

## **MAIDS REPORT - COMMENTS**

### **Motorcycle Action Group – United Kingdom**

#### **Introduction**

In response to the comments by the authors of the MAIDS report, we would like to point out that the query in relation to table one of our previous document<sup>1</sup> (also see Annex One), was not made for the purpose of entering into a discussion about the reliability of government vehicle registration (parc) data, but rather to determine whether there may be a correlation between fatalities and engine size. The data were merely indicative of the overall situation in terms of type and volume of PTWs in the countries your teams studied. Although using aggregate parc data by individual countries may well be questionable, the point we were attempting to make was that the volumes and usage of different types of PTWs (i.e. mopeds, scooters and motorcycles) are vastly different in each country and because the authors of the report have aggregated PTWs into either L1 or L3 categories<sup>2</sup>, it is in MAG's view, difficult to ascertain from the report whether there may be a correlation between the severity of accidents and engine sizes of PTWs. This we believe is due to restrictive PTW definitions used in the report.

For example, with reference to the Transport Research Laboratory (TRL) from the UK Department of Transport, Report Number 607, published in 2004. This study surveyed motorcyclists during 2002/03 and examined 11,360 respondents and from these, 1,495 accident cases were studied in detail. On page 14 point 4.3.3. in the TRL report, the authors identify a relationship between engine size and type of accident. Or rather, that riders of PTWs with engine sizes up to 125cc had a much higher probability of accident involvement than riders of larger motorcycles. Though these accidents were generally minor or with slight injuries.

On page 28 point 7.4 "Bike size as a risk factor", the TRL report comments on STATS19 accidents and other data and states that there appears to be a strong relationship between engine size and rate of fatalities per million kilometres, with the rate for motorcycles over 250cc being twice the average rate and the rate for motorcycles over 500cc being about 40% higher than the average. The report suggests that smaller bikes (in the United Kingdom) tend to be ridden by younger and inexperienced riders and will therefore have inflated the apparent risk of these machines. Also, the study could only use a linear 'accidents per mile' accident rate, rather than a rate based on a power function of mileage. This will also have tended to cause the study to overestimate the risk of smaller motorcycles as compared to larger ones.

The fatality rates include fatalities to pillion passengers. Larger bikes in the United Kingdom are more likely to carry a pillion passenger and this will have contributed to a relatively high fatality rate for these machines. The report also found that as bike size increased, so did the proportion of accidents involving overtaking or riding round a bend (which were two of the manoeuvres most commonly involved in accidents), as well as injury severities for these two types of accident, the proportion of accidents with two or more other vehicles and the proportion of accidents at night.

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<sup>1</sup> Motorcycle Action Group – U.K. Queries relating to the MAIDS Report? 23<sup>rd</sup> July, 2004

<sup>2</sup> reference MAIDS report page 15 – PTW Legal Category : Moped (thermic engine not exceeding 50cm<sup>2</sup> and speed not exceeding 50 km/h) is an L1 vehicle; Mofa (speed not exceeding 25 km/h and may have pedals) is an L1 vehicle; Motorcycle (thermic engine exceeding 50cm<sup>2</sup> and speed exceeding 50 km/h) is an L3 vehicle.

Furthermore, the study found that, adjusting for mileage, age, experience etc the fitted model found that, on open-roads, bikes with bigger engines (>500cc) tend to be involved in fewer accidents than other bikes ( $\leq$ 500cc). There was no significant effect of bike size in build up areas.

In summary:

- Small bikes tend to have more minor accidents (and total accidents) per year than bigger bikes, but for higher severity accidents, this reverses direction.
- Small bikes tend to be ridden by younger, less experienced riders and to cover fewer miles per year than bigger bikes.
- The increase in accident severity with bike size means that for severe accidents, the mileage-adjusted accident rate may be higher for bigger bikes than smaller bikes. The report suggests that that this was true for fatal accidents, but not for the totality of injury accidents reported or for accidents involving serious injury. In figure 4.3.4 of the TRL report, the graph shows there was no relevant relationship between bike size and accidents per bike – for non minor accidents and serious injuries. This implies that the mileage adjusted accident rate would decrease with bike size for these classes of accident.

A further area of concern with regards to the MAIDS report in the context of the correlation of engine size, type of PTW and the proportion of L1 vehicles compared to L3 vehicles in the study is in fact highlighted as a potential weakness by the authors themselves. We refer to the penultimate line in paragraph three on page 43. *“Note that the distribution of PTW styles is perhaps more typical of the sampling areas than the whole (enlarged) European Union.”* This is in our view, an admission that the data may be unreliable if extrapolated to other countries not involved in the study. We believe this admission leaves the report open to criticism.

Another important issue in relation to engine size and accidents can be found in the ROSPA Report of 2001, comments on PTWs and bhp: *“In the early 1990’s a proposed European Commission limit of 100 bhp on motorcycles failed, partly because it was not possible to demonstrate a link between bhp and accident risk. Therefore, it was not possible to show that imposing a limit would reduce the number of motorcycle accidents. Having said that, there is little justification for manufacturer’s producing such powerful motorcycles (or cars, of course) which are capable of speeds of more than twice the maximum speed limit for road use. Recent reports suggest that manufacturers are considering setting a voluntary maximum limit of 186 mph on motorcycles. But setting a limit at this excessive speed does not seem to be a serious attempt to improve rider safety.”*

Of equal consideration in the ROSPA report (point 7.5) linking age and engine size to the severity of accidents is that of ‘Rider Dedication’ or rather a measure that distinguishes summer riders from people who ride in all conditions throughout the year. Referring to section 5.1 of the ROSPA report, it was found that people who ride all year round, irrespective of the weather, have a much higher liability than other riders, even when age experience and mileage differences have been adjusted for. The report found that the all-year-all-weather riders have an accident liability 1.7 times higher than people who rider only in summer. The report also indicates that this dedication may be involuntary in the sense that the rider does not have access to other forms of transport or due to financial reasons.

**MAG UK** considers the above findings of significant importance and hence the reason for querying the MAIDS report in which there appears to be a failure in the identification of the correlation between engine size, age and the type/severity of accidents.

Furthermore, **MAG UK** believes that the relevance in the separation of parc (or PTWs registered and in circulation) by country (as identified in table one of our first query) is crucial. While we accept that the quality of registration data by country as an indicator of the proportion of mopeds/scooters (50cc and under) to those of higher engine sizes is of varying standards, however as previously indicated, the proportion of motorcycles (L3 vehicles) compared to PTWs of engine sizes of <50cc (L1 vehicles) is 34.6% in Italy; in Spain this proportion is 39.6%; while in France it is 40.1% and so forth. In the United Kingdom however, the proportion is 85% motorcycles compared to only 15% PTWs <50cc. There are no mofas in circulation in the U.K.

**MAG UK** has the view that there may be a correlation between the severity and type of accidents and the proportionality of the PTW groups in these diverse countries; other implications to consider in relation to the PTW groups are age, licensing laws and training skills in the individual countries and how these factors may impact on riders.

## **Further Comments and Observations on the MAIDS report by MAG UK**

**MAG UK** is of the view that the MAIDS report has the potential to be an important milestone towards identifying reasons for PTW accidents. However, any PTW safety report carried out in Europe must be considered in relation to its relevance for the UK motorcycling community.

In order to support the MAIDS report, we aim to highlight issues that we consider to be weaknesses, which may ultimately allow third parties such an interpretation as to enable them to use the report to the detriment of the riding community. As a riders' rights organisation we would be remiss if we did not do this. It is within this spirit that we offer our comments and observations. Due to time constraints the following comments and observations are those we consider the most important.

### **1. Accident data collection**

In the 3<sup>rd</sup> paragraph page 13, the report states:

*“The lines of sight, as seen by the PTW rider and the OV driver were documented photographically by physically walking along the pre-crash paths whenever possible. The presence of stationary view obstructions (e.g., road signs) or mobile view obstructions (e.g. lorries or buses), was documented using photographs and included in the detailed scene diagrams.”*

#### **Comment:**

In order to have a better understanding of the accidents in question, it would have been very helpful if the accident were reconstructed using a motorcycle to follow the pre-crash path. The reason for this is because this is the view that the motorcyclist would have seen and as such, could have offered a completely different view point by taking into consideration issues such as height level, restricted view, road conditions, traffic conditions etc. It is felt that this omission weakens the report.

### **2. Accident Reconstruction**

Paragraphs 2, 3 and 4 page 14, the report states:

*“Clothing effectiveness was then coded relative to the effect that the clothing had upon AIS 1 level injuries. It is generally accepted in the scientific literature that appropriate PTW rider clothing has a minimal effect upon reducing many serious PTW rider injuries (Noordzij et al., 2001). The decision to consider only AIS 1 injuries was based upon the need for a consistent coding methodology that provided practical procedures to get objective results.*

*The effect of the clothing could be coded under a number of categories. If the kinematic analysis indicated direct contact with surfaces that could cause AIS 1 injury (e.g., roadway) but the medical record review provided no such injuries, then the clothing was considered to have prevented AIS 1 injury. If there was AIS 1 injury, but the investigators felt that the clothing had reduced the magnitude and severity of the AIS 1 injuries, then the clothing was coded as having reduced the injury severity. If the clothing had no effect upon the AIS 1 injuries, then this code was applied for the case.*

*In addition to these possible codings, if the coverage was not present and injury occurred, this was coded. This includes situations where some type of clothing was*

worn, but the clothing did not cover the entire area (e.g., t-shirts, shorts, sandals, etc.). Similarly, if there was no contact in this region (based upon the kinematic analysis), then the code “no injury producing contact in region” was used.”

**Comment:** Within the context of this statement and further in Chapter 9 in the section on Clothing, the following observations are necessary.

- There does not appear to be any mention of internal injuries and a potential relationship with protective clothing. Or if there is, it is not clearly identifiable. In this context, it would also have been helpful if the severity of accidents – specifically regarding lower extremities, head and neck (in relation to single vehicle accidents and OV accidents) were identified, by engine size of the PTW and style, because the type of protective clothing may be indicative of lifestyle but also because it stands to reason that a person riding a mofa would have completely different protective clothing than someone riding a 1200cc touring motorcycle.
- It would have been helpful if the report had indicated the type of injury in relation to the collision contact point, to identify any correlation between the two, in order to identify issues such as weakness of protective clothing or of PTW manufacture or car manufacture e.g. blind spots, or even the structural strength of the OV. On page 130 point 23 and in figure 6.1, the report identifies type of injury sustained from roadside barriers, so there is precedence therefore presumably the data are available. In fact in the report on the methodology and process, there appears to be adequate detail of these factors.
- Equally, the report does not make any mention of the brand name either of the PTW or of the other vehicle which could help to identify substandard manufacture or weaknesses of design. There are many instances of recalls of vehicles which are due to substandard or faulty manufacture which could have a potential impact on accidents – which could have been unknown to the investigator. This possibility does not appear to have been considered in this report and due to the nature of the main funding organisation, this is in our view, an important omission. In fact, the report on methodology and process clearly indicates that the interviewers identified not only the make but the model and PTW size, therefore this information is available. In consideration of this wealth of information, the question that we have to ask is - who is intended to benefit from this report?
- Within the description of protective clothing including helmets, there is no mention of EC standards (or other) and the impact that substandard clothing or helmets may have had in the accidents, equally there is no mention of brand names in the context of helmets or other protective clothing to identify substandard quality or weaknesses of manufacture.

3. In Chapter 10, numbers 16 and 17 of the findings states:

*“Only Modified conventional street motorcycles were found to be “over represented” in the accident data. There was no evidence of an increased risk associated with riding any other PTW style”.*

**Comment:** This suggestion of an increased risk for modified motorcycles is illogical. This appears to be an attempt to extrapolate conclusions beyond a direct analysis of the data. The reason for saying this is that it is impossible to know the level of modifications, globally across all riders, to be able to set a baseline for comparison. Numbers within the sampled data would have to be compared with the level of modifications all riders as a whole, not included in the study. Furthermore, modified vehicles are not a "style" of bike. Wander around a parking area at any bike gathering and you will see a vast range of modifications from smaller indicators to more powerful headlights, non-approved tyres, different seats, paint jobs, aftermarket silencers and the like. Modifications are present on every style of bike. Such assertions cannot go unchallenged.

4. *“Technical machine problems feature in less than 1% of accidents and those were mainly related to tyres”.*

**Comment:** If you cross reference this with claims about the significance of modified bikes, it would appear that modifications don't cause any "technical problems".

5. *“There were no cases found by the teams in which an accident was caused by PTW design or manufacture”.*

**Comment:** As the study was carried out on behalf of The Association of European Motorcycle Manufacturers (ACEM) it might be prudent to reconsider this statement. It would not be difficult for any critic to find a litany of recalls due to faults in manufacture design over the years. It would be helpful to know whether the investigators had the expertise to determine whether there may have been some mechanical failure. Were the PTWs taken to a garage to identify potential mechanical failures or structural faults, or were these observations left to the discretion of the interviewer?

## 6. Vehicle characteristics Chapter 5

With regards to the proportion of collisions with other vehicles (mainly cars), the findings of the MAIDS report has by implication, identified an important issue which concurs with other important UK studies such as the ROSPA report (2001) i.e. that there is a lack of education and training for car drivers with regards to PTW awareness. However, there are a number of issues which raise concerns with regards to the interpretation and findings made by the authors of the MAIDS report.

6.1 While there is a detailed list of the colour of the PTWs involved in accidents, we are somewhat perplexed as to the logic of the analysis and interpretation of the findings in terms of a correlation with conspicuity. Perhaps it may have been useful to quantify the proportion of the colour of specific models identified in the study and in circulation in that region or country. In other words if every second PTW were black or even white, the instances of accident involvement of these vehicles would be, *ipso facto*, far greater.

6.2 The issue of conspicuity continues in the MAIDS report in relation to headlights:

The ROSPA report states that *“Drivers involved in a collision with a motorcycle often claim that they did not see the motorcycle. It has been suggested that motorcyclists should be required to use their headlights during the day as this may help to reduce accidents. The Road Vehicles Lighting Regulations 1989 (as amended) currently*

*permit, but do not require, the use of daytime running lights by any vehicle, not just motorcycles. However, the conclusions of research into the benefits or dis-benefits of daytime running lights on motorcycles (and on all motor vehicles) is somewhat contradictory at present.”*

On page 99 of the MAIDS report, the teams indicated that “*in 24.4% of the accidents collected, the headlamp was not in use at the time of the accident. In many cases, a switched off headlamp was likely to have been a contributing factor to accident causation*”. However the report continues “*it was not possible to make a determination of whether or not the lack of headlamp usage had increased or decreased the risk of being in a PTW accident because the exposure data collection procedure involved an evaluation of PTWs that were refuelling and stopped at the time of the evaluation, and thus not riding*”.

**Comment:** Why then make the comment suggesting that “the use of the PTW headlamp has been recognised as an aid to conspicuity”? In light of the evaluations made in the ROSPA report mentioned above, the MAIDS report does not appear to have identified any document to support the authors’ claim which in any case contradicts their own findings. Furthermore if the investigators found the exposure data to be unreliable, then how can the results on this issue be presented at all? Indeed how can they come to the conclusion that “*In many cases, a switched off headlamp was likely to have been a contributing factor to accident causation*”? In MAG’s view this comment is gratuitous and can be construed as support for the manufacturers’ position with regards to hardwired headlamps and is contrary to the position taken by the Government Advisory Group on Motorcycling in the UK which, in its recommendation (ix) stated “*That (Department for Transport) DfT seek to find a compromise solution through the UN-ECE in Geneva that would require machines to be fitted with an AHO override switch*”.

**6.3** With regards to the subjectivity of the investigators in determining whether clothing (in terms of conspicuity) was a cause or not of the accident, it has not been made clear in the report on what premise these investigators made that assumption. For example, the report does not identify whether the riders wearing dark clothing had any type of fluorescent or reflective markings. Furthermore, there are no indications - that we could find - as to whether the helmet had fluorescent or reflective markings, or whether the colour of the helmet may have aided conspicuity. Even though in the report on methodology and process, there is reference to reflective markings. We believe this is an omission and thus weakens the report.

## **7. Powered two wheelers in a mixed traffic environment - Chapter eight**

On page 98, the authors state that “*environmental factors contribute to overall PTW accident causation*” and further : “*these findings indicate that PTW accidents occur more frequently in light traffic conditions, **suggesting** that other road users may not be expecting the presence of a PTW*”.

**Comment:** Following the introduction of congestion charging in the centre of London at the beginning of 2003, analyses of trends in accidents were gathered. The Transport for London (TfL) recently presented these statistics to the London Motorcycle Working Group and demonstrated that in parallel to the reduction of car and goods vehicle usage by 18%, there was an increase in PTW usage by 15%. Further, the findings indicated that there has also been a fall in casualties by 7% from 2002 to 2003. This suggests that there are in fact fewer accidents in light traffic.

Perhaps it would have been helpful if the authors had identified exactly how they defined 'light traffic' other than assumptions made by the individual investigators – which would presumably have been subjective. Were there for example specific guidelines to quantify light, medium and heavy traffic? If so, could the authors please explain what those guidelines were?

**MAG UK** recognises that other vehicles – mainly cars - are a major cause of accidents, indeed the figure of 50% identified in the MAIDS report had already been identified in the ROSPA report (2001) in this country. But statements like “*the authors believe that other road users may not be expecting the presence of a PTW*” are confusing and misleading especially in consideration of the statement that “*additional data would be helpful*”, which highlights the fact that the MAIDS report is incomplete.

8. These comments lead to the most important issue as far as MAG UK is concerned.

8.1 In reference to the statement on page 10 “*The data collected during this study represents the most comprehensive in-depth data currently available for PTW accidents in Europe. It is expected that this data will provide much needed information for developing future research in relation to public policy issues. Recommendations for future countermeasures and investigations are provided*”.

8.2 On page 11 the report identifies such objectives as: “*To apply this comprehensive and reliable data source in the development of proper countermeasures that will reduce the frequency and severity of PTW accident*”.

8.3 With regards to your response to our initial comments about fatalities, you wrote “*the teams working in the (5) several countries were obliged to select only accidents with injured people, eliminating for their analysis scope accidents without injured people. As a consequence the MAIDS database is not comparable with all accidents occurring in the same countries (...) Having recalled these above mentioned elements, we can only produce tables based on the 103 fatal cases found in MAIDS. You will observe that the figures are very often too small to make solid conclusions*”<sup>3</sup>.

**Comment:** Indeed – we have made that observation. This is another issue that we have identified in this document which adds to our concerns about the MAIDS findings.

9. On page 47 second paragraph “*It was reported by the German team that some exposure data sampling was done at rider group meetings. For this reason, the validity of the exposure data for this particular variable is questionable and no statistical comparison can be made between the accident data and the exposure data*”.

**Comment:** In the first instance, this lapse of procedure in the study raises serious concerns. Secondly, it begs the question of whether further sampling for other issues was also carried out with the German riders' group at their meetings<sup>4</sup>. It seems somewhat unrealistic that the team only asked one question about ABS brakes. Were

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<sup>3</sup> Reference points 7 and 8 of the authors' response to the MAG UK document “Queries relating to the MAIDS Report” of 23<sup>rd</sup> July, 2004

<sup>4</sup> The fact that the authors indicated more than one meeting leads to the assumption that more than one question was asked.



any other questions asked to the German riders' group on other topics and if so, what were they and were they included in the report?

## **Conclusion**

Irrespective of whether ACEM intends or not to pursue further research is not in discussion. However, what is apparent to **MAG UK** is that the MAIDS report is being offered AS IT STANDS as the ultimate study on PTW accidents in Europe.

**MAG UK** is a consumer organisation and believes that the results of this best defined 'pilot' study will become binding and final and therefore the report itself risks becoming a weapon for those wishing to promote legislation in detriment to motorcyclists.

We are aware that the Third European Driving Licence Directive proposes an increase of the age limit for Direct Access. In light of the fact that the MAIDS report is incomplete, indeed, as previously indicated in our comments, in the introduction of the MAIDS report page 10, there is a clear statement of intent "*It is expected that this data will provide much needed information for developing future research in relation to public policy issues*"

In view of this comment, the problem we have to consider is that studies such as MAIDS may well be vulnerable to manipulation. For example by MEPs working on directives, such as the Third European Driving Licence (perhaps to be used to raise the age limit for Direct Access), or by other organisations with vested interests. In consideration of the determination of certain groups to restrict motorcycling and in consideration of the fact that the authors themselves admit that there is more work to be done, how then can ACEM present the findings of the MAIDS report to government or anybody else?

Our comments are not complete and indeed we look forward to discussing the report to contribute our input so that the authors may present a well-balanced, objective and unbiased snapshot of PTW accidents in the five countries studied. However, as the report stands, **MAG UK** would not be able to support it.

14<sup>th</sup> September, 2004

This document represents the views of the Motorcycle Action Group (MAG UK) and was prepared by Trevor Baird, Director of Public Affairs (MAG UK), Elaine Hardy, National Research Officer (MAG UK), with the contribution of Mark Shaw (MAG Nottingham).

## ANNEX ONE

### Motorcycle Action Group – U.K. Queries relating to the MAIDS Report - 23<sup>rd</sup> July 2004

Table One

A breakdown of PTWs by type and country as well as the proportion of fatalities and motorcycles as a proportion of parc in each country

Countries	Mopeds	Motorcycles	Total Parc <sup>5</sup> 2000	Fatalities as % of total accidents	Motorcycles as % of parc
Italy	6,375,000	3,373,890	9,748,890	5.5	34.6
NL	533,000	144,000	677,000	7.5	21.3
Spain	2,202,521	1,445,644	3,648,165	9.9	39.6
Germany	1,724,945	3,337,848	5,062,793	19.6	65.9
France	1,442,000	968,000	2,410,000	10.6	40.1
	12,277,466	9,269,382	21,546,848		

Source: Parc data BOVAG NL and ACEM

Table Two

% of PTWs in MAIDS report by category		
	% Accident Group	% Control Group
L1 Mofa	3	5.3
L1 Moped	40.2	35.1
L3 Motorbikes	56.8	59.6

Source: MAIDS Report

As seen in Table One, there appears to be a correlation between the type of PTW and fatalities or rather where the proportion of motorcycles is greater, the fatalities appear to be proportionately higher.

Furthermore, due the high proportion of moped users in Italy and Spain, it is assumed that many of these users are older than in Northern countries, because mopeds in these countries have not until very recently, required insurance so presumably are more commonly used as a convenient and cheap method of transport. Also, the average annual usage of these vehicles would cover a period of 8-9 months rather than 5-6 months so there may be issues of bias in the data due to these factors. .

Therefore in order to determine whether there is a relationship between engine size, type of PTW, age and the severity of the accident, it would be useful to have a breakdown of data for each country for:

- 1) Data relating to the individual engine size and type of PTW (e.g. Scooter, sports etc) for each of the accidents, separated out by country;
- 2) The age of the rider by individual engine size and type of PTW separated out by country;
- 3) Data for each accident by severity/type of accident in relation to engine size/type of PTW and age of rider in each country;
- 4) A breakdown of the age of the PTWs in order to determine whether there is a relationship with the age of the PTW and accidents in each country;
- 5) Data relating to the severity of accidents, type of PTW, age of rider per month in each country.

<sup>5</sup> Parc: Total PTWs registered and in circulation