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Risk and Motorcyclists in Scotland

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RISK AND MOTORCYCLISTS IN SCOTLAND

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EXECUTIVE SUMMARY

Aims

The objectives of this project were:

- to study variations in attitudes to risk taking and understanding of risks across different social and demographic groupings of motorcyclists,
- study the extent to which attitudes influence behaviour,
- investigate variations between statistical risk assessments and motorcyclists' assessment of risk,
- identify those motorcyclists whose attitudes towards risk place them at risk and
- to provide recommendations on how future road safety campaigns could be better targeted towards high risk groups

Background

Road safety targets for the period to 2010 together with a strategy for achieving them were published jointly by the Scottish Executive, the UK Government and the National Assembly for Wales in March 2000 ('Tomorrow's Roads - Safer for Everyone'). The targets are to achieve a 40% reduction in the number of people killed or seriously injured; a 50% reduction in the number of children killed or seriously injured and a 10% reduction in the slight casualty rate on the 1994-1998 baseline average (DETR, 2000).

In general, progress towards these targets in Scotland has been excellent; however, motorcyclists are one group of road users where casualties have increased over the 1994-1998 average. In 2004, there were 986 motorcyclist casualties on Scottish roads of which 389 were either killed or seriously injured (Scottish Executive, 2006).

Increasing numbers of people are using motorcycles for travel and recreation. Per mile travelled, motorcyclists are 25 times more at risk of being killed in a road traffic accident than car users and 5 times more likely to be killed than cyclists (DfT, 2005, p27).

The risk of a motorcyclist being involved in an accident depends on factors such as the rider's age, sex, experience, type of road, characteristics of the motorcycle and exposure. The assessment of risk is complicated by interactions between these and other factors (Sexton et al, 2004).

Recent research into motorcycle accidents in Scotland confirmed that the number of motorcycle accidents in Scotland has increased in recent years (Sexton et al, 2004a). The average rate of increase in motorcycle casualties from 1996 to 2002 approached 9% per year for killed and serious casualties (KSI) and just over 6% per year for all casualties. However there has been a drop in Scottish motorcycle KSI casualties from 2002 to 2003, and a further drop in 2004 reducing the percentage change over the 1994 to 1998 baseline for KSI to 9%. (The figures for built-up and non built-up roads are respectively 2% below and 18% above the 1994-1998 baseline) (SE, 2006).

Method

This study has:

- (a) Obtained a sample of 124 in-depth and partially structured interviews with motorcyclists covering a range of risk propensity with the aim of obtaining measures of risk acceptance and attitudes to risk.
- (b) Conducted a self-completion questionnaire survey of motorcyclists (returned sample of 364 from 2,000 questionnaires distributed) from a range of backgrounds and likely risk taking. Through the questionnaire, we have obtained measures of behaviour, attitudes and self-reported rider style together with demographic information.
- (c) Analysed the data from the in-depth interviews and the self-completion questionnaires in order to investigate the levels of risk accepted by motorcyclists, their attitudes to risk and their perceptions of personal risk.
- (d) Considered the findings and made recommendations in relation to Road Safety Scotland activity on potential remedial measures directed at high risk riders.

Key findings and Recommendations

Most riders in this study said they were aware of, or willing to believe, objective estimates of motorcycling risk. Furthermore, they were willing to accept these levels of risk and few would consider giving up motorcycling because of them. It does not appear that, as a group, motorcyclists base their behaviour on grossly under-estimating the risks of motorcycling as an activity.

- Three rider groups, identified on the basis of responses to a series of questions about the relative risk of motorcycling and car driving, give some insight into patterns of perception, and possible remedial actions:
- "Risk Deniers" might be susceptible to improved information on the real risks of motorcycling provided it is presented in a convincing way – though educational measures designed to show that they themselves are not immune from this risk would also be needed.
- "Optimistic Accepters" might be influenced by educational campaigns designed to bring home to them the true impact of motorcycle accidents on victims and their families. Measures designed to improve awareness of personal limitations and to reduce the belief that skill provides immunity from risk should also be useful. However, this group has a pattern of riding motives that also needs to be considered. One way to do this is by emphasising the link between such motives/goals and safety so that riders are more able to take these into account. Another might be to find ways of promoting other riding goals that would reduce risk (see Sexton et al (2004b)). It may also be the case that, for some riders at least, it is unrealistic to expect educational and training measures to be very effective in reducing risk; and that if the government wishes to reduce their risk substantially, attention will also need to be given to engineering and enforcement-based measures.

- “Realistic Accepters” may be the group most susceptible to educational and training interventions. Their self-assessment of their own risk is two-to-three times higher than the self-assessed risk of the other groups, they worry more about the risks than the other groups, and they are more aware that their own skills do not protect them from this risk.

It is probably not feasible or even desirable, to target each group with a different safety intervention. However, identifying the groups does give an indication of the types of content that need to be considered, and their potential effectiveness.

Suggestions for road safety campaigns

Following the above discussion, a campaign based on using ‘risk’ as the lever of influence would thus consider the following:

- Present convincing information on the objective risk of motorcycling, while recognising that many riders will not need convincing.
- Show that riders tend to be unrealistically optimistic about whether or not these risks apply to them personally, and about the extent to which their skills protect them from the risk.
- Demonstrate the true impact of motorcycle accidents on victims and their families.

However, the surveys demonstrated that riders in the survey samples did not in general seem to grossly under-estimate the risk of motorcycling. It was also apparent that most riders in the surveys were dedicated to riding and would not consider giving it up because of the risk. It must be recognised, therefore, that measures like the above, focussing on giving riders a better appreciation of the risks they run, may well not be very effective in reducing motorcycle accidents. Therefore a potential strategy should also consider the following:

- Promotion of 'safe' goals for motorcycling – for example, smoothness and safety rather than speed and 'progress'. In effect, this would recognise the importance of riding for pleasure as a goal, but seek to encourage people to obtain this pleasure from other facets of riding.
- Making available and promoting training and educational measures to improve riders' safe-riding skills but ensure that they also promote safe goals rather than unsafe ones, give attention to the influence of attitudes and goals on riding behaviour, and improve people's self evaluation skills and their awareness of risk-increasing factors.
- Encouraging being a smoother rider, a rider with good perception & planning skills
- Suggesting the goal of completing all rides with no 'surprises' and making the point that 'being a good rider is not enough' or, rather, redefining what is seen as a good rider.
- Creating an attitude that riding is a continuous learning process and improvement activity, from ‘cradle to grave’, thus encouraging the view that, by continuing to learn, riding will become better and more enjoyable.

- Developing an increased skill level without a corresponding increase in risk – possibly by using highly-respected expert riders to promote safe riding, so that riders aspire to ride as well as these experts, rather than trying to emulate ‘racing riders’ on the road
- Encouragement of more pre and post-test training, (a view which is endorsed by motorcycle training organisations). An equivalent of the Pass Plus scheme for bikers could be considered, as could an extended BikeSafe scheme, an NVQ qualification or training via IAM or RoSPA. In any training, attention needs to be given, as discussed above, to ensuring that safe, rather than unsafe, goals are promoted, and that attention is given to the influence of attitudes and goals on riding behaviour, and to improving people's self evaluation skills and their awareness of risk-increasing factors.

CHAPTER ONE INTRODUCTION

Background

1.1 Road safety targets for the period to 2010 together with a strategy for achieving them were published jointly by the Scottish Executive, the UK Government and the National Assembly for Wales in March 2000 ('Tomorrow's Roads - Safer for Everyone'). The targets are to achieve a 40% reduction in the number of people killed or seriously injured; a 50% reduction in the number of children killed or seriously injured and a 10% reduction in the slight casualty rate on the 1994-1998 baseline average (DETR, 2000).

1.2 In general, progress towards these targets in Scotland has been excellent; however, motorcyclists are one group of road users where casualties have increased over the 1994-1998 average. In 2004, there were 986 motorcyclist casualties on Scottish roads of which 389 were either killed or seriously injured (Scottish Executive, 2006).

1.3 Increasing numbers of people are using motorcycles for travel and recreation. Per mile travelled, motorcyclists are 25 times more at risk of being killed in a road traffic accident than car users and 5 times more likely to be killed than cyclists (DfT, 2005, p27).

1.4 The risk of a motorcyclist being involved in an accident depends on factors such as the rider's age, sex, experience, type of road, characteristics of the motorcycle and exposure. The assessment of risk is complicated by interactions between these and other factors (Sexton et al, 2004).

1.5 Recent research into motorcycle accidents in Scotland confirmed that the number of motorcycle accidents in Scotland has increased in recent years (Sexton et al, 2004a). The rate of increase in motorcycle casualties from 1996 to 2002 approached 9% per year for killed and serious casualties (KSI) and just over 6% per year for all casualties.

1.6 Sexton et al (2004a) also found that the majority of fatal and serious casualties occurred on non built-up roads. Non built-up roads are faster roads and a motorcycle accident is more likely to result in a fatal or serious rider casualty. There has been a higher growth in non built-up road KSI casualties than in built-up road KSI casualties. In 2002, the percentage growth over the 1994 to 1998 baseline for built-up and for non built-up road KSI casualties was 24% and 32% respectively. However there has been a drop in Scottish motorcycle KSI casualties from 2002 to 2003, and a further drop in 2004, such that in 2004 KSIs were for built-up and non built-up roads respectively 2% below and 18% above the baseline figures (SE, 2006).

1.7 Sexton et al (2004a) also examined a sample of fatal and serious accidents and found that accidents on built-up roads tended to be the fault of the motorist rather than the motorcyclist. A significant number of these accidents were caused by cars turning right or doing a 'u' turn in front of the motorcyclist. However, motorcyclists were also at fault on some built-up road accidents because riders lost control due to excessive speed, slippery roads, inexperience etc. Accidents on non built-up roads were found to be mostly the fault of the motorcyclist and were often due to 'loss of control'. Over two-thirds of the accidents on non-built-up roads involved larger engined 'sports' bikes (i.e. over 500cc).

1.8 Sexton et al (2004a) suggested that it would be valuable to conduct some further research into the risk acceptance of motorcyclists. They argued that it would be helpful to road safety campaigns if an understanding of the perceived risks and why motorcyclists accept such risks could be determined.

1.9 In research for the DfT, Sexton et al (2004b) stated that

“Given the very striking facts about the risks faced by motorcyclists, it would seem desirable to make sure that riders are actually aware of these risks. This might encourage riders to modify their riding behaviour or to take up further training. Ways of communicating the risks of motorcycling should be explored and riders’ current understanding of these risks assessed.”

1.10 In order to obtain further understanding of risk assessment and attitudes towards risk amongst different groups of motorcyclists in Scotland a new study has been conducted and is the subject of this report.

Project objectives

1.11 The specific objectives of the project were:

- To study variations in attitudes to risk taking and understanding of risks across different social and demographic groupings of motorcyclists
- To study the extent to which attitudes influence behaviour
- To investigate variations between statistical risk assessments and motorcyclists’ assessment of risk
- To identify those motorcyclists whose attitudes towards risk place them at risk
- To provide recommendations on how future road safety campaigns could be better targeted towards high risk groups

1.12 These objectives address the concern that KSI accidents in Scotland involving motorcyclists constitute nearly 13% of all KSI accidents (in 2004), and that per mile travelled motorcyclists are estimated to have 25 times higher risk than car users of being killed in an accident (DfT, 2005).

Report structure

1.13 The remainder of this report consists of an overview of the methodology in Chapter 2, a summary of the main results in Chapter 3 and conclusions and recommendations in Chapter 4. Details of the methodology are given in Annex A, some more detailed data analyses in Annex B, copies of the interview and self-completion questionnaires in Annexes C and D respectively and, finally, copies of the pictures used in the interviews are given in Annex E.

CHAPTER TWO METHODOLOGY

Overview of approach

2.1 This study has:

- (a) Obtained a sample of 124 in-depth and partially structured interviews with motorcyclists covering a range of risk propensity with the aim of obtaining measures of risk acceptance and attitudes to risk.
- (b) Conducted a self-completion questionnaire survey of motorcyclists (returned sample of 364 from 2,000 questionnaires distributed) from a range of backgrounds and likely risk taking. Through the questionnaire, we have obtained measures of behaviour, attitudes and self-reported rider style together with demographic information.
- (c) Analysed the data from the in-depth interviews and the self-completion questionnaires in order to investigate the levels of risk accepted by motorcyclists, their attitudes to risk and their perceptions of personal risk.
- (d) Considered the findings and made recommendations in relation to Road Safety Scotland activity on potential remedial measures directed at high risk riders.

2.2 The findings from the two surveys have been interpreted and provide a better understanding of the following issues:

- What do riders think is the objective risk in motorcycling
- What do riders think is their own risk
- Do the above differ, and if so then why
- How do these risks and perception vary with type of rider
- How do own risks compare with other riders
- How do these risks compare with other activities
- How do riders rank different risk situations and how does this compare with the 'actual' risk
- How do riders react to different risk messages about the 'true' risk
- How do riders attitudes to risk influence their perception and acceptance of risk

Understanding of risk

2.3 In designing the questionnaire, a number of aspects of risk needed to be taken into account. First, the level of risk (probability of a defined type of accident) may be expressed in absolute terms – e.g. the number of riders out of 100 who would have an accident in a year - or relative to the risk of other activities. Secondly, it is necessary to distinguish between estimates of objective risk derived from accident statistics, and respondents' own estimates and perceptions of risk. This survey was able to make use of results from previous research (Sexton et al, 2004b) to estimate the objective risk of riders of a given age, experience and

annual mileage. Thirdly, risk estimates may be needed for different populations – e.g. motorcyclists in general, or riders who are like the respondent in some way (e.g. with respect to age, experience and annual mileage). Fourthly, risk estimates for different types or severities of accident may be needed. All these approaches were used in the questionnaires. For example, riders were asked to imagine 100 typical riders, and say how many they thought would have accidents of various severities in the next 12 months. They were then asked the same question but for riders of the same age, sex and experience as themselves, and doing a similar amount and type of riding. A further question sought an approximation to the rider's estimate of his own risk by asking him to imagine 100 riders exactly like himself in every way. Other questions presented the respondent with information on risk (e.g. the statistical risk of riders of his own age, sex and experience, or the published estimate that, per mile travelled, motorcycle riders are 25 times more likely than car drivers to be killed in a crash). Comparisons of motorcycling risk with the risks of other transport modes, and with the risks of sports such as hang-gliding and rock climbing were also sought.

2.4 One motivating factor for riding motorcycles is thought to be to be sensation seeking. Risk may be a consequence of obtaining the sensation, but it has been suggested by Zuckerman (2000), that it is sensation rather than risk itself that is sought. The questionnaire measured sensation-seeking using the Arnett Sensation Seeking scale (Arnett, 1994).

2.5 In addition to the questions on risk and sensation-seeking, the questionnaire included items on behaviour, attitude and riding style as previously used in Sexton et al (2004b). The self-completion questionnaire also included a question developed by Broughton (2005) in which respondents were shown five photographs of road scenes and asked to rate them on enjoyment, speed, concentration and risk. Together, all these questions enabled a comprehensive picture of riders to be obtained which could then be used to explore the inter-relationships between sensation-seeking, perception of risk, acceptance of risk and self-reported measures of behaviour, attitude and style.

Sample representativeness

2.6 There was a poor response rate to the questionnaire survey with just 364 (18%) of the 2,000 questionnaires distributed being returned. In-part this was due to there not being any control on the sample and no way in which reminders could be sent. Riders were either handed a questionnaire or collected one from a club or motorcycle shop. We cannot, therefore, be sure how many of the 2,000 distributed questionnaires found their way into the hands of potential respondents. The survey conducted by Sexton et al (2004b) achieved nearly 40% response rate, but this was only after a reminder and was a survey where a questionnaire was posted to the rider.

2.7 However, although the present survey achieved slightly less than half of the response rate achieved by the Sexton et al (2004b) survey, the distribution of respondents by sex and years of riding experience are very similar. Table A shows the percentage of male and of female respondents by riding experience for the two surveys. A visual inspection of the percentage values shows that the current questionnaire survey is similarly distributed to the much larger sample achieved by Sexton et al (2004b). It is concluded that, although the response rate was poor, the achieved sample is as representative of the motorcycling population as the earlier and much larger survey – at least in terms of age and sex distribution.

Table A – Percentage of respondents by age and riding experience

Cell entries are percentages of column totals	This survey (n=334)		Sexton et al survey (n=10218)	
	Male (91% of total)	Female (9% of total)	Male (92% of total)	Female (8% of total)
Riding experience				
Up to 10 years	46%	77%	47%	71%
10 to 20 years	19%	16%	22%	19%
20 to 30 years	21%	6%	18%	7%
More than 30 years	14%	0%	14%	3%

CHAPTER THREE RESULTS

Variations in attitudes to risk taking and understanding of risks across different social and demographic groupings of motorcyclists

Interview survey

3.1 The 124 interviewees were asked to compare themselves with other motorcycle riders of similar age and sex and to state how much more or less likely they were to be involved in an accident while riding on public roads in the next 12 months. No respondents thought they would be more likely than the others to be involved in an accident, and just over a third thought they would be as likely to have an accident. The other respondents all thought they would be less likely to be involved in an accident and 19% much less likely. This is a fairly typical finding, since most riders/drivers consider themselves at least as good a rider/driver as those of a similar age and sex.

3.2 Interviewees were then asked to consider riders of the same age, sex and experience as themselves and who rode the same number of miles per year, and state how many (out of 100) would have an accident or minor spill in the next 12 months. Responses ranged from none (n=3) to 85 with an average of just under 14. The median and modal values¹ were both 10.. These did not change when outliers (values that it is hard to accept as the respondent's serious estimate of risk, i.e. zero or greater than 40) were excluded, but the average dropped to 12.

3.3 Interviewers had a table² from which they could provide an estimate of the riders' accident risk, given their sex, age, experience and miles ridden per year. These estimates varied from 3 to 33 per 100 riders, with an average value of 7 and a median and mode of 6. The implication of this, when compared to the respondents' own estimates of risk from the earlier question, was that riders tended to judge the risk of being in an accident to be higher than that derived from the tables. Further information on the differences between the two measures of risk is given in paragraph 3.36.

3.4 The interviewees were asked if they were willing to believe the estimated accident risk taken from the tables, and then a series of follow-up questions. There were only 4% of interview respondents who were not willing to believe the estimated risk for them as derived from the tables; 96% agreed that they were aware that riding was this risky, and that they were prepared to accept the risk. Only 29% worried about the risk. Only 13% of respondents indicated a willingness to consider giving up riding if the risk of being killed was 25 times higher than when driving a car. Most interviewees wore protective gear which they believed would help reduce the risk of injury. Virtually all agreed that you had to accept some risk otherwise life would be too boring, see Table B1 of Appendix B for the full set of questions and responses.

¹ Median is a measure of central tendency. The median of a sample is the value for which one-half (50%) of the observations (when ranked) will lie above that value and one-half will lie below that value.

² The tables were derived from a previous survey of 11,500 motorcyclists, where overall accident risk was modelled as a function of age, mileage and experience (Sexton et al, 2004b).

3.5 These patterns of responses strongly suggest that respondents did not generally underestimate the statistical risk of riding, and that they were prepared to accept this risk. However, there were also indications that a substantial proportion of respondents (42%) felt that this statistical risk for riders like themselves did not actually apply to them because they were good riders.

3.6 Respondents were grouped by their age; the distribution is shown in Figure 3.1. The average scores on a number of questions relating to risk were computed and compared by age group.

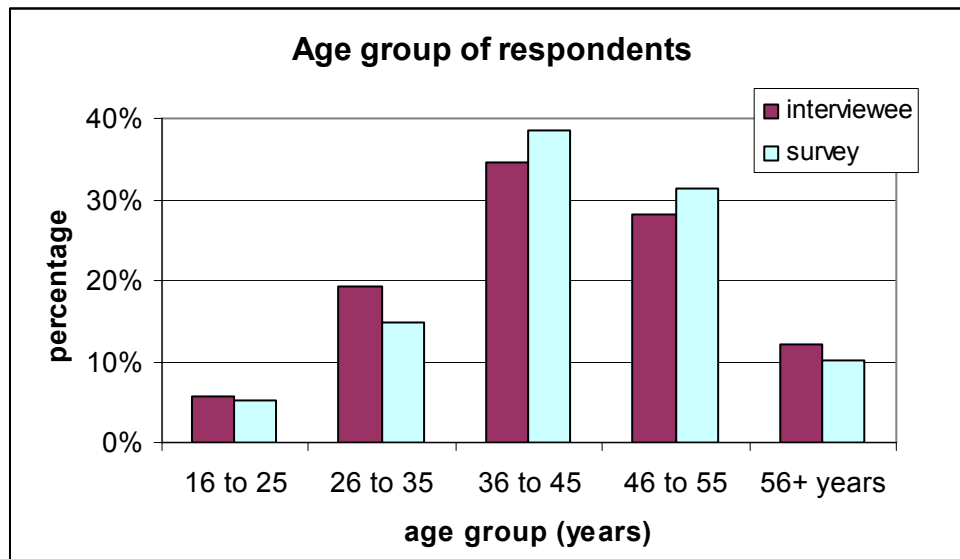


Figure 3.1 - Age group of respondents

3.7 Younger riders (16-25 yrs) on average considered themselves about as likely to have an accident as others of the same age and sex. However, older riders were more optimistic when comparing themselves with their peers. For example riders aged 46-55 years considered themselves on average as 'less likely' to have an accident than others of the same age and sex. Riders' estimates of the absolute risks faced by others of the same age and sex also fell strongly with age. 18-25 year-olds estimated that 29 out of 100 riders of the same age and sex would have an accident or minor spill during the next 12 months. This fell to about 9 out of 100 for riders aged over 45. Further information on the differences between the age-groups is given in Table B3 of Appendix B, which summarises the results for the questions for which there was a statistically significant age effect.

3.8 Respondents were also grouped by their riding experience; the distribution is shown in Figure 3.2. The average values on a number of questions asking about understanding and acceptance of risk were computed and compared by experience. The statistically significant results are given in Table B5 of Appendix B, and the main ones are summarised below.

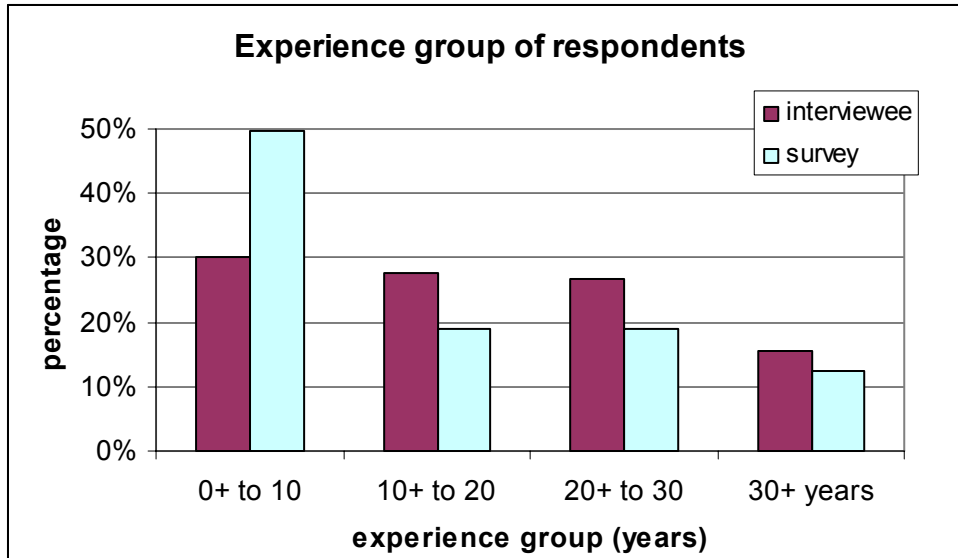


Figure 3.2 - Experience group of respondents

3.9 All the experience groups thought themselves (on average) less likely to be involved in an accident than other riders of their own age and sex, but this effect was stronger for very experienced riders. This difference is consistent with the well-established effect of experience on accident risk – an effect shown in the second row of Table B5. The experienced riders were more likely than the inexperienced to see themselves as avoiding some of the risk by being good riders, and they also worried less about the risk.

Self-completion questionnaire survey

3.10 The self-completion questionnaire also asked questions about different aspects of riders’ perception of risk when riding, and their acceptance of risk. See Question 23 in Appendix D and Table B11 in Appendix B. Because it was not feasible in the self-completion questionnaire to present the respondent with an estimate of his or her personal statistical risk, the risk they were asked to consider in the self-completion questionnaire was that motorcyclists were 25-times more likely than car drivers to be killed in an accident.

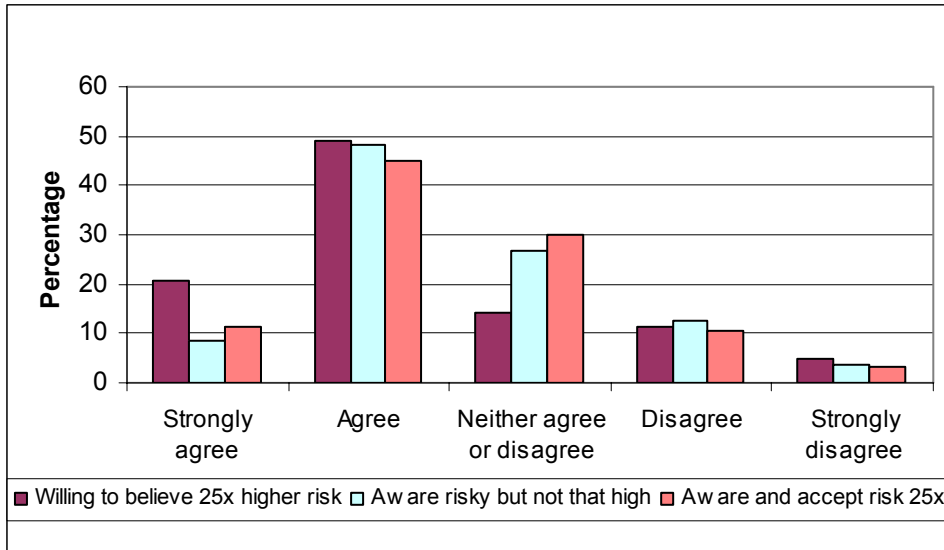


Figure 3.3 -Awareness of motorcyclists' 25x excess fatality risk over car drivers

3.11 16% of respondents were not willing to believe that motorcyclists are 25 time more likely to be killed than car drivers. However, 66% indicated that they were aware of this and were prepared to accept it. However, only 29% worried about the risk of riding. 16% believed that they avoided some of this risk by being a good rider. Figure 3.3 presents some of the results in chart form.

3.12 About 84% of self-completion questionnaire respondents agreed that they wore protective gear which would help reduce the risk of injury. Many (64%) also agreed that you had to accept some risk otherwise life would be too boring, and only 3% (10 respondents) would even consider giving up riding if the risk of being killed was actually 25 times higher when riding than when driving. See Figure 3.4.

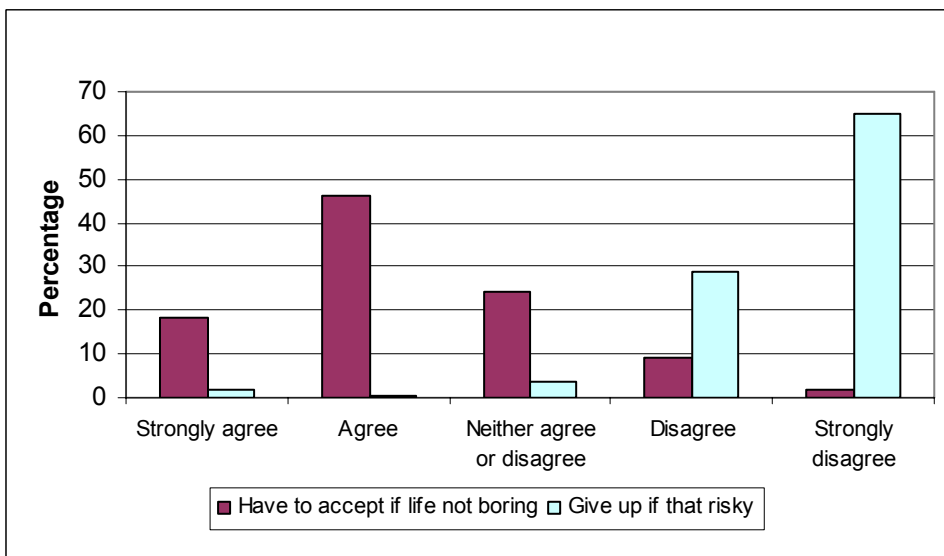


Figure 3.4 - Accept risk 'otherwise life too boring' and agree that 'would give up'

3.13 Respondents were grouped by their age and by their experience as riders; the distribution of respondents has already been shown in Figure 3.1 and Figure 3.2 respectively. A similar analysis to that carried out for the interview sample, comparing age and experience group averages for a number of questions about risk, was conducted on the self-completion questionnaire data.

3.14 Only the experience group analyses produced any statistically significant differences between group averages, see Table B14. All experience groups tended to believe that they were less likely to be involved in an accident than other riders of the same age and sex but this optimism was strongest for riders with 30 years of experience or more (see Figure 3.5). Also, the more experienced riders were less willing to believe that the risk of a fatal accident was 25 times higher for motorcyclists than car drivers. The less experienced riders worried more about the risk. Very few riders in any group said they would consider giving up riding if the fatality risk was really 25-times more than for car driving.



Figure 3.5 - Rider comparison with similar riders

3.15 Riders were asked to rate on a 7-point scale how safe or risky they thought motorcycling is. They were asked to rate the risk for riders in general and for themselves. The distribution of responses is shown in Figure 3.6. The estimate of risk for themselves was generally lower than for riders in general.

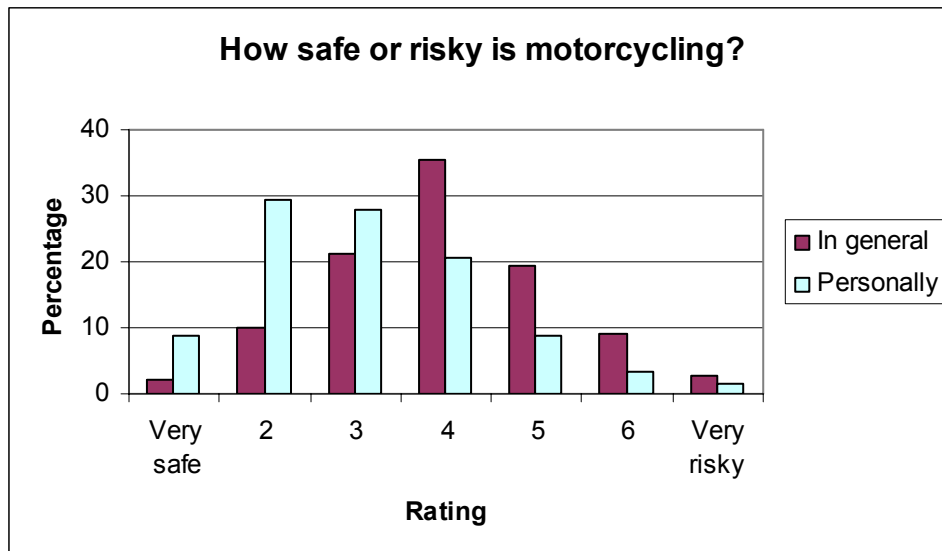


Figure 3.6 - Rider risk assessment of risk for riders in general and for themselves

Summary

3.16 Interview responses and self-completion questionnaire responses are broadly in agreement, and suggest that:

- Most respondents were willing to believe the statistical risk of motorcycling expressed in terms of estimated accident risk for their peers (interview survey) or in terms of the excess risk over car driving (self-completion survey). In fact, most said they were aware of this level of risk and were willing to accept it.
- There was in fact a tendency for riders to over-estimate the statistical risk of accidents for riders like themselves as compared to a computed risk from a model based on a previous survey.
- Few riders said they would consider giving up motorcycling if its fatality risk per mile really was 25 times higher than that of car driving.
- There was a strong tendency for riders to estimate their own risk as below that of their peers. A substantial proportion also thought that the statistical risk estimates did not apply to them because they were good riders.
- Highly experienced riders were more optimistic than less experienced riders when it came to comparing their own risk with that of others of the same age, sex, experience and annual mileage. In the interview sample only, older riders were more optimistic than younger riders when they compared themselves with their peers.
- Rider's estimates of risk levels for themselves and for their peers fell with increasing age and experience

3.17 The general picture, therefore, is that motorcyclists have a reasonably realistic view of the risks of motorcycling in terms of expected accidents per year, and in terms of the excess

risk over car driving. They do not, as a group, appear to grossly underestimate this risk. This suggests that simply providing them with better information about statistical risk is unlikely to be very effective in changing their behaviour and improving safety (or dissuading them from riding), though providing a better understanding of what that risk means in practice might be effective. A substantial proportion of riders think that they avoid some of the statistical risk by being good riders. This may be true to an extent, though we do not know whether those who believe it are in fact those who are at relatively low risk. This optimistic comparison with peers, which is particularly strong for the older and more experienced riders, is something that has potential to be tackled by rider training and education.

Extent to which attitudes influence behaviour

Self-completion questionnaire survey

3.18 One of the most influential pieces of work relating to driving behaviour published in the last 15 years was that by Reason et al. (1990). Using a self-completion questionnaire (known as the Driver Behaviour Questionnaire - DBQ), Reason et al (1990) classified aberrant driving behaviours in terms of a system of errors and violations. Violations were defined as "deliberate deviations from those practices believed necessary to maintain the safe operation of a potentially hazardous system". Errors were broadly defined as the "failure of planned actions to achieve their intended consequences".

3.19 These findings have been replicated, with variations, in further studies in the UK. Sexton et al (2004b) developed a new version of the DBQ (the Motorcycle Rider Behaviour Questionnaire (MRBQ)) specifically for motorcyclists, investigated its factor structure and its relation to motorcycle accidents. Previous research has found that people who score high on DBQ violations are statistically more likely to have been involved in accidents in the past (Parker, Reason, Manstead, & Stradling, 1995a) and to be involved in the future (Parker, West, Stradling, & Manstead, 1995b). There is also some evidence to suggest that self-reported driving errors are related to accidents (e.g. Parker et al., 1995a).

3.20 Sexton et al (2004b) fitted two models of rider behaviour using statistical modelling techniques. In these models attitudes/motivations/perceptions and rider style influence rider behaviour, which in turn influence the likelihood of accident involvement. Age, sex and experience influenced both attitudes and behaviour, and may also have a direct influence on accidents. Accident risk was also directly influenced by the number of miles ridden in the past 12-months. The reported frequency of errors was the most important behavioural contribution to accident involvement (once the mileage effect had been taken into account). Traffic errors (mostly associated with failures of hazard perception or observational skills) were the most consistent predictors. Control errors (mainly to do with difficulties of control associated with high speed, or errors in speed selection) were also important in some analyses. However, these errors occur in a context that suggests they may be closely linked with riding styles involving carelessness, inattention and excessive speed – i.e. styles that might be termed ‘violational’.

3.21 In the present study, a 24 item version of the MRBQ from Sexton et al. (2004b) was used in the self completion questionnaire, covering four of the behavioural factors identified by Sexton et al. Factor scores were computed for these four factors and provided the following measures of behaviour:

- TRAFFIC ERRORS – e.g. ‘fail to notice that pedestrians are crossing when turning into a side street from a main road’; ‘attempt to overtake someone that you hadn’t noticed to be signalling a right turn’.
- SPEEDING – speeding behaviours - e.g. ‘exceed the speed limit on a residential road’; ‘race away from traffic lights with the intention of beating the driver/rider next to you’; ‘open up the throttle and just go for it on country roads’.
- STUNT – performing stunts and other high risk behaviours – e.g. ‘attempt to do, or actually do, a wheelie’; ‘intentionally do a wheel spin’.
- CONTROL ERRORS - e.g. ‘run wide when going round a corner’; ‘brake or throttle back when going round a corner or bend’; ‘find that you have difficulty in controlling the bike when riding at speed (e.g. steering wobble)’.

3.22 Higher scores in these factors mean that the respondent indicated that the behaviour occurred more often. For example the question ‘How often do you exceed the speed limit on a residential road’ contributes to the SPEEDING behaviour measure, and a high score means that respondents reported doing this frequently or nearly all the time.

3.23 There are two errors factors (TRAFFIC ERRORS and CONTROL ERRORS). However, this distinction is not clear cut since as pointed out by Sexton et al (2004b) many of the error items are errors occurring in a violational context. The ‘SAFETY’ factor as used in Sexton et al (2004b) was not used in this study because it was in-part covered by other questions, and in-part because of space limitations.

3.24 Behavioural factors such as violations and errors might prove useful in terms of explaining why motorcycle accidents occur. To explain why people behave in these ways requires the psychological determinants of behaviour to be explored. Drivers' attitudes, motivations and perceptions about safety, for example, have been assessed in research studies in the past, and have proved to be useful predictors of driving behaviour (e.g. Baughan et al 2005; Maycock & Forsyth, 1997; Parker et al, 1995b).

3.25 The self completion questionnaire asked a number of questions relating to risk, as reported earlier. These questions define measures of ‘risk propensity’, which may be helpful in comparing the behaviour measures. For the present analysis one of these, (“You have to accept some risk, if life is not to be too boring”), has been used as an indicator of rider attitude. The derived behaviour measures (scores on the four MRBQ factors) discussed above were compared for each of the response groups defined by this ‘attitude’ question and the results shown in Figure 3.7, see also Table B14.

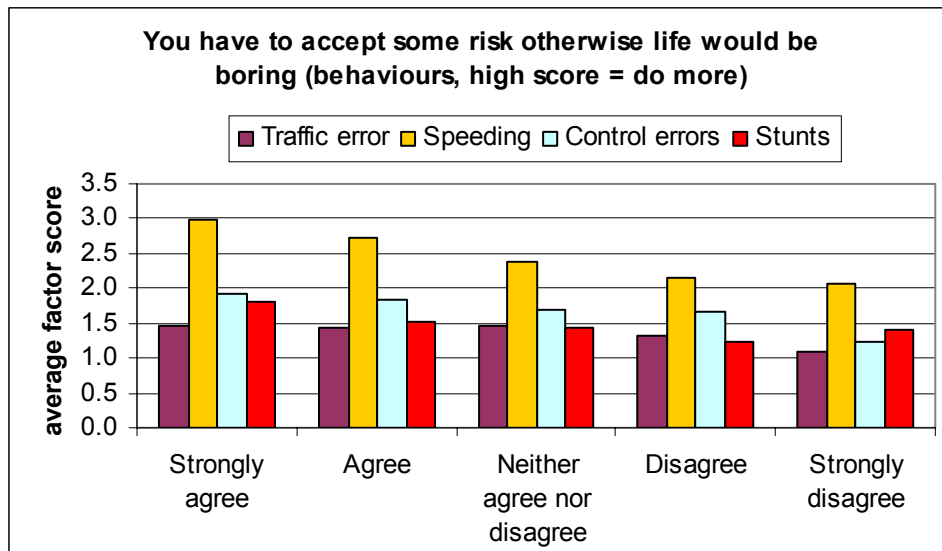


Figure 3.7 - Rider behaviour measures by ‘attitude’ question

3.26 It is clear from Figure 3.7 that the more strongly riders agree that ‘you have to accept some risk otherwise life would be too boring’ the more likely are they to commit speeding behaviours. They also tend to make more traffic violation errors, control errors and pull stunts.

3.27 Based on the work of Schulz et al (1991) in Germany, Sexton et al (2004b) developed a Motorcycle Rider Motivation Questionnaire (MRMQ) that in Britain identified three motivational factors in motorcycle riding.

3.28 In the present self-completion survey 14 items from the MRMQ were used to measure two of these factors:

- PLEASURE – the general pleasure derived from riding motorcycles
- SPEED – enjoy the dynamic aspects of performance from motorcycles

3.29 The question, “You have to accept some risk, if life is not to be too boring”, has been used above as an indicator of rider attitude; the relationship between responses to it, and riders' scores on the two motivational factors from the MRMQ is shown in Figure 3.8 . It is clear that the more strongly riders agree that ‘you have to accept some risk otherwise life would be too boring’ the more pleasure they get from riding and the more they have a liking/motivation for speeding (a low score means more pleasure).

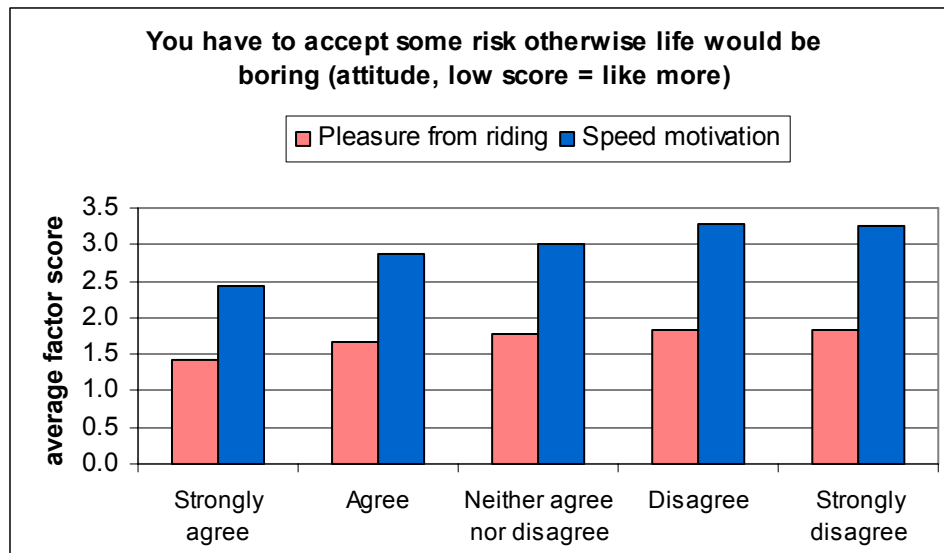


Figure 3.8 - Rider motivation and ‘attitude’ towards risk

Summary

3.30 The average values for each of the MRBQ behaviour factors and MMRQ motivational factors indicate that those riders who agree that “You have to accept some risk, if life is not to be too boring” tend to report 'riskier' behaviours and motivations than other riders. That is, riders who agree that they ‘accept some risk otherwise life would be too boring’ tend to report:

- More traffic errors
- More speeding behaviours
- More control errors
- Being more likely to do stunts when riding
- Getting more pleasure from their riding
- Being motivated by a liking of speed and the dynamic aspects of motorcycling

All the above relationships are statistically significant. It can thus be concluded that the attitude of the rider (as expressed in the statement considered) is reflected in their reported behaviours, i.e. those who accept ‘more risk’ tend to be riders who make more errors, speed more and get more pleasure from riding.

Variations between statistical risk assessments and motorcyclists assessments of risk

Interview survey

3.31 As was reported earlier, interviewees were asked to consider riders of the same age, sex and experience who rode the same number of miles per year, and state how many (out of 100) would have an accident or minor spill in the next 12 months.

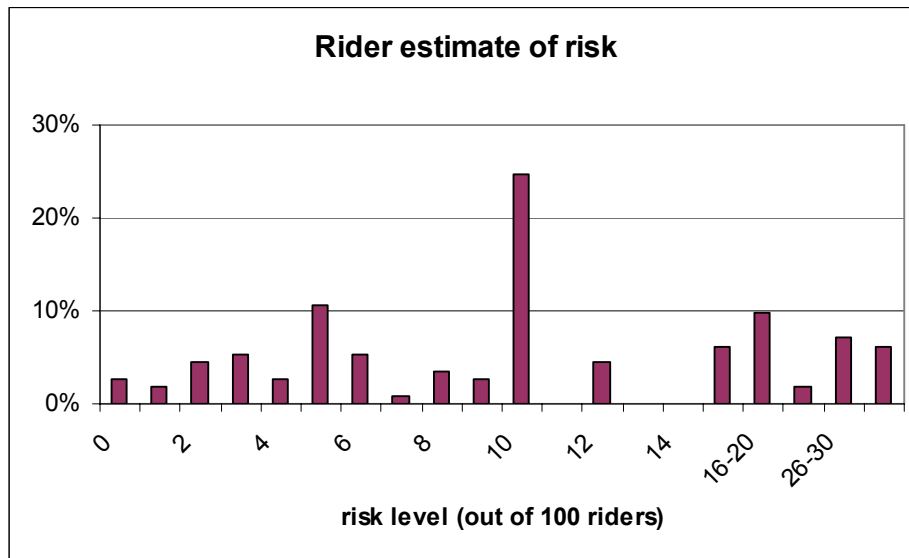


Figure 3.9 - Rider's estimates of risk for riders like themselves in terms of age, sex, experience and annual mileage

3.32 The distribution of respondents' own risk assessments for riders like themselves in terms of age, sex, experience and annual mileage is shown in Figure 3.9.

3.33 Interviewers had a table from which they could provide an estimate of the riders' accident risk, given their age, experience and miles ridden per year. This table was derived from a statistical model, and enabled the interviewer to give a figure (out of 100 similar riders) based on actual accident history from a sample of motorcyclists who responded to a previous survey. The distribution of the statistical risk predictions for the same riders is shown in Figure 3.10.

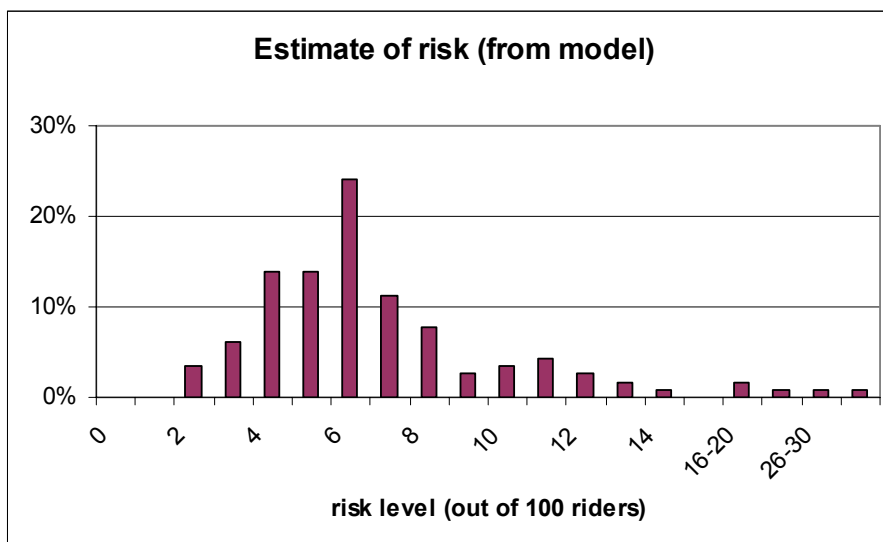


Figure 3.10 - Risk estimates from statistical model

3.34 The difference in the distributions shown in Figures 3.9 and 3.10 implies that riders had a very strong tendency to judge the risk of being in an accident higher than that derived from the model, i.e. they tended to over-estimate the risk faced by riders like themselves, see Figure B1 in Annex B.

3.35 The finding that riders tend to over, rather than under-estimate their objective risk levels is consistent with the findings, reported above in paragraph 3.9, that riders are generally willing to believe the statistical risk estimates, and that most riders say they already know and have accepted that risks are at such levels. Paragraph 3.13 also showed that a substantial proportion of respondents, mainly the older and more experienced riders, felt that by being good riders they avoided some of the statistical risk for riders like themselves in terms of age, sex, experience and annual mileage.

Summary

3.36 Riders are aware that the risk of having an accident is fairly high, however they are not very good at estimating that risk. On average they over-estimate the risk to riders of the same age, sex and annual mileage as themselves derived from a statistical model (from Sexton et al, 2004b). However, riders tend to regard the risk to themselves as less than that for riders of the same age and sex, i.e. riders consider that they are safer than their peers. This finding is consistent with the hypothesis that a substantial proportion of riders think that they avoid some of the statistical risk by being ‘better’ riders than their peers.

Motorcyclists with attitudes which place them at risk

Interview survey

3.37 It seems reasonable to assume that riders with different attitudes may be at different levels of risk. Riders who realise that motorcycling is a risky activity and are aware of the risk, but consciously accept the risk may ride more defensively than riders who deny such risk exists for them. It was helpful to compare riders' responses to questions about risk, as perceived in a series of pictures of different road and traffic scenarios.

3.38 Using stimulus materials and a procedure developed by Broughton (Broughton & Stradling, 2005) interviewees were shown a series of 5 pictures depicting different road scenes (see Annex E). They were asked to imagine that they are riding the road in their normal manner and to rate the setting on four characteristics (on 5-point scales from 1 very low to 5 very high). The characteristics rated were:

- How enjoyable it would be
- The speed you would ride
- How much concentration you would need
- How risky it would be to ride the road.

3.39 For each picture, and overall, there were highly significant associations between ratings of enjoyment and speed, and between ratings of concentration and risk. The only association between ratings of speed and risk was a weak one for Picture5, and the only association between speed and concentration was a weak one for Picture4. A plausible hypothesis would be that, across the range of road settings represented in the 5 pictures, bikers vary speed to manipulate enjoyment and vary concentration in the face of varying perceived risk, but that rated enjoyment and rated risk are statistically independent, i.e. high enjoyment has little or nothing to do directly with the perceived risk of the setting. Further details of this analysis are reported in Annex B.

Self-completion questionnaire survey

3.40 We have already seen that, in the self-completion survey, riders who have a more favourable attitude towards accepting the risks of motorcycling tend to report more risky motorcycling behaviour patterns. This finding was explored further by using the k-cluster technique to define three rider groups based on responses to eight items about the risk of motorcycling (question 23). The k-cluster technique generates groups that differ from each other as much as possible with respect to their responses. Table A summarises the characteristics of the groups and Table B16 in Appendix B gives the group scores on each of the eight questionnaire items.

Table A - Rider Group characteristics (from self-completion questionnaire survey)

Group	Main distinguishing characteristics
1 (n=72)	Not willing to believe that riding is as high as 25-times more risky than driving a car, do not worry about the risk; strongly disagree that would give up if actually true; more likely than group 3 to believe that they avoid this risk by being good riders;
2 (n=119)	Aware or willing to believe that riding is 25-times more risky, prepared to accept the risk; do not worry about the risk; strongly disagree that would give up riding if actually true; more likely than group 3 to believe that they avoid this risk by being a good riders; more likely than the other groups to believe that you need to accept some risk to avoid life being too boring.
3 (n=144)	Aware or willing to believe that riding is 25-times more risky, or aware that riding is risky but perhaps not that risky; does not avoid the risk by being a good rider; would not give up riding if risk factor of 25 was true; more likely than the other groups to worry about the risk of riding; less prepared than group 2 to accept the risk.

3.41 As a convenient shorthand, the three groups in Table A might be named as follows:

- **RISK DENIERS (GROUP 1)** - those who simply did not accept the risk of being killed in a crash is 25 times higher if riding as compared to being in a car, and did not worry about the risk, albeit they still accept that riding is a riskier activity than driving;
- **OPTIMISTIC ACCEPTERS (GROUP 2)** - those who agreed that there was a risk, but accepted the risk and did not worry about it and considered that it did not really apply to them as ‘good’ riders;
- **REALISTIC ACCEPTERS (GROUP 3)** - those who agreed and were aware that there was a risk, had not realised it was that high and considered that it did apply to them as riders.

3.42 . Respondents were asked to imagine three groups of 100 riders (typical riders; riders of the same age, sex, experience and amount and type of riding as themselves; riders exactly like themselves in every way). For each group, they were asked to estimate the number of accidents in 12 months with no injuries, minor injuries, and serious or fatal injuries. Responses to these questions for the three rider risk groups are summarised in Figure 3.11 and Figure 3.12 and Table B. Further information on responses to these questions is given in Table B10 of Annex B

Table B - Accident risk estimates by riders in the 3-rider groups (self-completion questionnaire)

Risk expressed as how many out of 100 riders in the next 12-months would be accident involved.	Rider group			
	1 (n=71)	2 (n=118)	3 (n=143)	
Risk for typical rider –	No-injury	19.9	22.4	25.0
	Minor injury	13.2	14.3	14.6
	Killed or seriously injured	5.0	5.5	7.3
Risk for riders of same age, sex, experience and annual mileage as me –	No-injury	11.3	12.8	17.0
	Minor injury	8.5	7.0	9.3
	Killed or seriously injured	3.2	3.6	5.2
Risk for riders exactly like me –	No-injury	6.4	7.6	12.5
	Minor injury	3.9	4.4	6.2
	Killed or seriously injured	1.2	2.2	3.3

3.43 It is noteworthy that the three groups differed in their estimates of risk for typical riders, as expected by their characteristics – i.e. the Risk Deniers gave lower estimates than the Optimistic Acceptors, and the Realistic Acceptors gave the highest estimates. However, the differences were rather small. Somewhat bigger differences (in percentage terms) were apparent for the estimated risks for 'riders exactly like me' – so that, for example, the Realistic Acceptors estimated the risks each category of injury to be two to three times greater than did the Risk Deniers.

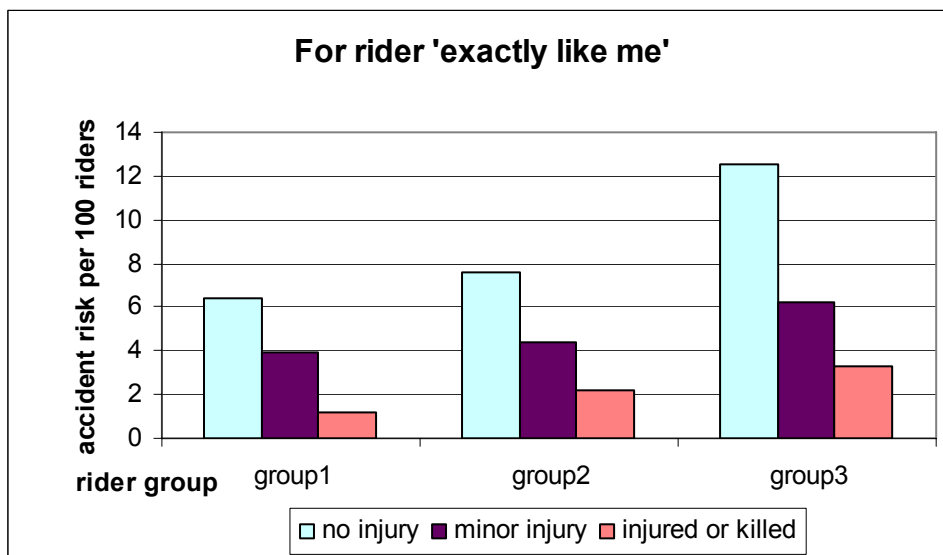


Figure 3.11 - Accident risk for 'riders like me'

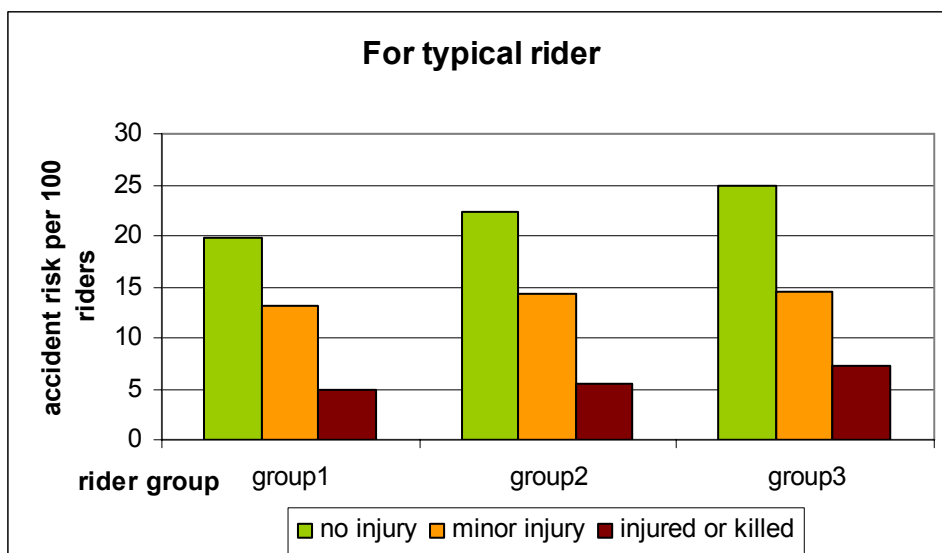


Figure 3.12 - Accident risk for 'typical riders'

3.44 Table B17 in Annex B shows for each rider group the average scores on a range of demographic, behaviour, risk and attitude measures. Some of the figures have been reproduced in Table C. The average rider age in each group is very similar; however their motorcycle riding experience differs. The riders in the first group have most experience with an average of just over 18years (excluding periods with breaks longer than 12-months), the second group has about 18months less experience on average and the third group has the least experience with an average of just over 11years. The third group have, on average, smaller capacity motorcycles and ride fewest miles per year with an average on about 4,500 miles. The third group tend to rate their likelihood of being accident involved in the next 12-months as slightly higher than the other two groups and rate their skill level as slightly lower.

Table C Mean values for each group on a number of rider measures

Measure	Group		
	1 (n=72)	2 (n=119)	3 (n=144)
Age of rider (yrs)	43.7	43.6	43.7
*Miles ridden in past 12-months	5844	5982	4497
*Number of years riding (excluding long breaks)	18.1	16.6	11.3
*Engine size of bike (cc)	922	897	810
*How likely to be involved in an accident in the next 12-months (5-point scale, lower score means considers less likely)	2.0	1.9	2.3
*Measure of own skill compared to others of same age and sex (5-point scale, lower score means better)	2.1	2.1	2.4

* indicates that there was statistically significant difference between some of the group means on this variable

3.45 There were only 39 riders who were accident involved in the past 12-months (11%) but 64% of riders reported at least 1 near miss. An analysis of accident and near-miss

involvement by rider group (from the self-completion questionnaire) indicated it is the first group of riders who actually report least near-misses - see Table D .

Table D - Characteristics of the 3-rider groups (self-completion questionnaire)

	Rider group		
	1 (n=71)	2 (n=118)	3 (n=143)
Proportion accident involved in past 12-months	11%	11%	12%
Proportion reporting at least 1 near miss in the past 12-months	52%	65%	67%
Average risk of motorcycling as compared to driving (1=less risk, 2=about the same, 3=more risky)	2.03	2.37	2.57
Proportion of 600cc bike riders	12%	15%	32%
Proportion of 900cc to 1000cc bike riders	33%	25%	13%
Proportion of sports / sports touring riders	58%	61%	60%

3.46 The third group tend to be 600c sport/sport-touring bike riders, whereas the first group are more likely to be on bigger bikes. All groups rated motorcycling as more risky than driving a car.

3.47 Table B17 in Annex B also shows that it is the second group of riders, the Optimistic Accepters, which have the ‘riskiest profile’. Compared to the other groups, this group:

- Is slightly more sensation seeking (especially the intensity of the sensation)
- Is more likely to exhibit speeding behaviours
- Is more likely to pull stunts
- Likes speed more

The third group of riders (the Realistic Accepters) tended to report slightly fewer speed or stunt behaviours, were less strongly motivated by a liking for speed, and by the pleasure of motorcycling.

3.48 To obtain further insights into the perceived risks of motorcycling, respondents to the self-completion survey were asked to consider seven activities:

- | | |
|-----------------|----------------|
| • Cycling | • Motorcycling |
| • Driving a car | • Hang-gliding |
| • Rock climbing | • Surfing |
| • Skiing | |

3.49 Respondents rated these activities in terms of three different constructs: the risk of having an accident while doing the activity, the seriousness of an accident during the activity, and the extent that personal skill can be used to avoid death or injury while engaged in the activity'. A low rating means that an activity was perceived as not risky, that the outcomes of accidents were not likely to be serious, and that the outcome is controllable by personal skill.

3.50 The average rating of these activities is shown in Figure 3.13, where the activities are ordered by average rating on the perceived risk. It shows that motorcycling was perceived as more risky than driving a car or cycling, about as risky as surfing (no significant difference between motorcycling and surfing average values), but less risky than skiing, rock climbing and hang-gliding. However, the outcomes of accidents were rated as more serious for motorcycling than skiing or surfing. Motorcycling accidents were rated as more subject to personal control than were accidents resulting from surfing, skiing, rock-climbing and hang-gliding but were not statistically significantly different from personal control when cycling.

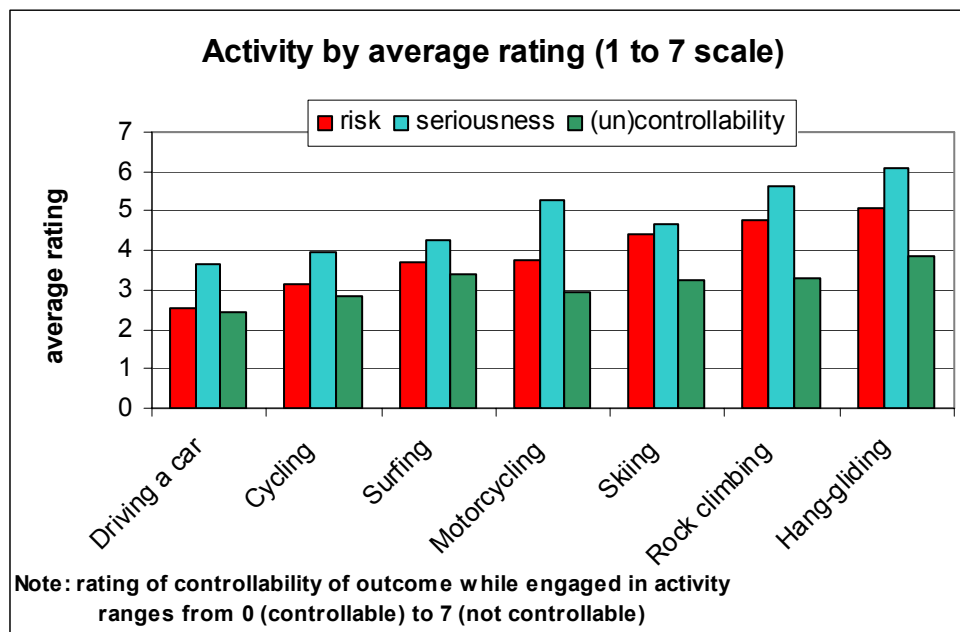


Figure 3.13 - Activity average ratings (ordered by risk)

3.51 Examining these scores for the three rider groups, showed that all three groups ranked the risk of the non-motorcycling activities in the following order:

- Hang gliding (highest risk)
- Rock climbing
- Skiing
- Surfing
- Cycling
- Driving a car (lowest risk)

The Optimistic Accepters and the Realistic Accepters placed motorcycling between surfing and skiing in this list. However, the Risk Deniers placed motorcycling between driving a car and cycling. Further information is given in Annex B, Tables B18, B19 and B20, which show that the Risk Deniers also ranked motorcycling risks as more controllable in comparison to other activities than did the other groups.

Summary

3.52 Three rider groups were identified on the basis of responses to the self-completion questions about the relative risk of motorcycling and car driving. These were labelled as Risk Deniers, Optimistic Accepters and Realistic Accepters.

3.53 Estimated absolute risk levels for typical riders, expressed as the number of riders out of 100 who would have an accident in a year, varied between the groups. The Risk Deniers gave the lowest estimates, and the Realistic Accepters the highest. There were stronger differences between groups for the estimated risk of 'riders exactly like me'. Here, the Realistic Accepters estimated the risk to be two to three times greater than did the Risk Deniers. Optimistic Accepters tended to have the riskiest profiles in terms of sensation seeking, speeding behaviours, stunts and a liking for speed, though the failure of Risk Deniers to recognise the levels of risk involved in motorcycling might itself be considered a risk factor.

3.54 The Risk Deniers placed motorcycling between car driving and cycling in terms of risk of accident. The other two groups placed it between surfing and skiing. The Risk Deniers also tended to believe more strongly than the other groups that motorcycle risks can be controlled by rider skill.

CHAPTER FOUR CONCLUSIONS AND RECOMMENDATIONS

Conclusions

4.1 Most riders in this study said they were aware of, or willing to believe, objective estimates of motorcycling risk. Furthermore, they were willing to accept these levels of risk and few would consider giving up motorcycling because of them. It does not appear that, as a group, motorcyclists base their behaviour on grossly under-estimating the risks of motorcycling as an activity.

- Three rider groups, identified on the basis of responses to a series of questions about the relative risk of motorcycling and car driving, give some insight into patterns of perception, and possible remedial actions:
- "Risk Deniers" might be susceptible to improved information on the real risks of motorcycling, provided it is presented in a convincing way – though educational measures designed to show that they themselves are not immune from this risk would also be needed.
- "Optimistic Accepters" might be influenced by educational (e.g. media) campaigns designed to bring home to them the true impact of motorcycle accidents on victims and their families. Measures designed to improve awareness of personal limitations and to reduce the belief that skill provides immunity from risk should also be useful. However, this group has a pattern of riding motives that also needs to be considered. One way to do this is by emphasising the link between such motives/goals and safety, so that riders are more able to take these into account. Another might be to find ways of promoting other riding goals that would reduce risk (see Sexton et al (2004b)). It may also be the case that, for some riders at least, it is unrealistic to expect educational and training measures to be very effective in reducing risk; and that, if the government wishes to reduce their risk substantially, attention will also need to be given to engineering and enforcement-based measures.
- "Realistic Accepters" may be the group most susceptible to educational and training interventions. Their self-assessment of their own risk is two-to-three times higher than the self-assessed risk of the other groups, they worry more about the risks than the other groups, and they are more aware that their own skills do not protect them from this risk.

4.2 It is probably not feasible or even desirable, to target each group with a different safety intervention. However, identifying the groups does give an indication of the types of content that need to be considered, and their potential effectiveness.

Suggestions for road safety campaigns

4.3 Following the above discussion, a campaign based on using 'risk' as the lever of influence would thus consider the following:

- Present convincing information on the objective risk of motorcycling, while recognising that many riders will not need convincing.

- Show that riders tend to be unrealistically optimistic about whether or not these risks apply to them personally, and about the extent to which their skills protect them from the risks.
- Demonstrate the true impact of motorcycle accidents on victims and their families.

4.4 However, the surveys demonstrated that riders in the samples did not, in general, seem to grossly under-estimate the risk of motorcycling. It was also apparent that most riders in the surveys were dedicated to riding and would not consider giving it up because of the risk. It must be recognised, therefore, that measures like the above, focussing on giving riders a better appreciation of the risks they run, may well not be very effective in reducing motorcycle accidents. Therefore, a potential strategy should also consider the following:

- Promotion of 'safe' goals for motorcycling – for example, smoothness and safety rather than speed and 'progress'. In effect, this would recognise the importance of riding for pleasure as a goal, but seek to encourage people to obtain this pleasure from other facets of riding.
- Making available and promoting training and educational measures to improve riders' safe-riding skills but ensure that they also promote safe goals rather than unsafe ones, give attention to the influence of attitudes and goals on riding behaviour, and improve people's self evaluation skills and their awareness of risk-increasing factors.
- Encouraging being a smoother rider, a rider with good perception & planning skills
- Suggesting the goal of completing all rides with no 'surprises' and making the point that 'being a good rider is not enough' or, rather, redefining what is seen as a good rider.
- Creating an attitude that riding is a continuous learning process and improvement activity, from 'cradle to grave', thus encouraging the view that, by continuing to learn, riding will become better and more enjoyable.
- Developing an increased skill level without a corresponding increase in risk – possibly by using highly-respected expert riders to promote safe riding, so that riders aspire to ride as well as these experts, rather than trying to emulate 'racing riders' on the road
- Encouragement of more pre and post-test training, (a view which is endorsed by motorcycle training organisations). An equivalent of the Pass Plus scheme for bikers could be considered, as could an extended BikeSafe scheme, an NVQ qualification or training via IAM or RoSPA. In any training, attention needs to be given, as discussed above, to ensuring that safe, rather than unsafe, goals are promoted, and that attention is given to the influence of attitudes and goals on riding behaviour, and to improving people's self evaluation skills and their awareness of risk-increasing factors.

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ANNEX A - RESEARCH METHODS

What do we mean by risk?

Looking at risk

In designing the questionnaire, a number of aspects of risk needed to be taken into account. First, the level of risk (probability of a defined type of accident) may be expressed in absolute terms – e.g. the number of riders out of 100 who would have an accident in a year - or relative to the risk of other activities. Secondly, it is necessary to distinguish between estimates of objective risk derived from accident statistics, and respondents' own estimates and perceptions of risk. This survey was able to make use of results from previous research (Sexton et al, 2004b) to estimate the objective risk of riders of a given age, experience and mileage. Thirdly, risk estimates may be needed for different populations – e.g. motorcyclists in general, or riders who are like the respondent in some way (e.g. with respect to age, experience and annual mileage). Fourthly, risk estimates for different types or severities of accident may be needed.

All these approaches were used in the questionnaires. For example, riders were asked to imagine 100 typical riders, and say how many they thought would have accidents of various severities in the next 12 months. They were then asked the same question but for riders of the same age, sex and experience as themselves, and doing a similar amount and type of riding. A further question sought riders' estimate of their own risk by asking them to imagine 100 riders exactly like themselves in every way. Other questions presented the respondent with information on risk (e.g. the statistical risk of riders of their own age, sex and experience, or the published estimate that, per mile travelled, motorcycle riders are 25 times more likely to be killed than car users. Comparisons of motorcycling risk with the risks of other transport modes, and with the risks of sports such as hang-gliding and rock climbing were also sought.

Relationship between risk and sensation seeking

Studies by Zuckerman and others showed that risk and sensation seeking are related. Zuckerman (2000) says that “risk-taking is not the main point of sensation-seeking behaviour; it is merely the price such people pay for certain kinds of activities that satisfy their need for novelty, change and excitement.

Sensation-seeking can extend to the physical, involving unusual or extreme sports such as skydiving, hang gliding, scuba diving, auto racing, rock climbing and white-water kayaking. Motorcycling could be included as such an activity. An interest in participating in such sports or activities describes one subcategory of sensation-seeking: thrill- and adventure-seeking. Arnett (1994) developed scales measuring sensation-seeking, they include two sub-scales which measure the novelty and the intensity of the sensation.

Risk and the relationship with perceived control

Starr (2004) introduced a concept of voluntary risk. Research in this area has found that humans tolerate substantially more risk when they engage in voluntary behaviour (Sjoberg 2004). This is related to a sense of controllability where less risk is perceived in situations that are under personal control, ‘Risk is sometimes defined as insufficient controllability’ (Brun 1994). People are found to believe that they are more in control than they actually are.

This helps to explain why riders (and drivers) think they are generally better and less at risk than the average rider (or driver), because they are in control.

Self-completion questionnaire development

The questionnaire for the survey was based on one used in an earlier study (Sexton et al, 2004). This included items on rider style, rider behaviours and rider attitudes. It was refined in order to better reflect the requirements of this project. This required some additional items on ways of measuring risk and some further items on the attitudes to perceived risks. The additional questions were determined from previous risk research as considered within the initial review process. The Arnett SSS (Sensation Seeking Scale) was used in order to provide an indication of the sensation seeking tendencies of riders (Arnett, 1994). The final form of the self-completion questionnaire is shown in Annex C.

Interview structure development

The interview structure was a combination of structured format and open-ended. The structured element was required in order to allow the use of materials and pre-considered questions. These have been used to determine the interviewees' perceptions of risk, attitudes to risk as well as basic demographic data plus information on motorbike use. The form of the structured elements relating to risk and attitudes towards risk involved the following:

- Pictures showing different risk scenarios and ask the interviewee to rate them.
- Use of a statistical model (from Sexton et al, 2004b) to predict the accident liability of the interviewee and record their response and reasons for acceptance or otherwise of that risk.

The final form of the interview schedule was determined from the review of risk measurement research as well as drawing on the experience of the project team. A small pilot of the materials was conducted with motorcyclists at the Scottish Motorcycle Show in March 2005. As a result of the pilot, the interview structure was modified slightly. The open-ended part of the interview was led by trained interviewers and explored all aspects of the risks, attitudes and experiences of the interviewee – it was not fully structured but there was a framework to guide the discussion. The interview took around 30 minutes to administer. The final form of the interview questionnaire is given as Annex D.

Sample population

In theory the sample population for this survey were all motorcyclists who ride in Scotland. However, it was not practical within the limitations of the project to select a random sample of Scottish motorcyclists.

It is well established that there are far more killed and seriously injured motorcyclists on non-built up roads and that risky rider behaviour is most likely to be observed on these roads. It is appreciated that there are more motorcycle accidents on built-up roads, but many of these are slight accidents where the fault is often the 'other' vehicle. Hence, the samples targeted were recreational riders on non-built up roads during weekends, or attending a motorcycle event (e.g. British Superbike weekend at Knockhill). Some of these riders will also use their bikes for commuting during the week.

Samples for interviews

The interviews were conducted by teams of at least two interviewers at places where bikers gather, either before a ride or after a ride. This included cafes, meeting spots (with a catering van), motorcycle shows and at Knockhill Circuit during the British Super Bikes racing weekend.

A cross-section of different rider types was approached. Interviewers were able to conduct one or two interviews per hour and distributed questionnaires to other riders between interviews. Given that many riders only ride during the warmer months, i.e. from April to October, then the interviews were conducted during May, June and July 2005. In this period, a total of 124 interviews were conducted.

Samples for questionnaire survey

The samples for the questionnaire survey came from three main sources. Those riders who take part in the interview sample were given a questionnaire to complete and post back to the research team. This was seen as potentially useful because the interviewer cannot ask all of the questions of interest within an interview situation. Also the questionnaire contains questions relating to risk and attitudes to risk which will be different from those used in the structured part of the interview. Unfortunately, in practice there were only 10 of the interviewees who returned the self-completion questionnaire, which was too few to do any comparative analysis.

The next sample for the questionnaires also came via the interviewers. They approached riders but did not interview them, had a very brief chat about this survey and asked them to complete the questionnaire and post it back to the research team.

Questionnaires were also distributed via motorbike dealers, clubs and organisations. The purpose of the survey was explained, and it was emphasised that the research is aimed at obtaining a better understanding of motorcyclist risk acceptance and attitudes towards risk.

Finally, around 500 questionnaires were distributed to attendees at the BMF Kelso Bikefest in July 2005.

In total, over 2,000 questionnaires were distributed throughout Scotland during the summer of 2005. The riders who received questionnaires covered the spectrum of riders and their selection was opportunistic. Hence there was no way in which those riders who took or were given a questionnaire could be reminded to complete it and return it. This meant that there was no way to influence the return rate. The survey was closed in August 2005 by which time 364 completed questionnaires had been returned representing a response rate of around 17%.

Focus groups

Riders who were interviewed were asked if they would be prepared to attend a focus group and were offered a small incentive to do so. It was anticipated that 3 focus group sessions would be run with a mix of 8-10 riders in each. However, in practice so few riders agreed to attend a focus group that this stage of the research was not tenable and so was abandoned.

ANNEX B - DETAILED DATA ANALYSES

Analysis of interview data

Characteristics of interviewees

Of the 124 interviewees, 117 had a current motorcycle licence and 116 owned a motorcycle. Their age varied from 20 years to 69 years, with an overall average age of 42 years (for those who currently own a bike the average age was 43 years and for those that did not it was 32 years). Only 9 interviewees were female (7%) and these were mainly pillion riders; only one female owned a motorcycle.

The average experience of those that were current riders was about 19 years of riding and they ride about 6,500 miles per year on a motorcycle and drive about 8,200 miles in car. About 43% used their bikes for commuting and a similar percentage used their bikes for rural road rides often on their own. About 35% used their bikes at the weekend with a club or organisation, about 67% used them at weekends with their mates on mainly rural roads overall nearly 80% used their bike for fun and enjoyment. About half of the respondents said they used their bike for fun and a car for transport.

During the summer 30% of riders said they used their bike on a daily basis, and over 60% on a weekly basis regardless of the conditions. These figures dropped to 13% and 35% respectively during the winter for daily and weekly use in all conditions. About 16% said that they used their bike in the winter when it was daylight and dry conditions, as compare to the 6% in the summer who only used their bike when it was daylight and dry.

Of the eight interviewees that did not currently ride a motorcycle, 6 stated that it was not because it was unsafe. Two stated that they could not afford it but that it was definitely not because of being inconvenient, albeit one thought it gave a bit of the wrong image. Only one stated that they would need to carry passengers. All of these interviewees were female.

Nearly a quarter of the interviewees who were current riders had taken a break of at least a year from riding. None of them were riding bikes less than 500cc, and only one had a 500cc bike. Over a quarter had 600cc bikes which were mainly sport bikes (a very popular size). Nearly 15% had 1000cc bikes, and over 35% had bikes of 1000cc or greater. The average size was 990cc, and the single female rider who was interviewed rode a 600cc sports touring motorcycle. Most of the bikes (42%) were described as sports-tourers and 34% as sports bikes, there were 16% tourer/roadsters and 4% each of custom and off-road/trailie type bikes.

Interviewees were asked about their offences, and 7% had received fixed penalty notices for motorbike related offences and 5% for car related offences. Of the 116 current riders there were 6% who had been flashed by a speed camera while riding a motorcycle and 5% while driving a car. There were 5 riders who had endorsement points incurred while riding and 4 that had points obtained while driving.

Of those who responded to the question about training taken, 50% said they had not taken any courses. There were 30% of respondents who had taken and passed their CBT and Direct Access course, about 10% had taken and passed their IAM qualification, one had taken and passed the BMF Blue Riband award, 2 a GNVQ qualification and about 23% had taken a Bikesafe course.

Nearly a third of interviewees who currently ride were members of a motorcycling club or organisation. These varied from MAG, BMF and IAM to BMW, Ducati and Honda Goldwing owner clubs as well as the Moray Coast motorcycle club and similar.

Nearly 30% used a tinted visor, 4 respondents had a small number-plate, 20% had an aftermarket exhaust system, 4% had up-rated their suspension and nearly a third said they had ‘rear-set’ footrests. They all wore protective clothing for upper body and legs of which 78% had armour in the jacket and 64% had armour in the trousers.

Interviewee accident and risk considerations

Interviewers had a table³ from which they could provide an estimate of the riders’ accident risk, given their age, experience and miles ridden per year. These estimates varied from 3 to 33 per 100 riders, with an average value of 7 and a median and mode of 6.

As was reported in the main text, interviewees were asked to consider riders of the same age and sex who rode the same number of miles per year, and state how many (out of 100) would have an accident or minor spill in the next 12 months. The distribution of respondents' own risk assessments for riders like themselves in terms of age, sex, experience and annual mileage is shown in Figure 3.9. The distribution of the statistical risk predictions for the same riders using the ‘look-up’ table supplied to interviewers is shown in Figure 3.10.

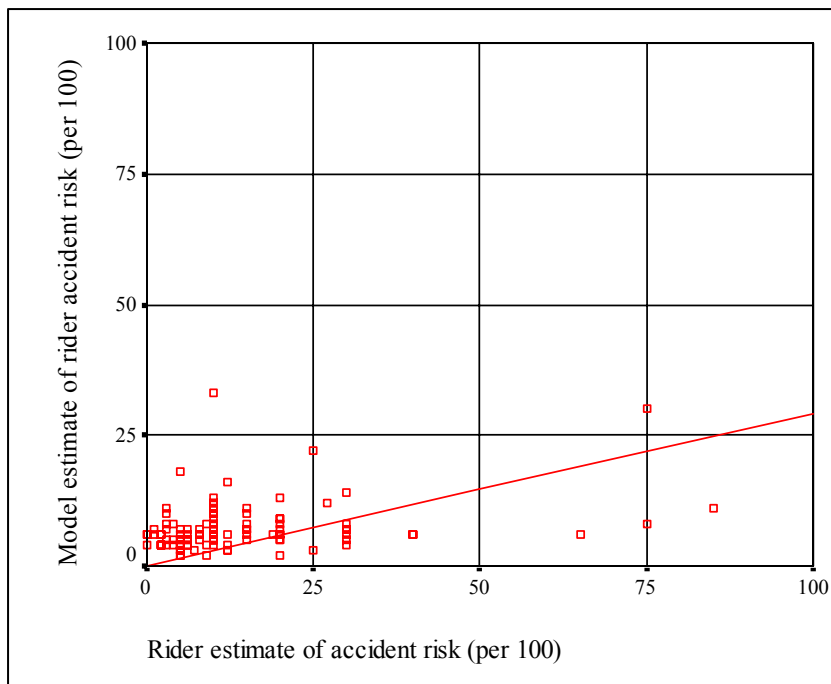


Figure B1 - Scatter plot of rider and model risk estimates.

The difference in the distributions of risk estimates seen in Figures 3.9 and 3.10 implies that riders had a very strong tendency to judge the risk of being in an accident higher than that derived from the model, i.e. they tended to over-estimate the risk faced by riders like themselves – in terms of age, sex and annual mileage.

The relationship between rider’s assessment of risk and the statistical assessment of risk is shown in Figure B1. The correlation between the two risk estimates is about 0.3, which is statistically significant, albeit not strong. A large scatter of riders' estimates of risk at any

³ The tables were derived from a previous survey of 11,500 motorcyclists, where accident risk was modelled as a function of age, mileage and experience (Sexton et al, 2004b).

given level of 'model-predicted' risk is apparent in Figure B1 and raises the question of whether riders who estimate that (say) 75 per cent of their peers will have an accident in a 12 month period, can be regarded as giving a serious estimate of risk. These findings may indicate that some respondents decided to over-estimate the risk, or that people find it extremely difficult to make such estimates.

The interviewees were asked if they were willing to believe the estimated accident risk taken from the tables. Their responses to this and associated questions are shown in Table B1.

Table B1 - Percentage level of agreement to estimated accident risk and related questions (interview survey)

Question (sample=116)	strongly agree	agree	neither agree or disagree	disagree	strongly disagree
Willing to believe estimated risk (based on age, mileage and experience model)	40%	52%	4%	4%	0%
Aware that riding was risky, but not realise that risky	11%	18%	14%	37%	19%
Aware that riding was this risky, and prepared to accept this risk	51%	45%	0%	3%	1%
A good rider so this risk does not apply to me	16%	26%	28%	28%	2%
Worry about risk of riding	3%	26%	12%	53%	6%
Wear protective gear so reduce risk of injury	58%	41%	1%	1%	0%
Accept some risk, otherwise life too boring	45%	53%	1%	2%	0%
Would consider giving up if risk of being killed 25 times higher than in car	3%	10%	18%	36%	33%

Respondents were grouped by their age, as shown in Table B2. The average values on a number of questions relating to risk were computed and compared by age group. The questions in Table B1 were scored from 1 (strongly agree) to 5 (strongly disagree), as were the responses to a question on the likelihood of being involved in an accident within the next 12-months.

Table B2 Age group and frequency of interviewees

Age group	Frequency	Percentage
16 to 25 years	7	6%
26 to 35 years	24	19%
36 to 45 years	43	35%
46 to 55 years	35	28%
56+ years	15	12%
Total	124	-

The questions where there was a statistically significant difference between the age group averages are shown in Table B3.

Table B3 Group averages for questions where there is statistically significant difference by age (interview sample)

Question	Age group				
	16-25yrs	26-35yrs	36-45yrs	46-55yrs	56+yrs
How likely to be involved in an accident in the next 12-months compared to other riders of your age and sex. (1=much less likely, 5=much more likely)	3.0	2.3	2.2	2.0	1.7
How many riders like you will have an accident (or minor spill) in the next 12-months (out of 100)	29.2	17.0	15.7	9.4	8.9
I am a good rider so this risk does not apply to me (1=strongly agree, 5=strongly disagree)	2.8	3.3	2.9	2.5	2.1
I worry about the risk of riding a motorcycle (1=strongly agree, 5=strongly disagree)	3.8	2.6	3.2	3.7	3.8
How risky is motorcycling in general (1=very safe, 7=very risky)	4.3	5.1	4.7	4.1	4.3
How risky is motorcycling for you personally (1=very safe, 7=very risky)	4.0	4.3	3.6	2.9	2.2

Respondents were grouped by their experience as riders, as shown in Table B4. The average values on a number of questions were computed and compared by age group. A similar analysis was conducted by experience group as it was for age group.

Table B4 Experience group and frequency of interviewees

Years of experience	Frequency	Percentage
0+ to 10 years	35	30%
10+ to 20 years	32	28%
20+ to 30 years	31	27%
30+ years	18	16%
Total	116	-

The questions where there was a statistically significant difference between the experience group averages are shown in Table B5.

Table B5 Group averages for questions where there is statistically significant difference (interview sample)

Question	Experience group			
	0-10yrs	10-20yrs	20-30yrs	30+yrs
How likely to be involved in an accident in the next 12-months compared to other riders of your age and sex. (1=much less likely, 5=much more likely)	2.3	2.3	2.0	1.9
Model estimate of riders that will have an accident (or minor spill) in the next 12-months (out of 100)	10.8	5.7	5.5	5.1
I am a good rider so this risk does not apply to me (1=strongly agree, 5=strongly disagree)	3.2	2.5	2.5	2.6
I worry about the risk of riding a motorcycle (1=strongly agree, 5=strongly disagree)	3.0	3.3	3.4	3.9
How risky is motorcycling in general (1=very safe, 7=very risky)	5.0	4.4	4.4	4.3
How risky is motorcycling for you personally (1=very safe, 7=very risky)	4.4	3.1	2.9	2.7

Interviewee responses to different road scenes

Using stimulus materials and a procedure developed by Broughton (2005; Broughton & Stradling, 2005) interviewees were shown a series of 5 pictures depicting different road scenes (see Annex E). They were asked to imagine that they are riding the road in their normal manner and to rate the setting on four characteristics on 5-point scales from 1 very low to 5 very high. The characteristics rated were:

- How enjoyable it would be
- The speed you would ride
- How much concentration you would need
- How risky it would be to ride the road.

Table B6 gives the mean ratings on each scale for each picture. Picture 5 was rated the most and Picture 4 the least enjoyable scenario. Pictures 5 and 3 received the highest ‘speed you would ride’ ratings and Picture 4 the lowest. There was most variation between scenes in ratings of enjoyment and speed and least variation between scenes in ratings of concentration as reflected in the values for the standardised Cronbach’s alpha for each scale. Thus across these five scenes the amount of concentration required varied least while the amount of enjoyment ‘available’ in each setting and the appropriate speed for the setting varied most. Rated risk varied, on average, from intermediate (Picture3: 3.33) to high (Picture4: 4.23): bikers know they are vulnerable road users.

Table B6 – Mean scale ratings for each picture

Scale	Picture1	Picture2	Picture3	Picture4	Picture5	alpha
How enjoyable	2.46	2.89	3.09	1.56	3.61	.49
Speed ridden	2.72	2.74	3.19	1.54	3.24	.48
Concentration required	4.17	4.30	4.09	4.70	4.47	.73
Risk in riding the road	3.46	3.58	3.33	4.23	3.64	.57

Table B7 shows the correlations between scores on the four scales for each of the five pictures and between enjoyment, speed, concentration and riskiness scale scores computed by averaging ratings across the five settings.

Table B7– Correlations between scale ratings for each picture and overall

		Speed	Concentration	Riskiness
Picture 1	Enjoyment	.40***	.17	.01
	Speed		.08	-.04
	Concentration			.42***
Picture 2	Enjoyment	.68***	.08	-.10
	Speed		.17	-.10
	Concentration			.37***
Picture 3	Enjoyment	.67***	.00	-.14
	Speed		.01	-.03
	Concentration			.33***
Picture 4	Enjoyment	.37***	.02	-.17
	Speed		-.18	-.19*
	Concentration			.55***
Picture 5	Enjoyment	.35***	-.03	-.07
	Speed		.24*	.06
	Concentration			.31**
Overall	Enjoyment	.56***	.03	-.07
	Speed		.01	-.04
	Concentration			.38***

* p < .05; *** p < .001

For each picture, and overall, there were highly significant associations between ratings of enjoyment and speed, and between ratings of concentration and risk. The only association between ratings of speed and risk was a weak one for Picture5, and the only association between speed and concentration was a weak one for Picture4. Fuller (2005) in his task-capability interface model of driver behaviour suggests that car drivers manipulate running speed to vary perceived task

difficulty. A plausible hypothesis would be that, across the range of road settings represented in the 5 pictures here, bikers vary speed to manipulate enjoyment and vary concentration in the face of varying perceived risk, but that rated enjoyment and rated risk are statistically independent, i.e. high enjoyment has little or nothing to do directly with the perceived risk of the setting.

The relationship between rated enjoyment and rated risk was examined further. Neural Network software was used to train for recognition of 6 possible response patterns: risk remains constant as enjoyment varies; enjoyment remains constant as risk varies; enjoyment falls and then rises as risk increases (U pattern); enjoyment rises and then falls with increasing risk (inverted U pattern); enjoyment decreases as risk increases; enjoyment increases as risk increases. Data from each respondent were sorted into ascending order of rated risk across the 5 pictures and then allocated by the trained software to one of the 6 patterns. No cases were found of the first three patterns. 59% were allocated to the inverted U group, labelled Risk Acceptors; 33% to the Risk Averse group whose enjoyment ratings tended to fall as rated risk increased; and 9% to the Risk Seeker group whose enjoyment ratings rose as their risk ratings rose, (ref: Broughton & Stradling 2005).

The three types did not differ significantly on the demographic variables (e.g., age, years experience, type of bike ridden, etc.) nor on mean scores of enjoyment, speed, concentration or riskiness. Asked in an open-ended question 'What types of risk do you take as a rider?' 70% of the Averse group, 64% of the Acceptor group and 33% of the Seeker group wrote in 'None' or an equivalent response.

There were statistically significant differences between the 3 groups on 4 of 20 comparisons of ratings across the 5 pictures. The Risk Averse scored lower on speed ratings for Picture 5 ($p=.017$); and the Risk Seekers scored lower on concentration for Picture 4 ($p=.002$) and higher on riskiness for Picture 2 ($p=.018$) and Picture 5 ($p=.006$), but otherwise mean ratings of the amount of enjoyment, speed, concentration and risk in each setting did not differ between the three groups.

There were however somewhat different patterns in the correlations for the three groups between scores on the 4 scales, as shown in Table B8. The Risk Averse group failed to show an association between concentration and risk, and thus run counter to the hypothesis noted above that bikers vary concentration with perceived risk, but did show a significant association between concentration and speed.

It should be noted that the three riders groups identified in this section (as derived in previous research by Broughton & Stradling 2005), bear some similarity with two of the three found using the set of variables which asked about understanding and acceptance of risk, see section 3.47. Specifically the 'risk accepters' are very much like the 'optimistic accepters' and the 'risk averse' like the 'realistic accepters'.

Table B8– Correlations between scale ratings for each biker type

	Speed	Concentration	Riskiness
Risk Averse (n=36)			
Enjoyment	.43**	.15	-.26
Speed		.34*	-.16
Concentration			.04
Risk Acceptors (n=65)			
Enjoyment	.46***	.13	.09
Speed		-.00	.04
Concentration			.52***
Risk Seekers (n=9)			
Enjoyment	.94***	-.60	.09
Speed		-.46	-.36
Concentration			.72*

Thus the three rider types identified by the responses to the ‘picture’ questions appear not to differ in the amount of enjoyment they obtain from riding and differ only in particular road settings on speed, concentration and perceived riskiness, and while all three types show a strong association between enjoyment and speed only two show a relationship between concentration and risk.

Interviewees were asked how safe or risky they considered motorcycling is in general and for themselves, the responses are shown in Table B9. It is interesting to see how much safer respondents regard motorcycling to be for them as compared to riders in general. This again confirms that riders perceptions of themselves are usually as safer, better rider than of riders in general.

Table B9 - How risky is motorcycling perceived (n=123)

How risky is motorcycling:	Very safe	Safe	Fairly safe	n/k	Bit risky	Risky	Very risky
In general	0%	3%	10%	33%	37%	15%	2%
For you	9%	20%	26%	21%	18%	5%	1%

Analysis of survey data

Introduction

The questionnaire contains data that has been used to derive measures of sensation seeking, attitudes, riding styles, riding behaviours and risk assessment. The data has been used to examine the interactions of various self-reported factors and how they relate to risk and accident liability.

The outcome from such analyses provides a further understanding on what factors are potentially important influences on risk acceptance and how attitudes to risk may be influencing risk acceptance.

Characteristics of self-completion questionnaire respondents

Of the 364 respondents returning the self-completion questionnaire, 344 (95%) had a full motorcycle licence and 347 (96%) owned a motorcycle. Their age varied from 18 years to 68 years, with an overall average age of 43 years. About 89% of respondents were male of whom 98% currently owned a motorcycle; of the 11% of females who responded (i.e. 40), 75% reported owning a motorcycle.

The average experience of those that were current riders was about 15 years of riding and they ride about 5,300 miles per year on a motorcycle and drive about 11,250 miles in car.

Of the 12 respondents that did not currently ride a motorcycle, 9 stated that it was not because it was unsafe. Seven stated that they could not afford it and only two said that it was because of being inconvenient. None thought that it gave the wrong image. Five stated that they would need to carry passengers. About three quarters of respondents who did not own a motorcycle were female.

Nearly 44% of respondents had taken a break of at least a year from riding. The engine size varied from 50cc to 2,300cc, just over 20% had 600cc bikes which were mainly sport bikes. Nearly 11% had 1000cc bikes, and nearly 30% had bikes of 1000cc or greater. The average engine size was 860cc. Most of the bikes (33%) were described as sports-tourers and 26% as sports bikes, there were 19% tourer/roadsters, 9% custom bikes, 6% off-road/trailie bikes, 6% classic bikes and 2 moped/scooters (which were 50cc).

Respondents were asked about their offences, and 5% had received fixed penalty notices for motorbike related offences and nearly 10% for car related offences. There were 15 riders who had endorsement points incurred while riding and 33 that had points obtained while driving.

Of those who responded to the question about training taken, 47% said they had not taken any courses. There were 45% of respondents who had taken and passed their CBT course and about 30% their Direct Access course. About 12% had taken and about 9% had passed their IAM qualification, 12 had passed their RoSPA test, four had passed the BMF Blue Riband award, one a GNVQ qualification and about 15% had taken a Bikesafe course.

Nearly a half of the respondents were members of a motorcycling club or organisation. These included riders from MAG, BMF and IAM to BMW, Ducati, Bandit, Harley Davidson, Triumph and Honda Goldwing owner clubs as well as the Moray Coast, Tweed Valley, Clyde Valley motorcycle clubs and similar.

Accident involvement

There were 39 respondents who had been accident involved within the past 12 months (just under 11%). Of these accident involved nearly 53% stated that they were not to blame at all, with just 5 accepting that they were fully to blame. There were nearly 64% who had the impression of just avoiding an accident within the past 12 months, i.e. had a near miss. Of these about half had the impression of have 1 or 2 near misses in the past 12 months. There were a few riders who reported as having a near miss on a weekly basis, i.e. about 50 in the past 12-months.

Risk estimates

Riders were asked to imagine 100 riders and to estimate how many would be involved in an accident of some kind within the next 12-months. Three types of accident were suggested and an estimate was required for each type:

- minor accident or spill with no injury,
- accident involving a minor injury and
- accident involving a serious or fatal injury

The 100 riders to be considered were either typical riders, riders of a similar age and experience covering similar miles or riders exactly like you. Estimates for the three severity of accident were required for each combination, thus generating 9 estimates in total. A summary across all respondents is given in Table B10.

Table B10 - Summary of estimates of number of accidents per 100 riders pa

Types of rider	Type of accident	Sample size = 335			
		Mean	Min.	Max.	SD
Typical	Minor – no injury	23.1	0	100	19.8
	Minor injury	12.6	0	88	13.9
	Serious or fatal injury	6.1	0	99	10.7
Same age, sex, experience and mileage covered pa	Minor – no injury	14.5	0	100	17.3
	Minor injury	8.3	0	75	10.5
	Serious or fatal injury	3.2	0	80	8.9
Exactly the same as ‘you’	Minor – no injury	9.3	0	100	15.0
	Minor injury	5.0	0	60	8.0
	Serious or fatal injury	2.4	0	50	5.8

The range of estimates extends from 0 to 100 and an examination of response patterns suggests that respondents are using the scales in differing ways. For example one respondent gave 100 to all non-injuries, 50 for minor injury and 2 for all serious or fatal injury. However, there was another respondent who gave the risk of a no injury accident as low (20), the minor accident risk as much higher (40) and of a serious or fatal accident as even higher (80). The second respondent presumably considers that having an accident on a motorcycle is likely to involve injury, whereas the first thinks that all riders have accidents but they are not usually fatal or serious. Alternatively, these responses may simply indicate that some respondents misunderstood the questions.

The average values do show a logically consistent and sensible pattern. The numbers decrease with severity of the accident. The numbers also decrease as the estimate becomes personalised, thus demonstrating that riders do perceive themselves to be safer than riders in general and even riders who are very similar in terms of age, sex, experience and miles ridden per year.

Defining risk groups

The self-completion questionnaire also asked questions about different aspects of riders' perception of risk when riding and their acceptance of risk. They were asked how much they agreed or disagreed (on a 5-point scale) with the statement, with a code of 1 meaning they strongly agreed and 5 that they strongly disagreed. The risk they were asked to consider in the self-completion questionnaire was that motorcyclists were 25-times more likely to be killed in an accident as compared to car drivers.

The eight questions were as follow:

- (i) I am willing to believe that riding a motorcycle is 25 times more risky than driving a car
- (j) I was aware that riding was more risky than driving a car, but did not realise it was 25 times more risky
- (k) I was aware that riding was 25 times more risky than driving a car, and I am willing to accept this risk
- (l) I am a good rider so the high risk does not apply to me
- (m) I worry about the high risk of riding a motorcycle
- (n) I wear protective gear and so reduce the risk of injury
- (o) You have to accept some risk, if life is not to be too boring
- (p) If motorcycling really is 25 times more risky than driving a car, I'll consider giving up riding motorbikes

The distribution of responses to these questions is shown in Table B11.

Table B11 - Percentage level of agreement to estimated accident risk and related questions (self-completion survey)

Question (<i>sample=346</i>)	strongly agree	agree	neither agree or disagree	disagree	strongly disagree
Willing to believe that risk of having fatal accident for riders is 25 times more than for a car driver	21%	49%	14%	11%	5%
Aware that riding was risky, but not realise that it was 25 times more risky	8%	48%	27%	13%	4%
Aware that riding was 25 times more risky than driving a car, and prepared to accept this risk	11%	45%	30%	10%	3%
A good rider so this risk does not apply to me	4%	12%	38%	37%	9%
Worry about risk of riding	3%	26%	31%	30%	10%

Wear protective gear so reduce risk of injury	41%	43%	9%	5%	1%
Accept some risk, otherwise life too boring	18%	46%	24%	9%	2%
Would consider giving up if risk of being killed 25 times higher than in car	2%	1%	4%	30%	65%

Respondents were grouped by their age and by their experience as riders, as shown in Tables B2 and B4 respectively. A similar analysis to that carried out for the interview sample comparing averages across a number of questions about risk was conducted.

Table B12 Age group and frequency of self-completion questionnaire respondents

Age group	Frequency	Percentage
16 to 25 years	18	5%
26 to 35 years	53	15%
36 to 45 years	137	39%
46 to 55 years	111	31%
56+ years	36	10%
Total	355	-

Table B13 Experience group and frequency of self-completion questionnaire respondents

Years of experience	Frequency	Percentage
0+ to 10 years	170	50%
10+ to 20 years	65	19%
20+ to 30 years	65	19%
30+ years	43	13%
Total	343	-

Only the experience group analyses produced any statistically significant differences between group averages. These questions for the experience group average values are shown in Table B14.

Table B14 Group averages for questions where there is statistically significant difference between experience groups (self completion questionnaire sample)

Question	Experience group			
	0-10yrs	10-20yrs	20-30yrs	30+yrs
How likely to be involved in an accident in the next 12-months compared to other riders of your age and sex. (1=much less likely, 5=much more likely)	2.3	2.0	2.1	1.8
I am willing to believe that risk of having fatal accident for riders is 25 times more than for a car driver (1=strongly agree, 5=strongly disagree)	2.2	2.1	2.5	2.8
I worry about the risk of riding a motorcycle (1=strongly agree, 5=strongly disagree)	3.0	3.4	3.4	3.3
I would consider giving up if risk of being killed 25 times higher than in car (1=strongly agree, 5=strongly disagree)	4.5	4.6	4.8	4.5
How risky is motorcycling for you personally (1=very safe, 7=very risky)	3.3	2.7	3.2	2.6

The average values for each of the motorcycle rider behaviour questionnaire (MRBQ) behaviour measures and motorcycle rider motivation questionnaire (MRMQ) factors are shown in Table B15 for each response to a question about risk acceptance.

Table B15 - Average values of behaviour and attitudes measures

Average of measure derived from MRBQ or MMRQ (A low values means less for behaviours and more for attitudes)	“You have to accept some risk, if life is not to be too boring”				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
<i>Sample size</i>	62	158	83	31	6
Traffic error (behaviour)	1.47	1.44	1.45	1.31	1.10
Speed (behaviour)	2.99	2.72	2.39	2.15	2.07
Control errors (behaviour)	1.93	1.83	1.68	1.66	1.23
Stunt (behaviour)	1.80	1.53	1.43	1.24	1.42
Pleasure from riding (motivation)	1.41	1.66	1.78	1.84	1.83
Speed attitude (motivation)	2.43	2.88	3.00	3.28	3.26

The k-cluster⁴ analysis technique was used to define 3 groups on the basis of responses to these eight statements. The technique generates groups which differ from each other as much

⁴ In general, the k-means method will produce exactly k different clusters of greatest possible distinction. You "tell" the computer package to form exactly k clusters that are to be as distinct as possible. The best number of clusters k leading to the greatest separation (distance) is not known a priori and must be determined from the data or other information.

as possible from the responses given. The three groups had mean values on each of the 8 statements as shown in Table B16.

Table B16 - Mean values for each group

Statement (average score for group, scored on 5-point scale)	Group		
	1 (n=72)	2 (n=119)	3 (n=144)
Willing to believe estimated risk	3.8	1.9	1.9
Aware that riding was risky, but not realise that risky	2.8	2.9	2.2
Aware that riding was risky, and prepared to accept this risk	3.3	1.8	2.6
A good rider so this risk does not apply to me	3.1	2.9	3.9
Worry about risk of riding	3.7	3.5	2.7
Wear protective gear so reduce risk of injury	1.9	1.7	1.9
Accept some risk, otherwise life too boring	2.5	1.9	2.5
Would consider giving up if risk of being killed 25 times higher than in car	4.7	4.7	4.4

Comparison of the three rider groups

A number of behaviour, attitude, sensation seeking and other measures were computed and have been identified in an earlier section. These have been compared between the rider risk groups and may help to understand some of the differences between the riders in each group, Table B17. For example those in group 3 covered less mileage and had less experience than those in group 1. However it is group 2 riders who are seeking more sensations overall as well as the novelty and intensity of the sensation.

Table B17 - Mean values for each group on a number of rider measures

Measure	Group		
	1 (n=72)	2 (n=119)	3 (n=144)
Age of rider (yrs)	43.7	43.6	43.7
*Miles ridden in past 12-months	5844	5982	4497
*Number of years riding (excluding long breaks)	18.1	16.6	11.3
*Engine size of bike (cc)	922	897	810
*How likely to be involved in an accident in the next 12-months (5-point scale, lower score means considers less likely)	2.0	1.9	2.3
*Overall sensation seeking score (4-point scale, lower score mean more sensations sought)	2.6	2.4	2.5
*Novelty sensation seeking score (4-point scale, lower score mean more sensations sought)	2.5	2.3	2.3
*Intensity sensation seeking score (4-point scale, lower score mean more sensations sought)	2.7	2.5	2.7
*Measure of own skill compared to others of same age and sex (5-point scale, lower score means better)	2.1	2.1	2.4
Measure of traffic behaviour errors (6-point scale, lower score mean fewer such errors)	1.3	1.5	1.4

*Measure of speed behaviour (6-point scale, lower score mean less)	2.5	2.8	2.5
Measure of control errors (6-point scale, lower score mean fewer)	1.7	1.8	1.8
*Measure of stunt behaviour (6-point scale, lower score mean less)	1.5	1.7	1.4
*Measure of pleasure derived from riding (5-point scale, lower score mean more)	1.6	1.6	1.8
*Attitudes towards speed (5-point scale, lower score means likes more)	2.9	2.7	3.0

* indicates that there was statistically significant difference between some of the group means on this variable

Relative risk was assessed across a number of activities on a 7-point scale (1=no risk to 7=high risk). The average scale values were then ranked with rider group. The lowest score has a rank of 1 indicating the lowest relative risk. Table B18 shows that driving a car is considered the least risky activity and hang-gliding the most risky. Overall motorcycling ranks 4th and is seen as more risky than driving a car, cycling or surfing but less risky than rock climbing, skiing and hang-gliding. However, those riders in group 1 only rank motorcycling as riskier than driving a car and less risky than cycling, surfing, rock climbing, skiing and hang-gliding.

Table B18 - Ranking on risk of activity, for each of the 3 rider groups

Risk ranking Activity	Group			overall
	1	2	3	
Cycling	3	2	2	2
Driving a car	1	1	1	1
Rock climbing	6	6	6	6
Skiing	5	5	5	5
Motorcycling	2	4	4	4
Hang-gliding	7	7	7	7
Surfing	4	3	3	3

The seriousness of having an accident while engaged in a number of activities was assessed by riders on a 7-point scale (1=not serious to 7=extremely serious) and then ranked according to the average value for the group. Table B19 shows that driving a car is likely to be the least serious and hang-gliding the most serious. Overall motorcycling ranks 5th and is seen as having a potentially more serious outcome than an accident when driving a car, cycling, surfing or skiing but less serious an outcome than rock climbing and hang-gliding. Motorcycling ranks higher for the seriousness of the outcome than the risk in the accident occurring.

Table B19 - Ranking serious of an accident while participating in activity, for each of the 3 rider groups

Seriousness ranking Activity	Group			overall
	1	2	3	
Cycling	2	2	2	2
Driving a car	1	1	1	1
Rock climbing	6	6	6	6
Skiing	4	4	4	4
Motorcycling	5	5	5	5
Hang-gliding	7	7	7	7
Surfing	3	3	3	3

The controllability of avoiding death or injury while engaged in a number of activities was assessed by riders on a 7-point scale (1=controllable to 7=not controllable) and then ranked according to the average value for the group. Table B20 shows that driving a car is seen as the most controllable and hang-gliding the least controllable. Overall and in group 2 and 3 motorcycling ranks 3rd and is seen as less controllable than driving a car or cycling, but more controllable than skiing, rock climbing, surfing and hang-gliding. However those riders in group 1 see motorcycling as more controllable than cycling.

Table B20 - Ranking controllability of avoidance of injury or death while engaging in each activity, for each of the 3 rider groups

Controllability ranking Activity	Group			overall
	1	2	3	
Cycling	3	2	2	2
Driving a car	1	1	1	1
Rock climbing	4	6	6	5
Skiing	5	4	5	4
Motorcycling	2	3	3	3
Hang-gliding	7	7	7	7
Surfing	6	5	6	6

Riders were asked how safe or risky they thought that motorcycling was in general and specifically for them. They rated the perceived risk on a 7-point scale going from 1=very safe to 7=very risky. Table B21 shows the distribution of responses. It indicates that riders perceive they personally are at less risk than riders in general. They consider that it is risky for 31% of riders in general, but only 13% consider that they personally are at risk. This is consistent with the findings from the interview survey.

Table B21 - How risky is motorcycling perceived (n=355)

How risky is motorcycling:	Very safe	Safe	Fairly safe	n/k	Bit risky	Risky	Very risky
In general	2%	10%	21%	35%	19%	9%	3%
For you	9%	29%	28%	21%	9%	3%	1%

The average rating values for each of the three rider groups are given in Table B22, and there is a statistically significant difference between the average values.

The group 1 riders perceive the risk in motorcycling less than the other two groups, in general and for themselves. Group 3 riders consider the risk to be highest, and specifically for themselves, i.e. they are the more risk aware group as is reflected by the characteristics described elsewhere.

Table B22 - Mean values for each rider group on perception of risk

Measure (7-point scale, low score is safe)	Group		
	1 (n=72)	2 (n=119)	3 (n=144)
How safe or risky is motorcycling in general	3.6	4.0	4.2
How safe or risky is motorcycling personally	2.4	2.8	3.6

Riders were asked to compare the risk when riding a motorcycle with the risk when driving a car and to state if they felt it was higher, lower or about the same. The row percentages in Table B23 shows that riders in group 1 perceive riding relatively less risky than riders in the other two groups, and those in group 3 relatively more risky. Overall, riders perceive riding as a more risky mode of transport than driving.

Table B23 - Perception of relative risk of riding compared to driving

Rider group (count and row%)	Motorcycle compared to car driving is			Total
	Less risky	About the same risk	More risky	
1	18 (25%)	33 (46%)	20 (28%)	71
2	11 (9%)	52 (44%)	55 (47%)	118
3	8 (6%)	44 (31%)	88 (63%)	140
Total	37 (11%)	129 (39%)	163 (50%)	329

*A Chi-squared test indicated a relationship between rows and columns ($\chi^2_4=32.5$ p<0.001)

Those respondents who had indicated they thought riding was less risky than driving were asked to say by how many times. The responses varied from 1 to 100 with an average of 12, suggesting that they thought riding is 12 times less risky than driving. Similarly, riders who had indicated they thought riding was more risky than driving were asked to say by how many times. The responses also varied from 1 to 100 with an average of 9, suggesting that they thought riding is 9 times more risky than driving. There were no statistically significant differences between the 3 rider groups on either measure, probably due to the large variation in the relative risk estimates.

ANNEX C - INTERVIEW QUESTIONNAIRE

REF:



INTERVIEW SURVEY OF MOTORCYCLISTS & NON-MOTORCYCLISTS

Please inform the interviewee that this questionnaire will only take about 20 minutes to complete. Any information they provide will be treated in the **strictest confidence** and used for research purposes only. No comments made will be linked to them as an individual. Even if they do not currently ride a motorcycle then please complete the first part of section A and section D.

For the purpose of this interview the word 'motorbike' is used to refer to either a motorcycle, scooter or moped. The results from this questionnaire are completely anonymous.

SECTION A: MOTORBIKE AND RIDING EXPERIENCE

Q1 Do you have a licence to ride a motorbike?

Yes Full licence Provisional
 No

Q2 Do you own a motorbike?

Yes
 No

Q3 How old were you on your last birthday?

_____ years old

Q4 Have you ridden a motorbike on a public road in the last 12 months?

Yes *If 'Yes', please go to Q6*
 No

Q5 Why are you not currently riding a motorbike?						
Please show how important each of the following reasons are on a 1 to 5 point scale going from (1) A very important reason to (5) No reason at all:						
	(Tick ONE box on EACH line)	(1) A very important reason	(2)	(3)	(4)	(5) No reason at all
(a)	I can't afford it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b)	It is inconvenient	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c)	Motorcycling gives the "wrong" image	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d)	Motorcycling is unsafe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e)	The need to carry passengers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f)	Other (please specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Interviewer: go to SECTION F if the participant is not a current rider, Sections C, D and E are for current motorcycle riders only

SECTION B: RISK AND ATTITUDES (CURRENT RIDERS ONLY)

Q6 Between the time you first started riding motorbikes and now, did you have a break from riding for more than a year?

Yes How long ago did you return to riding after your last long break? _____ years
 No

Q7 What is the engine size of the bike you rode today:

_____ cc

Q8 What type of motorbike are you riding today?

(Tick ONE box)

- 1. Sports
- 2. Sports-Touring motorcycle
- 3. Tourer/Roadster motorcycle
- 4. Off road/Trail motorcycle
- 5. Custom or cruiser motorcycle
- 6. Classic motorcycle
- 7. Scooter
- 8. Moped

Q9 How many fixed penalty notices or summonses for motoring offences have you received in the last 12 months for (a) riding a motorbike and (b) driving a car (Do not include parking offences for either)?

(Please write in)

- (a) Riding a motorbike: _____ offences
 (b) Driving a car: _____ offences

Q10 How many times have you been flashed by a speed camera in the last 12 months whilst (a) riding a motorbike and (b) driving a car?

(Please write in)

- (a) Riding a motorbike: _____ times
 (b) Driving a car: _____ times

Q11 How many endorsement points have you had on your licence in the last 12 months for (a) riding a motorbike and (b) driving a car (Do not include parking offences for either)?

(Please write in)

- (a) Riding a motorbike: _____ points
 (b) Driving a car: _____ points

Q12 What motorcycle training courses and tests have you (a) taken and (b) passed?

(READ OUT and tick ALL THAT APPLY for part (a) and part (b))

No motorcycle training courses taken

	(a) Courses taken	(b) Courses passed
1. Compulsory Basic Training	<input type="checkbox"/>	<input type="checkbox"/>
2. Direct/Accelerated Access	<input type="checkbox"/>	<input type="checkbox"/>
3. IAM Advanced Motorcycle	<input type="checkbox"/>	<input type="checkbox"/>
4. RoSPA Advanced Riding	<input type="checkbox"/>	<input type="checkbox"/>
5. Blue Riband Advanced Rider award	<input type="checkbox"/>	<input type="checkbox"/>
6. GNVQ 'Advanced' in Motorcycle Riding	<input type="checkbox"/>	<input type="checkbox"/>
7. Bikesafe	<input type="checkbox"/>	<input type="checkbox"/>

Q13 Do you belong to a motorcycling organisation or club?
 Yes If 'Yes', which clubs/organisations do you belong to?
 No

Q14 READ OUT and tick ALL THAT APPLY

- | | Yes | No |
|-----------------------------------------------------------------|--------------------------|--------------------------|
| 1. Do you use a tinted visor? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Do you have a tiny number plate on your bike? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Do you have an 'after-market' exhaust system or silencer(s)? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Have you up-rated your suspension? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Do you have 'rear-set' footrests? | <input type="checkbox"/> | <input type="checkbox"/> |

Q15	Do you normally wear clothing when riding that gives protection for your:		
	<i>(Please tick ALL THAT APPLY)</i>		
	Leather	Textile	Armoured?
1. Shoulders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Elbows	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Back	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Hips	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Knees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q16 Compared with other motorbike riders your age and sex, how likely or unlikely do you think it is that YOU will be involved in an accident while riding a motorbike on a public road in the next 12 months? (Tick one box)

- | | |
|--------------------------------------------------------|--------------------------|
| 1. I am much less likely to be involved in an accident | <input type="checkbox"/> |
| 2. I am less likely to be involved in an accident | <input type="checkbox"/> |
| 3. I am as likely to be involved in an accident | <input type="checkbox"/> |
| 4. I am more likely to be involved in an accident | <input type="checkbox"/> |
| 5. I am much more likely to be involved in an accident | <input type="checkbox"/> |

Q17 Imagine 100 riders of the same age, sex and experience as you, and who ride the same number of miles as you do. How many do you think will have an accident (or minor spill) in the next 12 months? (Write in the space provided)

_____ riders

Q18 How long have you been riding motorbikes on public roads for? (Do NOT include long periods when you never rode)

(Please write in the number of years and months)

_____ years _____ months

Q19 Approximately, how many miles have you RIDDEN on a motorbike in the last 12 months on public roads?

_____miles

Q20 Approximately, how many miles have you DRIVEN in a car in the last 12 months on public roads?

_____miles

(Interviewer: From the answers given in Q3, Q19 and Q20, use the **RISK TABLES** to find the accident rate that applies to the participant and write it in the boxes then read the question)

Q21 Given your age, experience and annual mileage it is estimated that of 100 riders like you, about will have an accident or minor spill in the next year. Can you please tell me how much you agree or disagree with the following statements.

	Strongly agree (1)	Agree (2)	Neither agree not disagree (3)	Disagree (4)	Strongly Disagree (5)
(a) I am willing to believe that out of 100 riders like me, about <input type="text"/> will have an accident or minor spill in the next 12 months	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) I was aware that riding was risky, but did not realise that risky	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) I was aware that riding was this risky and I am willing to accept this risk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) I am a good rider so this risk does not apply to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Generally:					
(e) I worry about the risk of riding a motorcycle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f) I wear protective gear and so reduce the risk of injury	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g) I accept some risk, otherwise life would be too boring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h) I would consider giving up motorcycling if the risk of being killed on a motorcycle was 25 times higher than when driving a car.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e) Other comments:					

SECTION C: RISK AND ENJOYMENT FACTORS (CURRENT RIDERS ONLY)

Interviewer: **Show PICTURE 1** and ask the questions.

Q22	PICTURE 1	Imagine you are riding the road shown in your normal manner. Please rate the road for: (Please tick one box for each item.)				
		Very Low	Low	Medium	High	Very High
(a)	How enjoyable it would be	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b)	The speed you would ride	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c)	How much concentration you would need	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d)	How risky it would be to ride the road	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q23 Why did you rate the road the way you did?

Interviewer: Show PICTURE 2 and ask the questions.

Q24	PICTURE 2	Imagine you are riding the road shown in your normal manner. Please rate the road for: (Please tick one box for each item.)					
			Very Low	Low	Medium	High	Very High
(a)	How enjoyable it would be		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b)	The speed you would ride		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c)	How much concentration you would need		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d)	How risky it would be to ride the road		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q25 Why did you rate the road the way you did?

Interviewer: Show PICTURE 3 and ask the questions.

Q26	PICTURE 3	Imagine you are riding the road shown in your normal manner. Please rate the road for: (Please tick one box for each item.)					
			Very Low	Low	Medium	High	Very High
(a)	How enjoyable it would be		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b)	The speed you would ride		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c)	How much concentration you would need		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d)	How risky it would be to ride the road		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q27 Why did you rate the road the way you did?

Interviewer: **Show PICTURE 4** and ask the questions.

Q28	PICTURE 4	Imagine you are riding the road shown in your normal manner. Please rate the road for: (Please tick one box for each item.)	Very Low	Low	Medium	High	Very High
(a)		How enjoyable it would be	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b)		The speed you would ride	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c)		How much concentration you would need	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d)		How risky it would be to ride the road	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q29 Why did you rate the road the way you did?

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Interviewer: **Show PICTURE 5** and ask the questions.

Q30	PICTURE 5	Imagine you are riding the road shown in your normal manner. Please rate the road for: (Please tick one box for each item.)	Very Low	Low	Medium	High	Very High
(a)		How enjoyable it would be	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b)		The speed you would ride	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c)		How much concentration you would need	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d)		How risky it would be to ride the road	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q31 Why did you rate the road the way you did?

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SECTION D: DISCUSSION (CURRENT RIDERS ONLY)

Interviewer: Ask the participant to identify when they ride in summer and in winter, and tick the appropriate box(s):

Q32			In all conditions	Only in the dry and in daylight
(a)	Summer	Daily	<input type="checkbox"/>	<input type="checkbox"/>
(b)		Weekly	<input type="checkbox"/>	<input type="checkbox"/>
(c)		Monthly	<input type="checkbox"/>	<input type="checkbox"/>
(d)		Less often	<input type="checkbox"/>	<input type="checkbox"/>
(e)	Winter	Daily	<input type="checkbox"/>	<input type="checkbox"/>
(f)		Weekly	<input type="checkbox"/>	<input type="checkbox"/>
(g)		Monthly	<input type="checkbox"/>	<input type="checkbox"/>
(h)		Less often	<input type="checkbox"/>	<input type="checkbox"/>

Interviewer: Ask the participant to identify which categories best describes them. Read out list and tick the appropriate boxes. Talk about why they think this is so. Then ask what type of risks they may take as a rider and note brief comments.

Q33	Category	Description
(a)	<input type="checkbox"/>	Ride for commuting to work and back
(b)	<input type="checkbox"/>	Ride mostly week-ends on rural roads often on my own
(c)	<input type="checkbox"/>	Ride mostly at week-ends with a motorcycle club / organisation
(d)	<input type="checkbox"/>	Ride mostly at week-ends with my mates on mainly rural roads
(e)	<input type="checkbox"/>	Ride mainly for fun / enjoyment
(f)	<input type="checkbox"/>	I use a car for transport and ride for fun
(g)	<input type="checkbox"/>	Other: describe

Q34 Tell me more about the type of riding that you do.

Q35 What type of risks do you take as a rider?

SECTION E: FOCUS GROUP PARTICIPATION (CURRENT RIDERS ONLY)

Q36 We will be holding discussion meetings where 8-10 riders can talk about their riding experiences. These will last a couple of hours and be held on a weekday evening in Edinburgh or possibly in Stirling. Refreshments will be provided and a payment of £20 will be made to cover expenses. Would you like to be invited to take part?

NO

YES

If YES, ask interviewee to fill in Focus Group form and note reference number of form here

SECTION F: OTHER INFORMATION ABOUT YOU & HOW YOU CONSIDER RISK

Q37 Finally, how safe or risky do you think motorcycling is.....

(CIRCLE ONE NUMBER)

		Very safe					Very risky	
a)	For motorcyclists in general	1	2	3	4	5	6	7
b)	For you personally	1	2	3	4	5	6	7

Q38 Sex of the interviewee:

Male

Female

ANNEX D - SELF-COMPLETION QUESTIONNAIRE



A SURVEY OF MOTORCYCLISTS & NON-MOTORCYCLISTS

Please complete this questionnaire by ticking the appropriate boxes and filling in the spaces as required. It will only take about 20 minutes to complete and not all questions may apply to you. Any information you provide will be treated in the **strictest confidence** and used for research purposes only. No comments you make will be linked to you as an individual. Even if you do not currently ride a motorcycle then please complete the first part of section A and section D.

NOTE: THE RESULTS FROM THIS QUESTIONNAIRE ARE COMPLETELY ANONYMOUS

Please note: The word 'motorbike' is used to refer to a motorcycle, scooter or moped.

SECTION A: YOUR MOTORBIKE AND RIDING EXPERIENCE

Q1 Do you have a licence to ride a motorbike?

Yes Full Provisional
No

Q2 Do you own a motorbike?

Yes
No

Q3 Have you ridden a motorbike on a public road in the last 12 months?

Yes *If 'Yes', please go to Q5*
No

Q4 Why are you not currently riding a motorbike?

Please show how important each of the following reasons are:

	(Tick ONE box on EACH line)	(1) A very important reason	(2)	(3)	(4)	(5) No reason at all
(a)	I can't afford it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b)	It is inconvenient	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c)	Motorcycling gives the "wrong" image	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d)	Motorcycling is unsafe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e)	The need to carry passengers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f)	Other (please specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ONLY CURRENT MOTORCYCLE RIDERS SHOULD COMPLETE THE REMAINDER OF THIS SECTION

IF YOU DO NOT CURRENTLY RIDE A MOTORBIKE NOW GO TO SECTION D

Q5 How long have you been riding motorbikes on public roads? (Do NOT include long periods when you never rode)

(Please write in the number of years and months)

_____ years _____ months

Q6 Between the time you first started riding motorbikes and now, did you have a break from riding for more than a year?
 Yes How long ago did you return to riding after your last long break? _____ years
 No

Q7 Approximately, how many miles have you ridden and driven in the last 12 months on public roads?
 ridden _____ bike-miles and driven _____ car-miles

Q8 What is the engine size of the bike you rode most often on public roads during the last year:
 _____ cc

Q9 What type of motorbike did you ride most often in the last year?
(Tick ONE box)

1. Sports	<input type="checkbox"/>
2. Sports-Touring motorcycle	<input type="checkbox"/>
3. Tourer/Roadster motorcycle	<input type="checkbox"/>
4. Off road/Trailie motorcycle	<input type="checkbox"/>
5. Custom / cruiser motorcycle	<input type="checkbox"/>
6. Classic motorcycle	<input type="checkbox"/>
7. Scooter	<input type="checkbox"/>
8. Moped	<input type="checkbox"/>

Q10 How many fixed penalty notices or summonses for motoring offences have you received in the last 12 months for (a) riding a motorbike and (b) driving a car (Do not include parking offences for either)?
(Please write in)

(a) Riding a motorbike: _____ offences
 (b) Driving a car: _____ offences

Q11 How many endorsement points have you had on your licence in the last 12 months for (a) riding a motorbike and (b) driving a car (Do not include parking offences for either)?
(Please write in)

(a) Riding a motorbike: _____ points
 (b) Driving a car: _____ points

Q12 What motorcycle training courses and tests have you (a) taken and (b) passed?
(Please tick ALL THAT APPLY for part (a) and part (b))

No motorcycle training courses taken <input type="checkbox"/>	(a)	(b)
	Courses taken	Courses passed
1. Compulsory Basic Training	<input type="checkbox"/>	<input type="checkbox"/>
2. Direct/Accelerated Access	<input type="checkbox"/>	<input type="checkbox"/>
3. IAM Advanced Motorcycle Test	<input type="checkbox"/>	<input type="checkbox"/>
4. RoSPA Advanced Riding Test	<input type="checkbox"/>	<input type="checkbox"/>
5. Blue Riband Advanced Rider award	<input type="checkbox"/>	<input type="checkbox"/>
6. GNVQ 'Advanced' in Motorcycle Riding	<input type="checkbox"/>	<input type="checkbox"/>
7. Bikesafe	<input type="checkbox"/>	<input type="checkbox"/>

Q13 Do you belong to a motorcycling organisation or club?
 Yes If 'Yes', which clubs/organisations do you belong to?
 No

SECTION B: ACCIDENTS

Q14 How many road accidents (including minor spills) have you been involved in while riding a motorbike on public roads in the last 12 months?

(Please write in)

_____ accidents *If you have entered zero accidents in the last 12 months please go to Q16*

Q15 To what extent were you to blame for the accidents

	Not at all to blame	A little to blame	Quite a lot to blame	Entirely to blame
1. Most recent accident	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Previous accident	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. One before that	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. One before that	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q16 Many riders have had the impression of only just avoiding an accident (i.e. a near miss). How many times has this happened to you in the last 12 months while riding a motorbike on a public road?

(Please write in)

_____ near misses

SECTION C: YOUR ATTITUDES AND RIDING BEHAVIOUR

Q17 (For each part of this question, please write in the spaces provided)

(your answer should be somewhere between 0 and 100)		A minor accident or spill (no injuries)	An accident involving a minor injury	An accident involving a serious* or fatal injury
a)	Imagine 100 typical riders. In the next 12 months how many do you think will have			
b)	Now imagine 100 riders of the same age, sex and experience as you, and doing a similar amount and type of riding as you. In the next 12 months how many do you think will have			
c)	Now imagine 100 riders <u>exactly</u> like you in every way. In the next 12 months how many do you think will have			

* a serious injury is one where the person is detained in hospital as an in-patient and/or where injuries require treatment

Q18 Compared with other motorbike riders your age and sex, how likely or unlikely do you think it is that YOU will be involved in an accident while riding a motorbike on a public road in the next 12 months?
(Tick one box)

1. I am much less likely to be involved in an accident
2. I am less likely to be involved in an accident
3. I am as likely to be involved in an accident
4. I am more likely to be involved in an accident
5. I am much more likely to be involved in an accident

Q19 Compared with other motorbike riders your age and sex, how much better or worse do you think you are at each of the following while riding?

(Tick one box on EACH line)

		I am much better	I am better	I am about the same	I am worse	I am much worse
(a)	Controlling the motorbike (i.e. vehicle control skills)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b)	Spotting hazards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c)	Getting out of a hazardous situation safely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d)	Anticipating what other road users are going to do	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e)	Avoiding hazardous situations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q20 When riding, how often do each of the following things happen to you?

(Tick one box on EACH line)

		Never	Hardly ever	Occasionally	Quite often	Frequently	Nearly all the time
(a)	Fail to notice that pedestrians are crossing when turning into a side street from a main road	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b)	Exceed the speed limit on a residential road	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c)	Miss "Give Way" signs and narrowly avoid colliding with traffic having the right of way	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d)	Attempt to overtake someone that you hadn't noticed to be signalling a right turn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e)	Race away from traffic lights with the intention of beating the driver/rider next to you	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f)	Exceed the speed limit on a motorway	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g)	Ride so fast into a corner that you scare yourself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h)	Exceed the speed limit on a country/rural road	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(i)	Ride so fast into a corner that you feel like you might lose control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(j)	Change gear when going round a corner or bend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(k)	Run wide when going round a corner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(l)	Find that you have difficulty controlling the bike when riding at speed (e.g. steering wobble)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(m)	Brake or throttle-back when going round a corner or bend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q21 When riding, how often do each of the following things happen to you?

(Tick one box on EACH line)

	Never	Hardly ever	Occasionally	Quite often	Frequently	Nearly all the time
(a) Pull out on to a main road in front of a vehicle that you hadn't noticed, or whose speed you have misjudged	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) Disregard the speed limit late at night or in the early hours of the morning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) Not notice a pedestrian waiting to cross at a zebra crossing, or a pelican crossing that has just turned red	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) Not notice someone stepping out from behind a parked vehicle until it is nearly too late	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e) Fail to notice or anticipate that another vehicle might pull out in front of you and have difficulty stopping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f) Get involved in unofficial 'races' with other riders or drivers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g) Attempt to do, or actually do, a wheelie	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h) Unintentionally do a wheel spin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(i) Intentionally do a wheel spin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(j) Pull away too quickly and your front wheel comes off the road	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(k) Open up the throttle and just 'go for it' on country roads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q22 How much do you agree or disagree with these following statements?

(Tick one box on EACH line)

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
(a) Riding a motorbike makes me feel good	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) When riding, it's a good feeling when you overtake others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) When riding a motorbike, I feel a sense of freedom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) I prefer to ride slowly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e) It is important to me that my motorbike has a high top speed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f) It is important to me that my motorbike has fast acceleration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g) I enjoy riding my motorbike at high speeds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h) I like to corner at high speed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(i) I enjoy going on long motorbike rides	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(j) Riding a motorbike is a good social activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(k) When riding a motorbike, I often feel as if I am at one with the machine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(l) I think that 60mph on a rural road is too slow (60mph is the National Speed Limit for single carriageway roads)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(m) Without motorbikes, my life would be less interesting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(n) It is fun to ride a motorbike	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q23 According to official figures the risk of being killed when riding a motorcycle is 25 times higher than it is when driving a car. Can you please indicate what you feel about this statistic?

<i>(Tick one box on EACH line)</i>		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
(a)	I am willing to believe that riding a motorcycle is 25 times more risky than driving a car	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b)	I was aware that riding was more risky than driving a car, but did not realise it was 25 times more risky	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c)	I was aware that riding was about 25 times more risky than driving a car, and I am willing to accept this risk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d)	I am a good rider so the high risk does not apply to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e)	I worry about the high risk of riding a motorcycle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f)	I wear protective gear and so reduce the risk of injury	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g)	You have to accept some risk, if life is not to be too boring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h)	If motorcycling really is 25 times more risky than driving a car, I'll consider giving up riding motorbikes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SECTION D: OTHER INFORMATION ABOUT YOU

The next two questions are not about motorcycling but will help us understand what type of person you are.

Q24 Please indicate how well the following statements describe you:

<i>(Tick one box on EACH line)</i>		Describes me very well	Describes me somewhat	Does not describe me very well	Does not describe me at all
(a)	I can see how it would be interesting to marry someone from a foreign country.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b)	When the water is very cold, I prefer not to swim even if it is a hot day	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c)	If I have to wait in a long line, I'm usually patient about it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d)	When I listen to music, I like it to be loud	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e)	When taking a trip, I think it is best to make as few plans as possible and just take it as it come	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f)	I stay away from movies that are said to be frightening or highly suspenseful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g)	I think it is fun and exciting to perform or speak before a group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h)	If I were to go to an amusement park, I would prefer to ride the rollercoaster or other fast rides	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(i)	I would like to travel to places that are strange and far away	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(j)	I would never like to gamble with money, even if I could afford it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q25 Please indicate how well the following statements describe you:

<i>(Tick one box on EACH line)</i>		Describes me very well	Describes me somewhat	Does not describe me very well	Does not describe me at all
(a)	I would have enjoyed being one of the first explorers of an unknown land	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b)	I like a movie where there are a lot of explosions and car chases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c)	I don't like extremely hot and spicy foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d)	In general, I work better when I am under pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e)	I often like to have the radio or TV on while I'm doing something else, such as reading or cleaning up	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f)	It would be interesting to see a car accident happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g)	I think it is best to order something familiar when eating in a restaurant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h)	I like the feeling of standing next to the edge on a high place and looking down	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(i)	If it were possible to visit another planet or the moon for free, I would be among the first in line to sign up	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(j)	I can see how it must be exciting to be in a battle during a war	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The following questions (Q26 – Q28) require you to consider the risk, the consequences and the control people have over a number of different activities. We are interested in how you rate these different activities; please circle the appropriate number that you consider most accurately reflects your view.

Q26 What is the risk of having an accident while doing the following activities?

(Circle ONE number of EACH line)

Spending a day:		Not Risky						Extremely Risky
(a)	Cycling	1	2	3	4	5	6	7
(b)	Driving a car	1	2	3	4	5	6	7
(c)	Rock climbing	1	2	3	4	5	6	7
(d)	Skiing	1	2	3	4	5	6	7
(e)	Motorcycling	1	2	3	4	5	6	7
(f)	Hang-gliding	1	2	3	4	5	6	7
(g)	Surfing	1	2	3	4	5	6	7

Q27 If an accident were to occur while doing the following activities, how serious would it be?
(Circle ONE number of EACH line)

		Not at all Serious						Extremely Serious
(a)	Cycling	1	2	3	4	5	6	7
(b)	Driving a car	1	2	3	4	5	6	7
(c)	Rock Climbing	1	2	3	4	5	6	7
(d)	Skiing	1	2	3	4	5	6	7
(e)	Motorcycling	1	2	3	4	5	6	7
(f)	Hang-gliding	1	2	3	4	5	6	7
(g)	Surfing	1	2	3	4	5	6	7

Q28 To what extent can a person, by personal skill, avoid death or injury while engaging in the activity?
(Circle ONE number of EACH line)

		Controllable						Not Controllable
(a)	Cycling	1	2	3	4	5	6	7
(b)	Driving a car	1	2	3	4	5	6	7
(c)	Rock Climbing	1	2	3	4	5	6	7
(d)	Skiing	1	2	3	4	5	6	7
(e)	Motorcycling	1	2	3	4	5	6	7
(f)	Hang-gliding	1	2	3	4	5	6	7
(g)	Surfing	1	2	3	4	5	6	7

Q29 Overall, how safe or risky do you think motorcycling is:
(Circle ONE number of EACH line)

		Very safe						Very risky
(a)	For motorcyclists in general	1	2	3	4	5	6	7
(b)	For you personally	1	2	3	4	5	6	7

Q30 For myself, I would say that riding a motorcycle is: (please tick one box)

(1) less risky (2) about the same risk (3) more risky

.... than driving a car

If less risky, then by how many times _____

If more risky, then by how many times _____

Q31 Are you:

Male
Female

Q32: How old were you on your last birthday?

_____ years old

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE, NOW PLEASE POST IT BACK IN THE ENVELOPE PROVIDED

ANNEX E - PICTURES USED IN INTERVIEWS



PICTURE 1



PICTURE 2



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PICTURE 3



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PICTURE 4



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PICTURE 5

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