervention to mandate ABS was no longer needed considering the impact on motorcycles sold in Victoria of compulsory ABS in the EU and the growth of ABS through industry-led initiatives such as that of ACEM.¹⁸⁴ The changes occurring outside of Australia, and their impact on Victoria, were highlighted by Mr Ray Newland:

*I would like there to be no mandating of technology, a la ABS for motorcycles.... I believe at this stage that the industry is doing its part regarding ABS and you will see that once ABS becomes mandatory in Europe in 2017 and comes to UNECE, it will naturally flow to Australia, and we will be on the same page.*¹⁸⁵

Honda Australia MPE also supported waiting for changes in other markets and relying on market forces to increase the availability of ABS on motorcycles:

*If the question is whether there is a future for ABS, the answer is, 'Absolutely, yes'. But it is also very much market driven: you can offer it, and offer it even at the right price, and people still do not want it. As Honda we are trying to push it more into the market, and we are seeing with this commuter bike the acceptance of ABS is even higher than we anticipated, and that has given us heart as well for future products. Last month the take up was close to 50 per cent on that commuter bike, so that is extraordinary.*¹⁸⁶

Mr Rob Smith, Motorcycling Australia, also recognised the flow on effect of changes in the EU:

*Regarding ABS, as of 2017 all motorcycles over 150 cc will have to have ABS. We are going to get it whether we like it or not.*¹⁸⁷

In addition to these issues, the expense of ABS as an option on motorcycles¹⁸⁸ (ranging from \$400–\$2000), the challenge of applying it to smaller capacity motorcycles¹⁸⁹ and its impact on vehicle handling were also cited as reasons for not mandating its use. In terms of the cost of ABS, Honda Australia MPE advised that the cost of ABS is being reduced and its availability on motorcycles will increase over time.¹⁹⁰ Its suitability for all motorcycles was questioned by Mr Robert Toscano, Honda Australia MPE, who stated:

The first thing that needs to be stated is that ABS does not necessarily suit all bikes. Even in the bikes that it does suit, it does not necessarily suit them in all riding conditions. People still need a choice. We also supply bikes to police departments, and they always specify ABS. Progressively we are trying to introduce more options of ABS across our range. I would not let my kids buy a car with ABS, so I think that option needs to be available for motorcycles as well.

*But it is not as simple as saying you need ABS on all products. The ABS system on a big sports bike, the sort of bike that the police are buying, is a different sort of ABS than would go on the 250cc commuter bike that we are selling at the moment.*¹⁹¹

Mr Rob Salvatore, VMC, expressed the view that ABS could affect the vehicle's handling:

... ABS can upset the dynamics of a motorbike. Particularly in a LAMS motorcycle, which is designed to a price, the ABS package is actually quite cheap and quite coarse. When ABS is engaged the pulsations could cause a dynamic instability, particularly if you are going into a curve.

*Also, if you do not use good braking practice and you apply ABS — so if you think you do not need to and you know how to brake and you just slam it on — your braking distance is likely to be far longer than if you applied good braking practice. ABS interferes with the weight transfer. It is the technology: you shock the wheel, it senses the wheel has stopped, so it lets it go and you continue on. The weight transfer has not come forward to flatten the wheel to give you the greater traction required to bring the bike to a stop.*¹⁹²

11.4.5 Findings

The design, adoption and use of motorcycle countermeasures are an emerging area. Some technologies such as airbags and stability control are in various stages of use and development, and as a result they have not been subjected to a level of evaluation or research that allows a definitive statement about their potential for reducing motorcycle trauma. The area of most interest, for the Committee, participants to the Inquiry and in other jurisdictions, is ABS. While the technology itself appears to be the most widely available motorcycle countermeasure, and has clear benefits such as better stopping distances and the ability to reduce the loss of control due to wheel lock, research into its potential to save lives and reduce injury does not appear to be fully conclusive or sufficiently definitive. The cautionary approach of VicRoads and the RACV support the conclusion that more research is needed into its potential use before

consideration is given to mandating. However, existing evidence suggests that ABS has the greatest potential of any countermeasure assessed by the Committee.

While the absence of a UNECE standard for ABS was cited by VicRoads and in the government's response to this Committee's *Inquiry into Vehicle Safety* in 2008, the EC's proposal for ABS on motorcycles is likely to overcome that obstacle, with the development of a standard in the period up to 2016. The Committee believes the European approach which will see braking systems fully mandated in 2017, will have positive ramifications for Victorian riders by improving the availability, and potentially the cost, of ABS on motorcycles. Nevertheless, the Committee is concerned with the low numbers of motorcycles fitted with ABS in Victoria, and believes that more needs to be done to increase levels of ABS use. Education campaigns and the use of incentives are one way of achieving those increases. That approach appears to have been a key driver in the increased fitting of ABS on motorcycles in Sweden and there is merit in following that approach in Victoria.

11.5 Protective gear

Protective gear has a long and rich history and in some respects is indistinguishable from motorcycling. Protective gear is a blanket phrase that consists of protective clothing, protective boots, gloves and body armour. In the popular consciousness, protective clothing has often been referred to as riding leathers, comprised of jackets, pants and one piece racing-style suits. However, changes over the last two decades in research and the development of new materials, armour and passive technology (such as airbag suits) as well as manufacturing have broadened the types of clothing referred to as protective. These innovations have led to significant changes in the quality and diversity of protective clothing and, as a consequence, the trauma outcomes of crashes.

Protective gear has an important role in motorcycle safety both before and after a crash. Its non-crash function is protection from the weather. Wearing protective gear, clothing in particular, can help reduce the potential impacts of fatigue, dehydration and the cold which are crash risk factors. An associated function is to increase rider visibility by using bright colours and reflective materials, which again, is intended to reduce crash risk.

In a crash scenario, motorcyclists rely on their protective gear to lessen the severity of their injuries and, in minor crashes, potentially avoid injury altogether. The crash benefits of protective gear have increasingly been the subject of academic research, and discussion among road safety agencies.

This is due to its potential to reduce the impacts of crashes on the rider and, at a community level, the cost of treatment and rehabilitation. However, protective gear is a complex policy issue in road safety. This is due to a number of factors including varying quality standards in manufacturing and materials, a motorcycle culture which includes a strong libertarian element, rider attitudes and the issues associated with mandating its use.

In Victoria, and across Australia, the use of protective gear is not compulsory when riding, but there have been attempts by Victorian road safety agencies to increase its use as a countermeasure, predominantly by promoting its use through advertising, education and consumer information.

The focus of this section is on protective gear as a countermeasure, as distinct from protective helmets. Motorcycle helmets, which are both mandated for riding and subject to a specific Australian Standard (which all helmets must meet before being sold in Victoria), were excluded from term of reference (g). The effectiveness of helmets and their performance in mitigating crash injuries is well documented, helmet use is very high, and helmets were the subject of very few comments in submissions and during public hearings. For these reasons, the Committee did not include helmets in its investigations into protective gear. It did however investigate protective clothing (jackets, pants and one-piece racing-style suits), protective boots and gloves and body armour, including knee and neck braces used by off-road motorcyclists.

11.5.1 What is protective gear and what are its functions?

Protective gear essentially protects a rider from injuries arising from a crash (particularly at low speed) or mitigates their severity.¹⁹³ It also protects riders from the elements, when they are riding. Protective gear is made from many different materials. Clothing tends to be made out of leather, Kevlar, Dyneema¹⁹⁴ and other man-made fibres such as nylon and plastic. Armour generally tends to be made of stronger materials such as Kevlar, carbon fibre and plastics. Although leather garments remain the epitome of protective clothing, new fibres have allowed equally protective products such as reinforced jeans to be manufactured.

The protective gear market is substantial and diverse, comprising hundreds of manufacturers from across the world, some of whom are affiliated with motorcycle producers (for example BMW clothing) while others specialise in particular types of riding (off-road, enduro and road racing). Many manufacturers focus on boots, gloves or clothing, while others produce a complete range of protective gear. Well-known manufacturers include Dainese and Alpine Stars and Australian companies Dririder and Draggin jeans (which produces specialised jeans made with Kevlar and Dyneema).¹⁹⁵

Boots and gloves, along with protective clothing provide an important barrier between a rider's skin and the road surface. The barrier provided by these items can reduce abrasion wounds and, if the barrier remains intact, reduce the chance of wounds becoming contaminated and in turn infected.

In contrast, armour acts to reduce injuries by absorbing the energy of an impact and spreading it across a wider surface area at a rate that is less damaging to the rider.¹⁹⁶ Increasingly, specialised products such as armour, knee and neck braces (particularly in the off-road riding area) have become more widely available. Neck braces which aim to prevent or lessen vertical spine injuries, together with knee braces which aim to prevent or lessen knee injuries, offer improved rider protection. However, researchers have

found that their development and that of armour more generally, has been limited by the need to balance protection with rider comfort and manoeuvrability.¹⁹⁷

11.5.2 Emerging trends for protective gear

An emerging trend in protective clothing is the inclusion of passive safety, in the form of airbags, within motorcycle jackets. These ‘airbag jackets’ activate using sensors, and protect the neck and other areas of the torso. Although these jackets have been developed and used predominantly for professional motorcycle racing, some are becoming available for use by the public. During the Inquiry the Committee sought comment on the emergence of airbag jackets from a number of witnesses. The general response was that the recent development of such jackets and their limited use make it difficult to assess their effectiveness. Mr Paul Varnsverry, Technical Director, PVA, based in the UK, cautioned:

*I do not think there is enough of a take-up of that product yet. I do not believe there is a sufficient number on the market for any meaningful data to come out of it ... That product has been in development for years and years, and I have not seen any significant number on the road. In fact I do not know anyone who owns one.*¹⁹⁸

While there are very few of these jackets in general use, a representative from the RACV stressed the potential that this technology represents:

*... there is some development going on in emerging technologies such as ... airbag suits for motorcyclists, which has potential to increase motorcycling safety in the future.*¹⁹⁹

The Committee also sought comment from representatives of the TAC on the injury mitigation potential of airbag jackets. Ms Samantha Cockfield explained:

*We are seeing some motorcycle airbags and evidence of their effectiveness. I must admit it is fairly low level evidence at this stage, but we are seeing some effectiveness at lower speeds. Inflatable body protectors are becoming more and more popular on the race circuit. We certainly saw them at the MotoGP over the weekend. We are looking at how effective and practical they may be.*²⁰⁰

These views are supported by Centre for Accident Research and Road Safety – Queensland University of Technology (CARRS-Q) research, which noted that while several companies are developing and marketing airbag jackets, their role in reducing injury remains limited by ongoing challenges.²⁰¹ On the basis of witness evidence, it appears that these challenges remain ongoing.

Whilst the emergence of airbag jackets is the most prominent example of the ongoing development of protective gear, there is significant research and development being undertaken. Polymer based materials that harden upon impact and new synthetic materials (such as Phase Change Materials which reduce thermal stress and improve thermal comfort for those wearing protective clothing²⁰²) and tanning treatments (to diminish the impact of the sun on leather) aimed at reducing the discomfort of riders wearing protective clothing in hot weather are also being pursued.²⁰³ The Committee considers that ongoing research and development appear likely to produce advances in

the performance and injury protection capabilities of protective gear in the future, which will have an impact on crash outcomes.

11.5.3 Why use protective gear?

Protective gear can reduce injury following a motorcycle crash. It has been proposed that wearing full protective gear (gloves, boots and leather clothing) could reduce the annual probability of injury, for motorcyclists, by 40%.²⁰⁴ Protective gear may have a role in reducing fatigue and dehydration, which are crash risk factors, by protecting riders from the weather and reducing noise and vibration stress.²⁰⁵ While the effectiveness of protective gear is said by some to be unknown,²⁰⁶ there is a well-established and highly persuasive body of research and studies that show protective clothing can reduce soft tissue injuries,²⁰⁷ open wounds,²⁰⁸ cuts and abrasions, friction burns, the stripping away of muscle,²⁰⁹ and contamination of wounds.²¹⁰ That effectiveness was noted in submissions²¹¹ and at public hearings. Ms Melinda Congiu, RACV stated that:

*... the injury reduction potential of motorcycle protective clothing has been quite well established over the years, and the increased use of protective clothing has the potential to greatly decrease the injury risk of motorcycles.*²¹²

The effectiveness of protective gear has led to some jurisdictions quantifying its potential in terms of injury reduction. A prominent example is the Swedish Transport Administration, which suggests three lives could be saved annually if motorcyclists wore full-body protective clothing.²¹³ The Alfred Health submission also raised the importance of protective gear suggesting that the reluctance to wear protective gear can have serious ramifications for motorcyclists in an accident.²¹⁴

Peer reviewed research conducted in Australia, has quantified the injury reduction qualities of protective gear and the performance of different components such as boots and jackets. The research, published in the Journal *Accident Analysis and Prevention*, was conducted on 298 motorcyclists who were treated in hospitals in the Australian Capital Territory (ACT) following a crash²¹⁵ (the ACT study). The research found that overall riders were significantly less likely to be admitted to hospital if they crashed while wearing a motorcycle jacket, pants or gloves.²¹⁶ Motorcyclists who wore protective gear with armour were also significantly less likely to sustain injuries to protected areas. Researchers found, when compared to those not wearing protective gear, a 23% lowering of risk when wearing a jacket, 45% for motorcycle gloves, 39% for motorcycle pants for leg injuries only and 45% for boots.²¹⁷ The ACT study also found that wearing boots of any kind reduced the risk of foot or ankle injuries by 53% when compared to shoes or joggers, a reduction similar to wearing motorcycle boots.²¹⁸ According to the research, the most substantial effect of protective gear was in preventing open wounds in a crash, and therefore reducing the likelihood of riders being hospitalised.²¹⁹

An important finding of the ACT study was that clothing fitted with armour significantly reduced the risk of soft tissues injuries such as bruises, abrasions, cuts and lacerations.²²⁰ While motorcycle gloves and boots, and non-motorcycle boots, without armour still provided a risk reduction for soft tissue injuries, motorcycle jackets and pants not fitted with armour did not.²²¹ The research is particularly noteworthy for its confirmation of the effectiveness of body armour in reducing injury, particularly to legs which are most likely to be injured in a motorcycle crash.²²²

The TAC has also undertaken research, based on the assessment of 500 clients, on the impact of protective gear for hospitalised riders.²²³ It found those riders who wore full protective gear and helmets had hospital stays five days shorter than those who did not or who wore less than a full complement of gear and helmet.²²⁴ The TAC study also found off-road riders fared better than on-road riders, which was possibly due to on-road riders wearing less protective gear.²²⁵

In response to the question raised in public hearings of whether protective gear can reduce injury, Mr David Shelton, VicRoads spoke of the high percentage of lower limb injuries sustained in crashes, and the protection offered through wearing boots:

*One-third of on-road casualty crashes involve injury to the lower extremity. Research shows that any boot reduces the likelihood of lower-limb injury by up to 53 per cent, and about one-quarter of riders report that they only sometimes or never wear boots. We think there is quite a lot that can be done in that particular area as a subgroup of the protective clothing safety opportunities overall.*²²⁶

The question of effectiveness was also put to medical specialists at the public hearings. Professor Russell Gruen, Director, National Trauma Research Institute, Alfred Health, made the following remarks on protective clothing:

*I am totally convinced that protective clothing helps, both in soft tissue injuries – so the severe disruption of skin, muscle and tendons down to bones – as well as in open fractures, which can have very nasty complications. What we mean by an ‘open fracture’ is, for example, typically a fractured leg with bones sticking out. It usually implies significant force and a lack of protective clothing.*²²⁷

Associate Professor Michael Leung, Director, Plastic, Hand and Maxillofacial Surgery Unit, Alfred Heath, noted:

*It is not uncommon to hear that if they had not worn protective gear their injuries would have been a lot worse. Even had they worn it they would still have had a lot of injuries, but if they had not worn it their injuries would have been worse than what they have. I do not think protective gear would stop them from having injuries, but it would minimise the injury ...*²²⁸

Associate Professor Susan Liew, Director, Orthopaedic Surgery, The Alfred Hospital, highlighted the impact of seemingly minor injuries, which could be mitigated by protective gear:

With feet injuries you may think, for example, ‘Oh, well, a broken toe isn’t such a big thing’, but you would have somebody on crutches for six weeks who cannot work or get to work, who would have pain, and if it healed in the wrong position, they would have pain for the rest of their life because they would have to

*walk on their foot... It is the same with the hands...; if you take out a thumb, for example, that is incredibly crippling. You cannot do anything with the rest of your hand. You do not think about those things until you see people and talk to people who actually have these injuries and who tell you how disabling it actually is.*²²⁹

In addition to research and professional medical opinions on the effectiveness of protective gear, the Committee also received evidence from motorcyclists who were involved in crashes. Their experiences provided the Committee with valuable evidence that illustrated the effectiveness of protective gear. Mr Matthew Zammit, a rider recovering from a serious crash, told the Committee:

*I had full safety protective gear on, which I probably owe my life to.*²³⁰

11.5.4 Limitations

While the injury reduction benefits of motorcycle protective gear and armour in particular are well established, there are limitations in what this countermeasure can achieve. In crashes involving high impacts or a rider hitting fixed objects, the role of protective clothing appears to be limited.²³¹ Similarly, the use of armour has not been proven to reduce the risk of fractures.²³² Mr Paul Varnsverry, PVA, highlighted these limitations:

*I am sure we have all heard about the seemingly innocuous incident that occurred that resulted in a fatality. How did that happen? There was not a mark on him. Then we have seen the wrecked vehicle, completely totalled, that has rolled several times and someone walks away unscathed. Real world accidents are chaotic and unpredictable, and I think if you start striving to achieve the ultimate, you let the best be the enemy of the good. I think we have to sit back and take a common sense view. We can actually, with protective clothing, reduce or prevent some injuries. That is all you will ever do; you will not prevent them all. There are injuries that the clothing cannot prevent, such as striking solid objects at speed, rotational forces or twisting, bending forces. That is established, it is accepted, and it is referenced in the European standards.*²³³

11.5.5 Current and past approaches to protective gear

11.5.5.1 Victoria

At present, the use of protective gear while riding in Victoria is not compulsory, and riders can chose to use it at their discretion. The approach by Victorian road safety agencies, as set out in state road safety and motorcycle strategies, involves actions that promote the benefits of wearing protective gear.²³⁴

The TAC drew the Committee's attention to its work on promoting protective gear:

Just in relation to protective gear, I would argue that the TAC probably does more advertising on protective gear than anybody else in the world. I think we have got extensive campaigns. Since we have identified that this is an issue we have had an evidence-based campaign, which has meant specific advertisements for both motorcyclists and scooter riders talking about it in the context of a range of risk ... such as that reduce your risks campaign. We do a range of work in the Victorian context in terms of providing motorcycle retailers who actually stock protective gear with promotional material to promote that protective gear and actually help them sell it.

*We have stands at both the motorcycle expo when it is on in Melbourne, but also the motorcycle GP which we know is incredibly well attended by motorcyclists in Victoria and also by those from interstate. Our program around protective gear is quite extensive and we have moved that program now into a pilot testing phase to be able to help motorcyclists choose the best quality gear that they can. So I think it would be very unfair to say that we are not doing work in this area.*²³⁵

The TAC also noted that protective gear had been a focus of an advertising campaign, *What's between you and the operating theatre?*, and promoted in other advertising campaigns such as *The Ride*.²³⁶

Agencies such as the TAC and VicRoads have faced difficulties in promoting the use of protective gear. The Committee heard that some of the difficulties exist at the retail level and are driven by the cost of protective gear:

*We have been in an ongoing sense talking to motorcycle retailers that actually sell protective clothing about how we can better assist them... We do work with them in store to get people to purchase, because they tell us it is a hard sell, that people come in to buy a bike and they have no intention of spending another \$500 to \$2000 on protective clothing.*²³⁷

In addition to promoting the use of protective gear, an ongoing project to introduce a consumer rating (the star rating system)²³⁸ for protective gear based on testing and rating its effectiveness has been underway since 2006.²³⁹ There have, however, been criticisms of the star rating system with suggestions that there was no need for such a system as there was an existing European Standard that could be applied to clothing.²⁴⁰

Past inquiries by this Committee in 1998 and by the Victorian Parliament's Social Development Committee in 1992 investigated and made recommendations on the use of protective clothing. The 1992 *Inquiry into Motorcycle Safety in Victoria* focused on motorcycle visibility, making the following recommendation:

The Committee recommends that:

*The Minister for Transport implement road safety measures to increase motorcycle conspicuity by: Encouraging motorcycle riders to use yellow, white, red and fluorescent colours for their motorcycles and their clothes ...*²⁴¹

In 1998, the Victorian Road Safety Committee completed the *Inquiry into the Review of Motorcycle Safety in Victoria* and made the following recommendation:

Recommendation 5.

*That VicRoads conclude and release as a matter of urgency, a recommended protective clothing and conspicuity standard.*²⁴²

The recommendation made in the 1992 Inquiry was supported by the Victorian Government with caveats that the measure would not be mandated or add costs to riders. VicRoads, in consultation with the motorcycling community, would develop innovative designs for items of motorcycling apparel which would highlight the conspicuity of the wearer.²⁴³ The response to the 1998 recommendation was twofold: it

committed the TAC to investigate communication strategies to encourage the use of appropriate clothing by motorcyclists, and VicRoads to develop guidelines for manufacturers of protective clothing and the development of an Australian Standard.²⁴⁴ Although there is no dedicated motorcycle protective gear standard, a guideline for the manufacturing of protective clothing was developed and published by Standards Australia in 2000.²⁴⁵ However, the effectiveness of that guideline is limited because it does not require manufacturers to adhere to or to make clothing that complies with its requirements.²⁴⁶ Further, issues have been identified with the appropriateness of tests for abrasion in the guidelines and there have been criticisms as to its usefulness.²⁴⁷ The Committee was advised by VicRoads that it is working with the TAC to better understand the way the European Standards for protective gear may apply here in Victoria:

*Certainly the focus of the work we are doing with the TAC is to look at the European standards. We are conscious of the fact that there are certainly a number of local suppliers and certain climatic conditions that mean that if effective clothing is too hot, it will have other effects. Part of the work we are doing now is really to understand how the European standards are applied and what implications they might have. If in the future we are going to promote the benefit of different levels of protection, we will almost certainly base it on the European standard. The research now is to get some local understanding about how it works.*²⁴⁸

11.5.5.2 Australia

Other Australian jurisdictions have taken a similar approach to Victoria. Protective gear is not compulsory²⁴⁹ and the emphasis is on promoting its use. At a Commonwealth level, the Department of Infrastructure Transport, Regional Development and Local Government funded the development of *The Good Gear Guide for Motorcycles and Scooters* which helps consumers chose protective gear and encourages its use.²⁵⁰

11.5.5.3 Europe

Generally, wearing motorcycle protective gear is not compulsory in the EU. However, representatives from the Belgian Institute for Road Safety, advised that a new law requiring the use of 'appropriate gear' (gloves, long-sleeved jacket, pants and boots) when riding, was introduced in Belgium on 1 September 2011.²⁵¹

There is no requirement that the gear meet any standard, including the European Standard. In response to a question from the Committee about the lack of a link to the European Standard, it was explained that because the legislation was designed to educate riders rather than mandate its use, a reference to the standard was not required.²⁵²

The Committee understands that the general approach by road safety regulators in Austria,²⁵³ Ireland, Luxemburg, Switzerland, the Netherlands,²⁵⁴ Sweden and in London²⁵⁵ has been to encourage the use of protective gear, through education and incentives.

European Standard and Regulation

European law regulates motorcycle protective gear through a Personal Protective Equipment Directive (89/686/EEC).²⁵⁶ The directive applies to protective gear made for motorcycling if it is sold on the basis that it is ‘protective’.²⁵⁷ Such gear must meet a European Standard (CE), be tested to that standard and carry a label certifying compliance if it is sold on the basis that it can protect motorcyclists.²⁵⁸ European Standards exist for gloves, boots, jackets and pants and back protectors.²⁵⁹ Mr Paul Varnsverry, PVA, provided the following explanation of the regulatory framework for the European Standards and the European regulatory requirements:

There are in total nine European standards, prepared under a mandate issued by the European Commission, covering motorcyclists’ protective clothing and equipment, consisting of limb protectors, back protectors, jackets, trousers and one and two piece suits, gloves, boots, and stone shields. Two further standards are under preparation. Products meeting these standards carry a presumption of conformity with the requirements of European legislation covering personal protective equipment.

The European standard for motorcyclists protective clothing, EN 13595, has its foundations in research produced by Dr Roderick Woods of Cambridge University and has been peer reviewed by the American Society for Testing and Materials. This standard assesses the critical characteristics for motorcyclists’ garments, including impact abrasion protection and burst strength of seams and fasteners.²⁶⁰

The European standard has two levels of performance, level 1 and level 2. Level 1 may be appropriate for scooter riders at low urban speeds; level 2 would perhaps be for riders out on the highways.²⁶¹

While there are European Standards for protective gear, gear that does not meet these standards can still be sold but cannot be advertised as being ‘protective’.

11.5.5.4 Is protective gear used by motorcyclists?

In its submission to the Inquiry, the TAC sought to direct the Committee’s investigations by referring to the outcomes of observational research it had carried out on rider attitudes towards protective gear. Summarising the findings at the public hearings, Ms Samantha Cockfield explained:

Approximately 80 per cent of people say that they own a complete set of protective clothing; they actually own most of the clothing. Those who do not own it generally say they do not because it is too expensive or they do not believe they need it. About two thirds believe that they own, or say that they own, body armour.

We are not specific about what types of body armour and whether it is for your knee, elbow or full body armour. If they do not wear gear, it is generally because they think that they are only taking a short trip, the weather is too hot or it is just inconvenient at the time to actually put their gear on.²⁶²

The overall rate of glove wearing was very high (97%), with over 80% wearing protective jackets. However, the wearing of protective clothing on legs was less observed, with 49% of riders using it. According to the TAC study undertaken by researchers from CARRS-Q, ‘the majority of motorcyclists observed in the study were wearing protective apparel, particularly on the upper body’.²⁶³

The outcomes of this research were useful in identifying the types of protective gear that riders use. The researchers found:

- ‘86% wore full gloves;
- 80% wore motorcycle specific or leather jackets (with 36% wearing leather);
- 60% wore boots; and
- 38% wore motorcycle specific or leather clothing on their legs’.²⁶⁴

This observational study was undertaken again in August 2011. The usage patterns differed from the earlier study, showing significant improvements in usage rates:

- ‘95% of motorcyclist wore full gloves;
- 81% wore motorcycle specific or leatherjackets;
- 68% wore boots; and
- 42.8% wore motorcycle specific or leather clothing on their legs’.²⁶⁵

The study also noted different rates of usage between commuter and recreational sites and between commuter and recreational riders.²⁶⁶ Boot wearing was seen on 60% of commuters but almost always on recreational riders. A particularly noteworthy finding was that commuter scooter riders were the least likely to wear protective apparel with the exception of full gloves.²⁶⁷ Unsurprisingly, the weather during which each study was undertaken, March and August, affected the rates of protective use, with the results suggesting that colder weather was the peak period for using protective gear.²⁶⁸ Other surveys conducted on behalf of VicRoads into the use of protective gear also reflect high levels of use on the upper body with fewer riders using leg protection or armour:

- ‘77% of respondents always wore gloves;
- 67% always wore jackets;
- 53% always wore boots;
- 39% always wore trousers; and
- 20% always wore armour’.²⁶⁹

Apart from observational studies, the use of protective gear, and recognition of its importance was also noted by submitters and witnesses.²⁷⁰ Mr David MacKenzie, Senior Instructor, Motorcycle Motion, graphically described the role of protective gear to the Committee:

*One of our instructors has a great saying that if you fall off a scooter, you lose skin, and if you fall off a sports bike, you lose meat. I tell my students that.*²⁷¹

Sergeant Darren Wittingslow, Victoria Police, also commented on the importance of protective gear:

If you want to have the right and the luxury of being able to ride a motorcycle and potentially end up in hospital, which costs the community hundreds of thousands of dollars every year, then you need to sign up and make sure that you give yourself the best available opportunity to survive when the accident happens.

*Given that recreational motorcycling, particularly out in the bush, is inherently a dangerous recreational pursuit and people are only out there to have fun, enjoy themselves and push themselves to the limit, it is going to go pear shaped. We have to accept that. If they have on the correct protective equipment, it is going to lessen their chances of being seriously injured.*²⁷²

The Committee also received evidence from riders who noted both the importance of being able to choose to wear protective gear but also the consequence of failing to do so. Mr David Hyatt, shared his view of those consequences:

*The option should be there for people to be able to choose to take up those options or not. If you are my friend, and you fall off without your gear on, then I reserve the right to ridicule you endlessly for making a stupid decision, but you have to be able to make the decision. If you are smart, you wear all the right gear.*²⁷³

11.5.5.5 Findings

Protective gear is a countermeasure subject to ongoing development, with the creation of airbag technology and the development and use of new textiles representing emerging areas of interest.

The Committee believes the available evidence, including research, the views of those who treat injured riders and those injured themselves, clearly supports a conclusion that protective gear has important and proven injury reduction benefits. However, there are limitations to the types of injuries such gear can reduce or help to avoid. The findings from the ACT study are particularly persuasive as to the injury reduction capacity of gear. The Committee notes one finding in particular: that using boots of any type conveys an obvious injury reduction benefit. Disseminating those findings and designing educational and promotional material based on existing research should be an area of focus for road safety agencies in Victoria.

The current primary approach to protective gear centers on the use of education and promotion by Victorian, Australian and overseas safety regulators. In addition, work has begun in Victoria on the star rating system, which can also be described as being part of the existing education and promotion approach. The Committee believes a star rating system has merit in terms of promoting the use of better performing protective gear and influencing consumer choice. However, that project, which began in 2006, has not yet been completed and remains at a formative stage. The Committee is concerned at the lack of progress towards developing a functioning star rating system.

The Committee is pleased by observational research which suggests high levels of protective gear use by Victorian motorcyclists. That research was supplemented by the evidence given by participants that motorcyclists recognised its importance. However, it is necessary to point out that its usage by motorcyclists was not uniform. The lower rate of protective gear use by scooter riders is an area that requires attention from VicRoads and the TAC. Further, the Committee believes education and promotional campaigns need to more significantly focus on the use of boots, armour and lower limb clothing, which do not attract the same level of use by motorcyclists.

11.5.6 Improving current protective gear to reduce motorcycle trauma

The Committee received a number of proposal for improving the use and effectiveness of protective gear. Broadly, these proposals could be characterised in one of three ways: the use of subsidies and incentives, mandating the use of protective clothing and introducing an Australian Standard.

11.5.6.1 Subsidies and incentives

Subsidies and incentives were cited by participants as an instrument for increasing protective gear use. The premise of using subsidies and incentives to achieve increased usage rates rests on two arguments: improving the affordability of gear and using financial incentives to motivate and influence motorcyclists. One submitter, Mr Tim Campbell, noted the cost of one jacket, at \$1,000, may be unaffordable.²⁷⁴ The Department of Sustainability and Environment (DSE) submission also drew attention to the costs of protective gear for off-road motorcycling. It noted that ‘cost was unquestionably the major barrier to wider adoption’, and suggested the cost of a full set of protective gear is between \$2,000 and \$3,000.²⁷⁵ In Chapter 6, the Committee noted cost was one factor in increased motorcycle usage in Victoria. Clearly, cost sensitivities which drive people to purchase motorcycles may also reduce the likelihood a motorcyclist will purchase protective gear, or a complete set of it.

There are a number of ways that subsidies and incentives might operate. These include the removal of the Goods and Services Tax (GST)²⁷⁶, subsidies from specific agencies such as the TAC²⁷⁷, and ‘tax waivers and insurance premium reductions and rebates’.²⁷⁸ The Committee notes that the use of subsidies and incentives for motorcyclists has been identified in the past. In the 2008 Motorcycle and Scooter Safety Summit, a future direction for protective gear included motorcycle advocates seeking GST exemptions for items that can be classified as safety gear by meeting minimum standards.²⁷⁹

11.5.6.2 Mandatory use of protective gear

The benefits of protective gear were considered significant enough for some participants to suggest making their use mandatory. A number of submissions were supportive of compulsory protective gear use.²⁸⁰ The submission from Victoria Police proposed that motorcyclists wear five types of gear, which would have to meet an Australian Standard.²⁸¹ Some witnesses raised the prospect of requiring novice riders in particular to wear protective gear. Mr Bill Tassigiannakis outlined his proposal for applying mandatory use on novice riders:

*Again this is more directed to young riders and putting in place a mechanism where they might be deemed to have a conditional licence. In the first 5 or 10 years they should have full gear: helmet, coat, pants, shoes and gloves. ... Just as I have a conditional licence because I am short sighted, even though I have been a driver for 30 years, the licences of motorbike riders of a certain age bracket could be deemed conditional upon wearing safety equipment.*²⁸²

The proposal to apply such a requirement to novice riders appears to be based on their crash risk. Ms Melinda Congiu referred to crash risk when discussing the RACV's proposal to apply compulsory protective clothing requirements to novice riders:

*In our submission to the discussion paper on graduated licensing last year we supported a requirement for all learner and intermediate motorcyclists to wear protective clothing while riding. This was because novice riders do have a high crash risk, and a requirement for them to wear protective clothing will reduce their injury risk. We also believe that requiring learner and intermediate riders to wear protective clothing may encourage good rider habits and may encourage the continued wearing of protective clothing once they are fully licensed.*²⁸³

Associate Professor Michael Leung, Alfred Heath, also supported the idea of mandating protective clothing:

*I think I would legislate that people should not be allowed to ride a motorcycle without appropriate protective gear and should wear shoes ... In terms of the legislation ... it is not to wear shorts and sandals to ride a bike.*²⁸⁴

A variation on the proposal to mandate was the idea of taking a staged approach with mandatory requirements applying to specific types of gear. Associate Professor Susan Liew, Director, Orthopaedic Surgery, The Alfred Hospital, explained:

*If you put in a standard that would be extremely unpopular — as in a stringent standard. I think that even just a descriptor would make a big difference ... To get it accepted first you would need to have a softer sort of approach and make it so that you mandate full covering of arms, legs, gloves and boots; even if in the first instance you made gloves and boots mandatory, that would make a difference.*²⁸⁵

A significant number of submissions and witnesses statements were opposed to mandatory use.²⁸⁶ The Committee noted that some witnesses believed the implementation of such a proposal could be problematic. Mr Paul Varnsverry, PVA, stated:

*... any talk at this time of compulsion would, in my opinion, be seriously premature, highly counterproductive and immensely damaging ...*²⁸⁷

The basis for opposition to this proposal was diverse. It included the following reasons: a lack of 'guarantees into its effectiveness';²⁸⁸ the need for more research into its effectiveness;²⁸⁹ risks posed by wearing protective gear; cost; the ability to enforce the requirement in the absence of a standard; freedom to choose;²⁹⁰ and the lack of an applicable standard. The Committee found cost, the freedom to choose, risks posed by wearing the gear and the lack of an applicable standard were reasons which were consistently cited by submitters and witnesses opposed to mandatory use.

Cost

Cost, and the sensitivity of motorcyclists to it, was cited earlier in the context of subsidies and incentives. In that instance, reducing the cost to motorcyclists was seen as a way of improving protective gear usage. However, if protective gear was mandated,

the cost involved could disadvantage some motorcyclists, as highlighted by Ms Elizabeth Krieg:

*... it is [about] cost. The gloves are not so much because you can get reasonably costed gloves that are protective, they have the knuckles which protect your knuckles and all that sort of stuff. Boots, again, you are walking into an area where boots can cost you anything up to \$1000 or more. The cost really makes it quite difficult for somebody starting out on a 250 bike — my first 250 was about \$6000 brand new on the road ... and that was reasonably cheap for a bike.*²⁹¹

While recognising the importance of gear in reducing trauma, Ms Krieg added that:

It would be worth it, but then you are disadvantaging people who cannot afford it. In theory people need to wear the gear. I have seen a girl on a scooter wearing the most beautiful yellow patent leather stilettos. What was she thinking? The reality is you are going to disadvantage a lot of people who cannot afford to go out and spend \$200, \$300 or \$400. A cheap helmet was \$199. Thank God I was not wearing that particular helmet when I had my accident, because I do not know that it would have protected me, but I was wearing a helmet. I was wearing a much better helmet.

*With riding, as you spend more time on a bike, it is then that you can start putting together good clothes. I have got jackets with armour, I have got my leather jacket still, I have got safety strips that glow in the dark, and that kit has grown. I have only had my licence since 2006 and I had my accident in 2007, but it has taken me a number of years to actually be able to afford to buy all the right gear.*²⁹²

Another witness, Mr John Karmouche, identified the costs of mandatory protective clothing to motorcycle businesses:

*It would impact on my business. At the moment I provide as a matter of course leather gloves, a protective jacket and a helmet. I provide protective wet weather trousers that keep them dry, and I require that the passenger wears solid footwear. All the riders that I use in my business are highly qualified and very experienced, and we have got no record of ever having had an accident. In terms of compulsory protective clothing, it would make it difficult for me but not impossible. Again, when it comes to protective clothing I think if you are going to do something then you need to get riders to encourage each other to do it. I believe there are effective ways to do that.*²⁹³

However, other witnesses countered that cost was not a factor for some riders:

*I do not think it is, because a person will go out and buy a \$20 000 bike and wear a cheap helmet, thongs and shorts. But really it is only a toy. People do not go and buy a bike because they have to buy a bike. There might be a bit of cost saving on fuel or something like that, but you are still laying out a lot of money. People who join a golf club are only playing golf for recreation, but they will spend a lot of money on the best available clubs, the best shirt, the best hat, the best shoes, because it ...is all part of the whole package, the whole scene.*²⁹⁴

Freedom to choose

The idea that riders should be free to choose whether they use protective gear or not was strongly asserted, as were the perceptions of what mandatory use would represent. Mr Tony Ellis made the following observations:

Mandating protective clothing is to a certain extent a means of controlling motorcycles — reducing the amount of riding. If people can only ride with full protective clothing, you are going to see a big drop-off in the usage to people on scooters. In the city in particular, why? They are doing around the same speed as a scooter. ... I ride a motorcycle into the city probably three days a week. I am not doing much more of a

*speed than 50 kilometres an hour, and a good cyclist will get up to that. Yet, we are saying, 'You must wear full protective clothing'. I normally do. I wear boots, gloves, some overpants and a jacket, but why are we trying to mandate it there when we do not for bicycles? You will get some very nasty injuries coming off on a gravel road in lycra. Most motorcyclists will wear at least jeans, a jacket and gloves.*²⁹⁵

Mr Kris Growcott added:

*... I believe in educated freedom of choice. I think the government's position is to educate and give us as consumers, as humans or as Australians the right to make the choice for ourselves, and I think the government's responsibility is better served in educating than in imposing mandate. I am resistant to the growing nanny state, and I think mandatory protective clothing would be a further extension of that.*²⁹⁶

The idea of being able to make informed decisions was also expressed by Ms Elizabeth Krieg:

*I think ultimately as adults we need to make choices in life. It would be nice to think that people would make the correct choices. We do not always do that. To make something mandatory is going to encourage people to not do it... I think the more you force people to do something, the more inclined they are not to do it. If people get fined for not wearing the right gear, then there will be complaints about revenue raising. You are not going to encourage co-operation by forcing something.*²⁹⁷

Mr John Voyage, Principal, Maurice Blackburn, cautioned that the decision to mandate would have to involve motorcyclists:

*Let the riders decide. I think that those who ride, decide. I would suggest that it is the sort of decision that should not be made until people who are involved in riding motorcycles are consulted.*²⁹⁸

Risks posed by wearing protective gear

While the issues of cost and freedom to choose were important factors, the Committee was concerned by motorcyclists' claims that mandatory clothing could increase the risk of dehydration and fatigue due to heat stress. Mr Rex Beard, President, Albury-Wodonga Branch, Ulysses Club, observed:

*Protective clothing can be an issue for the pluses and minuses. On a hot day what is the use of being all rugged up in protective clothing if you are not rehydrating yourself? Because you can be on the verge of heat stroke or heat exhaustion and be dressed up adequately, but your mind is not functioning.*²⁹⁹

Ms Aline Delhaye, Secretary-General, Federation of European Motorcyclists' Associations (FEMA), also raised these safety risks with the Committee. Ms Delhaye explained that while protective clothing was suitable in some weather conditions, its use in hot environments such as Australia and Southern Europe could create safety risks.³⁰⁰ However, the issue of risks caused by using protective clothing in hot environments was tempered by other witnesses. Mr Paul Kennelly told the Committee:

*You have a lot of textile gear now which has vents that breathe and allow air to flow through. A lot of the pants have the exact same thing, and a lot of the boots also have ventilation through them. It does get a lot hotter with the gear on, but the thing is that even if you come off a bike doing 40 kilometres per hour to 50 kilometres per hour, you are going to do yourself a lot of damage.*³⁰¹

Mr Greg McCoy reinforced that observation:

*It is about being uncomfortably hot and having to wear [a jacket]. But jackets now have material that breathes. When you are on a motorbike and you are actually riding into the air, it is actually cool. ... I do not think it is going to be an issue or should be an issue. If people want to ride bikes, they have to wear mandatory gear with it.*³⁰²

Other witnesses suggested that the ability to ride on hot days, when protective gear could create the types of risks mentioned, had to be balanced against the risks of not wearing protective gear. Mr David MacKenzie, Motorcycle Motion, stated:

*If you have ever fallen off without wearing protective gear and slid down the road, you know that it is an extremely uncomfortable experience. I tell you that from personal experience. On a 40 degree summer day you should be rethinking whether you should be out riding a motorcycle. I was a motorcycle courier for quite a period of time a long time ago in another life. On a 45 degree day when you are sitting on top of an engine that generates heat and you are on top of bitumen that is 65 degrees, if you have all your protective gear on, you sweat buckets and probably cannot get enough fluid into your system to replenish and rehydrate yourself for what you are losing by being correctly suited up, so to speak.*³⁰³

Lack of an applicable standard

The lack of an Australian Standard means there is no way to ensure that all protective gear will perform in the same way in a crash. A minimum standard that all gear would have to meet would create a benchmark for safety performance. Gear that fell below that standard could not be sold as being ‘protective’ or for the purposes of motorcycling. The absence of a standard could mean that in spite of mandating protective gear, its purported injury reduction benefits would not be achieved.

The issue of the safety performance of different gear was identified during the ACT study into the injury reduction capabilities of protective gear. Researchers found a substantial proportion of motorcycle gloves (25.7%), jackets (29.7%), and pants (28.1%) were assessed as having failed due to material damage sustained as part of the crash.³⁰⁴ That is an important finding because it supports the argument that mandating protective gear in the absence of a performance standard may not lead to better trauma outcomes.

The absence of a standard also poses issues for enforcement. The link between a standard and the ability to identify whether gear met the applicable standard was made by Victoria Police.

Superintendent Bob Stork, Road Policing Strategy Group, stated:

*... what would be good for police, enforcement and therefore the driver behaviour change, is upon interception being able to check and say, ‘That jacket has a standard; yes, that’s okay’ or ‘No, it’s not’. It is not something that would come in overnight. It is something that would need to be staged over quite a period of time.*³⁰⁵

However, Mr Paul Varnsverry, PVA, suggested even with standards, enforcement could still be difficult:

*The European legislation defines what constitutes protective clothing, but the reality is that often it can be extremely difficult and sometimes impossible for even the expert eye to differentiate between protective and other clothing without resorting to destructive inspection and laboratory analysis. I suspect that the relevant authorities would experience even greater difficulties in recognising the differences in, for example, a roadside check.*³⁰⁶

11.5.6.3 Should there be an Australian Standard for protective gear?

The creation of an Australian Standard for protective gear has long been identified as a way of improving the quality of protective clothing. It is also seen to be a prerequisite for compulsory use of protective gear. The submission from Victoria Police linked the compulsory use of protecting gear with an applicable standard, which would also have an enforcement purpose by making it easy to identify complying gear.³⁰⁷

This Committee recommended the implementation of a standard in its 1998 *Inquiry into Motorcycle Safety*.³⁰⁸ In the intervening period, a guideline for manufacturers has been released by Standards Australia, but the adoption of a standard remains unmet. The idea of creating an Australian Standard, based on the European Standard, was raised with the Committee during discussions on protective gear. Mr Mark Collins, National Rider Training Manager, Honda Australia Rider Training (HART) suggested the creation of a new standard was unnecessary, suggesting instead that adopting a standard would be a better approach:

*There is a current CE standard for clothing that exists. I think what is being proposed is that we develop another, separate standard, which would involve having to test all articles of clothing and protective gear. Why invent a new standard when one exists already? Why can we not just get on with what is currently accepted as high quality protective clothing and move forward? It is there already.*³⁰⁹

Consumers and manufacturers may also benefit from the implementation of a standard, because it would allow better performing gear to be identified and sold to discerning consumers. Mr Kris Growcott, formerly an employee of Draggin Jeans, expressed his views on the role of a standard in the context of manufacturing and retailing:

I think there should be regulation on what suppliers and distributors can classify as protective. The hardest thing with getting our [Draggin Jeans] product into suppliers was that there were cheaper products out there and there was no restriction on the wordage they could use. As long as they said they were a Kevlar motorcycle jean, they could say they were protective. There was nothing to show that they had been tested. There was no Australian standard being applied, like there is with helmets.

When Draggin Jeans introduced a jean that was fully CE certified and tried to get it into stores, the stores were unaware of the CE requirements, even though they had been selling and continued to sell most of the armoured products by big brands like Alpinestars and Dainese, which are all CE certified. They were unaware of what that meant and how it applied. To be honest, most suppliers were driven by the margin they could make on a product. They were willing to pass the requirement of looking after yourself onto the rider. We were trying to educate around that, but it was a difficult situation to be in because at the time I was at Draggin Jeans competitors were entering the market every five or six months because they could get access to an inferior Kevlar product. They could get access to manufacturing offshore and bring in a

*product that was probably giving the supplier 20 to 30 per cent more margin than the Draggin Jeans product. That was a huge difficulty, and there was no push down from the government position on suppliers having knowledge of or even understanding the CE or applying any kind of Australian standard.*³¹⁰

The Committee was also informed that there was wide-ranging support for the creation of a standard. Mr Paul Varnsverry, PVA, explained:

*From my meetings and conversations with members of all interest groups ... I am aware of ... support for establishing a committee under the auspices of Standards Australia to investigate how the European standards might be fast tracked into Australian standards. Furthermore, at least two Australian test facilities are drawing up business cases for manufacturing test apparatus to the specifications set out in the European standards, ready to respond to any demands placed on them to service product development projects from industry, as well as supporting a star rating scheme such as it is expected may result from the conclusions of the TAC and MAA [Motorcycle Accidents Authority of NSW] projects.*³¹¹

However, there is also opposition to the creation of an Australian standard. Ms Hollie Black, General Manager, Select Scootas, cited increased costs and applicability in her response on the creation of a standard:

*... I firmly believe in continuing to educate riders about good gear and the already existing CE standards from Europe. Not only would initiating an Australian only standard be a waste of time and money, it would also substantially increase the cost of protective clothing in Australia, making it cost prohibitive for retailers to stock and consumers to buy protective clothing.*³¹²

The VicRoads submission also included a number of reasons that questioned the merit of introducing a standard. The size of the Australian market was said to restrict the ability to require manufacturers to meet a new standard, and such a standard was limited in its application because the vast majority of clothing is imported.³¹³ The implementation of a standard, based on the European approach, could also be avoided by manufacturers not labelling the gear as being 'protective'. VicRoads also suggested that in the absence of legislation compelling riders to wear standards compliant gear, there would not be an incentive for manufacturers to have their gear tested.³¹⁴ Further, VicRoads cautioned that even if standards were introduced and mandated, enforcement would be problematic and its costs would exceed the benefits. As an alternative to introducing a standard, VicRoads suggested that the star rating system was a better method for improving usage rates.³¹⁵

11.5.6.4 Findings

The Committee notes the evidence received from participants reflected a wide range of views on ways to increase the use of protective gear. Creating subsidies and incentives to increase usage has merit. However, the lack of a standard or a functioning star rating system would make it difficult to justify such an approach at present because it would not be possible to verify the performance of the gear being subsidised or subject to an incentive. If a star rating system did exist, subsidies could be attached to gear that meets a certain star rating, thus promoting the use of better performing products.

The proposal to mandate protective gear is similarly undermined by the lack of either a standard or a star rating system. Mandating the use of protective gear would, theoretically, lead to substantial trauma reductions. However, in the absence of a minimum level of performance, supported by a star rating or a standard, the quality of that reduction is impossible to quantify. It is not appropriate to propose a measure the benefits of which could not be quantified. Such a conclusion is supported by the findings of the ACT study which noted substantial failures of protective gear in real world crashes. Clearly, the creation of an Australian Standard, perhaps using the European Standard as a starting point, and a functioning star rating system, are necessary prerequisites to the introduction of compulsory use. Although there are issues to consider in the creation of an Australian Standard, the Committee believes that creating such a standard should be explored. However, there are also other considerations.

In addition to the lack of a performance rating for gear, the Committee notes that affordability, cost, and the potential side-effects of wearing protective clothing in Victorian conditions support adopting a more cautious approach. The high levels of usage observed in TAC and VicRoads studies also support such an approach as it appears many Victorian riders already recognise the benefits of and wear protective gear, although there is room for improvement.

Ultimately, compulsory protective gear may be seen as justified. But this could only occur if a number of preceding steps had been met. The Committee believes mandating could only be justified if usage rates remained below optimal levels (arguably these levels currently exist), subsidies and incentives and improved education and promotional activities by road safety agencies had not resulted in higher usage levels, and after the creation of a standard and star rating system (to create a minimum performance level). A staged approach, leading to mandatory use, would consist of a number of steps which are outlined in the table below.

Table 11.1: Steps in making protective gear mandatory

Stage	Action
1	Promote use (TAC advertising), websites, public education campaigns
2	Provide information about the importance and quality of protective gear
3	Subsidise use or incentives
4	Introduce a functioning star rating system
5	Introduce an Australian Standard – new minimum above which the stars rating applies
6	Mandate for some motorcyclists (i.e. novices)
7	Mandate to all motorcyclists

In addition, the findings of a Victorian MAIDS-like study would guide decision-makers on the need for mandation. At present the Committee believes it is vital to focus on the first five stages listed in the table above. Further, it believes that high usage rates and the lack of a standard or star rating do not, at present, justify mandatory protective gear use.

11.5.7 Increasing the conspicuousness of motorcyclists

A number of submissions raised hi-visibility clothing, such as safety vests as an area which could increase rider visibility and thus reduce crashes. The Committee is aware that a failure to give way to motorcyclists has been cited in a number of research studies and by road safety regulators as a cause of motorcycle crashes.³¹⁶ It has therefore been proposed that increasing the visibility of motorcyclists would reduce these types of crashes,³¹⁷ although that assumption has been questioned.³¹⁸ For example, some researchers believe that drivers estimate that motorcycles will reach them later than cars across a range of conditions and due to a number of factors.³¹⁹ However, other researchers suggest that increasing the use of reflective or florescent clothing can reduce crash risk.³²⁰

On the basis that increased visibility could reduce crashes, some submissions proposed hi-visibility clothing should be mandatory.³²¹ A proposal to mandate hi-visibility clothing was included in the Victoria Police submission. Superintendent Bob Stork elaborated on this proposal, emphasising the need for motorcyclists to be seen in poor light:

We have simply said high visibility. We are not experts around the actual visibility of the clothing or how that might be portrayed. With our own solos we have moved to that high visibility clothing. What we are saying is that they need to be seen.

*... It would have to be high visibility, reflective and able to be seen at night in poor light conditions. Many cyclists incorporate it now within the clothing that they actually purchase and wear, even though in the sunshine you do not necessarily see it, but in poor light or once reflected through headlights, it actually lights up. There are opportunities to do that type of thing. We are not engineers and we are not experts, but we do believe that a high visibility would be of benefit.*³²²

Qualified support was also provided by Ms Melinda Congiu, RACV:

*We would need to see research evidence supporting that, but it does seem like a reasonable suggestion. It was something that was raised in the GLS discussion paper ... about having maybe a high visibility vest for learners and novice riders, and perhaps something along those lines could be considered. It does seem reasonable to be able to have some sort of reflective tape or bright colours to be able to see motorcyclists a bit more clearly. I am not aware of what the evidence is around that and whether that does increase crash risk, so it would be interesting to see what the research is to support that.*³²³

The GLS reference made by Ms Congiu refers to the VicRoads proposal for a Graduated Licensing Scheme (GLS) for motorcyclists, in which learner riders would be required to wear hi-visibility vests or jackets.³²⁴ The idea of imposing such a requirement on novice riders was also discussed by Ms Alene McGowan, General Manager of Armstrong's Driver Education:

*... high visibility clothing designating an L rider and a P rider would help other users of the road to identify the level of skill that person has while they are on the road.*³²⁵

11.5.7.1 Overseas examples

The Committee identified at least one jurisdiction, France, that will require the use of hi-visibility vests. Beginning on 1 January 2013, all riders or passengers of motorcycles

exceeding 125cc must wear reflective clothing complying either to French standards or a standard with an equivalent level of safety. The French safety requirements for these vests include a reflective area with a total surface area of at least 150 cm² which is visible to other road users. The material does not have to be fluorescent, only reflective and the colour is not fixed. The Committee understands that material which appears red, green or even black in daylight will conform as long as it is reflective when exposed to lights from vehicles at night. The reflective material must be worn on the upper body, between the belt line and the shoulders, so as to be visible to other road users.

11.5.7.2 Australian examples

The submission from Australia Post provided the Committee with an example of the use of high visibility clothing in a workplace setting. According to the submission, Australia Post conducted a trial that involved 1000 motorcycles and postmen.³²⁶ Motorcycles had yellow panniers and flags added and postmen wore fluorescent uniform uppers (upgraded to fluorescent uniforms in 2009).³²⁷ The trial found there was a reduction in crashes involving motorcycle postmen. The success of that trial led to Australia Post applying this approach across its motorcycle fleet. The submission claimed there had been a 57% decrease in crashes on roads and at roundabouts, a reduction of 55% in crashes on driveways and a 33% decrease in intersection ‘incidents’.³²⁸

11.5.7.3 Using protective gear to increase rider visibility

The idea of increasing rider visibility in order to reduce collision with other road users is a persuasive one. Research indicates motorcycles might be less visible in traffic and their visibility could, to an extent, be improved by clothing (and helmet colour).³²⁹ However, research suggests increasing visibility through the use of protective clothing is difficult because visibility requirements change depending on the environment a motorcyclist is riding in.

The most important aspect of increasing visibility is that the protective clothing contrasts with the environment.³³⁰ According to the Netherlands Institute for Road Safety Research (SWOV), motorcyclists may benefit from reflective clothing worn at night, but whether that also works during the day depends on the environment.³³¹ Specifically, the SWOV found while reflective clothing can improve visibility in situations that involve dense traffic and at night³³², when riding in rural or open spaces the use of darker clothing was more beneficial.³³³ The conclusions reached by SWOV are supported by other researchers who found there are a number of factors involved in the detectability of riders, including the ability to be seen in the environment and the awareness of other road users.³³⁴

One difficulty identified in using clothing to improve visibility was that riders operate in different environments which necessitate different clothing to allow the rider to stand out.³³⁵ That aligns with the SWOV’s conclusion that ‘there is no clear indication of which appearance is best for conspicuity in all circumstances’.³³⁶ It is also important to note, that reducing the likelihood of crashes between motorcycles and other vehicles is not singularly dependent on increasing the visibility of motorcyclists. Motorcyclists wearing

highly visible clothing can still be involved in crashes caused by a lack of awareness by the other road user. While visibility is clearly important, it relies on other road users being aware of or looking out for motorcyclists.

11.5.7.4 Findings

The idea that making motorcyclists more visible by wearing highly reflective or boldly coloured protective clothing is persuasive. However, the types of clothing required to increase visibility are dependent on the environment in which motorcyclists ride. For example, while hi-visibility vests may improve visibility in dense traffic or at night, they do not improve visibility in rural areas to the same extent as darker clothing, which allows motorcyclists to stand out. The Australia Post trial provides an example of the potential of hi-visibility clothing to reduce crashes in a workplace setting. However, the Committee believes the trial involves a type of riding that can be distinguished from those that this Inquiry focuses on, such as commuting or recreational riding. Postal motorcyclists travel at lower speeds, use footpaths and operate (generally) in urban environments and during the day. These are activities which are suited to the use of hi-visibility vests.

Increasing the level of visibility of one group – motorcyclists – could make it easier for other road users to see them. However, the Committee believes it is only one aspect in trying to reduce crashes where visibility is an issue; the other is raising the awareness levels of other road users. It is about shared responsibility.

The Committee is unable to support the proposal to mandate the use of hi-visibility clothing for motorcyclists, because there is no single approach in terms of increasing the visibility of clothing that would work in all riding circumstances. However, promoting the use of different clothing for different types of riding (for example hi-visibility for commuters and darker clothing for recreational road riders) through education could be beneficial. Research findings into the effectiveness of the hi-visibility clothing measure to come into effect in France on 1 January 2013 would be very useful, particularly if it indicates a reduction in crash risk.

11.6 Training

Training is a type of behavioural countermeasure.³³⁷ During the course of the Inquiry, the Committee received a substantial amount of evidence about the importance of training, its potential to reduce trauma and ways to improve it. The Committee placed particular emphasis on proposals that were consistently raised in submissions and public hearings, including on-road training, additional rider training and the way that motorcycle clubs could work on improving rider skills, rider awareness and rider road craft.

11.6.2 Research on training

A recurring proposal in submissions was the idea that training, in real world situations, could lead to reduced trauma and better skills. However, according to the TAC, there is no research currently that demonstrates a safety benefit for further rider training (post-

licence).³³⁸ Similarly, the RACV advised it was ‘unaware of any behavioural change programs that had been evaluated and shown to be effective in reducing crash risk for motorcyclists’.³³⁹ At the public hearings, Ms Melinda Congiu, RACV, stated that post-licence rider training could create risks rather than reduce them by drawing parallels with the experience of driver training:

*There is a commonly held belief that post licence driver training courses will improve driving skills and reduce crash risks, but there is little evidence to support this. In fact this type of training can actually lead to an increase in confidence and optimum bias, which is the perception that the driver is more skilful than they actually are, and can result in an increased crash risk for novice drivers. There is no evidence of a reduced crash risk for experienced drivers attending advanced or defensive driving courses, and overall the current evidence on motorcycle rider training as an effective road safety countermeasure does not support the idea that it is being effective either. It is consistent with the effectiveness of formal driver education as well...Our other recommendation is that consideration should only be given to behaviour change programs if there is substantial evidence of the effectiveness of these programs. RACV does not support any post licence rider training as it is extremely unlikely that any training program will reduce crash risk and have a positive road safety benefit.*³⁴⁰

The observations of the TAC and the RACV submissions attracted the Committee’s attention. The role of training is generally thought to suggest safety improvements and the reduction of risk. On that basis, the Committee sought comment from MUARC researchers on the question of effectiveness. Ms Christine Mulvihill provided the Committee with the following observations on training:

There are a couple of problems with the training issue. One is that we do not yet have enough well-designed studies to demonstrate whether training is actually effective or not. That is why we do not recommend not to have training; we just do not know whether we can prove that it works or not. The other issue is whether the type and content of the training is appropriate. Traditionally there has been only a focus on the teaching of control skills, both in car and motorcycle riding, although control skills are clearly more important in riding than in driving. The argument is we need to have a greater emphasis on the role of higher order cognitive skills. By that we mean the ability of the rider to read the road and anticipate what is going to happen next.

There have also been a lack of attitudinal and motivational factors addressed in training programs because we are not really sure how to do that yet. They are harder to train than skills, for example. We are still not sure about what the content of training should be, but there is a feeling that it should comprise more higher order training skills and more of a focus on attitudes and motivations.

It is possible that past training programs have only focused on one part of that to the detriment of other aspects, which may be critical factors in reducing risk. We need to be careful about what we transfer from the driving to the motorcycling context, but the evidence with car driving for novices in particular shows that if you only focus on vehicle control skills, you risk a situation where it leads to inflated confidence of the novice who would then take more risks than they would if they had had no training at all. So you need to develop insight and temper the driver’s confidence so that they do not think they know everything.

*Whether that exists in motorcycle riders to the same degree, I am not sure but there are some lessons we have learnt in the car driver training research that we need to be mindful of with motorcycle riding.*³⁴¹

While there appears to be little research into the potential or realised safety benefits of training,³⁴² the Committee noted that training appears to provide some benefits to riders.

Mr Jesper Christensen, Secretary-General of the Swedish Motorcycle Association identified some of the benefits of training and advised that research undertaken in Sweden has shown:

- 86% of motorcyclists reported feeling more secure after undertaking further training; and
- 47% of motorcyclist reported taking less risks after undertaking further training.

The effectiveness of motorcycle training has also been a focus for researchers at the University of Nottingham in the UK. Dr Alex Stedmon from the Centre for Motorcycle Ergonomics & Rider Human Factors, Faculty of Engineering, discussed some of the research he had undertaken on this issue, with the Committee. That research used motorcycle simulators to investigate differences in rider performance based on the level of training a rider had received.³⁴³ Novice, experienced and advanced riders were tested using a range of on road scenarios. The research found that riders who had undertaken an advanced riding course managed all scenarios more effectively than the other two groups.³⁴⁴ Dr Stedmon suggested the findings support the contention that while experience appears to help develop rider skills, advanced training may help further develop rider awareness, perception and a sense of responsibility.³⁴⁵

11.6.2 Training programs and approaches

11.6.2.1 Victoria

Victoria has a number of research and practical projects focused on motorcycle training. These include the assisted rides project,³⁴⁶ the Yarra Ranges Unstructured Rides Program and the TAC Ride Smart DVD. Training pre-licence is not mandatory in Victoria and a number of accredited providers, clubs and companies operate post-licence, advanced rider training. The improvement of training has also been a focus of safety plans under Victoria's Road Safety Strategy.³⁴⁷

11.6.2.2 Europe

There is a heavy reliance on training, including post-licence training, in European Union countries. For example, the Dutch *Action Plan for Improving Road Safety for Motorcyclists Strategic* includes a measure for training advanced motorcycle skills. At an EU level, an initial rider training program has been developed. A joint EC and FEMA initiative, it is an ongoing project that is currently looking at e-coaching.³⁴⁸

11.6.3 Improving training

11.6.3.1 Simulators and e-coaching

The idea of using 'simulated experiences' to improve hazard perception may confer benefits to riders by improving their hazard perception skills.³⁴⁹ According to VicRoads, simulators have been used in Japan to improve hazard perception among novice riders.³⁵⁰

In Victoria, simulators are used for training by at least one motorcycle accredited provider, Honda. Mr Mark Collins, HART, informed the Committee about the use of simulators as part of rider training and its potential benefits:

*Honda Worldwide has simulators, so we were able to draw on their expertise and introduce them in Australia. I have not measured the success of the simulators as far as novice riders being less able or more able to avoid crashes, but the people who get off the simulators are hazard aware — they know the typical scenarios they are likely to face on the road, and being more aware of something gives you more time to react and respond and recognise the difficulty... There [are] a couple of papers out internationally saying that there are positive benefits. In Australia we have not measured that.*³⁵¹

There appear to be some benefits to using simulators in training scenarios. The VicRoads submission noted that ‘MUARC studies have found that driving simulators are an effective means of driver training in certain circumstances such as teaching hazard perception, and that these could be transferred into real world scenarios’.³⁵² An obvious benefit of using simulators is that a person can be trained to deal with different hazards while remaining safe.³⁵³ However, Ms Amanda McKenzie, DECA, emphasised that simulators are only one component of training:

*The simulator is a great invention and a great piece of technology. It does not take away the need to be on the road and get that on road experience, but it is able to take someone, put that person in a simulated environment, work out where that person is and then look at how that person is able to change and learn over a period of time without having to go into an on road experience. You are able to give that experience without going out on the road in an uncontrolled environment.*³⁵⁴

Further, whilst simulators do have a role in training, they are limited by their lack of realism,³⁵⁵ a point forcefully put by Mr David MacKenzie, Motorcycle Motion:

*It is all well and good to play computer games on them. I think that is how people would treat them, as a computer game. It is not a game once you get out on the road. That is another point that I make to students. I say that once you get out on the road, it is not a game any longer. They do a hazard perception test for their licence in a car.*³⁵⁶

There are other constraints to using simulators at present. According to VicRoads this includes their limited availability, accessibility, relative cost and the constraints of existing technology.³⁵⁷ The Committee shares this view.

E-coaching is a different type of simulated experience, which has the potential to significantly improve rider skills.³⁵⁸ The software could be web-based and include exercise opportunities where a rider could practise aspects of riding.³⁵⁹ VicRoads suggested that a similar experience to e-coaching is being used in Victoria (the TAC’s Ride Smart DVD).³⁶⁰ The Committee discussed the concept of e-coaching with Ms Aline Delhaye, who explained that it is centred on raising rider awareness and putting the rider at risk, but in a virtual way.³⁶¹ The Committee was also advised that e-coaching is an emerging area of interest for FEMA in Europe.

11.6.3.2 On-road training

The idea of incorporating on-road training, both pre and post-licensing, and undertaking more training was a recurring theme at public hearings.³⁶² The argument for including on-road training, including at the pre-licence stage, is to allow motorcyclists to familiarise themselves with the road environment, and to be aware of the risks that it poses. Support for on-road training was provided by accredited providers. Ms Alene McGowan, Armstrong's, explained:

*We believe that an on road component would be a far more valuable training facility than a simulator.*³⁶³

There was also support from Ms Amanda McKenzie, DECA:

*We also would recommend — and it is probably a difficult scenario as to what the best course of action to address it is — to try and get on road training, so you are having time with a trainer — designated route. If you look at normal licensing for heavy vehicle trucks, there are determined routes to do the licence, then something like that in being able to place people in, I suppose, not a controlled but semi controlled area where you have got an instructor there, and again focusing around the behavioural type of aspects of the learning.*³⁶⁴

Another example was provided by Sergeant Rod Lay, Victoria Police:

*Through my experience as an off road coach too I have seen the need for a significant amount of rider training. Some people are fantastic riders from the get go and need little training, but the majority of us need a significant amount of training, and you can see the development in the safety of riders when I get hold of them as a newbie and take them through the basic principles ...*³⁶⁵

11.6.6.3 Additional training

There is a strongly held view among motorcyclists that additional training, such as advanced rider training, can reduce risks and improve riding performance. The VMC suggested advanced rider training could be used to adjust attitude and by doing so, produce safer riders.³⁶⁶ Mr Tony Ellis explained the importance of ongoing training in the context of riding behaviours:

*You do get into bad habits. You will get into bad habits, and things change. You forget things. I found the last training course I did was good. It made me think about things a bit more in the way I ride, which I found excellent. The first training course I ever did was many years ago in Canberra. The ACT police used to run them for riders. The axiom was, ‘We know you riders are going to go fast, so we will teach you how to do it without killing yourselves’. It was a very different attitude back then ...*³⁶⁷

Another witness, Mr Des Malone, Secretary, Albury-Wodonga Branch, Ulysses Club, provided an example of how tailored training can help riders adjust to different road environments:

*Chequered Band was the name of the operator.... It included videos, road rules and hill starts in Keilor and finished with radio controlled helmets between him and me while on Mount Alexander Road at 5.30 on a Friday night. He would say, ‘It wouldn’t be advisable to pass that tram now’. It was very good for me, as a country rider, to give me confidence riding in the city, which I do not do very much.*³⁶⁸

11.6.3.4 Findings

The idea that improved and additional training for motorcyclists could improve their skill levels and thus reduce their crash risk is, intuitively, persuasive. The Committee notes, however that post-licence training does not appear to be beneficial. The available research suggests there is no evidence supporting its crash reduction benefits. In fact, as suggested by the RACV, such training could create risks. In spite of the lack of a conclusive research base justifying its use, road safety agencies in Victoria and other jurisdictions continue to assess and develop motorcycle training. Motorcyclists believe that such training can help them improve their technique, understand their environment and ultimately, improve their safety. The Committee believes, based on its overseas investigations and evidence presented to it, that training has an important but not yet proven role in reducing crash risk. It may well be an important countermeasure, but more research needs to be undertaken.

The Committee believes there is great merit in conducting training, particularly pre-licence, on the road. Riding a motorcycle in normal riding conditions provides a richer and more useful learning experience, particularly for novice riders. The Committee notes that such a requirement has been included in the proposed Graduated Licensing System (GLS).

Improving training through technology, by using simulators and software applications, is an area of interest and one that appears to be supported by evaluations, although they have been limited. The Committee believes that these technologies will play an increasingly important role in training motorcyclists.

11.6.4 Training through motorcycle clubs and groups

In addition to accredited providers, motorcycle clubs and groups also offer training to riders. The Committee was told that motorcycle groups provide an important training or mentoring role for motorcyclists. Clubs use more experienced riders to help novice or less experienced riders develop their road craft. Clubs, such as the Classic Motorcycle Club Victoria view this training as fostering motorcycle safety.³⁶⁹

The idea of using clubs to mentor riders and to help them improve their skills underpinned the proposal from Ms Heather Ellis, which was to extend the club permit system in Victoria.³⁷⁰ The proposed club permit system would require riders to join a motorcycle club. By participating in club events, riders would be able to improve their safety, with more experienced riders teaching skills such as risk awareness.³⁷¹ Ms Ellis explained the safety benefits of implementing such a system:

*[It] would provide safe opportunities for novice riders to participate on organised rides with experienced riders ... they could concentrate on improving their riding skills and not on the route, as they would be following a ride leader who also controls the speed of the group to keep within the speed limit ... novice riders can also benefit from the advice of experienced riders on road safety, particularly on the awareness of potential road dangers. It would be a sort of informal mentorship because, after all, when you get a group of motorcyclists together the topic of conversation is mostly all things motorcycling.*³⁷²

In addition to motorcycle groups, training opportunities are also provided to riders on an ad hoc voluntary basis by other riders. The existence of these informal training arrangements was raised by Mr David McAuliffe:

*Through Netrider, I am involved in a voluntary arrangement where learners and inexperienced riders can practice their skills in a relatively safe environment and under observation by more experienced riders. ... The sessions give new riders the opportunity to practise skills like cornering and braking and to get used to the feel of leaning in a safe environment away from the risks of collisions with other traffic. The sessions also allow new riders the opportunity to discuss any difficulties they are having and to seek advice on how such difficulties can be overcome. It allows learners to discuss the near misses they may have had and to find out what they have done wrong and what, possibly, they could have done to stay safer. There is no charge for these practice sessions and no payment for the riders who provide them. It is done purely out of the camaraderie between riders and a belief that newer riders should be given the best possible chance to stay safe and alive.*³⁷³

Mr McAuliffe stressed to the Committee that these training arrangements were not intended to replace the services offered by accredited providers.³⁷⁴ However, he believed that applying this approach to training could be extremely beneficial for motorcyclists and suggested:

*If the Victorian government were to facilitate such schemes delivered by volunteers across the whole of Victoria, training could be extended to thousands of new riders. The benefits of such a scheme would be an expected reduction in serious injuries and fatalities in new and returning riders through providing controlled and safe environments for new riders to practise in while developing their skills; providing better and continued training for new riders; encouraging the proper use of protective gear through the example of peers and more experienced riders; providing feedback and constructive criticism so that any mistakes in technique can be rectified early; providing a network where new riders can exchange ideas, experiences and tips about staying safe; ensuring that new riders are exposed to the risks and challenges of non-suburban riding in a controlled and progressive manner; and finally, providing a network through which the government messages about developments in safety gear, new safety technologies et cetera can be readily promulgated to new riders.*³⁷⁵

11.6.4.1 Findings

The Committee was impressed by the interest and resourcefulness of motorcycle clubs and volunteers in providing training and support to other riders. While the broader issue of the effectiveness of training applies equally to these proposals as they did to those discussed earlier, using clubs to foster safety and mentor riders is a positive approach to motorcycling and may help promote safer riding behaviours. The Committee does not, however, believe a club permit system of volunteer training is justified, particularly in the absence of an appropriate evidence base for understanding training.

Recommendations: Chapter 11**Recommendation 45:**

That VicRoads and the Transport Accident Commission, in conjunction with road safety researchers, undertake a crash reporting and investigation study, using the Motorcycle Accident In-Depth Study approach as a model.

Recommendation 46:

That VicRoads update its road engineering guides to ensure they account for motorcycles. The guides, including any policies, procedures and any other documents needed in the design, building and maintenance of roads should take a safe systems approach, with a view to reducing the injury and fatality risk to motorcyclists.

Recommendation 47:

That VicRoads improve, in respect of motorcyclists, the operation of Wire Rope Safety Barriers and other roadside barriers (such as steel or concrete barriers) by utilising existing technology such as retrofitting barrier posts with cushion products, employing underrun protection rails and using other technologies to reduce the impacts of snagging or deceleration. These improvements should occur on roads that have been identified as requiring improvement based on crash statistics, or using the approach taken for identifying blackspot and blacklength roads, to ensure that funds are best utilised.

Recommendation 48:

That the Transport Accident Commission and VicRoads investigate the use of incentives and public education campaigns to increase the number of motorcycles being purchased with Anti-Lock Braking Systems.

Recommendation 49:

That VicRoads and the Transport Accident Commission provide yearly reports to the Motorcycle Advisory Group on research, advancements and evaluations of motorcycle Anti-lock Braking System, and other countermeasures both in Australia and overseas. Those reports should also be made available to the public through the respective agencies websites.

Recommendation 50:

That VicRoads and the Transport Accident Commission develop educational campaigns for the use of protective clothing based on research findings with a focus on improving the usage of armour and lower body clothing and on segments of the motorcycle community that have lower rates of use.

Recommendation 51:

That the Transport Accident Commission provide a report on the development of the star rating system, including prospective timelines, to government, the Motorcycle Advisory Group and the Road Safety Committee within six months of the tabling of this report.

Recommendation 52:

That a star rating system for protective motorcycle clothing, which includes boots, gloves, jackets, pants and armour, be established within 24 months, and be fully functioning within 36 months, of the tabling of this report. It should adopt the Conformité Européenne standards for protective motorcycle gear, but also take into consideration Victorian requirements including weather patterns and must include a testing and certification regime.

Recommendation 53:

That gear that does not meet a minimum star rating (once established) should not be sold or branded as ‘protective’ motorcycle gear in Victoria. Clothing that does meet a minimum standard should be subject to incentives and subsidies devised by road safety agencies to facilitate its purchase by motorcyclists.

Recommendation 54:

That VicRoads and the Transport Accident Commission in conjunction with Standards Australia create an Australian Standard for motorcycle protective gear. This standard should use the European standards as a basis, but take into account Victorian and Australian specific factors.

Recommendation 55:

That VicRoads and the Transport Accident Commission investigate ways of improving motorcycle safety through behavioural change programs including changes to the car licence curriculum and road rules so that motorcyclists and the risks posed to them by other road users are highlighted. Other areas that should also be explored include school education and advertising campaigns aimed at all road users.

Recommendation 56:

That VicRoads and the Transport Accident Commission investigate the potential of simulators and virtual training software to complement motorcycle training.

Endnotes: Chapter 11

- ¹ VicRoads, MUARC motorcycle study, viewed September 2012,
<http://www.vicroads.vic.gov.au/Home/Moreinfoandservices/Motorcycles/MUARCMotorcycleStudy/>.
- ² Victorian Automobile Chamber of Commerce, *Submission to the Inquiry*, September 2011, pp. 28-29.
- ³ Association de Constructeurs Européens de Motocycles, MAIDS - *In-depth investigations of accidents involving powered two wheelers*, Final Report 2.0, April 2009, p.9, <http://www.maids-study.eu/pdf/MAIDS2.pdf>.
- ⁴ These included the following: AIT/FIA Foundation (CH); The British Motorcyclists Federation (UK); Comité Européen des Assurances (BE); International commission for driver testing (NL); European Commission - Directorate Energy and Transport (EU); The Federation of European Motorcyclists Associations (BE); Fédération Internationale de Motocyclisme (CH); and the Verkehrstechnisches Institut der Deutschen Versicherer (DE). See http://ec.europa.eu/transport/road_safety/projects/doc/maids.pdf.
- ⁵ Association de Constructeurs Européens de Motocycles, MAIDS - *In-depth investigations of accidents involving powered two wheelers*, pp. 2-5, http://www.maids-study.eu/pdf/MAIDS_LEAFLET.pdf.
- ⁶ Association de Constructeurs Européens de Motocycles, MAIDS - *In-depth investigations of accidents involving powered two wheelers*, Final Report 2.0, April 2009, p.9, <http://www.maids-study.eu/pdf/MAIDS2.pdf>.
- ⁷ Association de Constructeurs Européens de Motocycles, MAIDS - *In-depth investigations of accidents involving powered two wheelers*, Final Report 2.0, April 2009, p.9, <http://www.maids-study.eu/pdf/MAIDS2.pdf>.
- ⁸ Association de Constructeurs Européens de Motocycles, MAIDS - *In-depth investigations of accidents involving powered two wheelers*, Final Report 2.0, April 2009, p.9, <http://www.maids-study.eu/pdf/MAIDS2.pdf>.
- ⁹ Association de Constructeurs Européens de Motocycles, MAIDS - *In-depth investigations of accidents involving powered two wheelers*, pp. 4-6, http://www.maids-study.eu/pdf/MAIDS_LEAFLET.pdf.
- ¹⁰ Association de Constructeurs Européens de Motocycles, MAIDS - *In-depth investigations of accidents involving powered two wheelers*, Final Report 2.0, April 2009, p.11, <http://www.maids-study.eu/pdf/MAIDS2.pdf>.
- ¹¹ Association de Constructeurs Européens de Motocycles, MAIDS - *In-depth investigations of accidents involving powered two wheelers*, p. 3, http://www.maids-study.eu/pdf/MAIDS_LEAFLET.pdf.
- ¹² Organisation for Economic Co-operation and Development / International Transport Forum, *Towards Zero: Ambitious Road Safety Targets and the Safe System Approach*, Summary Document, Transport Research Centre, 2008, p. 79, <http://www.internationaltransportforum.org/jtrc/safety/targets/08TargetsSummary.pdf>.
- ¹³ Australian Transport Council, *National Road Safety Strategy 2011-2020*, May 2011, p. 33, http://www.atcouncil.gov.au/documents/files/NRSS_2011_2020_15Aug11.pdf.
- ¹⁴ Government of Victoria, *Victoria's Road Safety Strategy: Arrive Alive 2008-2017*, Melbourne, 2008, pp. 39-40.
- ¹⁵ Government of Victoria, *Victoria's Road Safety and Transport Strategic Action Plan for Powered Two Wheelers 2009-2013*, Melbourne, 2009, p. 23.
- ¹⁶ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (g).
- ¹⁷ Greig K, Haworth N & Wishart D, *Identifying programs to reduce road trauma to ACT motorcyclists*, December 2007, p. 40, http://eprints.qut.edu.au/27211/1/mcyc_progs_NRMA-ACT_final_report%5B1%5D.pdf.
- ¹⁸ European Transport Safety Council, *Vulnerable Riders – Safety Implications of motorcycling in the European Union*, Brussels, 2008, p. 23.
- ¹⁹ VicRoads, Motorcycle trial on Hoddle Street bus lane, Collingwood, 21 June 2012, viewed August 2012, <http://www.vicroads.vic.gov.au/Home/RoadProjects/MelbourneRoadProjects/Inner/HoddleStMotorcycleTrial.htm>.
- ²⁰ VicRoads, Motorcycle trial on Hoddle Street bus lane, Collingwood, 21 June 2012, viewed August 2012, <http://www.vicroads.vic.gov.au/Home/RoadProjects/MelbourneRoadProjects/Inner/HoddleStMotorcycleTrial.htm>.

- ²¹ VicRoads, Motorcycle trial on Hoddle Street bus lane, Collingwood, 21 June 2012, viewed August 2012, <http://www.vicroads.vic.gov.au/Home/RoadProjects/MelbourneRoadProjects/Inner/HoddleStMotorcycleTrial.htm>.
- ²² VicRoads, Motorcycle trial on Hoddle Street bus lane, Collingwood, 21 June 2012, viewed August 2012, <http://www.vicroads.vic.gov.au/Home/RoadProjects/MelbourneRoadProjects/Inner/HoddleStMotorcycleTrial.htm>.
- ²³ York I, Ball S & Hopkin J, Motorcycles on bus lanes – monitoring of the second TfL trial, version 1 – Client project report CRP1224, Transport Research Laboratory, UK, December 2011, p. 2.
- ²⁴ Transport for London, *Motorcycles to be allowed permanent access to bus lanes*, Media Release, 21 December 2011, <http://www.tfl.gov.uk/corporate/media/newscentre/archive/22125.aspx>.
- ²⁵ Transport for London, *Motorcycles to be allowed permanent access to bus lanes*, Media Release, 21 December 2011, <http://www.tfl.gov.uk/corporate/media/newscentre/archive/22125.aspx>.
- ²⁶ Mr Tom Duckham, Delivery Planning Manager – Motorised Travel, and Mr Peter Sadler, Researcher, Transport for London, *Meeting*, 25 June 2012, London, United Kingdom.
- ²⁷ Smith G, Turner B & Hill J, *A toolkit for saving lives*, Journal of the Australasian College of Road Safety, vol. 22 issue. 2, 2011, p. 19, http://acrs.org.au/wp-content/uploads/ACRS_Journal_22_No2_WebLR.pdf.
- ²⁸ Sohadi RUR, Mackay M & Hills B, *Multivariate Analysis of Motorcycle Accidents and the Effects of Exclusive Motorcycle Lanes in Malaysia*, Journal of Crash Prevention and Injury Control, vol. 2 issue. 1, 2000, p. 11, 15.
- ²⁹ Sohadi RUR, Mackay M & Hills B, *Multivariate Analysis of Motorcycle Accidents and the Effects of Exclusive Motorcycle Lanes in Malaysia*, Journal of Crash Prevention and Injury Control, vol. 2 issue. 1, 2000, p. 11.
- ³⁰ Sohadi RUR, Mackay M & Hills B, *Multivariate Analysis of Motorcycle Accidents and the Effects of Exclusive Motorcycle Lanes in Malaysia*, Journal of Crash Prevention and Injury Control, vol. 2 issue. 1, 2000, p. 11.
- ³¹ Sohadi RUR, Mackay M & Hills B, *Multivariate Analysis of Motorcycle Accidents and the Effects of Exclusive Motorcycle Lanes in Malaysia*, Journal of Crash Prevention and Injury Control, vol. 2 issue. 1, 2000, p. 15.
- ³² Professor Mark Stevenson, Director, MUARC, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 651.
- ³³ VicRoads, *Make Motorcycling Safer – guidelines for a program to reduce loss of control motorcycle crashes – A resource for Local Government*, May 2005.
- ³⁴ See VicRoads, *Motorcycle Notes*, no's 1, 3-6 & 8-10, various dates.
- ³⁵ VicRoads, *Making roads motorcycle friendly – A guide for road design, construction and maintenance*, provided by VicRoads, Perth, 5 November 2011.
- ³⁶ VicRoads, *Road Design*, 19 June 2012, viewed August 2012, <http://www.vicroads.vic.gov.au/Home/Moreinfoandservices/RoadManagementAndDesign/DesignStandardsManualsNotes/RoadDesign/>.
- ³⁷ VicRoads, *VicRoads supplement to Austroads Guide to Road Design – Part 6*, Rev. 2.0, July 2011, pp. 13-14.
- ³⁸ VicRoads, *Submission to the Inquiry*, September 2011, p. 48.
- ³⁹ VicRoads, *Submission to the Inquiry*, September 2011, p. 49.
- ⁴⁰ VicRoads, *Eastern region motorcycle treatments overview*, submitted at Public Hearing for Inquiry into Motorcycle Safety, Bairnsdale, 14 December 2011.
- ⁴¹ Directive 2008/96/EC of the European Parliament and of the Council, 19 November 2008.
- ⁴² European Transport Safety Council, *Vulnerable Riders – Safety Implications of motorcycling in the European Union*, Brussels, 2008, pp. 20-23.
- ⁴³ European Transport Safety Council, *Vulnerable Riders – Safety Implications of motorcycling in the European Union*, Brussels, 2008, pp. 20-23.
- ⁴⁴ Institute of Highway Incorporated Engineers, *IHIE Guidelines for motorcycling – improving safety through engineering and integration version 1.1*, UK, 2010.

- ⁴⁵ Institute of Highway Incorporated Engineers, IHE *Guidelines for Motorcycling*, March 2010, viewed August 2012, <http://theihe.org/knowledge-network/motorcycling/ihe-guidelines-for-motorcycli/>.
- ⁴⁶ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 25.
- ⁴⁷ Mr Daryl Townsend, Chairman, Eastern Region Motorcycle Working Party, *Transcript of Evidence*, Bairnsdale, 14 December 2011, p. 606.
- ⁴⁸ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 25.
- ⁴⁹ Motorcycling Australia, *Submission to the Inquiry*, August 2011, p. 25.
- ⁵⁰ Victorian Automobile Chamber of Commerce, *Submission to the Inquiry*, September 2011, p. 28.
- ⁵¹ Ulysses Club, *Submission to the Inquiry*, September 2011, p. 6.
- ⁵² Mr Rod Bennett, Chairperson, RoadSafe Barwon, *Transcript of Evidence*, Geelong, 15 November 2011, p. 351.
- ⁵³ RPS Industries, *Submission to the Inquiry*, July 2011, p. 5.
- ⁵⁴ Maurice Blackburn, *Submission to the Inquiry*, September 2011, p. 8.
- ⁵⁵ Swedish Transport Administration, *Improved safety for motorcycle and moped riders – Joint Strategy for the period 2010-2010 – version 1.0*, 2010, p. 27.
- ⁵⁶ Jama HH, Grzebieta RH, Friswell R & McIntosh AS, *Characteristics of fatal motorcycle crashes into roadside safety barriers in Australia and New Zealand*, Accident Analysis and Prevention, vol. 43 issue. 3, May 2011, p. 653.
- ⁵⁷ Candappa N, D'Elia A, Corben B & Newstead S, *Wire rope barrier effectiveness on Victorian roads*, Monash University Accident Research Centre, 2011, [http://casr.adelaide.edu.au/rsr/RSR2011/5EPaper%20189%20Candappa.pdf..](http://casr.adelaide.edu.au/rsr/RSR2011/5EPaper%20189%20Candappa.pdf)
- ⁵⁸ Karim H, Alam M & Magnussen R, *Road barrier repair costs and influencing factors*, Journal of Transportation Engineering, vol. 137 no. 5, May 2011, p. 349.
- ⁵⁹ Treve H, *Crash against obstacles in urban areas: A real safety problem*, presentation given to European Transport Council Conference on Urban Traffic Safety, Strasburg, 8-10 October 2003, p. 9.
- ⁶⁰ Jama HH, Grzebieta RH, Friswell R & McIntosh AS, *Characteristics of fatal motorcycle crashes into roadside safety barriers in Australia and New Zealand*, Accident Analysis and Prevention, vol. 43 issue. 3, May 2011, p. 652.
- ⁶¹ Berg FA, Rucker P, Gartner M, Konig J, Grzebieta R & Zou R, *Motorcycle impacts to roadside barriers – real – world accident studies, crash tests and simulations carried out in Germany and Australia*, Paper presented to the 19th International Technical Conference on the Enhanced Safety of Vehicles (ESV) Conference held in Washington DC, USA, June 2005, p. 1.
- ⁶² Berg FA, Rucker P, Gartner M, Konig J, Grzebieta R & Zou R, *Motorcycle impacts to roadside barriers – real – world accident studies, crash tests and simulations carried out in Germany and Australia*, paper presented to 19th International Technical Conference on the Enhanced Safety of Vehicles, Washington DC, 6-9 June 2005, p. 1.
- ⁶³ Jama HH, Grzebieta RH, Friswell R & McIntosh AS, *Characteristics of fatal motorcycle crashes into roadside safety barriers in Australia and New Zealand*, Accident Analysis and Prevention, vol. 43 issue. 3, May 2011, p. 652.
- ⁶⁴ Duncan C, Corben B, Truedsson N & Tingvall C, *Motorcycle and safety barrier crash-testing: Feasibility study*, Australian Transport Safety Bureau, December 2000, p. 16.
- ⁶⁵ Pask A, *Submission to the Inquiry*, June 2011, unnumbered submission: Hangmore Motorcycle Cub, *Submission to the Inquiry*, July 2011, unnumbered submission.
- ⁶⁶ Bergman T, *Submission 8 to the Victorian Inquiry into Motorcycle Safety 2011*, unnumbered submission.
- ⁶⁷ Victorian Motorcycle Council, *Submission to the Inquiry*, September 2011, p. 12.
- ⁶⁸ Robertson P. S, *Submission to the inquiry*, July 2011.
- ⁶⁹ Victorian Motorcycle Council, *Submission to the Inquiry*, September 2011, p. 12.
- ⁷⁰ Maurice Blackburn, *Submission to the Inquiry*, September 2011, p. 8.

- ⁷¹ Independent Riders Group, *Submission to the Inquiry*, September 2011; Czajka M, *Correspondence with the secretariat of the Road Safety Committee*, 1 August 2011, p.2.
- ⁷² Jama HH, Grzebieta RH, Friswell R & McIntosh AS, *Characteristics of fatal motorcycle crashes into roadside safety barriers in Australia and New Zealand*, Accident Analysis and Prevention, vol. 43 issue. 3, May 2011, p. 659.
- ⁷³ Professor Raphael Grzebieta, Chair, Road Safety, Transport and Road Safety Research, UNSW, *Meeting*, 5 November 2011, p. 17.
- ⁷⁴ Gobson T & Benetatos E, *Motorcycles and crash barriers*, NSW Motorcycle Council, 1 November 2000, pp. 4-5.
- ⁷⁵ Jama HH, Grzebieta RH, Friswell R & McIntosh AS, *Characteristics of fatal motorcycle crashes into roadside safety barriers in Australia and New Zealand*, Accident Analysis and Prevention, vol. 43 issue. 3, May 2011, p. 655, 658.
- ⁷⁶ Bambach M. R, Grzebieta R. H & McIntosh A. S, *Crash characteristics of motorcycles impacting road side barriers*, paper presented at *Australasian Road Safety Research, Policing and Education Conference*, Canberra, 31 August - 3 September 2010, p. 5.
- ⁷⁷ Jama HH, Grzebieta RH, McIntosh A, Friswell R, Favand J, Attard M & Smith R, *Overview of motorcycle crash fatalities involving road safety barriers*, Journal of the Australasian College of Road Safety, vol. 20 issue 4, November 2009, pp. 272-273.
- ⁷⁸ Berg FA, Rucker P, Gartner M, Konig J, Grzebieta R & Zou R, *Motorcycle impacts to roadside barriers – real – world accident studies, crash tests and simulations carried out in Germany and Australia*, paper presented to 19th International Technical Conference on the Enhanced Safety of Vehicles, Washington DC, 6-9 June 2005, pp. 11-12.
- ⁷⁹ Jama HH, Grzebieta RH, Friswell R & McIntosh AS, *Characteristics of fatal motorcycle crashes into roadside safety barriers in Australia and New Zealand*, Accident Analysis and Prevention, vol. 43 issue. 3, May 2011, pp. 655-656.
- ⁸⁰ Berg FA, Rucker P, Gartner M, Konig J, Grzebieta R & Zou R, *Motorcycle impacts to roadside barriers – real – world accident studies, crash tests and simulations carried out in Germany and Australia*, paper presented to 19th International Technical Conference on the Enhanced Safety of Vehicles, Washington DC, 6-9 June 2005, p. 12.
- ⁸¹ Berg FA, Rucker P, Gartner M, Konig J, Grzebieta R & Zou R, *Motorcycle impacts to roadside barriers – real – world accident studies, crash tests and simulations carried out in Germany and Australia*, paper presented to 19th International Technical Conference on the Enhanced Safety of Vehicles, Washington DC, 6-9 June 2005, p. 12.
- ⁸² EuroRAP, *Barriers to change: designing safer roads for motorcyclists – position paper on motorcycles and crash barriers*, December 2008, p. 3.
- ⁸³ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 5.
- ⁸⁴ The Independent, *Concern over wire rope crash barriers sparks EU review*, Editorial, Tuesday 9 October 2007, Ireland, http://www.umcinc.com.au/uploads/Guard%20Rails/http__www_independent_ie_national-news_concern-over-wire-rope-crash-barriers-sparks-eu-review-1138.pdf.
- ⁸⁵ Minister for Planning and Infrastructure – The Hon A MacTiernan (WA Legislative Assembly), *Question on Notice No. 2631*, 37th Parliament of Western Australia session 1, 19th September 2007, <http://www.parliament.wa.gov.au/parliament/pquest.nsf/c99dd775292ce5954825718e00176c69/95496e332a4953cdc825734100302927?OpenDocument&ExpandSection=1>.
- ⁸⁶ Carlsson A, *Evaluation of 2+1-roads with cable barrier – Final report*, VTI rapport 636A, Swedish Road Administration, 2009, p. 14, http://www20.vv.se/fud-resultat/Publikationer_000501_000600/Publikation_000594/VTI%20rapport%20636A%20f%C3%B6rf.pdf.

- ⁸⁷ Swedish Transport Administration, *Improved safety for motorcycle and moped riders – Joint Strategy for the period 2010-2010 – version 1.0*, 2010, p. 26.
- ⁸⁸ EuroRAP, *Barriers to change: designing safer roads for motorcyclists – position paper on motorcycles and crash barriers*, December 2008, p. 3.
- ⁸⁹ EuroRAP, *Barriers to change: designing safer roads for motorcyclists – position paper on motorcycles and crash barriers*, December 2008, p. 13.
- ⁹⁰ Parliament of Victoria Road Safety Committee, *Inquiry into Crashes Involving Roadside Objects*, Parliament of Victoria, Melbourne, March 2005, p. 215.
- ⁹¹ Government of Victoria, *Government response to the Inquiry into crashes involving roadside objects*, Melbourne, tabled 22 March 2005, p. 17.
- ⁹² EuroRAP, *Barriers to change: designing safer roads for motorcyclists – position paper on motorcycles and crash barriers*, December 2008, p. 3.
- ⁹³ Roads Magazine, *Road Safety – Developing a solution*, October/ November 2011, p. 64.
- ⁹⁴ Mr Wayne Moon, Senior Program Development Engineer, VicRoads, *Trancipt of Evidence*, Traralgon, 13 December 2011, p. 567.
- ⁹⁵ Berg FA, Rucker P, Gartner M, Konig J, Grzebieta R & Zou R, *Motorcycle impacts to roadside barriers – real – world accident studies, crash tests and simulations carried out in Germany and Australia*, paper presented to 19th International Technical Conference on the Enhanced Safety of Vehicles, Washington DC, 6-9 June 2005, p. 6, 8.
- ⁹⁶ EuroRAP, *Barriers to change: designing safer roads for motorcyclists – position paper on motorcycles and crash barriers*, December 2008, p. 11, 13; RPS Industries, *Submission to the Inquiry*, July 2011, p. 9; Berg FA, Rucker P, Gartner M, Konig J, Grzebieta R & Zou R, *Motorcycle impacts to roadside barriers – real – world accident studies, crash tests and simulations carried out in Germany and Australia*, paper presented to 19th International Technical Conference on the Enhanced Safety of Vehicles, Washington DC, 6-9 June 2005, pp. 6, 8.
- ⁹⁷ Victorian Motorcycle Council, *Submission to the Inquiry*, September 2011, p. 12.
- ⁹⁸ Parliament of Victoria Road Safety Committee, *Inquiry into Vehicle Safety*, Parliament of Victoria, Melbourne, August 2008, p. 3-4.
- ⁹⁹ Anderson RWG, Hutchinson TP, Linke B & Ponte G, *Analysis of crash data to estimate the benefits of emerging vehicle technology*, CASR094, Centre for Automotive Safety Research, University of Adelaide, Adelaide, 2011, p. 53.
- ¹⁰⁰ Royal Automobile Club of Victoria, *Submission to the Inquiry*, September 2011, p. 5.
- ¹⁰¹ Honda, *Honda Develops World's First Production Motorcycle Airbag System*, 8 September 2008, viewed August 2012, <http://world.honda.com/news/2005/2050908.html>; Anderson RWG, Hutchinson TP, Linke B & Ponte G, *Analysis of crash data to estimate the benefits of emerging vehicle technology*, CASR094, Centre for Automotive Safety Research, University of Adelaide, Adelaide, 2011, pp. 53-54.
- ¹⁰² Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (h).
- ¹⁰³ Swedish Transport Administration, *Improved safety for motorcycle and moped riders – Joint strategy for the period 2010-2020, version 1.0*, April 2010, p. 20.
- ¹⁰⁴ European Transport Safety Council, *Vulnerable Riders – Safety Implications of motorcycling in the European Union*, Brussels, 2008, p. 15.
- ¹⁰⁵ Anderson RWG, Hutchinson TP, Linke B & Ponte G, *Analysis of crash data to estimate the benefits of emerging vehicle technology*, CASR094, Centre for Automotive Safety Research, University of Adelaide, Adelaide, 2011, pp. 53-54.
- ¹⁰⁶ Parliament of Victoria Road Safety Committee, *Inquiry into Vehicle Safety*, Parliament of Victoria, Melbourne, August 2008, p. 55; Cardinale P, D'Angelo C & Conti M, *Traction Control System for Motorcycles*, 2008, EURASIP

- Journal on Embedded Systems*, 2009, viewed August 2012,
<http://jes.eurasipjournals.com/content/2009/1/161373>.
- ¹⁰⁷ Cardinale P, D'Angelo C & Conti M, *Traction Control System for Motorcycles*, 2008, EURASIP Journal on Embedded Systems, 2009, viewed August 2012, <http://jes.eurasipjournals.com/content/2009/1/161373>.
- ¹⁰⁸ Parliament of Victoria Road Safety Committee, *Inquiry into Vehicle Safety*, Parliament of Victoria, Melbourne, August 2008, p. 55.
- ¹⁰⁹ Parliament of Victoria Road Safety Committee, *Inquiry into Vehicle Safety*, Parliament of Victoria, Melbourne, August 2008, pp. 55-56.
- ¹¹⁰ Anderson RWG, Hutchinson TP, Linke B & Ponte G, *Analysis of crash data to estimate the benefits of emerging vehicle technology*, CASR094, Centre for Automotive Safety Research, University of Adelaide, Adelaide, 2011, pp. 52-53.
- ¹¹¹ Swedish Transport Administration, *Improved safety for motorcycle and moped riders – Joint strategy for the period 2010-2020, version 1.0*, April 2010, p. 20.
- ¹¹² Swedish Transport Administration, *Improved safety for motorcycle and moped riders – Joint Strategy for the period 2010-2020 – version 1.0*, Sweden, 2010, p. 20.
- ¹¹³ Parliament of Victoria Road Safety Committee, *Inquiry into Vehicle Safety*, Parliament of Victoria, Melbourne, August 2008, p. 52.
- ¹¹⁴ Teoh E R, *Effectiveness of Antilock Braking Systems in reducing Motorcycle Fatal Crash Rates*, Traffic Injury Prevention, vol.12 issue. 2, April 2011, p. 170.
- ¹¹⁵ Parliament of New South Wales Joint Standing Committee on Road Safety (RoadSafe), *Vulnerable road users: Inquiry into motorcycle and bicycle safety*, Report no. 5/54, Sydney, 2010, p. 31.
- ¹¹⁶ Roll G, Hoffman O & Konig J, *Effectiveness evaluations of antilock brake systems (ABS) for motorcycles in real world accident scenarios*, Paper no. 09-0254, DEKRA Automobil AG, Germany, 2009, p. 5 <http://www-nrd.nhtsa.dot.gov/pdf/esv/esv21/09-0254.pdf>.
- ¹¹⁷ Mr Rob Smith, Manager, Australian Riders' Division, Motorcycling Australia, *Transcript of Evidence*, Geelong, 15 November 2011, p. 309.
- ¹¹⁸ Motorcycle Motion, *Submission to the Inquiry*, July 2011, p. 9.
- ¹¹⁹ European Transport Safety Council, *Position paper on the proposal for a Regulation on the approval and market surveillance of two-or three-wheel vehicles and quadricycles*, p. 3,
http://www.etsc.eu/documents/ETSC_Position_on_L-category_vehicles.pdf; also cited in Ministry of Infrastructure and Environment, *Action Plan for improving road safety for motorcyclists Strategic Approach*, The Hague, February 2011, p. 16.
- ¹²⁰ Teoh E R, *Effectiveness of Antilock Braking Systems in reducing Motorcycle Fatal Crash Rates*, Traffic Injury Prevention, vol.12 issue. 2, April 2011, p. 169.
- ¹²¹ Vavry K & Winkelbauer M, *Braking performance of experienced and novice motorcycle riders – results of a field study*, paper presented at International Conference on Transport and Traffic Psychology, Nottingham, 2004, cited in Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (h).
- ¹²² Teoh E R, *Effectiveness of Antilock Braking Systems in reducing Motorcycle Fatal Crash Rates*, Traffic Injury Prevention, vol.12 issue. 2, April 2011, p. 170: Seiniger P, Schroter K & Gail J, *Perspectives for motorcycle stability control systems*, Accident Analysis and Prevention, vol. 44 issue.1, January 2012, p. 4.
- ¹²³ Green D, *A comparison of stopping distance performance for motorcycles equipped with ABS, CBS, and conventional Hydraulic Brake Systems*, United States Department of Transportation, National Highway Traffic Safety Administration, paper presented at International Motorcycle Safety Conference, Long Beach, 28-30 March 2006, pp. 3-4.

- ¹²⁴ Teoh E. R & Stepper K, *Motorcycle Safety: The case for ABS*, presentation at SMSA Annual Conference, Des Mones, 19-21 August 2011, refer to the section titled 'Conventional motorcycle brake systems'.
- ¹²⁵ Road Safety Committee, meeting with ACEM, Mr Jacques Compagne, Secretary General, 6 July 2012, Brussels, Belgium.
- ¹²⁶ Green D, *A comparison of stopping distance performance for motorcycles equipped with ABS, CBS, and conventional Hydraulic Brake Systems*, United States Department of Transportation, National Highway Traffic Safety Administration, paper presented at International Motorcycle Safety Conference, Long Beach, 28-30 March 2006, p. 4.
- ¹²⁷ VicRoads, *Submission to the Inquiry*, September 2011, p. 68.
- ¹²⁸ Newland R, *Submission to the Inquiry*, July 2011, p. 9.
- ¹²⁹ Superintendent Bob Stork, Road Policing Strategy Group, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 28.
- ¹³⁰ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (h).
- ¹³¹ Government of Victoria, *Victoria's Road Safety Strategy: Arrive Alive 2008-2017*, Melbourne, 2008, p. 40.
- ¹³² Government of Victoria, *Victoria's Road Safety and Transport Strategic Action Plan for Powered Two Wheelers 2009-2013*, Melbourne, 2009, p. 37.
- ¹³³ Parliament of Victoria Road Safety Committee, *Inquiry into Vehicle Safety*, Parliament of Victoria, Melbourne, August 2008, p. 55.
- ¹³⁴ Government of Victoria, *Government Response to the Parliamentary Inquiry into Vehicle Safety 2008*, Melbourne, tabled 3 February 2009.
- ¹³⁵ VicRoads, *Submission to the Inquiry*, September 2011, p. 68.
- ¹³⁶ Australian Transport Council, *National Road Safety Action Plan 2009 and 2010*, g. xii
- ¹³⁷ Australian Transport Council, *National Road Safety Strategy 2011-2020*, May 2011, p. 76,
http://www.atcouncil.gov.au/documents/files/NRSS_2011_2020_15Aug11.pdf
- ¹³⁸ Motorcycle and Scooter Safety Action Group, *Safe vehicles – Workshop compilation*, Government of Western Australia, Perth, June 2011, p. 4, <http://www.ors.wa.gov.au/Documents/MSSAG/motorcycle-mssagcompilationssv-forum2.aspx>.
- ¹³⁹ Note: This term is used by the European Commission and within the broader European Union to a braking system in which either an antilock brake system and, or, a combined brake system is present. Refer to European Commission, *Two- or Three-wheel vehicles and Quadricycles Impact Assessment*, 558340 DT, 2010, p. 53, http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2010/sec_2010_1152_en.pdf.
- ¹⁴⁰ Transport Accident Commission, *Submission to the Inquiry*, September 2012, Term of reference (h).
- ¹⁴¹ Association de Constructeurs Européens de Motocycles, *ACEM Brake Commitment*, viewed August 2012, <http://www.acem.eu/index.php/policy-access/safety/european-road-safety-charter/acem-brake-commitment>; Ministry of Infrastructure and Environment, *Action Plan for improving road safety for motorcyclists Strategic Approach*, Netherlands, The Hague, February 2011, p. 16.
- ¹⁴² Correspondence with Mr Guido Gielen, Policy Officer, Automotive Industry Unit, Directorate-General for Enterprise and Industry (ENTR), European Parliament, 16 October 2012.
- ¹⁴³ European Commission, *Regulation (EU) No .../2010 of the European Parliament and of the Council on the approval and market surveillance of two- or three-wheel vehicles and quadricycles*, COM(2010) 542, 4 October 2010, Annex VIII, <http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0542:FIN:EN:PDF>.
- ¹⁴⁴ European Commission, *EU road safety plan for next 10 years – 20/07/2010*, viewed September 2012, http://ec.europa.eu/news/transport/100720_en.htm.

- ¹⁴⁵ European Commission, *Regulation (EU) No .../2010 of the European Parliament and of the Council on the approval and market surveillance of two- or three-wheel vehicles and quadricycles*, COM(2010) 542, 4 October 2010, Annex VIII, <http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0542:FIN:EN:PDF>.
- ¹⁴⁶ European Commission, *Regulation (EU) No .../2010 of the European Parliament and of the Council on the approval and market surveillance of two- or three-wheel vehicles and quadricycles*, COM(2010) 542, 4 October 2010, Annex VIII, <http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0542:FIN:EN:PDF>.
- ¹⁴⁷ European Commission, *Two- or Three-wheel vehicles and Quadricycles Impact Assessment*, 558340 DT, 2010, p. 53, http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2010/sec_2010_1152_en.pdf.
- ¹⁴⁸ European Commission, *Two- or Three-wheel vehicles and Quadricycles Impact Assessment*, 558340 DT, 2010, p. 53, http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2010/sec_2010_1152_en.pdf.
- ¹⁴⁹ European Commission, *Regulation (EU) No .../2010 of the European Parliament and of the Council on the approval and market surveillance of two- or three-wheel vehicles and quadricycles*, COM(2010) 542, 4 October 2010, pp. 36,38, <http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0542:FIN:EN:PDF>.
<http://www.europarl.europa.eu/committees/en/studiesdownload.html?languageDocument=EN&file=66991>; European Parliament, *Motorbikes need to be safer and greener*, Internal Market Committee MEPs, IMCO press release, December 2011,
<http://www.europarl.europa.eu/news/en/pressroom/content/20111205IPR33211/html/Motorbikes-need-to-be-safer-and-greener-say-Internal-Market-Committee-MEPs>.
- ¹⁵⁰ Email correspondence with Mr Guido Gielen, Policy Officer, Automotive Industry Unit, Directorate-General for Enterprise and Industry (ENTR), European Parliament, 16 October 2012.
- ¹⁵¹ Mr Malcolm Harbour, Chairman, Internal Market and Consumer Protection Committee, *Meeting*, European Parliament.
- ¹⁵² Swedish Transport Administration, *Improved safety for motorcycle and moped riders – Joint Strategy for the period 2010-2020 – version 1.0*, Sweden, 2010, p. 6.
- ¹⁵³ Swedish Transport Administration, *Improved safety for motorcycle and moped riders – Joint Strategy for the period 2010-2020 – version 1.0*, Sweden, 2010, p. 20.
- ¹⁵⁴ Swedish Transport Administration, *Improved safety for motorcycle and moped riders – Joint Strategy for the period 2010-2020 – version 1.0*, Sweden, 2010, p. 20.
- ¹⁵⁵ Mr Claes Tingvall, Director, Traffic Safety, Swedish Transport Administration, Mr Roger Johannson, National Coordinator, Safe Infrastructure Market and Planning, Swedish Transport Administration and Mr Matteo Rizzi, Road Safety Research, *Meeting*, Folksam, 29 June 2012, Stockholm, Sweden.
- ¹⁵⁶ Swedish Transport Administration, *Analysis of Road Safety Trends 2010 Management by Objectives for Road Safety Work, Towards the 2020 Interim targets*, Sweden, April 2011, p. 47.
- ¹⁵⁷ Transport Accident Commission, *Submission to the Inquiry*, September 2012, Term of reference (h).
- ¹⁵⁸ Ms Samantha Cockfield, Manager, Road Safety, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 74.
- ¹⁵⁹ Rizzi M, Strandroth J & Tingvall C, *The effectiveness of antilock brake systems on motorcycle in reducing real-life crashes and injuries*. Traffic Injury Prevention, vol. 10 issue. 5, 2009, pp. 479 & 485.
- ¹⁶⁰ Rizzi M, Strandroth J & Tingvall C, *The effectiveness of antilock brake systems on motorcycle in reducing real-life crashes and injuries*. Traffic Injury Prevention, No 10, 2009, p. 485.
- ¹⁶¹ Rizzi M, Strandroth J & Tingvall C, *The effectiveness of antilock brake systems on motorcycle in reducing real-life crashes and injuries*. Traffic Injury Prevention, vol. 10 issue. 5, 2009, p. 485.
- ¹⁶² Teoh E R, *Effectiveness of Antilock Braking Systems in reducing Motorcycle Fatal Crash Rates*, Traffic Injury Prevention, vol.12 issue. 2, April 2011, p. 169.

- ¹⁶³ Anderson RWG, Hutchinson TP, Linke B & Ponte G, *Analysis of crash data to estimate the benefits of emerging vehicle technology*, CASR094, Centre for Automotive Safety Research, University of Adelaide, Adelaide, 2011, p. 52.
- ¹⁶⁴ Ms Melinda Congiu, Manager, Road User Behaviour, Royal Automobile Club of Victoria, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 260.
- ¹⁶⁵ Ms Amanada McKenzie, Chief Executive Officer, Driver Education Centre of Australia (DECA), *Transcript of Evidence*, Melbourne, 18 October 2011, p. 91.
- ¹⁶⁶ VicRoads, *Submission to the Inquiry*, September 2011, p. 67.
- ¹⁶⁷ VicRoads, *Submission to the Inquiry*, September 2011, p. 67.
- ¹⁶⁸ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 10.
- ¹⁶⁹ Victorian Motorcycle Council, *Submission to the Inquiry*, September 2011, p. 11.
- ¹⁷⁰ Mr Ray Newland, *Transcript of Evidence*, Geelong, 15 November 2011, p. 321; Mr Stuart Carter, *Transcript of Evidence*, Geelong, 15 November 2011, p. 370; Mr David Hyatt, *Transcript of Evidence*, Ballarat, 16 November 2011, p. 391.
- ¹⁷¹ Bergman T, *Submission to the Inquiry*, July 2011.
- ¹⁷² Newland R, *Submission to the Inquiry*, July 2011, p. 9.
- ¹⁷³ Motorcycle Motion, *Transcript of Evidence*, July 2011, p. 9.
- ¹⁷⁴ Motorcycle Motion, *Transcript of Evidence*, July 2011, p. 9.
- ¹⁷⁵ VicRoads, *Submission to the inquiry*, September 2011, p. 68.
- ¹⁷⁶ Victorian Motorcycle Council, *Submission to the Inquiry*, September 2011, p. 12.
- ¹⁷⁷ Parliament of Victoria Road Safety Committee, *Inquiry into Vehicle Safety*, Parliament of Victoria, Melbourne, August 2008, pp. 18-19.
- ¹⁷⁸ Ms Samantha Cockfield, Manager, Road Safety, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 74.
- ¹⁷⁹ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 10.
- ¹⁸⁰ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 11.
- ¹⁸¹ Mr Ray Newland, *Transcript of Evidence*, Geelong, 15 November 2011, p. 321.
- ¹⁸² Honda Australia, *Submission to the Inquiry*, September 2011, Term of Reference (g).
- ¹⁸³ Victorian Automotive Chamber of Commerce, *Submission to the Inquiry*, September 2011, pp. 29-30.
- ¹⁸⁴ Transport Accident Commission, *Submission to the Inquiry*, September 2012, Term of Reference (h).
- ¹⁸⁵ Mr Ray Newland, *Transcript of Evidence*, Geelong, 15 November 2011, p. 321.
- ¹⁸⁶ Mr Robert Toscano, Director of Honda Australia, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 119.
- ¹⁸⁷ Mr Rob Smith, Manager, Australian Riders' Division, Motorcycling Australia, *Transcript of Evidence*, Geelong, 15 November 2011, p. 309.
- ¹⁸⁸ VicRoads, *Submission to the Inquiry*, September 2011, p. 68.
- ¹⁸⁹ Mr Rob Salvatore, Victorian Motorcycle Council, *Transcript of Evidence*, Melbourne, 19 October 2011, pp. 276-277.
- ¹⁹⁰ Mr Robert Toscano, Director of Honda Australia, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 120; Mr Tony Hinton, General Manager, Motorcycle Division, Honda Australia Rider Training, Honda Australia, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 120.
- ¹⁹¹ Mr Robert Toscano, Director of Honda Australia, *Transcript of Evidence*, Melbourne, 18 October 2011, pp. 119.

- ¹⁹² Mr Rob Salvatore, Victorian Motorcycle Council, *Transcript of Evidence*, Melbourne, 19 October 2011, pp. 276-277.
- ¹⁹³ Haworth N, de Rome L & Rowden P, *Motorcycle Protective Clothing: Stage 1 review of literature and development of a safety 'star rating' system (RSD-0299)*, for VicRoads, November 2006, p. 1.
- ¹⁹⁴ Mr Kris Growcott, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 216.
- ¹⁹⁵ Mr Kris Growcott, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 216.
- ¹⁹⁶ Haworth N, de Rome L & Rowden P, *Motorcycle Protective Clothing: Stage 1 review of literature and development of a safety 'star rating' system (RSD-0299)*, for VicRoads, November 2006, pp. vi-vii.
- ¹⁹⁷ de Rome, L, Ivers R, Fitzharris M, Du W, Haworth N, Heritier S, Richardson D, *Motorcycle protective clothing: Protection from injury or just the weather?*, Accident Analysis and Prevention, vol. 43 issue 6, 2011, p. 1898; Haworth N, de Rome L & Rowden P, *Motorcycle Protective Clothing: Stage 1 review of literature and development of a safety 'star rating' system (RSD-0299)*, for VicRoads, November 2006, p. vii.
- ¹⁹⁸ Mr Paul Varnsverry, Technical Director, PVA, and Independent Consultant on standards development of motorcycle clothing and other protective equipment, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 148.
- ¹⁹⁹ Ms Melinda Congiu, Manager, Road User Behaviour, Royal Automobile Club of Victoria, *Transcript of Evidence*, Melbourne, 19 October 2011, p.260.
- ²⁰⁰ Ms Samantha Cockfield, Manager, Road Safety, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 68.
- ²⁰¹ Haworth N, de Rome L & Rowden P, *Motorcycle Protective Clothing: Stage 1 review of literature and development of a safety 'star rating' system (RSD-0299)*, for VicRoads, November 2006, p. vii.
- ²⁰² Reinertsen RE, Faerevik H, Holbø K, Nesbakken R, Reitan J, Røyset A, Suong Le Thi M, *Optimizing the performance of phase-change materials in personal protective clothing systems*, International Journal Occupational Safety Ergonomics, vol. 14 no.1, 2008, p. 43; Motorcycle Council of NSW, *Protection from the weather*, viewed August 2012, <http://roadsafety.mccofnsw.org.au/a/78.html>.
- ²⁰³ Haworth N, de Rome L & Rowden P, *Motorcycle Protective Clothing: Stage 1 review of literature and development of a safety 'star rating' system (RSD-0299)*, for VicRoads, November 2006, p. vii.
- ²⁰⁴ Elvik R & Vaa T, *The handbook of road safety countermeasures*, Oxford, UK, 2004, p. 657.
- ²⁰⁵ de Rome L, *The injury reduction benefits of motorcycle protective clothing*, paper presented at National Transportation Safety Board Motorcycle Safety Forum, Washington DC, 12-13 September 2006, pp. 7-8.
- ²⁰⁶ National Center for Injury Prevention and Control, *Motorcycle Safety – How to save lives and save money*, 2012, http://www.cdc.gov/Motorvehiclesafety/pdf/motorcycle_brief-a.pdf citing National Highway Traffic Safety Administration, *Countermeasures that work: A highway safety countermeasure guide for state highway safety offices*, 3rd edition, 2008.
- ²⁰⁷ Citing Aldman, Hurt, Schuller & Otte in de Rome, L, Ivers R, Fitzharris M, Du W, Haworth N, Heritier S, Richardson D, *Motorcycle protective clothing: Protection from injury or just the weather?*, Accident Analysis and Prevention, vol. 43 issue 6, 2011, p. 1897; de Rome L, *The injury reduction benefits of motorcycle protective clothing*, paper presented at National Transportation Safety Board Motorcycle Safety Forum, Washington DC, 12-13 September 2006, p. 2.
- ²⁰⁸ McIntyre A, Nieuwesteeg & Cockfield S, *Motorcyclists injuries and protective clothing: Research with TAC Clients*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011, p. 1.
- ²⁰⁹ de Rome L, *The injury reduction benefits of motorcycle protective clothing*, paper presented at National Transportation Safety Board Motorcycle Safety Forum, Washington DC, 12-13 September 2006, p. 2.

- ²¹⁰ Eid HO, Barss P, Adam SH, Torab FC, Lunsjo K, Grivna M, & Abu-Zidan FM, *Factors affecting anatomical region of injury, severity, and mortality for road trauma in a high-income developing country: lessons for prevention*, Injury, vol. 40 issue 7, July 2009, p. 4.
- ²¹¹ Newland R, *Submission to the Inquiry*, July 2011, p. 8; Clemens K, *Submission to the Inquiry*, August 2011, p. 2; Victoria Police, *Submission to the Inquiry*, September 2011, pp. 11-12; Royal Automobile Club of Victoria, *Submission to the Inquiry*, September 2011, p. 5.
- ²¹² Ms Melinda Congiu, Manager, Road User Behaviour, Royal Automobile Club of Victoria, *Transcript of Evidence*, Melbourne, 19 October 2011, p.260.
- ²¹³ Swedish Transport Administration, *Improved safety for motorcycle and moped riders – Joint Strategy for the period 2010-2020 – version 1.0*, Sweden, 2010, pp. 24, 26.
- ²¹⁴ The Alfred, *Submission to the Inquiry*, September 2011, p. 16.
- ²¹⁵ de Rome, L, Ivers R, Fitzharris M, Du W, Haworth N, Heritier S, Richardson D, *Motorcycle protective clothing: Protection from injury or just the weather?*, Accident Analysis and Prevention, vol. 43 issue 6, 2011, p. 2.
- ²¹⁶ de Rome, L, Ivers R, Fitzharris M, Du W, Haworth N, Heritier S, Richardson D, *Motorcycle protective clothing: Protection from injury or just the weather?*, Accident Analysis and Prevention, vol. 43 issue 6, 2011, p. 3.
- ²¹⁷ de Rome, L, Ivers R, Fitzharris M, Du W, Haworth N, Heritier S, Richardson D, *Motorcycle protective clothing: Protection from injury or just the weather?*, Accident Analysis and Prevention, vol. 43 issue 6, 2011, p. 3.
- ²¹⁸ de Rome, L, Ivers R, Fitzharris M, Du W, Haworth N, Heritier S, Richardson D, *Motorcycle protective clothing: Protection from injury or just the weather?*, Accident Analysis and Prevention, vol. 43 issue 6, 2011, p. 4.
- ²¹⁹ de Rome, L, Ivers R, Fitzharris M, Du W, Haworth N, Heritier S, Richardson D, *Motorcycle protective clothing: Protection from injury or just the weather?*, Accident Analysis and Prevention, vol. 43 issue 6, 2011, p. 6.
- ²²⁰ de Rome, L, Ivers R, Fitzharris M, Du W, Haworth N, Heritier S, Richardson D, *Motorcycle protective clothing: Protection from injury or just the weather?*, Accident Analysis and Prevention, vol. 43 issue 6, 2011, p. 5.
- ²²¹ de Rome, L, Ivers R, Fitzharris M, Du W, Haworth N, Heritier S, Richardson D, *Motorcycle protective clothing: Protection from injury or just the weather?*, Accident Analysis and Prevention, vol. 43 issue 6, 2011, p. 5.
- ²²² de Rome, L, Ivers R, Fitzharris M, Du W, Haworth N, Heritier S, Richardson D, *Motorcycle protective clothing: Protection from injury or just the weather?*, Accident Analysis and Prevention, vol. 43 issue 6, 2011, p. 5.
- ²²³ McIntyre A, Nieuwesteeg & Cockfield S, *Motorcyclists injuries and protective clothing: Research with TAC Clients*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011, p. 2.
- ²²⁴ McIntyre A, Nieuwesteeg & Cockfield S, *Motorcyclists injuries and protective clothing: Research with TAC Clients*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011, p. 8.
- ²²⁵ McIntyre A, Nieuwesteeg & Cockfield S, *Motorcyclists injuries and protective clothing: Research with TAC Clients*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011, p. 8.
- ²²⁶ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 10.
- ²²⁷ Professor Russell Gruen, Director, National Trauma Research Institute; Professor of Surgery, Monash University; General Surgeon and Trauma Surgeon and Head, Trauma Quality Assurance, The Alfred Hospital, *Transcript of Evidence*, Melbourne, 18 October 2011, pp. 159-160.
- ²²⁸ Associate Professor Michael Leung, Director, Plastic, Hand and Maxillofacial Surgery unit, Alfred Heath, and Director, Plastic Surgery Unit, Southern Health, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 636.
- ²²⁹ Associate Professor Susan Liew, Director, Orthopaedic Surgery, The Alfred Hospital, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 687.

- ²³⁰ Mr Matthew Zammit, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 46.
- ²³¹ de Rome L, *The injury reduction benefits of motorcycle protective clothing*, paper presented at National Transportation Safety Board Motorcycle Safety Forum, Washington DC, 12-13 September 2006, p. 2; de Rome & Stanford G, *Motorcycle Protective Clothing: Fashion or function?*, International Motorcycle Safety Conference: The Human Element, Motorcycle Safety Foundation, Long Beach, 28-30 March 2006, p.1.
- ²³² de Rome, L, Ivers R, Fitzharris M, Du W, Haworth N, Heritier S, Richardson D, *Motorcycle protective clothing: Protection from injury or just the weather?*, Accident Analysis and Prevention, vol. 43 issue 6, 2011, p. 8.
- ²³³ Mr Paul Varnsverry, Technical Director, PVA and Independent Consultant on standards development of motorcycle clothing and other protective equipment, *Transcript of Evidence*, Melbourne, 18 October 2011, pp. 148-149.
- ²³⁴ Government of Victoria, *Victoria's Road Safety Strategy: Arrive Alive 2008-2017*, Melbourne, 2008, p. 40; Government of Victoria, *Victoria's Road Safety and Transport Strategic Action Plan for Powered Two Wheelers 2009-2013*, Melbourne, 2009, pp. 4, 25, 39; Government of Victoria, *Victoria's Road Action Plan 2011-12*, November 2011, p. 15.
- ²³⁵ Ms Samantha Cockfield, Acting Senior Manager, Road Safety and Marketing, Road Safety, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 706.
- ²³⁶ Correspondence from Ms Samantha Cockfield, Manager, Road Safety, Transport Accident Commission, 17 July 2012.
- ²³⁷ Ms Samantha Cockfield, Manager, Road Safety, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 69.
- ²³⁸ Government of Victoria, *Victoria's Road Safety and Transport Strategic Action Plan for Powered Two Wheelers 2009-2013*, Melbourne, 2009, p. 39.
- ²³⁹ Haworth N, de Rome L & Rowden P, *Motorcycle Protective Clothing: Stage 1 review of literature and development of a safety 'star rating' system (RSD-0299)*, for VicRoads, November 2006, p. 1.
- ²⁴⁰ Robertson P, *Submission to the Inquiry*, July 2011, Term of reference (g); Honda Australia, *Submission to the Inquiry*, September 2011, Term of reference (g).
- ²⁴¹ Parliament of Victoria Road Safety Committee, *Inquiry into Motorcycle Safety in Victoria – First Report Motorcycle Visibility*, Parliament of Victoria, Melbourne, March 1992, p. v.
- ²⁴² Parliament of Victoria Road Safety Committee, *Inquiry into the Review of Motorcycle Safety*, Parliament of Victoria, Melbourne, 1998, p. xiii.
- ²⁴³ Government of Victoria, *Response to recommendations Parliamentary Social Development committee First Report – Motorcycle visibility March 1992*, Melbourne, tabled 24 November 1993, p. 3.
- ²⁴⁴ Government of Victoria, *Government Response to the Parliamentary Road Safety Committee Report of an Inquiry into the Review of Motorcycles Safety in Victoria*, Melbourne, tabled 27 October 1998.
- ²⁴⁵ Standards Australia, *Motorcycle Protective Clothing: Guidelines for manufacturing*, HB173-2000, Sydney, December 2000.
- ²⁴⁶ Haworth N, de Rome L, Varnsverry P & Rowden P, *Motorcycle protective clothing: Are stars better than standards?*, paper presented at Australasian Road Safety Research, Education and Policy Conference, Melbourne, 15-16 October 2007, p. 5.
- ²⁴⁷ Haworth N, de Rome L, Varnsverry P & Rowden P, *Motorcycle protective clothing: Are stars better than standards?*, paper presented at Australasian Road Safety Research, Education and Policy Conference, Melbourne, 15-16 October 2007, pp. 5-6.
- ²⁴⁸ Mr James Holgate, Director, Road User Safety, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 11

- ²⁴⁹ Wishart D & Watson B, *Victoria Motorcycle Apparel observations study March 2010*, Final report to the Transport Accident Commission, June 2011, p. v.
- ²⁵⁰ Department of Infrastructure Transport, Regional Development and Local Government, *The Good Gear Guide for Motorcycle and Scooter Riders*, 2009, p. 3, http://www.infrastructure.gov.au/roads/safety/publications/2009/pdf/good_gear_guide_nrsc.pdf; Note: The National Road Safety Council, a body appointed by the Australian Transport Council (ATC), has also been involved in the funding updated editions.
- ²⁵¹ Mr Quentin de Montblanc, Director, Communication and Awareness, Belgian Institute for Road Safety and Ms Nina Nuyttens, Researcher, Belgian Institute for Road Safety, *Meeting*, Brussels, Belgium, 6 July 2012.
- ²⁵² Mr Quentin de Montblanc, Director, Communication and Awareness, Belgian Institute for Road Safety and Ms Nina Nuyttens, Researcher, Belgian Institute for Road Safety, *Meeting*, Brussels, Belgium, 6 July 2012.
- ²⁵³ Austrian Ministry for Transport, Innovation and Technology, *Austrian Road Safety Programme 2011-2020*, 2011, p. 80, <http://www.bmvit.gv.at/en/service/publications/downloads/rsp2020.pdf>.
- ²⁵⁴ Ministry of Infrastructure and Environment, *Action Plan for improving road safety for motorcyclists Strategic Approach*, The Hague, February 2011, pp. 24-25.
- ²⁵⁵ Mr Tom Duckham, Delivery Planning Manager – Motorised Travel, Transport for London and Mr Peter Sadler, Researcher, *Meeting*, Transport for London, 25 June 2012, London, United Kingdom.
- ²⁵⁶ European Economic Community, *Council Directive of 21 December 1989 on the approximation of the laws of the Member States relating to personal protective equipment*, 89/686/EEC, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1989L0686:20031120:EN:PDF>.
- ²⁵⁷ European commission, *CE Marking for Personal Protective Equipment*, Factsheet, 2011; de Rome & Stanford G, *Motorcycle Protective Clothing: Fashion or function?*, International Motorcycle Safety Conference: The Human Element, Motorcycle Safety Foundation, Long Beach, 28-30 March 2006, p.1.
- ²⁵⁸ European commission, *CE Marking for Personal Protective Equipment*, Factsheet, 2011 de Rome & Stanford G, *Motorcycle Protective Clothing: Fashion or function?*, International Motorcycle Safety Conference: The Human Element, Motorcycle Safety Foundation, Long Beach, 28-30 March 2006, p.1.
- ²⁵⁹ Haworth N, de Rome L, Varnsverry P & Rowden P, *Motorcycle protective clothing: Are stars better than standards?*, paper presented at Australasian Road Safety Research, Education and Policy Conference, Melbourne, 15-16 October 2007, p. 3.
- ²⁶⁰ Mr Paul Varnsverry, Technical Director, PVA and Independent Consultant on standards development of motorcycle clothing and other protective equipment, *Transcript of Evidence*, Melbourne, 18 October 2011, pp. 144-145.
- ²⁶¹ Mr Paul Varnsverry, Technical Director, PVA and Independent Consultant on standards development of motorcycle clothing and other protective equipment, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 146.
- ²⁶² Ms Samantha Cockfield, Manager, Road Safety, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 66.
- ²⁶³ Wishart D & Watson B, *Victoria Motorcycle Apparel observations study March 2010*, Final report to the Transport Accident Commission, June 2011, p. vi.
- ²⁶⁴ Wishart D & Watson B, *Victoria Motorcycle Apparel observations study March 2010*, Final report to the Transport Accident Commission, June 2011, p. vii.
- ²⁶⁵ Wishart D & Watson B, *Victoria Motorcycle Apparel observations study August 2010*, Final report to the Transport Accident Commission, June 2011, pp. vi-vii.
- ²⁶⁶ Wishart D & Watson B, *Victoria Motorcycle Apparel observations study August 2010*, Final report to the Transport Accident Commission, June 2011, p. viii.

- ²⁶⁷ Wishart D & Watson B, *Victoria Motorcycle Apparel observations study August 2010*, Final report to the Transport Accident Commission, June 2011, p. viii.
- ²⁶⁸ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (c).
- ²⁶⁹ Kerryn Alexander Research, *Motorcycle Protective Clothing: Market testing of two safety star rating models – Research report*, for VicRoads, May 2007, p. 13.
- ²⁷⁰ Victorian Automobile Chamber of Commerce, *Submission to the Inquiry*, September 2011, p. 30; Tame J, *Submission to the Inquiry*, February 2012.
- ²⁷¹ Mr David MacKenzie, Senior Instructor, Motorcycle Motion, *Transcript of Evidence*, Geelong, 15 November 2011, p. 335.
- ²⁷² Sergeant Darren Wittingslow, Victoria Police, *Transcript of Evidence*, Wangaratta, 29 November 2011, p. 433.
- ²⁷³ Mr David Hyatt, *Transcript of Evidence*, Ballarat, 16 November 2011, p. 391.
- ²⁷⁴ Campbell T, *Submission to the Inquiry*, July 2011, p. 3.
- ²⁷⁵ Department of Sustainability and Environment, *Submission to the Inquiry*, September 2011, Term of Reference (c).
- ²⁷⁶ Select Scootas, *Submission to the Inquiry*, September 2011, Term of Reference (g); Ulysses Club, *Submission to the Inquiry*, September 2011, p. 5; Mr Paul Varnsverry, Technical Director, PVA and Independent Consultant on standards development of motorcycle clothing and other protective equipment, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 149.
- ²⁷⁷ Bergman T, *Submission to the Inquiry*, July 2011.
- ²⁷⁸ de Rome, L, Ivers R, Fitzharris M, Du W, Haworth N, Heritier S, Richardson D, *Motorcycle protective clothing: Protection from injury or just the weather?*, Accident Analysis and Prevention, vol. 43 issue 6, 2011, p. 6.
- ²⁷⁹ Department of Infrastructure, Transport, Regional Development and Local Government, *Motorcycle and Scooter Safety Summit: The road ahead 10-11 April 2008*, March 2009, p. 8.
- ²⁸⁰ Motorcycle Motion, *Submission to the Inquiry*, July 2011, p. 4; Nicholas M, *Submission to the Inquiry*, July 2011; Kimpton S, *Submission to the Inquiry*, July 2011; Tsilis V, *Submission to the Inquiry*, July 2011; and McDermott F, *Submission to the Inquiry*, December 2011.
- ²⁸¹ Victoria Police, *Submission to the inquiry*, September 2011, p. 12.
- ²⁸² Mr Bill Tassigiannakis, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 205.
- ²⁸³ Ms Melinda Congiu, Manager, Road User Behaviour, Royal Automobile Club of Victoria, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 260.
- ²⁸⁴ Associate Professor Michael Leung, Director, Plastic, Hand and Maxillofacial Surgery Unit, Alfred Heath, and Director, Plastic Surgery Unit, Southern Health, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 637.
- ²⁸⁵ Associate Professor Susan Liew, Director, Orthopaedic Surgery, The Alfred Hospital, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 686
- ²⁸⁶ Mr Kris Growcott, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 216; Ulysses Club, *Submission to the Inquiry*, September 2011, p. 5.
- ²⁸⁷ Mr Paul Varnsverry, Technical Director, PVA and Independent Consultant on standards development of motorcycle clothing and other protective equipment, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 146.
- ²⁸⁸ Mastoris E, *Submission to the Inquiry*, July 2011, Term of Reference (c).
- ²⁸⁹ Newland R, *Submission to the Inquiry*, July 2011, p. 8.
- ²⁹⁰ Victorian Automobile Chamber of Commerce, *Submission to the Inquiry*, September 2011, p. 30.
- ²⁹¹ Ms Elizabeth Krieg, *Transcript of Evidence*, Ballarat, 16 November 2011, p. 398.
- ²⁹² Ms Elizabeth Krieg, *Transcript of Evidence*, Ballarat, 16 November 2011, p. 398.
- ²⁹³ Mr John Karmouche, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 195.

- ²⁹⁴ Mr Greg McCoy, *Transcript of Evidence*, Wangaratta, 29 November 2011, pp. 440-441.
- ²⁹⁵ Mr Tony Ellis, Ulysses Club, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 301.
- ²⁹⁶ Mr Kris Growcott, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 217.
- ²⁹⁷ Ms Elizabeth Krieg, *Transcript of Evidence*, Ballarat, 16 November 2011, p. 397.
- ²⁹⁸ Mr John Voyage, Principal, Maurice Blackburn, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 242.
- ²⁹⁹ Mr Rex Beard, President, Albury-Wodonga Branch, Ulysses Club, *Transcript of Evidence*, Wodonga, 30 November 2011, p. 498.
- ³⁰⁰ Ms Aline Delhaye, General Secretary, Federation of European Motorcyclists' Associations, *Meeting*, Perth, 4 November 2011, p. 10.
- ³⁰¹ Mr Paul Kennelly, Wodonga TAFE, *Transcript of Evidence*, Wodonga, 30 November 2011, p. 527.
- ³⁰² Mr Greg McCoy, *Transcript of Evidence*, Wangaratta, 29 November 2011, p. 443.
- ³⁰³ Mr David MacKenzie, Senior Instructor, Motorcycle Motion. *Transcript of Evidence*, Geelong, 15 November, p. 335.
- ³⁰⁴ de Rome, L, Ivers R, Fitzharris M, Du W, Haworth N, Heritier S, Richardson D, *Motorcycle protective clothing: Protection from injury or just the weather?*, Accident Analysis and Prevention, vol. 43 issue 6, 2011, p. 2.
- ³⁰⁵ Superintendent Bob Stork, Road Policing Strategy Group, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 27.
- ³⁰⁶ Mr Paul Varnsverry, Technical Director, PVA and Independent Consultant on standards development of motorcycle clothing and other protective equipment, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 146.
- ³⁰⁷ Victoria Police, *Submission to the Inquiry*, September 2011, p. 12.
- ³⁰⁸ Parliament of Victoria Road Safety Committee, *Inquiry into the Review of Motorcycle Safety*, Parliament of Victoria, Melbourne, 1998, p. xiii.
- ³⁰⁹ Mr Mark Collins, National Rider Training Manager, Honda Australia Rider Training, Honda Australia Motorcycles and Power Equipment Pty Ltd., *Transcript of Evidence*, Melbourne, 18 October 2011, p. 121.
- ³¹⁰ Mr Kris Growcott, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 216.
- ³¹¹ Mr Paul Varnsverry, Technical Director, PVA and independent consultant on standards development of motorcycle clothing and other protective equipment, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 145.
- ³¹² Ms Hollie Black, General Manager, Select Scootas, *Transcript of Evidence*, 18 October 2011, p. 137.
- ³¹³ VicRoads, *Submission to the Inquiry*, September 2011, p. 21.
- ³¹⁴ VicRoads, *Submission to the Inquiry*, September 2011, p. 21.
- ³¹⁵ VicRoads, *Submission to the Inquiry*, September 2011, p. 21.
- ³¹⁶ Clarke, DD, Ward P, Bartle C & Truman W, *The role of motorcyclist and other driver behaviour in two types of serious accident in the UK*, Accident Analysis & Prevention, vol. 39 issue 5, September 2007; Horswill MS, Helman S, Ardiles P & Wann JP, *Motorcycle Accident Risk Could Be Inflated by a Time to Arrival Illusion*, Optometry and Vision Science, vol. 82, no. 8, August 2005.
- ³¹⁷ Wells S, Mullin B, Norton R, Langley J, Connor J, Lay-Yee R & Jackson R, *Motorcycle rider conspicuity and crash related injury: case-control study*, British Medical Journal, vol. 328 issue. 7444, 10 April 2004, p. 857.
- ³¹⁸ Hole GJ, Tyrrell L & Langham M, *Some factors affecting motorcyclists' conspicuity*, Ergonomics, vol. 39 no. 7, 1996, p. 946; Horswill MS, Helman S, Ardiles P & Wann JP, *Motorcycle Accident Risk Could Be Inflated by a Time to Arrival Illusion*, Optometry and Vision Science, vol. 82, no. 8, August 2005, p. 744.

- ³¹⁹ Horswill MS, Helman S, Ardiles P & Wann JP, *Motorcycle Accident Risk Could Be Inflated by a Time to Arrival Illusion*, Optometry and Vision Science, vol. 82, no. 8, August 2005, p. 740. Note: The Committee discusses factors affecting driver awareness in Chapter 7. Refer to the section titled *Research on driver awareness of motorcyclists*. See also Khashawi F, *Detecting motorcycles in road scenes: differences between car drivers and motorcyclists*, Doctoral Thesis, University of Nottingham, March 2011, http://etheses.nottingham.ac.uk/2044/1/Fadhel_Khashawi_Thesis.pdf.
- ³²⁰ Wells S, Mullin B, Norton R, Langley J, Connor J, Lay-Yee R & Jackson R, *Motorcycle rider conspicuity and crash related injury: case-control study*, British Medical Journal, vol. 328 issue. 7444, 10 April 2004, p. 857.
- ³²¹ Victoria Police, *Submission to the Inquiry*, September 2011, p. 12; Campbell T, *Submission to the Inquiry*, July 2011; McLennan PG, *Submission to the Inquiry*, June 2011.
- ³²² Superintendent Bob Stork, Road Policing Strategy Group, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 26.
- ³²³ Ms Melinda Congiu, Manager, Road User Behaviour, Royal Automobile Club of Victoria, *Transcript of Evidence*, Melbourne, 19 October 2011, p.266.
- ³²⁴ VicRoads, *Supplementary VicRoads Submission to the Inquiry into Motorcycle Safety*, 2 March 2012.
- ³²⁵ Ms Alene McGowan, General Manager, Armstrong, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 100.
- ³²⁶ Australia Post, *Submission to the Inquiry*, September 2011, p. 4.
- ³²⁷ Australia Post, *Submission to the Inquiry*, September 2011, p. 4.
- ³²⁸ Australia Post, *Submission to the Inquiry*, September 2011, p. 4.
- ³²⁹ de Craen S, Doumen M, Bos N & van Norden Y, *The role of motorcyclists and car drivers in conspicuity-related motorcycle crashes*, SWOV Institute for Road Safety Research, Netherlands, 2011, p. 43; Wells S, Mullin B, Norton R, Langley J, Connor J, Lay-Yee R & Jackson R, *Motorcycle rider conspicuity and crash related injury: case-control study*, British Medical Journal, vol. 328 issue. 7444, 10 April 2004, p. 857.
- ³³⁰ de Craen S, Doumen M, Bos N & van Norden Y, *The role of motorcyclists and car drivers in conspicuity-related motorcycle crashes*, SWOV Institute for Road Safety Research, Netherlands, 2011, p. 43; Hole GJ, Tyrrell L & Langham M, *Some factors affecting motorcyclists' conspicuity*, Ergonomics, vol. 39 no. 7, 1996, p. 951.
- ³³¹ de Craen S, Doumen M, Bos N & van Norden Y, *The role of motorcyclists and car drivers in conspicuity-related motorcycle crashes*, SWOV Institute for Road Safety Research, Netherlands, 2011, p. 22.
- ³³² de Craen S, Doumen M, Bos N & van Norden Y, *The role of motorcyclists and car drivers in conspicuity-related motorcycle crashes*, SWOV Institute for Road Safety Research, Netherlands, 2011, pp. 22, 43.
- ³³³ de Craen S, Doumen M, Bos N & van Norden Y, *The role of motorcyclists and car drivers in conspicuity-related motorcycle crashes*, SWOV Institute for Road Safety Research, Netherlands, 2011 de Craen S, Doumen M, Bos N & van Norden Y, *The role of motorcyclists and car drivers in conspicuity-related motorcycle crashes*, SWOV Institute for Road Safety Research, Netherlands, 2011, pp. 22, 43.
- ³³⁴ Gershon P, Ben-Asher N & Shinar D, *Attention and search conspicuity of motorcycles as a function of their visual context*, Accident Analysis and Prevention, vol. 44 issue 1, 2012., p. 6.
- ³³⁵ Gershon P, Ben-Asher N & Shinar D, *Attention and search conspicuity of motorcycles as a function of their visual context*, Accident Analysis and Prevention, vol. 44 issue 1, 2012., p. 6.
- ³³⁶ de Craen S, Doumen M, Bos N & van Norden Y, *The role of motorcyclists and car drivers in conspicuity-related motorcycle crashes*, SWOV Institute for Road Safety Research, Netherlands, 2011, p. 43.
- ³³⁷ National Cooperative Highway Research Program, *Effectiveness of behavioral highway safety countermeasures*, NCHRP Report 622, Transportation Research Board, Washington DC, 2008, pp. 5-6.
- ³³⁸ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (h).
- ³³⁹ Royal Automobile Club of Victoria, *Submission to the Inquiry*, September 2011, p. 4.

- ³⁴⁰ Ms Melinda Congiu, Manager, Road User Behaviour, Royal Automobile Club of Victoria, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 260.
- ³⁴¹ Ms Christine Mulvihill, Research Fellow, Monash University Accident Research Centre, *Transcript of Evidence*, Melbourne, 6 March 2012, pp. 646-647.
- ³⁴² Kardamanidis K, Martiniuk A, Ivers RQ, Stevenson MR & Thistlewaite K, *Motorcycle rider training for the prevention of road traffic crashes*, Cochrane Review, 2010, p. 23.
- ³⁴³ Dr Alex Stedmon, Centre for Motorcycle Ergonomics & Rider Human Factors, Faculty of Engineering, University of Nottingham, *Meeting*, London, UK, 26 June 2012.
- ³⁴⁴ Dr Alex Stedmon, Centre for Motorcycle Ergonomics & Rider Human Factors, Faculty of Engineering, University of Nottingham, *Meeting*, London, UK, 26 June 2012.
- ³⁴⁵ Dr Alex Stedmon, Centre for Motorcycle Ergonomics & Rider Human Factors, Faculty of Engineering, University of Nottingham, *Meeting*, London, UK, 26 June 2012.
- ³⁴⁶ Professor Mark Stevenson, Director, MUARC, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 653
- ³⁴⁷ Government of Victoria, *Victoria's Road Safety and Transport Strategic Action Plan for Powered Two Wheelers 2009-2013*, Melbourne, 2009, p. 29.
- ³⁴⁸ European Commission, *The IRT model – European initial Rider Training Programme*, Brussels, 2011, p. 4.
- ³⁴⁹ VicRoads, *Submission to the inquiry*, September 2011, p. 63.
- ³⁵⁰ VicRoads, *Submission to the inquiry*, September 2011, p. 63.
- ³⁵¹ Mr Mark Collins, National Rider Training Manager, Honda Australia Rider Training, Honda Australia Motorcycles and Power Equipment Pty Ltd, *Transcript of Evidence*, Melbourne, 18 October 2011, pp. 120-121.
- ³⁵² VicRoads, *Submission to the inquiry*, September 2011, p. 63; Hosking S, Liu C, Mulvihill C, Bayly M, Murdoch C, Haworth N & Regan M, *Hazard perception and responding by experienced and inexperienced motorcyclists: Stage 2*, for VicRoads, July 2008, p. 21.
- ³⁵³ Pallavicini MR, *Simulation forgives - reality does not: Driver training in the next 10 years*, Journal of the Australasian College of Road Safety, vol. 21 issue. 1 February 2010, p. 26.
- ³⁵⁴ Ms Amanda McKenzie, Chief Executive Officer, Driver Education Centre of Australia, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 98.
- ³⁵⁵ Ms Christine Mulvihill, Research Fellow, Monash University Accident Research Centre, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 648.
- ³⁵⁶ Mr David MacKenzie, Senior Instructor, Motorcycle Motion, *Transcript of Evidence*, 15 November 2011, p. 334.
- ³⁵⁷ VicRoads, *Submission to the inquiry*, September 2011, p. 64.
- ³⁵⁸ VicRoads, *Submission to the Inquiry*, September 2011, p. 63.
- ³⁵⁹ VicRoads, *Submission to the Inquiry*, September 2011, p. 63.
- ³⁶⁰ VicRoads, *Submission to the Inquiry*, September 2011, p. 63.
- ³⁶¹ Ms Aline Delhaye, General Secretary, Federation of European Motorcyclists' Associations, *Meeting*, Perth, 4 November 2011, p. 9.
- ³⁶² Note: On-road testing is included as part of the motorcycle licensing regime in New South Wales. Transport Roads and Maritime Services (NSW), *Motorcycle Rider Training Scheme*, 7 June 2012, <http://www.rta.nsw.gov.au/licensing/gettingallicence/motorcycle/index.html>.
- ³⁶³ Ms Alene McGowan, General Manager, Armstrong, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 106.
- ³⁶⁴ Ms Amanda McKenzie, Chief Executive Officer, Driver Education Centre of Australia, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 90.
- ³⁶⁵ Sergeant Rod Lay, Victoria Police, *Transcript of Evidence*, Bairnsdale, 14 December 2011, p. 596.
- ³⁶⁶ Victorian Motorcycle Council, *Submission to the Inquiry*, September 2011, p. 14.
- ³⁶⁷ Mr Tony Ellis, Ulysses Club, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 301.

³⁶⁸ Mr Des Malone, Secretary, Albury-Wodonga branch, Ulysses Club, *Transcript of Evidence*, Wodonga, 30 November 2011, p. 494.

³⁶⁹ Classic Motorcycle Club of Victoria, *Submission to the Inquiry*, July 2011.

³⁷⁰ Ellis H, *Submission to the Inquiry*, July 2011, Term of Reference (f).

³⁷¹ Ellis H, *Submission to the Inquiry*, July 2011, Term of Reference (f).

³⁷² Ms Heather Ellis, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 290.

³⁷³ Mr David McAuliffe, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 188.

³⁷⁴ Mr David McAuliffe, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 191.

³⁷⁵ Mr David McAuliffe, *Transcript of Evidence*, Melbourne, 18 October 2011, pp. 189-190.

Chapter 12 at a glance

Overview

This chapter discusses new initiatives to reduce motorcycle crashes and injuries. It deals with both individual proposals such as filtering, and proposals that are similar in nature and have been grouped together. Grouped initiatives covers new approaches to motorcycle safety, safe systems and its implications for motorcycles, funding, off-road, and the potential application of Intelligent Transport Systems and associated technologies.

Key findings

Strategies and initiatives need to be aimed at specific motorcycle segments with an emphasis on scooter and off-road riding and they should contain specific trauma reduction targets. The introduction of safer cars on Victorian roads may be reducing the level of driver awareness, a situation that could be rectified through education.

Currently Victoria regulates filtering practice through the road rules, which have the effect of prohibiting the practice. Whilst filtering, as distinct from lane splitting, may have potential safety benefits, there is limited research available on both the benefits and risks, and the term itself is subject to varying definitions. At present a focus on evaluation, research and development needs to take place before filtering can be legalised.

The funding of motorcycle safety could benefit from a greater reliance on subsidies and incentives to increase safety. The funding of enforcement, by the Traffic Accident Commission, merits review as there may be alternative activities which improve safety.

In terms of off-road riding, there is a lack of evidence supporting a junior off-road recreational licence, but increasing the use of emergency locating devices such as EPIRBS could significantly improve trauma outcomes for injured riders.

Intelligent Transport Systems and associated technologies are not yet adapted for motorcycles, and their impact cannot be quantified at present. However, these technologies used on cars and heavy vehicles may improve motorcycle safety indirectly by reducing crash risks posed by other road users and improve post-crash treatment times. If existing obstacles and concerns with ITS on motorcycles can be overcome, this technology could have an important role to play in motorcycle safety. The use of associated technologies such as alcohol interlocks and GPS tracking systems for recidivist motorcycle offenders are areas of particular note.

Recommendations

Recommendation 57:

That road safety agencies set and incorporate trauma reduction targets for motorcycles, and motorcycle segments, in motorcycle strategies and for individual interventions. Targets should be both aspirational and empirical in nature.

Recommendation 58:

That the Transport Accident Commission and VicRoads review their driver instructional materials to deal with the issue of safety features on vehicles that may affect a driver's ability to see motorcyclists.

Recommendation 59:

That the benefits and risks of filtering, as distinct from lane splitting, be reviewed with the aim of introducing filtering in Victoria. A review committee should be constituted within 12 months of the tabling of this report and its members must include motorcycle community stakeholders and advocates, transport academics, police and other government agencies. The review committee will be responsible for:

- Creating a definition that includes references to speed and the location of the rider on the road during filtering among others;
- Identifying the benefits and risks of legalising filtering;
- Undertaking research into the incidence of rear-end crashes and crashes involving motorcycles and other vehicles within the same lane;
- Formulating training requirements so that riders can safely filter;
- Implementing a trial of filtering, followed by an evaluation to allow for a realistic assessment of the risks of filtering; and
- Consulting with the public and motorcycle stakeholders.

The review committee will produce a report, with recommendations, and submit it to the Minister for Transport and the Road Safety Committee within 12 months of the committee being constituted.

Recommendation 60:

That the Transport Accident Commission's funding of enforcement be reviewed with a view to identifying whether there has been an undue reliance on enforcement, by the Transport Accident Commission, and whether these funds would be more appropriately spent on alternative programs, initiatives and activities (such as subsidising countermeasures) which can improve motorcycle safety.

Recommendation 61:

That road safety agencies incorporate subsidies and incentives in motorcycle strategies, interventions and when introducing new countermeasures. Only countermeasures that have a measurable road safety benefit, either by reducing crash risk or improving trauma rates, should be eligible for such subsidies and incentives.

Recommendation 62:

That the hypothecation of funds derived from enforcement, and their transfer to a specific road safety fund which could be used to supplement existing funding for road safety measures, including those aimed at motorcyclists, such as that in Western Australia and New South Wales, be implemented in Victoria.

Recommendation 63:

That the Department of Sustainability and Environment and road safety agencies investigate ways to increase the awareness of emergency location devices among off-road motorcyclists and assess ways to improve access to such devices, including making such devices available for a small rental fee.

Recommendation 64:

That VicRoads and the Transport Accident Commission provide yearly reports to the Motorcycle Advisory Group on research, advancements and evaluations of Intelligent Transport Systems and associated technologies, both in Australia and overseas. These reports should also be made available to the public through the respective agencies websites.

CHAPTER 12: NEW INITIATIVES

12.1 *Introduction*

Finding new ways to reduce motorcycle trauma is an important task and one that is timely, considering the growth of motorcycle usage in Victoria and the potential of new technologies and ideas to help realise this aim. The potential for an increase in the number of injured riders in the coming decade, coupled with the longstanding objective of reducing Victoria's road trauma, required the Committee to investigate the numerous proposed suggestions. In summary, while many of the proposals were creative, showing a high level of enthusiasm and purpose, most were found to have limited utility because they were too specific, while others were judged by the Committee to be unproven. Other submissions and witnesses offered suggestions for enhancing or improving existing initiatives rather than new initiatives.

Nevertheless, the Committee identified several new initiatives that, in its view, have the potential to reduce trauma and enhance motorcycle safety. Some of these new initiatives are specific (for example filtering), whereas others have been grouped in target areas such as off-road riding. The new initiatives discussed in this chapter are comprised of the following: proposals for changing the strategic approach of road safety agencies with a focus on using the safe system framework and addressing safety collectively across agencies and departments; filtering; funding; off-road riding; and the application of an Intelligent Transport System (ITS) for motorcycles. Some of these initiatives, in particular the ITS and filtering have been the subject of much interest both domestically and overseas.

The structure of this chapter also includes a brief overview of some of the issues identified by the Committee in regard to new initiatives. These include the importance of the link between crash data and new initiatives and the need to balance interventions against the risks of motorcycling.

12.2 *Overview*

The growth of motorcycling, in Victoria, nationally and internationally, has resulted in the rapid development of new initiatives. Proposals for new initiatives to improve motorcycle safety were included in almost all the submissions received by the committee and were raised by many witnesses at public hearings. The Committee was pleased by the breadth of new initiatives proposed and the creativity applied by participants. In developing and providing the Committee with new initiatives for reducing trauma, submitters and witnesses stressed the need to balance safety needs with mobility and the enjoyment of riding. One witness, Professor Marcus Wigan, Principal, Oxford Systematics, provided the Committee with an overview of his vision for the future of motorcycling and motorcycle safety in Victoria:

If we look at 'Mobility matches safety' ... this is a situation that would be desirable to reach. Processes for effective shared use of dedicated lanes have been worked out and motorcycles, bicycles and scooters are able to benefit as a result. Inter-vehicle warning systems have been improved.

Poor rates of driver identification and response to motorcycles with right of way have been corrected. Legal structures have been put in place to enforce liabilities on the larger vehicles to take due care up and down the hierarchy. Filtering through traffic when stationary is being clearly permitted and there is an offence of inconsiderate driving put in place to handle any inappropriate use of this filtering right. Intelligent transport systems on all types of vehicles have reduced door opening events and other forms of inter vehicle collisions. The usage levels of motorcycles and scooters is 15 to 25 per cent of traffic in many busy urban locations, and all parties ride in a manner visibly more aware of these vehicles in the traffic stream. This is a situation which would demonstrate balance and attention to mobility, access and coherence in the vehicles ...¹

12.3 New approaches to regulating motorcycle safety and the safe system

12.3.1 Tailoring safety strategies to different motorcycle groups

Motorcyclists are a diverse and vulnerable road user group, and their place within the broader transport policy framework, and the associated risks they face, needs to reflect that. However, the approach taken by road safety agencies in designing and implementing road safety strategies has generally been to treat motorcyclists as a single road user group, rather than one made up of many segments such as mopeds, scooters and off-road motorcyclists. That approach has changed to an extent, with Victoria's *Road Safety and Transport Strategic Action Plan for Powered Two Wheelers 2009–2013* (the PTW Action Plan) recognising the differences among motorcyclists and noting the scooter segment in particular.² However, in spite of recognising these differences, the PTW Action Plan has not been designed around individual segments, with most interventions and actions aimed at motorcyclists as a whole.

Changing the way strategic plans are designed so that their interventions and actions are aimed at different motorcycle segments was raised as a new initiative in several submissions. The Victorian Automobile Chamber of Commerce (VACC) submission noted the importance of different motorcycle segments, recommending that strategies should be built around those segments.³ In the submission from Mr Rex Deighton-Smith, the need for a specific road safety strategy for scooters was proposed based on the growth, needs and culture of scooter riders.⁴

In Chapter 6, the Committee noted the diversity of the motorcycling community and the growth of different segments such as off-road and mopeds and scooters. Of particular importance is the off-road riding segment of the community, which has attracted very little attention from road safety agencies (see Chapter 5). The Royal Automobile Club of Victoria (RACV) submission drew attention to the lack of any road safety strategy aimed at off-road riders and recommended:

The Victorian government should establish and implement a state wide strategy for a coordinated and accountable whole of government approach to the management and safety of off-road motorcycle riding in Victoria.⁵

The submission added that in developing such a strategy, Victoria could use the *Queensland Off-Road Motorcycling Management Strategy* (the Queensland Strategy) as

a model.⁶ The present PTW Action Plan does not extend to include off-road riding, a point that is recognised in the document:

*The focus of the plan is on-road safety and transport issues for PTW riders and pillion passengers. More than half of all motorcycles sold are for off-road purposes, and while off-road use is not in the scope of the plan, it is likely that some of the initiatives will have a flow on safety benefit.*⁷

Although the PTW Action Plan does refer to the *Recreational Trail Bike Initiative* (Trail Bike Initiative), designed and managed by the Department of Sustainability and Environment (DSE), the Committee notes this initiative did not deal with safety issues in the way the PTW Action Plan does. It is worth noting that there are similarities between the Trail Bike Initiative and the Queensland Strategy. While the Committee agrees there is merit in developing a specific strategy for off-road riders, the RACV's suggestion of using the Queensland Strategy as a model is tempered by the fact that the Queensland Strategy is aimed at competition activities on private land (for example on speedways), includes All Terrain Vehicles and appears to be predominantly aimed at managing noise pollution and its enforcement rather than safety.⁸ In many respects, the Queensland Strategy mirrors the DSE's Trail Bike Initiative, which means many of the activities it includes are already being pursued by DSE and Victoria Police. Therefore, in the context of off-road, it remains necessary to design and implement a strategy aimed at this group of riders.

12.3.1.1 Findings

Designing strategies and initiatives aimed at specific motorcycle segments is imperative. Initiatives, communications and training differ according to the type of motorcycle being ridden. The focus of Victorian road safety strategies for motorcycles needs to be tailored to the requirements and nuances of each of these segments. Of particular importance are the growing segments of scooters and off-road. While there is an existing strategy in Victoria aimed at off-road riders, it lacks a safety focus. This situation needs to be rectified.

12.3.2 Having specific targets for reducing trauma for motorcyclists

A fundamental objective in road safety is the reduction of trauma. Road safety strategies usually include specific reduction targets. Road safety targets have an important function in road safety according to the Organisation for Economic Co-operation and Development (OECD). Measurable targets are said to 'communicate the importance of road safety, motivate stakeholders to act, create a sense of ownership, lead to partnerships and holds those involved in managing the road network responsible for their achievement'.⁹ Further, research has shown that countries that have targets perform better over time than those that do not.¹⁰

In Australia, the setting of trauma reduction targets is well entrenched. In the recent *National Road Safety Strategy 2011-2020*, a 30% reduction in road trauma has been set, to be achieved during its operation.¹¹ According to the OECD, there are two types of trauma reduction targets, aspirational and empirically derived.¹² The importance of setting aspirational trauma reductions is well recognised.¹³ Large trauma reduction

targets are felt to assist in moving away from conservative approach towards road safety, lead to the development of new interventions and require best practice solutions. However, aspirational targets are not linked to specific interventions and if they are not met, ‘either because they are not feasible or interventions did not deliver the necessary reductions, can undermine the credibility of road safety programs and target setting generally’.¹⁴ In contrast to aspirational targets, empirically derived targets reflect the estimated impact of a given intervention based on previous evidence as to its effectiveness and an estimate of its likely outcome.¹⁵

Arguably, setting targets that are both aspirational and empirically derived, as part of a road safety strategy, is an important component in achieving measurable trauma reductions. However, the PTW Action Plan lacks both an aspirational and empirically derived target. The absence of motorcycle trauma reduction targets in Victoria can be contrasted with the approach taken by other jurisdictions, such as Sweden. The Committee notes the use of such targets as part of Sweden’s *Improved Safety for Motorcycle and Moped Riders – Joint strategy for the period 2010–2020* (the Joint Strategy).¹⁶ This strategy includes both types of targets, with a 50% overall reduction and individual trauma reductions for different interventions.¹⁷ During the public hearings, the Committee sought comment from VicRoads on the specific reduction targets for motorcycle trauma. Responding to the Committee, Mr David Shelton, Executive Director, Road Safety and Network Access, stated:

*We are particularly interested, however, in the benefits that may come from having a specific set of targets for the reduction of motorcycle trauma. At the moment we have high level targets for reducing fatalities and serious injuries. The current target is a 30 per cent reduction by 2017, and a similar level of performance is reflected in the national road safety strategy. Our interest is in whether or not there is benefit in having a set of targets specifically for motorcycle trauma to help us focus and drive our performance.*¹⁸

The reference to a 30% reduction in overall road trauma, as part of the National Road Safety Strategy which applies to Victoria, would include a reduction in motorcycle casualties. However, it is not directly linked to motorcyclists, and the 30% reduction may not be uniformly achieved across road users. Further, the target could arguably be met even if motorcycle trauma reductions are not achieved. Mr James Holgate, Manager, Road User Safety at VicRoads provided additional commentary on the efficacy of a motorcycle trauma reduction target:

*The international consensus is that an absolute number is what drives action and drives performance. Certainly when setting a target we need to take growth and exposure into account, and certainly the number of motorcycles is increasing, but to get action an absolute target is what is needed to make sure we focus on improvement.*¹⁹

The Committee notes the research into the efficacy of both aspirational and empirical targets, and the absence of existing motorcycle trauma targets. Clearly, VicRoads recognises the importance of targets and the need for motorcycle strategies to include targets.

12.3.2.1 Findings

An important component of road safety strategies is the inclusion of trauma reduction targets. In the Committee's view developing and applying specific motorcycle trauma reduction targets is likely to improve motorcycle safety. Targets provide a number of benefits, including accountability for those involved in managing safety on the road network. The current strategies dealing with motorcycle safety lack such targets.

Targets included in broader road safety strategies such as the National Road Safety Strategy are insufficient because they are not adequately linked to the safety performance of motorcycles. While there is great merit in following the Swedish approach in developing Victorian motorcycle targets, Victoria should ensure that any targets reflect local factors such as the prevalence of off-road riding and the nature of the Victorian road network.

12.4 The safe systems approach to motorcycles and associated issues

The safe system is a new approach for reducing road trauma. It was first developed in the Netherlands and Sweden.²⁰ The Netherlands version of the safe system approach is named '*Sustainable Safety*' whereas in Sweden it is named '*Vision Zero*'.²¹ Irrespective of the name given, the safe systems approach now underpins European and Australian interventions to reduce road trauma. The basic principle underpinning the safe system is the need to accommodate human error. The safe system accepts that people make mistakes and crashes will continue to occur irrespective of prevention efforts. To address human error, the safe system uses a combination of infrastructure and behavioural interventions to reduce the severity of crashes so that collisions do not cause death and the risk of serious injury is lessened.

12.4.1 The key elements of a safe systems approach

Whilst the central principle of the safe systems approach is to safeguard road users through design and management practices, the following are also accepted elements of the system.²²

- Crashes will continue to occur, prevention efforts notwithstanding;
- Road systems should be developed to accommodate and be forgiving to human error;
- Crash impact forces should be within the boundaries of human tolerance so that no fatalities will occur and serious injuries are reduced;
- Vehicles, the road infrastructure and speeds should be managed in order to minimise the probability of death as a consequence of a road crash;
- Communication and management structures should be comprehensive among those regulating safety;
- Strong economic analyses should be used to understand the cost and scale of trauma;
- There should be shared responsibility for road safety by all those that use the road network; and
- Individual road user responsibilities and behavioural countermeasures should support the safe system.

12.4.2 Safe systems and motorcycle safety in Victoria

The National Road Safety Strategy, released in May 2011, is built around a safe systems approach.²³ It borrows from the Swedish *Vision Zero* the goal of having no person killed or injured on Australian roads. The initiatives of the strategy, to which Victoria is a signatory, are based on having safer roads, speeds, vehicles and people. The safe systems approach covers all road users including motorcyclists. For motorcyclists, who are inherently vulnerable, making the road environment more forgiving to errors and lowering speeds is one way of reducing deaths and serious injuries. The importance placed in the National Road Safety Strategy²⁴ on making the road environment more forgiving and reducing speeds has been extended in the PTW Action Plan:

*The plan fits within the framework of Victoria's Road Safety Strategy: arrive alive 2008–2017. It takes a Safe System approach to road safety, which recognises the benefits to be gained from an overarching strategy that delivers safer travel through safer vehicles, safer roads and safer road users. A Safe System is one in which the likelihood of a crash, and the risk of death or serious injury in the event of a crash is reduced.*²⁵

Although the safe system is clearly designed to accelerate improvements in the safety of all road users, including motorcyclists, the Committee received evidence that the design and manufacture of safer vehicles as part of this system may have unintended consequences for motorcyclists and potentially increase their crash risk.

12.4.3 Do safer cars create a risk for motorcyclists?

A growing concern, in terms of safer vehicles within the safe system approach, is the impact of car design on driver awareness. The improvements in vehicle technology, including passive safety features, have been a key driver of road trauma reductions. One feature, vehicle A pillars, have become thicker as a way of better protecting the occupants of a car. These thickened pillars have aroused concern because of the perception that they reduce driver visibility in relation to motorcycles. Starting in 2005, the United Kingdom (UK) Department for Transport 'highlighted possible risks with thicker A pillars in new model cars and has commissioned ongoing research into the problem with the potential for variations to the vehicle design standards a possible outcome'.²⁶ The concerns of the UK Department for Transport were relayed to the Committee in both submissions and at the public hearings. During the public hearings Ms Jenny Tame provided her view on vehicle design and awareness of drivers in the following terms:

*The current design of cars is that they are very much safety oriented. The driver is actually too cocooned; the driver feels safe, and the driver is only on the lookout for bigger hazards. The human condition means that we are not so much interested in little things, and as ... riders we fall into that category. We have to know that the car driver is not really taking account of us; there is a fair chance that they are not. ... We are increasing in numbers. It is up to them.*²⁷

The VACC also drew attention to the increasing sophistication of driver aids and comforts as factors that reduce awareness:

*A new motor vehicle is well equipped with comfortable seating, air-conditioning excellent sound system, GPS, telephone(s) and plenty of glass; it is effectively a sound protected 'bubble' with blind spots.*²⁸

12.4.3.1 Findings

The Committee believes there is an important balance when comparing the potential risks of road safety technology for one road user group (car drivers) that can reduce the safety outcomes for another (motorcyclists). In this instance cars, which comprise the overwhelming majority of the vehicle fleet in Victoria, have become safer due to improvements in the design and manufacture of new vehicles. Those improvements represent one of the areas of focus in the safe system, safer vehicles. However, when these improvements reduce the awareness of drivers by potentially obscuring motorcyclists, this issue needs to be addressed. Possible approaches could include teaching drivers to look for motorcycles. Raising awareness among drivers that their vehicles' improved safety might create issues for motorcyclists, may help reduce crash risks for motorcyclists.

12.5 Filtering

The practice of filtering is a longstanding one for motorcyclists. Although there is a level of variation in the way filtering is defined, the practice generally involves motorcycles overtaking cars that are stopped or travelling at low speed by moving alongside them within the same lane. In Victoria, the operation of the road rules means the practice of filtering is deemed to be illegal. That interpretation of the road rules has been criticised by motorcyclists, and there remains some confusion among motorcyclists about the lawfulness of filtering. In spite of the road rules, riders continue to filter through traffic, because of the associated benefits, which are said to include reduced commuting times and increased fuel efficiency. However, motorcyclists also strongly assert there are important safety benefits in filtering. The Committee received large volumes of information that included proposals about the purported benefits of legalising filtering in Victoria. Conversely, the Committee also received advice from road safety agencies that the practice of filtering is dangerous and reduces the safety of riders.

12.5.1 Defining filtering

The term 'filtering' was defined in a number of ways by submitters, witnesses and in published research. Some of these definitions were closely aligned, while others differed considerably. Mr David MacKenzie, Senior Instructor, Motorcycle Motion, provided the following definition of filtering and the distinction between it and lane splitting:

*... I split it into two. There are two different forms as far as I am concerned. One is filtering, and one is lane splitting. As far as I am concerned filtering is motorcycles moving up through stationary traffic to the front of the traffic lights ... lane splitting is moving between moving vehicles, which is totally unacceptable. It is dangerous.*²⁹

Mr Rob Smith, Manager, Australian Riders' Division, Motorcycling Australia, expanded on that definition by referring to a speed differential:

... a speed suggested ... was 30 kilometres an hour. So at up to 30 kilometres an hour a motorcycle could pass moving traffic.... Above that, it could be termed 'lane splitting'. Because we do not really have any hard and fast figure at the moment, it is hard to determine. For me, I think lane splitting is a more aggressive act.

Generally it [lane splitting] is high speed. But until we actually get a definition, it is hard to be able to say that one is and one is not. But I see filtering as something that is done at a controlled speed, and I guess I put with that the simple premise that you do it at a speed that allows you to stop to avoid a collision.³⁰

The lack of a single, accepted definition of filtering as distinct from lane splitting is significant. In its review of the Australian Road Rules in 2011, the National Transport Commission (NTC) suggested that lane splitting occurred when the overtaking motorcycle involved speed, whereas lane filtering happened when the motorcycle was overtaking in slow or stationary traffic.³¹ However, the NTC did not specify a kilometre speed to distinguish between filtering and lane splitting. Given the level of variation in these definitions, the Committee sought comment from Victoria Police on the difference between filtering and lane splitting. Then acting Senior Sergeant Jamie Chester explained that:

[filtering] ... is basically overtaking another vehicle on the left within the same lane of traffic or same lane. Whilst the vehicle is moving that is lane splitting, but lane filtering is while the vehicle that is being overtaken is stationary.³²

This explanation is again a slight variation, in that it characterises filtering as involving a stationary vehicle rather than stationary or slow moving.

In 2012 Motorcycling Australia released a paper proposing the legalisation of filtering which included the following definitions:

- a. *Filtering – where a motorcycle passes either to the left or right of stationary or slower moving vehicles travelling parallel to each other at a safe speed.*
- b. *Lane Splitting – where a motorcycle passes either to the left or the right of stationary or slower moving vehicles travelling parallel to each other, in an unsafe manner and an unsafe speed.³³*

Importantly, the paper cautioned that overtaking a vehicle by travelling in an oncoming carriageway was not deemed to be filtering.³⁴ Given the level of variation in the definition of filtering the Committee felt it was important that any new initiative to introduce filtering rely on a single definition. The version put forward by Motorcycling Australia arguably provides a good basis on which to investigate the benefits of filtering. However, it lacks a reference to an actual speed limit above which the practice would be lane splitting, relying instead on the subjective reference to unsafe speeds. A reference to speed would be an important component of a filtering definition and a pre-condition to its legalisation.

Unlike filtering, there was no support among submitters and witnesses to the Inquiry for legalising lane splitting. Given the lack of reference to a speed limit, it is difficult to determine the point at which filtering ends and lane splitting begins. However, the Committee was consistently informed by motorcyclists and road safety agencies that lane splitting was a dangerous practice and was not supported as a safety measure.

12.5.2 The legal status of filtering

12.5.2.1 Victoria

Although there is some confusion about the legal status of filtering in Victoria,³⁵ it is considered to be a breach of the road rules and is therefore unlawful. The confusion appears to have arisen due to the explicit lack of an offence banning filtering or lane splitting.³⁶ Instead, if a motorcycle filters it can constitute a breach of other road rules such as overtaking on the left while a vehicle is moving³⁷ or, according to the NTC, failing to signal, failing to keep a safe distance or failing to drive within a single marked lane.³⁸

12.5.2.2 International jurisdictions

As with Victoria, a similar level of confusion exists with the legal status of filtering in other jurisdictions. The Committee received evidence and reviewed material that suggested filtering was lawful in several European countries.³⁹ In Belgium, the practice of filtering is lawful. During a meeting with representatives from the Belgian Ministry of Transport and Mobility, the Committee was informed that filtering has been allowed since September 2011; however, it is subject to a number of conditions. Motorcycles are not to exceed 50 kilometres per hour, and the speed difference between the cars and the motorcycle cannot be higher than 20 kilometres per hour. An additional condition is that filtering is only allowed in-between the two left most lanes outside of urban areas.⁴⁰ Interestingly, the framing of filtering in Belgium could be viewed as allowing both filtering and low speed lane splitting.

Although motorcyclists in the Netherlands are permitted to filter, the mechanism that allows them to do so differs considerably from the legal situation in Belgium. According to the Institute for Road Safety Research (SWOV), filtering is not enshrined in legislation, but in a non-binding code of conduct:

Motorcycles are subject to the same traffic rules as motorised four-wheeled vehicles. In traffic queues, motorcyclists are allowed to slowly filter past the queue. There is a code of conduct (not a legal obligation) which among other things states that this is only permitted if the cars are driving at less than 40 km/h. The motorcyclist may then ride no more than 10 km/h faster than the cars he is passing. On roads with more than two lanes, the motorcyclist should opt for a position in one of the two leftmost lanes.⁴¹

In contrast to Belgium and the Netherlands, the approach to filtering in the UK is unclear. Some motorcycle associations such as the Motorcycle Riders Association of Australia (MRA) claim filtering has been made lawful in the UK⁴² through changes to the UK Highway Code. The MRA's interpretation is supported by the Oregon Department of Transportation which found the UK had allowed lane sharing for some time.⁴³ Evidence received by the Committee suggested the practice was well-enshrined, to the extent that it is included in the Royal Society for the Prevention of Accidents in advanced

motorcycle instruction.⁴⁴ Mr Rob Smith shared his experiences as a member in a course run by the Royal Society:

*During that, if I did not filter when it was available, I would be penalised. This would be seen as not making the most of the opportunities to make progress. While I was doing it I was reviewed as to how I was doing it — whether the speed was appropriate or whether the gap selection was appropriate. In terms of speed they look at the speed differential, so if the traffic is moving at 30 kilometres per hour and I filter past them at 35 or 40, that is good. In the UK they apply a 20/20 rule, which means that up to 20 miles an hour you can pass at 20 miles an hour faster, so you can pass at 40. Above that, they view it as dangerous, and I do not really have a problem with that.*⁴⁵

The situation in the United States (US) differs from state to state, with most states prohibiting filtering.⁴⁶ However, California allows filtering by default, as there is no offence for filtering or a formal enforcement protocol.⁴⁷ Further, since 2008 the New Jersey legislature has introduced legislative bills to establish a lane splitting task force.⁴⁸ Although it appears that the legislation is yet to be passed, having been referred to a committee for technical review, the bill is noteworthy for creating a parliamentary group to assess the merits and issues with implementing lane splitting.⁴⁹

12.5.3 The benefits of filtering

Inquiry participants cited reduced commuting times and potential safety benefits as the benefits of filtering.⁵⁰ The types of safety benefits fall into three categories: a reduction in heat stress by allowing motorcyclists to continue moving through traffic;⁵¹ a reduction in the risk of rear-end collisions;⁵² and improved visibility of hazards and traffic⁵³ by moving away from traffic.⁵⁴ Mr Rob Smith framed the benefits of filtering as follows:

*Filtering is really very important. Not only does it alleviate congestion, but it also has a lot of side effects, one of which is that if you allow riders to filter on a hot day you are more likely to get them to wear protective clothing because they can keep moving and there will be a through-flow of air, whereas if you make them sit in traffic on a 40 degree day between a whole load of cars that are pumping out a lot of emissions, choking up people and giving people all kinds of horrible diseases, you are going to get overheated riders.*⁵⁵

While there appears to be merit in reducing heat stress (particularly in summer and when riders are wearing protective clothing), the primary safety benefit of calls to legalise filtering may rest on its potential to reduce rear-end collisions. However, there are also arguments against filtering. The first is that the incidence of rear-end collisions is generally low for motorcyclists, thus limiting the potential safety benefits of filtering. The Motorcycle Accident In-Depth Study (MAIDS), which tracked and forensically analysed over 921 motorcycle crashes across five European countries,⁵⁶ found that very few crashes involved rear-end collisions. Of the total number of crashes, less than 7% involved a collision at the rear of the motorcycle.⁵⁷ The low number of rear-end collisions was similarly cited by the road safety researcher Ms Liz de Rome, Principal Consultant and Managing Director, LdeR Consulting, who advised that whilst riders fear being run into from behind, they are more likely to run into another vehicle due to their quick acceleration but less capable braking ability.⁵⁸

The VicRoads submission also cited the Hurt and MAIDS report findings that filtering had only been found to be a factor in between 0.45% and 5% of motorcycle crashes.⁵⁹

According to a VicRoads investigation of the role of lane splitting or filtering involvement in crashes, which it cautioned should be treated as indicative only, ‘about 7.9% of Melbourne metropolitan motorcycle crashes involving two vehicles *may have* been associated with lane filtering or splitting’⁶⁰. The Committee was unable to locate definitive research on the incidence of filtering as a crash cause in Victoria, a situation also cited by Motorcycling Australia.⁶¹ Due to the absence of research, the Committee expanded its investigations and assessed whether filtering was a factor or cause in fatal motorcycle crashes in Victoria from 1 January 2000 to February 2011. On the basis of its analysis of the Victorian Coroners Court case files and police crash reports, the Committee was able to definitively locate three fatalities from more than 500 cases during that period that explicitly involved a rider filtering or lane splitting.⁶² Although it is possible filtering was a factor in more crashes, on the basis of information made available in the Coronial reports, the incidence of filtering in terms of Victorian fatalities is extremely low.

The second criticism of filtering is that riding between vehicles, even those that are slow moving or stationary, poses risks because drivers may not see the rider and move into their path or sideswipe them.⁶³ One witness, Mr David MacKenzie provided the following scenario about the risks posed by cars to filtering riders:

*Think about peak hour traffic ... You are driving on the Geelong road up to Melbourne for the morning. There is a gap somewhere. How many of you have seen cars go, ‘I will have that gap right now’? Cars do not look for motorcyclists.*⁶⁴

The Committee was told by one witness that these types of risks meant that filtering was inappropriate for novice riders:

*... for a novice rider I think it is quite dangerous. If you have had plenty of years experience and you are an accomplished rider, it is probably not quite so dangerous. It is probably not an ideal practice, but if you are a novice rider — especially a learner — it is not something you would be promoting ...*⁶⁵

Importantly, the risks posed by other road users have been analysed by researchers in the UK. Researchers found lane-sharing (both filtering and lane splitting) create a safety issue by ‘violating driver expectation’. This occurred because drivers who were not expecting riders to be moving alongside them could execute turns which crossed the path of the motorcyclist, thus causing a collision.⁶⁶ The Oregon Department of Transportation report into lane-sharing noted that the greatest risk to motorcyclists occurred at times of congestion because that was when lane-sharing was typically practised.⁶⁷ Summarising these risks, the Oregon Department of Transportation found:

*Lane-sharing presents unique safety considerations due to the fact that motorcycles are allowed in spaces not designed for such traffic and where movement is not expected. Accidents pose a risk for property damage and injury, where the seriousness of injury is greatest for motorcyclists.*⁶⁸

However, in response to opponents of filtering, advocates of its legalisation argue that research from the 1981 Hurt Report⁶⁹ through to the MAIDS and UK studies have found that filtering is not involved in many crashes. That in turn suggests the safety risks are low while the cumulative benefits are high enough to justify its legalisation. In his submission, Mr David McAuliffe summarised that argument:

*While there is a theoretical risk of motorcycles being involved in accidents while filtering, there is an equal risk, probably with greater consequences, of motorcyclists who do not filter being struck from behind in rear end collisions by motorists who fail to see them. These do occur currently in the same way that drivers rear end each other, but as stated earlier the risk of injury is greater when it is a motorcyclist who is hit.*⁷⁰

12.5.4 Filtering as a new road safety initiative

The Committee received a substantial number of submissions calling for the legalisation of filtering.⁷¹ The question of whether filtering is unlawful, and therefore needs to be legalised, is an issue the Committee first needed to address. Although there is no explicit offence of filtering,⁷² there is a wide range of views on the lawfulness or otherwise of the practice, with motorcycle advocacy groups such as Motorcycling Australia suggesting the rules dealing with the practice are ambiguous,⁷³ whilst Victoria Police states it is clearly an offence.⁷⁴ In the Committee's view, while the construction of the road rules has the effect of making filtering unlawful, the level of interest in its legalisation and its potential safety benefits necessitate further analysis.

The views of Inquiry participants ranged from support for the legalisation of filtering at one end of the spectrum, to undertaking further research on its benefits or otherwise, at the other. In terms of further research, then Deputy Commissioner, Kieran Walshe, Regional and Road Policing, Victoria Police, made the following suggestions:

*In regard to lane splitting and filtering, we believe independent research as to the benefits or shortcomings of lane splitting and filtering should be undertaken that identifies what the risks involved are, looks at whether there is a reduction in congestion to the road network, looks at legislation and looks at enforcement. There is a continued call from motorcycle lobbyists to consider safe lane splitting and low-lane filtering into other road users. There is a lack of research as to the benefits, shortcomings and risks involved with this particular activity. Legislation directed to lane filtering may provide control of the activity. It is very difficult to enforce unless tasked by dedicated motorcycle patrols.*⁷⁵

These comments highlight one of the issues in legalising filtering. Enforcing lane splitting as distinct from filtering would require a clear filtering definition to ensure lane splitting would remain a practice subject to enforcement. Even with a definition, distinguishing between lane splitting and filtering on the road could be a difficult task for enforcement officers. Nevertheless, the position of Victoria Police is that further research is required on this issue.⁷⁶ VicRoads commented in similar terms:

On the surface, splitting and filtering are problematic for safety; however, the position we are coming to increasingly is that with adequate controls there are many things we can do safely.

With that in mind, particularly where cars in lanes are stationary and motorcyclists are moving through them, I think it is possible to imagine a way that that can be done safely. How we actually establish that in a way that can also be regulated, particularly in being enforced by police, is the next challenge for us.

*As I was saying earlier about finding the balance, I think this is one area where VicRoads needs to look very seriously at whether in fact there is a different balance that needs to be struck.*⁷⁷

Another consideration is that considerable emphasis needs to be placed on drivers. Filtering is clearly an activity that requires both motorcyclists and drivers to interact in a way that minimises risk. Therefore drivers are an integral component of filtering and doing so safely, as Mr Rob Smith highlighted:

*The real issue with filtering is that if we legitimise filtering, then there is a requirement for drivers to be part of that interaction and to look for riders. One of the key things that riders want is for drivers to look for them. If we legitimise filtering, then we can incorporate that regulation into driver training. It would be ‘When you are in traffic, look for riders because they will be filtering. They are allowed to.’*⁷⁸

The importance of being aware also applies to riders. The skill level, the need to be aware of blind spots, and the likely behaviour of drivers requires motorcyclists to pay great attention, a point strongly made by Ms Aline Delhaye, Secretary-General of the Federation of European Motorcyclists Associations (FEMA).⁷⁹ The importance of awareness by all road users, the risks posed by drivers on the road, the lack of Victorian research and definitive research on its benefits or otherwise, and the practical issues cited by VicRoads and Victoria Police are significant obstacles to legalising filtering. Nevertheless, these two agencies appear to be supportive of further analysis on this issue.

12.5.4.1 Findings

At present, filtering is unlawful in Victoria. There are various definitions used for filtering and different approaches by road safety agencies. On the basis of the available evidence, the Committee believes filtering, as distinct from lane splitting, may have potential safety benefits. However, the extent to which these benefits reduce trauma is difficult to ascertain. Conversely, there are risks associated with filtering, and the Committee considers that although these remain difficult to quantify they need to be evaluated by reference to Victorian crash data to properly assess crash risks.

The lack of a commonly applied Victorian definition of filtering needs to be addressed. In the Committee's view, many of the elements for a definition of filtering exist in published literature and evidence collected during the Inquiry. An appropriate definition would consist of a reference to the lane position of a filtering motorcyclist, a maximum speed for filtering above which it would be considered lane splitting, and a reference to executing the manoeuvre in a safe way.

Framing filtering as a road safety measure for motorcyclists is a move away from the current regulatory approach which views the practice as being illegal and risky. The fact that overseas jurisdictions have legalised filtering, coupled with the acceptance by VicRoads of the potential benefits it poses, makes its investigation by road safety agencies a priority.

In the Committee's view, legalising filtering requires a number of stages to be fulfilled. Firstly, there needs to be a commonly applied definition of filtering. Secondly, it is necessary to undertake further research on the crash risks and benefits of filtering. Thirdly, it is crucial to address the safety risks posed by other road users and find ways to train or educate riders on the safest way to filter. Lastly, it is imperative that lane splitting remain a prohibited practice and one that can be more easily enforced and distinguished from filtering. As part of this work, the Committee believes that a trial of filtering on a designated road or area followed by evaluation would greatly assist any assessment of filtering. These stages need to be completed before filtering as a lawful practice on Victoria roads is introduced. In the Committee's estimation, legalising filtering should only occur if the practice has been shown to improve safety, can be done safely and can be regulated.

12.6 Funding motorcycle safety

This section focuses on initiatives and issues associated with funding. The Committee first addresses the issue of law enforcement activities being funded by the Traffic Accident Commission (TAC) and then canvasses two new proposals for the way motorcycle safety is funded. These initiatives are: using infringement fines to fund road safety initiatives and using incentives and subsidies to increase the safety of motorcyclists.

12.6.1 The funding of police enforcement by the TAC

As part of its legislated role and functions, the TAC is required to efficiently and economically manage the transport compensation scheme⁸⁰, to ensure that the scheme emphasises accident prevention⁸¹ and to 'promote the prevention of transport accidents and safety in use of transport'.⁸² It fulfils these roles and functions in a number of ways including the use of its funds to pay for road safety initiatives as well as undertaking its own road safety activities, the best known being its television advertisements. As part of its prevention role, the TAC uses some of its funds to pay for police enforcement.

As the TAC has a limited pool of funds for safety initiatives, using some of these funds to pay for enforcement activities emerged as a potential issue during the Inquiry. While funding motorcycle targeted enforcement activities may be seen as a worthwhile road safety activity, the TAC's apparent reliance on enforcement as an instrument for improving road safety may limit its ability to fund other motorcycle safety initiatives. The TAC funds a number of different enforcement activities. The Committee sought details on these activities. Ms Samantha Cockfield, then Acting Senior Manager, Road Safety and Marketing, TAC, provided the following overview of the TAC funding of Victoria Police enforcement activities:

The TAC has funded Victoria Police in one form or another pretty much since its inception – so probably for at least 20 years. Initially a lot of that funding was around provision of ... technology....

More recently the model has moved to police self-funding or police acquiring funding for that sort of technology ...

If we look at the past financial year, which has been the sort of model that has been used over the last couple of years, we have allocated just over \$2 million to our enhanced enforcement program.

It is a three-phase program. One component is around providing funding to local police to address local road safety issues. The way that works is that we have two funding rounds a year and police are invited to put in submissions, or basically business cases, as to why they would like funding. The funding levels are generally somewhere between \$5000 and \$20 000 per project ...

... There are about 20 to 22 per round generally that are funded and they are from pretty much all across Victoria and all areas of Victoria Police. Another component of the program is the centralised operations program ... The last program, which is a newer program in the way we do funding, is called our priority police service area, or priority PSA, program, and that looks at the top six of the riskiest police service areas primarily according to TAC data.

There is actually a funding agreement between Victoria Police and the TAC which is quite specific about the fact that these funds are only to be used over and above anything police would normally be doing in their day-to-day operations. We see very often that police on overtime or on their days off are actually doing TAC work.

The other thing to note is that whilst the \$2 million sounds like a reasonable amount, this sort of funding program occurs certainly across Australia. Our equivalent, in what was the RTA in New South Wales, I think put about \$12 million to 13 million per annum into a similar program. The actual model is quite well understood because of the road safety outcomes. But in terms of the police budget \$2 million is obviously very minute, so we are quite specific about what we are achieving in that program.⁸³

In terms of the way the funding is used, the TAC confirmed that 90% of the funds were used to pay for ‘police overtime payments, days off and accommodation when officers operate in distant places’.⁸⁴ It was stressed that TAC funding was not used to pay for the day-to-day operations of police⁸⁵ or for equipment such as off-road motorcycles.⁸⁶

In terms of assessing the road safety benefits of this funding, the TAC relies on infringement data and police reports to assess the outcomes of smaller or localised programs, and evidence based evaluations of larger programs.⁸⁷ The Committee was also advised that Victoria Police utilise a review process to ensure the funded operations have been beneficial.⁸⁸ In response to the Committee’s question about whether their funding could be a disincentive for police to fund enforcement activities, the TAC expressed the view that there was no negative aspect to its enforcement funding.⁸⁹ The view of the TAC was supported by Inspector Brett Harman, State Policing Office, Victoria Police, who commented:

In relation to the question about disincentive, I would disagree that that is the case. I base that comment on the fact that there is ample opportunity across the organisation for local areas under one of the streams or one of the tiers of funding to make application for those operations. Although they are not significant in number, there are some good practice examples.⁹⁰

12.6.1.1 Findings

The Committee accepts the use of TAC funds for enforcement activities may result in a road safety benefit for motorcyclists, but it may also result in the TAC being unable to fund alternative programs for motorcyclists. Clearly, the overall value of the enforcement funding program appears small in comparison to other jurisdictions such

as New South Wales (NSW), or the operating budgets of the TAC or Victoria Police, and the extent to which it applies to motorcyclists is also unclear. Nevertheless, the Committee believes there is merit in reviewing the funding of enforcement by the TAC and identifying whether the focus of this funding should move away from enforcement and instead be directed towards other motorcycle-related programs, for example subsidising and providing incentives for motorcycle countermeasures.

12.6.2 Securing new funding

The ability to reduce trauma levels relies on regulatory interventions and strategies which in turn require funding. Generally, funding for motorcycle safety, and road safety as a whole, is drawn from the budgets or income of road safety agencies (noting that there are additional sources of funding, such as from the Commonwealth Government, for some road building projects). The only exception to this in Victoria is the motorcycle safety levy.

While the approach to funding road safety in Victoria is long established, there are at least three jurisdictions (Western Australia (WA), NSW and Belgium) which have changed the way they fund existing and new initiatives. Unlike Victoria, these jurisdictions transfer or hypothecate funds accumulated from infringement fines to a road safety fund. This approach greatly increases the availability of funds for road safety, links safety derived income from fines to the prevention of crash risk and trauma, and is likely to result in a reduction in trauma.

12.6.2.1 Western Australia (WA)

WA has used the transfer of revenue from speed and red light camera fines to a dedicated Road Trauma Trust Fund (the Fund) as a way of increasing road safety.⁹¹ Monies from the Fund are used for a variety of road safety measures including a community grants program operated by local government.⁹² Importantly, the Fund is also being used to fund the implementation of the WA road safety strategy, *Towards Zero*,⁹³ which aims to reduce trauma by 40% in the period 2008–2020.⁹⁴ The importance of being able to better fund the strategy was cited by both the WA Premier and the Minister for Road Safety as a reason to increase the amount of revenue transferred from fines to the Fund.⁹⁵ Prior to 2011, the amount transferred equated to one-third of the revenue. In 2011, the WA government increased the allocation to two-thirds in 2011 and from July 2012, all revenue derived from speed and red light cameras was to be transferred to the Fund.⁹⁶ In the financial year from 2011-12, actual revenue over \$57 million dollars, from infringement fines, was allocated to the Fund.⁹⁷

In November 2011, the Committee met with the then Minister for Police, Emergency Services and Road Safety, the Hon. Robert Johnson, in Perth. During the discussions, the importance of linking revenue from enforcement to road safety and the crucial role that funding fulfils in achieving trauma reductions was discussed. The Minister also suggested that the WA approach could reduce the negative perceptions that road safety enforcement was aimed at increasing revenue.⁹⁸

12.6.2.2 New South Wales (NSW)

The WA approach to hypothecation has since been followed by NSW. In late September 2012 the NSW Parliament assented to legislation which will create a road safety fund.⁹⁹ While this legislation is not yet operational, once it commences in July 2013,¹⁰⁰ NSW will become the second Australian state to have a dedicated fund for road safety purposes. The *NSW Transport Administration Amendment (Community Road Safety Fund) Act 2012*, which amends the *Transport Administration Act 1988*, establishes a ‘Community Road Safety Fund’ (the safety fund).¹⁰¹ The safety fund will receive direct payments from all fines and penalties recovered for camera recorded offences among others.¹⁰² Payments from the fund can be used for road safety functions which are carried out by the state road safety regulator, Transport for New South Wales. The types of activities (referred to as road safety functions) that can be funded include conducting testing and research, developing and implementing infrastructure projects, and providing the advice and assistance of public and local authorities for the promotion or improvement of road safety.¹⁰³

The establishment of the safety fund was initially proposed through a petition by members of the National Roads and Motorists’ Association to the NSW Parliament. In June 2012, the NSW Government’s NSW Speed Camera Strategy (the Strategy) referred to the creation of a fund to ‘directly fund road safety measures, in addition to allocated road safety funding. The Strategy also noted ‘that by redirecting revenue collected from speed camera fines drivers could feel confident that this money was being used to improve the safety of roads and road users’.¹⁰⁴ The Hon Duncan Gay MLC, Minister for Roads and Ports, in a media release dealing with the new fund noted that the fund would mean that ‘drivers who ignored the law and put others at risk would be helping to pay for road safety improvements’.¹⁰⁵

12.6.2.3 Belgium

Belgium created a dedicated road safety fund in 2004 which is used to finance research, in-depth surveys and road safety policy, among other measures.¹⁰⁶ The fund is also used to finance special enforcement projects run by the Federal Police.¹⁰⁷ The funding stream is provided by a percentage of traffic fine revenue and in 2004 had a capitalisation of approximately 42 million euros (a figure that is likely to have since been exceeded).¹⁰⁸

12.6.2.4 The potential benefits of hypothecation

In the Committee’s view, there are merits in Victoria directing funds derived from infringement fines to a specific road safety fund. Particularly if it enables increased use of proven countermeasures such as infrastructure improvements or to subsidise countermeasures, such as Anti-lock Braking Systems (ABS). The Australasian College of Road Safety (ACRS) is also supportive of the benefits of hypothecating funds for road safety. It cites the fact that ‘road safety usually has to compete with other, equally important areas, for funding and directing the proceeds of traffic camera operations could overcome any deficits in road safety funding’.¹⁰⁹ The ACRS also notes hypothecation would reduce the ‘force of a common view that the use of traffic cameras is purely aimed at revenue raising’.¹¹⁰ Further, while there are benefits to

hypothesation, the ACSR stresses the need for safeguards to ensure the hypothesation is appropriate and does not reduce the overall level of road safety funding.¹¹¹

12.6.2.5 Findings

Transferring funds derived from enforcement activities and using them to enhance and increase road safety measures, in this case for motorcyclists, as well as other road users, is likely to increase the use of countermeasures and expand research activities.

Increasing the volume, scope and tempo of road safety interventions would be greatly assisted by hypothesating funding. Hypothesation is likely to lead to reductions in road trauma by expanding the use and types of interventions and countermeasures which have been proven to lead to reductions. However, the Committee was not provided with evidence about the level of hypothesation needed to improve trauma reduction rates in Belgium or in WA where hypothesation is established. Nevertheless, the Committee believes hypothesation has a number of benefits and these would extend to motorcyclists.

12.6.3 A new emphasis on subsidies and incentives

The way motorcycle safety, and road safety more generally, is funded in Victoria, may benefit from a move towards incentives and subsidies. Subsidising training courses, the purchase of protective clothing and including safety features such as ABS on motorcycles were cited in road safety publications, strategies and by submitters and witnesses as ways of improving motorcycle safety and reducing trauma levels. Subsidies and incentives in motorcycle safety were viewed by some as being important interventions for reducing motorcycle crash risk.¹¹² The basis for this premise is that subsidies and incentives might be used to encourage riders to engage in activities such as training or use equipment (such as protective gear) that has a clear safety benefit. Subsidies and incentives may enable riders to access training and purchase protective clothing which they may otherwise be unable to afford or where they are unsure of whether the cost is justified in terms of injury reduction or crash risk. The potential role of incentives in promoting training was one example given to the Committee. Mr Rex Deighton-Smith explained:

*... we need to positively motivate people to do it. If the providers of that training can convince people that it is in their interests, then people will undertake the training. As a matter of public policy I think encouraging them with a few financial incentives ... would be reasonable and worthwhile.*¹¹³

Another witness cited the potential to subsidise accredited providers, framing the proposal in terms of the affordability of motorcycle training:

*There is no funding currently provided to assist in the training of motorcycle riders. Whilst I appreciate the nature of the user pays system, redirecting some of that TAC levy towards the accredited providers at a greater level of tuition would be possible without continual cost increases.*¹¹⁴

In many respects, subsidies and incentives can be viewed as providing an inducement for riders to do things which they might otherwise not do. Additionally, some participants suggested incentives may help promote continued safety by motorcyclists

in a manner similar to that of an insurance rating (which promotes safer driving by reducing a driver's premium).

Road safety agencies have used subsidies and incentives in the past to achieve defined motorcycle safety objectives. Examples of that approach include the subsidisation of training as part of *Operation Yellow Flag, Black Flag* program¹¹⁵ and the TAC's funding of first aid courses for Ulysses members.¹¹⁶ However, the use of subsidies and incentives appears to have been ad hoc, having been used for specific projects or as part of other initiatives rather than as a systematic approach for regulating motorcycle safety.

The lack of a systematic or entrenched use of subsidies or incentives by road safety agencies, and the reliance of road safety agencies on enforcement, was raised with the Committee. Mr Rex Deighton-Smith's remarks reflect a view expressed by several Inquiry participants:

The issue of sticks and carrots is important. I echo the point that it is pretty easy to take the view that whenever government pays attention to motorcyclists the next thing that happens is that it is waving a stick. It would be very well regarded if some of the committee's recommendations involved carrots rather than sticks. I believe that rider training is important in terms of improving skills and reducing accident rates, but I would like to see better rider training being approached from a carrot point of view rather than from a stick point of view.

I would like to see encouragement of people undertaking additional training after they have become licensed. There are tools you could use; financial tools are obviously useful. We have a motorcycle levy, which is a stick, if you like, but perhaps to counterbalance that we could have some rebates on motorcycle registration or on the Transport Accident Commission charge for motorcyclists who have undertaken certain kinds of approved training. As someone with over 25 years experience I have recently done some rider training. I think you can convince people, even very experienced motorcyclists, that it is something that is in their interests and get them to do it.¹¹⁷

The types of activities and areas that could attract subsidisation and incentives, and their funding, were the subject of numerous proposals made to the Committee. Generally, proposals were for the subsidisation of training¹¹⁸ and the purchase of protective clothing.¹¹⁹ One submitter also suggested those riding motorcycles with passive safety features could attract reduced insurance premiums.¹²⁰

The use of subsidies and incentives to improve motorcycle safety are being pursued in a number of jurisdictions. In WA, the Motorcycle & Scooter Safety Action Group (MSSAG) identified 'rebates or incentives for the purchase of approved safety equipment'¹²¹ and training vouchers for novice riders when they purchase a new motorcycle as potential new initiatives.¹²² The MSSAG also suggested incentive programs to reward good behaviour by motorcyclists (reduced fees for those without speeding fines for example).¹²³ At the international level, Austria is pursuing tax incentives for riders purchasing motorcycles equipped with ABS with the aim of increasing the number of motorcycles equipped with this technology.¹²⁴

A key concern in the implementation of subsidies and incentives is how they are funded. Those proposing subsidies and incentives also provided suggestions for how they would be funded. The use of safety levy funds,¹²⁵ reduced TAC premiums¹²⁶ and reduced

registration charges¹²⁷ were all cited as sources of funding. While the cost of implementing such a proposal needs to be balanced against the potential benefits, subsidising proven countermeasures contains the promise of reduced road trauma. The benefits in terms of safety outcomes that subsidies and incentives may provide could also extend to other areas such as reduced injury costs to the accident compensation scheme. An example of such an outcome, focused on the potential savings of subsidised protective clothing, was provided to the Committee by Mr John Lambert, Director, John Lambert & Associates:

*Based on its figures, the TAC say 15 per cent of their motorcycle injury costs relate to the fact that people do not wear protective clothing. That suggests they could probably subsidise protective clothing to about \$200 a year and the cost would balance out.*¹²⁸

12.6.3.1 Findings

The Committee believes there may be substantial benefits in using subsidies and incentives to guide, induce and motivate motorcyclists to use safety equipment such as protective clothing, undertake training and purchase motorcycles with safety features such as ABS. The approach in Victoria has been to use subsidies and incentives in a targeted and moderated way. There appears to be merit in moving towards a systematic approach to using subsidies and incentives for countermeasures that measurably reduce crash risks and trauma. This approach may not be appropriate for all countermeasures; only those that achieve reductions in crash risk or trauma should qualify for subsidisation and incentive payments.

The focus of the Committee in investigating this proposal was the potential benefits of using subsidies and incentives rather than trying to determine the amount of subsidisation. Clearly, the appropriateness of the subsidy is something that needs to take into account the potential savings in terms of injury reduction and costs to the accident compensation scheme and the cost of providing inducements to riders. The interest in subsidies and incentives in WA and Austria and of participants to the Inquiry suggest that this proposal is worth pursuing in Victoria.

12.7 Off-road riding proposals

Proposals that would improve the safety performance of off-road riders, both in terms of reducing crashes and treating riders after a crash were included in the Committee's assessment of new initiatives. In terms of off-road safety improvements, the Committee identified a proposal for the creation of a junior off-road licence and the use of emergency positioning beacons as new initiatives that could potentially reduce motorcycle crashes and injuries.

12.7.1 Establishing a junior licence for off-road

The Committee's investigations found there are very few providers offering off-road training, and generally both training and licensing was directed towards on-road riding. The VACC submission outlined a proposal for the introduction of a junior recreational rider licence.

The proposal was further outlined during the VACC's appearance before the Committee:

*We advocate ... the introduction of a junior licensing program. It is a wonderful program that we believe is where a rider learns the nuts and bolts of riding. The fundamentals and the skills that keep him upright are actually learnt on the trail. In those formative years — we are talking about from 12 to 14 years onwards — we have a system that allows young riders to ride and be educated and tutored alongside experienced trail riders with a registration program that allows that support.*¹²⁹

The VACC's proposal for an off-road junior licence, which was supported by the submission from the Australian Motorcycle Trail Riders Association,¹³⁰ appears to mirror an earlier proposal developed by then Senior Constable Rod Lay, Victoria Police, in 2002 (the 2002 proposal).¹³¹ The Committee understands some aspects of the 2002 proposal were presented to the Victorian Motorcycle Advisory Council (VMAC) in 2005.¹³² The premise behind both proposals was that giving riders the opportunity to start riding at a younger age, while accompanied by an adult, would lead to improved riding skills and therefore reduced crash risk.¹³³ It would also require motorcycles to be registered and therefore be subject to roadworthiness requirements and TAC insurance cover.¹³⁴ It would also enable road safety agencies to regulate, through training and enforcement a practice that 'is widespread and unlawful because riders are under the Victorian motorcycle permit age of 18'.¹³⁵ Some of these advantages were reiterated to the Committee by Sergeant Rod Lay:

*Kids often learn to ride on a dirt bike. Some of those kids go on to ride road bikes at a later stage, and I believe they need training from an early age in relation to those basic skills to allow them to ride a road bike safely in the future, because the requirements for training and licensing for road bikes are, in my view, not sufficient.*¹³⁶

*I am a believer that we should have a junior rider licence proposal where kids perhaps from the age of 16 can go riding with a suitably trained parent or guardian in the forest after they have both attended a course on safe and responsible riding with an aspect about legislation so that the kids can then legally pick up the skills and the behaviour required to teach them how to ride in a safe and responsible manner, because they are out there on their L's on their first day in the forest.*¹³⁷

In trying to determine the merits of this proposal, the Committee sought a response from VicRoads. Mr James Holgate, Director, Road User Safety, explained that a junior licence for off-road riding had been raised during the consultation phase of the development of the Graduated Licensing Scheme (GLS). However, the premise that a junior licence could reduce trauma and deal with underage riding was contested as there was no road safety evidence to support junior licences and such a proposal could potentially increase trauma.¹³⁸ Further Mr Holgate explained, 'younger riders were said not to be able to sufficiently control an off-road motorcycle or to have the hazard perception skills needed to negotiate challenging situations'.¹³⁹

12.7.1.1 Findings

The Committee notes the cross-section of support from submitters and witnesses for an off-road junior licensing scheme. However, the lack of evidence both in terms of crash risk, or potential benefits, make it inappropriate for the Committee to recommend the development of a new licence category.

12.7.2 Emergency locating devices

By its very nature, off-road riding is likely to occur in places that are remote and in terrain that creates difficulties for injured riders trying to contact emergency services. The potential role of emergency locating devices in dealing with off-road trauma, particularly in improving trauma outcomes, was identified by the Committee as a potential new initiative.

The Committee noted the importance of being able to treat an injured rider as quickly as possible before transferring them to the most appropriate hospital or medical facility. Unlike crashes in populated areas or on sealed roads, when a rider is injured off-road, medical attention and the attendance of police is dependent on the ability of the rider, or their companions, to make contact with emergency services. However, the ability to make contact with emergency services by mobile phone following on off-road crash can be severely limited and in many cases non-existent due to the terrain and the lack of mobile communications links. Often it is a matter of luck as to whether contact can be made with, and an injured rider attended to by, emergency services, as explained by Mr Vic Harris, father of Mr Scott Harris, who was seriously injured off-road:

*... he [Scott] was very lucky in that the air ambulance could get to him. If I put myself in the position of some of the trail bike riders in the Victorian high country and so forth, I wonder whether or not that access would have been there. I know that he would not have survived had there been reliance on the road ambulance, because they could not get in. It was the air ambulance that basically was the saviour, and it was lucky too that that air ambulance was en route to somewhere else and was diverted. There were a lot of things that came into place.*¹⁴⁰

The Committee received evidence from Ambulance Victoria about the reliance on mobile phones in the context of trying to access emergency services following a crash:

*There is also a heavy reliance on mobile phones as a platform for seeking emergency assistance from remote areas. When someone has an accident the first thing they do is grab their mobile phone and often there is no coverage, so that is an issue. Because of the fact that riders are often from outside the area the difficulty in providing accident locations, due to riders having limited knowledge of the area they are in, is an operational issue from the perspective of being able to get the right location from motorcycle riders or people from interstate ... I spoke to about 15 paramedics, who between them had about 184 years of experience, and no one could ever remember a motorcycle accident where a motorcycle rider had their own first aid provisions.*¹⁴¹

The development of communications technology for emergency situations, generally referred to as emergency beacons or EPIRBs (Emergency Position Indicating Radio Beacons), could deal with the issues of accessing emergency services post-crash. The obvious benefits of this technology include the ability to immediately contact emergency services and to pinpoint the location of an injured rider. These are significant benefits considering the importance of timely medical intervention in treatment outcomes and the prevention of death, and the difficulties posed by off-road areas such as state forests and national parks.

The Committee sought responses from police and ambulance representatives at public hearings on the use of emergency location devices. Mr Tony Walker, General Manager, Regional Services, Ambulance Victoria, stated:

*They are certainly useful from our perspective, particularly from a helicopter emergency response. It may be in parts of the state where there is no mobile coverage. That will be the only way that somebody who is out riding could flag that there is an issue. We would be supportive of anything that enabled access in an area where they have limited mobile coverage and no other way of accessing the 000 service. In many of those cases, that will be where our helicopters would be responding to and can have the ability to track and to locate those beacons as part of that work.*¹⁴²

Sergeant Cameron Walker, Victoria Police, also supported the idea of emergency location devices for off-road riding:

*I think the locator beacons are an excellent idea. If a motorcyclist is out on his own and gets injured, as long as that thing can be activated somebody can know about him and pinpoint him very quickly. Obviously if he has critical injuries, that will mean the difference between life and death. The topography access to them in a timely fashion can be very difficult. Once we get off the road we can struggle. We – that is, ambulance and police – can also be a long way away from the incident. One of our issues is remoteness and being able to get to people.*¹⁴³

The potential of emergency location devices has already been identified in Victoria. During public hearing in Melbourne, Mr Roger Pitt, Trail Bike Project Manager, Forests and Parks Division, DSE, provided the Committee with information about a trial of emergency location devices:

*We are aware of a trial in one district where riders could actually, for a small fee, hire an EPIRB for a weekend's use and return it. That sounds really good for riders who are heading into remote areas where mobile phone reception may not be available.*¹⁴⁴

The Committee understand this was an extremely limited trial and it is unclear if it has continued and whether the trial was managed by a government entity. The Committee confirmed that the trial was not implemented or managed by the DSE.

12.7.2.1 Findings

The potential of emergency location devices for reducing trauma is sufficient to warrant additional attention from road safety agencies and the DSE. The Committee believes being able to access emergency services as promptly as possible will improve trauma outcomes for off-road motorcyclists. It also believes raising awareness of the importance of such devices with off-road motorcyclists, and assessing ways to make these devices available to motorcyclists would be beneficial.

12.8 Intelligent Transport Systems

The potential role of Intelligent Transport Systems (ITS) in road safety has been included by this Committee in a number of inquiries over the last seven years.¹⁴⁵ An ITS refers to the ‘application of computer and communication technologies for transport infrastructure and vehicles, as a means of improving mobility, safety¹⁴⁶ and the quality of the environment.’¹⁴⁷ ITS, and associated technologies, have been an emerging area

for over a decade. The European Union (EU) has been leading the way in applying new technologies to the road. Many of the technologies being developed or implemented are aimed at enhancing road safety,¹⁴⁸ where ‘the potential of ITS in a road safety context is said to be significant’¹⁴⁹ because it ‘increases the margin of safety’.¹⁵⁰

The initial focus for ITS solutions has been on two road user groups: heavy vehicles and passenger cars. ITS is significantly less advanced for motorcycles and road safety regulators have been unable to apply the technologies to riders. However, regulators and governments, particularly the European Commission (EC) have funded or run projects aimed at developing or adapting ITS technologies for motorcycles. Like many areas of motorcycle safety, simply transferring ITS technologies from other vehicles to motorcycles is problematic. This is because the design and dynamics of motorcycles limit the technical adaptation of certain ITS systems, particularly those that have not been custom-designed for motorcycles.¹⁵¹

12.8.1 Definitions and types of ITS

The development of ITS appears to have, at least initially, been driven by commercial considerations. ITS technologies allow for fleet management of heavy vehicles, satellite navigation and the integration of different freight carrying modes of transport, specifically merchant shipping, trains and heavy vehicles.

In the road safety context, technologies have been developed to enhance vehicle safety by preventing crashes, reducing trauma during a crash or following a crash.¹⁵² Occasionally, these technologies will be referred to as telematics, a term that refers to those technologies that rely on Global Positional System (GPS), remote wireless communication (usually on the road) and integration within a computer network. ITS technologies that have been developed for safety can be placed in one of three categories: vehicle based systems; infrastructure based systems; and cooperative systems.¹⁵³ These systems rely on both in-vehicle receptors and external infrastructure based technology,¹⁵⁴ and each category is ‘in turn comprised of technologies that are either passive (because they operate after a crash has occurred and are aimed at minimising trauma) or active (guiding, advising or taking control of some element of the driving to assist the driver prior to a collision)’.¹⁵⁵ There are several types of technologies that underpin an ITS and each provides different safety benefits. A non-exhaustive list follows:

- Emergency warning system for vehicles;
- GPS navigation;
- Integrated hands-free cell phones;
- ABS and traction control;
- Advance lighting systems;
- Fatigue monitoring;
- Blind spot monitoring (in cars);
- Wireless safety communications;
- Collision warnings;

- Curve speed warnings;
- Lane departure warnings;
- Automatic driving assistance systems;
- Automatic distress or mayday calls (such as the European eCall system in which vehicles send emergency services a distress call after a collision or crash);¹⁵⁶
- Helmet mounted displays;
- Speed monitoring;
- Speed limiters;
- Alcohol interlocks; and
- Intelligent Speed Adaptation (ISA).¹⁵⁷

Intelligent Speed Adaptation (ISA)

Some ITS technologies have been implemented in Victoria. There has been a growing emphasis on ISA because of the importance road safety agencies place on speed as a crash risk factor¹⁵⁸ and the benefits of ISA in reducing speed and speed violations.¹⁵⁹ ISA technology can operate in three modes. The first is advisory, during which the ISA device tells the driver or rider what their speed is. If a person is exceeding the limit, the ISA device might vibrate or pulse the accelerator pedal or offer some form of resistance.¹⁶⁰ In the second mode, defined as being supportive, ISA devices may apply the brakes, cut fuel supply or alter the throttle to reduce speed, although this can be overridden by the driver. The last mode is referred to as limiting, because it works in the same way as the supportive mode but cannot be overridden by the driver.¹⁶¹

12.8.2 International jurisdictions

Associated technologies are a natural addition to the safe system approach. European regulators have been forceful and enthusiastic supporters of such technology. Their interest and investigation of associated technologies have slowly been transferred from cars and heavy vehicles to motorcycles.

The EC has been an enthusiastic supporter of ITS projects. The EC has funded several projects such as the Smart Restraint Systems project¹⁶² and there is an operative directive on an ITS framework and related matters¹⁶³. Further, the EC and EU countries have founded an ITS organisation, ERTICO, to research, develop and deploy ITS in Europe. ERTICO has led standards development, digitisation of maps, the development of ITS technologies and their deployment¹⁶⁴.

The EU Road Safety program which aims to cut the number of road deaths by half from 2011–2020 includes the development of ITS technologies with a focus on vehicles.¹⁶⁵ ITS based technologies feature prominently in the EC's strategy. The program emphasises 'active safety' devices, in particular eSafety technologies. Examples of these devices are lane departure warning systems, mandatory automatic emergency braking for trucks and buses and mandatory speed limiters for commercial vehicles. The EC is also pursuing measures that increase the level of implementation in private passenger vehicles of other eSafety technologies such as anti-collision warning systems.¹⁶⁶

In addition to these projects, the EC has also undertaken motorcycle ITS projects – the ‘Saferider project’, the ‘Safespot project’ and the ‘Watch over project’. The Saferider project studied the potential of advanced rider assistance and on-bike vehicle information systems.¹⁶⁷ The Safespot project focused on cooperative ITS, with the objective of identifying ways that infrastructure and vehicles, including motorcycles, could interact in a manner that improved safety by identifying potentially dangerous situations.¹⁶⁸ The Watch-over project, which began in 2006, was also a cooperative ITS project aimed at preventing crashes involving vulnerable road users, such as motorcycles, using short range communication and vision sensors.¹⁶⁹

12.8.3 Current limitations in terms of motorcycles

12.8.3.1 ITS has not been designed for motorcycles

Researchers have noted that associated technologies have been developed with car safety in mind.¹⁷⁰ That also extends to the application of ITS technology¹⁷¹ which appears focused on heavy vehicles. Although there is great potential for motorcycles, especially with technologies such as ABS, vehicle diagnostic systems, advance lighting system, blind spot monitoring, ISA, intersection collision warnings and driver status monitoring system, these technologies have only slowly started being adapted to motorcycles.¹⁷²

In spite of the focus on ITS by the EC, and projects aimed at applying ITS to motorcycles, its use on motorcycles in Europe has been limited. The European Transport Safety Council has recognised these limitations and has suggested that ITS devices need to be developed and adapted specifically for motorcycles.¹⁷³

12.8.3.2 The benefits for motorcyclists are unclear

Many ITS applications for motorcycles have been subjected to very few trials, if any, and research and evaluation of ITS for motorcycles appears to be in its infancy.¹⁷⁴ There have been some limited trials of ITS technologies on motorcycles, such as forward collision warning systems¹⁷⁵ and ISA,¹⁷⁶ but generally ITS for motorcycles is a new area of road safety research and development. In two of the leading road safety jurisdictions, the Netherlands and Sweden, an ITS has not been a focus of their respective motorcycle safety strategies. The Dutch *Action Plan for improving road safety for motorcyclists* does not include an ITS initiative, and while Sweden’s *Improved safety for motorcycle and moped riders* discusses associated technologies such as ISA and eCall as potential ways of improving safety, it did not recommend their application, instead suggesting more research was needed.¹⁷⁷

In 2006, researchers from the Monash University Accident Research Centre (MUARC) investigating the potential of ITS for motorcyclists noted that no attempt had been made to estimate the relative harm reduction of deploying ITS on motorcycles.¹⁷⁸ MUARC suggested that such research was therefore a priority,¹⁷⁹ and that it appeared to have begun in jurisdictions such as Sweden.¹⁸⁰ Researchers also noted that the focus for ITS in terms of motorcycle safety should in the short term be on research and the development of ITS standards for motorcycles (and vehicles more generally).¹⁸¹

That should be followed by a period of evaluation to study the effectiveness of existing technologies in terms of usability, adaptability to motorcycles and cost-benefit analyses.¹⁸²

12.8.3.3 *The cost of ITS*

There are also questions about the cost of ITS technologies. Technological solutions, particularly those in the developmental stage, are extremely expensive. Decisions about developing and implementing ITS technologies need to be compared against other interventions. The benefits of ITS technologies might be outweighed by the potential benefits of existing, less-costly and easily implemented solutions such as improving road infrastructure.

12.8.3.4 *Issues posed by the design and handling characteristics of motorcycles*

There are also practical issues with fitting much of the ITS technology on motorcycles. Both motorcycle design and dynamic handling limit the adaptability of ITS technologies used on cars and heavy vehicles. A good case study of these limitations is the fitting of ISA onto motorcycles. The advisory warning mode of ISA would be difficult to replicate on a motorcycle due to a rider's exposure while the vehicle's handling characteristics would make the feedback mechanisms, such as vibrations, difficult to feel. Further, there are genuine risks for riders from an ISA device operating in its supportive or limiting mode which can involve the application of brakes. Implementing ITS technologies such as ISA and crash avoidance systems on motorcycles at present is problematic.¹⁸³

12.8.3.5 *Other concerns*

There is also a concern that ITS technologies might compromise rider control of the vehicle due to the technology automating certain tasks.¹⁸⁴ That point was well made by Mr Bertrand Nelva-Pasqual, Manager, Technical Service and Development Studies, Mutuelle des Motards (a motorcycle insurer). Mr Nelva-Pasqual suggested a reliance on technology could reduce or undermine motorcycle safety by reducing a rider's reliance on road craft and skills to reduce risks.¹⁸⁵ The Secretary-General of FEMA, Ms Aline Delhaye, also suggested that while ITS technologies had the potential to be a safety device they were not a complete solution on their own.¹⁸⁶ It was also stressed to the Committee that such technologies need to be investigated and used appropriately.¹⁸⁷

12.8.3.6 *ISA as a proposal for motorcycles*

The importance placed on ISA as a potential device for improving road safety, merited additional assessment by the Committee. The TAC submission described ISA as a 'technology that may have a significant role to play in reducing speeding among motorcyclists and the associated trauma'.¹⁸⁸ While this technology has the potential to be beneficial, it appears to have undergone very few trials on motorcycles, and research into its effectiveness is extremely limited.¹⁸⁹ That has also been the conclusion of the Swedish Transport Administration and the TAC.¹⁹⁰ Although the Swedish Transport Administration noted the potential of ISA to reduce motorcycle fatalities by 15 lives per annum, it suggested much more research was needed.¹⁹¹

The Committee is aware of at least one study into ISA on motorcycles in Europe, which involves MUARC.¹⁹² At present, ISA appears to be at an emerging stage for use on motorcycles with the focus being on research and evaluation.

In spite of the limitations, ISA technology continues to be seen by some road safety regulators as having significant benefits for motorcycle safety considering the role of speed in crashes. The Committee shares this view.

12.8.4 Benefits of ITS technologies used on cars and heavy vehicles

It appears likely that many of the car and heavy vehicle related technologies will have positive safety benefits for motorcyclists, because they either allow the driver to be more aware of motorcycles or reduce crash risks created by cars and heavy vehicles. Lane departure and blind spot detection or warnings,¹⁹³ co-operative ITS technologies that reduce the risk of collisions and the eCall system which can contact emergency services after a collision can improve motorcycle safety. Reducing the risk of collisions and improving treatment response times following a crash are likely to have an impact on motorcycle safety, a point noted by VicRoads.¹⁹⁴ However, the extent to which these technologies will reduce motorcycle trauma is unclear.

The EC believes ITS systems, and eCall in particular, ‘should contribute decisively to improving the effectiveness and speed of rescue for motorcyclists’.¹⁹⁵ In terms of ITS more broadly, the Committee believes technology is likely to have an increasingly important role in motorcycle safety and reduce trauma over time.

12.8.5 Future uses of ITS in the motorcycle area

The Committee received a number of submissions that referred to the future use of ITS technologies. The TAC outlined the future potential of ISA, while VicRoads noted the potential of lane departure warning systems and blind spot detection.¹⁹⁶ Witnesses also outlined proposals for the use of technology. Mr Bill Tassigiannakis provided a proposal for ITS in the licensing of novice motorcyclists:

*The area I would like to flesh out [of the Graduated Licensing Scheme proposal] is that L-platers are supervised by a fully licensed person during 120 hours of driving, which has to be recorded. That is not feasible for a motorcycle rider. Wearing my industrial hat, there should be some sort of an electronic monitoring or tracking device for recording how long a person has been on a bike, the duration of the ride, the location and the speed. This is not for infringement purposes but so that data can then be taken back to a trainer or an authority to show whether the rider has done an adequate amount in the three months, and then they would continue on with training. That may help between the L-plate and the P-plate and also between the P-plate and the full licence.*¹⁹⁷

The usefulness of alcohol interlocks on motorcycles, particularly for recidivist riders, was also raised with the Committee.¹⁹⁸ Professor Raphael Grzebieta, University of NSW, suggested alcohol interlocks fitted to motorcycles could, in his view, be beneficial for road safety.¹⁹⁹ The potential of alcohol interlocks has already been identified by South Australia, which listed these devices as a priority in their 2005–2010 motorcycle safety strategy.²⁰⁰

Alcohol interlocks are also used in France. As of 1 July 2012, all motorists, including motorcyclists are required to carry a single use breathalyser device that complies with French regulations and carries an NF label (that is, the device meets the applicable standard).²⁰¹ A failure to carry such a device is an offence. The Committee understands businesses serving alcohol will also be required to have breathysers available for patrons to use at their request.²⁰² The focus on alcohol intoxication in France stems from its involvement in road crashes. According to the most recent statistics produced by the National Observatory of the interdepartmental Security Traffic data, alcohol intoxication was the leading cause of crashes in France accounting for 30% of road deaths.²⁰³ That equates to 1,150 fatalities where the leading or only cause of the crash was alcohol intoxication.²⁰⁴ Unlike France, the role of alcohol intoxication in Victorian motorcycle crashes, and fatalities in particular, was not cited during the Inquiry process and the Committee did not identify the French approach as one that would be justified in Victoria at present.

In terms of alcohol interlocks, preliminary research appears to weakly support the contention there is some benefit in employing alcohol interlocks on motorcycles used by riders with a history of drink riding.²⁰⁵ Attitudinal research, however, has found that motorcyclists generally appreciate the risks of drink riding to a greater extent than that of car drivers (discussed in Chapter 7). On the basis of the available evidence, and rider attitudes towards drink riding, the Committee views the potential role of alcohol interlocks on motorcycles at present as a sentencing option for recidivist offenders. However, the lack of evaluative data suggests more research needs to be undertaken to quantify the potential of alcohol interlocks as a method for reducing motorcycle trauma.

Technologies that log the movements and speed performance of drivers is another ITS technology with potential for application to motorcycles.²⁰⁶ These technologies, sometimes referred to as telematics, are currently used in Europe, and in Victoria, to monitor the performance of heavy vehicles and commercial drivers.²⁰⁷ Freight companies, both in Australia and in Europe, have used ITS technologies (usually based on the use of GPS) to track the movement of their vehicles both for compliance with speed limits but also to track the timelines for delivery. In Victoria, VicRoads can require specific heavy vehicles to comply with conditions to access certain roads by using a monitoring device certified by Transport Certification Australia. These devices are part of the Intelligent Access Program (IAP)²⁰⁸ aimed at allowing heavy vehicles to access the road network subject to abiding with location restrictions. In Victoria, IAP devices focus on the location of heavy vehicles rather than the speed performance of drivers.²⁰⁹ That is not the case in Europe, where private companies are using ITS and associated technologies to track employee compliance with speed limits.²¹⁰

The application of such monitoring technologies for motorcycles has not been envisaged at a technical or road safety level. There are significant concerns with the use of such technologies relating to equity, justice policy, privacy and transparency, issues which were highlighted with the Committee during the public hearings,²¹¹ as well as the potential for tampering.²¹² While these are significant issues that need to be addressed

if this technology is to be applied to motorcyclists, there may be useful applications for this technology in areas such as managing motorcyclists who are recidivist speeding offenders.

12.8.6 Findings

ITS and its associated technologies have the potential to improve motorcycle safety and reduce trauma. At present, the focus of these technologies has been in the passenger and heavy vehicle fleet. There is limited evaluative research about the efficacy of ITS in the motorcycle area and many ITS applications and technologies are not currently suitable for motorcycles. Some may even pose a danger to motorcyclists in their current form (such as the limiting mode of ISA that applies braking when the speed limit is exceeded). Additionally, there are also issues with the transparency and privacy of ITS, the need for standards and improved technology.

In spite of these current limitations, the Committee believes that the emerging focus in Europe on motorcycle related ITS and the adaption of ITS technologies such as ISA for motorcycles is likely to accelerate in the future. Once that occurs, the potential of ITS is likely to be significant for motorcycle safety. Of particular importance will be technologies that reduce crash risk factors for motorcyclists, such as ISA, and cooperative systems that reduce the likelihood of a collision caused by other road users. Examples of the potential of ITS for motorcycling can also be seen in technologies such as eCall which can accelerate treatment times, thus improving trauma outcomes.

While an ITS that extends to motorcycles is at a formative stage, there are likely to be more immediate benefits from ITS and associated technologies used by cars and heavy vehicles. The application of lane departure warnings, blackspot detection and ISA are likely to reduce the crash risks posed by other road users to motorcyclists. Co-operative systems have the potential to prevent collisions between motorcyclists and other road users. Cumulatively, these technologies could improve motorcycle safety in the absence of any motorcycle specific ITS applications.

In terms of recidivist offenders, the Committee believes that alcohol interlocks and speed monitoring devices could become important sentencing and compliance options in the future, although as with all areas of ITS, these are not presently available in the motorcycling area.

Recommendations: Chapter 12**Recommendation 57:**

That road safety agencies set and incorporate trauma reduction targets for motorcycles, and motorcycle segments, in motorcycle strategies and for individual interventions. Targets should be both aspirational and empirical in nature.

Recommendation 58:

That the Transport Accident Commission and VicRoads review their driver instructional materials to deal with the issue of safety features on vehicles that may affect a driver's ability to see motorcyclists.

Recommendation 59:

That the benefits and risks of filtering, as distinct from lane splitting, be reviewed with the aim of introducing filtering in Victoria. A review committee should be constituted within 12 months of the tabling of this report and its members must include motorcycle community stakeholders and advocates, transport academics, police and other government agencies. The review committee will be responsible for:

- Creating a definition that includes references to speed and the location of the rider on the road during filtering among others;
- Identifying the benefits and risks of legalising filtering;
- Undertaking research into the incidence of rear-end crashes and crashes involving motorcycles and other vehicles within the same lane;
- Formulating training requirements so that riders can safely filter;
- Implementing a trial of filtering, followed by an evaluation to allow for a realistic assessment of the risks of filtering; and
- Consulting with the public and motorcycle stakeholders.

The review committee will produce a report, with recommendations, and submit it to the Minister for Transport and the Parliamentary Road Safety Committee within 12 months of the committee being constituted.

Recommendation 60:

That the Transport Accident Commission's funding of enforcement be reviewed with a view to identifying whether there has been an undue reliance on enforcement, by the Transport Accident Commission, and whether these funds would be more appropriately spent on alternative programs, initiatives and activities (such as subsidising countermeasures) which can improve motorcycle safety.

Recommendation 61:

That road safety agencies incorporate subsidies and incentives in motorcycle strategies, interventions and when introducing new countermeasures. Only countermeasures that have a measurable road safety benefit, either by reducing crash risk or improving trauma rates, should be eligible for such subsidies and incentives.

Recommendation 62:

That the hypothecation of funds derived from enforcement, and their transfer to a specific road safety fund which could be used to supplement existing funding for road safety measures, including those aimed at motorcyclists, such as that in Western Australia and New South Wales, be implemented in Victoria.

Recommendation 63:

That the Department of Sustainability and Environment and road safety agencies investigate ways to increase the awareness of emergency location devices among off-road motorcyclists and assess ways to improve access to such devices, including making such devices available for a small rental fee.

Recommendation 64:

That VicRoads and the Transport Accident Commission provide yearly reports to the Motorcycle Advisory Group on research, advancements and evaluations of Intelligent Transport Systems and associated technologies, both in Australia and overseas. Those reports should also be made available to the public through the respective agencies websites.

Endnotes: Chapter 12

- ¹ Professor Marcus Wigan, Principal, Oxford Systematics, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 125.
- ² Government of Victoria, *Victoria's Road Safety and Transport Strategic Action Plan for Powered Two Wheelers 2009-2013*, Melbourne, 2009, p. 13.
- ³ Victorian Automobile Chamber of Commerce, *Submission to the Inquiry*, September 2011, p. 31.
- ⁴ Deighton-Smith R, *Submission to the Inquiry*, July 2011, p. 7.
- ⁵ Royal Automobile Club of Victoria, *Submission to the Inquiry*, September 2011, p. 7.
- ⁶ Royal Automobile Club of Victoria, *Submission to the Inquiry*, September 2011, p. 3.
- ⁷ Government of Victoria, *Victoria's Road Safety and Transport Strategic Action Plan for Powered Two Wheelers 2009-2013*, Melbourne, 2009, p. 6.
- ⁸ Department of Communities, *Off-Road Motorcycling Management Strategy*, Queensland Government, March 2011, <http://rti.cabinet.qld.gov.au/documents/2010/nov/response%20to%20cmc%20review%20of%20off-road%20motorcycling/Attachments/Off-Road%20Motorcycling%20Management%20Strategy.pdf>.
- ⁹ Organisation for Economic Co-operation and Development / International Transport Forum, *Towards Zero: Ambitious Road Safety Targets and the Safe System Approach*, Summary Document, Transport Research Centre, 2008, p. 10, <http://www.internationaltransportforum.org/jtrc/safety/targets/08TargetsSummary.pdf>.
- ¹⁰ Organisation for Economic Co-operation and Development / International Transport Forum, *Towards Zero: Ambitious Road Safety Targets and the Safe System Approach*, Summary Document, Transport Research Centre, 2008, p. 10, <http://www.internationaltransportforum.org/jtrc/safety/targets/08TargetsSummary.pdf>.
- ¹¹ Australian Transport Council, *National Road Safety Strategy 2011-2020*, May 2011, p. 3, http://www.atcouncil.gov.au/documents/files/NRSS_2011_2020_15Aug11.pdf.
- ¹² Organisation for Economic Co-operation and Development / International Transport Forum, *Towards Zero: Ambitious Road Safety Targets and the Safe System Approach*, Summary Document, Transport Research Centre, 2008, p. 38, <http://www.internationaltransportforum.org/jtrc/safety/targets/08TargetsSummary.pdf>.
- ¹³ Organisation for Economic Co-operation and Development / International Transport Forum, *Towards Zero: Ambitious Road Safety Targets and the Safe System Approach*, Summary Document, Transport Research Centre, 2008, p. 38, <http://www.internationaltransportforum.org/jtrc/safety/targets/08TargetsSummary.pdf>.
- ¹⁴ Organisation for Economic Co-operation and Development / International Transport Forum, *Towards Zero: Ambitious Road Safety Targets and the Safe System Approach*, Summary Document, Transport Research Centre, 2008, p. 38, <http://www.internationaltransportforum.org/jtrc/safety/targets/08TargetsSummary.pdf>.
- ¹⁵ Organisation for Economic Co-operation and Development / International Transport Forum, *Towards Zero: Ambitious Road Safety Targets and the Safe System Approach*, Summary Document, Transport Research Centre, 2008, p. 38, <http://www.internationaltransportforum.org/jtrc/safety/targets/08TargetsSummary.pdf>.
- ¹⁶ Swedish Transport Administration, *Improved safety for motorcycle and moped riders – Joint Strategy for the period 2010-2020 – version 1.0*, Sweden, 2010, p. 26.
- ¹⁷ Swedish Transport Administration, *Improved safety for motorcycle and moped riders – Joint Strategy for the period 2010-2020 – version 1.0*, Sweden, 2010, p. 26.
- ¹⁸ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 2.
- ¹⁹ Mr James Holgate, Director, Road User Safety, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 9.
- ²⁰ Organisation for Economic Co-operation and Development / International Transport Forum, *Towards Zero: Ambitious Road Safety Targets and the Safe System Approach*, Summary Document, Transport Research Centre, 2008, p. 14, <http://www.internationaltransportforum.org/jtrc/safety/targets/08TargetsSummary.pdf>.

- ²¹ Organisation for Economic Co-operation and Development / International Transport Forum, *Towards Zero: Ambitious Road Safety Targets and the Safe System Approach*, Summary Document, Transport Research Centre, 2008, p. 14, <http://www.internationaltransportforum.org/jtrc/safety/targets/08TargetsSummary.pdf>.
- ²² Organisation for Economic Co-operation and Development / International Transport Forum, *Towards Zero: Ambitious Road Safety Targets and the Safe System Approach*, Summary Document, Transport Research Centre, 2008, p. 15, <http://www.internationaltransportforum.org/jtrc/safety/targets/08TargetsSummary.pdf>.
- ²³ Australian Transport Council, *National Road Safety Strategy 2011-2020*, May 2011, p. 3, http://www.atcouncil.gov.au/documents/files/NRSS_2011_2020_15Aug11.pdf.
- ²⁴ Australian Transport Council, *National Road Safety Strategy 2011-2020*, May 2011, pp. 32, 34, http://www.atcouncil.gov.au/documents/files/NRSS_2011_2020_15Aug11.pdf.
- ²⁵ Government of Victoria, *Victoria's Road Safety and Transport Strategic Action Plan for Powered Two Wheelers 2009-2013*, Melbourne, 2009, p. 6.
- ²⁶ Crundall D, Clarke D, Ward P & Bartle C, *Car Drivers' skills and attitudes to motorcycle safety: A review*, Road safety research report No. 85, Department for Transport, London, May 2008, p. 19.
- ²⁷ Ms Jenny Tame, *Transcript of Evidence*, Traralgon, 13 December 2011, p. 582.
- ²⁸ Victorian Automobile Chamber of Commerce, *Submission to the Inquiry*, September 2011, p. 21.
- ²⁹ Mr David Mackenzie, Senior Instructor, Motorcycle Motion, *Transcript of Evidence*, Geelong, 15 November 2011, p. 331.
- ³⁰ Mr Rob Smith, Manager, Australian Riders' Division, Motorcycling Australia, *Transcript of Evidence*, Geelong, 15 November 2011, p. 312.
- ³¹ National Transport Commission, *Review of the Australian Road Rules and Vehicle Standards Rules*, Discussion Paper, Melbourne, 2011, p. 44.
- ³² Acting Senior Sergeant Jamie Chester, Road Policing Strategy Division, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 30.
- ³³ Smith R, *Filtering. Legitimising Motorcycle Filtering In Traffic Lanes: A Compelling Case*, Motorcycling Australia, Melbourne, 2012, p. 5.
- ³⁴ Smith R, *Filtering. Legitimising Motorcycle Filtering In Traffic Lanes: A Compelling Case*, Motorcycling Australia, Melbourne, 2012, p. 5.
- ³⁵ Sperley M & Pietz AJ, *Motorcycle Lane-Sharing*, Literature Review, Oregon Department of Transportation, Salem, 2010, p. 11.
- ³⁶ National Transport Commission, *Review of the Australian Road Rules and Vehicle Standards Rules*, Discussion Paper, Melbourne, 2011, p. 44.
- ³⁷ Acting Senior Sergeant Jamie Chester, Road Policing Strategy Division, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 30.
- ³⁸ National Transport Commission, *Review of the Australian Road Rules and Vehicle Standards Rules*, Discussion Paper, Melbourne, 2011, p. 44.
- ³⁹ Motorcycle Riders' Association of Australia, *Submission to the Inquiry into Managing Transport Congestion*, Victorian Competition and Efficiency Commission, Submission no. 72, 20 December 2005, [http://www.vcec.vic.gov.au/CA256EAF001C7B21/WebObj/Submission72-MotorcycleRidersAssociationofAustralia/\\$File/Submission%2072%20Motorcycle%20Riders%20Association%20of%20Australia.pdf](http://www.vcec.vic.gov.au/CA256EAF001C7B21/WebObj/Submission72-MotorcycleRidersAssociationofAustralia/$File/Submission%2072%20Motorcycle%20Riders%20Association%20of%20Australia.pdf).
- ⁴⁰ Mr Denis Hendrichs, Head, Road Regulation Service, Federal Public Service (Ministry) Mobility and Transport, Meeting, 6 July 2012, Brussels, Belgium.
- ⁴¹ SWOV Institute for Road Safety Research, *SWOV Fact Sheet: Motorcyclists*, Netherlands, December 2010, pp. 1-2.

- ⁴² Motorcycle Riders' Association Victoria, *Motorcycle Riders Association calls for Legalisation of Lane Splitting*, Media Release, 12 January 2006, viewed August 2012, <http://www.mravic.org.au/forum/modules/news/article.php?storyid=189>; Motorcycle Riders' Association of Australia, *Submission to the Inquiry into Managing Transport Congestion*, Victorian Competition and Efficiency Commission, Submission no. 72, 20 December 2005, [http://www.vcec.vic.gov.au/CA256EAF001C7B21/WebObj/Submission72-MotorcycleRidersAssociationofAustralia/\\$File/Submission%2072%20%20Motorcycle%20Riders%20Association%20of%20Australia.pdf](http://www.vcec.vic.gov.au/CA256EAF001C7B21/WebObj/Submission72-MotorcycleRidersAssociationofAustralia/$File/Submission%2072%20%20Motorcycle%20Riders%20Association%20of%20Australia.pdf).
- ⁴³ Sperley M & Pietz AJ, *Motorcycle Lane-Sharing*, Literature Review, Oregon Department of Transportation, Salem, 2010, p. 3.
- ⁴⁴ Mr Rob Smith, Manager, Australian Riders' Division, Motorcycling Australia, *Transcript of Evidence*, Geelong, 15 November 2011, pp. 311-312.
- ⁴⁵ Mr Rob Smith, Manager, Australian Riders' Division, Motorcycling Australia, *Transcript of Evidence*, Geelong, 15 November 2011, p. 312.
- ⁴⁶ Sperley M & Pietz AJ, *Motorcycle Lane-Sharing*, Literature Review, Oregon Department of Transportation, Salem, 2010, pp. 3-4.
- ⁴⁷ Sperley M & Pietz AJ, *Motorcycle Lane-Sharing*, Literature Review, Oregon Department of Transportation, Salem, 2010, p. 3.
- ⁴⁸ State of New Jersey, *Assembly, No. 1684*, 213th Legislature, 2008.
- ⁴⁹ State of New Jersey, *Assembly, No. 1684*, 213th Legislature, 2008; State of New Jersey, *Assembly, No. 140*, 214th Legislature, 2010.
- ⁵⁰ Smith R, *Sharing Road Space, Positive Integration of PTWs into the Transport System*, Motorcycling Australia, Melbourne, 2011, p. 8; Mr Rob Smith, Manager, Australian Riders' Division, Motorcycling Australia, *Transcript of Evidence*, Geelong, 15 November 2011, p. 312; Ms Aline Delhayé, General Secretary, Federation of European Motorcyclists' Associations, *Meeting*, Perth, 4 November 2011, p. 4.
- ⁵¹ Inglis M, *Submission to the Inquiry*, July 2011.
- ⁵² Smith R, *Sharing Road Space, Positive Integration of PTWs into the Transport System*, Motorcycling Australia, Melbourne, 2011, p. 8.
- ⁵³ Smith R, *Sharing Road Space, Positive Integration of PTWs into the Transport System*, Motorcycling Australia, Melbourne, 2011, p. 8.
- ⁵⁴ Superintendent Bob Stork, Manager, Road Policing Strategy, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 29.
- ⁵⁵ Mr Rob Smith, Manager, Australian Riders' Division, Motorcycling Australia, *Transcript of Evidence*, Geelong, 15 November 2011, p. 312.
- ⁵⁶ Association de Constructeurs Européens de Motocycles, *MAIDS - In-depth investigations of accidents involving powered two wheelers*, Final Report 2.0, April 2009, p.9, <http://www.maids-study.eu/pdf/MAIDS2.pdf>.
- ⁵⁷ Association de Constructeurs Européens de Motocycles, *MAIDS - In-depth investigations of accidents involving powered two wheelers*, Final Report 2.0, April 2009, pp.103, 150, <http://www.maids-study.eu/pdf/MAIDS2.pdf>.
- ⁵⁸ Ms Liz de Rome, Principal Consultant and Managing Director, LdeR Consulting, *Meeting*, Perth, 5 November 2011, p. 5.
- ⁵⁹ VicRoads, *Submission to the Inquiry*, September 2011, p. 71.
- ⁶⁰ VicRoads, *Submission to the Inquiry*, September 2011, p. 71.
- ⁶¹ Smith R, *Sharing Road Space, Positive Integration of PTWs into the Transport System*, Motorcycling Australia, Melbourne, 2011, pp. 4-5, 8.
- ⁶² Coroners Court of Victoria, Motorcycle fatalities, date series 1 January 2000 – 25 February 2011.

⁶³ Sperley M & Pietz AJ, *Motorcycle Lane-Sharing*, Literature Review, Oregon Department of Transportation, Salem, 2010, p. 12.

⁶⁴ Mr David MacKenzie, Senior Instructor, Motorcycle Motion, *Transcript of Evidence*, Geelong, 15 November 2011, p. 331.

⁶⁵ Mr Adam Judge, Motorcycle Trainer, Armstrong's Driver Education, *Transcript of Evidence*, Melbourne, 18 October 2011, pp. 101-102.

⁶⁶ Sperley M & Pietz AJ, *Motorcycle Lane-Sharing*, Literature Review, Oregon Department of Transportation, Salem, 2010, p. 12; Crundall D, Clarke D, Ward P & Bartle C, *Car Drivers' skills and attitudes to motorcycle safety: A review*, Road safety research report No. 85, Department for Transport, London, May 2008, p. 24; VicRoads, *Submission to the Inquiry*, September 2011, p. 71.

⁶⁷ Sperley M & Pietz AJ, *Motorcycle Lane-Sharing*, Literature Review, Oregon Department of Transportation, Salem, 2010, p. 12.

⁶⁸ Sperley M & Pietz AJ, *Motorcycle Lane-Sharing*, Literature Review, Oregon Department of Transportation, Salem, 2010, p. 11.

⁶⁹ Sperley M & Pietz AJ, *Motorcycle Lane-Sharing*, Literature Review, Oregon Department of Transportation, Salem, 2010, p. 11.

⁷⁰ McAuliffe D, *Submission to the Inquiry*, July 2011.

⁷¹ Sava T, *Submission to the Inquiry*, July 2011, Term of Reference (b); Mastoris E, *Submission to the Inquiry*, July 2011, Term of Reference (h); Inglis M, *Submission to the Inquiry*, July 2011; McAuliffe D, *Submission to the Inquiry*, July 2011.

⁷² McAuliffe D, *Submission to the Inquiry*, July 2011.

⁷³ Smith R, *Sharing Road Space, Positive Integration of PTWs into the Transport System*, Motorcycling Australia, Melbourne, 2011, p. 6.

⁷⁴ Acting Senior Sergeant Jamie Chester, Road Policing Strategy Division, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 30.

⁷⁵ Deputy Commissioner Kieran Walshe, Regional and Road Policing, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 22.

⁷⁶ Superintendent Bob Stork, Manager, Road Policing Strategy, Victoria Police, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 29.

⁷⁷ Mr David Shelton, Executive Director, Road Safety and Network Access, VicRoads, *Transcript of Evidence*, Melbourne, 17 October 2011, pp. 7-8.

⁷⁸ Mr Rob Smith, Manager, Australian Riders' Division, Motorcycling Australia, *Transcript of Evidence*, Geelong, 15 November 2011, p. 312.

⁷⁹ Ms Aline Delhaye, General Secretary, Federation of European Motorcyclists' Associations, *Meeting*, Perth, 4 November 2011, p. 4.

⁸⁰ S. 11(a) *Transport Accident Act 1986*, Vic.

⁸¹ S. 11(c) *Transport Accident Act 1986*, Vic.

⁸² S. 12(2) *Transport Accident Act 1986*, Vic.

⁸³ Ms Samantha Cockfield, Acting Senior Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, pp. 694-695.

⁸⁴ Ms Samantha Cockfield, Acting Senior Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 697.

⁸⁵ Ms Samantha Cockfield, Acting Senior Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 697.

- ⁸⁶ Ms Samantha Cockfield, Acting Senior Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 696.
- ⁸⁷ Ms Samantha Cockfield, Acting Senior Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 695.
- ⁸⁸ Commander Trevor Carter, Office of Deputy Commissioner, Regional and Road Policing, State Policing Office, Victoria Police, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 725.
- ⁸⁹ Ms Samantha Cockfield, Acting Senior Manager, Road Safety and Marketing, Transport Accident Commission, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 696.
- ⁹⁰ Inspector Brett Harman, State Policing Office, Victoria Police, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 724.
- ⁹¹ Office of Road Safety (WA), *Road Safety Council welcomes Road Trauma Trust Fund changes*, Government of Western Australia, 19 April 2011, viewed September 2012, <http://ors.wa.gov.au/Latest-News/Media-Releases/Road-Safety-Council-welcomes-Road-Trauma-Trust-Fund.aspx>.
- ⁹² RoadWise, *Community Road Safety Grants Program*, West Australian Local Government Association, viewed April 2012, http://www.roadwise.asn.au/road_safety_grants.
- ⁹³ Government of Western Australia & Road Safety Council, *Towards Zero – Road safety Strategy to reduce road trauma in Western Australia 2008-2020*, viewed September 2012, <http://ors.wa.gov.au/Documents/towardszero-strategy.aspx>.
- ⁹⁴ Government of Western Australia & Road Safety Council, *Towards Zero – Road safety Strategy to reduce road trauma in Western Australia 2008-2020*, viewed September 2012, p. 8. <http://ors.wa.gov.au/Documents/towardszero-strategy.aspx>.
- ⁹⁵ Government of Western Australia, *100 per cent of speed camera revenue for road safety*, Ministerial Media Statements, Office of the Premier and Office of the Minister for Road Safety, 19 April 2011, <http://www.mediastatements.wa.gov.au/Pages/WACabinetMinistersSearch.aspx?ItemId=139498&minister=Johnson&admin=Barnett>.
- ⁹⁶ Government of Western Australia, *100 per cent of speed camera revenue for road safety*, Ministerial Media Statements, Office of the Premier and Office of the Minister for Road Safety, 19 April 2011, <http://www.mediastatements.wa.gov.au/Pages/WACabinetMinistersSearch.aspx?ItemId=139498&minister=Johnson&admin=Barnett>.
- ⁹⁷ Road Safety Council (WA), *Road Safety Council Report on Activities 2011-12 as required by Section 13 of the Road Safety Council Act 2002*, <http://www.ors.wa.gov.au/Documents/RSC/rsc-report-section13-.pdf>.
- ⁹⁸ Minister for Police, Emergency Services, and Road Safety, the Hon. Robert Johnson, *Meeting*, Perth, Western Australia, November 4, 2011.
- ⁹⁹ *Transport Administration Amendment (Community Road Safety Fund) Act 2012 No 70 (NSW)*.
- ¹⁰⁰ Government of New South Wales, *Community road safety fund legislation passed into law*, Media Release, Minister for Roads and Ports, 18 September 2012, <http://www.transport.nsw.gov.au/sites/default/files/b2b/releases/120918-community-road-safety-fund-legislation-passed-into-law.pdf>.
- ¹⁰¹ *Transport Administration Amendment (Community Road Safety Fund) Act 2012 No 70 (NSW)*, Schedule 1 Amendment of Transport Administration Act 1988 No 109
- ¹⁰² *Transport Administration Amendment (Community Road Safety Fund) Act 2012 No 70 (NSW)*, Schedule 1 Amendment of Transport Administration Act 1988 No 109 – s. 80H.
- ¹⁰³ *Transport Administration Amendment (Community Road Safety Fund) Act 2012 No 70 (NSW)*, Schedule 1 Amendment of Transport Administration Act 1988 No 109 – s. 80J; Transport for New South Wales, *The NSW*

Speed camera Strategy, June 2012, viewed September 2012,
[http://www.rta.nsw.gov.au/roadsafety/downloads/nsw_speed_camera_strategy.pdf..](http://www.rta.nsw.gov.au/roadsafety/downloads/nsw_speed_camera_strategy.pdf)

¹⁰⁴ Transport for New South Wales, *The NSW Speed camera Strategy*, June 2012,
[http://www.rta.nsw.gov.au/roadsafety/downloads/nsw_speed_camera_strategy.pdf..](http://www.rta.nsw.gov.au/roadsafety/downloads/nsw_speed_camera_strategy.pdf)

¹⁰⁵ Government of New South Wales, *Community road safety fund legislation passed into law*, Media Release, Minister for Roads and Ports, 18 September 2012,
[http://www.transport.nsw.gov.au/sites/default/files/b2b/releases/120918-community-road-safety-fund-legislation-passed-into-law.pdf.](http://www.transport.nsw.gov.au/sites/default/files/b2b/releases/120918-community-road-safety-fund-legislation-passed-into-law.pdf)

¹⁰⁶ Federal Ministry of Transport and Mobility, *Road safety on highways: Survey results*, Belgium, 6 March 2007,
[http://www.mobilit.fgov.be/data/route/Persberf.pdf.](http://www.mobilit.fgov.be/data/route/Persberf.pdf)

¹⁰⁷ Federal Ministry of Transport and Mobility, *Road safety on highways: Survey results*, Belgium, 6 March 2007,
[http://www.mobilit.fgov.be/data/route/Persberf.pdf.](http://www.mobilit.fgov.be/data/route/Persberf.pdf)

¹⁰⁸ EuroRAP, *Belgium – EuroRAP Overview*, 14 November, 2006,
[http://www.eurorap.org/library/pdfs/country_profiles/English_hi/Belgium%20\(E\)%20Final.pdf.](http://www.eurorap.org/library/pdfs/country_profiles/English_hi/Belgium%20(E)%20Final.pdf)

¹⁰⁹ Australasian College of Road Safety, Hypothecation of fines, viewed September 2012, <http://acrs.org.au/about-us/policies/safe-speeds/hypothecation-of-fines/>.

¹¹⁰ Australasian College of Road Safety, Hypothecation of fines, viewed September 2012, <http://acrs.org.au/about-us/policies/safe-speeds/hypothecation-of-fines/>.

¹¹¹ Australasian College of Road Safety, Hypothecation of fines, viewed September 2012, <http://acrs.org.au/about-us/policies/safe-speeds/hypothecation-of-fines/>.

¹¹² Mr John Voyage, Principal, Maurice Blackburn, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 237.

¹¹³ Mr Rex Deighton-Smith, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 284.

¹¹⁴ Mr David MacKenzie, Senior Instructor, Motorcycle Motion, *Transcript of Evidence*, Geelong, 15 November 2011, p. 327.

¹¹⁵ Superintendent Neville Taylor, Road Policing Operations and Investigation Division, Victoria Police, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 722.

¹¹⁶ Mr Phil Lemin, Executive Director, Accident Scene Management Australia, *Transcript of Evidence*, Wangaratta, 29 November 2011, p. 461.

¹¹⁷ Mr Rex Deighton-Smith, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 281.

¹¹⁸ Ms Heather Ellis, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 293; and Deighton-Smith R, *Submission to the Inquiry*, July 2011, p. 7.

¹¹⁹ Mr John Lambert, Director, John Lambert & Associates, and Road Safety Consultant, *Transcript of Evidence*, Geelong, 15 November 2011, p. 355; Reevu, *Submission to the Inquiry*, July 2011, p. 3, 8; and Australian Motorcycle Trail Riders Association, *Submission to the Inquiry*, July 2011, Term of Reference (h).

¹²⁰ Hangmore Motorcycle Club, *Submission to the Inquiry*, July 2011.

¹²¹ Motorcycle and Scooter Safety Action Group, *Safe vehicles – Workshop compilation*, Government of Western Australia, Perth, June 2011, p. 1, <http://www.ors.wa.gov.au/Documents/MSSAG/motorcycle-mssagcompilationssv-forum2.aspx>.

¹²² Motorcycle and Scooter Safety Action Group, *Safe Road Use – Workshop Compilation*, Government of Western Australia, Perth, 2011, p. 1, <http://www.ors.wa.gov.au/Documents/MSSAG/motorcycle-mssagcompilationssr-forum2.aspx>.

¹²³ Motorcycle and Scooter Safety Action Group, *Safe Speeds – Workshop Compilation*, Government of Western Australia, Perth, 2011, p. 2, <http://www.ors.wa.gov.au/Documents/MSSAG/motorcycle-mssagcompilationsss-forum2.aspx>.

- ¹²⁴ Austrian Ministry for Transport, Innovation and Technology, *Austrian Road Safety Programme 2011-2020*, Vienna, 2011, p. 79, <http://www.bmvit.gv.at/en/service/publications/downloads/rsp2020.pdf>.
- ¹²⁵ Ms Heather Ellis, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 293.
- ¹²⁶ Mr Adam Kostick, Community Engagement, Maurice Blackburn Lawyers, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 238.
- ¹²⁷ Deighton-Smith R, *Submission to the Inquiry*, July 2011, p. 7; Reevu, *Submission to the Inquiry*, July 2011, p. 8; Australian Motorcycle Trail Riders Association (AMTRA), *Submission to the Inquiry*, July 2011, Term of Reference (h).
- ¹²⁸ Mr John Lambert, Director, John Lambert & Associates, *Transcript of Evidence*, Geelong, 15 November 2011, p. 355.
- ¹²⁹ Mr John Buskes, Chairman, Motorcycle Industry Division, Victorian Automobile Chamber of Commerce, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 224.
- ¹³⁰ AMTRA, *Submission to the Inquiry*, July 2011, Term of Reference (h).
- ¹³¹ Lay R, *Road Safety Proposal for Consideration – ‘Junior Recreational Rider Licence’*, 2 October 2002, <http://www.amtra.com.au/forum/general-chat/dolescent-off-road-licensing/?action=dlattach;attach=2765>.
- ¹³² Correspondence from Mr James Holgate, Director, Road User Safety, VicRoads, 4 May 2012.
- ¹³³ Victorian Automobile Chamber of Commerce, *Submission to the Inquiry*, September 2011, p. 32.
- ¹³⁴ Lay R, *Road Safety Proposal for Consideration – ‘Junior Recreational Rider Licence’*, 2 October 2002, p. 4 <http://www.amtra.com.au/forum/general-chat/dolescent-off-road-licensing/?action=dlattach;attach=2765>.
- ¹³⁵ Lay R, *Road Safety Proposal For Consideration – ‘Junior Recreational Rider Licence’*, 2 October 2002, pp. 1, 3. <http://www.amtra.com.au/forum/general-chat/dolescent-off-road-licensing/?action=dlattach;attach=2765>.
- ¹³⁶ Sergeant Rod Lay, Victoria Police, *Transcript of Evidence*, Bairnsdale, 14 December 2011, p. 593.
- ¹³⁷ Sergeant Rod Lay, Victoria Police, *Transcript of Evidence*, Bairnsdale, 14 December 2011, p. 596.
- ¹³⁸ Correspondence from Mr James Holgate, Director, Road User Safety, VicRoads, 4 May 2012.
- ¹³⁹ Correspondence from Mr James Holgate, Director, Road User Safety, VicRoads, 4 May 2012.
- ¹⁴⁰ Mr Victor Harris, *Transcript of Evidence*, Melbourne, 19 October 2011, p. 253.
- ¹⁴¹ Mr Matthew Chadban, Group Manager, Upper Hume, Ambulance Victoria, *Transcript of Evidence*, Wodonga, 30 November 2011, p. 533.
- ¹⁴² Mr Tony Walker, General Manager, Regional Services, Ambulance Victoria, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 745.
- ¹⁴³ Sergeant Cameron Roberts, Victoria Police, *Transcript of Evidence*, Wodonga, 30 November 2011, p. 476.
- ¹⁴⁴ Mr Roger Pitt, Trail Bike Project Manager, Forests and Parks Division, Department of Sustainability and Environment, *Transcript of Evidence*, Melbourne, 17 October 2011, p. 88.
- ¹⁴⁵ Parliament of Victoria Road Safety Committee, *Inquiry into Federal-State Road Funding Arrangements*, Parliament of Victoria, Melbourne, September 2010, p. 189; Parliament of Victoria Road Safety Committee, *Inquiry into the Country Road Toll*, Parliament of Victoria, Melbourne, May 2005, p. 290.
- ¹⁴⁶ Parliament of Victoria Road Safety Committee, *Inquiry into Federal-State Road Funding Arrangements*, Parliament of Victoria, Melbourne, September 2010, p. 189.
- ¹⁴⁷ Ambak K, Atiq R & Ismail R, *Intelligent Transport System for Motorcycle Safety and Issues*, European Journal of Scientific Research, Vol. 28, No. 4, Selangor, 2009, p. 601.
- ¹⁴⁸ Ambak K, Atiq R & Ismail R, *Intelligent Transport System for Motorcycle Safety and Issues*, European Journal of Scientific Research, Vol. 28, No. 4, Selangor, 2009, p. 601.
- ¹⁴⁹ Ambak K, Atiq R & Ismail R, *Intelligent Transport System for Motorcycle Safety and Issues*, European Journal of Scientific Research, Vol. 28, No. 4, Selangor, 2009, p. 600.

- ¹⁵⁰ Pieve M (Piaggio), *Future perspective on cooperative systems for a safe and sustainable mobility*, presentation at the ATA International Workshop, 24-5 May 2007, Fortress of Bard, Aosta Italy, p. 9.
- ¹⁵¹ Ambak K, Atiq R & Ismail R, *Intelligent Transport System for Motorcycle Safety and Issues*, European Journal of Scientific Research, Vol. 28, No. 4, Selangor, 2009, p. 600.
- ¹⁵² Ambak K, Atiq R & Ismail R, *Intelligent Transport System for Motorcycle Safety and Issues*, European Journal of Scientific Research, Vol. 28, No. 4, Selangor, 2009, p. 601.
- ¹⁵³ Parliament of Victoria Road Safety Committee, *Inquiry into the Country Road Toll*, Parliament of Victoria, Melbourne, May 2005, p. 290.
- ¹⁵⁴ Parliament of Victoria Road Safety Committee, *Inquiry into the Country Road Toll*, Parliament of Victoria, Melbourne, May 2005, p. 290.
- ¹⁵⁵ Parliament of Victoria Road Safety Committee, *Inquiry into the Country Road Toll*, Parliament of Victoria, Melbourne, May 2005, p. 290.
- ¹⁵⁶ Ambak K, Atiq R & Ismail R, *Intelligent Transport System for Motorcycle Safety and Issues*, European Journal of Scientific Research, Vol. 28, No. 4, Selangor, 2009, p. 602; Avenoso A, *Road Safety as a right and responsibility for all*, Blueprint for EU's Road Safety Action Programme 2010-2020, European Transport Safety Council, Brussels, 2008, p. 26; Organisation for Economic Co-operation and Development / International Transport Forum, *Towards Zero: Ambitious Road Safety Targets and the Safe System Approach*, Summary Document, Transport Research Centre, 2008, p. 86,
<http://www.internationaltransportforum.org/jtrc/safety/targets/08TargetsSummary.pdf>.
- ¹⁵⁷ Bayly M, Regan M & Hosking S, *Intelligent Transport Systems and Motorcycle Safety*, Report No. 260, Monash University Accident Research Centre, Melbourne, 2006, pp. 44-46; European Commission, *Cost-benefit assessment and prioritisation of vehicle safety technologies*, Final Report, Brussels, 2006, p. 14.
- ¹⁵⁸ Doeke SD, Anderson RWG & Woolley JE, *Advisory Intelligent Speed Adaptation for government fleets*, Centre for Automotive Safety Research, Adelaide, 2011, p. 1.
- ¹⁵⁹ Fitzharris M, Stephan K, Newstead S, Truong J, Healy D, Collins S & Rowe G, *Final Analysis of the TAC ISA Heavy Vehicle Trial: Effects of ISA and Fuel Efficiency Training on Speed Choice*, Insurance Commission of WA, Perth, 2011, p. 2.
- ¹⁶⁰ Swedish Transport Administration, *ISA – Intelligent Speed Adaptation*, 12 June 20, viewed September 2012,
<http://www.trafikverket.se/Om-Trafikverket/Andra-sprak/English-Engelska/Road-Safety/ISA--Intelligent-Speed-Adaptation/>.
- ¹⁶¹ Doeke SD, Anderson RWG & Woolley JE, *Advisory Intelligent Speed Adaptation for government fleets*, Centre for Automotive Safety Research, Adelaide, 2011, p. 1.
- ¹⁶² Smart RRS, *Smart RRS Project*, viewed September 2012, <http://smarrrs.unizar.es/content.php?seccion=16>.
- ¹⁶³ European Parliament and Council, *Directive 2010/40/EU of the European Parliament and of the Council*, Official Journal of the European Union, L207, Vol. 53, 7 July 2010, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:207:0001:0013:EN:PDF>.
- ¹⁶⁴ ERTICO, *About ERTICO*, 2010, viewed September 2012, <http://www.ertico.com/about-ertico/>.
- ¹⁶⁵ European Commission, *EU road safety plan for next 10 years – 20/07/2010*, viewed September 2012,
http://ec.europa.eu/news/transport/100720_en.htm.
- ¹⁶⁶ FIA Foundation, *EU launches Road Safety 2011-2020 plan*, FIA Foundation for the Automobile and Society, viewed July 2012, <http://www.fiafoundation.org/news/archive/2010/Pages/EUlaunchesRoadSafety2011-2020plan.aspx>.

- ¹⁶⁷ ROSA Project, *European Handbook on Good Practices in Safety for Motorcyclists*, March 2011, http://ec.europa.eu/transport/road_safety/pdf/projects/rosa_handbook_training_en.pdf; Saferider Project, *Advanced Telematics for Enhancing the Safety and Comfort of Motorcycle Riders*, Project Presentation, European Commission Information Society, Brussels, Belgium, 2008, p. 8; Saferider Project, *SAFERIDER: Advanced Rider Assistance Systems (ARAS) and On-Bike Information Systems (OBIS) for Powered Two-Wheelers*, European Commission Information Society, viewed July 2012, http://ec.europa.eu/information_society/events/cf/ict2010/item-display.cfm?id=3376.
- ¹⁶⁸ Safespot Project, *Objectives*, European Commission Information Society and Media, viewed July 2012, <http://www.safespot-eu.org/objectives.html>; Safespot Project, *Equipped Motorcycles Integrating the Safety Margin Applications*, Deliverable 4.4.4, European Commission Information Society and Media, 2009, p. 5.
- ¹⁶⁹ Andreone L, Guarise A, Lilli F, Gavrila DM & Pieve M, *Cooperative systems for vulnerable road users: The concept of the watch-over project*, Presentation, 13th ITS World Congress, London, 2006, p. 3,5
- ¹⁷⁰ Bayly M, Regan M & Hosking S, *Intelligent Transport Systems and Motorcycle Safety*, Report No. 260, Monash University Accident Research Centre, Melbourne, 2006, p. 12.
- ¹⁷¹ Commander Trevor Carter, Office of Deputy Commissioner, Regional and Road Policing, State Policing Office, Victoria Police, *Transcript of Evidence*, Melbourne, 7 March 2012, p. 733.
- ¹⁷² Ambak K, Atiq R & Ismail R, *Intelligent Transport System for Motorcycle Safety and Issues*, European Journal of Scientific Research, Vol. 28, No. 4, Selangor, 2009, p. 602.
- ¹⁷³ European Transport Safety Council, *Vulnerable Riders – Safety Implications of motorcycling in the European Union*, Brussels, 2008, p. 13.
- ¹⁷⁴ Swedish Transport Administration, *Improved safety for motorcycle and moped riders – Joint Strategy for the period 2010-2020 – version 1.0*, Sweden, 2010, pp. 20-21; Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (h); and Bayly M, Regan M & Hosking S, *Intelligent Transport Systems and Motorcycle Safety*, Report No. 260, Monash University Accident Research Centre, Melbourne, 2006, p. 48.
- ¹⁷⁵ Ambak K, Atiq R & Ismail R, *Intelligent Transport System for Motorcycle Safety and Issues*, European Journal of Scientific Research, Vol. 28, No. 4, Selangor, 2009, p. 602.
- ¹⁷⁶ Professor Mark Stevenson, Director, Monash University Accident Research Centre, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 653.
- ¹⁷⁷ Swedish Transport Administration, *Improved safety for motorcycle and moped riders – Joint Strategy for the period 2010-2020 – version 1.0*, Sweden, 2010, pp. 20-21.
- ¹⁷⁸ Bayly M, Regan M & Hosking S, *Intelligent Transport Systems and Motorcycle Safety*, Report No. 260, Monash University Accident Research Centre, Melbourne, 2006, p. 49.
- ¹⁷⁹ Bayly M, Regan M & Hosking S, *Intelligent Transport Systems and Motorcycle Safety*, Report No. 260, Monash University Accident Research Centre, Melbourne, 2006, p. 49.
- ¹⁸⁰ Swedish Transport Administration, *Improved safety for motorcycle and moped riders – Joint Strategy for the period 2010-2020 – version 1.0*, Sweden, 2010, pp. 20-21.
- ¹⁸¹ Ambak K, Atiq R & Ismail R, *Intelligent Transport System for Motorcycle Safety and Issues*, European Journal of Scientific Research, Vol. 28, No. 4, Selangor, 2009, p. 608.
- ¹⁸² Ambak K, Atiq R & Ismail R, *Intelligent Transport System for Motorcycle Safety and Issues*, European Journal of Scientific Research, Vol. 28, No. 4, Selangor, 2009, p. 608.
- ¹⁸³ Oxley J & Budd L, *Improving Motorcycle Safety in a Safe System*, Fact Sheet no. 13, Curtin-Monash Accident Research Centre, Perth, 2011, p. 7; Ambak K, Atiq R & Ismail R, *Intelligent Transport System for Motorcycle Safety and Issues*, European Journal of Scientific Research, Vol. 28, No. 4, Selangor, 2009, p. 608.

¹⁸⁴ Bayly M, Regan M & Hosking S, *Intelligent Transport Systems and Motorcycle Safety*, Report No. 260, Monash University Accident Research Centre, Melbourne, 2006, p. 49.

¹⁸⁵ Mr Bertrand Nelva-Pasqual, Manager, Technical Service and Development Studies, Mutuelle des Motards, Meeting, Belgium, 5 July 2012.

¹⁸⁶ Ms Aline Delhaye, General Secretary, Federation of European Motorcyclists' Associations, *Meeting*, Perth, 4 November 2011, p. 6.

¹⁸⁷ Ms Aline Delhaye, General Secretary, Federation of European Motorcyclists' Associations, *Meeting*, Perth, 4 November 2011, p. 6.

¹⁸⁸ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (h).

¹⁸⁹ Ambak K, Atiq R & Ismail R, *Intelligent Transport System for Motorcycle Safety and Issues*, European Journal of Scientific Research, Vol. 28, No. 4, Selangor, 2009, p. 605.

¹⁹⁰ Swedish Transport Administration, *Improved safety for motorcycle and moped riders – Joint Strategy for the period 2010-2020 – version 1.0*, Sweden, 2010, pp. 20-21; and Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (h).

¹⁹¹ Swedish Transport Administration, *Improved safety for motorcycle and moped riders – Joint Strategy for the period 2010-2020 – version 1.0*, Sweden, 2010, pp. 20-21.

¹⁹² Professor Mark Stevenson, Director, Monash University Accident Research Centre, *Transcript of Evidence*, Melbourne, 6 March 2012, p. 653.

¹⁹³ VicRoads, *Submission to the Inquiry*, September 2011, p. 70; Organisation for Economic Co-operation and Development / International Transport Federation Transport Research Committee, *Workshop on Motorcycling Safety – Final Report*, 2008, Lillehammer, pp. 39-40, <http://www.internationaltransportforum.org/jtrc/safety/Lillehammer2008/Lillehammer08FinalReport.pdf>; European Commission, *Towards a European road safety area: policy orientations on road safety 2011-2020*, Brussels, 2010, p. 9.

¹⁹⁴ VicRoads, *Submission to the Inquiry*, September 2011, p. 70.

¹⁹⁵ European Commission, *Towards a European road safety area: policy orientations on road safety 2011-2020*, Brussels, 2010, p. 9.

¹⁹⁶ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (h); VicRoads, *Submission to the Inquiry*, September 2011, p. 70.

¹⁹⁷ Mr Bill Tassigiannakis, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 205.

¹⁹⁸ Transport Accident Commission, *Submission to the Inquiry*, September 2011, Term of Reference (h).

¹⁹⁹ Professor Raphael Grzebieta, Chair, Road Safety, Transport and Road Safety Research, UNSW, *Meeting*, Perth, 5 November 2011, p. 18.

²⁰⁰ Department for Transport , Energy and Infrastructure, *Motorcycling Road Safety Strategy 2005-2010 The South Australian Road Safety Strategy 2003-2010*, Government of South Australia, Adelaide, 2005, p. 12.

²⁰¹ Foreign and Commonwealth Office, *Travel & living abroad: France*, UK, viewed September 2012, <http://www.fco.gov.uk/en/travel-and-living-abroad/travel-advice-by-country/europe/france1>.

²⁰² Minister of the Interior, *Intervention du ministre de l'Intérieur sur la sécurité routière*, Press Conference on Road Safety, France, 5 January 2012, <http://www.interieur.gouv.fr/Archives/Archives-Claude-Gueant-2011-2012/Les-interventions-du-Ministre/05.01.2012-Conference-de-presse-sur-la-securite-routiere>.

²⁰³ Observatoire National Interministériel De Sécurité Routière, *La sécurité routière en France*, Paris, 2011, p. 3.

²⁰⁴ Observatoire National Interministériel De Sécurité Routière, *La sécurité routière en France*, Paris, 2011, p. 3.

²⁰⁵ Anderson RWG, Hutchinson TP, Linke B & Ponte G, *Analysis of crash data to estimate the benefits of emerging vehicle technology*, CASR094, Centre for Automotive Safety Research, University of Adelaide, Adelaide, 2011, p. 47.

²⁰⁶ European Transport Safety Council, “PRAISE”: Preventing Road Accidents and Injuries for the Safety of Employees, Driving for Work: Managing Speed, Brussels, 2011, p. 31.

²⁰⁷ European Transport Safety Council, “PRAISE”: Preventing Road Accidents and Injuries for the Safety of Employees, Driving for Work: Managing Speed, Brussels, 2011, p. 31.

²⁰⁸ Transport Certification Australia, *The Intelligent Access Program (IAP)*, viewed August 2012, <http://www.tca.gov.au/regulatory-telematics/iap>.

²⁰⁹ Transport Certification Australia, *What is the IAP?*, viewed August 2012, <http://www.tca.gov.au/regulatory-telematics/iap/what-is-the-iap>.

²¹⁰ European Transport Safety Council, “PRAISE”: Preventing Road Accidents and Injuries for the Safety of Employees, Driving for Work: Managing Speed, Brussels, 2011, p. 31.

²¹¹ Professor Marcus Wigan, Principal, Oxford Systematics, *Transcript of Evidence*, Melbourne, 18 October 2011, p. 127.

²¹² Mr Ray Newland, *Transcript of Evidence*, Geelong, 15 November 2011, p. 324.

Date of Adoption: 22 November 2012

Appendices

Appendix A: Submissions received

Appendix B: Public hearing witnesses

Appendix C: Meetings – Australia

Appendix D: Meetings – International

Appendix E: Motorcycle safety levy funded projects

Appendix A: Submissions received

No.	Date Received	Name	Organisation
1	31/05/2011	Mr Stuart Darke	
2	31/05/2011	Mr Rodney Brown	
3	14/06/2011	Mr Peter McLennan	
4	18/06/2011	Mr Brian Fox	
5	20/06/2011	Mr Alan Pask	
6	21/06/2011	Mr Mike Irwin	
7	1/07/2011	Mr P S Robertson	
8	10/07/2011	Mr Trevor Bergman	
9	11/07/2011	Mr Darryl Dear	
10	13/07/2011	Mr Daryl Townsend Chairperson ERMCWP	RoadSafe – Gippsland Community Road Safety Council
11	14/07/2011	Mr Robert Millar	
12	15/07/2011	Mr Phil Lemin Executive Director	Accident Scene Management Australia
13	19/07/2011	Mr Michael Chmiel Mr David Lyster	
14	19/07/2011	Mr Bruce Donaldson Chairperson	Motorcycle Road Riders Co-operative Ltd
15	19/07/2011	Mr Tim Campbell	
16	19/07/2011	Mr Bruce Donaldson	
17	20/07/2011	Mr Ray Isles Secretary	Classic Motorcycle Club of Victoria Inc.
18	20/07/2011	Ms Heather Ellis	
19	21/07/2011	Mr Craig Burke President	BSA Motorcycle Owners Association Inc.
20	21/07/2011	Mr Derek Elias Senior Instructor	Motorcycle Motion
21	21/07/2011	Mr Tudo Sava	
22	21/07/2011	Mr Cameron Rowley	
23	21/07/2011	Mr Epaminondas Mastoris	
24	21/07/2011	Mr Matthew Inglis	
25	22/07/2011	Mr Mark Nicholas Co-Founder	Hangmore Motorcycle Club Inc.
26	22/07/2011	Mr Rex Deighton-Smith	

No.	Date Received	Name	Organisation
27	22/07/2011	Mr Thomas Wentworth	
28	22/07/2011	Mr Jason Schutt	
29	22/07/2011	Mr Jeff Herdman Managing Director	RPS Industries
30	22/07/2011	Mr Pete Dowe	
31	25/07/2011	Ms Sarah Kimpton	
32	25/07/2011	Ms Victoria Tsiolis	
33	25/07/2011	Mr David McAuliffe	
34	25/07/2011	Mr John Lambert Director	John Lambert & Associates
35	25/07/2011	Mr Carey Murphy Director	Reevu Australasia
36	27/07/2011	Mr Serge Coffa President	Australian Motorcycle Trail Riders Association
37	27/07/2011	Mr Lloyd Davis President	Hartwell Motorcycle Club
38	28/07/2011	Mr David Pendleton Product Development & Brand Marketing Manager	Driver Education Centre of Australia (DECA)
39	29/07/2011	Ms Alene McGowan General Manager	Armstrong's Driver Education
40	29/07/2011	Mr Ray Newland	Australian Professional Driver Consultants
41	2/08/2011	Mr Ian Faraher Chair, Victorian State Committee	Royal Australasian College of Surgeons
42	3/08/2011	Mr Damien Codognotto Mr Michael Czajka	Independent Riders Group
43	10/08/2011	Mr Klaus J E Clemens	
44	31/08/2011	Mr Rodd Glenn-Smith Good Sports Victorian and South Australian State Manager	Australian Drug Foundation
45	31/08/2011	Mr Rob Smith Manager, Australian Riders' Division	Motorcycling Australia
46	5/09/2011		RoadSafe Metropolitan North Eastern Inc.
47	6/08/2011	Professor Narelle Haworth Acting Director and Theme Leader, Vulnerable Road Users	Centre for Accident Research & Road Safety Queensland – Queensland University of Technology
48	7/08/2011	Mr Iain Cameron Executive Director	Office of Road Safety Government of Western Australia

No.	Date Received	Name	Organisation
49	8/09/2011		Maurice Blackburn
50	8/09/2011	Mr Robert Toscano Director	Honda Australia Motorcycle and Power Equipment
51	8/09/2011	Ms Hollie Black General Manager	Select Scootas
52	8/09/2011	Commander Trevor Carter Office of Deputy Commissioner, State Policing Office	Victoria Police
53	9/09/2011	Ms Mary Townsend Roads/Project Engineer	Rural City of Wangaratta / RoadSafe Alliance Group
54	9/09/2011	Professor Russell Gruen Director, National Trauma Research Institute	Alfred Health
55	9/09/2011	Mr Peter Baulch Chairman	Victorian Motorcycle Council
56	12/09/2011	Mr Michael McKenna Motorcycle Industry Division Manager	Victorian Automobile Chamber of Commerce (VACC)
57	9/09/2011	Mr Maurice Cammack Manager Road Safety	Main Roads WA
58	9/09/2011	Professor Marcus Wigan Principal	Oxford Systematics
59	12/09/2011	Mr Rod Bennett Chairperson	RoadSafe Barwon
60	13/09/2011		Ulysses Club
61	13/09/2011	Mr Bruce Gidley Acting Chief Executive	VicRoads <i>(original and supplementary)</i>
62	15/09/2011	Mr Patrick Williams General Manager, Mail Cost and Service	Australia Post
63	16/09/2011	Ms Janet Dore Chief Executive Officer	Transport Accident Commission (TAC)
64	19/09/2011	Mr Nino Occhietti Road Safety Officer, Community Safety	City of Casey
65	20/09/2011	Mr Colin Jordan Managing Director & CEO	Royal Automobile Club of Victoria (RACV) Ltd
66	22/09/2011	Mr Greg Tweedley Chief Executive, Victorian WorkCover Authority	WorkSafe Victoria

No.	Date Received	Name	Organisation
67	6/10/2011	Prof Raphael Grzebieta Chair of Road Safety	Transport and Road Safety Research (TARS)
68	12/10/2011	Mr Greg Wilson Secretary	Department of Sustainability and Environment
69	14/10/2011	Hon David Davis MP Minister for Health	Department of Health
70	18/10/2011	Confidential	
71	17/10/2011	Mr Bill and Mrs Mary Tassigianakis	
72	31/10/2011	Mr Stephen Bardsley Public Officer, Club Secretary & VCPS Permit Officer	Lambretta Club Australia / Melbourne Crusaders Scooter Club
73	22/11/2011	Mr Frank de Rijcke	
74	03/12/2011	Mr Frank McDermott	
75	29/02/2012	Ms Jenny Tame	
76	02/04/2012	Confidential	

Appendix B: Public hearing witnesses

Location	Date	Name	Organisation
Melbourne	17/10/2011	Mr David Shelton Executive Director, Road Safety and Network Access	VicRoads
		Mr James Holgate Manager, Road User Safety	VicRoads
		Mr Des Pearson Auditor-General	Victorian Auditor-General's Office
		Mr Ray Winn Director, Performance Audit	Victorian Auditor-General's Office
		Deputy Commissioner Kieran Walshe Regional and Road Policing	Victoria Police
		Superintendent Robert Stork Road Policing Strategy Division	Victoria Police
		A/g Senior Sergeant Jamie Chester Road Policing Strategy Division	Victoria Police
		Ms Frances Diver Executive Director, Hospital and Health Service Performance Division	Department of Health
		Mr Matthew Zammit	
		Judge Jennifer Coate State Coroner	State Coroner's Office
		Ms Samantha Hauge Manager, Coroners Prevention Unit	State Coroner's Office
		Mr David Hogan Team Leader, Coroners Prevention Unit	State Coroner's Office
		Ms Samantha Cockfield Manager, Road Safety	Transport Accident Commission
		Mr Alan Woodroffe, Senior Manager, Policy Legislation and Review	Transport Accident Commission
		Mr Richard Wadsworth Statewide Recreation and Tourism Coordinator	Department of Sustainability and Environment
		Mr Roger Pitt Trail Bike Project Manager	Department of Sustainability and Environment

Location	Date	Name	Organisation
Melbourne	18/10/2011	Ms Amanda McKenzie Chief Executive Officer	Driver Education Centre of Australia
		Ms Alene McGowan General Manager	Armstrong's Driver Education
		Mr Adam Judge Motorcycle Trainer	Armstrong's Driver Education
		Mr Robert Toscano Director	Honda Australia Motorcycles and Power Equipment
		Mr Tim Hinton General Manager, Motorcycle Division	Honda Australia Motorcycles and Power Equipment
		Mr Mark Collins National Rider Training Manager Honda Australia Rider Training	Honda Australia Motorcycles and Power Equipment
		Professor Marcus Wigan Principal	Oxford Systematics Australia
		Ms Hollie Black General Manager	Select Scootas
		Mr Paul Varnsverry Technical Director	PVA Technical File Services Ltd
		Professor Russel Gruen Director, National Trauma Research Institute	Alfred Health
		Ms Sarah Kimpton	
		Ms Victoria Tsilios	
		Mr Damian Codognotto	Independent Riders' Group
		Mr Michael Czajka	Independent Riders' Group
		Mr Georges Gouron	Independent Riders' Group
		Mr David McAuliffe	
		Mr John Karmouche	
		Mr Greg Blore	
		Mr Phil Lemm Executive Director	Accident Scene Management Australia
		Mr Nonda Mastoris	
		Mr Laurie Park	
		Mr Bill Tassigiannakis	
		Mr Shaun Leonard Chairman	Australian Motorcycle Council

Location	Date	Name	Organisation
Melbourne	19/10/2011	Mr Kris Growcott	
		Mr John Buskes Chairman, Motorcycle Industry Division	Victorian Automobile Chamber of Commerce (VACC)
		Ms Kat Gordon Delegate to VicRoads Motorcycle Advisory Group	Victorian Automobile Chamber of Commerce (VACC)
		Mr Stuart Strickland Industry Consultant	Victorian Automobile Chamber of Commerce (VACC)
		Mr Michael McKenna Manager, Motorcycle Industry Division	Victorian Automobile Chamber of Commerce (VACC)
		Mr John Voyage Principal	Maurice Blackburn
		Mr Adam Kostick Community Engagement	Maurice Blackburn
		Mr Scott Harris	
		Mr Vic Harris	
		Mrs Deborah Harris	
		Mr Michael Case A/g General Manager, Public Policy	Royal Automobile Club of Victoria (RACV)
		Ms Melinda Congiu Manager, Road User Behaviour	Royal Automobile Club of Victoria (RACV)
		Mr Rob Salvatore Research Analyst	Victorian Motorcycle Council
		Ms Bronwyn Sorensen Secretary	Victorian Motorcycle Council
		Mr Rex Deighton-Smith	
		Ms Heather Ellis	
		Mr Tony Ellis	Ulysses Club

Location	Date	Name	Organisation
Geelong	15/11/2011	Mr Rob Smith Manager, Australian Riders' Division	Motorcycling Australia
		Mr Ray Newland	
		Mr David MacKenzie Senior Instructor	Motorcycle Motion
		A/g Senior Sergeant Shane Howard	Victoria Police
		A/g Sergeant John Lee	Victoria Police
		Mr Rod Bennett Chairperson	RoadSafe Barwon
		Mr John Lambert Director	John Lambert & Associates
		Mr Peter Bell	
		Mr Stuart Carter	
		Mr William Moodie	
Ballarat	16/11/2011	Sergeant Ross Humphrey	Victoria Police
		Mr David Hyatt	
		Ms Elizabeth Krieg	
		Mr Eric Foster	Ulysses Club
		Mr Glen Arkell	Ulysses Club
Wangaratta	29/11/2011	Mr Doug Sunderland	
		Ms Mary Townsend Engineer	RoadSafe North East
		Mr Robert Allen Public Officer	RoadSafe North East
		Sergeant Darren Wittingslow	RoadSafe North East
		Mr Greg Talbot	RoadSafe North East
		Mr Greg McCoy	
		Mrs Jenny McCoy	
		Mr Kieran Klemm	
		Senior Sergeant Bill Gore	Victoria Police
		Sergeant Michael Connors	Victoria Police
		Senior Constable Jo Long	Victoria Police
		Mr Phil Lemkin Executive Director	Accident Scene Management Australia
		Mr N Weeks	

Location	Date	Name	Organisation
Wodonga	30/11/2011	Sergeant Cameron Roberts	Victoria Police
		Dr Mike Taylor Emergency Department Director	Albury-Wodonga Health
		Mr Rex Beard President	Ulysses Club
		Mr Des Malone Secretary	Ulysses Club
		Mr Colin Maxwell	Christian Motorcyclists Association of Australia (Vic)
		Mr David Beck	
		Mr Damian Codognotto	Independent Riders' Group
		Mr Ross Ludlow	Wodonga TAFE
		Mr Alex Stojanovic	Wodonga TAFE
		Mr Paul Kennelly	Wodonga TAFE
		Mr Thomas Devereaux	Wodonga TAFE
		Mr Steven Dumesny	Wodonga TAFE
		Mr Matthew Chadban Group Manager, Upper Hume	Ambulance Victoria
		Mr Greg Cook Regional Manager, Hume Region	Ambulance Victoria
Traralgon	13/12/2011	Senior Sergeant David Watson	Victoria Police
		Mr Wayne Moon Senior Program Development Engineer	VicRoads
		Mr Pas Moncella Team Leader, Programs and Project Development	VicRoads
		Ms Alana McCallum Community Road Safety Advisor	VicRoads
		Mr Pete Dowe	
		Ms Jennifer Tame	
Bairnsdale	14/12/2011	Acting Sergeant Ralph Turner	Victoria Police
		Sergeant Rod Lay	Victoria Police
		Inspector Ian Gillespie	Victoria Police
		A/g Senior Sergeant Melanie Hamshire	Victoria Police
		Mr Daryl Townsend Chairman	Eastern Region Motorcycle Working Party
		Mr Ian Sanders Owner	Ride-Tek Motorcycle Training Academy

Location	Date	Name	Organisation
Melbourne	6/3/2012	Mr Rob Smith Manager, Australian Riders' Division	Motorcycling Australia
		Associate Professor Michael Leung Director, Plastic, Hand and Maxillofacial Surgery Unit	Alfred Health
		Professor Mark Stevenson Director	Monash University Accident Research Centre
		Ms Christine Mulvihill Research Fellow	Monash University Accident Research Centre
		Dr Trevor Allen Research Fellow	Monash University Accident Research Centre
		Mr David Shelton Executive Director, Road Safety and Network Access	VicRoads
		Mr James Holgate Manager, Road User Safety	VicRoads
		Mr Peter Schofield Manager, Road Safety Strategy and Community Programs	VicRoads
		Associate Professor Sue Liew Director, Orthopaedic Surgery	Alfred Health
		Ms Samantha Cockfield A/g Senior Manager, Road Safety and Marketing	Transport Accident Commission
		Mr Alan Woodroffe, Senior Manager, Policy Legislation and Review	Transport Accident Commission
		Mr Michael Nieuwesteeg Research Manager, Road Safety	Transport Accident Commission
		Commander Trevor Carter Office of Deputy Commissioner, Regional and Road Policing	Victoria Police
		Superintendent Neville Taylor Road Policing Operations and Investigations Division	Victoria Police
		Superintendent Neil Patterson Intelligence and Covert Support Division	Victoria Police
		Inspector Brett Harman State Policing Office	Victoria Police
		Senior Sergeant Jamie Chester Road Policing Strategy Division	Victoria Police

Location	Date	Name	Organisation
Melbourne (continued)	6/3/2012	Ms Jennifer Rebeiro A/g Group Manager, Operations System Support Division	Victoria Police
		Ms Mary Mulhearn Enhancement Lead, Operations System Support Division	Victoria Police
		Mr Tony Walker General Manager, Regional Services	Ambulance Victoria
		Dr Karen Smith Manager, Research and Evaluation	Ambulance Victoria
Melbourne	31/8/2012	Mr Peter Baulch Chairman	Victorian Motorcycle Council
		Mr Rob Salvatore Research Analyst	Victorian Motorcycle Council
		Mr Rob Smith Manager, Australian Riders' Division	Motorcycling Australia
		Mr John Thompson Senior Manager, Road Safety and Marketing	Transport Accident Commission
		Ms Samantha Cockfield Manager, Road Safety	Transport Accident Commission
		Mr Michael Nieuwesteeg Research Manager, Road Safety	Transport Accident Commission
		Detective A/g Senior Sergeant Peter Bellion	Victoria Police

Appendix C: Meetings – Australia

Location	Date	Name	Organisation
Perth	04/11/2011	Mr Matthew Brown Head of Member Advocacy	RAC WA
		Mr Dave Wright Vice President	Motorcycle Riders' Association WA
		Mr Iain Cameron Executive Director	Office of Road Safety
		The Hon Rob Johnson MLA	Minister for Police and Road Safety
		Ms Aline Delhaye Secretary-General	Federation of European Motorcyclists' Associations
	05/11/2011	Ms Liz de Rome Principal Consultant & Managing Director	LdeR Consulting
		Professor Raphael Grzebieta Chair Road Safety Transport and Road Safety Research	University of New South Wales
Melbourne	16/02/2012	Superintendent Bob Stork	Victoria Police
		Inspector Steve Smith	Victoria Police
		Inspector David Griffin	Victoria Police
		Senior Sergeant Jamie Chester	Victoria Police
		A/Senior Sergeant Peter Bellion	Victoria Police
		A/Senior Sergeant Justin Rhoderick	Victoria Police
		Sergeant Steve Lomas	Victoria Police

Appendix D: Meetings – International

Location	Date	Name	Organisation
United Kingdom	25/06/2012	Mr Pete Doughty Manager, Safety Product Centre	SATRA Technology Centre
		Mr Paul Varnsverry Technical Director	PVA Technical File Services Ltd
		Mr Tom Duckham Delivery Planning Manager Motorised Travel	Transport for London
		Mr Peter Sadler Researcher	Transport for London
	26/06/2012	Dr Alex Stedmon Centre for Motorcycle Ergonomics & Rider Human Factors	Faculty of Engineering University of Nottingham
		Mr Simon Best CEO	Institute of Advanced Motorists
		Mr Tony Sharp Immediate Past President	Institute of Highway Engineers
		Mr Malcolm Palmer Research and Trials Manager	Transport Research Laboratory
		Mr Shaun Helman Principal Psychologist	Transport Research Laboratory
	27/06/2012	Mr Steve Kenward A/g Chief Executive	Motorcycle Industry Association of Great Britain
		Ms Karen Cole Director, Safety and Training	Motorcycle Industry Association of Great Britain
		Mr Craig Carey-Clinch Managing Director	Rowan Public Affairs
		Mr Jeff Stone Media and PR Manager	British Motorcyclists Federation
		Mr Paddy Tyson Campaigns Manager	Motorcycle Action Group

Location	Date	Name	Organisation
Sweden	28/06/2012	Mr Jesper Christensen Secretary – General	Swedish Motorcycle Association
		Mr Kent Gustafson Deputy Director General	National Road and Transport Research Institute
		Dr Nils Petter Gregerson Senior Research Director	National Road and Transport Research Institute
		Dr Jorgen Larsson Traffic Safety Analyst	National Road and Transport Research Institute
		Dr Urban Bjorketun	National Road and Transport Research Institute
		Mr Tommy Petterson Laboratory Manager Crash Safety	National Road and Transport Research Institute
		Dr Anna Anund	National Road and Transport Research Institute
	29/06/2012	Mr Claes Tingvall Director, Traffic Safety	Swedish Transport Administration
		Mr Roger Johannson National Coordinator Safe Infrastructure Market and Planning	Swedish Transport Administration
		Mr Matteo Rizzi Road Safety Research	Folksam
The Netherlands	02/07/2012	Mr Herman Moning Senior Adviser	Department of Road Safety Rijkswaterstaat
		Mr Bert Kengen Senior Adviser	Department of Road Safety Rijkswaterstaat
		Dr Robbert Verweij Senior Policy Adviser	Ministry of Infrastructure and Environment
		Mr Aad Verkade Motorised Two Wheeler Manager	BOVAG
		Mr Wim Taal	Motorcyclists Action Group
		Mr Arjan Everink Traffic and Training	KNMV
		Mrs Hillie Talens Project Manager, Traffic and Transport	CROW

Location	Date	Name	Organisation
The Netherlands	03/07/2012	Professor Fred Wegman Managing Director	SWOV Institute for Road Safety Research
		Dr Wendy Weijermars Researcher	SWOV Institute for Road Safety Research
		Dr Saskia de Craen Researcher	SWOV Institute for Road Safety Research
		Dr Marjan Hagenzieker Scientific Adviser / Senior Researcher	SWOV Institute for Road Safety Research
		Mr Han Tonnon Head Information and Communication	SWOV Institute for Road Safety Research
Strasbourg	04/07/2012	Mr Malcolm Harbour Chairman	Internal Market and Consumer Protection Committee, European Parliament
		Mr Brian Simpson Chairman	Transport and Tourism Committee, European Parliament
		Mr Bernd Lange Member	Group of the Progressive Alliance of Socialists and Democrats in the European Parliament
Belgium	05/07/2012	Ms Aline Delhaye Secretary-General	Federation of European Motorcyclists' Associations
		Mr Kris Redant Europe's Road Research Centres	National Road Research Centres in Partnership
		Ms Cristina Marolda Policy Officer, Research and Innovative Transport Systems	Directorate-General for Mobility and Transport, European Commission
		Mr Bertrand Nelva-Pasqual Manager, Technical Service and Development Studies	Mutuelle des Motards
		Mr Szabolcs Schmidt Head ,Road Safety Unit	Directorate-General for Mobility and Transport, European Commission
		Mr Casto Lopez-Benitez Policy Officer, Road Safety Unit	Directorate-General for Mobility and Transport, European Commission
		Mr Johan Renders Legislative Officer, Automotive Industry Unit	Directorate-General for Enterprise and Industry, European Commission
		Mr Guido Gielen Policy Officer, Automotive Industry Unit	Directorate-General for Enterprise and Industry, European Commission

Location	Date	Name	Organisation
Belgium	06/07/2012	Mr Jacques Compagne Secretary General	Motorcycle Industry in Europe
		Ms Vaneta Vassileva Safety Coordinator	Motorcycle Industry in Europe
		Ms Ellen Townsend Policy Director	European Transport Safety Council
		Mr Mircea Steriu Communications Officer	European Transport Safety Council
		Mr Marc Vansnick Director, Road Safety Management	Federal Public Service Mobility and Transport
		Mr André Tourneur Attaché, Road Safety Management	Federal Public Service Mobility and Transport
		Mr Denis Hendrichs Head, Road Regulation Service	Federal Public Service Mobility and Transport
		Mr Quentin de Montblanc Director, Communication and Awareness	Belgian Institute for Road Safety
		Ms Nina Nuyttens Researcher	Belgian Institute for Road Safety
France	09/07/2012	Mr Stephane Espie Director of Research	Institute of Science and Technology of Transport, Planning and Networks
		Mr Frederic Jeorge Director General	Federation of French Motorcyclists
		Mr Eric Thiollier	Federation of French Motorcyclists
		Mr Vuthy Phan Head of Epidemiology and Accident Sciences Department	European Centre of Studies on Safety and Risk
	10/07/2012	Mr Stephen Perkins Head of Research	International Transport Forum
		Ms Veronique Feypell de La Beaumelle Analyst	International Transport Forum
		Mr Frederic Pechenard Inter-Ministerial Delegate for Road Safety	
		Mr Joel Valmain Advisor	Inter-Ministerial Delegate for Road Safety
		Mr Pascal Dunikowski “Monsieur Moto”	Inter-Ministerial Delegate for Road Safety

Appendix E: Motorcycle Safety Levy funded projects

Education or research and development projects funded by the Motorcycle Safety Levy

Code	Approved Funding '000s	Project Description	Strategic Domain	Description
235LF210	39	Associative learning methods – Stage 1	Education	<p>Preliminary work: In 2001 and 2002, VicRoads commissioned research to investigate issues associated with crashes at intersections between cars and motorcycles and to recommend potential research directions that might help in the development of countermeasures. The initial report was a theoretical review of the psychological processes that might contribute to drivers failing to avoid this type of crash and concluded that models of associative learning might be useful in addressing this crash problem. The second project in 2002 involved a small scale preliminary trial that was found to support this conclusion.</p> <p>Stage 1: In 2005, a larger pilot investigation was undertaken ('Stage 1'). The 2005 trial used a PC-based decision-making task with a small sample comprising inexperienced drivers, novice and experienced drivers and confirmed the results of the preliminary trial. Study findings showed that using an avoidance paradigm to associate turning in front of motorcycles with negative consequences was effective in changing the behaviour of car drivers towards motorcyclists during the computer task.</p>
AK755	80	Associative learning methods – Stage 2	Education	<p>Stage 2. In 2007, a further study ('Stage 2') extended the previous work by investigating whether the learning effect could be transferred from a static environment (photos) to a more dynamic and realistic environment (videos). The findings replicated previous findings in that the associative learning intervention increased the likelihood of drivers' responding that they would wait for approaching motorcycles at intersections. However, this effect was only present when the participants were presented with photographs. When the intervention used videos there was no evidence of increased wait responses to motorcycles. Overall, the results found that avoidance learning does not appear to occur in dynamic contexts where the task is more representative of real-world driving. Furthermore, the study was unable to demonstrate any transfer of avoidance learning from the static learning contexts to dynamic contexts. The research proposed alternative methodologies that may be more successful in training drivers to give way to motorcycles at intersections and the associative learning approach has not been pursued further.</p> <p>The Stage 2 report, Evaluation of associative learning methods to train drivers to give way to motorcyclists is available..</p>

Code	Approved Funding '000s	Project Description	Strategic Domain	Description
AQ565	770	Development of a new Motorcycle Graduated Licensing System	Education	VicRoads is reviewing the current system for licensing motorcyclists. The high crash risk of inexperienced riders has highlighted the need to update licensing for motorcyclists to reflect the road safety needs of today's riders. A discussion paper titled 'Graduated licensing for motorcyclists' was released for public comment. The discussion paper contains a number of questions relating to options that the Victorian Government may consider to improve the safety of novice motorcyclists. More information on the Motorcycle GLS can be found at http://www.vicroads.vic.gov.au/motorcycleglgs
AQ565	770	Development of a new Motorcycle Graduated Licensing System	Education	VicRoads is reviewing the current system for licensing motorcyclists. The high crash risk of inexperienced riders has highlighted the need to update licensing for motorcyclists to reflect the road safety needs of today's riders. A discussion paper titled 'Graduated licensing for motorcyclists' was released for public comment. The discussion paper contains a number of questions relating to options that the Victorian Government may consider to improve the safety of novice motorcyclists. More information on the Motorcycle GLS can be found at http://www.vicroads.vic.gov.au/motorcycleglgs
AL520	200	Development of a pilot training course for returning riders	Education	This project used an on-road assessment, conducted by motorcycle instructors, to assess and compare the skills and behaviours of newly licensed, recently returned and on-going riders. The study found significant differences between the newly licensed riders and the other two groups, but no relevant differences between returning and on-going riders. On the basis of the preliminary report, which suggested that a specific course for returning riders was unwarranted, the project is being re-sscoped to consider the needs of older riders.
AL684	180	Development of a rider program incorporating assisted rides	Education	On-road instructed riding has been recommended as a best practice training procedure. This has been used in the BikeSafe program in the UK. There are also smaller programs conducted in Victoria. This project investigated how these programs should be undertaken and determined the most appropriate course content for a major program to be conducted in Victoria.
AO335	2350	Develop, trial and evaluate an on-road assisted ride program	Education	The aim of this project is to develop a program curriculum, trial and evaluate an on-road program for newly licensed riders that results in safer on-road riding by participants, reduced engagement in risk taking behaviours, and reduced crash involvement for participants. The program involves a significant on-road component where riders are given individual feedback on their riding by coaches. The coaches provide formal/informal mentoring and feedback to riders about how they could modify/improve their riding skills to enhance their safety.

Code	Approved Funding '000s	Project Description	Strategic Domain	Description
AP892	189	Assisted Rides Insurance	Education	Legal and liability issues associated with this project required additional insurance coverage before any on-road riding could be conducted.
235LF211	130	Great Ocean Ride DVD	Education	The Great Ocean Road is one of the highest risk roads for motorcyclists in Australia. To increase riders' awareness of the risks of the road, a video was developed and distributed on DVD and via YouTube. The video follows the journey of two riders, highlighting many of the issues riders need to be aware of on the Great Ocean Road.
235LF204	500	Hazard perception and responding by motorcyclists	Education	<p>The overall aim of this multi-stage project was to identify the fundamental skills necessary for hazard perception and responding by motorcycle riders. Monash University Accident Research Centre was commissioned by VicRoads to conduct a multi-stage program of research to investigate hazard perception training for motorcyclists.</p> <p>Stage 1 presented evidence that the hazard perception and responding abilities of inexperienced riders are deficient compared with those of experienced riders. However, the evidence was insufficient to identify whether the fundamental deficiencies exist in hazard perception, in responding, or in both components, and could not be used to identify the nature of these deficiencies. The Stage 1 reports concluded that hazard perception training products, or a hazard perception test, for motorcyclists should not be developed until a greater body of empirical research is conducted to investigate the determinants of hazard perception, how hazard perception skills vary as a function of different classes of hazards, and the extent to which hazard perception can be trained.</p> <p>Stage 2 aimed to determine the critical hazards that motorcyclists need to detect and respond to, and the differences between experienced and inexperienced motorcycle riders in their ability to perceive and respond to hazards. Across four experiments, it was found that both riding and driving experience affects hazard perception abilities in motorcycle riders: Experienced riders are faster to recognise that an object is a hazard, and have different visual scanning patterns, fewer crashes, and more appropriate approach speeds.</p> <p>Further work was then conducted to develop a business case to assess the feasibility of introducing motorcycle specific hazard perception training and testing into the licensing system. The business case was prepared after analysing various options to develop and implement training and testing measures and used to inform the development of a revised Motorcycle Graduated Licensing System. A range of reports resulting from this project have been publicly released.</p>

Code	Approved Funding '000s	Project Description	Strategic Domain	Description
	129	Protective clothing research, cost/benefit & star system	Education	Protective clothing has the potential to prevent many minor injuries and significantly reduce the severity of injury in more serious crashes. However, little advice is available to riders as to which gear offers the best protection for their purchasing dollar. A review of literature resulted in the development of two options for a motorcycle protective clothing 'star rating' system. Market testing has shown that 96% of riders would either 'definitely' or 'possibly' make use of a 'star rating' system for motorcycle protective clothing.
	170	Communications strategy for promoting protective clothing	Education	This project, which included a review of literature and focus group-based market research, examined options for communicating the benefits of protective clothing to riders. A report was prepared recommending strategy options scaled according to different campaign costs. Each option was costed, delivery mechanisms, key messages to be communicated, audiences to be targeted, and the expected outcomes. Recommended options were then proposed for implementation.
AN986	950	Public education campaign	Education	This project funded the purchase of broadcast rights and the conversion of the British "Look, Look and Look Again" television advertisement for use in a Victorian driver awareness campaign.
AJ004	410	Redevelopment of the motorcycle knowledge test	Education	The Motorcycle Knowledge Test has been redeveloped to reflect the updated content of the new Victorian Rider Handbook. The project developed new test items and conducted independent trialling and validation to ensure that the test is fair and assesses all the important information for riding safely.
235LF203	400	Redevelopment of the Victorian Rider handbook	Education	The redeveloped Victorian Rider Handbook was released to the public in October 2004. All riders must study the Victorian Rider Handbook to pass the learner permit test. The main benefits of the redeveloped handbook include improved content and coverage of issues, inclusion of up to date information, better prepared applicants with more understanding of motorcycle road craft and rider safety issues. The Handbook is periodically updated to reflect Road Rule and other changes.
	446	Development of a new Learner Permit curriculum	Education	This project will develop a new best-practice curriculum for learner permit test applicants.

Code	Approved Funding '000s	Project Description	Strategic Domain	Description
AO675	1872	Community policing and education program	Enforcement	<p>A two-year trial of a multi-action approach combining education and enforcement targeting both riders and drivers to improve the safety of all motorcyclists, this project provided additional police involvement in motorcycle safety over and above usual enforcement levels. Five major state-wide and 50 regional operations were conducted each year. As well as using awareness raising methods such as media articles, displays and presentations, information highlighting risks and advice was provided to both riders and drivers intercepted by police during operations. This included educating drivers to be aware of their driving behaviours that put motorcyclists at risk. While education was the main focus of this program, penalties were administered when required, with deterrence of riders and drivers who exhibited high risk behaviours jeopardising motorcycle safety a key objective.</p> <p>The "Rider Survivor" training component of this program enabled police officers to identify intercepted motorcyclists who were receptive to, and would benefit from, attending training. Where the officer assessed that there would be a benefit, he or she offered the motorcyclist a voucher entitling the recipient to participate in a subsidised Rider Survivor course.</p>
AP100	275	Evaluation of Community policing and education program	Enforcement	This research evaluated the Community Policing and Education project, including a process evaluation, analysis of crash data, on-road speed surveys, an online survey of motorcyclists and roadside traffic observations.
AJ003	65	Communications strategy for road engineers to consider motorcycling needs	Engineering, Technology and ITS	This project aimed to better communicate the needs of motorcyclists to those responsible for building, designing and maintaining roads. Market research with the target audience identified key messages of importance, the best ways to get the messages across and any barriers to incorporating a more motorcycle friendly approach. The study informed the development of "Making Roads Motorcycle Friendly".
2363EFAT	69	Development of engineering initiatives (2002-2003)	Engineering, Technology and ITS	Information on completed engineering projects can be found at http://www.vicroads.vic.gov.au/Home/SafetyAndRules/SafeRiders/Motorcyclists/MotorcycleSafetyLevy/
AP101	75	Research into the benefits of specific blackspot treatment types for motorcyclists	Engineering, Technology and ITS	The purpose of this project was to better understand the effectiveness of specific road improvement treatments for motorcycle safety. Some time will be required to build a sufficiently large data set for analysis. The introduction of incident detection software and equipment, capable of recording vehicle conflicts and crashes, may allow the dataset to be developed more quickly. The project has been closed until sufficient data is available to permit a robust evaluation.

Code	Approved Funding '000s	Project Description	Strategic Domain	Description
AI995	200	Evaluation of Motorcycle Safety Levy Motorcycle Blackspot Program	Engineering, Technology and ITS	<p>This project evaluated the Motorcycle Blackspot Program which involved the treatment of sites that had a crash history indicating they were especially dangerous for motorcyclists. Data from 87 sites were used in the present evaluation, which measured the effectiveness of the program based on the extent to which treatments reduced the number of casualty crashes involving a motorcycle and the number of serious casualty crashes involving a motorcycle.</p> <p>Analysis results showed that implementation of the Motorcycle Blackspot Program was associated with a statistically significant ($p<0.05$) reduction in casualty crashes involving a motorcycle of 24%. The average expenditure required to prevent one casualty crash involving a motorcycle over the life of the program was estimated to be less than \$19,000, which compares favourably to analogous cost-effectiveness estimates derived for previous blackspot programs that didn't focus on motorcycle safety alone.</p>
AI994	100	Evaluation of prior blackspot programs for effects on motorcycle safety	Engineering, Technology and ITS	The two programs - the \$85M TAC-funded blackspot program (559 sites over the period 1992-1996) and the Accident Blackspot component of the \$240M TAC-funded State-wide Blackspot program,(841 sites from 2000 to 2004) were evaluated to determine the effect of different types of treatments on the frequency of casualty motorcycle crashes at treated sites. For the \$240M blackspot program, intersection treatments resulted in a 38% reduction in casualty motorcycle crashes, while the estimated reduction for off-path treatments was 30%. For the \$85M blackspot program, route treatments were estimated to reduce casualty motorcycle crashes at treated sites by 35%, compared with 27% for intersection treatments.
AN486	596	Extension of the vehicle activated sign trial for motorcyclists	Engineering, Technology and ITS	Vehicle activated signs (VAS) are a road side device typically comprising of a radar device and a sign with a flashing message. The signs illuminates when a vehicle approaches a hazardous locations at a speed that is considered to be unsafe. Post-installation analysis indicates that the VAS reduced vehicle speeds at all sites and motorcycle crashes at most sites.
AM265	120	Investigation of technologies at intersections	Engineering, Technology and ITS	A report on an investigation into crashes at intersections involving motorcycles and motor scooters. The report uses road crash data and police crash reports to identify crashes involving motorcyclists at intersections between 1 January 2003 and 31 December 2007. The report investigates potential infrastructure and technology solutions to improve safety for motorcyclists at intersections, with consideration to the crash patterns identified in the crash data and police reports.

Code	Approved Funding '000s	Project Description	Strategic Domain	Description
AJ227	59	Motorcycle barrier protection trials - management	Engineering, Technology and ITS	Safety barriers perform a vital road safety function and save many lives. However, they are not as forgiving for riders as they are for car drivers. Several types of devices that make barriers more forgiving for motorcyclists have been identified through VicRoads funded research. Three different types of products have been identified for an on-road trial. Protective attachments to barriers have been installed at high risk motorcycle locations. The sites are monitored to evaluate their practical effectiveness. Details of the trial locations are available at http://www.vicroads.vic.gov.au/Home/SafetyAndRules/SafeRiders/Motorcyclists/MotorcycleSafetyLevy/
AM079, AM081, AM087	32	Motorcycle friendly roundabout trial	Engineering, Technology and ITS	Trial motorcycle-friendly signage infrastructure on 3 major highway roundabouts.
AN438	20	Motorcycle friendly roundabout trial extension	Engineering, Technology and ITS	Trial motorcycle-friendly signage infrastructure on a major arterial road.
AN200	82	Publication and delivery of "Making Roads Motorcycle Friendly" Seminars	Engineering, Technology and ITS	The delivery of a series of state-wide workshops targeting road designers, builders and maintenance contractors has been undertaken.
AL681	55	Research into road space management for motorcyclists	Engineering, Technology and ITS	Investigation of ways to more effectively use road space for motorcyclists providing greater mobility and improved safety, researching the road safety and transport impacts of road space management opportunities such as lane filtering, advanced stop lines and use of bus and transit lanes to identify possible initiatives for trialling. This included monitoring developments internationally.
AJ002	170	Research on perceptual countermeasures	Engineering, Technology and ITS	Perceptual countermeasures are modifications to the road environment designed to change the way the road user will see and respond to the road ahead. These are usually low cost treatments such as line markings that change the perception of how fast a driver/rider is travelling. This project investigated and trialled on-road treatments to assess the effects on the safety of motorcyclists.

Code	Approved Funding '000s	Project Description	Strategic Domain	Description
AP733	190	Further Trial of Perceptual Countermeasures - Where You Look Is Where You Go (WYLIWYG)	Engineering, Technology and ITS	This project is a further development of the perceptual countermeasures project commenced in 2008. WYLIWYG (Where You Look Is Where You Go) is an innovative approach to curve delineation developed in Buckinghamshire, UK. This project trialled WYLIWYG on a length of road which is both popular with motorcyclists and experiences significant numbers of motorcycle crashes in Victoria, Australia. The study found that, in the short term, riders' curve negotiation behaviour changed in a positive fashion at some sites and negatively at others. The effects are small and not consistent at all treatment sites. Further work is required to identify whether the effect persists over time and which curve geometries benefit most from treatment.
AM267	85	Feasibility study into fully controlled right turn phases at intersections	Engineering, Technology and ITS	This project examined the feasibility of using fully controlled right turn signals to improve motorcyclists' safety at intersections. Stage 1 produced a report detailing the findings from a literature review, analysis of crash data, traffic volume data and traffic signal capacity and delays. The Stage 2 report detailed site inspections and consideration of site factors at locations identified in Stage 1, and the outcomes of discussions with VicRoads Regions and Local Government.
AI997	85	Review of engineering maintenance practices	Engineering, Technology and ITS	VicRoads provides guidelines for regional engineers in relation to road maintenance. This project examined ways of improving road maintenance practices for the safety of motorcyclists and informed the development of Making Roads Motorcycle Friendly
AK011	200	Enhanced crash investigation	Enhanced information for decision making	This project involved an investigation of approximately 30 motorcycle casualty crashes to provide in-depth information on vehicle, environment and road user factors contributing to serious injuries from run-off-road and side impact crashes.
AJ226	58	Extent of injury among off-road riders	Enhanced information for decision making	Very little information is available on the extent and location of off-road riding. Off-road riders are thought to be involved in serious crashes in transit between their home and the off-road location, on local roads outside built-up areas, forest roads and on trails within parks. This research project aimed to assess the extent of injury crashes among off-road riders to help determine ways of improving off-road rider safety.
AL521	88	Investigation into scooter involvement in crashes	Enhanced information for decision making	This study examined scooter involvement in crashes. Drawing on crash and registration data, it found that the rate of increase in crashes for scooters is greater than for motorcycles in general, and that scooter rider crashes have some distinctly different characteristics. The small sample size available at the time indicated that further work was required.

Code	Approved Funding '000s	Project Description	Strategic Domain	Description
		Further investigation of scooter involvement in crashes	Enhanced information for decision making	<p>This project will identify trends in scooter crashes, compare rates and numbers of scooter crashes, and the types of injuries sustained with the crashes of other vehicle types. The research will inform policy-making in regard to whether safety programs for scooter riders should differ from general motorcycle programs.</p> <p>*approved funding will not be published until a contract is awarded.</p>
AL680	128	Investigation of how to enhance emergency response to motorcyclists involved in crashes	Enhanced information for decision making	This project is investigating the level of preventable injury associated with improvements in early response of motorcycle crashes and ways in which emergency response could be enhanced.
AI998	221	Motorcycle exposure study	Enhanced information for decision making	Exposure to risk is a key concept in road safety. It refers to how likely some road users are to get injured relative to how much time they spend on the road. This can be very important in setting priorities or identifying emerging issues. The motorcycle exposure study provided information on some of the more commonly travelled roads in Victoria, the proportion of motorcycles versus all vehicles on many roads throughout Victoria, and some of the key characteristics of different rider groups (e.g. sport, tourer, cruiser, traditional, scooter). Issues such as trip purpose, time of day, rider experience and licence status have all been included in the research. This research will help to better target specific motorcycle safety initiatives in the areas that are likely to have maximum benefit.
AP892	480	Powered Two Wheeler Case control study	Enhanced information for decision making	This case control study aims to better understand the factors that contribute to motorcycle crashes. The study focuses on two main issues: motorcycle travel speed and the key factors that determine the choice of travel speed; and the role of the physical environment in crash causation. 575 crashed riders and 575 control riders will be recruited over the course of the project.
AP102	127	Research into rider/driver attitudes	Enhanced information for decision making	This research investigated the attitudes of motorcyclists and drivers towards each other, and whether these attitudes demonstrate a sufficient understanding of the crash risk and vulnerability of motorcyclists. The study found that there was little or no relationship between rider attitudes and crashes or near misses; and driver attitudes and crashes or near misses.
AM594	208	Research into the costs-benefits of providing off-road riding facilities in Victoria	Enhanced information for decision making	This report was commissioned to provide a greater understanding of the potential economic, social and environmental benefits and costs associated with the provision of off-road motorcycle facilities in Victoria, and to assess the potential of managed off-road facilities to improve riders' safety by attracting high-risk riders (both on-road and off-road) to a safer environment.

Code	Approved Funding '000s	Project Description	Strategic Domain	Description
AL518	350	Research into the role of speed and speeding in motorcycle crashes	Enhanced information for decision making	This project examined the separate effects of inappropriate and excessive motorcycle speed, and changes in traffic speed on the frequency and severity of motorcycle crashes. Part 1 involved a review of motorcycle crash studies in Australia and overseas as well as detailed Victoria Police crash investigation reports and coroners' reports into deaths involving motorcycle riders. Part 2 investigated the influence of shifts in traffic speed across the road network on motorcyclist trauma based on the collection and analysis of information on travel data and speeds over a period of time, across a range of speed zones and road types. Motorcycle crash patterns were then assessed against changes in measures of traffic speed.
		Investigation of licence testing and 3-wheel motorcycles	Enhanced information for decision making	This project will examine the suitability of 3-wheeled single-track motorcycles as vehicles for motorcycle learner permit and licence testing. *approved funding will not be published until a contract is awarded
	64	Promoting a safe riding culture	Enhanced information for decision making	This project will develop articles to be made available to the editors of motorcycle club newsletters and to the general media.
AL519	35	Motorcycle Centre of Excellence - Stage 1 Options Report	Levy support	Stage 1. This project involved a pre-feasibility study to investigate options for setting up a centre of excellence for motorcycle safety and transport. Its purpose was to assist the Victorian Government to identify options for a centre of excellence and determine which option(s) should be investigated in a feasibility study. On completion of the project, the Minister for Roads and Ports decided not to continue with the feasibility study (Stage 2).
AM472	50	Motorcycling Centre of Excellence - Stage 2 Feasibility Study	Levy support	Stage 2. These funds had been allocated to the feasibility study to streamline completion of the project. As the project did not continue past Stage 1, these funds were instead used to conduct similar small scale actions relating to increasing knowledge and understanding of motorcycle safety and transport issues including some actions included in Victorian's Road Safety and Transport Strategic Action Plan for Powered Two Wheelers 2009-2013.
AJ577	50	MSL Communication 2006/2007	Levy support	Revise & print Motorcycle Safety Levy brochures for inclusion with motorcycle registration renewals, update website content.
AL059	64	MSL Communication 2007/08	Levy support	This project provided information to riders about how the Levy is spent. It includes development of website content, mailed out brochures, correspondence with motorcyclists and displays at motorcycle events.

Appendix E: Motorcycle safety levy funded projects

Code	Approved Funding '000s	Project Description	Strategic Domain	Description
AM991	85	MSL Communication 2008/09	Levy support	Revise & print Motorcycle Safety Levy brochures for inclusion with registration renewals, duplication and distribution of the Great Ocean Ride DVD, duplication and distribution of the Ride On DVD, analysis of the Great Ocean Ride DVD feedback questionnaires, purchase and distribution of the Good Gear Guide, design of the VMAC stand for the Melbourne Motorcycle Expo.
AP734	39	MSL Communication 2009/10	Levy support	Revise & print Motorcycle Safety Levy brochures for inclusion with registration renewals, update website content. Great Ocean Ride, Good Gear Guide and Ride On distributed at regional motorcycling forums.
AR867	55	MSL Communication 2010/11	Levy support	Revise & print registration renewal brochures, update website content, distribution of Good Gear Guide, Ride On DVD, updates to Victorian Rider handbook.
AP103	163	Enhanced Motorcycle Safety Levy Communications	Levy support	This project sought to develop communications strategy advising riders of the safety benefits arising from the Motorcycle Safety Levy. The project is closed pending the outcome of the Parliamentary Road Safety Committee Inquiry into Motorcycle Safety.
23LF207	400	Project support 2002 -2005	Levy support	Costs for development of projects and program management. These costs are distributed to projects once approved by the Minister.
AM285	200	LAMS - Evaluation	Other	The Learner Approved Motorcycle Scheme was commenced in 2008, and provided learner and novice riders with access to a greater variety of motorcycles that are appropriate for their level of experience and more suitable to riders of all sizes.
AM282	200	LAMS - Public Information Campaign	Other	
AM275	25	LAMS - publications	Other	
AM284	70	LAMS - Regional Services	Other	
AM286	700	LAMS - Registration and Licensing System Changes	Other	
AM281	90	LAMS - Regulatory Impact Statement	Other	
AM283	10	LAMS - Training of Customer Services	Other	

Source: <http://www.roadsafety.vic.gov.au/levyprojects>

Infrastructure projects funded by the Motorcycle Safety Levy (as at October 2012)

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Alpine	Bogong High Plains Rd	Commences 13.2 km south west of Simmonds Creek Rd	Bogong	Shoulder sealing through curves, asphalt regulation and resurfacing through curves and speed and hazard signage improvements.	3	0	140	21/06/2006
Alpine	Great Alpine Rd	Commences 6.3 km south of Cemetery Lane	Harrietville	Shoulder sealing through curves, asphalt regulation and surface improvements through curves, speed and hazard warning signage improvements and guardrail rubbing rail (at accident location) on outside of curve.	4	0	38	30/04/2006
Alpine	Bright-Tawonga Rd	Great Alpine Rd and Kiewa Valley Hwy	Germantown Tawonga South	Shoulder sealing and speed and hazard warning signage improvements	3	0	26	30/11/2006
Alpine	Bright-Tawonga Rd	Ch 8.8 to 13.6	Tawonga South	Shoulder sealing, asphalt overlay, asphalt regulation, motorcycle friendly signs at inconsistent horizontal curvature, motorcycle friendly guide posts.	1	1	92	31/10/2008
Alpine	Great Alpine Rd	Harrietville to Regional Boundary	Harrietville Mt Hotham	Install curve warning speed advisory signage, delineation on 41 curves.	12	0	63	30/05/2007
Alpine	Great Alpine Rd	Harrietville to Omeo	Harrietville Hotham Heights Omeo	Installation of rubrail on existing guardrail, motorcycle risk advisory signs, replacement of steel guardfence delineator supports with plastic supports, sealing of bellmouths and pull off areas, speed advisory and warning signs, curve alignment markers (CAMs), regulation around curves and removal of vegetation on batters	35	2	315	30/06/2011

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Alpine Shire	Great Alpine Rd	Commences 0.95 km south of Dargo High Plains Rd	Hotham Heights	Some shoulder sealing, asphalt crossfall correction on curves, regulation and resurfacing through curves, speed and hazard warning signage improvements and guardrail rubbing rail (at accident location) on outside of curve.	10	0	340	21/06/2006
Alpine Shire	Mount Buffalo Rd	Commences south west of roundabout exit	Mount Buffalo	Curve warning signage improvements.	3	0	9	28/02/2006
Bass Coast	Back Beach Rd	Sunset Strip to Ventnor Rd	Phillip Island	Surfacing of high priority bellmouths. Install frangible motorcycle risk advisory signs, more motorcycle friendly reflectorised guide posts, driveable culvert endwalls, and removal of redundant roadside objects.	11	3	98	24/04/2009
Bass Coast	Bass Hwy	Philip Island Tourist Rd	Anderson	Install motorcycle friendly signs and sign posts on the roundabout			32	5/10/2007
Bass Coast	Bunurong Rd	Seaward Dve to Ullathornes Dve	Inverloch	Improve delineation (including curve alignment markers, speed advisory signs and linemarking) along length, culvert extension and safety barrier at Surf Pde.	3	0	64	14/02/2004
Bass Coast	Bunurong Rd	Cape Paterson Rd to Goroke St	Inverloch Cape Paterson	Installation of speed advisory signage for curves, additional curve alignment markers, curve alignment markers with advisory speed signs, upgrading of all existing warning signs and curve alignment markers to class 1 reflective signs, vehicle activated sign on the approach to a high risk curve, guard fence extensions with rub rail, guard fence with rub rail at two high risk curves, rub rail on existing guard fence, installation of plastic guide posts, vegetation removal to improve sightlines, sealing of gravel bell mouths and pullover areas, lowering of the speed limit from 100km/h to 80km/h.	5	1	680	18/04/2012

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Bass Coast	Phillip Island Tourist Rd	Anderson to Cowes	Anderson San Remo Phillip Island Cowes	Seal high priority bellmouths, install speed advisory signs, curve alignment markers, motorcycle risk advisory signs, reflectorised motorcycle friendly guide posts, driveable culvert endwalls, remove bollards adjacent to the carriageway.	86	19	308	24/04/2009
Baw Baw	Korumburra-Warragul Rd	Lardners Track to the Grand Ridge Rd	South of Warragul	Install Motorcycle High Risk signs curve warning signs, curve alignment markers and guide posts. Install CAMs at McDonalds Track. Repair surface irregularities. Install edge lining on the road between Browns Rd and 3.6 km south of Grand Ridge Rd.	3	0	145	23/06/2006
Baw Baw	Lang Lang-Poowong Rd	South Gippsland Hwy to Poowong	Lang Lang to Poowong	Installation of motorcycle warning signage and speed advisory signage, curve alignment markers, speed advisory signage, replacement of existing rigid guideposts with frangible guideposts and installation of guideposts where none currently exist.	5	0	48	26/04/2006
Baw Baw	Mount Baw Baw Rd	Old Fumina Rd to Vesper Rd	Noojee	Asphalt regulation.	3	0	14	15/12/2003
Baw Baw	Nayook - Powelltown Rd		between Nayook and Powelltown	Install drivable end walls for pits and driveway culverts. Install curve alignment markers & advisory speed signs.	9	0	52	16/06/2004
Baw Baw	Walhalla Rd	Tyers-Thomson Valley Rd to Bruntons Bridge Rd	Walhalla	Installation of edge line marking, new frangible guideposts, speed advisory signage for curves and curve alignment markers, new guard rail, rub rails to existing and new guard rails, curve alignment markers with advisory speed signs to increase heightened awareness of higher risk areas, removal of hazardous vegetation to improve sight lines, Sealing of unsealed gravel bellmouths and pull over areas.	7	0	621	9/06/2011

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Baw Baw	Walhalla Rd	Micahs Track to Maiden Town Track	Walhalla	Install Motorcycle Hazardous Area signs, curve alignment markers, advisory speed signs and linemarking at high risk locations. Resurface to improve skid resistance in high risk locations.	3	0	58	14/06/2004
Baw Baw	Walhalla Rd	Tyers-Thomson Valley Rd to North Gardens Reserve	Tyers-Thomson Valley Rd to North Gardens Reserve	Installation of edgelines and replacement of guard fence delineators with motorcycle friendly plastic delineators.	9	0	26	29/05/2006
Baw Baw	Willowgrove Rd	Trafalgar to Mt Baw Baw Rd	Trafalgar Hill End Icy Creek	Surfacing of high priority bellmouths. Installation of frangible speed advisory signs, curve alignment markers, motorcycle risk advisory signs and motorcycle friendly reflectorised guide posts. Replacement of steel guardfence delineator supports with plastic supports. Installation of rubrail to existing guardfence at one location and curve widening on one high risk corner. Install advanced warning signs.	22	6	355	13/05/2009
Baw Baw	Yarra Junction-Noojee Rd	Limberlost Rd to Main Neerim Rd	Piedmont	Shoulder sealing at three intersections including sealing of bellmouths & installation of motorcycle warning signs.	5	0	53	21/06/2004
Baw Baw	Forest Rd	Labertouche Rd to end of Shire Boundary	Labertouche	Supply and installation of high motorcycle risk area signs, chevron alignment markers, guideposts, speed advisory signs, curve warning signs and advance warning signs	3	0	27	23/04/2007
Baw Baw	Mt Baw Baw Rd	Main Neerim Rd to Willowgrove Rd	Narracan	Installation of new guard fence barriers with motorcycle barrier protection, motorcycle barrier protection on existing high and medium risk barriers, guideposts and speed advisory signage for curves (new locations), CAM's, motorcycle high risk area signage, drivable culvert end walls and sealing of unsealed gravel bellmouth.	6	2	662	18/12/2009

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Baw Baw	Mt Baw Baw Rd	Willowgrove Rd to Mt Baw Baw Alpine Resort	Narracan	Installation of speed advisory signs, chevron alignment markers, motorcycle risk advisory signs, reflectorised guide posts and driveable culvert endwalls.	4	0	330	18/12/2009
Baw Baw & South Gippsland	Korumburra-Warragul Rd	Ross Witherdons Rd to McDonalds Track	Strzelecki	Removal of vegetation, installation of curve warning signs, motorcycle warning signs & edgelines.	4	0	32	30/12/2003
Benalla	Lima East Rd	Ch 12km - 14Km	Lima East Swanpool	Install curve advisory speed signs & curve alignment markers.	3	0	2	18/06/2004
Boroondara	High Street	Warrigal Rd to Warner Ave	Ashburton	Improve delineation of guard rail with CAM's, install motorcycle barrier protection (rub rail), install additional guard rail, install motorcycle friendly guardrail terminal, replace existing keep left and chevron signs and posts with motorcycle friendly signs and posts.	3	0	83	30/07/2008
Campaspe & Gannawarra	Murray Valley Hwy	West of Wyuna (Regional Boundary) to north of Kerang	From Regional boundary at Goulburn River, passing through the towns of Echuca, Cohuna and Kerang up to north of Kerang.	Seal bellmouths.	11	0	619	18/04/2008
Cardinia	Beaconsfield-Emerald Rd	Stoney Ck Rd to St Georges Rd	Beaconsfield Upper	Re-surface through curves, shoulder sealing & install motorcycle warning signs.	5	2	97	18/02/2004
Cardinia	Black Snake Creek Rd	Beenak East Rd to Rocky Ridge Track	Gembrook	Install motorcycle warning signs & curve alignment markers.	7	0	20	28/05/2004
Cardinia	Gembrook Rd	Healesville-KooWee Rup Rd to Belgrave-Gembrook Rd	Gembrook	Gipsitrack test to identify advisory speed. Install speed and curve advisory signs, edge lines, curve alignment markers CAMs, and guideposts.	6	0	97	30/06/2006

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Cardinia	Healesville-Koo-Wee-Rup Rd	Avon Rd to Mountain Rd	Cockatoo	Install curve alignment markers on curves, side road warning signs, linemarking and guideposts. Remove loose stones.	5	2	36	28/05/2004
Cardinia	Pakenham Rd (Healesville-Koo-Wee-Rup Rd)	McBride St to Taylor Rd	Cockatoo	Install Side Road Ahead warning signs. Repair broken road edges. Linemark edge lines. Install guideposts. Broken mirror to be replaced under maintenance program.	5	1	75	30/04/2005
Cardinia	South Gippsland Hwy	Western Port Rd	Lang Lang				33	5/10/2007
Cardinia	Healesville-Koo-Wee-Rup Rd	Taylor Rd to Princes Highway East	Pakenham Upper	Gipsitrac test to identify advisory speed. Install edgelines, CAMs, advisory signs, and guideposts.	8	0	180	28/02/2007
Casey	South Gippsland Hwy	Baxter-Tooradin Rd	Tooradin	Install motorcycle friendly signs and sign posts on the roundabout			33	5/10/2007
Colac-Otway	Forrest-Apollo Bay Rd	Colac-Forrest Rd to Beech-Forest Rd	Forrest to Haines Junction	Install CAMs, double centre lines, edge lines, guideposts, curve advisory signs, and intersection warning sign. Seal shoulder and bellmouths	5	0	117	30/06/2007
Colac-Otway	Great Ocean Rd	Ch 52.5km - 55.5 km	Mt Defiance	Sealing of car park entries and traffic control devices on larger car parks.	6	0	8	14/12/2003
Colac-Otway	Great Ocean Rd	West of Grey River including Shrapnel Gully	West of Grey River including Shrapnel Gully	Asphalt overlay at the selected sites to produce a smooth pavement surface	5	0	180	30/06/2004
Colac-Otway	Great Ocean Rd	West of Red Johanna Rd	Johanna Heights	Pavement repairs by asphalt surfacing. Install frangible poles and light weight signs	6	0	75	6/12/2005
Colac-Otway	Great Ocean Rd	Parker River Rd to east of Cape Otway Rd	Maits Rest	Pavement repairs by asphalt surfacing	2	1	123	8/12/2005

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Colac-Otway	Great Ocean Rd	from Apollo Bay to Lavers Hill.	Great Ocean Rd from Apollo Bay to Lavers Hill	Seal bellmouths, seal shoulders on curves, repair of road edge inside of curves, complete edgelines, removal of obsolete signs and install motorcycle barrier protection (rub-rail)	22		470	27/06/2008
Corangamite	Great Ocean Rd	from Lavers Hill to Port Campbell.	Great Ocean Rd from Lavers Hill to Port Campbell	Seal bellmouths, seal shoulders on curves, repair of road edge inside of curves, complete edgelines, removal of obsolete signs and install motorcycle barrier protection (rub-rail).	23		580	27/06/2008
Darebin	Plenty Rd (Whittlesea Rd)	Tyler St to Ethel Gr	Preston	Improve linemarking through intersection.	5	0	13	4/12/2003
Docklands	Docklands Highway	Footscray Rd to Dudley Street - Wurundjeri Way	Docklands	Install curve advisory and speed advisory signs. Lift pit lids and reconstruct side entry pits.	5	0	72	23/12/2004
Docklands	Docklands Highway (Charles Grimes Bridge)	Charles Grimes Bridge West of Stadium Drive to north of Lorimer St	Docklands	Install two electronic "prepare to stop" signs, advanced lane indication signs, additional speed advisory signs and apply high skid resistant pavement sealing on steel expansion joints.	4	0	362	28/06/2006
East Gippsland	Buchan Orbost Rd	Buchan to Orbost	Buchan Bete Bolong Orbost	Installation of speed advisory signs. Installation of curve alignment markers. Installation of motorcycle risk advisory signs. Installation of motorcycle friendly reflectorised guide posts. Curve widening and edge improvements at high risk locations including curves and intersections. Vegetation removal at high risk locations. Advanced warning for bridges.	11	9	305	20/04/2009

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
East Gippsland	Great Alpine Rd	Hankshaw Hill Rd & Jim and Jack Track	Omeo	Sealing of gravel bellmouths at driveways and at intersections. Surface rejuvenation at selected locations. Install additional motorcycle risk area signs. Install additional curve alignment markers. Review speed advisory signs.	6	2	135	23/06/2006
East Gippsland	Great Alpine Rd	Hankshaw Hill Rd to Bruthen-Nowa Nowa Rd	Omeo to Bruthen	Additional motorcycle risk area signs, additional CAM's, installation of edge lines where road width is greater than 6.2 metres, sealing of gravel bell mouths for intersecting roads, vegetation trimming and removal and replacement of metal delineators by plastic delineators on guard fence.	10	3	380	14/09/2007
East Gippsland	Great Alpine Rd west of Omeo		Various	Attach RubRail and MotoTUB to barriers at highest risk locations.			90	24/04/2007
East Gippsland	Omeo Highway	11 km north of Omeo to Glen Valley	North of Omeo to Glen Valley	Installation of motorcycle warning signage and speed advisory signage.	5	0	21	22/06/2007
East Gippsland & Wellington	Dargo Rd	Princes Hwy to township of Dargo	Bairnsdale to Dargo	Surfacing of high priority bellmouths. Installation of speed advisory signs, curve alignment markers (CAM's), motorcycle risk advisory signs, reflectorised guideposts, driveable culvert endwalls, motorcycle barrier protection to existing guard fence, removal of existing timber guideposts and replacement of steel guard fence delineator supports with plastic supports.	7	1	400	21/01/2010

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Golden Plains	Meredith-Steiglitz Rd	Pioneer Ridge Rd to Duggan Rd	Coopers Bridge	Improved signing on both approaches. Edge lining and installation of curve alignment markers.	4	0	20	30/04/2006
Golden Plains	Meredith-Steiglitz Rd	Duggan Rd to Pioneer Ridge Rd	East of Meredith	Install curve alignment markers on frangible poles at curves, seal bellmouth entrances at intersections and seal shoulders. Provide new edge line and centre line marking, install guideposts. Remove / trim trees to improve sightlines.	5	1	186	22/06/2007
Golden Plains Shire	Steiglitz Rd	Maude to Steiglitz	Steiglitz	Install new polybuffer rail with end terminals, seal bellmouths, install curve alignment markers and curve warning signs on fluted aluminium poles and replace timber guide posts with plastic guide posts.	5	0	195	27/07/2011
Hepburn	Midland Hwy	Clunes-Creswick Rd to Ballan-Daylesford Rd	Creswick to Daylesford	Installation of guard fence rubrail, flexible guideposts, CAMs, flexible guard fence delineators, Motorcycle friendly guard fence with rubrail, wildlife warning signs and sealing of bellmouths.	5	0	454	18/12/2009
Kingston	Boundary Rd	Governor Rd	Breaside	Motorcycle Friendly Roundabout Trial Extension	0	0	20	30/11/2008
Knox	Ferntree Gully Rd	Stud Rd to Burwood Hwy	Knoxfield	Seal unsealed shoulder, tree removal, installation of merge warning signage.	12	0	63	30/06/2011
LaTrobe & Baw Baw	Moe Rawson Rd	Moe to Rawson	Moe Erica Rawson	Installation of a painted edgeline, sealing of high priority gravel bell mouths, installation of speed advisory signs, CAMs and reflectorised guideposts. Replacement of steel guardfence delineator supports with plastic supports, installation of driveable culvert endwalls and replacement of 'proud' pits at high risk locations	4		220	29/02/2008

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
LaTrobe & Baw Baw	Tyers-Thomson Valley Rd	Tyers to Thomson Valley Rd	Tyers Rawson	Installation of curve alignment markers, edgelines, speed advisory and motorcycle warning signage, guide posts and relocation of existing guide posts to provide consistent spacing along the route. Installation of guardrail, rubrail to new and existing guardrail, upgrade existing signs to improve consistency along the route.	8	0	494	9/06/2011
LaTrobe & Baw Baw	Tyers-Thomson Valley Rd	Moe-Glengarry Rd to Thomson Valley Rd	Tyers to Thomson Valley	Installation of additional curve alignment markers, edge lines over entire route, plastic delineators for guard fences, additional speed advisory and motorcycle warning signage, additional guideposts and relocation of existing frangible guideposts to provide a consistent spacing for the entire length of the road.	8	0	112	16/05/2006
Macedon	Cameron Drive Rd	Full length (3.5km)	Mt Macedon	Install curve warning signs, advisory speed signs, curve alignment markers, motorcycle warning signs & edgelines.	6	1	28	30/06/2004
Macedon Ranges	Fingerpost Rd	Old Calder Highway to the end of the road	Woodend	Install curve alignment markers, guideposts, speed advisory signs and curve warning signs.	4	0	40	20/06/2008
Macedon Ranges & Mitchell	Goulburn Valley Highway, Kilmore-Broadford Rd, Kilmore-Epping Rd, Cameron Drive and Mt. Macedon Rd		Various	Replace steel delineator with flexible plastic delineator			5	30/06/2006

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Manningham	Ringwood-Warrandyte Rd	Mullum Mullum Rd to Warrandyte	Warrandyte	Gipsitrack test to identify advisory speed. Install speed and curve advisory signs, curve alignment markers, guideposts.	11	2	83	30/06/2006
Mansfield	Mansfield-Whitfield Rd	Ch 20.4km - 23.6 Km	Bridge Creek Tolmie	Install motorcycle warning signs & edgelines with raised reflective pavement markers.	7	0	6	28/06/2004
Mansfield	Mansfield-Woods Point Rd	Jamieson River Bridge to Kevington (8.2km length)	Jamieson	Install curve warning signs, curve alignment markers & edgelines to match existing linemarking.	5	1	19	28/06/2004
Mansfield & Wangaratta	Mansfield-Whitfield Rd	Table Top Rd & Wangaratta Whitfield Rd	Tolmie Whitfield	Install curve warning speed advisory signage, edgelines, upgrade centre line to meet current standards. Shoulder sealing on curves and at intersections.	31	1	78	29/06/2007
Melbourne	Johnston Street	Calton to Abbotsford	Calton to Abbotsford	Resurfacing/patch pavement to remove unevenness, raise and replace utility pit lids, water blast accumulated oil and improve lane guidance for eastbound traffic at Elgin St/Johnstone St/Nicholson St intersection.			250	30/06/2008
Melbourne	Victoria Street	From Hoddle St to Burnley St	Richmond	Resurfacing/patch pavement to remove unevenness, raise and replace utility pit lids, review and replace pavement markings to improve delineation.			348	6/02/2009
Melbourne	Power Street	Kavanagh St	Southbank	Install skid resistant surfacing, lighting upgrade, patching, profiling, replace existing "No Right Turn" sign with symbolic LED sign and replace existing signals with LED signal lanterns to improve conspicuity.	5	0	210	10/02/2010
Melbourne	Queensberry Street	Howard St	North Melbourne	Install skid resistant surfacing and new motorcycle friendly signage, lighting improvements, relocation of signage, delineation improvements and raise/lower pit lids.	4	0	80	31/03/2010

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Melbourne	Swan Street	Batman Ave	Melbourne	Installation of part time fully controlled right turn, patching, profiling, skid resistant surfacing, re-linemarking, skid resistant pavement markings and replace existing signals with LED signal lanterns to improve conspicuity.	5	0	210	13/01/2010
Mitchell & Murrindindi	Broadford-Flowerdale Rd		Broadford to Flowerdale	Shoulder sealing, installation of guard rail with rub rail, fitting some existing guard rail with rub rail, installation of CAMs, additional signing, additional guide posts, reduction of speed limit from 100km/h to 80km/h.	13	0	827	28/05/2010
Mitchell & Murrindindi	Broadford-Flowerdale Rd	Broadford & Whittlesea -Yea Rd	Broadford Flowerdale	Install curve warning speed advisory signage, delineation on 16 curves and link existing inconsistent linemarking (edge lines) to provide continuous edgelines from Broadford to Flowerdale.	14	0	85	21/06/2006
Moonee Valley	Maribyrnong Rd (Ascot Vale-Keilor Rd)	Ferguson St to Ascot Vale Rd (1km length)	Moonee Ponds	Install concealed intersection sign on the west approach to Moore St & motorcycle warning signs supplemented with signs on the east of Union St & east of Milton St advising of the slippery nature of tram tracks.	6	0	6	25/03/2004
Moorabool	Myrniong - Trentham Rd	South of Simons Reef Rd	West of Blackwood	Asphalt regulation, linemarking & installation of signage.	3	0	138	16/04/2004
Moorabool	Myrniong Trentham Rd	Western Fwy to Trentham	Myrniong to Trentham	Complete edgelines, CAMs, seal bell mouths and shoulder on curves	8		374	18/03/2008
Moorabool	Myrniong-Trentham Rd	Hastings Rd To Dales Creek Av	Greendale	Attach RubRail to guardrail			91	29/11/2006
Mornington Peninsula	Arthurs Seat Rd	Pt. Nepean Rd and Mornington-Flinders Rd	Arthurs Seat	Gipsitrac test to identify advisory speed. Install speed and curve advisory signs, curve alignment markers (CAMs), edgelines, guideposts.	10	0	92	30/06/2006

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Mornington Peninsula	Mornington-Flinders Rd	Bittern-Dromana Rd to Rosebud-Flinders Rd	Flinders	Gipsitrac test to identify advisory speed. Install edge lines, CAMs, frangible advisory signs, and guideposts.	7	0	152	30/06/2007
Mornington Peninsula	Rosebud-Flinders Rd	Main Ck Walking Tk to Meakins Rd	Flinders	Resurface to remove corrugations and improve skid resistance, create wide sealed shoulder on curves, cut back foliage, install Motorcyclist Slippery Surface and High Risk Area signs.	5	0	66	19/03/2004
Mornington Peninsula	Rosebud-Flinders Rd	Pt. Nepean Rd and Frankston-Flinders Rd	Rosebud Flinders	Gipsitrac test to identify advisory speed. Install speed, curve advisory and intersection signs, CAMs, and edgelines.	19	0	153	30/06/2006
Mount Alexander	Pyrenees Hwy	Elphinstone to Castlemaine	Elphinstone to Castlemaine	Install rub-rails on all existing guardrail without rub-rail, sealing of bellmouths at unsealed side roads, improvement to warning signs and advisory speed signs, delineation improvements and upgrading existing dividing line to correct standard.	5	0	850	24/09/2010
Murrindindi	Eildon - Jamieson Rd	Ch 0.0km - 29.9km	Torbreck Station	Install centreline, guide posts & motorcycle warning signs.	9	0	60	30/06/2004
Murrindindi	Extons Rd	Healesville-Kinglake Rd - Powers Rd	Kinglake Central	Install curve alignment markers, curve warning & advisory speed signs on two curves near Powers Rd & additional guide posts.	3	0	5	18/06/2004
Murrindindi	Healesville-Kinglake Rd	Old Toolangi Rd to 2km south of Myers Creek Rd	Toolangi	Install curve alignment markers, guide posts, curve warning & advisory speed signs.	5	0	8	18/06/2004
Murrindindi	Heidelberg-Kinglake Rd	Pinchgut Lane to Healesville-Kinglake Rd	Kinglake	Asphalt overlay to correct surface condition and crossfall, minor batter works to open up curves, improved signing and delineation on 5 curves and the installation of guardfence on the outside of two curves.	8	2	150	21/06/2005

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Murrindindi	Lake Mountain Rd	Ch 0.9km - 4.1Km	Cambarville Marysville	Install motorcycle warning signs, curve alignment markers & curve advisory speed signs.	6	0	25	23/06/2004
Murrindindi	Lake Mountain Rd		Lake Mountain	Attach MotoTUB to guardrail			45	31/12/2006
Murrindindi	Maroondah Hwy	77.4 km - 80.5 km	Mt Dom Dom Narbethong	Resurface pavement to improve skid resistance, install edgelines, advisory speed signs, curve alignment markers & extend guard fence.	5	0	71	31/03/2004
Murrindindi	Marysville-Woods Point Rd	Marysville to Lake Mountain Rd	Marysville	Install edgelines, curve warning signs, speed advisory signs & curve alignment markers at selected curves.	10	0	42	30/04/2004
Murrindindi	Marysville-Woods Point Rd	At Anderson's Mill Rd	Marysville	Seal Anderson Mill Rd at the intersection of Marysville Rd.	4	0	50	30/05/2004
Murrindindi	Snobs Creek Rd	Goulburn Valley Hwy to Herbs Rd	Eildon	Installation of guideposts along the full route and upgrade warning signs at the north end of the road.	6	0	27	30/06/2005
Murrindindi	Whittlesea-Yea Rd	Kinglake West to Nichols Rd	Kinglake West	Install edgelines to provide a consistent level of delineation.	4	3	5	18/06/2004
Murrindindi	Whanregaren Rd	Coghills Lane to Maroondah Highway	Alexandra	Delineation and safety improvements.	4	0	317	22/06/2012
Murrindindi	Jerusalem Creek Rd	Pinniger Rd to Mount Pinniger Rd	Eildon	Delineation and safety improvements.	4	0	923	22/06/2012
Murrindindi & Yarra Ranges	Healesville-Kinglake Rd	Maroondah Hwy and Heidelberg-Kinglake Rd	Healesville Toolangi Kinglake	Install curve warning speed advisory signage and delineation (curve alignment markers CAMs) on approximately 20 curves.	30	1	34	30/04/2006
Nillumbik	Heidelberg-Kinglake Rd	Anzac Cl to Gosfield Rd	Hurstbridge	Improve delineation, shoulder sealing & warning signs	3	0	69	18/06/2004

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Nillumbik	Heidelberg-Kinglake Rd	Church Rd to Kangaroo Ground-St Andrews Rd	St Andrews	Improve delineation & install warning signs.	6	1	55	18/06/2004
Nillumbik	Heidelberg-Kinglake Rd	From Nihill Cr to Region Border	St Andrews Mittons Bridge Kinglake	Improve delineation, install warning signs, improve sight lines & remove debris from surface.	5	1	105	18/06/2004
Nillumbik	Heidelberg-Kinglake Rd	Ninks Rd and Nillumbik Shire boundary	St. Andrews	Install Curve Alignment Markers and Curve Advisory signs at every corner along the entire length. Pavement regulation over a 2.5 km length across both lanes including filling corrugations and provision of a high skid resistant surface. Trimming of vegetation from edge lines.	9	0	330	24/06/2005
Nillumbik	Heidelberg-Kinglake Rd	Between Yan Yean Rd and Lower Rd	Cottles Bridge	Install curve alignment markers at two bends and signs (between Yan Yean Rd and Lower Rd, Wattle Glen).	2	0	28	17/03/2006
Nillumbik	Kangaroo Ground-Warrandyte Rd	Yeomans Rd to 1.1km north of Yeomans Rd	Kangaroo Ground	Install advisory speed signs, curve alignment markers, shoulder sealing, replace culvert end walls with drivable end walls & resurface pavement to improve skid resistance.	5	0	359	30/12/2004
Nillumbik & Yarra Ranges	Eltham-Yarra Glen Rd	Melba Hwy to Research-Warrandyte Rd	Kangaroo Ground Christmas Hill Yarra Glen	Sealing of bellmouths, sealing of shoulders where they are inadequate, complete edgelines along the route, install CAMs, frangible advisory signs, and guideposts.	9	0	235	20/12/2007
Nillumbik	Eltham-Yarra Glen Rd	Bolton St to Wattletree Rd	Eltham	Install guardfence incorporating PolyBuffer' rail. Retrofitting 'PolyBuffer' rail to existing lengths of guardfence and remove redundant bollards and old signs.	7	1	330	7/06/2011

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Nilumbik	Kangaroo Ground-Warrandyte Rd	Ringwood-Warrandyte Rd to Eltham-Yarra Glen Rd	Kangaroo Ground	Install guardfence incorporating 'PolyBuffer' rail. Retrofit PolyBuffer' rail to existing lengths of guardfence. Formalise and seal 4 existing bus-stops, seal driveway bellmouths and install drivable culvert end-walls. Modify existing drainage pits to remove potential roadside hazard. Seal unsealed shoulder and install additional signage.	4	1	287	22/11/2011
Nilumbik	Research-Warrandyte Rd	Eltham-Yarra Glen Rd to Kangaroo Ground-Warrandyte Rd	Warrandyte	Retrofit 'PolyBuffer' rail to existing lengths of guardfence, formalise and seal existing bus-stops, seal driveway bellmouths, modify two existing drainage pits. Seal shoulder and install curve alignment markers and hazard warning signage.	4	1	336	2/09/2011
Northern Grampians	Northern Grampians Rd	West of Halls Gap to Silverbands Rd	West of Halls Gap	Repair & resurface pavement on curves, inside curve widening, install curve advisory signs, advisory speed signs, curve alignment markers, motorcycle warning signs, guideposts, relocate stop linemarking at Silverbands Rd & painted edgelines where missing.	5	0	140	23/12/2004
Northern Grampians	Northern Grampians Rd	Mt. Difficult Rd to 800 metres beyond Wartook Rd	Halls Gap	Install edgelines. Repair surface irregularities, together with some lane seal widening, on curves and install CAMs on downhill curves, fixed on frangible poles. Install 'High Risk Area' motorcycle signs.	7	0	80	30/06/2006
Northern Grampians & Ararat	Grampians	Western Hwy, Stawell to north of Dunkeld	Dunkeld Halls Gap Stawell	Install edgelines and advance warning signing (animal and high risk area signs)	4		83	3/06/2008
Northern Grampians & Horsham Rural City	Northern Grampians Rd	Grampians Rd and Western Hwy	Halls Gap Wartook Western Highway	Install edgelines, signing, and CAMs.	22	0	35	30/06/2006

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Port Phillip	Aughtie Drive	Albert Rd to Lakeside Dve	Albert Park	Install reflectors on existing bollards, install CAMs on various curves, install 15 new streetlights at various locations.	5	1	240	22/05/2006
Port Phillip & Melbourne	St Kilda Rd	From Commercial Rd to Glenhuntly Rd	St Kilda	Resurfacing/patch pavement to remove unevenness, raise and replace utility pit lids, water blast accumulated oil, review and replace pavement markings, trim foliage to improve visibility.	380	42	250	6/02/2009
Port Phillip & Melbourne	Montague Street	West Gate Fwy	South Melbourne	Remove obstructions from sight line, re-surface curve to improve skid resistance, remove log fencing & relocate sign.	4	0	45	3/10/2003
South Gippsland	Lang Lang-Poowong Rd	South Gippsland Hwy to Drouin-Korumburra Rd Poowong town	Nyora Poowong	Install new speed advisory, curve warning signs and curve alignment markers, edgeline marking, upgrade existing curve alignment markers, bellmouth sealing, installation of guide posts, hazardous vegetation removal (trees & stumps), installation of driveable culvert endwalls.	8	0	499	9/06/2011
South Gippsland	Loch Poowong Rd	Ferriers Rd to Smiths Rd	Loch	Install reflectorised guideposts, linemarking/RRPMs, widening of pavement at horizontal curves, sealing driveway bellmouths and tree clearing.	5	1	180	13/06/2008
South Gippsland & Baw Baw	Korumburra-Warragul Rd	Korumburra to Warragul	Korumburra to Warragul	Installation of additional curve alignment markers, edge lines over entire route, motorcycle friendly plastic delineators for guard fences, additional speed advisory and motorcycle warning signage.	11	1	194	1/05/2006
Stonnington	Malvern Rd	Chapel St to Glenferrie Rd	Toorak-Malvern	Concrete scarifying treatment, installation of "Slippery when wet" warning signs.	12	1	79	10/05/2011
Strathbogie	Euroa - Mansfield Rd	Ch 22km - 25Km	Gooram	Install curve warning & advisory speed signs, resurface to improve pavement texture & shape & install motorcycle warning signs.	3	0	60	15/03/2004

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Strathbogie	Euroa-Mansfield Rd	Gooram to Merton	Gooram	Barrier protection and safety improvements.	14	0	795	29/06/2012
Surf Coast	Great Ocean Rd	Mt Defiance Lookout	Mt Defiance	Seal shoulder parking areas. Install No U turn and pedestrian warning signs. Extend guard rail through parking area.	6	0	20	23/12/2003
Surf Coast	Great Ocean Rd	Andersons Ck to Herschell Rd	Andersons Ck to Herschell Rd	Resurfacing to provide a smoother ride.	7	0	52	30/06/2004
Surf Coast	Great Ocean Rd	Smythes Creek Bridge	Smythes Creek	Mill slab to correct level and resurface approach to provide a smooth transition.	1	0	90	30/06/2004
Surf Coast	Great Ocean Rd	Old Coach Rd	Moggs Creek	Rationalise and re-position warning signs.	3	0	10	1/08/2004
Surf Coast	Deans Marsh-Lorne Rd	Birregurra-Deans Marsh Rd and Great Ocean Rd	Deans Marsh to Lorne	Reduce gravel on roads by sealing driveways, turn out areas and shoulders and kerb and channel on inside of curves	17	1	173	30/06/2006
Surf Coast	Deans Marsh-Lorne Rd	Deans Marsh to Lorne	Deans Marsh	Installation of new Polybuffer rail for around 3300m with 32 polybuffer end terminal, sealing of approximately 10 bell mouths and replacing around 125 steel poles with fluted aluminium poles	13	0	480	27/07/2011
Surf Coast	Great Ocean Rd	Fairhaven to Lorne	Fairhaven	Installation of new rub rail, upgrade existing rub rail to current standards, sealing of approximately 15 bell mouths and replacing steel poles with fluted aluminium poles.	15	0	280	27/07/2011
Surfcoast & Colac-Otway	Great Ocean Rd	Lorne to Wild Dog Creek (Apollo Bay)	Lorne to Appollo Bay	Installation of guard fence rub rail on high and medium risk curves, sealing of high and medium risk bellmouths and tracked gravel areas, installation of motorcycle friendly delineators and sign posts in 'exposed' areas.	50	3	1922	25/06/2010
Towong	Murray River Rd	Murray Valley Hwy to Granya	Granya	Install edgelines, curve alignment markers & warning signs.	11	0	48	20/04/2005

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Towong	Murray Valley Hwy	West of Upper Murray Rd to west of Upper Murray Rd	Towong	Install curve warning signs, curve alignment markers, speed advisory signs, seal bellmouth of access road, modify embankment to improve sight lines & shoulder sealing.	3	0	58	30/04/2004
Towong	Murray River Rd, Murray Valley Highway, Granya Rd	Bellbridge to Corryong	Bellbridge Walwa Corryong Shelley	Installation of rubrail on existing guardrail, motorcycle risk advisory signs, replacement of steel guardfence delineator supports with plastic supports, sealing of bellmouths, speed advisory and warning signs on curves, curve alignment markers (CAMs), flexible guide posts, driveable endwalls and removal of old headwalls, replacement of old timber guideposts and removal of trees within clear zone.	41	3	1200	30/06/2011
Various	Various	6 sites throughout Victoria		Install vehicle activated signs targeting motorcycles.			596	27/06/2009
Wangaratta	Mansfield-Whitfield Rd	Ch 37km - 40 Km	Toombullup/Whitlands	Install edgelines with raised reflective pavement markers, minor patching & motorcycle warning signs.	3	0	47	30/05/2004
Wellington	Licola Rd	Chesterfield Rd to Kellehers Rd (7.5km length)	Glenmaggie	Install Motorcycle Hazardous Area signs, curve alignment markers, advisory speed signs guideposts and edge lines at high risk locations	3	1	52	21/06/2004
Wellington	Licola Rd	Heyfield to Licola	Heyfield to Licola	Installation of motorcycle warning signage, curve alignment markers, speed advisory signage and replacement of existing rigid guideposts with frangible guideposts and installation of guideposts where currently none.	14	1	167	1/06/2006
Whittlesea	Whittlesea-Yea Rd	Jacks Creek Rd to Mobile Mission Maintenance Centre	Humevale	Install 25 drivable concrete end walls at existing culverts.	5	1	52	15/06/2004

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Whole Region	Princes Highway, Main Neerim Rd, Korumburra-Warrigul Rd, Lang Lang Poowong Rd, Licola Rd, Great Alpine Rd (Bruthen to Region boundary), Walhalla Rd, Tyers Thompson Valley Rd		Various	Replace steel delineator with flexible plastic delineator.			17	31/05/2007
Yarra	Hoddle St/Eastern Fwy Onramp	Hoddle St	Collingwood	Correction of the superelevation on curve and resurfacing with skid resistant material.	4	0	97	19/11/2007
Yarra	St Georges Rd	Barkly St	Fitzroy North	Installation of keep clear road marking at the intersection, lighting upgrade, line marking to improve lane conspicuity at the intersection and localised pavement repair work.	4	0	70	23/05/2010
Yarra	Swan Street	Hoddle St to Burnley St		Resurfacing/patch pavement to remove unevenness, raise and replace utility pit lids, removal of coloured/painted sections of pavement, review and replace pavement markings to improve delineation.	11	1	270	24/06/2010
Yarra Ranges	Belgrave-Gembrook Rd	Grantulla Rd to Church Rd	Menzies Creek	Repair shoulder, install curve alignment markers, motorcycle warning signs & removal of vegetation.	3	0	36	31/07/2004

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Yarra Ranges	Burwood Hwy		Upper Ferntree Gully	Attach StackCushion to WRB posts			12	24/01/2007
Yarra Ranges	Donna Buang Rd including Acheron Way southern sealed section	Maroondah Hwy to Warburton	Warburton	Gipsitrac test to identify advisory speed. Install edgelines, CAMs, frangible advisory signs, and guideposts.	5	0	170	29/06/2007
Yarra Ranges	Eltham-Yarra Glen Rd	Mt Wise Rd to Skyline Rd North	Yarra Glen	Re-surface pavement around curve, install motorcycle warning signs, curve advisory signs & edgelines.	4	0	66	22/12/2003
Yarra Ranges	Eltham-Yarra Glen Rd		Yarra Glen	Attach MotoTUB to guardrail			43	30/04/2009
Yarra Ranges	Emerald-Monbulk Rd	Moxhams Rd to Fairy Dell Rd	Monbulk	Install motorcycle warning signs, curve advisory signs, curve alignment markers, edgelines, centrelines & guideposts.	5	0	51	22/03/2004
Yarra Ranges	Healesville-Kinglake Rd	Joshua Rd to 1.6 km nth of Joshua Rd	Near Chum Creek	Seal bellmouths at Joshua Rd & two 4 WD tracks, widen & seal shoulders at drop off locations, barrier line marking, additional plastic guide posts on inside of curves, motorcycle signs & install motorcycle barrier protection on guard rail.	6	1	99	30/12/2007
Yarra Ranges	Healesville-Kinglake Rd	Eleva Rd to Heath Rd	Chum Creek	Install Side Road Ahead and Curve Advisory signs. Repair broken road edges. Line mark edge lines and centre line. Install guide posts and Curve Alignment Markers. Pipe the steep gully and install guard rail at cross culvert.	5	0	117	30/05/2005
Yarra Ranges	Maroondah Hwy	Healesville to Mt Dom Dom Saddle (Blackspur)	Healesville to Mt Dom Dom Saddle (Blackspur)	Shoulder sealing, installation of guard rail with rub rail, fitting some existing guard rail with rub rail, installation of motorcycle friendly CAMs, additional signing, reduction of speed limit from 100 km/h to 80 km/h.	82	35	547	23/10/2008

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Yarra Ranges	Maroondah Hwy		Healesville	Attach RubRail to guardrail - outside of curve			23	28/02/2007
Yarra Ranges	Marysville-Woods Point Rd	Marysville Rd & Warburton-Woods Point Rd	Saint Fillans	Install curve alignment markers, advisory signs, and guideposts.	23	0	77	2/06/2006
Yarra Ranges	Mount Dandenong Tourist Rd	Mason Gv to Bellavista Cr	Sassafras	Install curve advisory signs, advisory speed signs, install curve alignment markers, RRPM's, resurface road on inside of curve, construct & seal the intersection.	7	0	68	1/09/2004
Yarra Ranges	Mt Dandenong Tourist Rd	Kallamondah Rd to Belgrave-Ferny Creek Rd	Ferny Creek	Install motorcycle warning signs, advisory signs & curve alignment markers.	4	0	13	26/04/2004
Yarra Ranges	Mt Dandenong Tourist Rd	Inverness Rd to Browns Rd	Kalorama	Re-patch rough pavement areas, install motorcycle warning signs & curve alignment markers.	7	0	18	30/06/2004
Yarra Ranges	Mt Dandenong Tourist Rd	Janiesleigh Rd to Acacia Track	Tremont	Repair pavement, install motorcycle warning signs & curve alignment markers.	5	0	26	31/07/2004
Yarra Ranges	Old Warburton Rd	Westburn to Warburton	Warburton	Gipsitrack test to identify advisory speed. Install speed and curve advisory signs, guideposts, and tree pruning at bends.	6	0	92	30/06/2006
Yarra Ranges	Warburton-Woods Point Rd		Warburton East	Attach RubRail to guardrail.			6	28/02/2007
Yarra Ranges	Warburton-Woods Point Rd		McMahons Creek	Attach RubRail to guardrail - outside of curve			16	28/02/2007
Yarra Ranges	Warburton-Woods Point Rd	Warburton Highway to Marysville-Woods Point Rd	East Warburton	Install curve alignment markers and guideposts.	53	4	89	13/06/2006

Municipality	Road Name	Intersecting Road(s)	Locality	Treatment	Motorcycle Crashes in 5 Years	Fatalities	Total estimated cost (\$000's)	Work Completed
Yarra Ranges	Warburton-Woodspoint Rd	Mc Mahons Creek to Marysville - Woods Point Rd	Reefton	Shoulder sealing, installation of guard rail with rub rail, fitting some existing guard rail with rub rail, installation of CAMs, additional signing, additional guide posts, reduction of speed limit from 100km/h to 80km/h.	32	3	711	12/02/2010
Yarra Ranges	Yarra Junction-Noojee Rd	Malletgum Ln to McConachys Rd	Gilderoy	Seal shoulder through curves, repair rough pavement areas, install motorcycle warning signs, curve alignment markers & edgelines.	3	0	63	30/06/2004
Yarra Ranges	Yarra Junction-Noojee Rd	Mackleys Creek Rd to Baw Baw Shire Boundary	Powelltown	Install Motorcyclist Slippery Surface and High Risk Area signs, clean road edges and centre where necessary, renew linemarking, install guide posts and cut back foliage.	4	0	38	30/06/2004
Yarra Ranges & Knox	Mountain Hwy (Wantirna Sassafras Rd)	Claremont Av to Old Coach Rd	Ferny Creek	Install motorcycle warning signs supplemented with "High Risk Area" signs, install curve advisory signs, advisory speed signs, curve alignment markers, repair shoulders & seal inside of curves, construct & seal three slow vehicle turnouts & cut back foliage.	17	0	96	1/09/2004
	Great Ocean Rd		Cinema Point	Attach RubRail to guardrail.			75	12/12/2006

Source: Correspondence from Mr Barry Scott, VicRoads, 19 October 2012.

Extract of proceedings

RECOMMENDATION 1

That an independent office of road safety be created, which will be responsible for collecting, collating, interpreting and publishing all road safety data relevant to road safety, and, for the purposes of this Inquiry, specifically motorcycle safety. Its functions will include:

- Investigating which agencies collect data and where there are data gaps, particularly with respect to off-road riding;
- Setting standards, definitions and data collecting protocols;
- Chairing committees that include all relevant agencies and departments involved in - motorcycle safety (including those that collect data);
- Setting benchmarks for the collecting and auditing of data;
- Co-ordinating the collection of data across departments dealing with health, road and environment portfolios; and
- Collecting sales, injury, registration, licensing, fatality and TAC insurance data.

Mr Elsbury moved, as an amendment, that the words, “That an independent office of road safety be created” be deleted and the words, “That an office of road safety be created within VicRoads” be inserted in their place.

Debate ensued.

Question – that the amendment be agreed to – put.

The Committee divided.

Ayes	Noes
Andrew Elsbury MLC	Murray Thompson MP Telmo Languiller MP Bill Tilley MP Jude Perera MP

Amendment negated.

RECOMMENDATION 42

That the Motorcycle Advisory Group, be required to report regularly to the Minister for Roads, through the Secretariat. Agendas, and minutes of all meetings will be provided promptly to the Minister's office (as well as to Motorcycle Advisory Group members) and a comprehensive report on the Motorcycle Advisory Group's activities and any outcomes should be submitted to the Minister on a yearly basis.

Mr Languiller moved, as an amendment, to insert the words, 'That the Government of the day be invited to attend all MAG meetings' at the end of the recommendation.

Debate ensued.

Question – that the amendment be agreed to – put.

The Committee divided.

Ayes	Noes
Telmo Languiller MP	Murray Thompson MP
Jude Perera MP	Andrew Elsbury MLC
	Bill Tilley MP

Amendment negated.

Bibliography

A

Always G & Poznanski J, *Fatal and serious injury motorcycle collisions attended by the major collision investigation group between May 2002 and April 2003*, Victoria Police, Melbourne, 2003.

Ambak K, Atiq R & Ismail R, *Intelligent Transport System for Motorcycle Safety and Issues*, European Journal of Scientific Research, Vol. 28, No. 4, Selangor, 2009.

Ambulance Victoria, *Ambulance Victoria Strategic Plan 2010-2012*,

<http://www.ambulance.vic.gov.au/Media/docs/Ambulance%20Victoria%20Strategic%20Plan-f2b7ef6d-5ba1-48d4-80c2-91df87d1869b-0.pdf>.

Anderson RWG, Hutchinson TP, Linke B & Ponte G, *Analysis of crash data to estimate the benefits of emerging vehicle technology*, CASR094, Centre for Automotive Safety Research, University of Adelaide, Adelaide, 2011.

Andreone L, Guarise A, Lilli F, Gavrila DM & Pieve M, *Cooperative systems for vulnerable road users: The concept of the watch-over project*, Presentation, 13th ITS World Congress, London, 2006.

Arbon P, *The role of bystander first aid in road trauma*, Journal of the Australasian College of Road Safety, vol. 19. issue. 3, August 2008.

Association de Constructeurs Européens de Motocycles, *ACEM Brake Commitment*,
<http://www.acem.eu/index.php/policy-access/safety/european-road-safety-charter/acem-brake-commitment>.

Association de Constructeurs Européens de Motocycles, *MAIDS - In-depth investigations of accidents involving powered two wheelers*, http://www.maids-study.eu/pdf/MAIDS_LEAFLET.pdf.

Association de Constructeurs Européens de Motocycles, *MAIDS - In-depth investigations of accidents involving powered two wheelers*, Final Report 2.0, April 2009, <http://www.maids-study.eu/pdf/MAIDS2.pdf>.

Association de Constructeurs Européens de Motocycles, *Motorcycle Industry welcomes vote of the European Parliament on the Type Approval Regulation*, Media release, 20 November 2012,
<http://www.acem.eu/index.php/media-corner/press-releases/126-motorcycle-industry-welcomes-vote-of-the-european-parliament-on-the-type-approval-regulation>.

Association de Constructeurs Européens de Motocycles, *Protective equipment for riders*, European Safer Urban Motorcycling, http://www.acem.eu/images/stories/doc/initiatives/safety/EN_eSUM_ppe.pdf.

Austraffic, *Motorcycle using bus lane trial – After study proposal*, for VicRoads, 13 March 2012.

Australasian College of Road Safety, *Hypothecation of fines*, <http://acrs.org.au/about-us/policies/safe-speeds/hypothecation-of-fines/>.

Australasian College of Road Safety, *Special edition on motorcycle and scooter safety*, vol. 20 issue. 4, November 2009.

Australian Bureau of Statistics, *1520.0 - ABS Data Quality Framework, May 2009*,
<http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/1520.0Main%20Features2May%202009?opendocument&tabname=Summary&prodno=1520.0&issue=May%202009&num=&view=.>

Australian Bureau of Statistics, *3101.0 - Australian Demographic Statistics*, 2001-2011 series, Canberra
<http://www.abs.gov.au/AUSSTATS/abs@.nsf/second+level+view?ReadForm&prodno=3101.0&viewtitle=Australian%20Demographic%20Statistics~Dec%202004~Previous~03/06/2005&&tabname=Past%20Future%20Issues&prodno=3101.0&issue=Dec%202004&num=&view=&.>

Australian Bureau of Statistics, *3303.0 – Causes of Death, Australia, 2010*, 2001 – 2010 series, Canberra,
<http://www.abs.gov.au/AUSSTATS/abs@.nsf/second+level+view?ReadForm&prodno=3303.0&viewtitle=Causes%20of%20Death,%20Australia~2010~Latest~20/03/2012&&tabname=Past%20Future%20Issues&prodno=3303.0&issue=2010&num=&view=&.>

Australian Bureau of Statistics, *9208.0 – Survey of Motor Vehicle Use, Australia*, 12 months ended October 2010, Canberra, 2011.

Australian Bureau of Statistics, *9309.0 - Motor vehicle Census Australia*, 2001 – 2011 series, Canberra,
<http://www.abs.gov.au/AUSSTATS/abs@.nsf/second+level+view?ReadForm&prodno=9309.0&viewtitle=Motor%20Vehicle%20Census,%20Australia~31%20Jan%202012~Latest~22/08/2012&&tabname=Past%20Future%20Issues&prodno=9309.0&issue=31%20Jan%202012&num=&view=&.>

Australian Bureau of Statistics, *A guide for using statistics for evidence based policy*, ABS, Cat. No. 1500.0, Canberra, 2010.

Australian Transport Council, *National Road Safety Action Plan 2009 and 2010*,
http://www.atcouncil.gov.au/documents/files/ATC_actionplan0910.pdf.

Australian Transport Council, *National Road Safety Strategy 2011-2020*, May 2011,
http://www.atcouncil.gov.au/documents/files/NRSS_2011_2020_15Aug11.pdf.

Australian Transport Safety Bureau, *Cross modal safety comparisons*, Discussion paper, 1 January 2005,
http://www.atsb.gov.au/media/36229/cross_modal_safety_comparisons.pdf.

Australian Transport Safety Bureau, *Mortality and morbidity in Australia due to Transport Accidents*, Canberra, 2004.

Australian Transport Safety Bureau, *Review of Wire Rope Safety Barriers*, Working Party Report: June 2000, <http://pandora.nla.gov.au/pan/23998/20020308-0000/www.atsb.gov.au/road/pdf/wrbarrier.pdf>.

Australian Transport Safety Bureau, *Road Deaths Australia, 2005 Statistical Summary*, April 2005.

Austrian Ministry for Transport, Innovation and Technology, *Austrian Road Safety Programme 2011-2020*, Vienna, 2011, <http://www.bmvit.gv.at/en/service/publications/downloads/rsp2020.pdf>.

Avenoso A, *Road Safety as a right and responsibility for all*, Blueprint for EU's Road Safety Action Programme 2010-2020, European Transport Safety Council, Brussels, 2008.

B

Baldock MRJ, Grigo JAL & Raftery SJ, *Protective clothing and motorcyclists in South Australia*, CASR Report Series CASR 088, University of Adelaide, Adelaide, March 2011.

Baldock MRJ, Kloeden CN, Lydon M, Ponte G & Raftery S, *Motorcycling in Victoria: preliminary findings of the evaluation of the Community Education and Policing Project*, Proceedings, Australasian Road Safety Research, Policing and Education Conference, Canberra, 31 August – 3 September 2010.

Baldock MRJ, Kloeden CN, Lydon M, Ponte G, Raftery SJ & Grigo JAL, *Evaluation of the VicRoads Community Policing and Education Project: Final Report*, Centre for Automotive Safety Research, December 2011.

Bambach M. R, Grzebieta R. H & McIntosh A. S, *Crash characteristics of motorcycles impacting road side barriers*, paper presented at *Australasian Road Safety Research, Policing and Education Conference*, Canberra, 31 August - 3 September 2010.

Bambach MR, Grzebieta RH & McIntosh A.S, *Injury typology of fatal motorcycle collisions with roadside barriers in Australia*, Accident Analysis and Prevention, vol. 49, November 2012.

Bayly M, Regan M & Hosking S, *Intelligent Transport Systems and Motorcycle Safety*, Report No. 260, Monash University Accident Research Centre, Melbourne, 2006.

Beach S, Brown K & Keast R, *Together Now: Stakeholders in Government Agencies*, paper presented at International Research Society for Public Management Conference, Brisbane, 2008.

Berg FA, Burkle H, Schmidts F & Epple J, *Analysis of the passive safety of motorcycles using accident investigations and crash tests*, Paper no. 98-S10-o-11, DEKRA Automobil AG, Germany, 1998.

Berg FA, Rucker P, Gartner M, Konig J, Grzebieta R & Zou R, *Motorcycle impacts to roadside barriers – real – world accident studies, crash tests and simulations carried out in Germany and Australia*, paper presented to 19th International Technical Conference on the Enhanced Safety of Vehicles, Washington DC, 6-9 June 2005.

Berry JG & JE Harrison , *Serious injury due to land transport accidents, Australia, 2005-06*, Injury Research and Statistics Series No. 42, Australian Institute of Health and Welfare, Canberra, 2008.

Bevan CA, Babl FE, Bolt P & Sharwood LN, *The increasing problem of motorcycle injuries in children and adolescents*, Medical Journal of Australia, vol. 189 no. 1, 7 July 2008.

Blackman RA & Haworth NL, *A qualitative exploration of the attitudes and experiences of moped and scooter riders*, Transportation Research Board 89th Annual Meeting, Washington DC, 10–14 January 2010.

Blackman RA & Haworth NL, *Implications for safety and planning of a sharp increase in moped and scooter use*, paper presented at International Conference on Safety and Mobility of Vulnerable Road Users: Pedestrians, Motorcyclists and Bicyclists, Jerusalem, 30 May-2 June 2010.

Blackman RA & Haworth NL, *Safety implications of increased moped and scooter use in an Australian city*, Proceedings, 20th Canadian Multidisciplinary Road Safety Conference, Ontario, 6-9 June 2010.

Bobevski I, Clark B, Lenne M, Keall M, Diamantopoulou K & Cameron M, *Development of road safety behaviour, travel and exposure surveys in Victoria*, Report no. 269, Monash University Accident Research Centre, October 2007.

Brace C, Scully M, Clarke B & Oxley J, *The relationship between crime and road safety*, Report no. 284, Monash University Accident Research Centre, January 2009.

Brumfitt G, Carey-Flinch C, Galliano F & Moscato G, *Smart wheels for city streets*, 2004 edition, Association des Constructeurs Europeens de Motorcycles.

Bureau of Infrastructure, Transport and Regional Economics, *Effectiveness of measures to reduce road fatality rates*, Information Sheet 39, Department of Infrastructure and Transport, Canberra, 2010.

Bureau of Infrastructure, Transport and Regional Economics, *Road Deaths Australia 2011 Statistical Summary*, Department of Infrastructure and Transport, Canberra, 2012.

Bureau of Infrastructure, Transport and Regional Economics, *Road Deaths Australia May 2011*, Department of Infrastructure, Transport, Regional Development and Local Government, Canberra, 2011.

Bureau of Infrastructure, Transport and Regional Economics, *Road deaths in Australia 1925-2008*, Information sheet 38, Department of Infrastructure, Transport, Regional Development and Local Government, Canberra, 2008.

Bureau of Infrastructure, Transport and Regional Economics, *Safety Statistics*, Department of Infrastructure and Transport, <http://www.bitre.gov.au/statistics/safety/index.aspx>.

C

Cairney P, *Implications of intelligent transport systems for high risk users and high risk situations*, document AP-R236, Austroads, Sydney, 2003.

Candappa N, D'Elia A, Corben A & Newstead S, *Evaluation of the effectiveness of flexible barriers along Victorian Roads Final Report*, Report No. 291, Monash University Accident Research Centre, June 2009.

Candappa N, D'Elia A, Corben B & Newstead S, *Wire rope barrier effectiveness on Victorian roads*, Monash University Accident Research Centre, 2011, <http://casr.adelaide.edu.au/rsr/RSR2011/5EPaper%20189%20Candappa.pdf>.

Cardinale P, D'Angelo C & Conti M, *Traction Control System for Motorcycles*, 2008, *EURASIP Journal on Embedded Systems*, 2009, <http://jes.eurasipjournals.com/content/2009/1/161373>.

- Cassell E, Clapperton A, O'Hare M, & Congiu M, *On- and off-road motorcycling injury in Victoria*, Hazard Journal, no. 64, Spring 2006.
- Cassell E, *Further research into off-road motorcycling injuries: feasibility study report*, RSD 0453, August 2007.
- Castro C & Horberry T, *The Human Factors of Transport Signs*, CRC Press, 2004.
- Chen HY, Senserrick T, Martiniuk ALC, Ivers RQ, Boufous S, Chang HY & Norton R, *Fatal crash trends for Australian young drivers 1997-2007: geographic and socioeconomic differentials*, Journal of Safety Research, vol. 41 no.2, April 2010.
- Christie R & Harrison W, *Investigation of motorcycle crash patterns for riders aged 17-25 in NSW and development for countermeasure strategies – A report to the Motorcycle Accident Authority of NSW*, RSCS Services, Sydney, December 2001.
- Christie R & Newland R, *Motorcyclist fatality and motorcycle sales patterns in Australia*, Proceedings, Australasian Research, Policing and Education Conference, Melbourne, 18-20 November 2001.
- Christie R, *Analysis of involvement of scooters in crashes and their common crash characteristics*, for VicRoads, June 2008.
- Christie R, *Development of a motorcycle on-road rider assistance program Stage 1 critically review current rider assistance programs and develop a model for delivery*, for VicRoads, RSCS Services, November 2007.
- Clark B, Haworth N & Lenné M, *The Victorian Parliamentary Road Safety Committee – A History of Inquiries and Outcomes*, Report No. 237, Monash University Accident Research Centre, June 2005.
- Clarke DD, Ward P, Bartle C & Truman W, *In depth study of motorcycle accidents*, Road Safety Research Report no. 54, Department for Transport, London, November 2004.
- Clarke, DD, Ward P, Bartle C & Truman W, *The role of motorcyclist and other driver behaviour in two types of serious accident in the UK*, Accident Analysis & Prevention, vol. 39 issue 5, September 2007.
- Clarkson E & Beer K, *Making roads motorcycle friendly*,
<http://casr.adelaide.edu.au/rsr/RSR2010/ClarksonE.pdf>.
- Conservation, Forests and Lands Act 1987 (Vic)*
- Cooper J, Polak J, Shmoeker J-D & Wigan M, *Addressing gaps in the availability of travel behaviour data*, paper presented at European Transport Conference, Strasbourg, 2003.
- Coroners Court of Victoria, *Coroners Prevention Unit*, Melbourne, 2009.
- Coroners Court of Victoria, *Inquest into the Death of Simon Peter Gardner*, Coroner John Olle, case 3877/09, 15 March 2011, http://www.coronerscourt.vic.gov.au/resources/c0266e8c-0091-40ee-8cde-5e7a9143c4a3/simonpetergardner_387709.pdf.
- Coroners Court of Victoria, *Motorcycle fatalities*, date series 1 January 2000 – 25 February 2011.

Creaser JI, Ward NJ, Rakauskas ME, Shankwitz C & Boer ER, *Effects of alcohol impairment on motorcycle riding skills*, Accident Analysis and Prevention, vol 41 issue. 5, September 2009.

Creel K, Wall JP, Boland P, Vecovski V, Prendergast M, Stowe J, Fernandes R, Beck J, Doecke S & Woolley J, *Road Safety benefits of intelligent speed adaptation for Australia*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011.

Crimes Act 1958 (Vic)

Crundall D, Clarke D, Ward P & Bartle C, *Car Drivers' skills and attitudes to motorcycle safety: A review*, Road safety research report No. 85, Department for Transport, London, May 2008.

Curtis C, Glover L, Legacy C & Wigan M, *A GAMUT position paper: A report of the GAMUT public forum on good governance for transport infrastructure*, Australasian Centre for the Governance and Management of Urban Transport, University of Melbourne, Melbourne, November 2008.

D

D'Elia A & Newstead S, *Alternative measures for serious injury for National Safety Strategy target setting*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Perth, 6–9 November 2011.

D'Elia A & Newstead S, *Feasibility of undertaking crash-based evaluation of the motorcycle blackspot program*, Draft Report, Monash University Accident Research Centre, March 2006.

D'Elia A, Newstead S, *An enhanced Road Safety Information System for Western Australia*, Curtin-Monash Accident Research Centre, September 2011.

Darnall N & Jolley GJ, *Involving the public: when are surveys and stakeholder interview effective?*, Review of Policy Research, vol. 21 no. 4, 2004.

Davies J & Franklin R, *Injuries resulting from horse riding and motorcycle incidents on farms*, Journal of Occupational Health Safety: Australia and New Zealand, vol. 22 no. 1, 2006.

Day L, Stathakis V & O'Hare M, *Motorcycle deployment and rider characteristics on Victorian farms*, Australian Journal of Rural Health, vol. 14 no. 5, October 2006.

de Craen S, Doumen M, Bos N & van Norden Y, *The role of motorcyclists and car drivers in conspicuity-related motorcycle crashes*, SWOV Institute for Road Safety Research, Netherlands, 2011.

de Rome & Stanford G, *Motorcycle Protective Clothing: Fashion or function?*, International Motorcycle Safety Conference: The Human Element, Motorcycle Safety Foundation, Long Beach, 28-30 March 2006.

de Rome L, *Final report on Gearing up: A seminar on motorcycle protective clothing and consumer protection in Australia*, Motorcycle Council of NSW, 4 May 2005.

de Rome L, Ivers R, Haworth N, Heritier S, Du W & Fitzharris M, *Novice riders and the predictors of riding without motorcycle protective clothing*, Accident Analysis and Prevention, vol. 43 issue 3, 2011.

- de Rome L, Ivers R, Haworth N.L, Heritier S, Fitzharris M & Du W, *Survey of novice motorcycle riders and their riding experience before licensing*, Transportation Research Record Series, US National Research Council, Transportation Research Board, 2010.
- de Rome L, *The injury reduction benefits of motorcycle protective clothing*, paper presented at National Transportation Safety Board Motorcycle Safety Forum, Washington DC, 12-13 September 2006.
- de Rome, L, Ivers R, Fitzharris M, Du W, Haworth N, Heritier S, Richardson D, *Motorcycle protective clothing: Protection from injury or just the weather?*, Accident Analysis and Prevention, vol. 43 issue 6, 2011.
- Delhay A, *How to improve road infrastructure through user-driven policies: the case of motorcyclist-friendly road restraint systems*, Federation of European Motorcyclists' Associations, paper presented at Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011.
- Deloitte Analytics, *Transport Accident Commission Client Investigation*, for the Transport Accident Commission, July 2010.
- Deloitte Touche Tohmatsu, *Draft – data exploration for the Road Safety Executive Group – Phase 1 Report*, for the Transport Accident Commission, 15 February 2012.
- Department for Transport , Energy and Infrastructure, *Motorcycling Road Safety Strategy 2005-2010 The South Australian Road Safety Strategy 2003-2010*, Government of South Australia, Adelaide, 2005.
- Department for Transport, *The Government's Motorcycling Strategy*, London, 2006.
- Department of Communities, *Off-Road Motorcycling Management Strategy*, Queensland Government, March 2011,
<http://rti.cabinet.qld.gov.au/documents/2010/nov/response%20to%20cmc%20review%20of%20off-road%20motorcycling/Attachments/Off-Road%20Motorcycling%20Management%20Strategy.pdf>.
- Department of Education and Early Childhood Development, *DEECD – Victorian Community Sector Collaboration and Consultation framework*, Melbourne, 2011,
<http://www.eduweb.vic.gov.au/edulibrary/public/commrel/policy/vscscf.pdf>.
- Department of Health, 'Victorian Emergency Minimum Dataset – Overview', *Victorian Government Health Information*, 2012, <http://www.health.vic.gov.au/hdss/vemd/vemdover.htm>.
- Department of Health, *Ambulance services in Victoria*, <http://www.health.vic.gov.au/ambulance/>.
- Department of Health, *Victorian Emergency Minimum Dataset (VEMD) User manual*, 16th edition, Melbourne, 2011-12.
- Department of Health, *What we do*, <http://www.health.vic.gov.au/whatwedo/>.
- Department of Infrastructure Transport, Regional Development and Local Government, *The Good Gear Guide for Motorcycle and Scooter Riders*, 2009,
http://www.infrastructure.gov.au/roads/safety/publications/2009/pdf/good_gear_guide_nrsc.pdf.

Department of Infrastructure, Transport, Regional Development and Local Government, *Motorcycle and Scooter Safety Summit: The road ahead 10-11 April 2008*, March 2009.

Department of Sustainability and Environment, *Annual Report 2011*, Melbourne, 31 August 2011.

Department of Sustainability and Environment, *Trail Bike Initiative – Project Update July 2006*, Melbourne, August 2006.

Department of Sustainability and Environment, *Trail Bike Market Research 2009*, Melbourne, 2010.

Department of Sustainability and Environment, *Trail riding ride safe, ride legal*, Melbourne, June 2010.

Department of Treasury and Finance, *2011-12 Model Report for Victorian Government Departments Model financial statements and report of operations guidance for reporting period ending 30 June 2012*, March 2012, [http://www.dtf.vic.gov.au/CA25713E0002EF43/WebObj/2011-12ModelReport/\\$File/2011-12ModelReport.pdf](http://www.dtf.vic.gov.au/CA25713E0002EF43/WebObj/2011-12ModelReport/$File/2011-12ModelReport.pdf).

Directive 2006/126/EC of the European Parliament and of the Council of 20 December 2006 on driving licences (Recast), Official Journal of the European Union, 30 December 2006.

Directive 2008/96/EC of the European Parliament and of the Council, 19 November 2008.

Doeke SD, Anderson RWG & Woolley JE, *Advisory Intelligent Speed Adaptation for government fleets*, Centre for Automotive Safety Research, Adelaide, 2011.

Duck N & Cavallo A, *The Repeat Speeders Trial: Victorian Trial of Intelligent Speed Assist Technology & the Speed Behaviour Program*, 2011,
<http://casr.adelaide.edu.au/rsr/RSR2011/1APaper%20094%20Duck.pdf>.

Duncan C, Corben B, Truedsson N & Tingvall C, *Motorcycle and safety barrier crash-testing: Feasibility study*, Australian Transport Safety Bureau, December 2000.

Dynamic Outcomes Consultants, *Yarra ranges instructed motorcycle rides program evaluation report for VicRoads*, for VicRoads, September 2008.

E

Eid HO, Barss P, Adam SH, Torab FC, Lunsjo K, Grivna M, & Abu-Zidan FM, *Factors affecting anatomical region of injury, severity, and mortality for road trauma in a high-income developing country: lessons for prevention*, Injury, vol. 40 issue 7, July 2009.

Elvik R & Vaa T, *The handbook of road safety countermeasures*, Oxford, UK, 2004.

ERTICO, *About ERTICO*, 2010, <http://www.ertico.com/about-ertico/>.

European commission, *CE Marking for Personal Protective Equipment*, Factsheet, 2011.

European Commission, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions- Towards a European road safety area: policy orientations on road safety 2011-2020*, SEC(2010) 903, Brussels, 20 August 2010.

European Commission, *Cost-benefit assessment and prioritisation of vehicle safety technologies*, Final Report, Brussels, 2006.

European Commission, *Directives and Regulations Two- and Three-wheel vehicles and Quadricycles*, http://ec.europa.eu/enterprise/sectors/automotive/documents/directives/motorbikes/index_en.htm.

European Commission, *EU road safety plan for next 10 years – 20/07/2010*, http://ec.europa.eu/news/transport/100720_en.htm.

European Commission, *F1 558340 DT Regulation on Two- or Three-wheel vehicles and Quadricycles*, Brussels, 2010.

European Commission, *MAIDS Motorcycle Accidents In Depth Study – Project Details*, Road Safety, http://ec.europa.eu/transport/road_safety/projects/doc/maids.pdf.

European Commission, *Regulation (EU) No .../2010 of the European Parliament and of the Council on the approval and market surveillance of two- or three-wheel vehicles and quadricycles*, COM(2010) 542, 4 October 2010, <http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0542:FIN:EN:PDF>.

European Commission, *The IRT model – European initial Rider Training Programme*, Brussels, 2011.

European Commission, *Towards a European road safety area: policy orientations on road safety 2011-2020*, Brussels, 2010.

European Economic Community, *Council Directive of 21 December 1989 on the approximation of the laws of the Member States relating to personal protective equipment*, 89/686/EEC, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1989L0686:20031120:EN:PDF>.

European Parliament and Council, *Directive 2010/40/EU of the European Parliament and of the Council*, Official Journal of the European Union, L207, Vol. 53, 7 July 2010, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:207:0001:0013:EN:PDF>.

European Parliament, *Motorbikes need to be safer and greener*, Internal Market Committee MEPs, IMCO press release, December 2011, <http://www.europarl.europa.eu/news/en/pressroom/content/20111205IPR33211/html/Motorbikes-need-to-be-safer-and-greener-say-Internal-Market-Committee-MEPs>.

European Safer Urban Motorcycling, *OLA Process for Developing Road Safety Projects*, Swedish National Road Administration, 2009, <http://www.local-transport-projects.co.uk/files/BP2%20016%20OLA%20Process.pdf>.

European Transport Safety Council, “*PRAISE*”: *Preventing Road Accidents and Injuries for the Safety of Employees, Driving for Work: Managing Speed*, Brussels, 2011.

European Transport Safety Council, *Position paper on the proposal for a Regulation on the approval and market surveillance of two-or three-wheel vehicles and quadricycles*, http://www.etsc.eu/documents/ETSC_Position_on_L-category_vehicles.pdf.

European Transport Safety Council, *Vulnerable Riders – Safety Implications of motorcycling in the European Union*, Brussels, 2008.

EuroRAP, *Barriers to change: designing safer roads for motorcyclists – position paper on motorcycles and crash barriers*, December 2008.

EuroRAP, *Belgium – EuroRAP Overview*, 14 November, 2006,

[http://www.eurorap.org/library/pdfs/country_profiles/English_hi/Belgium%20\(E\)%20Final.pdf](http://www.eurorap.org/library/pdfs/country_profiles/English_hi/Belgium%20(E)%20Final.pdf).

F

Federal Ministry of Transport and Mobility, *Road Safety Fund report checks carried out in 2006*, Belgium, 2006, <http://www.mobilit.fgov.be/data/route/PASR2006.pdf>.

Federal Ministry of Transport and Mobility, *Road safety on highways: Survey results*, Belgium, 6 March 2007, <http://www.mobilit.fgov.be/data/route/Persberf.pdf>.

Federation of European Motorcyclists' Associations, *A European Agenda for Motorcycle Safety – The Motorcyclists' Point of View*, Brussels, April 2009.

Federation of European Motorcyclists' Associations, *Intelligent Transport Systems (ITS) FEMA Position Paper*, http://www.fema-online.eu/uploads/documents/ITS/20110110_FEMA_ITS_position.pdf.

FIA Foundation, *EU launches Road Safety 2011-2020 plan*, FIA Foundation for the Automobile and Society, <http://www.fiafoundation.org/news/archive/2010/Pages/EUlaunchesRoadSafety2011-2020plan.aspx>.

Fitzharris M, Stephan K, Newstead S, Truong J, Healy D, Collins S & Rowe G, *Final Analysis of the TAC ISA Heavy Vehicle Trial: Effects of ISA and Fuel Efficiency Training on Speed Choice*, Insurance Commission of WA, Perth, 2011.

Foreign and Commonwealth Office, *Travel & living abroad: France*, UK,

<http://www.fco.gov.uk/en/travel-and-living-abroad/travel-advice-by-country/europe/france1>.

Forests Act 1958 (Vic)

Forward S, *The intention to commit driving violations – a qualitative study*, Transportation Research Part F: Traffic Psychology and Behaviour, vol. 9 no. 6, 2006.

Fotheringham N, *The motorcycle safety levy: Providing an integrated program to improve motorcyclist safety*, 2007, <http://casr.adelaide.edu.au/rsr/RSR2007/FotheringhamN.pdf>.

G

Gabbe BJ, Cameron PA, Williamson OD, Edwards ER, Graves SE & Richardson MD, *The relationship between compensable status and long-term patient outcomes following orthopaedic trauma*, Medical Journal of Australia, vol. 187. no.1, July 2007.

Gerondeau C, *Road Safety in France Reflections on three decades of road safety policy*, FIA Foundation for the Automobile and Society, France, 2005.

- Gershon P, Ben-Asher N & Shinar D, *Attention and search conspicuity of motorcycles as a function of their visual context*, Accident Analysis and Prevention, vol. 44 issue 1, 2012.
- GHD, *Motorcycle Graduated Licensing System Public Forums Final Report*, for VicRoads, January 2011.
- Gibson J, *Road Fatality Review Panel: Do we count it or not?*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011.
- Gobson T & Benetatos E, *Motorcycles and crash barriers*, NSW Motorcycle Council, 1 November 2000.
- Gold Coast City Council, *Australian Road Safety Awards 2011 – SMART Motorcycle Training Program*, Gold Coast City Council Nomination, 2011.
- Government of New South Wales, *Community road safety fund legislation passed into law*, Media Release, Minister for Roads and Ports, 18 September 2012,
<http://www.transport.nsw.gov.au/sites/default/files/b2b/releases/120918-community-road-safety-fund-legislation-passed-into-law.pdf>.
- Government of South Australia, *South Australia's Compulsory Third Party Insurance Scheme 2012 Green paper*, 2012, http://www.treasury.sa.gov.au/CTPg.reenpaper/downloads/ctp_green_paper.pdf.
- Government of Victoria, *Engineering technology projects*, 27 March 2012,
http://www.roadsafety.vic.gov.au/initiatives/safer_road_users/the_motorcycle_safety/engineering_technology_projects.html.
- Government of Victoria, *Government response to the Inquiry into crashes involving roadside objects*, Melbourne, tabled 22 March 2005.
- Government of Victoria, *Government Response to the Parliamentary Road Safety Committee Report of an Inquiry into the Review of Motorcycles Safety in Victoria*, Melbourne, tabled 27 October 1998.
- Government of Victoria, *Government Response to the Parliamentary Inquiry into Vehicle Safety 2008*, Melbourne, tabled 3 February 2009.
- Government of Victoria, *Response to recommendations Parliamentary Social Development committee First Report – Motorcycle visibility March 1992*, Melbourne, tabled 24 November 1993.
- Government of Victoria, *Victoria's Road Action Plan 2011-12*, November 2011.
- Government of Victoria, *Victoria's Road Safety and Transport Strategic Action Plan for Powered Two Wheelers 2009-2013*, Melbourne, 2009.
- Government of Victoria, *Victoria's Road Safety Strategy: Arrive Alive 2008-2017*, Melbourne, 2008.
- Government of Victoria, *Victoria's Road Safety Strategy: The motorcycle safety levy*, June 2012,
http://www.roadsafety.vic.gov.au/initiatives/safer_road_users/the_motorcycle_safety/the_motorcycle_safety_levy.html.
- Government of Victoria, *Victorian Community Road Safety Alliance: Terms of Reference*, 2010,
<http://www.roadsafety.vic.gov.au/files/initiatives/communityroadsafe/CRSP%20terms%20of%20reference.pdf>.

Government of Victoria, *Victorian Motorcycle Advisory Council Terms of Reference*, 1998.

Government of Western Australia & Road Safety Council, *Towards Zero – Road safety Strategy to reduce road trauma in Western Australia 2008-2020*, March 2009,

<http://ors.wa.gov.au/Documents/towardszero-strategy.aspx>.

Government of Western Australia, *100 per cent of speed camera revenue for road safety*, Ministerial Media Statements, Office of the Premier and Office of the Minister for Road Safety, 19 April 2011, [http://www.mediastatements.wa.gov.au/Pages/WACabinetMinistersSearch.aspx?ItemId=139498&m inister=Johnson&admin=Barnett](http://www.mediastatements.wa.gov.au/Pages/WACabinetMinistersSearch.aspx?ItemId=139498&minister=Johnson&admin=Barnett).

Government Social Research Unit, *Publishing research in government*, GSR professional guidance series, Her Majesty's Treasury, January 2010, http://www.civilservice.gov.uk/wp-content/uploads/2011/09/GSR-Publication-Guidance-29-Jan-2010_tcm6-35775.pdf.

Greaves SP & Ellison AB, *Personality, risk aversion and speeding: An empirical investigation*, Accident Analysis and Prevention, vol. 43 issue. 5, September 2011.

Green D, *A comparison of stopping distance performance for motorcycles equipped with ABS, CBS, and conventional Hydraulic Brake Systems*, United States Department of Transportation, National Highway Traffic Safety Administration, paper presented at International Motorcycle Safety Conference, Long Beach, 28-30 March 2006.

Greig K, Haworth N & Nielson, *The suitability of current crash databases for analysis of motorcycle crashes*, Report No. 08/02, Royal Automobile Club of Victoria, Noble Park, February 2008.

Greig K, Haworth N & Wishart D, *Identifying programs to reduce road trauma to ACT motorcyclists*, December 2007, http://eprints.qut.edu.au/27211/1/mcyc_progs_NRMA-ACT_final_report%5B1%5D.pdf.

Grzebieta RH, *Motorcycle crashes into roadside & median road safety barriers*, Presentation by the NSW Injury Risk management Research Centre, <http://www.spokes.com.au/assets/whats-on/Motorcycle-crashes-into-barriers.pdf>.

Gunderd, *TAC motorcycle reconstruction ad alternative voice-over*, YouTube, 5 May 2012, http://www.youtube.com/watch?v=3_0Xs3mVUME.

H

Hadingham K, *A review of engineering maintenance practice for motorcycle safety (Stages 2 & 3) Project RSD0267*, for VicRoads, April 2006.

Hardy E, *SMC Survey of motorcyclists and their views on advanced training*, the Swedish Motorcyclists Association, Borlange, http://www.fim-live.com/fileadmin/user_upload/documents/CAP/SMC_Motorcyclistsview_on_advanced_training.pdf.

- Harrison JE & Henley G, *Trends in serious injury due to land transport accidents, Australia 2000-01 to 2008-09*, Injury Research and Statistics Series No. 66, Australian Institute of Health and Welfare, Canberra, 2012.
- Haworth N & Mulvihill C, *Review of motorcycle licensing and training*, Report No. 240, Monash University Accident Research Centre, June 2005.
- Haworth N, de Rome L & Rowden P, *Motorcycle Protective Clothing: Stage 1 review of literature and development of a safety 'star rating' system (RSD-0299)*, for VicRoads, November 2006.
- Haworth N, de Rome L, Varnsverry P & Rowden P, *Motorcycle protective clothing: Are stars better than standards?*, paper presented at Australasian Road Safety Research, Education and Policy Conference, Melbourne, 15-16 October 2007.
- Haworth N, Greig K & Wishart D, *Moped and motor scooter licensing and training: Current approaches and future challenges*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Adelaide, 10-12 November 2008.
- Haworth N, Grieg K & Wishart D, *Motorcycle and scooter training and licensing (RSD-0367) – Report to VicRoads*, for VicRoads, August 2007.
- Haworth N, Mulvihill C & Symmons M, *Hazard perception and responding by motorcyclists – background and literature review*, Report no. 235, Monash University Accident Research Centre, for the Transport Accident Commission and VicRoads, May 2005.
- Haworth N, Mulvihill C & Symmons M, *Motorcycling After 30*, Report No. 192, Monash University Accident Research Centre, Clayton, 2002.
- Haworth N, Mulvihill C, *A comparison of hazard perception and responding in car drivers and motorcyclists*, International Motorcycle Safety Conference: 'The Human element', Motorcycle Safety Foundation, Long Beach, 28-30 March 2006.
- Haworth N, Smith R & Kowadlo N, *Evaluation of rider training curriculum in Victoria*, Report No. 165, Monash University Accident Research Centre, February 2000.
- Haworth N, Smith R, Brumen I & Pronk N, *Case control study of motorcycle crashes*, CR 174, Federal Officer of Road Safety, Department of Transport and Regional Development, Canberra, 1997.
- Haworth N.L & Rowden P.J, *Challenges in improving the safety of learner motorcyclists*, 20th Canadian Multidisciplinary Road Safety Conference, Ontario, 6-9 June, 2010.
- Haworth NL, Grieg K & Nielson AL, *A comparison of risk taking in moped and motorcycle crashes*, Transportation Research Board 88th Annual Meeting, Washington DC, 11-15 January 2009.
- Haworth NL, *Integrating policy approaches for vulnerable road users*, 29th Australasian Transport Research Forum, Gold Coast, 27-29 September 2006.
- Haworth NL, Nielson AL, *Motor scooters and mopeds – are increasing sales translating into increasing crashes?*, Transportation Research Board 87th Annual Meeting, Washington DC, 13-17 January 2008.

Haworth NL, *Powered two wheelers in a changing world: Challenges and opportunities*, Accident Analysis and Prevention, vol. 44 issue 1, 2010.

HDG Consulting Group, *Motorcycle protective clothing – Stage 3 feasibility of a ‘star rating’ system*, Final report, August 2008.

HDG Consulting Group, *Preliminary feasibility of establishing a motorcycle safety and transport centre of excellence – Final Report*, for VicRoads, September 2008.

Henley G & Harrison J, *Serious injury due to land transport accidents, Australia 2006–07*. Injury Research and Statistics Series No. 53, Australian Institute of Health and Welfare, Canberra, December 2009, <http://www.aihw.gov.au/publication-detail/?id=6442468321>.

Henley G & Harrison J, *Trends in serious injury due to land transport accidents, Australia 2000–01 to 2007–08*, Injury Research and Statistics Series No. 56, Australian Institute of Health and Welfare, Canberra, April 2011, <http://www.aihw.gov.au/publication-detail/?id=10737418595>.

Henley G & Harrison J, *Trends in serious injury due to land transport accidents, Australia 2000–01 to 2008–09*, Injury Research and Statistics Series No. 66, Australian Institute of Health and Welfare, Canberra, June 2012, <http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=10737421990>.

Hennessy P, Govan C & Lowery R, *TAC Motorcycle Tracker*, for the Transport Accident Commission, Sweeney Ref. 18680, Melbourne, 2010.

Higgins J & McCloskey D, *Analysis of motorcycle ownership in VIC*, for the Transport Accident Commission, 22 December 2009.

Hillard P, *Enhanced motorcycle crash investigation project*, for the Victorian Motorcycle Advisory Council, June 2008.

Hogan v Transport Accident Commission [2012] VSC 206 (18 May 2012).

Hole GJ, Tyrrell L & Langham M, *Some factors affecting motorcyclists’ conspicuity*, Ergonomics, vol. 39 no. 7, 1996.

Honda, *Honda Develops World’s First Production Motorcycle Airbag System*, 8 September 2008, <http://world.honda.com/news/2005/2050908.html>.

Horswill MS, Helman S, Ardiles P & Wann JP, *Motorcycle Accident Risk Could Be Inflated by a Time to Arrival Illusion*, Optometry and Vision Science, vol. 82, no. 8, August 2005.

Hosking S, Liu C, Mulvihill C, Bayly M, Murdoch C, Haworth N & Regan M, *Hazard perception and responding by experienced and inexperienced motorcyclists: Stage 2*, for VicRoads, July 2008.

|

Institute of Advanced Motorists, *IAM Advanced Rider Performance – a simulator study*, London, 2010.

Institute of Highway Incorporated Engineers, *IHE Guidelines for Motorcycling*, March 2010, <http://theihe.org/knowledge-network/motorcycling/ihe-guidelines-for-motorcyclists/>.

Institute of Highway Incorporated Engineers, *IHIE Guidelines for motorcycling – improving safety through engineering and integration version 1.1*, UK, 2010.

Internal Market and Consumer Protection Committee of the European Parliament, *Approval and market surveillance of two- or three-wheeled vehicles and quadricycles Study*, IP/A/IMCO/ST/2011-21,

Directorate General for Internal Policies Policy Department A: Economic and Scientific Policy, European Parliament, 2012,

<http://www.europarl.europa.eu/committees/en/studiesdownload.html?languageDocument=EN&file=66991>.

International Association for Public Participation Australasia, *IAP2 Public Participation Spectrum*, 2004,

<http://www.iap2.org.au/sitebuilder/resources/knowledge/asset/files/36/iap2spectrum.pdf>.

International Traffic Safety Data and Analysis Group, *Reporting on serious road traffic casualties – combining and using different data sources to improve understanding of non-fatal road traffic crashes*, International Transport Forum / Organisation for Economic Co-operation and Development, Paris, December 2011.

Irwin R, *Road policing – an intelligent approach*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011.

J

Jama HH, Grzebieta RH, Friswell R & McIntosh AS, *Characteristics of fatal motorcycle crashes into roadside safety barriers in Australia and New Zealand*, Accident Analysis and Prevention, vol. 43 issue. 3, May 2011.

Jama HH, Grzebieta RH, McIntosh A, Friswell R, Favand J, Attard M & Smith R, *Overview of motorcycle crash fatalities involving road safety barriers*, Journal of the Australasian College of Road Safety, vol. 20 issue 4, November 2009.

Jamson S & Chorlton K, *The Changing nature of motorcycling: Patterns of use and rider characteristics*, Journal of Transportation Research Part F, vol. 12, 2009.

Jost G, Allsop R, Steriu M & Popolizio M, *2010 Road safety target outcome: 100,000 fewer deaths since 2001*, 5th Road Safety PIN Report, European Transport Safety Council, Brussels, 21 June 2011.

K

Kardamanidis K, Martiniuk A, Ivers RQ, Stevenson MR & Thistlewaite K, *Motorcycle rider training for the prevention of road traffic crashes*, Cochrane Review, 2010.

Karim H, Alam M & Magnussen R, *Road barrier repair costs and influencing factors*, Journal of Transportation Engineering, vol. 137 no. 5, May 2011.

Karim H, *Road design for future maintenance – life-cycle cost analyses for road barriers*, Doctoral Thesis, Royal Institute of Technology (KTH), Stockholm, 2011.

Kerryn Alexander Research, *Motorcycle on-road rider assistance program market research report*, for VicRoads, August 2007.

Kerryn Alexander Research, *Motorcycle Protective Clothing: Market testing of two safety star rating models – Research report*, for VicRoads, May 2007.

Khashawi F, *Detecting motorcycles in road scenes: differences between car drivers and motorcyclists*, Doctoral Thesis, University of Nottingham, March 2011,
http://etheses.nottingham.ac.uk/2044/1/Fadhel_Khashawi_Thesis.pdf.

Kopp P, *The unpredicted rise of motorcycles: A cost benefit analysis*, Transport Policy, vol. 18 issue. 4, 2011.

L

Land Act 1958 (Vic)

Land Conservation (Vehicle control) Act 1972 (Vic)

Lay R, *Road Safety Proposal for Consideration – ‘Junior Recreational Rider Licence’*, 2 October 2002
<http://www.amtra.com.au/forum/general-chat/dolescent-off-road-licencing/?action=dlattach;attach=2765>.

Lewis I, *Factors influencing the effectiveness of advertising countermeasures in road safety*, Doctoral Thesis, Queensland University of Technology, 2008.

LexisNexis Butterworths Editorial, *Australian Legal Words and Phrases 1900-2011*, vol. 3 P-Z, Australia, 2011.

Local Government Act 1989 (Vic)

M

Magazzu D, Cornelli M & Marinoni A, *Are car drivers holding a motorcycle licence less responsible for motorcycle –car crash occurrence? A non-parametric approach*, Accident Analysis and Prevention, vol. 38 issue. 2, 2006.

Mandl U, Dierx A & Ilzkovitz F, *The effectiveness of efficiency of public spending*, Economic Papers 301, European Commission, Brussels, February 2008.

McIntyre A, Nieuwsteeg & Cockfield S, *Motorcyclists injuries and protective clothing: Research with TAC Clients*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011.

Mikocka-Walus A, Gabbe B, Cameron P, *Motorcycle-related major trauma: On-road versus off-road incidence and profile of cases*, Emergency Medicine Australasia, vol. 22 no. 5, 2010.

Minister for Planning and Infrastructure – The Hon A MacTiernan (WA Legislative Assembly), *Question on Notice No. 2631*, 37th Parliament of Western Australia session 1, 19th September 2007,
<http://www.parliament.wa.gov.au/parliament/pquest.nsf/c99dd775292ce5954825718e00176c69/95496e332a4953cdc825734100302927?OpenDocument&ExpandSection=1>.

Minister of the Interior, *Intervention du ministre de l'Intérieur sur la sécurité routière*, Press Conference on Road Safety, France, 5 January 2012, <http://www.interieur.gouv.fr/Archives/Archives-Claude-Gueant-2011-2012/Les-interventions-du-Ministre/05.01.2012-Conference-de-presse-sur-la-securite-routiere>.

Ministry of Infrastructure and Environment, *Action Plan for improving road safety for motorcyclists Strategic Approach*, The Hague, February 2011.

Ministry of Transport, Public Works and Water Management & Royal Haskoning, *Roundabouts – Application and design a practical manual*, Netherlands, June 2009.

Monash University Accident Research Centre, *Strategic guide for expenditure of the motorcycle safety levy funding*, May 2004.

Monash University, *Victorian Injury Surveillance Unit*,
<http://www.monash.edu.au/miri/research/research-areas/home-sport-and-leisure-safety/visu/>.

Motor Cycle Industry Association, *The Transport Select Committee Inquiry Effective Road & traffic Management – Written evidence from the Motor Cycle Industry Association (ETM51)*, Transport Committee, House of Commons, March 2011,
<http://www.publications.parliament.uk/pa/cm201011/cmselect/cmtran/writev/etm/m51.htm>.

Motor Cycle Industry Association, *The Transport Select Committee Scrutiny into the work of the driver and vehicle licensing Agency (DVLA) and the Driving Standards Agency (DSA) – Written evidence from the Motor Cycle Industry Association (DDA 18)*, Transport Committee, House of Commons, September 2011,
<http://www.publications.parliament.uk/pa/cm201012/cmselect/cmtran/1610/1610vw15.htm>.

Motor Cycle Industry Association, *The Transport Select Committee Scrutiny into the work of the government's strategic framework for road safety – Written evidence from the Motor Cycle Industry Association (RSF 17)*, Transport Committee, House of Commons, October 2011,
<http://www.publications.parliament.uk/pa/cm201213/cmselect/cmtran/506/506we09.htm>.

Motorcycle and Scooter Safety Action Group, *Safe Road Use – Workshop Compilation*, Government of Western Australia, Perth, 2011, <http://www.ors.wa.gov.au/Documents/MSSAG/motorcycle-mssagcompilationssru-forum2.aspx>.

Motorcycle and Scooter Safety Action Group, *Safe Speeds – Workshop Compilation*, Government of Western Australia, Perth, 2011, <http://www.ors.wa.gov.au/Documents/MSSAG/motorcycle-mssagcompilationsss-forum2.aspx>.

Motorcycle and Scooter Safety Action Group, *Safe vehicles – Workshop compilation*, Government of Western Australia, Perth, June 2011, <http://www.ors.wa.gov.au/Documents/MSSAG/motorcycle-mssagcompilationssv-forum2.aspx>.

Motorcycle Council of NSW, *Protection from the weather*,

<http://roadsafety.mccofnsw.org.au/a/78.html>.

Motorcycle Riders' Association Victoria, *Connecting with Motorcycle Riders*, Melbourne, 2010.

Motorcycle Riders' Association of Australia, *Submission to the Inquiry into Managing Transport Congestion*, Victorian Competition and Efficiency Commission, Submission no. 72, 20 December 2005, [http://www.vcec.vic.gov.au/CA256EAF001C7B21/WebObj/Submission72-MotorcycleRidersAssociationofAustralia/\\$File/Submission%2072%20%20Motorcycle%20Riders%20Association%20of%20Australia.pdf](http://www.vcec.vic.gov.au/CA256EAF001C7B21/WebObj/Submission72-MotorcycleRidersAssociationofAustralia/$File/Submission%2072%20%20Motorcycle%20Riders%20Association%20of%20Australia.pdf).

Motorcycle Riders' Association Victoria, *Motorcycle Riders Association calls for Legalisation of Lane Splitting*, Media Release, 12 January 2006,

<http://www.mravic.org.au/forum/modules/news/article.php?storyid=189>.

Moulton v Williams & Baxter [1969] VR 524

Mulvihill C & Haworth N, *Crashes of older riders – characteristics and implications for countermeasures*, Report to Motor Accidents Authority of NSW, March 2006.

Musselwhite C, Avineri E, Susilo Y, Fulcher E, Bhattachary D, Hunter A & Stockley R, *Road Safety Research Report No. 111 Understanding Public Attitudes to Road Users Safety*, for the Department for Transport, London, September 2010.

N

National Center for Injury Prevention and Control, *Motorcycle Safety – How to save lives and save money*, 2012 http://www.cdc.gov/Motorvehiclesafety/pdf/motorcycle_brief-a.pdf.

National Cooperative Highway Research Program, *Effectiveness of behavioral highway safety countermeasures*, NCHRP Report 622, Transportation Research Board, Washington DC, 2008.

National Highway Traffic Safety Administration, *Countermeasures that work: A highway safety countermeasure guide for state highway safety offices*, 3rd edition, 2008.

National Parks Act 1975 (Vic)

National Transport Commission, *Napping Tips – To help prevent driver fatigue*, Heavy Vehicle Driver Fatigue Reform Information Bulletin, July 2008,
http://www.ntc.gov.au/filemedia/Publications/HVDF_NappingTips_July08.pdf.

National Transport Commission, *Review of the Australian Road Rules and Vehicle Standards Rules*, Discussion Paper, Melbourne, 2011.

Nordqvist M & Gregersen NP, *Study on motorcyclist's behaviour and attitude towards road safety*, Sveriges MotorCyklister & Nationalforeningen for Trafiksakerhetens Framjande, 2010.

Norwegian Public Roads Administration, *Special Analysis Fatal Motorcycle Accidents 2005-2009*, Report Nr. 45, Directorate of Public Roads Road users and vehicles department driver training, November 2011.

O

- O'Connor TM, Hanks HA, Elcock MS, Turner RC & Veitch C, *The medical and retrieval costs of road crashes in rural and remote northern Queensland, 2004-2007: findings from the Rural and Remote Road Safety Study*, Medical Journal of Australia, vol. 190. no.2, January 2009.
- O'Hare M, Cassell & Congiu M, *Off-road motorcycling injury in Victoria*, Monash University Accident Research Centre and the Victorian Injury Surveillance Unit, July 2006.
- Observatoire National Interministériel De Sécurité Routière, *La sécurité routière en France*, Paris, 2011.
- Office of Road Safety (WA), *Road Safety Council welcomes Road Trauma Trust Fund changes*, Government of Western Australia, 19 April 2011, <http://ors.wa.gov.au/Latest-News/Media-Releases/Road-Safety-Council-welcomes-Road-Trauma-Trust-Fund.aspx>.
- Office of Traffic Safety, *Survey shows what riders and drivers think of motorcycle 'lane splitting'*, Press Release, California, May 3 2012,
http://www.ots.ca.gov/Media_and_Research/Press_Room/2012/doc/2012_Motorcycle_Survey_and_Safety_Month.pdf.
- Organisation for Economic Co-operation and Development / International Transport Federation Transport Research Committee, *Workshop on Motorcycling Safety – Final Report*, 2008, Lillehammer <http://www.internationaltransportforum.org/jtrc/safety/Lillehammer2008/Lillehammer08FinalReport.pdf>.
- Organisation for Economic Co-operation and Development / International Transport Forum, *Towards Zero: Ambitious Road Safety Targets and the Safe System Approach*, Summary Document, Transport Research Centre, 2008,
<http://www.internationaltransportforum.org/jtrc/safety/targets/08TargetsSummary.pdf>.
- Organisation for Economic Co-operation and Development, *Drugs and driving detection and deterrence*, Transport Research Centre, 2010.
- Organisation for Economic Co-operation and Development, *Road Safety Annual Report 2011*, France, 2012.
- Organisation for Economic Co-operation and Development/ International Transport Forum, *Sharing Road Safety developing an international framework for crash modification functions*, Research report, 2012.
- Otte D, Jansch M & Haasper C, *Injury protection and accident causation parameters for vulnerable road users based on German In-Depth Accident Study GIDAS*, Accident Analysis and Prevention, vol. 44 issue. 1, January 2012.
- Oxley J & Budd L, *Improving Motorcycle Safety in a Safe System*, Fact Sheet no. 13, Curtin-Monash Accident Research Centre, Perth, 2011.

P

Pallavicini MR, *Simulation forgives - reality does not: Driver training in the next 10 years*, Journal of the Australasian College of Road Safety, vol. 21 issue. 1 February 2010.

Parliament of New South Wales Joint Standing Committee on Road Safety (RoadSafe), *Vulnerable road users: Inquiry into motorcycle and bicycle safety*, Report no. 5/54, Sydney, 2010.

Parliament of Queensland Economic Development Committee, *Inquiry into the road safety benefits of fixed speed cameras*, Report No. 4, October 2010.

Parliament of Victoria Public Accounts and Estimates Committee, *Review of the 2009-10 and 2010-11 Annual Reports*, Parliament of Victoria, Melbourne, February 2012.

Parliament of Victoria Public Accounts and Estimates Committee, *Report on the 2010-11 Budget Estimates Part Three*, Parliament of Victoria, Melbourne, September 2010.

Parliament of Victoria Road Safety Committee, *Inquiry into Crashes Involving Roadside Objects*, Parliament of Victoria, Melbourne, March 2005.

Parliament of Victoria Road Safety Committee, *Inquiry into driver distraction*, Parliament of Victoria, Melbourne, August 2006.

Parliament of Victoria Road Safety Committee, *Inquiry into Federal-State Road Funding Arrangements*, Parliament of Victoria, Melbourne, September 2010.

Parliament of Victoria Road Safety Committee, *Inquiry into Motorcycle Safety in Victoria – First Report Motorcycle Visibility*, Parliament of Victoria, Melbourne, March 1992.

Parliament of Victoria Road Safety Committee, *Inquiry into the Country Road Toll*, Parliament of Victoria, Melbourne, May 2005.

Parliament of Victoria Road Safety Committee, *Inquiry into the Review of Motorcycle Safety*, Parliament of Victoria, Melbourne, 1998.

Parliament of Victoria Road Safety Committee, *Inquiry into Vehicle Safety*, Parliament of Victoria, Melbourne, August 2008.

Paulozzi LJ, *The role of sales of new motorcycles in a recent increase in motorcycle mortality rates*, Journal of Safety research, vol.36 issue 4, 2005.

Performance Verification and Accreditation, *Options for destructive analysis of motorcycle garments*, for the Transport Accident Commission, 5 March 2012.

Petroulias T, *Community attitudes to road safety – 2011 survey report*, Road Safety Report no. 5, Department of Infrastructure and Transport & the National Road Safety Council, December 2011.

Pieve M (Piaggio), *Future perspective on cooperative systems for a safe and sustainable mobility*, presentation at the ATA International Workshop, 24-5 May 2007, Fortress of Bard, Aosta Italy.

Pigot J, *Symbolic identities Masculinity Motorcycle*, Artlink, vol. 16 no. 1, 1996.

Podda F, *Drink Driving: Towards zero tolerance*, European Transport Safety Council, Brussels, Belgium, 24 April 2012.

Pogarsky G, *Identifying “deterrable” offenders: implications for research on deterrence*, Justice Quarterly, vol.19 no.3, September 2002.

PriceWaterhouseCoopers & Minter Ellison, *National competition policy review of Victoria’s transport compensation legislation*, for the Department of Treasury and Finance, Victoria, 20 December 2000.

R

Reality Check Communication Research, *Fatigue related motorcycle Crashes Rider Survey Research Market Research Stages 1 & 2*, for VicRoads, November 2006.

Registration and Licensing Compliance Group, *Quarterly summary report accredited heavy vehicle and motorcycle providers April-June 2011*, Quarterly summary report, VicRoads, August 2011.

Reinertsen RE, Faerevik H, Holbø K, Nesbakken R, Reitan J, Røyset A, Suong Le Thi M, *Optimizing the performance of phase-change materials in personal protective clothing systems*, International Journal Occupational Safety Ergonomics, vol. 14 no.1, 2008.

RideTech, *DriveTech (UK) and Thames Valley Police join forces to improve motorbike safety*, Media Release, 10 March 2004, http://www.drivetech.co.uk/pdfs/pressrelease_040310.pdf.

Rizzi M, Strandroth J & Tingvall C, *The effectiveness of antilock brake systems on motorcycle in reducing real-life crashes and injuries*. Traffic Injury Prevention, vol. 10 issue. 5, 2009.

Rizzi M, Strandroth J, Johansson R & Lie A, *The potential of different countermeasures in reducing motorcycle fatal crashes: what in-depth studies tell us*, in Proceedings, 22nd International Technical Conference on the Enhanced Safety of Vehicles, Washington DC, 13-16 June 2011.

Road Management Act 2004 (Vic)

Road Safety (Drivers) Regulations 2009 (Vic)

Road Safety (General) Regulations 2009 (Vic)

Road Safety (Vehicles) Regulations 2009 (Vic)

Road Safety Act 1986 (Vic)

Road Safety Council (WA), *Road Safety Council Report on Activities 2011-12 as required by Section 13 of the Road Safety Council Act 2002*, <http://www.ors.wa.gov.au/Documents/RSC/rsc-report-section13-201112.aspx>.

Road Safety Road Rules 2009 (Vic)

Roads Magazine, *Road Safety – Developing a solution*, October/ November 2011.

RoadSafe Eastern Victoria, *Motorcycle Crash Data – Fact Sheet*,

http://bairnsdaledistricts.ulysesclub.org/Portals/vicbair/documents/Eastern_Bike_Fact_sheet.pdf.

RoadWise, *Community Road Safety Grants Program*, West Australian Local Government Association, April 2012, http://www.roadwise.asn.au/road_safety_grants.

RoadWise, *Motorcycle Safety*, West Australian Local Government Association, November 2011,
<http://www.roadwise.asn.au/resources/resources/motorcyclesafety>.

Rodrigo D & Andrés-Amo P, *Background Document on Public Consultation*, Organisation for Economic Co-operation and Development, 2006.

Roll G, Hoffman O & Konig J, *Effectiveness evaluations of antilock brake systems (ABS) for motorcycles in real world accident scenarios*, Paper no. 09-0254, DEKRA Automobil AG, Germany, 2009,
<http://www-nrd.nhtsa.dot.gov/pdf/esv/esv21/09-0254.pdf>.

ROSA Project, *European Handbook on Good Practices in Safety for Motorcyclists*, March 2011,
http://ec.europa.eu/transport/road_safety/pdf/projects/rosa_handbook_training_en.pdf.

Rowden PJ & Watson BC, *Motorcycle rider training and perceptions of skill*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Adelaide, 10-12 November 2008.

Royal Automobile Club of Victoria, *The effectiveness of driver training/education as a road safety measures*, 2011 edition,
<http://www.racv.com.au/wps/wcm/connect/e21e218046f4a67f9d40fdcedbccd5d8/The+Effectiveness+of+Driver+Training+and+Education+-+2011.pdf?MOD=AJPERES&CACHEID=e21e218046f4a67f9d40fdcedbccd5d8>.

Rudin-Brown CM, Clark B, Allen A, Mulvihill C & Filtness A (MUARC), *Do drinking and riding mix? Effects of legal doses of alcohol on balance ability in experienced motorcyclists*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011.

S

Saferider Project, *Advanced Telematics for Enhancing the Safety and Comfort of Motorcycle Riders*, Project Presentation, European Commission Information Society, Brussels, Belgium, 2008.

Saferider Project, *SAFERIDER: Advanced Rider Assistance Systems (ARAS) and On-Bike Information Systems (OBIS) for Powered Two-Wheelers*, European Commission Information Society,
http://ec.europa.eu/information_society/events/cf/ict2010/item-display.cfm?id=3376.

Safespot Project, *Equipped Motorcycles Integrating the Safety Margin Applications*, Deliverable 4.4.4, European Commission Information Society and Media, 2009.

Safespot Project, *Objectives*, European Commission Information Society and Media,
<http://www.safespot-eu.org/objectives.html>.

Scully J, Newstead S, Corben B & Candappa N, *Effect of prior blackspot programs on motorcycle safety*, Project number RSD 0286, for VicRoads, 24 October 2006.

Seiniger P, Schroter K & Gail J, *Perspectives for motorcycle stability control systems*, Accident Analysis and Prevention, vol. 44 issue.1, January 2012.

- Shahar A, van Loon E, Clarke D & Crundall D, *Attending overtaking cars and motorcycles through the mirrors before changing lanes*, Accident Analysis and Prevention, vol. 44 issue. 1, January 2012.
- Smart RRS, *Smart RRS Project*, <http://smarrrs.unizar.es/content.php?seccion=16>.
- Smith G, Turner B & Hill J, *A toolkit for saving lives*, Journal of the Australasian College of Road Safety, vol. 22 issue. 2, 2011, http://acrs.org.au/wp-content/uploads/ACRS_Journal_22_No2_WebLR.pdf.
- Smith R, *Filtering. Legitimising Motorcycle Filtering In Traffic Lanes: A Compelling Case*, Motorcycling Australia, Melbourne, 2012.
- Smith R, *Sharing Road Space, Positive Integration of PTWs into the Transport System*, Motorcycling Australia, Melbourne, 2011.
- Smithson A, Russell-Weisz L & Wernham R, *Learnings from Phase One of WALGA's local government safe system project*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011.
- Snitow SL, *Reducing the drink driving road toll: A case study in integrating communication and social policy enforcement*, Master of Arts Thesis, RMIT University, Melbourne, June 2004.
- Sohadi RUR, Mackay M & Hills B, *Multivariate Analysis of Motorcycle Accidents and the Effects of Exclusive Motorcycle Lanes in Malaysia*, Journal of Crash Prevention and Injury Control, vol. 2 issue. 1, 2000.
- South D & Associates Pty Ltd, *Options for the collection and expenditure of the motorcycle safety levy*, 1 June 2006.
- Sperley M & Pietz AJ, *Motorcycle Lane-Sharing*, Literature Review, Oregon Department of Transportation, Salem, 2010.
- Standards Australia, *Motorcycle Protective Clothing: Guidelines for manufacturing*, HB173-2000, Sydney, December 2000.
- State of New Jersey, *Assembly, No. 140*, 214th Legislature, 2010
- State of New Jersey, *Assembly, No. 1684*, 213th Legislature, 2008
- State Services Authority, *Governance arrangements for Victoria's regulators Discussion paper*, State Government of Victoria, Melbourne, 2010.
- Stedmon AW, Crundall D, Crundall E, Irune A, Saikayosit R, van Loon E, Ward P & Greig N, *Investigating motorcycle rider behaviours: developing an integrated experiment approach*, Advances in Transportation Studies, Special edition, December 2010.
- Stedmon AW, *Human-motorcycle interaction (HMI): Issues and research in motorcycle ergonomics and rider human factors*, Presentation to the Human Centred Design Institute, Brunel University, Middlesex, 23 February 2010.
- Steg L & van Brussel A, *Accidents, aberrant behaviours, and speeding of young moped riders*, Journal of Transportation Research Part F, 2009.

Steinhardt DA, Sheehan MC & Siskind V, *Profiling off-road motorcycle and all-terrain riders in Queensland, Australia*, in Proceedings, 21st Canadian Multidisciplinary Road Safety Conference, Canadian Association of Road Safety Professionals, Nova Scotia, 8-11 May 2011.

Stephan K & Newstead S, *Measuring the influence of the road and roadside in the safe system*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011.

Stephan K, Symmons M, Hillard P, Bohensky M, Muir C & Lenne M, *Characteristics of fatal motorcycle crashes involving excessive and/or inappropriate speed*, for VicRoads, October 2008.

Strategic Safety Solutions, *Accredited provider scheme – heavy vehicle drivers and motorcycle riders training and assessment – Independent review, assessment and recommendations*, for VicRoads, July 2008.

Styles T, Imberger K, Cairney P & Pyta V, *Motorcycle crashes and injuries in Victoria*, VC73145-2, Contract report for VicRoads, August 2007.

Swedish Motorcyclists Association, *Motorcycle Vision Zero*, Sweden,
http://www.svmc.se/upload/SMC%20centralt/Dokument/rapporter/MC_Vision%20Zero.pdf.

Swedish Transport Administration, *Analysis of Road Safety Trends 2010 Management by Objectives for Road Safety Work, Towards the 2020 Interim targets*, Sweden, April 2011.

Swedish Transport Administration, *Improved safety for motorcycle and moped riders – Joint Strategy for the period 2010-2020 – version 1.0*, Sweden, 2010.

Swedish Transport Administration, *ISA – Intelligent Speed Adaptation*, 12 June 20,
<http://www.trafikverket.se/Om-Trafikverket/Andra-sprak/English-Engelska/Road-Safety/ISA--Intelligent-Speed-Adaptation/>.

Swedish Transport Administration, *OLA – Systematic Collaboration for Safer Road Traffic*,
<http://www.trafikverket.se/Om-Trafikverket/Andra-sprak/English-Engelska/Road-Safety/OLA--Systematic-Collaboration-for-Safer-Road-Traffic-/>.

SWOV Institute for Road Safety Research, *SWOV Fact Sheet: Motorcyclists*, Netherlands, December 2010.

Symmons M & Newstead S, *Feasibility of assessing the influence of shifts in traffic speed on motorcycle trauma*, VicRoads Project RDS-0516, for VicRoads, August 2008.

T

Teoh E R, *Effectiveness of Antilock Braking Systems in reducing Motorcycle Fatal Crash Rates*, Traffic Injury Prevention, vol.12 issue. 2, April 2011.

Teoh E. R & Stepper K, *Motorcycle Safety: The case for ABS*, presentation at SMSA Annual Conference, Des Moines, 19-21 August 2011.

The Independent, *Concern over wire rope crash barriers sparks EU review*, Editorial, Tuesday 9 October 2007, Ireland,

http://www.umcinc.com.au/uploads/Guard%20Rails/http___www_independent_ie_national-news_concern-over-wire-rope-crash-barriers-sparks-eu-review-1138.pdf.

Thornton JA, *Fear patterns in anti-speeding advertisements: effects on simulated driver-behaviour*, Doctoral Thesis, University of Wollongong, Wollongong, 2005.

Transport (Compliance and Miscellaneous) Act 1983 (Vic)

Transport Accident Act 1986 (Vic)

Transport Accident Charges Order (No. 1) 2012 (Vic)

Transport Accident Commission v Lees [2002] VSC 397 (13 September 2002)

Transport Accident Commission v Vanbenthem [2002] VSC 398 (13 September 2002)

Transport Accident Commission, *Annual Report 2005*, October 2005, Melbourne, 2005.

Transport Accident Commission, *Annual Report 2011*, 29 August 2011, Melbourne, 2011.

Transport Accident Commission, *Annual road toll*, 19 July 2012,

<http://www.tac.vic.gov.au/jsp/statistics/roadtollannual.do?areaID=23&tierID=1&navID=3>.

Transport Accident Commission, *Crash database*,

<http://www.tacsafety.com.au/jsp/statistics/reportingtool.do?tierID=100>.

Transport Accident Commission, *Current Motorcycle Campaign*, 2012,

<http://www.tacsafety.com.au/jsp/content/NavigationController.do?areaID=13&tierID=2&navID=BF7673AE7F00000101C2E8A4A4EBD88F&navLink=null&pageID=1556>.

Transport Accident Commission, *Motorcycle riders targeted in new TAC campaign*, posted 26 April 2012,

<https://www.facebook.com/TransportAccidentCommission>.

Transport Accident Commission, *New TAC campaign urges riders to reduce risks*, Media release, 20th October 2009,

<http://www.tac.vic.gov.au/jsp/content/NavigationController.do?areaID=23&tierID=1&navID=63CC12CD7F00000101A5D19311EC6AC2&navLink=null&pageID=1897>.

Transport Administration Amendment (Community Road Safety Fund) Act 2012 No 70 (NSW)

Transport Administration Amendment (Community Road Safety Fund) Bill 2012 (NSW)

Transport Certification Australia, *The Intelligent Access Program (IAP)*,

<http://www.tca.gov.au/regulatory-telematics/iap>.

Transport Certification Australia, *What is the IAP?*, <http://www.tca.gov.au/regulatory-telematics/iap/what-is-the-iap>.

Transport for London, *Motorcycles to be allowed permanent access to bus lanes*, Media Release, 21

December 2011, <http://www.tfl.gov.uk/corporate/media/newscentre/archive/22125.aspx>.

Transport for New South Wales, *The NSW Speed camera Strategy*, June 2012,

http://www.rta.nsw.gov.au/roadsafety/downloads/nsw_speed_camera_strategy.pdf.

Transport Integration Act 2010 (Vic)

Transport Roads and Maritime Services (NSW), *Motorcycle Rider Training Scheme*, 7 June 2012,

<http://www.rta.nsw.gov.au/licensing/gettingalicence/motorcycle/index.html>.

Treve H, *Crash against obstacles in urban areas: A real safety problem*, presentation given to European Transport Council Conference on Urban Traffic Safety, Strasburg, 8-10 October 2003.

Tuluie et al, *United States Patent – Motorcycle concerning simulator*, no. 6,733,294 B2, 11 May 2004.

Tunnicliff D, Watson B, White KM, Lewis I & Wishart D, *The social determinants of motorcycle riding and the key determinants influencing rider behaviour: A qualitative investigation*, Traffic injury Prevention, vol. 12 issue. 4, August 2011.

Tunnicliff DJ, Watson J, Barry C, White KM, Hyde MK, Schonfeld CC & Wishart DE, *Understanding the factors influencing safe and unsafe motorcycle rider intentions*, Accident Analysis and Prevention, vol. 49, November 2012.

U

Ultrafeedback, *Motorcyclist exposure on Victorian Roads (RSD 457) Final Report*, for VicRoads, May 2008.

Umar RRS, Mackay MG & Hills BI, *Preliminary analysis of exclusive motorcycle lanes along the federal highway F02, Shah Alam, Malaysia*, Transport Research Laboratory, IATSS Research, vol. 19 no. 2, 1995.

Urban LS, *Identifying “Deterrable” offender in a sample of active juvenile offenders*, Southwest Journal of Criminal Justice, vol. 6 no. 1, 2009.

V

Vavryk K & Winkelbauer M, *Braking performance of experienced and novice motorcycle riders – results of a field study*, paper presented at International Conference on Transport and Traffic Psychology, Nottingham, 2004.

VicRoads, *Accepted safety barrier products*, Road Design Note RDN 06-04A, July 2011.

VicRoads, *Accredited Provider Services Agreement – Motorcycle training and assessment services*, Version 1, January 2010.

VicRoads, *Accredited provider services agreement – motorcycle training and assessment services - Business procedures manual*, Version 2, April 2010.

VicRoads, *Australian Bureau of Statistics Definitions – Guidelines for reporting and classifying road vehicle accidents*, submitted at Public Hearing for Inquiry into Motorcycle Safety, Melbourne, 6 March 2012.

VicRoads, *Club Permits*, October 2012,

<http://www.vicroads.vic.gov.au/Home/Registration/PermitsModificationsAndDefects/OtherPermits/ClubPermits.htm>.

VicRoads, *Consultation for Motorcycle Measures*, Motorcycle Notes, No.2, Kew, 2000,

<http://www.vicroads.vic.gov.au/NR/rdonlyres/322B0D1B-A200-4B56-BDF1-B16D96700D13/0/tr1999056.pdf>.

VicRoads, *Eastern region motorcycle treatments overview*, submitted at Public Hearing for Inquiry into Motorcycle Safety, Bairnsdale, 14 December 2011.

VicRoads, *Farm Bikes*, March 2011,

<http://www.vicroads.vic.gov.au/Home/Registration/WhatHasToBeRegistered/OtherVehiclesvesselsAndRegistrationIssues/FarmBikes.htm>.

VicRoads, *Make Motorcycling Safer – guidelines for a program to reduce loss of control motorcycle crashes – A resource for Local Government*, May 2005.

VicRoads, *Making roads motorcycle friendly – A guide for road design, construction and maintenance*, provided by VicRoads, Perth, 5 November 2011.

VicRoads, *Motorcycle Advisory Group*, September 2012,

<http://www.vicroads.vic.gov.au/Home/Moreinfoandservices/Motorcycles/MotorcycleAdvisoryGroup/>.

VicRoads, *Motorcycle blackspot projects*, March 2012,

http://www.roadsafety.vic.gov.au/initiatives/safer_road_users/the_motorcycle_safety/motorcycle_blackspot_projects.html.

VicRoads, *Motorcycle Notes*, no. 1-10, 1999-2003.

VicRoads, *Motorcycle trial on Hoddle Street bus lane*, Collingwood, 21 June 2012,

<http://www.vicroads.vic.gov.au/Home/RoadProjects/MelbourneRoadProjects/Inner/HoddleStMotorcycleTrial.htm>.

VicRoads, *Recreational motorcycle registration*, September 2012,

<http://www.vicroads.vic.gov.au/Home/Registration/WhatHasToBeRegistered/OtherVehiclesvesselsAndRegistrationIssues/RecreationMotorcycleRegistration.htm>.

VicRoads, *Regional Services*, 5 March 2010,

<http://www.vicroads.vic.gov.au/Home/AboutVicRoads/OrganisationalStructure/RegionalServices.htm>.

VicRoads, *Response to the Inquest into the Death of Simon Peter Gardner*, 28 June 2011,

http://www.coronerscourt.vic.gov.au/resources/75e722b2-758d-4b15-93c5-d5906a7bbd94/responsevicroads_gardner.pdf.

VicRoads, *Road Design*, 19 June 2012,

<http://www.vicroads.vic.gov.au/Home/Moreinfoandservices/RoadManagementAndDesign/DesignStandardsManualsNotes/RoadDesign/>.

VicRoads, *The Victorian Rider Handbook*, 2010.

VicRoads, *Trial of VicRide: On-road coaching information booklet*, January 2012.

VicRoads, *VicRoads road network*, January 2010,

<http://www.vicroads.vic.gov.au/Home/Moreinfoandservices/RoadManagementAndDesign/TypesOfRoads/VictoriasRoadNetwork.htm>.

VicRoads, *VicRoads supplement to Austroads Guide to Road Design – Part 6*, Rev. 2.0, July 2011.

VicRoads, *Victoria's Road Safety Strategy – Approved Projects*, November 2012,

<http://www.roadsafety.vic.gov.au/levyprojects>.

VicRoads, *Victoria's Road Safety Strategy – Engineering technology projects*,

http://www.roadsafety.vic.gov.au/initiatives/safer_road_users/the_motorcycle_safety/engineering_technology_projects.html.

VicRoads, *Victoria's road safety strategy – FAQs*, March 2012,

http://www.roadsafety.vic.gov.au/initiatives/safer_road_users/the_motorcycle_safety/faqs.html.

VicRoads, *Victoria's Road Safety Strategy – Motorcycle blackspot projects*,

http://www.roadsafety.vic.gov.au/initiatives/safer_road_users/the_motorcycle_safety/motorcycle_blackspot_projects.html.

VicRoads, *Victorian Community Partnership Program: Registered Groups*, October 2012,

<http://www.vicroads.vic.gov.au/Home/SafetyAndRules/AboutRoadSafety/StrategyAndPrograms/VictoriaCommunityRoadSafetyPartnershipProgram/RegisteredGroups.htm>.

VicRoads, *Victorian Community Road Safety Partnership Program: Statement of requirements for local community groups 2010*, Kew, 2010.

Victoria State Trauma System, *Definition of Major Trauma*, Department of Health, October 2010,

<http://www.health.vic.gov.au/trauma/definition.htm>.

Victorian Auditor-General, *Motorcycle and Scooter Safety Programs*, Melbourne, February 2011.

Victorian Government Health Information, *Victorian State Trauma System - Terms of Reference*,

October 2010, <http://www.health.vic.gov.au/trauma/stc-tor.htm>.

Victorian Motorcycle Advisory Council, *Annual Report 2008-2009*, 2009.

Victorian Motorcycle Advisory Council, *Annual Report 2009-2010*, 2010.

Victorian Motorcycle Advisory Council, *Safety advice for off road motorcycle riders*, Meeting Paper – Draft Proposal, 5 February 2007.

Victorian Motorcycle Council, *Motorcycle Riders Universally Outraged at TAC's "Reconstruction" Ad*

Campaign, Media Release, Melbourne, 27 April 2012,

<http://victorianmotorcyclecouncil.org.au/index.php?mact=News,cntnt01,detail,0&cntnt01articleid=5&cntnt01returnid=57>

Victorian State Trauma Outcomes Registry Monitoring Group, *Report – Victorian motorcycle collisions 1 July 2005 to 30 June 2011*, Monash University, 21 March 2012.

Vulcan P, Cameron M & Newstead S, *Road Trauma in Perspective*, paper presented to Vehicle Accidents their Cause – Reconstruction – Law Conference, Monash University, Department of Civil Engineering, Melbourne, 28-29 July 1995,
<http://www.monash.edu.au/miri/research/reports/papers/roadtoll.html>.

W

Wall JP, Boland P, Vecovski V, Prendergast M, Stow J, Creef K & Beck J, *Moving from research to reality – rolling out ISA technology across New South Wales*, paper presented at Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011.

Wallace P, Haworth N & Regan M, *Best training methods for teaching hazard perception and responding by motorcyclists*, Report No. 236, Monash University Accident Research Centre, for the Transport Accident Commission, May 2005.

Watson A, McKenzie K & Watson B, *Priorities for developing and evaluating data quality characteristics of road crash data in Australia*, paper presented at the Australasian Road Safety Research, Policing and Education Conference, Perth, 6-9 November 2011.

Watson B, Tunnicliff D, White K, Schonfeld C & Wishart D, *Psychological and social factors influencing motorcycle riders' intentions and behaviour*, Australian Transport Safety Bureau, Canberra, August 2007.

Watson BC, *Unlicensed drivers: Are they high risk?*, 3rd International Conference on Urban traffic Safety, Edmonton, 17-21 April 2011.

Wegman F & Aarts L (eds), *Advancing sustainable safety – National road safety outlook for 2005-2020*, SWOV Institute for Road Safety Research, Leidschendam, 2006.

Weijermars W & Wegman F, *Ten years of Sustainable Safety in the Netherlands*, Transportation Research Records, Transportation Research Journal, vol. 2213, August 2011.

Wells S, Mullin B, Norton R, Langley J, Connor J, Lay-Yee R & Jackson R, *Motorcycle rider conspicuity and crash related injury: case-control study*, British Medical Journal, vol. 328 issue. 7444, 10 April 2004.

White M & Walker J, *Update and overview of research on the effectiveness of the Victorian Transport Accident Transport Commission's road safety television advertising campaigns*, Transport SA, South Australia, December 2002.

Wigan M, *The role of contestable processes in advancing sustainability in transport and planning*, Road and Transport Research, vol. 20 no. 1, March 2011.

Wilson FA, Stimpson JP & Hilsenrath PE, *Gasoline prices and their relationship to rising motorcycle fatalities, 1990-2007*, American Journal of Public Health, vol. 99 no.10, October 2009.

Wishart D & Watson B, *Victoria Motorcycle Apparel observations study March 2010*, Final report to the Transport Accident Commission, June 2011.

Wishart D & Watson B, *Victoria Motorcycle Apparel observations study August 2010*, Final report to the Transport Accident Commission, June 2011.

Wishart D, Watson B & Rowden P, *Motorcycle rider protective apparel wearing: observational study results from the Brisbane and Canberra regions*, Journal of the Australasian College of Road Safety, vol. 20 no. 4, 2009.

WorkSafe Victoria, *Quad bikes on farms, A handbook for workplaces*, edition no. 2, 2009.

World Health Organisation, *Global status report on road safety – Time for action*, Geneva, 2009,
http://whqlibdoc.who.int/publications/2009/9789241563840_eng.pdf.

Y

Yamasaki et al, *United States Patent – Riding simulation system for motorcycles*, no. 5,547,382, 20 August 1996.

York I, Ball S & Hopkin J, *Motorcycles on bus lanes – monitoring of the second TfL trial*, version 1 – Client project report CRP1224, Transport Research Laboratory, UK, December 2011.

