

Straightforward

Research and Development

Motorcycle casualties in NI Statistical Analysis, Causes and Influencing Factors

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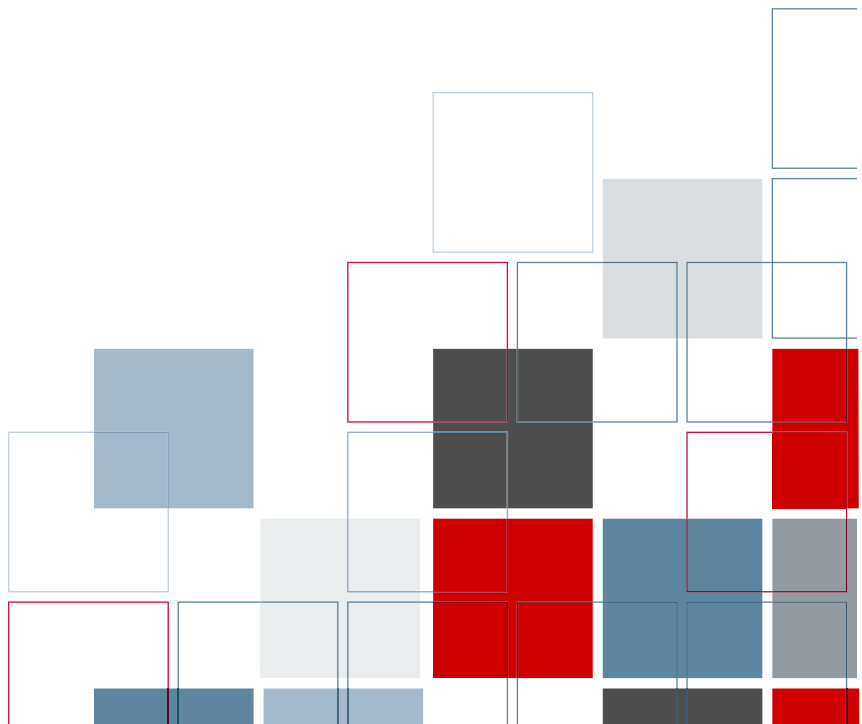


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Section 1 Executive Summary

This research was commissioned by the Department of the Environment's Road Safety Division (RSD). This assignment is one of a number of research and statistical investigations into road safety in Northern Ireland (NI) being carried out by RSD which are intended to inform the development of the new RSS and assist future policy planning.

10-year analysis of motorcycle collision and casualty data (PSNI 1998-2007):

- In total, 4,416 separate collisions involving a motorcycle were recorded in the period between 1st April 1998 and 31st March 2008. In total, there were 5,522 casualties accounted for across the ten-year period (1,689 killed or seriously injured).
- The estimated cost of casualties from motorcycle collisions to the Northern Ireland economy over the 10-year study period is just over £619M.
- While the actual number of motorcycle collisions has increased throughout the 10 years of the study period, the number of collisions per 10,000 motorcycles registered in Northern Ireland has decreased dramatically.
- Over the ten-year period from 1998 to 2007, all motorcycle collisions accounted on average for 6.9% of the total number of all collisions in Northern Ireland, and just over 13% of KSI¹ collisions in the Province. Throughout the 10 years, fatal motorcycle collisions as a proportion of total collisions in Northern Ireland has increased in general. The proportion of Motorcycle KSI collisions has steadily increased throughout the 10-year period from 1998 to 2007
- The top three causes for all KSI motorcycle collisions (irrespective of responsibility) were emerging from a minor road without care; excessive speed having regard to conditions; and turning right without care. The top three principal causes for KSI collisions where the motorcyclists was responsible, were excessive speed having regard to conditions; overtaking on offside without care; and inattention or attention diverted. Top three factors for KSI Single Vehicle Collisions were excessive speed having regard to condition; alcohol or drugs; and inexperience with type of vehicle.
- Throughout the 10 years, the biggest proportion of KSI collisions happened in the month of May; between the hours of 15:00hours and 17:59 hours; and almost half of all KSI collisions happened between Friday to Sunday.

¹ Killed or Seriously Injured.

- 45% of all KSI collisions happened on roads with a 30mph speed limit and 44% on roads with a 60mph speed limit. 81% happened on single carriageway roads with 1 lane in each direction. More than two-thirds (65%) happened 'not at or within 20 meters of a junction'. Of those collisions occurring at T-junctions, more than 45% occurred at a T-junction with give way signs or markings, followed by 36% at 'uncontrolled' junctions, and almost 13% at junctions with a stop sign.
- More than two-thirds of motorcyclists did not leave the carriageway after a Single Vehicle Collision – of those that did leave the carriageway, the majority struck trees/fence or another boundary. Less than 0.5% hit a central or nearside/offside crash barrier.
- 69.4% of all motorcycle casualties were riding motorcycles with capacities of 125cc² or above.
- 92% of all casualties were male with a high proportion of males casualties killed or seriously injured and a higher proportion of female casualties slightly injured.
- The biggest proportion of KSI casualties were aged 17-24 (31%), followed by 25-34 (26.6%). In comparison to the age profile of respondents to the Motorcycle Survey, this would tend to suggest that younger motorcyclists are disproportionately represented in casualty statistics.
- Less than half of KSI motorcycle casualties were responsible for the collision in which they were involved (46.4%). Overall less than 32% of all motorcycle casualties were responsible for the collision.
- 21% of motorcyclists involved in KSI collisions were 'L-drivers' (33% of all collisions).

Motorcycle Casualties Research:

- Average age of respondents to the motorcycle casualties research was 41 years of age. 92% were male and 8 female. The biggest proportion of respondents was 'Professional' (36%) followed by 'Manager/Senior Officials' (17%) and 'Other' (16%). Almost 20% of motorcyclists owned Sports Tourers, followed by 16% Adventure Tourers, 13% Naked/Street Bikes, 10% Tourer and more than 10% each for Sport and Super Sport.

² The terms 'cc' and 'bhp' are used throughout this report. 'CC' means 'Cubic Centimetre', and can be commonly referred to as 'engine size'. Technically, it refers to a metric unit of volume equal to one-thousandth of a litre. 'BHP' (Brake Horse Power) is the measure of an engine's power output. BHP and CC are not necessarily connected. A small capacity engine can still produce a high power output depending on the characteristics of the engine

- 19.8% had been involved in collisions in the three years preceding the research and 66% involved in near misses in the 12 months preceding the research. Scooter, naked/street bike, sport and super sport rider had been involved in a higher than average proportion of collisions.
- A higher than average proportion of motorcyclists riding machines with 100bhp to 150bhp had been involved in collisions and a higher proportion of those riding machines with less than 50bhp had experienced near misses.
- While a higher proportion of those who ride their motorcycles frequently have been involved in collisions and near misses, responsibility for the collision in which motorcyclists have been involved decreases with frequency ridden.
- A slightly higher proportion of those who ride alone have been involved in collisions over the past three years (21.4% compared to 20.2% riding with friends and 20.4% riding with a club). However a higher percentage of those riding with friends or with a club have experienced near miss collisions in the past 12 months.
- More than 35% of respondents indicated that they are currently members of a motorcycling group or organisation and almost 50% of respondents indicated that they are members of a motorcycling-based website forum.
- On average, questionnaire respondents had 16 years experience riding motorcycles since passing their test. Less than half of the motorcyclists who passed their test more than 21 years ago have regularly ridden a motorcycle since passing their test.
- A slightly higher proportion of riders who had completed motorcycle training/assessment were involved in collisions. Riders who had completed motorcycle training/assessment and ride frequently were significantly less likely to have been responsible for a collision in which they have been involved.
- More than 28% of respondents highlighted that they have not participated in voluntary training as it 'costs too much' and more than 22% because they 'did not know about it'.
- While training is widely perceived to be the one area that people believe will make a difference to road safety, the figures presented suggest that while training may reduce the risk of motorcycle riders causing collisions, it may not reduce the overall number of motorcycle collisions in Northern Ireland.
- 85% of respondents felt that all new riders should complete Compulsory Basic Training; 58% agreed that new riders should be restricted by brake horse power; 33% felt that cubic capacity should be

restricted, and 14% felt motorcyclists should be able to ride what they want.

- More than half of respondents felt that motorcyclists in general take risks (52.6%), while 16% felt that they themselves took risks while riding on the road. The biggest proportion of respondents felt that motorcyclists take risks in overtaking and filtering. A higher proportion of motorcyclists who indicated they 'take risks' on the roads were involved in collisions (30% compared to 17% who don't).
- 16% of respondents indicated that they have ridden their motorcycle after having one alcoholic drink, 2% after having 2 drinks and less than 1% after having had three drinks. Less than 1% of respondents indicated that they have ridden their motorcycle under the influence of drugs. 20.5% of those riders who have ridden after having one alcoholic drink have been involved in collisions in the past three years.
- 41% of those motorcyclists who had been involved in a collision indicated that they were responsible for the collision. The main principal causation factors (in the rider's opinion) were inattention, slippery roads, and vehicle emerging from a side road.
- 66% of respondents had experience one of more near misses in the previous 12 months – more than 75% of which were caused by inattention, or another vehicle emerging from a side road.
- 86.6% of motorcyclists feel that 'other drivers' are the main causes of collision in Northern Ireland, followed by 50% indicating 'motorcyclists' themselves, almost 40% 'roads', and 15% 'other road users'.
- The biggest proportion of respondents (32.4%) believe that providing training to other drivers (for example as part of the car test) would help reduce the number of motorcycle collisions in Northern Ireland. Almost one-quarter of respondents indicated that they did not know how the number of collisions could be reduced, and 17% felt that voluntary/advanced training for motorcyclists would help reduce collisions.
- 53% of respondents indicated that they think advertising has an impact on Road Safety for motorcyclists. 41% of motorcyclists think that advertising has an impact through reminding riders about the dangers and consequences of their vulnerability. Almost 17% of motorcyclists think that advertising (mainly manufacturers) has a negative impact on riding behaviours through promotion of a 'speed' and 'racing' culture.

Other Driver's behaviour and attitude survey:

This survey aimed to gather an understanding of driver's attitudes and behaviour towards motorcyclists. Respondents were asked to indicate to what extent they agreed/disagreed with a series of statements following research that suggesting experience and exposure to motorcycles feed into the drivers' schemata for dealing with a variety of driving situations. Results of the survey showed that:

- General road users perceive the age profile for the average motorcyclist to be younger than that actually returned in the responses to the Motorcycle Casualties NI Survey. General road users also perceive the highest proportion of motorcyclists to be skilled tradesmen, rather than the actual of professional and managerial.
- Six statements were chosen to test the perceptual skills of road users in relation to motorcycling. Respondents who do not ride motorcycles tended to agree more strongly with the statements which were negatively orientated in terms of motorcycling, such as 'It is difficult to estimate the speed of approaching motorcycles while waiting to turn at a junction onto a main carriageway', and 'When in slow moving traffic I am often surprised by motorcyclists filtering through the traffic'
- Those who do not ride a motorcycle or those who have no interest in motorcycling believe more strongly that it is easier for a motorcycle to swerve to avoid a collision than car drivers.
- Five statements suggesting empathetic attitudes towards motorcycling were resented to respondents. The Control Group had a significantly higher degree of empathy towards motorcycling than those who do not. This in itself is not surprising however the fact that there is a consistent difference between those who do not ride a motorcycle and those who have not interest at all in motorcycling is notable.
- There was a clear distinction between the degree to which respondents agreed with negatively loaded attitude statements. Quite a marked difference between the respondents in relation to the statement "It costs less to repair the average motorcycle after a minor accident, compared with an average car", "When a car and a motorcycle collide it is typically the fault of the motorcyclist", and "Motorcyclists often perform manoeuvres that are risky or inappropriate".
- Using the internationally recognised Driver Behaviour Questionnaire, drivers are asked to estimate how often they engaged in driving violations, errors and lapses, ranging from 'Never' to 'Nearly Always'. In the vast majority of cases, those drivers who had more than 10 years experience in driving a car or motorcycle report less frequent lapses of concentration, errors and violations on the roads

Stakeholder Interviews and Focus Groups:

- Focus group discussions and one-to-one interviews with stakeholders from the motorcycle industry and community explored the main findings of this research assignment.
- There was an overwhelming level of support for the research and the potential to move towards bilateral engagement for road safety within all sections of the motorcycling community.
- Stakeholders from all sections of the motorcycling community agreed that the main causes of collisions involving motorcyclists in Northern Ireland are human error on the part of both motorcyclists and other vehicle drivers. They agreed that there was a fairly even split between collisions caused by excessive speed on the part of motorcyclists and carelessness/inattention on the part of other drivers.
- Lack of adequate participation in ongoing training and frequency of riding was an issue raised by stakeholders across the motorcycling industry and community. The proportion of learner riders involved in collisions was another area that stakeholders believed should be tackled in the forthcoming road safety strategy.
- The perception of road conditions as a contributory factor in collisions was questioned by many of the stakeholders interviewed throughout the research. The report highlights a significant discrepancy between the perceptions of riders regarding roads as a contributory factor versus the perception of investigating officers into the 4,416 collisions over the period from 1998-2007.
- Many of the issues discussed at the focus group meeting and one-to-one stakeholders interviews would require specific changes in policy to enable implementation throughout Northern Ireland, including: increasing publicity campaigns, introducing Compulsory Basic Training, revising the current motorcycle test, providing incentives to riders to complete advanced tests, introducing government incentives for high visibility clothing and focussing on first stage preventative activity.
- Stakeholders believe that a more comprehensive system for collecting collision statistics should be put in place to enable investigating officers to collect and analyse more background data on riders involved in collisions to enable more effective profiling of the 'type' of, and experience of riders involved in collisions.
- Stakeholders felt that this (prior to development of the forthcoming road safety strategy) is an opportune time to look at the development of a multi-disciplinary Motorcycle Stakeholders Forum. The forum would "adopt a proactive role based on better availability of motorcycle collision causation factors".

Recommendations

1. Significant emphasis should be placed on efforts to reduce motorcycle collisions where other road users are emerging from minor roads and where motorcyclists have excessive speed with regard to conditions.
2. Road safety messages for motorcyclists should be targeted to the 17-35 and over 55 age categories given their overrepresentation in the demographic profile of involvement in collisions and responsibility for the collision in which they are involved.
3. Road safety messages should focus on rider and other road user responsibility. The vast majority of consultees believe that other road users are responsible for the majority of collisions – this is the case in ‘slight injury’ collisions. However rider responsibility increases with severity of the collision. Messages should be directed towards motorcyclists to reinforce the fact that in 2 out of every 3 fatal collisions, the rider is responsible.
4. Collision Report Forms should be amended to enable investigating police officers to more accurately record the combination of causation factors leading to a collision. Consultation with stakeholders showed that few Road Traffic Collisions have one causation factor. In many cases collisions are caused by a sequence of events and/or a combination of causation factors. It is also recommended that Collision Report Forms include increased background data on the casualty and the motorcycle they were riding. Increased background and causation data would enable more informed analysis for primary stage prevention of Road Traffic Collisions.
5. Consultation with the NI Ambulance Service highlights that there exists an opportunity to analyse the ‘patient pathways’ of motorcycle casualties following collisions. This would enable more comprehensive understanding of the long-term impact of motorcycle collisions on individuals, families and society at large. It would also contribute to the capacity to understand ways in which to reduce the severity of injuries suffered by casualties as a result of the collisions.
6. Motorcyclist road safety messages should raise awareness of the involvement of motorcyclists across all spectrums in collisions and near misses. The widely held assumption that involvement in collisions is limited somewhat to ‘weekend warriors’ is not supported by this research. Those who ride their motorcycles more frequently for commuting to and from work, at work and professionally are equally (or more) likely to have been involved in collisions than those who ride only at weekends.

7. Motorcyclist road safety messages should raise awareness of the impact that alcohol can have as a causation factor given the percentage admitting to riding after one drink and the percentage of single vehicle collisions caused by alcohol impairment.
8. There is an overwhelming degree of support for the introduction of Compulsory Basic Training among the motorcycle community and industry. Legislation should be put in place to introduce CBT as a matter of urgency.
9. Motorcyclists holding provisional licenses are over-represented in the collision data for the 10-year study period. Government should consider the reasons underlying this over-representation and where possible implement policy to bring NI into line with other Member States throughout the EU.
10. Response from stakeholders suggests that there is a significant degree of support for the introduction of measures which would be covered by the 3rd Directive – for example progressive licensing, restrictions on cubic capacity as well as brake horse power, progressive training and direct access where appropriate.
11. Government departments should explore the potential to include motorcycle awareness in the car driving test. The majority of respondents to the research suggested that training and awareness for other road users was the number one priority in reducing the number of motorcycle collisions in Northern Ireland, followed by further promotion of voluntary and advance motorcycle training, and awareness advertising.
12. The extent of and membership of the on-line motorcycling community presents a significant opportunity for the use of innovative marketing and promotion techniques to communicate road safety messages to motorcyclists throughout Northern Ireland.
13. More proactive advertising could focus on increasing other road users perceptual skills, empathy for and knowledge of motorcycling. Respondents and stakeholders suggested this should build on positive promotion of motorcyclists and motorcycling (enjoyment of motorcycling and profiling as responsible road users), perhaps within the context of a Bikesafe assessment to also reach motorcyclists who are reluctant to come forward for such assessment. There was a strong level of support for rerunning and building upon the 'Underneath' advertisement to tackle the level of dehumanisation of motorcyclists.
14. Road safety messages should highlight that participation in voluntary training/assessed rides can help to reduce rider responsibility in collisions. More effective promotion of such training/assessment

could increase the proportion of motorcyclists participating as almost half of respondents said they did not know about the training, or thought it was too expensive.

15. There was a significant level of support for increasing the promotion and saturation of training within the motorcycling community. Consultees believe that this should be taken to a different level and included at point of sale for all new and repeat purchasers throughout Northern Ireland. This would require policy level support and widespread support from manufacturers/importers.
16. More innovative approaches to rider training should be explored by the motorcycle community and supported by government departments. For example the promotion of rider skills days and motorcycle safety simulator training in association with the emergency services and motorcycle dealers.
17. Respondents suggested that further work should be undertaken to explore more widescale incentivisation of training throughout the insurance and dealer industry in Northern Ireland.
18. As the number of motorcyclists in Northern Ireland increases, other road users should be made aware of their possible presence - either by increasing publicity campaigns or develop and deploy additional signing.
19. Enforcement of motorcycle restrictions for those who have recently passed the motorcycle test. This should include implementation of innovative techniques to enable police to identify restricted machines more easily, and implementation of policy to ensure motorcycle dealers take a responsible approach to sales and servicing of restricted machinery to restricted riders.
20. There was an almost unanimous feeling among all stakeholders and some questionnaire respondents that this is an opportune time to look at the development of a multi-disciplinary Motorcycle Stakeholders Forum. Consultation with stakeholders also confirmed that the Forum should include a wide cross-section of the motorcycle community and industry and all sections of the emergency services should be involved the development and implementation of a motorcycle stakeholders forum. This would enable a more holistic picture of road traffic collisions from the initial influencing factors through to the, sequence of events during and immediately after the collision, and also the patient pathway taken in the months and years following motorcycle collisions.
21. The Motorcycle Forum should have a role in advising on policy direction, strategy and dissemination of key road safety messages throughout the motorcycle community. The group should be

instrumental in the creation of a '*Motorcycle Safety Strategy*' for Northern Ireland.

Section 2 Background and Introduction:

This research was commissioned by the Department of the Environment's Road Safety Division. Road Safety Division (RSD) within the DOE is responsible for the creation of the Northern Ireland Road Safety Strategy (RSS). The current RSS 2002-12 was published in November 2002 and established road safety objectives over a ten-year period and set the following casualty reduction targets for 2012:

- A one third reduction (from the average for the period 1996-2000) in the number of people killed or seriously injured on NI's roads each year; from the 1996-2000 average of 1750 to fewer than 1200 by 2012.
- A 50% reduction (from the average for the period 1996-2000) in the number of children killed or seriously injured on NI's roads each year from the 1996-2000 average of 250 to fewer than 125 by 2012.

By 2007, although significant progress had been made towards achieving the targets set out in the RSS, NI still had a higher proportion of its population killed or seriously injured through road traffic collisions than Great Britain.

Analysis of motorcycle casualties in particular showed that:

- The number of motorcyclists killed or seriously injured in 2007 was 153, an increase of 47% on the 1996-2000 average
- Motorcyclists accounted for 6% of all those killed or seriously injured over the period 1996-2000; in 2007 this had risen to 13%
- The number of motorcyclists slightly injured in 2007 was 297, an increase of 37% on the 1996-2000 average and an increase of 11% from the 2006 figure.

The Minister for the Environment has made a commitment to make road safety a top priority for the DOE and to create a new Strategy to be published in 2010.

The Public Accounts Committee (PAC) of the NI Assembly discussed the NI Audit Office's (NIAO) further review of road safety in NI on Thursday 13 September 2007. The NIAO report³ and the PAC review⁴ of this were published in December 2007 and contained recommendations for improving road safety in NI. A number of comments were made on road safety research in Northern Ireland including distinct areas in which it was considered necessary for projects to be carried out by DOE. The Department's

³ The Northern Ireland Audit Office report can be accessed at <http://www.niauditoffice.gov.uk/pubs/onereport.asp?arc=True&id=202&dm=0&dy=0>

⁴ The Public Accounts Committee report can be accessed at http://www.niassembly.gov.uk/public/2007mandate/reports/report5_07_08r.htm

Memorandum of Response was placed before the NI Assembly on 9 January 2008⁵.

The Committee recommended that the Department allocate adequate funding to undertake research as a basis for designing measures to tackle specific Northern Ireland problems and that, given their particular vulnerability, early research should focus on motorcyclists.

The objectives of this assignment are to:

- a. Carry out a literature review of recent key research relevant to the project (UK, Irish or international);
- b. Carry out an analysis of available statistics relating to motorcycle casualties and collisions in NI and investigate rider and other drivers' behaviour and attitudes;
- c. Using the outputs from (a) and (b) above, identify the likely causes, influencing factors and any common trends, patterns and characteristics of motorcycle casualties; and
- d. Recommend measures to reduce motorcycle casualties.

This assignment is one of a number of research and statistical investigations into road safety in NI being carried out by RSD which are intended to inform the development of the new RSS and assist future policy planning.

⁵ The Department of the Environment's Memorandum of Response to the Public Accounts Committee report can be accessed at <http://www.aasdni.gov.uk/pubs/MORs/mor%203rd%20report%200708.pdf>

Section 3 Methodology:

Given the range of data available a number of methodologies were employed in the completion of this research assignment. A research steering committee was established to oversee the research assignment (details of membership are included in Appendix 2 of this report) through whom the various stages of the research methodology were agreed.

Carry out a literature review of recent key research relevant to the project (UK, Irish, and international).

A literature review was completed of all relevant National and International literature relating to motorcycle casualties, research and strategies formulated by government and motorcycling lobbying groups. Where possible, the literature review drew on research to inform development of the motorcycle and other road users questionnaire.

Completion of a 10 year analysis (1998-2007) of available PSNI injury collision and casualty data for motorcycle casualties in NI

This assignment includes an analysis of Police Service of Northern Ireland (PSNI) collision and casualty data covering the 10-year period from 1998 to 2007. The data was extracted from the PSNI's Central Statistics Branch database and transferred for analysis using Statistical Package for Social Scientists (SPSS) Version 17. A list of the variables included in the analysis is appended in Appendix 1 of this report.

This section includes analysis of Collision Report Forms from 4,416 collisions involving motorcycles throughout the 10-year period from 1998-2007. It also includes analysis of casualty data for 5,522 casualties who were involved in these collisions throughout the 10-year period.

Included within this section is analysis of other statistics relating to motorcycling in Northern Ireland including motorcycle and rider licensing, registered motorcycles throughout Northern Ireland, etc.

Investigate rider behaviour and attitudes:

Following discussion with the project steering committee a questionnaire was designed for administration to the motorcycling community (both face-to-face and on-line) throughout Northern Ireland. Assuming that the population of motorcyclists in Northern Ireland is approximately 31,000⁶, we aimed to

⁶ It is very difficult to know with certainty the exact population of motorcyclists in Northern Ireland. We have based this figure on estimates from research completed by Right to Ride in 2009.

achieve a response to the questionnaire of 380. This would enable a confidence level of 95% at a confidence interval of +/- 5%. In total, we received 945 responses to the questionnaire (2.5 times more than envisaged), which reduces the confidence interval to +/- 3%. Some of the respondents were from the Republic of Ireland but were riding in Northern Ireland on a regular basis. These respondents were interviewed at Bike Safe Assessments throughout the course of the research and also at informal motorcycle meetings.

The questionnaire focused on ownership of motorcycles, use trends, rider characteristics and behaviour, access/take-up of available training, involvement in collisions/near misses, etc.

Investigate other drivers' behaviour and attitudes to motorcyclists

Following discussion with the research steering committee, a questionnaire was designed to assess other road users behaviour and attitudes towards motorcyclists and motorcycling in general. Again this questionnaire was completed using a mixture of face-to-face and on-line interviews.

The questionnaire drew on the framework proposed by Accident Research Unit, University of Nottingham for assessing other road users attitudes towards motorcycling. It also included questions from the Driver Behaviour Questionnaire (DBQ, Parker et al) developed by Manchester University. It focussed on other road users attitudes, basic knowledge, and perceptual skills towards motorcycling.

A total of 213 people responded to the questionnaire. The sample included 128 other road users and 85 'Gold Standard' control group respondents drawn from those motorcyclists who had completed the Motorcycle Casualties Questionnaire, had more than 10 years experience in both riding a motorcycle and driving another vehicle, and rode more frequently than once per week.

Focus Group and Stakeholder Interviews:

We conducted two focus group discussions as part of the assignment and a range of stakeholder interviews. These were designed to explore the data gathered through the statistical and primary research described above and in discussion with industry experts, identify the likely causes, influencing factors and any common trends, patterns and characteristics of motorcycle collisions and casualties in Northern Ireland. The discussions also focussed on possible options to help reduce the number of casualties which could be integrated into the new Road Safety Strategy.

A range of stakeholders were consulted from across the motorcycle industry and community including representatives from government departments, motorcycle traders, motorcycle groups, on-line motorcycle forums, police

officers, a motorcycle lobby group, Institute of Advance Motorists⁷ motorcycle group and motorcycle promoters. A list of those organisations consulted is included in Appendix 3 of this report.

Six stakeholders attended the focus group with the Motorcycle Retailers Association and 13 stakeholders attended a focus group held in DOE Clarence Court prior to completion of the draft report.

⁷ A road safety charity dedicated to increasing skills for road users, raising driving and riding standards and helping to save lives on the roads.

Section 4 Findings of Literature Review

A literature review of national and international literature relating to causes and influencing factors for motorcycle collisions was completed prior to the primary research phase of the assignment. Result of the Literature Review influenced the sections and questions included in the primary research for both the motorcyclists survey and the focus group discussion. The full literature review is appended in Appendix 6 and contains the following sections:

- **Policy Context** - for this research at Northern Ireland, GB and Republic of Ireland level
- **Research** - at national and international level on the incidence of motorcycle collisions, evaluation of interventions at Northern Ireland and GB Level, research into the cause and influencing factors for collisions, research into car drivers attitudes towards motorcyclists, engineering and design interventions to try to reduce the number of motorcycle collisions internationally.
- **Motorcycle Strategies** – summary of motorcycle strategies introduced by governments in other jurisdictions at UK, European and International level.

The main Findings of the Literature Review were:

- The Northern Ireland Road Safety Problem Profile highlighted that the top 6 causation factors for fatal collisions involving motorcycles were:
 1. Excessive speed
 2. Inattention or attention diverted
 3. Alcohol or drugs
 4. Emerging from minor road without care
 5. Turning right without care
 6. Overtaking on offside without care
- This is broadly in line with the causation factors identified in the Collision Analysis and the Motorcyclists Questionnaire.
- The PSNI analysis of Motorcyclist Collisions and Casualties in Northern Ireland highlighted that motorcyclists KSI's are predominantly male and aged 17-24. This is in line with the gender and demographic profile presented in the collision analysis in this research report.
- Participants in BikeSafe Evaluations in both Scotland and Northern Ireland indicate that Bikesafe had a positive impact on their riding behaviour.
- The Write to Ride Survey highlighted that 78% of respondents had a near miss accident in the 12 years preceding the survey. 82% of those had to swerve to avoid another vehicle, 75 riders indicated that their

vehicle skidded, 53 said they lost grip and 56 said they nearly lost control.

- 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). 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.
- According to research published by the University Of Nottingham, motorcyclists are over-represented in UK traffic accident statistics. Many car–motorcycle accidents are due to the inappropriate actions of car drivers. It is predicted that car drivers at risk of collision with motorcycles have divergent attitudes and beliefs about motorcyclists compared to safer drivers, which may lead to a deficient mental model guiding their interactions with motorcyclists.
- The Hurt Report Found that the most common motorcycle accident involves another vehicle causing the collision by violating the right-of-way of the motorcycle at an intersection, usually by turning left in front of the oncoming motorcycle because the car driver did not see the motorcycle. The motorcycle rider involved in the accident is usually inconspicuous in traffic, inexperienced, untrained, unlicensed, unprotected and does a poor job of avoiding the collision. The data of this accident research provided the following principal findings:
 - Accident and Injury Causes. The automobile driver fails to detect the inconspicuous motorcycle in traffic. This is due to the lack of motorcycle conspicuity and lack of caution and awareness of the automobile driver. The lack of skill and traffic strategy increases the motorcycle rider's involvement in collisions. Injury severity increases with collision speed, but the motorcycle rider's lack of head protection accounts for the most severe but preventable injuries. Also, motorcycle rider lack of collision avoidance skills increases injury severity.
 - Protective Equipment. The only significant protective equipment is the qualified safety helmet, and it is capable of a spectacular reduction of head injury frequency and severity. The Federal Motor Vehicle Safety Standard 218 provides a highly qualified safety helmet for use by motorcycle riders. This research shows NO reasons for a motorcycle rider to be without a safety helmet; qualified helmets do not limit vision or hearing in traffic or cause injury.
 - Countermeasures. The basic Motorcycle Rider Course of the Motorcycle Safety Foundation is effective in training motorcycle riders and those trained riders are both less involved and less injured in motorcycle accidents. This course - or its equivalent -

should be made a pre-requisite, or at least a co-requisite, of motorcycle use and should be applied in driver Improvement for those motorcycle riders who have received traffic citations. Licensing of motorcycle riders must be improved with special motorcycle licenses and improved testing such as has been developed by NHTSA-Traffic Safety Programs. Law enforcement should act to enforce license requirements, identify alcohol involved motorcycle riders, remove dirt bikes from traffic, and effectively cite and file against culpable accident-involved automobile drivers as well as motorcycle riders. Most motorcycles in accidents are inconspicuous, and the use of the headlamp in daylight and high visibility jackets

- A literature review of motorcycle collisions by Oxford University has highlighted that various engineering designed have been incorporated by manufacturers into motorcycles over the past decade to try to mitigate against the number of collisions involving motorcycles including daytime running lights, personal protective equipment and engineering such as airbags and anti-lock braking systems.
- A range of motorcycle strategies throughout UK, Europe and as far afield as Australia have highlighted some innovative measures to focus on motorcycle safety on the roads. We feel that a Motorcycle Safety Forum should consider the range and application of these issues within the Northern Ireland context.

Section 5 Statistical Analysis:

This section of the report provides statistical analysis of the data recorded on Collision Report Forms for collisions in the calendar years of 1998 to 2007. The data has been extracted from PSNI's Central Statistics database, a range of variables from which were analysed using Statistical Package for Social Scientists (SPSS). Three categories of variables were included in the analysis:

- Contextual Variables in relation to the collision
- Variables specifically relating to the casualty
- Variables relating to the vehicle (s) involved in the collision and driver licensing

A full list of the statistical variables included in this analysis is outlined in Appendix 1 of the report.

It must be noted that the data includes all casualties from collisions involving a motorcycle. In total, this section of the report contains analysis of 4,416 road traffic Collision Report Forms⁸. This includes both the motorcyclist (or pillion passenger), and any other casualties involved in the actual collisions. In the following sections we have differentiated between motorcyclist casualties and casualties involved in collisions to remove ambiguity regarding the role of the casualty in the collision. We have also cross-tabulated the main variables for those KSI collisions and casualties, in line with standard practice from a policy point of view.

Collisions:

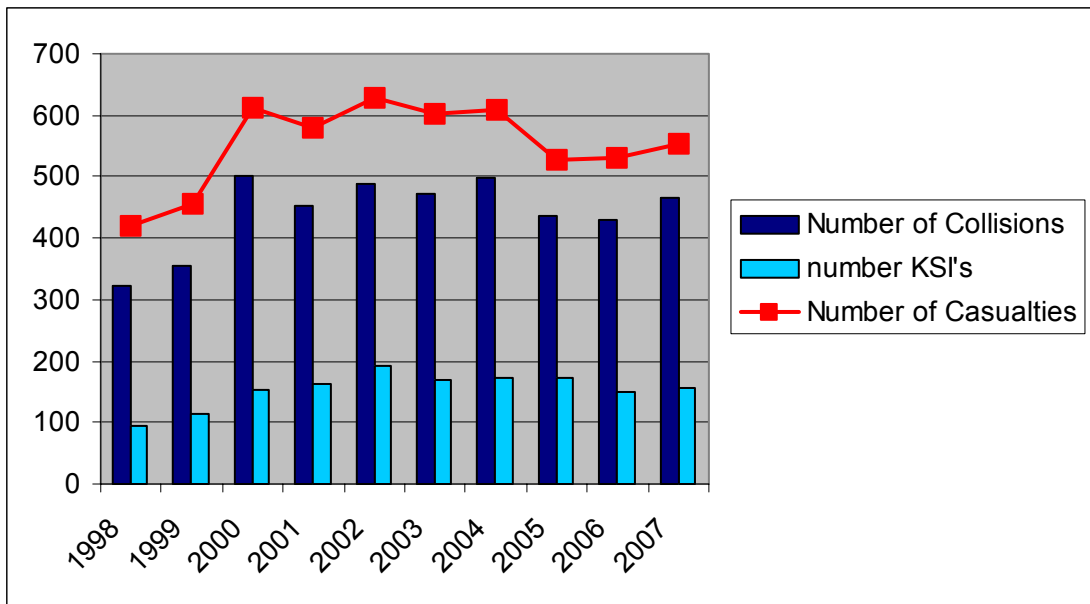
In total, 4,416 separate collisions involving a motorcycle were recorded in the period between 1st April 1998 and 31st March 2008. In total, there were 5,522 casualties accounted for across the ten-year period⁹. This accounts for 6.9% of total collisions throughout Northern Ireland for the ten-year period.

The chart below highlights the total number of collisions by year and the total number of casualties involved in the collision. On average, there were 1.25 casualties per collision.

⁸ Collision Report Forms (CRF) are completed by investigating Police Service of Northern Ireland (PSNI) officers attending Road Traffic Collisions in Northern Ireland. They cover a range of variables relating to the casualties, environmental factors, vehicle type, manoeuvres etc. The data is inputted by the PSNI's Central Statistics Unit and is used to make daily, monthly and annual reports on Road Safety throughout Northern Ireland.

⁹ 4,455 of these were 'motorcyclist' casualties – i.e. actually riding a motorcycle which was involved in the collision

Figure 1 Trends in Collision and Casualty Numbers 1998 to 2007

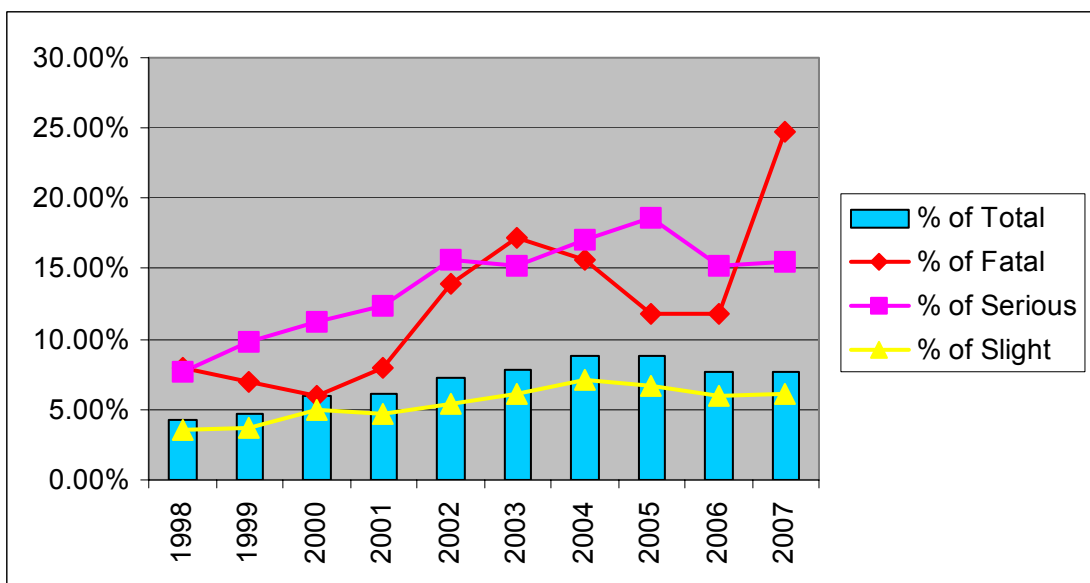


Motorcycle Collisions as a Proportion of Total Collisions:

Over the ten-year period from 1998 to 2007, all motorcycle collisions accounted on average for 6.9% of the total number of all collisions in Northern Ireland, and just over 13% of KSI collisions in the Province. There were 1,539 KSI collisions involving motorcycles throughout the ten-year period.

The chart below shows the proportion of motorcycle collisions compared to the Northern Ireland average and cross-tabulated by severity.

Figure 2 Motorcycle Collisions as Proportion of Total Collisions 1998-2007



The chart highlights that fatal and serious motorcycle collisions are disproportionately higher than the average. The chart shows that throughout the 10 years, fatal motorcycle collisions as a proportion of total collisions in Northern Ireland has increased in general. For example in the Year 1998, Fatal Motorcycle Collisions accounted for almost 8% of total Fatal Collisions. In 2007, Fatal Motorcycle Collisions accounted for almost 25% of all Fatal Collisions in Northern Ireland in that year. The proportion had been declining steadily since 2003, however increased dramatically again in 2007.

The table below shows the total number of motorcycle and total KSI collisions in Northern Ireland over the ten year period and the percentage of which were motorcycle KSI collisions:

Table 1 Percentage of Motorcycle KSI Collisions of Total KSI's 1998-2007

	Motorcycle KSI's	Total KSI's	Proportion Motorcycle KSI's
1998	96	1246	7.7%
1999	115	1214	9.5%
2000	152	1424	10.7%
2001	164	1424	11.5%
2002	192	1378	13.9%
2003	169	1241	13.6%
2004	173	1092	15.8%
2005	171	1023	16.7%
2006	151	962	15.7%
2007	156	1014	15.4%
Total	1539	12018	12.8%

The table clearly shows that while the number of KSI collisions has decreased since 2002, Motorcycle KSI collisions as a proportion of overall KSI collisions has steadily increased throughout the 10-year period from 1998 to 2007.

Motorcycle Collisions as a Proportion of Motorcycles Licensed:

While the data above shows that the overall number of motorcycle collisions has increased throughout the ten-year study period from 1998 to 2007, the number of motorcycle collisions per 10,000 motorcycles licensed in NI has decreased dramatically. The table below shows the number of motorcycles licensed for each calendar year of the study period and the number of KSI collisions per 10,000 motorcycles licensed:

Table 2 KSI Collisions per 10,000 Licensed Motorcycles

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Motorcycles/Mopeds ⁱ	11,663	13,087	14,116	15,205	17,598	23,820	24,533	25,998	27,083	28,150
KSI Collisions	96	115	152	164	192	169	173	171	151	156
KSI Collisions per 10,000 licensed Motorcycles	82.31	87.87	107.68	107.86	109.10	70.95	70.52	65.77	55.75	55.42

Principal Causes of Motorcycle Collisions:

The table below highlights analysis of the principal causation factor for all motorcycle collisions throughout the ten-year period. At present the Collision Report Forms record only the Principal Causation factor for collisions. Throughout our focus group discussions and one-to-one interviews with members of the research steering group and motorcycle stakeholders, a common concern expressed was the fact that very few Road Traffic Collisions have one causation factor. In many cases collisions are caused by a sequence of events and/or a combination of causation factors. This should be borne in mind when interpreting the figures presented below.

Table 3 Top 10 Causes for KSI and Top 10 causes for all Collisions involving a motorcycle 1998-2007

	KSI Collisions		All collisions	
	Frequency	Percent	Frequency	Percent
Emerging from minor road without care	206	13.4	683	15.5
Excessive speed having regard to conditions	205	13.3	373	8.4
Turning right without care	200	13.0	501	11.3
Overtaking on offside without care	165	10.7	383	8.7
Inattention or attention diverted	144	9.4	559	12.7
Alcohol or drugs - driver/rider	70	4.5	137	3.1
Emerging from private road/entrance without care	62	4.0	198	4.5
Wrong course/position	62	4.0	147	3.3
Crossing or entering road junction without care	47	3.1	189	4.3
U turning without care	47	3.1	120	2.7
Total within Top 10 Causes	1208		3290	

The table above shows the top 10 causes for KSI and all collisions involving motorcycles in Northern Ireland throughout the study period from 1998 to 2007. In terms of KSI Collisions, the top four causes of all collisions account for more than 50% of all collisions.

The table below illustrates the top 10 Principal Causes for the collision where the motorcyclist is responsible:

Table 4 Top 10 Principal Factors for KSI and all Collisions where Motorcyclist is Responsible 1998-2007

	KSI Collisions		All Collisions	
	Frequency	Percent	Frequency	Percent
Excessive speed having regard to conditions	168	25.3	303	19.7
Overtaking on offside without care	118	17.8	259	16.9
Inattention or attention diverted	98	14.8	280	18.2
Alcohol or drugs - driver/rider	53	8.0	92	6.0
Inexperience with type of vehicle	42	6.3	104	6.8
Wrong course/position	37	5.6	64	4.2
Overtaking on nearside without care	23	3.5	55	3.6
Emerging from minor road without care	21	3.2	59	3.8
Crossing or entering road junction without care	16	2.4	49	3.2
Driving too close	13	2.0	60	3.9
Total within Top 10 Causes	589		1325	

In total motorcyclists were responsible for 664 of the 1,539 KSI collisions, just over 43%. The table clearly shows a different pattern of causation factors to collisions where either motorcyclists or other road users were responsible. More than one quarter (25.3%) of all collisions where the motorcyclist was responsible were caused by excessive speed having regard to conditions, followed by overtaking on offside without due care, inattention or attention diverted, and alcohol or drugs.

Further analysis of the data filtering in only Single Vehicle KSI Collisions, shows that four Principal Causation Factors accounted for almost 90% of KSI Single Vehicle Collisions where the rider was responsible¹⁰. The table below outlines the causation factors:

Table 5 Causation Factors for KSI Single Vehicle Collisions where rider responsible

	Frequency	Percent
Excessive speed having regard to conditions	49	34.3
Alcohol or drugs - driver/rider	31	21.7
Inexperience with type of vehicle	24	16.8
Inattention or attention diverted	22	15.4
Total	126	

The table below shows the number of vehicles involved in the collisions:

Table 6 Number of Vehicles involved in Collision

Number of Vehicles involved in collision	Frequency	Percent
1	625	14.2
2	3545	80.3
3	220	5.0
4	19	.4
5	4	.1
6	1	.0
7	1	.0
8	1	.0
Total	4416	100.0

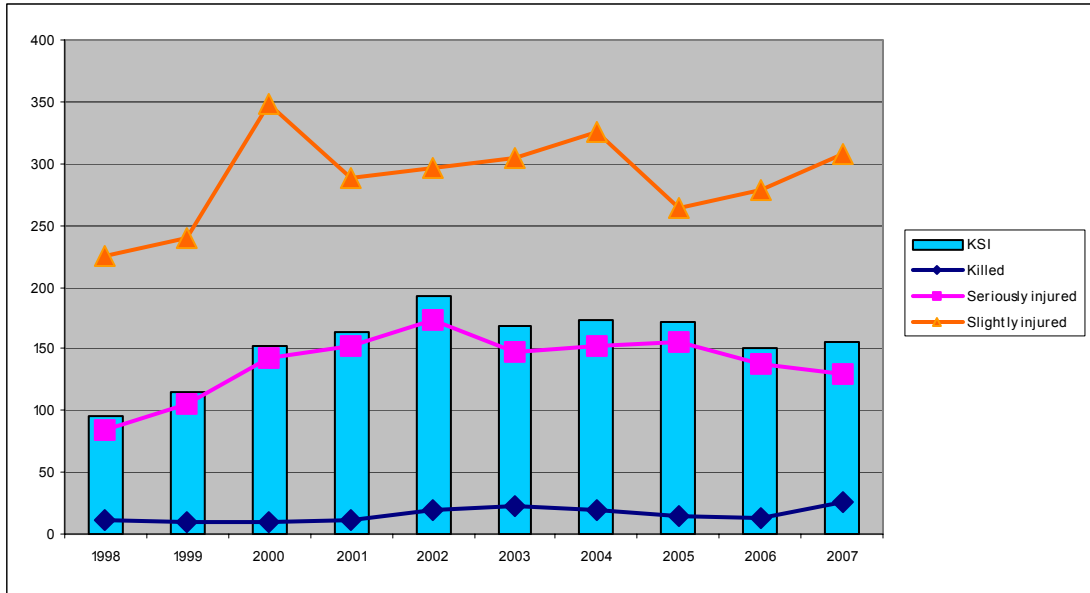
As the table shows, more than 80% of the collisions involved two vehicles. A separate variable is included in the dataset, denoting whether or not collisions were 'Single Vehicle Collisions'.

¹⁰ There were 143 KSI Single Vehicle Collisions where the rider was responsible

Collision Severity:

The chart below highlights the trends in collision severity over the 10-year period.

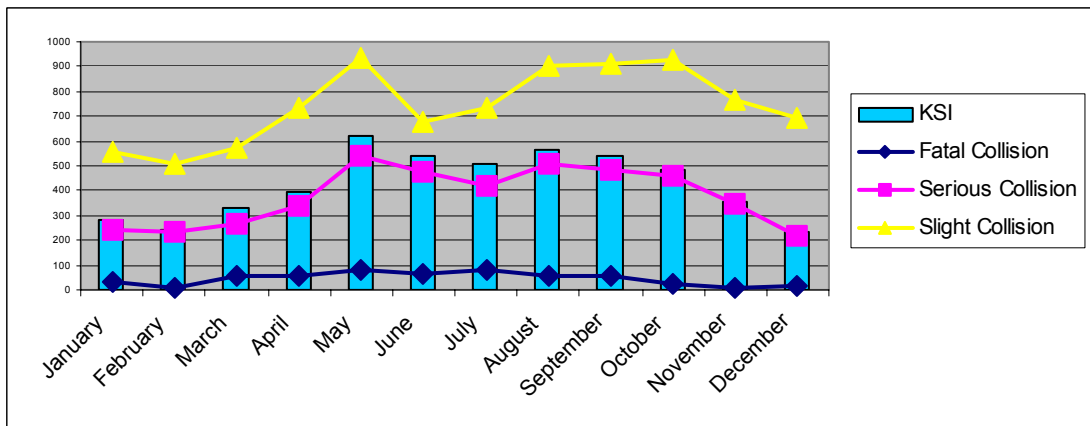
Figure 3 Annual Trends in Collision Severity 1998 - 2007



The chart shows that while numerically, KSI collisions have reduced since 2002; the number of fatal collisions has increased. On average, there were 16 fatal collisions each year over the ten-year period, 138 serious injury collisions and 288 slight injury collisions. The highest number of fatal collisions was recorded in 2007 with 26 fatal collisions, and the lowest number recorded was in 1999 and 2000, both with 9 fatal collisions.

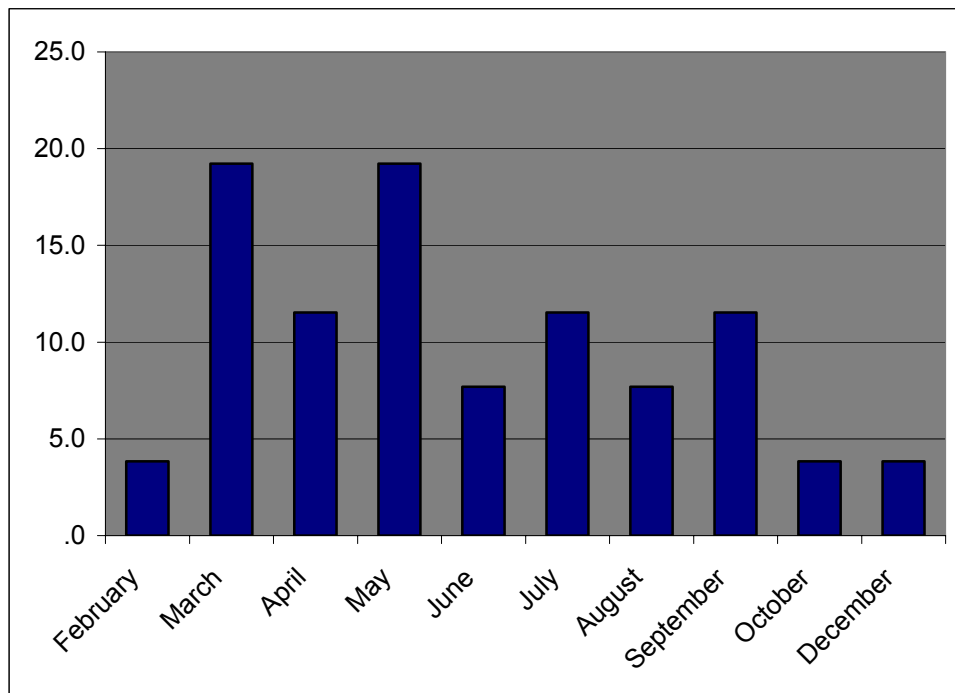
The table below highlights monthly trends in collision severity:

Figure 4 Monthly Trends in Collision Severity 1998 – 2007



The table clearly shows over the ten-year period a marked increase in 'slight' collisions in the month of May with a drop off in the month of June and July. The figures for fatal collisions remains relatively constant throughout May, June and July, and begins to decrease from the month of August. Given the significant number of fatalities recorded in 2007, the chart below shows an analysis of the monthly trend in that year:

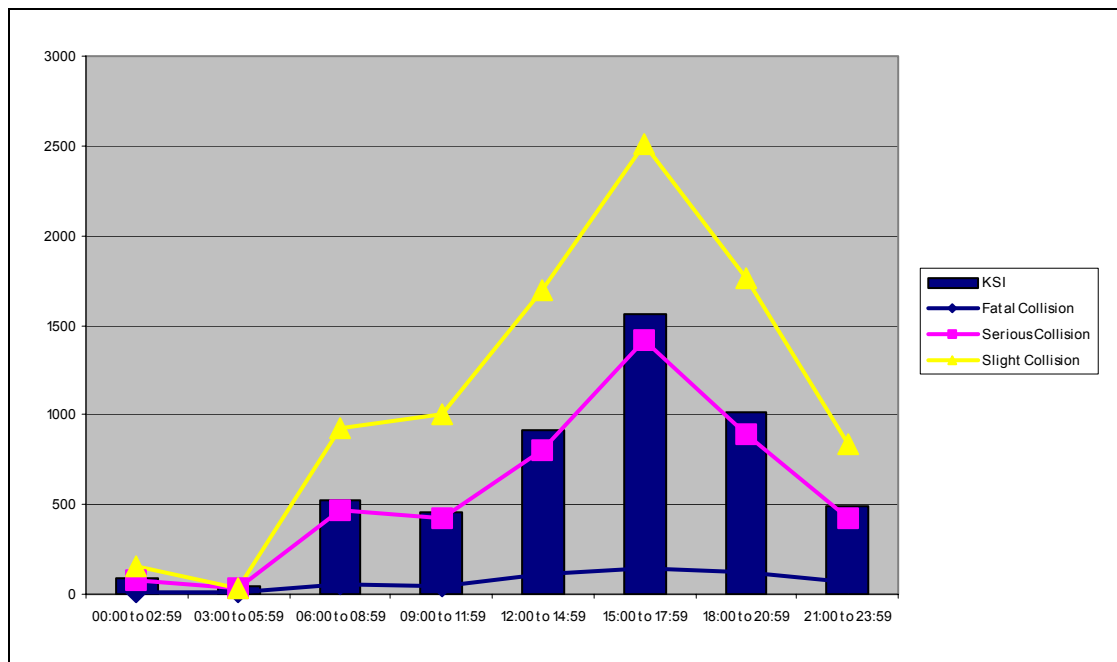
Figure 5 Fatal Collisions by Month in 2007



The chart shows that 50% of the fatal collisions in that year occurred in March, April and May. Records show that the weather in this year was particularly good, perhaps encouraging a significant increase in the number of motorcycle traffic and miles travelled in that year.

The chart below highlights the trends in collisions by time of day over the 10-year period:

Figure 6 Hourly Trends in Collision Severity 1998 - 2007



The chart shows that the biggest proportion of all collisions happened between 15:00 hours and 17:59 hours across the ten years in Northern Ireland. In total 29% of all collisions (31% of KSI collisions) happened within this three-hour period on the roads. The proportion of collisions among the three categories varied significantly with 22% of fatal collisions, 30% of serious collisions and 28% of slight collisions within this time period.

The table below highlights that 49% of KSI collisions involving motorcycles occurred between Fridays to Sunday

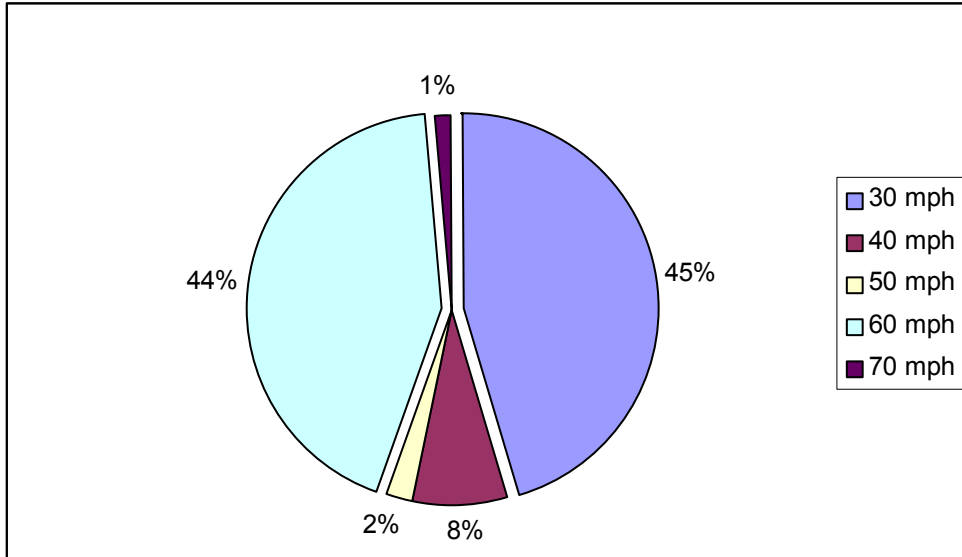
Table 7 KSI Collisions by Day of Week

	Frequency	Percent
Sunday	255	16.6
Friday	253	16.4
Saturday	249	16.2
Thursday	212	13.8
Tuesday	202	13.1
Wednesday	197	12.8
Monday	171	11.1
Total	1539	100

Environmental Conditions:

The chart below shows percentage of KSI collisions classified by the carriageway speed limit:

Figure 7 KSI Collisions by Carriageway Speed Limit 1998-2007



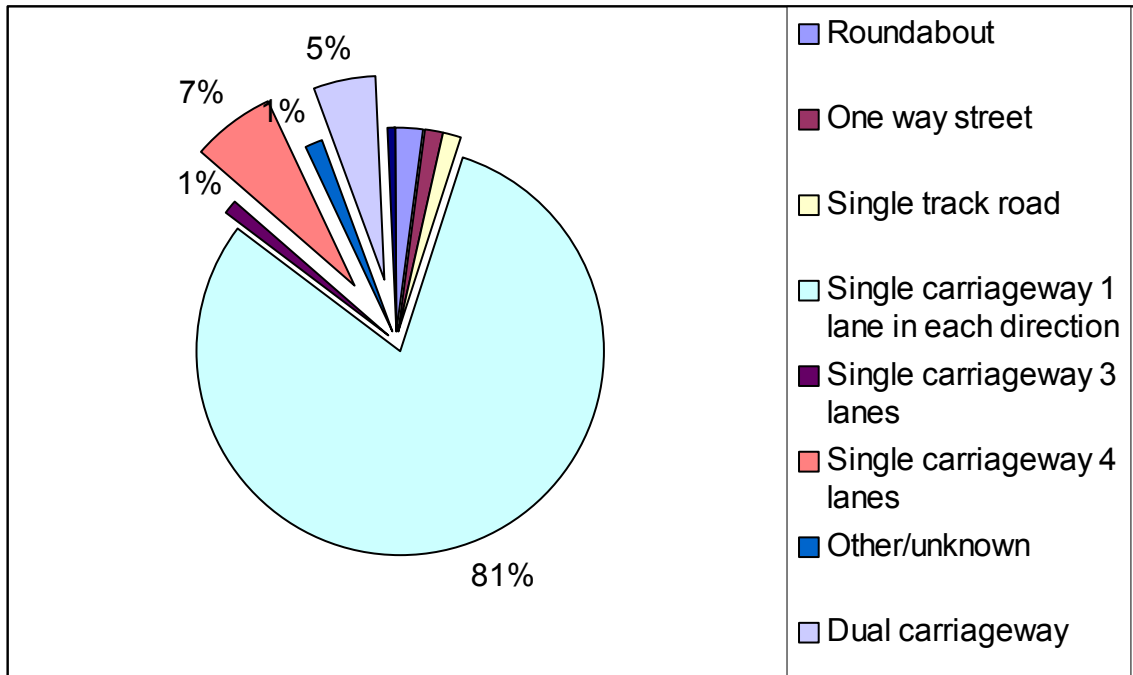
The chart illustrates that the 45% of KSI collisions occurred on roads with a 30mph speed limit in place, and 44% on roads with a 60mph speed limit in place. Almost 8% happened within a 40mph speed limit. Further analysis shows that 48% of KSI Single Vehicle Collisions occur on roads with a 60 mph speed limit.

Light Conditions:

More than 70% of collisions occurred during daylight hours (68% KSI's). Of those occurring during the hours of darkness, more than 84% occurred in an area where streetlights were lit and more 13% in an area where there were no streetlights.

Carriageway Type:

Figure 8 Collisions by Carriageway Type 1998-2007



The chart above shows that almost 81% of KSI collisions occurred on Single Carriageway roads with 1 lane in each direction, followed by 7% on Single Carriageway (4 lanes) and 5% on Dual Carriageway. Further analysis shows that 89% of fatal and 78% of serious collisions happen on single carriageways with 1 lane in each direction. The chart below highlights the percentage of collisions by severity on each of the carriageway types:

Figure 9 KSI Collision Severity by Carriageway Type 1998-2007

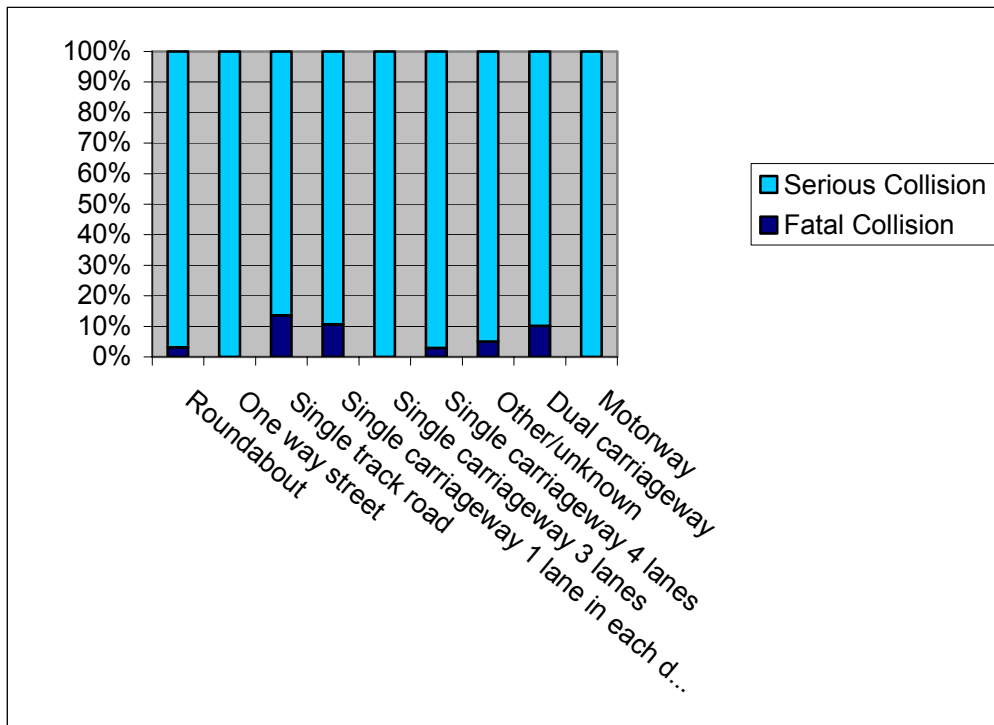
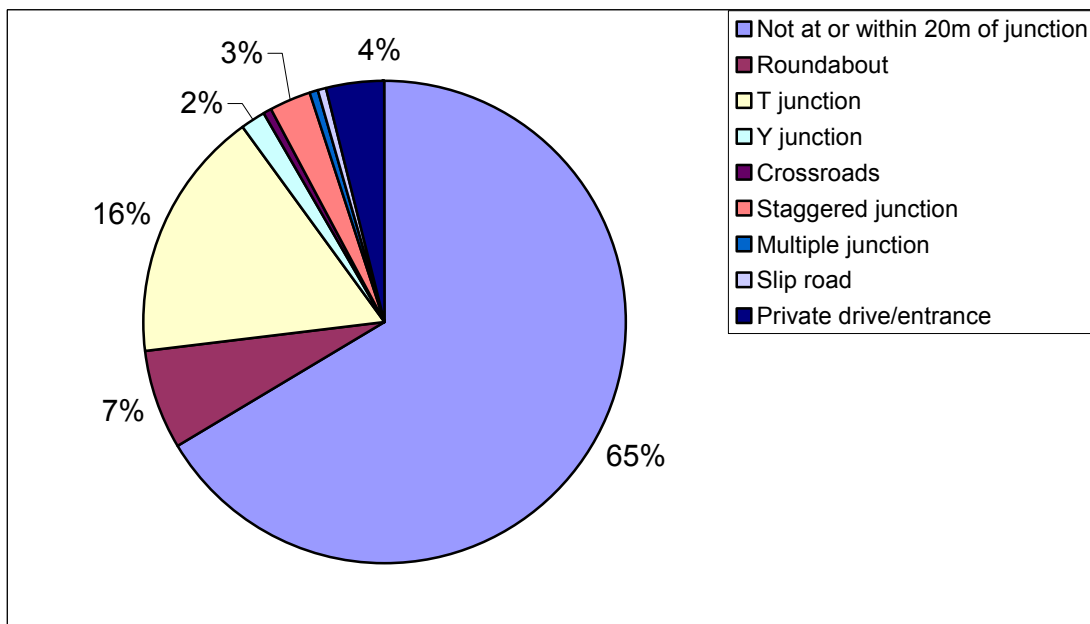


Figure 10 Collisions by Junction Detail 1998-2007



The chart shows that the biggest proportion of KSI collisions (65%) over the 10-Year period happened not at or within 20 meters of a junction, followed by 16% at a T-junction. 7% of KSI collisions occurred at a roundabout and 4% at a private drive/entrance.

Of those collisions occurring at T-junctions, more than 45% occurred at a T-junction with give way signs or markings, followed by 36% at ‘uncontrolled’ junctions, and almost 13% at junctions with a stop sign.

More than 68% of KSI collisions occurred on 'dry' road conditions, followed by 24.5% in wet conditions and 7.3% on slippery conditions (including snow, frost, oil, mud, etc).

Position of vehicle following collision:

The table below highlights the position of motorcycles following Single Vehicle collisions. This section attempts to explore the focus on

Table 8 Position of Vehicles Following Single Vehicle Motorcycle Collisions 1998-2007

	Frequency	Percent
Did not leave carriageway	291	68.1
Nearside	64	15.0
Offside	36	8.4
Nearside and rebounded	14	3.3
Straight ahead at junction	11	2.6
Total	416	

The table shows that in the vast majority of collisions (more than 68%), the motorcycle did not leave the carriageway. Where a motorcycle did leave the carriageway, the table below shows the object that the vehicle hit:

Table 9 Objects hit by SVC motorcycle leaving carriageway

	Frequency	Percent
Tree/fence/other boundary	56	13.1
Other permanent object	27	6.3
Entered ditch	10	2.3
Lamp post	9	2.1
Road sign/traffic signal	7	1.6
Telegraph/electricity pole	7	1.6
Central crash barrier	1	.2
Near side or off side crash barrier	1	.2
	118	

We were interested in exploring the data here given the significant amount of debate and publicity that has surrounded the impact of crash barriers in severity of motorcycle collisions. The data as presented here would appear to suggest that the incidence of motorcycles striking crash barriers during or after a collision is quite low in Northern Ireland. This would tend to support the findings of the recently completed EuroRAP Report which concluded that “despite the amount of high profile coverage that wire rope barriers have attracted, limited research does not warrant the inference that they are more or less dangerous than other types of barrier on the market”ⁱⁱⁱ. Another report completed by Transport Research Laboratory for Transport Scotland in 2008 highlighted that “the risk of motorcyclists receiving fatal or serious injuries during an impact with a safety fence post is high; although the number of those injured each year from such impacts on major roads is relatively low (an average of 182.8 per year in Great Britain). The report further suggested that “An examination of the type of safety fence impacted has shown that, particularly in Scotland, there is a disproportionately high percentage of motorcyclists being killed or seriously injured after impacting a wire rope safety fence than other types of safety barrier, although the actual number of impacts is low (less than 1 per year). This issue should be addressed, and it is felt that the most effective approach to this would be to first better understand the circumstances surrounding these particular instances.”

Casualties:

As outlined above, there were 5,522 casualties as a result of collisions involving motorcycles over the ten-year period from 1998 to 2007 (1,689 of these were KSI casualties). This represents, on average, more than 5% of the total number of casualties for the 10-year period across Northern Ireland, and 11.4% of KSI casualties. 4,455 of the casualties were motorcyclist casualties, i.e. those who were actually riding a motorcycle which was involved in a collision. The table below outlines the number of casualties involved in a motorcycle collision and the number of 'motorcyclist' casualties:

Table 10 Number of Motorcyclist Casualties v Casualties involved in Motorcycle Collisions

	M'cyclist Killed	Overall Killed	M'cyclist Seriously injured	Overall Seriously injured	M'cyclist KSI	Overall KSI	M'cyclist Slightly injured	Overall Slightly injured	M'cyclist Total	Overall Total
1998	11	11	91	100	102	111	228	308	330	419
1999	9	10	104	118	113	128	245	328	358	456
2000	7	9	149	157	156	166	343	447	499	613
2001	11	11	156	168	167	179	293	400	460	579
2002	19	20	181	197	200	217	298	411	498	628
2003	22	23	153	164	175	187	299	415	474	602
2004	22	22	151	168	173	190	324	420	497	610
2005	15	15	154	166	169	181	260	347	429	528
2006	14	14	135	150	149	164	290	368	439	532
2007	26	28	133	138	159	166	312	389	471	555
	156	163	1407	1526	1563	1689	2892	3833	4455	5522

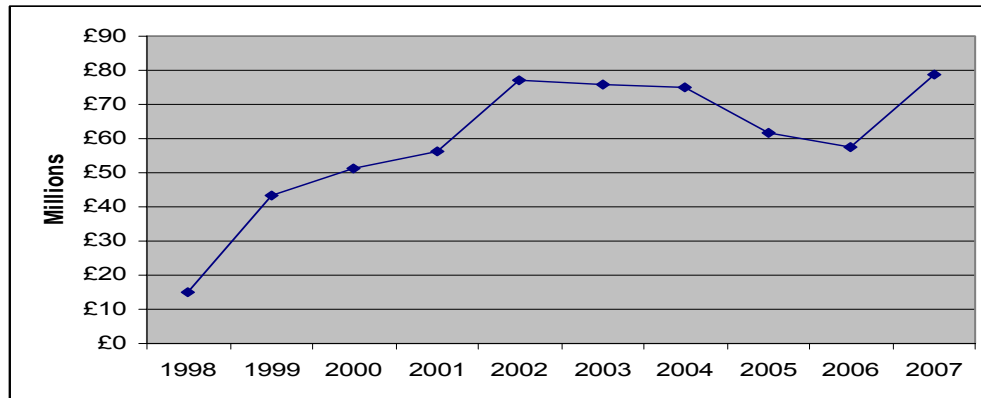
In the following section, where the terms 'motorcyclist casualties' is used, analysis is based on those 4,455 casualties who were riding motorcycles. Where the terms casualties involved in motorcycle collisions is used, analysis is based on the 5522 casualties involved in collisions, whether or not they were riding a motorcycle.

In addition to the immense personal and societal cost of casualties from Road Traffic Collisions, there is a substantial financial cost to the society and a robust financial argument for preventative intervention. The Department for Transport in UK calculate the annual cost to society of Road Traffic Collisions. Using the financial data generated by the DfTⁱⁱⁱ, the estimated cost of casualties from motorcycle collisions to the Northern Ireland economy over the 10-year study period is just over £619M. The table below highlights the figures:

Table 11 Estimated Financial Cost of casualties involved in motorcycle collisions to NI Economy 1998-2007

	Number	Average Cost ¹¹	Total Estimated Cost
Killed	163	£1,683,800	£274,459,400.00
Seriously Injured	1526	£189,200	£288,719,200.00
Slightly Injured	3833	£14,600	£55,961,800.00
Total			£619,140,400.00

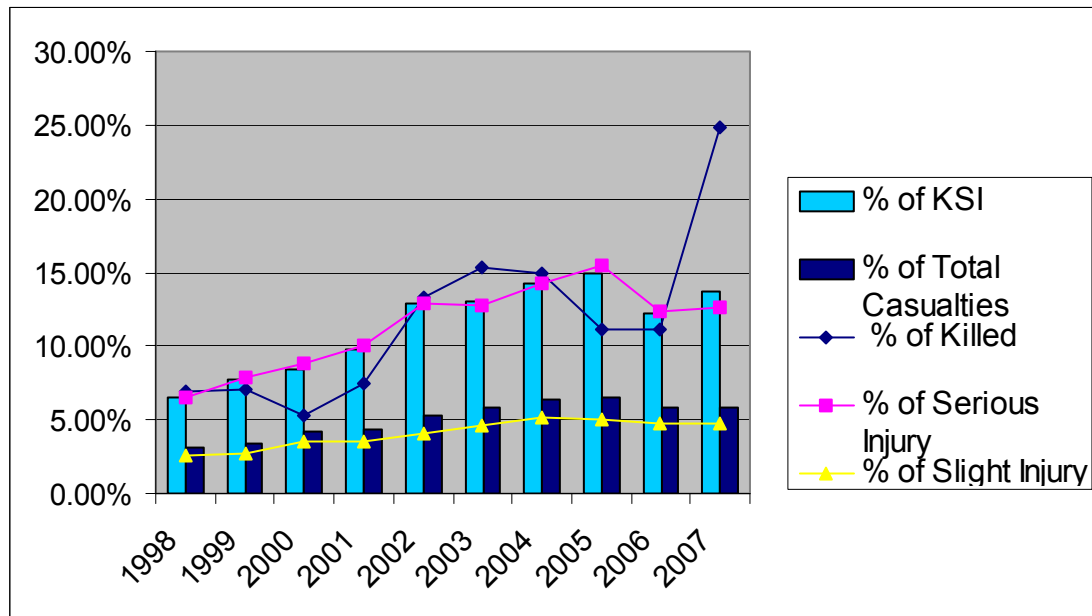
Figure 11 Average Annual Costs of Casualties involved in Motorcycle collisions



The chart above shows that the estimated financial cost to the NI economy has increased over the 10 years of the study period.

¹¹ The values for the prevention of fatal, serious and slight casualties include the following elements of cost: loss of output due to injury, ambulance costs and the costs of hospital treatment, human costs, based on WTP (Willingness to Pay) values, which represent pain, grief and suffering to the casualty, relatives and friends, and, for fatal casualties, the intrinsic loss of enjoyment of life over and above the consumption of goods and services.

Figure 12 Casualties involved in a Motorcycle Collision as a Proportion of All Injury and KSI Casualties NI 1998-2007



The chart above highlights a similar pattern to Figure 5 in that the proportion of motorcyclists killed or seriously injured reflects a significantly higher proportion of all collisions in Northern Ireland throughout the ten-year study period. The chart shows a consistently higher proportion of those killed or seriously injured, with peaks in the former in 2002-2004 and again in 2007 where motorcyclists accounted for 24.7% of all people killed as a result of Road Traffic Collisions in Northern Ireland (almost 1 in 4 fatalities).

The table below lists the vehicle in which casualties were either driving, riding or were passengers:

Table 12 KSI and All Casualty Vehicles 1998-2007

	KSI Casualties		All Casualties	
	Frequency	Valid Percent	Frequency	Valid Percent
Motorcycle (125cc and above)	1136	69.4	2731	51.2
Motorcycle (under 125cc)	255	15.6	894	16.7
Moped	155	9.6	787	14.7
Car (4 wheeler)	63	3.8	784	14.7
Other	80	1.0	326	2.7
TOTAL	1689		5522	

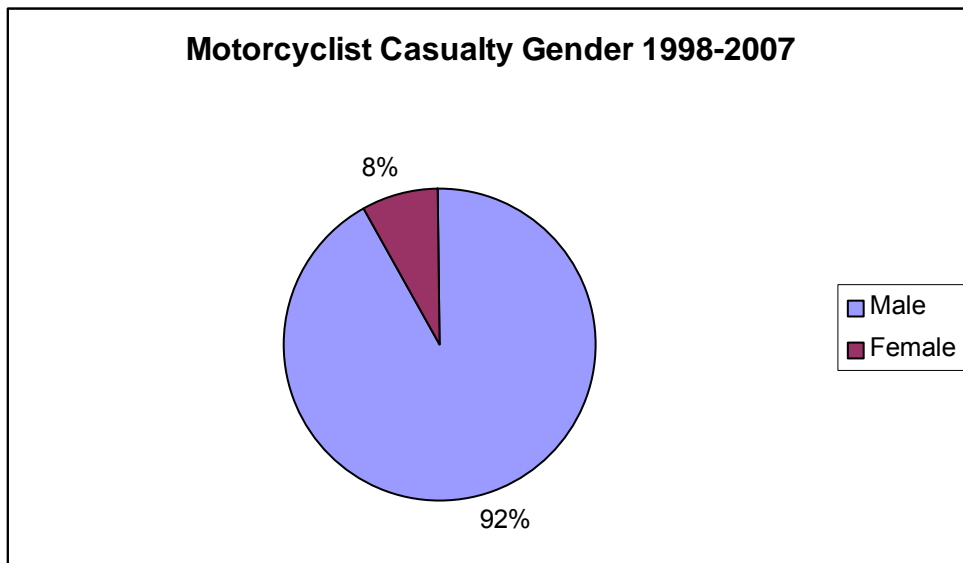
The table shows that more than 98.4% of KSI casualties were riding motorcycles from one of the four different categories under which they have been recorded on the Collision Report Forms throughout the 10-year period of

the analysis, compared to 82% of all casualties. The table shows a significant difference in the number of KSI casualties who were travelling in cars compared to overall casualties in cars, underscoring the greater likelihood that a motorcyclist is more often vulnerable to serious/fatal injury in a collision.

Further analysis shows that 62% of casualties from Single Vehicle collisions were riding motorcycles of 125cc or above, 18% a motorcycle 125cc or below, 15% a moped and 5% a 'motorcycle'.

Trends in motorcycle casualties by age and gender

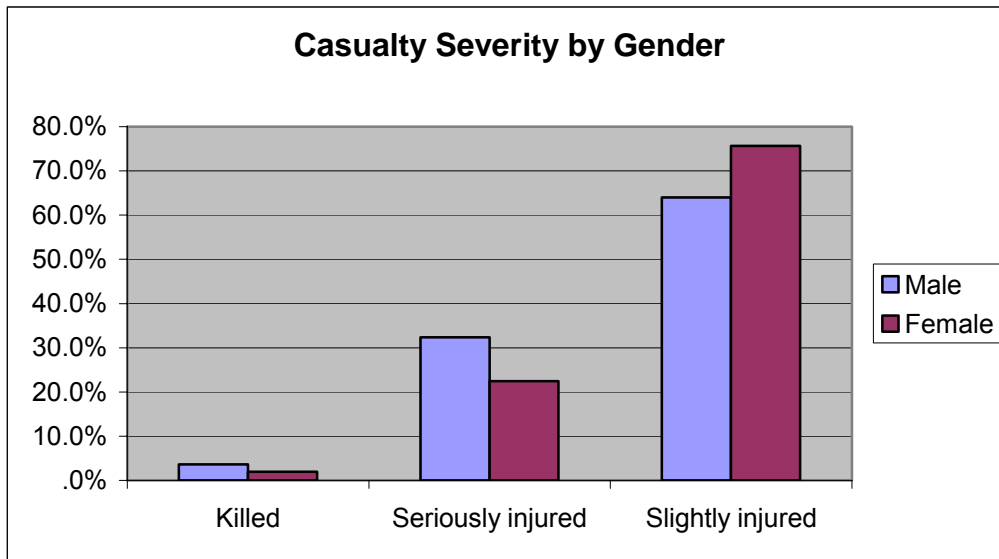
Figure 13 Motorcyclist Casualty by Gender 1998-2007



The chart above shows that 92% of motorcyclist casualties (either rider or passenger, not including casualties in other vehicles) were male and 8% were female. 37% of the female motorcyclist casualties were pillion passengers. The chart below shows that a slightly higher proportion of male casualties were either fatally or seriously injured.

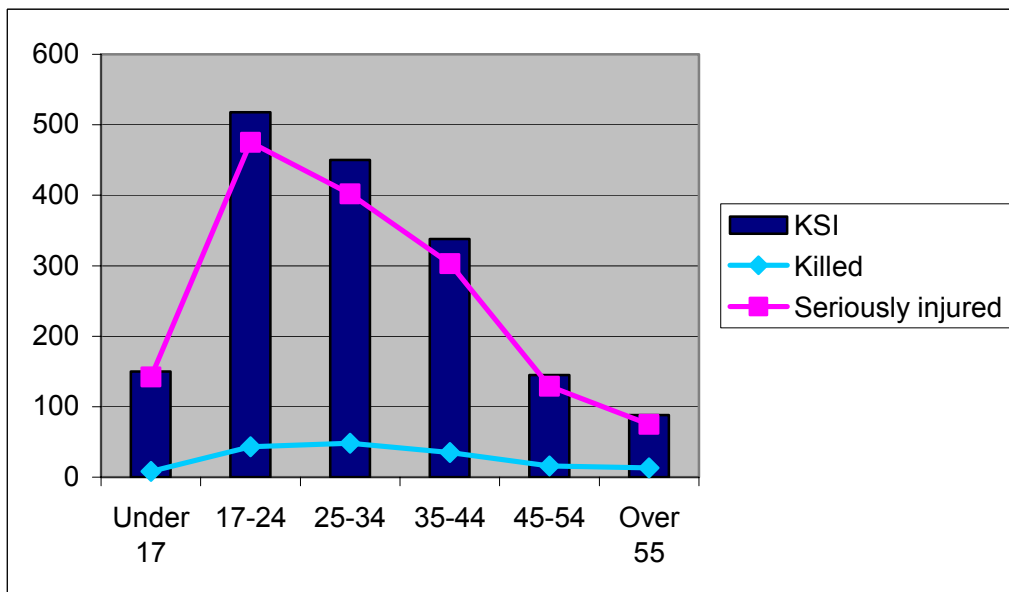
Casualty Severity:

Figure 14 Motorcyclist Casualty Severity by Gender 1998-2007



Figures 19 and 20 below highlight a significant variance in the age of casualties concerned in collisions involving motorcycles.

Figure 15 Casualty Severities by Age 1998-2007



Helmet Use:

Analysis of the data for motorcyclist casualties shows that more than 87% of the motorcyclist and pillion passengers were wearing helmets, 3% were not wearing helmets and data was either not recorded or missing in 10% of cases. Further analysis shows that a higher proportion of those who were killed as a result of their collision (8.3%) were not wearing helmets compared to those who were seriously injured (3.6%) or slightly injured (1.9%). Helmet use has been shown through research to be a significant measure in reduction of injury severity and fatalities in motorcycling. The ground-breaking ‘Hurt

Report^{12,iv} concluded that the risk of death from a motorcycle collision is more than halved if a helmet is worn and concluded that “helmeted riders and passengers showed significantly lower head and neck injury for all types of injury and levels of severity.’

Casualty Responsibility:

Overall analysis illustrates that more than 68% of motorcyclist casualties were not responsible for the collision in which they were involved (57% in the case of KSI’s).

Figure 16 Motorcyclist Casualty Responsibility by Age 1998-2007

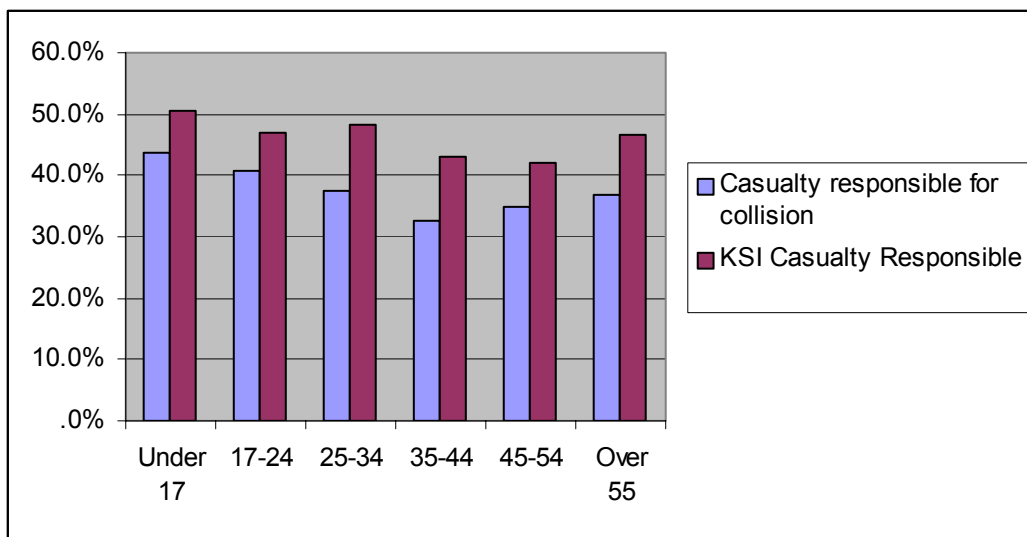


Figure 21 illustrates that the percentage of motorcyclists responsible for the collision in which they are involved decreases by age group from Under 17 to the 35-44 age group across both KSI and All Casualties. The proportion then increases for the later two age groups.

¹² A motorcycle safety study conducted in the USA in 1976 and published in 1981 which significantly advanced knowledge regarding causes of motorcycle collisions.

Figure 17 Motorcycle Rider Responsibility by Gender 1998-2007

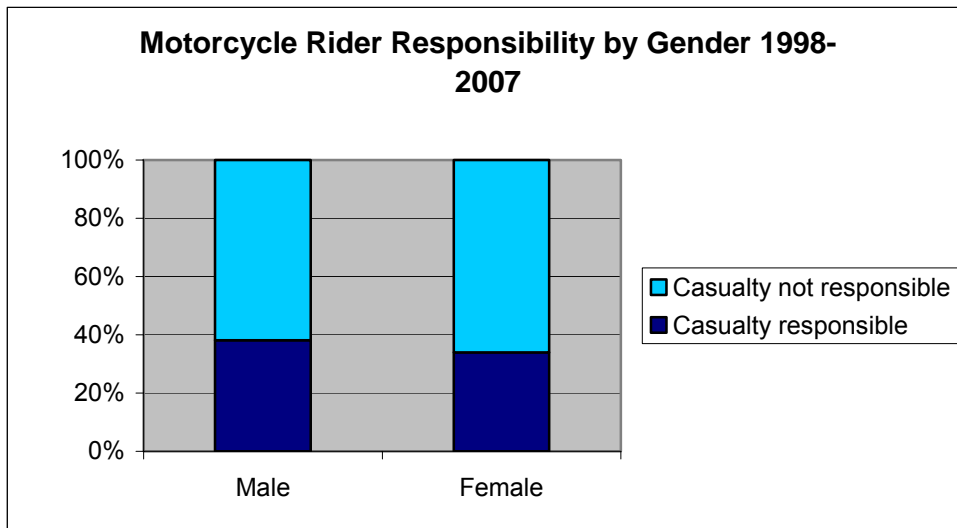


Figure 22 illustrates a significant difference in the proportion of males and females motorcycle riders responsible for the collision¹³. 42% of male motorcycles riders were responsible for the collision in which they were involved, compared to 34% of female passengers.

Figure 18 Motorcycle Casualty Responsibility by Severity 1998-2007

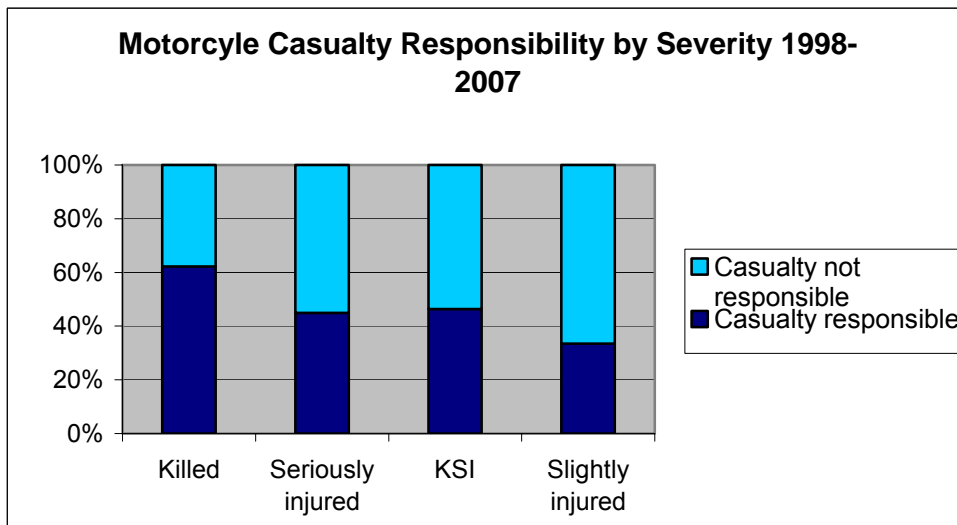


Figure 23 illustrates a significant relationship between casualty severity and casualty responsibility. More than 62% of motorcyclists who were killed were responsible for the collision in which they were involved, compared to 45% of those seriously injured (46.4% KSI) and 33% of those slightly injured.

¹³ N=3,468 – we have filtered out pillion passengers here to negate the effect of the higher proportion of females riding as pillion passengers.

Driver and Vehicle Analysis:

The table below shows the license type for motorcycle riders involved in collisions:

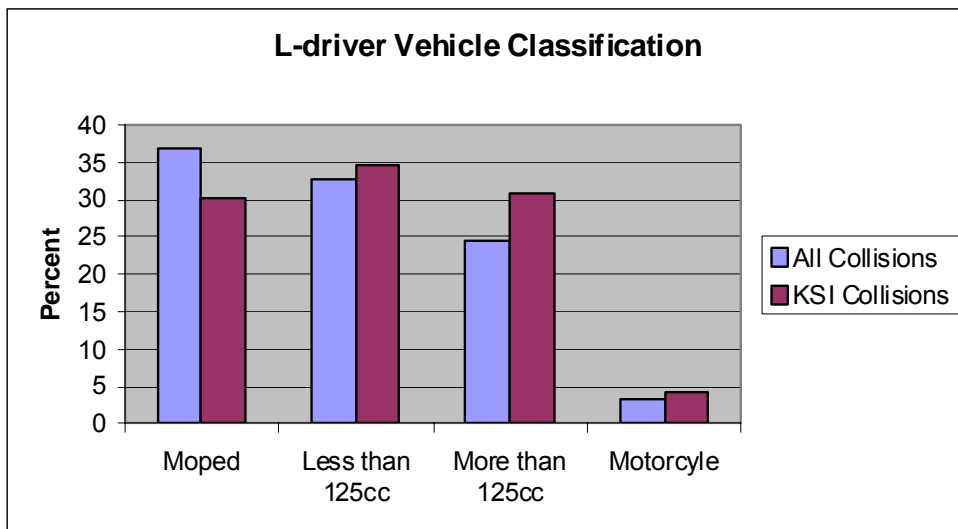
Table 13 Motorcycle-Rider License Type

License Type	KSI Casualties Percent	All Casualties Percent
Unrestricted	65.6	55.5
Learner-driver	21	32.9
No license	8.0	5.0
Restricted driver	3.8	3.4

The table shows that quite a high percentage of motorcyclists involved in KSI and all collisions over the ten-year period were Learner Drivers. By contrast, only 1% of drivers of other vehicles in the collisions were learner drivers¹⁴.

Only 9 Foreign EU/Non-EU drivers were recorded as having been involved in motorcycle collisions recorded over the ten-year study period (1 in a KSI collision). The table below shows the vehicle classification of learner drivers:

Figure 19 Motorcycle L-driver Vehicle Classification



The chart above shows that almost one quarter (24.7%) of Learner Driver motorcycle casualties and almost one-third of Learner Driver KSI casualties

¹⁴ At the focus group meeting following the research phase, it was highlighted that the UK is one of the few EU Member States that permit unaccompanied riding of a motorcycle on a provisional licence. Recent DFT Guidance has stated that allowing unaccompanied riding in the UK is potentially in contravention of the EC 2nd Directive and Government is currently considering reviewing the matter.

were riding motorcycles of more than 125cc. Further analysis shows that of those aged Under 17, almost 50% held Provisional Licenses, and almost 10% had no license at all. Of those aged 17-24, almost 34% held Provisional Licenses and just over 52% held unrestricted licences.

The chart below shows a comparison of rider age by type of motorcycle involved in the collision:

Figure 20 Rider Age by Type of Motorcycle involved in collision 1998-2007

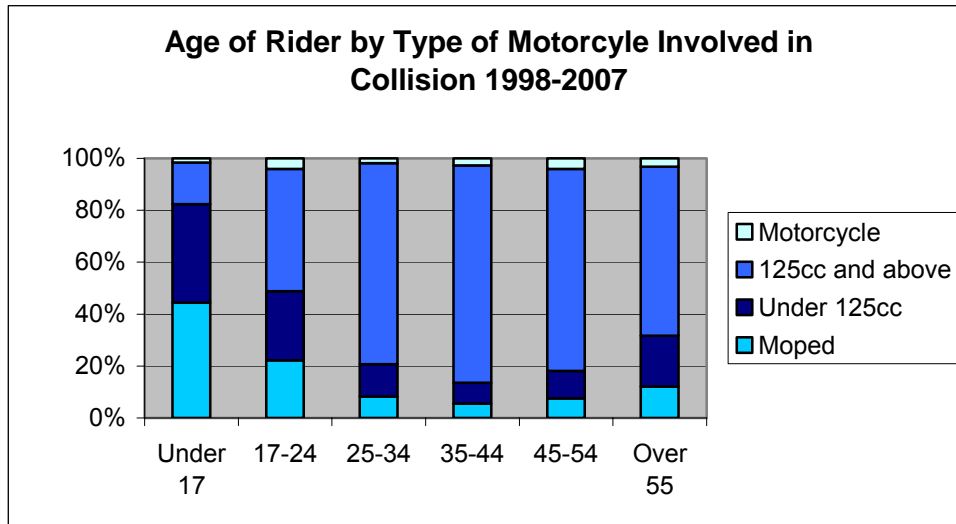


Figure 26 shows that almost half of the Under 17 years olds were riding mopeds (44.4%) and 38 % were riding Motorcycles under 125 cc. Of those aged 17-24 years, 47.2% were riding Motorcycles with cubic capacities of more than 125cc.

Main Findings from this Section:

- In total, 4,416 separate collisions involving a motorcycle were recorded in the period between 1st April 1998 and 31st March 2008. In total, there were 5,522 casualties accounted for across the ten-year period (1,689 killed or seriously injured).
- The estimated cost of casualties from motorcycle collisions to the Northern Ireland economy over the 10-year study period is just over £619M.
- Over the ten-year period from 1998 to 2007, all motorcycle collisions accounted on average for 6.9% of the total number of all collisions in Northern Ireland, and just over 13% of KSI¹⁵ collisions in the Province. Throughout the 10 years, fatal motorcycle collisions as a proportion of total collisions in Northern Ireland has increased in general. The

¹⁵ Killed or Seriously Injured.

proportion of Motorcycle KSI collisions has steadily increased throughout the 10-year period from 1998 to 2007

- While the actual number of motorcycle collisions has increased throughout the 10 years of the study period, the number of collisions per 10,000 motorcycles registered in Northern Ireland has decreased dramatically.
- The top three causes for all KSI motorcycle collisions (irrespective of responsibility) were emerging from a minor road without care; excessive speed having regard to conditions; and turning right without care. The top three principal causes for KSI collisions where the motorcyclists was responsible, were excessive speed having regard to conditions; overtaking on offside without care; and inattention or attention diverted. Top three factors for KSI Single Vehicle Collisions were excessive speed having regard to condition; alcohol or drugs; and inexperience with type of vehicle.
- Throughout the 10 years, the biggest proportion of KSI collisions happened in the month of May; between the hours of 15:00hours and 17:59 hours; and almost half of all KSI collisions happened between Friday and Sunday.
- 45% of all KSI collisions happened on roads with a 30mph speed limit and 44% on roads with a 60mph speed limit. 81% happened on single carriageway roads with 1 lane in each direction. More than two-thirds (65%) happened 'not at or within 20 meters of a junction'. Of those collisions occurring at T-junctions, more than 45% occurred at a T-junction with give way signs or markings, followed by 36% at 'uncontrolled' junctions, and almost 13% at junctions with a stop sign.
- More than two-thirds of motorcyclists did not leave the carriageway after a Single Vehicle Collision – of those that did leave the carriageway, the majority struck trees/fence or another boundary. Less than 0.5% hit a central or nearside/offside crash barrier.
- 69.4% of all motorcycle casualties were riding motorcycles with capacities of 125cc or above.
- 92% of all casualties were male with a high proportion of male casualties killed or seriously injured and a higher proportion of female casualties slightly injured.
- The biggest proportion of KSI casualties were aged 17-24 (31%), followed by 25-34 (26.6%). In comparison to the age profile of respondents to the Motorcycle Survey, this would tend to suggest that younger motorcyclists are disproportionately represented in casualty statistics.

- Less than half of KSI motorcycle casualties were responsible for the collision in which they were involved (46.4%). Overall less than 32% of all motorcycle casualties were responsible for the collision.
- 21% of motorcyclists involved in KSI collisions were 'L-drivers' (33% of all collisions).

Section 6 Motorcycle Casualties Research:

This section of the report outlines the statistical analysis of the responses to the motorcyclist questionnaire.

Working on the assumption that there are approximately 31,000 motorcyclists in Northern Ireland, we set out to achieve a response to the questionnaire of 389. We achieved a total of 945 responses to the questionnaire through a combination of on-line responses and face-to-face interviews completed at Bikesafe events and public 'meets'.

During our stakeholder interviews and focus group discussions the response rate to the questionnaire was commented on. One stakeholder commented:

"I think the response to this survey shows the tremendous thirst there is out there among the motorcycling community for some sort of input into road safety, there is a perception that riders do not want to know, but this clearly shows that there is a big need to include them."

Steering Group member

Another stakeholder commented:

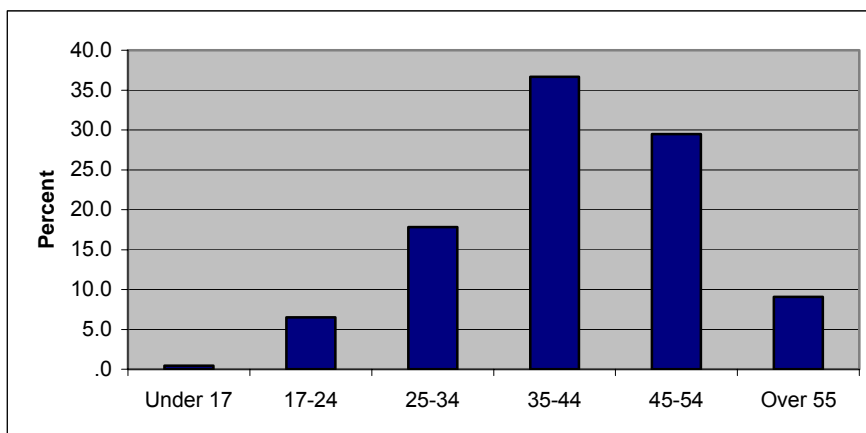
"I think this research has done superb to get the views of almost 1000 motorcyclists. Usually people who do surveys get maybe 200 or 300 and then do an average and say that's the views of motorcyclists and get a stupid result from a couple of hundred enthusiasts. The other 800 who are missing are those who we really want to get the views of at the end of the day."

Motorcycle Retail Association Member

Demographics:

The average age of respondents was just over 41 years of age. The oldest respondent was 75 years of age and the youngest was 16 years of age.

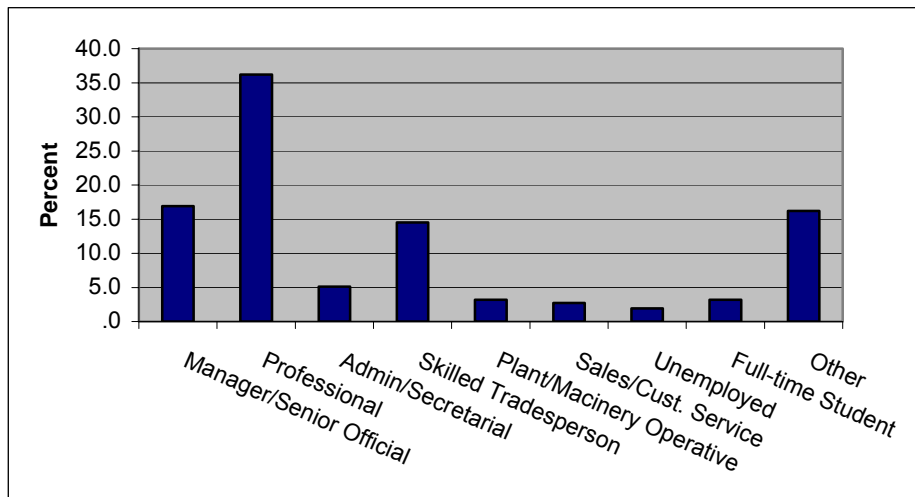
Figure 21 Respondent Age Group



As the chart shows, the biggest proportion of respondents (36.7%) was in the 35-44 age group. 91.8% of respondents were male and 8.2% were female. This is roughly comparable to the age profile from the PSNI Evaluation of the Bikesafe scheme in December 2005¹⁶. This is the only other robust baseline of motorcycling demographics to which we could compare the demographic profile responding to the questionnaire.

The chart below highlights respondent's occupation:

Figure 22 Respondents Job Profile



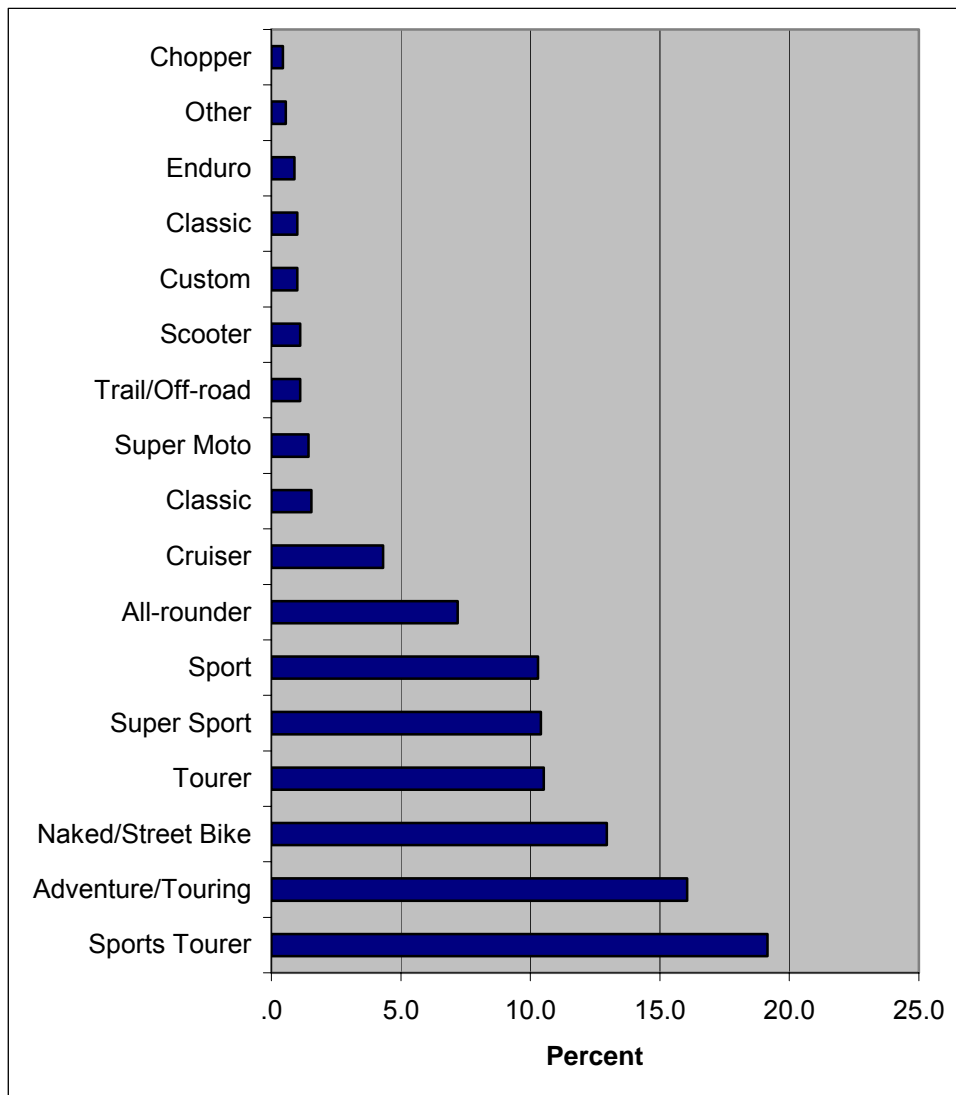
The biggest proportion of respondents was 'Professional' (36%) followed by 'Manager/Senior Officials' (17%) and 'Other' (16%). 'Other' occupations included a wide spectrum of occupations from chefs to fire fighters, bus drivers, farmers and those who were retired. The response to the question highlights the vast range of people riding motorcycles in Northern Ireland. It will be interesting to profile this question against the attitudinal survey carried out with other drivers to see whether or not the perception equates to the actual profile represented here¹⁷(See Section 6).

The chart overleaf highlights the motorcycle that respondents ride most often. We asked which motorcycle they ride most often, as we were conscious that many motorcyclists own more than 1 motorcycle.

¹⁶ Age group of 425 respondents to the Bikesafe evaluation were – 3.3% under 24 Years of age, 19.5% 25-34, 38.7% 35-44, 25.6% 45-54 and 13% over 55 years of age.

¹⁷ Research carried out by Millward Brown Ulster for DOENI in January 2008, 'Attitudes Towards Motorcyclists Among Drivers', suggested that the visual image of the 'bike and biker' has served to dehumanise them to such an extent that car drivers in many cases see them as 'Phantoms of the Road, thereby removing sympathy for their plight'. The research suggested that motorcyclists may have been placed to the back of many car driver's minds and there is a need for normalisation of the motorcyclist using humanising methodologies. This research led to the 'Underneath' Campaign commissioned and screened by DOENI in May 2009.

Figure 23 Respondents Category of Main Motorcycle



Almost 20% of motorcyclists owned Sports Tourers, followed by 16% Adventure Tourers, 13% Naked/Street Bikes, 10% Tourer and more than 10% each for Sport and Super Sport.

64% of motorcyclists responding to the questionnaire owned one motorcycle and 36% owned more than one. The biggest proportion owned either 2, 3 or 4 motorcycles (22%, 7% and 5% respectively), however some owned significantly more motorcycles. One respondent owned 23 motorcycles, adding “*too many to list...*” The majority of those respondents, who specified the type of their second motorcycle, indicated that they owned either classic or off-road motorcycles as their second/third machines. The data did not suggest a significant proportion of motorcyclists having a second super sports machine for weekend riding¹⁸. Further analysis of the data however shows that the main machine profile changes for those indicating that they only ride

¹⁸ This question was included at the request of the research steering group to ascertain if there was a significant number of motorcyclists who kept super sports machines for weekend riding and used a less powerful machine for their usual mode of motorcycle transport.

their motorcycle at the weekend. Less than a third of respondents indicated that they only ride their machine at the weekend (n=276), however more than 42% of them ride Sports Tourers, Sports, or Super Sports motorcycles. 63% of these motorcyclists reported having near miss collisions in the 12 months preceding the research and 14.4% having a collision in the three years preceding the research. As we will explore later in this chapter of the research, this is actually a lower percentage than respondents overall who have had near misses (66%) or collisions (19.8%).

The table below shows involvement in a collision/near miss by the main 5 types of motorcycles ridden by respondents:

By Category of motorcycle, a higher percentage of sports, super sport, naked/street bike and scooters had been involved in collisions than the average. Although the numbers of respondents riding enduro and supermoto machines was very small overall, a significantly higher percentage of their riders had been involved in both collisions and near misses.

Table 14 Collision/Near Miss by Top 5 Types of Motorcycle

	Number	Percentage Collision	Percentage Near Miss
Sport	85	24.7	63.4
Super Sport	89	21.3	67
Naked/Street Bike	108	25	75
Adventure/Touring	139	16.5	70
Sports Tourer	165	18.2	60
Scooters	8	25	62.5
All categories	594	19.8	66

Figure 24 Type of Collision by Motorcycle Type

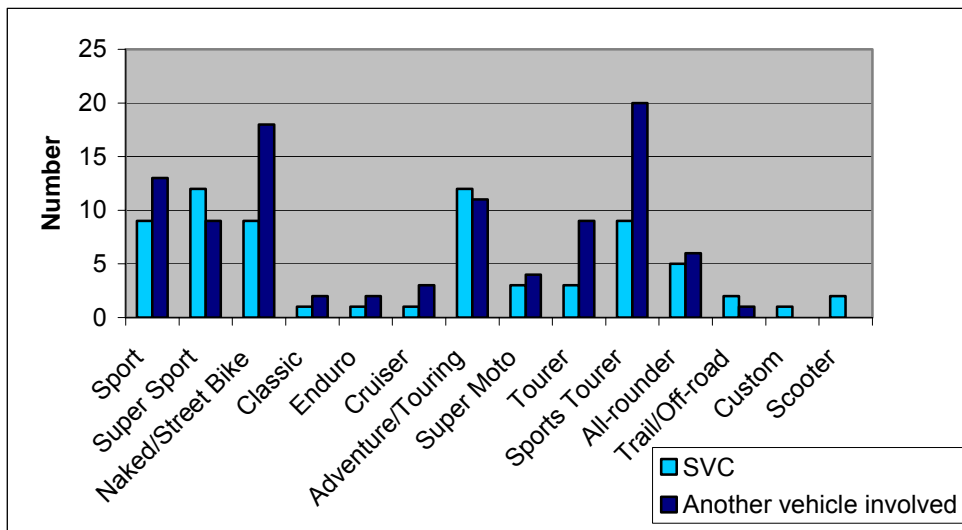
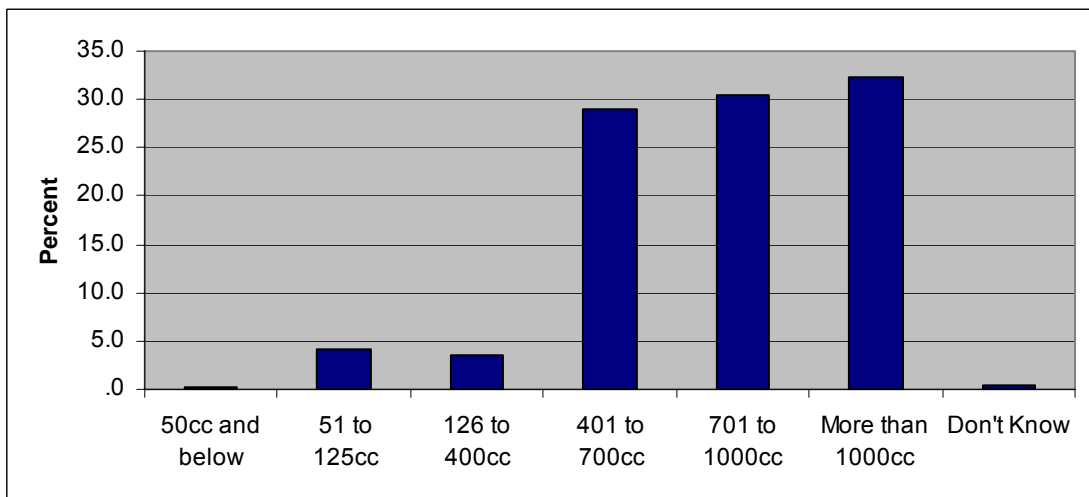


Figure 25 Cubic Capacity of Respondents Main Motorcycle



The chart shows that the majority of respondents ride motorcycles with a Cubic Capacity of more than 401cc.

Table 15 Involvement in Collision/Near Miss by Motorcycle CC

	Number	Collision	Near Miss
51 to 125cc	34	23.5%	72.7%
126 to 400cc	25	32.0%	64.0%
401 to 700cc	242	21.5%	66.9%
701 to 1000cc	267	20.2%	68.7%
More than 1000cc	274	16.8%	63.0%
Total	842 ¹⁹		

The table below shows a breakdown of BHP of respondent’s motorcycles with the proportion within each category that have been involved in a collision or near miss. The analysis is based on 848 respondents, as 10% of respondents did not answer the question on BHP:

Table 16 Respondents involvement in Collisions/Near Miss by BHP of Motorcycle

	Number of Respondents	Collision	Near Miss
Under 33bhp	33	21.2%	71.9%
34 to 50bhp	24	12.5%	75.0%
51 to 100bhp	311	20.3%	68.8%
100 to 150bhp	232	25.4%	65.4%
More than 150bhp	58	17.2%	65.5%
Don't know/No Answer	190	13.7%	60.6%
Total	848		

A higher percentage of those whose motorcycle was between 100 to 150 bhp were involved in collisions in the past three years.

Respondents were asked which of the following categories they regularly used their motorcycles for:

Table 17 Involvement in Collisions/Near Misses by Motorcycle Use

	N	Percent of Cases	Collision last 3 Years	Near Miss Last 12 mnths
Commuting	420	49.5%	25.6%	72.0%
Work	61	7.2%	29.5%	59.0%
Personal Use	706	83.3%	20.9%	68.0%
Long Distance Travel	372	43.9%	21.0%	70.0%
Sport	83	9.8%	34.9%	63.9%
Social ²⁰	469	55.3%	17.8%	66.6%
Professional	35	4.1%	25.7%	51.4%
Other	20	2.4%	15.0%	80.0%
	2166			

This was a multiple response question therefore the total number of responses is greater than the number of respondents to the survey

¹⁹ Where totals do not add up to 945 questionnaire respondents, non-response to individual questions accounts for the difference

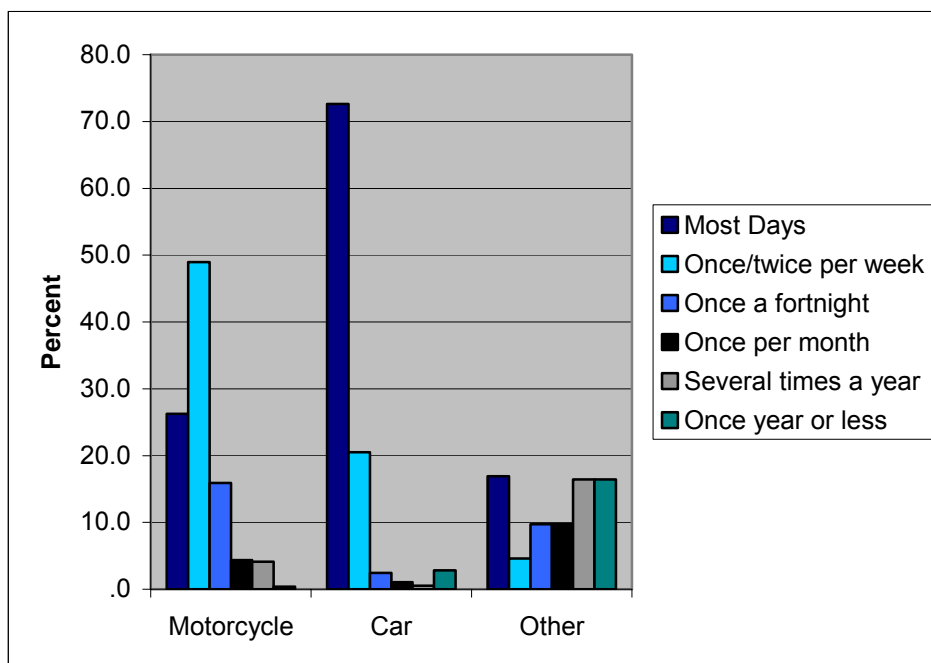
²⁰ We defined personal use as using the motorcycle simple for their own personal use which would cover a range of possibilities but not for work. We defined ‘social’ as use of the motorcycle as part of a club or for meeting friends for ‘rides out’ at the weekend.

The table shows that the biggest proportion of respondents (83.3%) were using their motorcycles for personal use, followed by 55.3% for social use (social use was defined as riding with a club or group of friends). Quite a high proportion (49.5%) indicated that they were using their motorcycles for commuting to and from work and 43.9% were using theirs for long distance travel. Just over 4% of respondents indicated that they used their motorcycles for professional use. Three Bikesafe events took place throughout the duration of the research. All of the Police Instructors who were conducting assessed rides as part of the Bikesafe events and the Bikesafe coordinator were interviewed as part of this research. Police Instructors therefore account for a large proportion of those motorcyclists who indicated 'Professional' motorcycle use.

Almost 35% of respondents who used their motorcycle for 'sport' had a collision in the past three years, followed by those who use their motorcycle for work and commuting. Higher percentages of those who used their motorcycles for long distance travel or personal use reported having near miss collisions in the 12 months preceding the research. The category in which the lowest proportion of riders reported having near miss collisions was 'Professional' motorcyclists.

The chart below highlights the frequency with which respondents use their motorcycle, a car or other vehicle:

Figure 26 Vehicle Usage Frequency



The chart illustrates that 26% of respondents use their motorcycle every day, 49% use it once or twice per week and 16% once per fortnight. In contrast 72% of respondents use a car most days, and just over 20% use a car

once/twice per week. Almost 17% use another vehicle most days. Other vehicles included vans, Heavy Goods Vehicles, buses and bicycles.

The table below highlights a crosstabulation of the frequency with which respondents ride their motorcycle and those who have been involved in collisions/near misses:

Table 18 Collision/Near Miss Involvement by Frequency Riding Motorcycle

	Collision		Near Miss	
	Number	% of responses	Number	% of responses
Most days	70	32.4%	166	77.2%
Once/twice per week	69	17.3%	265	66.4%
Once a fortnight	14	10.7%	73	56.2%
Once per month	6	16.7%	16	47.1%
Several Times a year	3	8.8%	17	53.1%
Once per year or less	0	.0%	0	.0%
Total	162	100%	537	100%

The response suggests that a higher percentage of those who ride their motorcycles on a more regular basis have actually been involved in collisions and near miss accidents over the past three years and 12 months respectively. One of the stakeholders commented on this finding by saying:

“There is a concept amongst some motorcyclists that it is nice to have a bike in the garage and be classified as a biker, but if you don’t take it out every Sunday, then there’s less chance of crashing and becoming one of the statistics.”

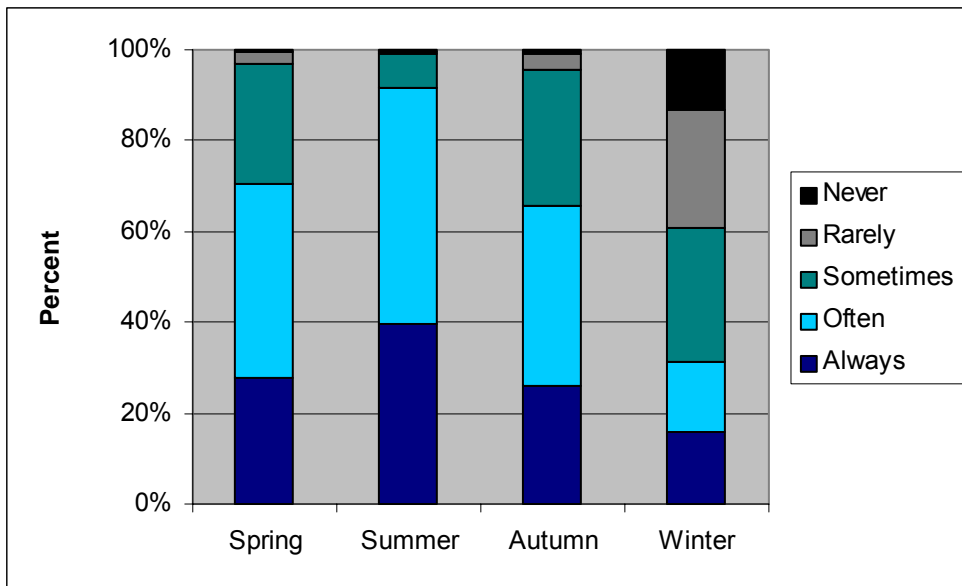
However when responsibility for the collision in which the rider is involved is layered in, responsibility for the collision is inversely proportional to the frequency with which respondents ride their motorcycles:

Table 19 Rider Responsibility for Collision by Frequency Riding Motorcycle

	Number	Rider Responsibility for collision
Most days	71	32.4%
Once/twice per week	70	41.4%
Once a fortnight	17	70.6%
Once per month	6	16.7%
Several Times a year	3	66.7%
Once per year or less	-	-

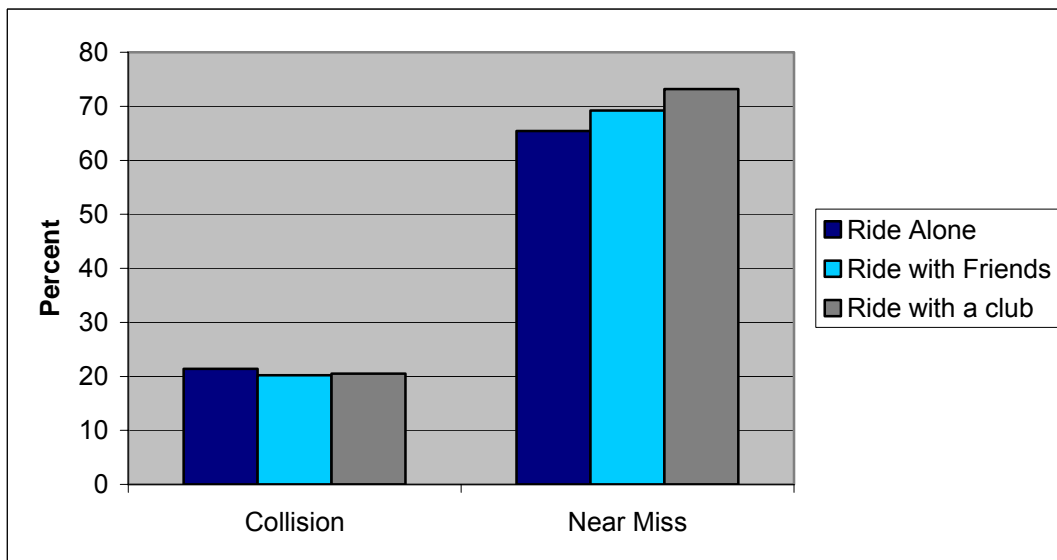
The chart below highlights how often respondents ride their motorcycle by season:

Figure 27 Frequency of Motorcycle Use by Season



The chart clearly highlights a higher proportion of respondents using their motorcycle during the spring and summer seasons. 27.6% of respondents highlighted that they 'always' use their motorcycle during spring and 39.6% always during summer months. More than 90% of respondents indicated that they use their motorcycle 'always' or 'often' during the summer months.

Figure 28 Involvements in Collisions/Near Miss by Ride Alone/With Friends



The chart above shows that a slightly higher proportion of those who ride alone have been involved in collisions over the past three years (21.4% compared to 20.2% riding with friends and 20.4% riding with a club). The chart shows however that a higher percentage of those riding with friends or with a club have experienced near miss collisions in the past 12 months.

Motorcycling Community

We asked respondents whether or not they were active members of motorcycle groups or whether they participated in motorcycling forums on the Internet. We believe this information is important for the Road Safety Division to enable more proactive targeting of road safety messages to the motorcycling community and to understand how to access motorcyclists more efficiently. Throughout our consultation with motorcyclists, many respondents asked for more proactive targeting of advertising and positive PR for motorcycling in Northern Ireland.

More than 35% of respondents indicated that they are currently members of a motorcycling group or organisation and almost 50% of respondents indicated that they are members of a motorcycling-based website forum. The range of motorcycling groups and forums represented by respondents was very comprehensive. Some of the groups in which respondents were members included:

- Quay Vipers
- Triumph RAT
- Motorcycle Action Group (MAG) Ireland, and UK
- Motorcycle Union of Ireland (MCUI)
- Harley Owners Group
- IAM Lisburn
- Frozen Bones MCC
- British Motorcyclists Federation (BMF)
- Right to Ride
- Blue Knights
- Christian Motorcyclists Association
- North Antrim Motorcycle Club
- Newry and Mourne MCC
- Honda Owners Club
- Trinity MCC
- NI Police MCC
- Curvy Riders MCC
- BMW Ulster section

The main 'on-line' motorcycle forums of which respondents were members include:

- www.nibikers.com
- www.ukgser.com
- www.rideitright.org
- www.solidbondsc.com
- www.irishbikerforum.com
- www.honda-varadero-uk.org
- www.realroadracing.com

Visordown
Motorcycle News

The extent of the on-line motorcycling community in Northern Ireland as discussed at the focus group session with motorcycle stakeholders suggesting that the online community presents significant marketing and promotion opportunity to communicate road safety messages to motorcyclists throughout Northern Ireland. One example in particular demonstrates the extent of this on-line community. Respondents to the Motorcycle casualties NI Questionnaire from the Quay Vipers Motorcycle Club represented the biggest section of club members; the Club hosts an on-line discussion forum on its website²¹. From January to November 2009, the club has averaged 157,000 views per month on its discussion forum²².

The table below outlines the range of motorcycling press and magazines that respondents read:

Table 20 Motorcycle Publication read by Respondents

	Percent of Respondents
MCN	59.4%
Bike	32.7%
RIDE	30.8%
Don't Read Magazines	15.9%
Performance Bikes	14.3%
Road Racing Ireland	14.1%
Superbike	9.6%
Other	8.9%
Irish racer	8.5%
Back Street Heroes	5.6%
Classic Rider	3.4%
Streetfighters	3.3%
Which Bike	1.5%
100% Biker	1.5%
Biker	1.4%

²¹ www.quayvipersmcc.com

²² This peaked in April 2009 to 327,811 page views following a fatal motorcycle collision on one of the Clubs Charity 'Ride Outs'.

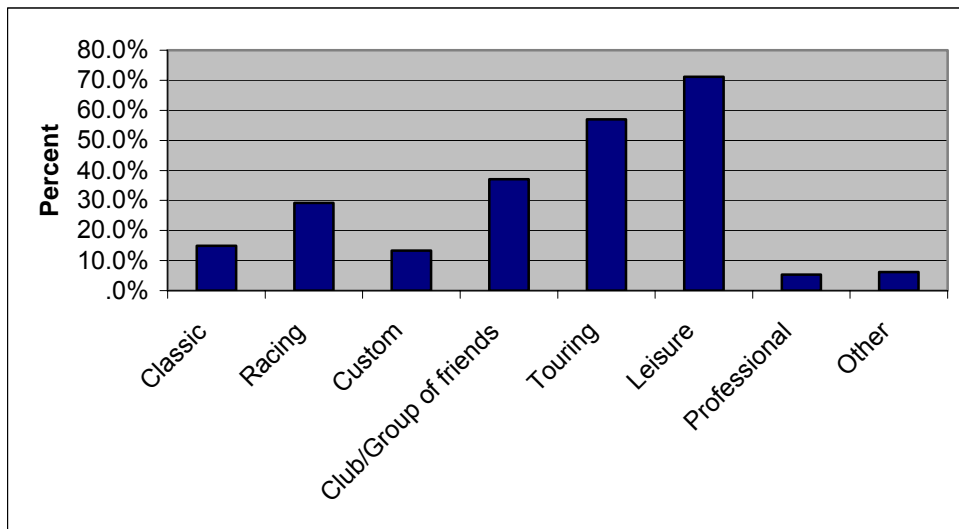
Sport Bike Rider	.7%
The Road	.6%
Northern Biker	.2%
Rider Open House	.1%

N=1,825 responses. Percentages in this table add up to more than 100% as respondents could select multiple responses for the question.

The table clearly shows that the most popular motorcycle publication read by respondents is Motorcycle News (more than 59%). 16% of respondents indicated that they do not read motorcycle magazines. Of those who do not read motorcycle magazines, only 22% are members of groups and 36% are members of motorcycle forums online. There is a significant proportion of the motorcycling population therefore who would be particularly difficult to reach through the specialist press or through clubs or forums.

The chart below highlights the type of motorcycling that respondents were interested in:

Figure 29 Respondent's Motorcycling Interest

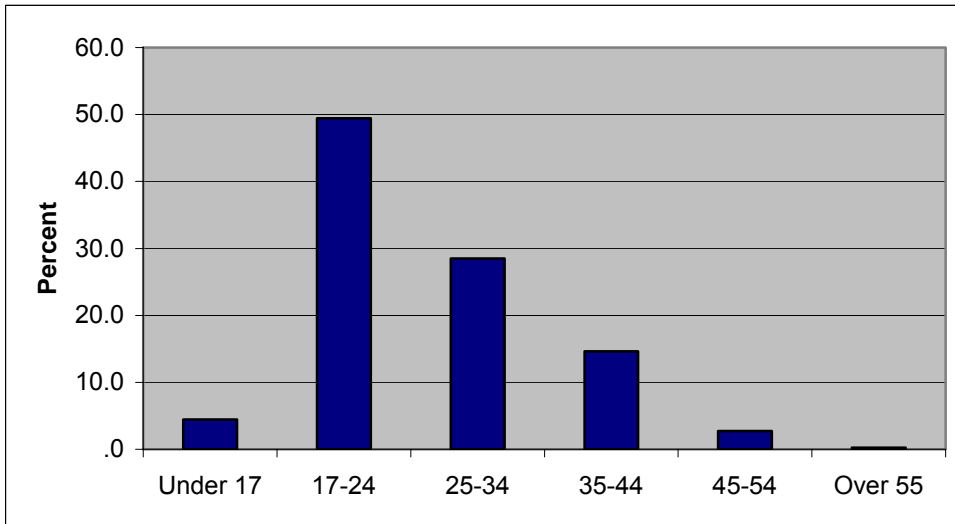


It highlights that the biggest proportion of respondents (more than 71%) were interested in motorcycling as a leisure pursuit, followed by touring, riding with a club/group of friends, and racing.

Licensing/Training:

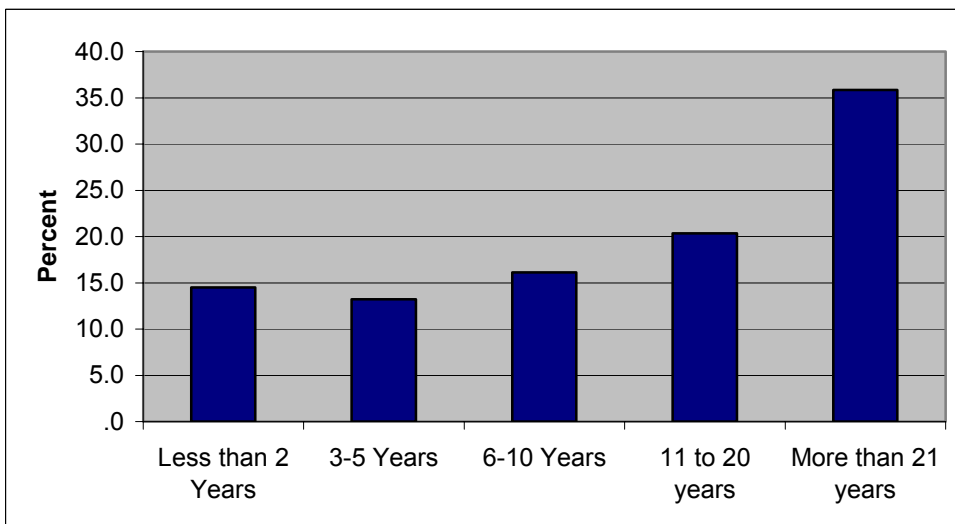
95.8% of questionnaire respondents held 'full motorcycle licenses', and the chart below shows that the biggest proportion of riders held their licences since they were 17-24 years of age.

Figure 30 Age Attaining Licence



On average, questionnaire respondents had 16 years experience riding motorcycles since passing their test. The chart below shows the range of experience among questionnaire respondents:

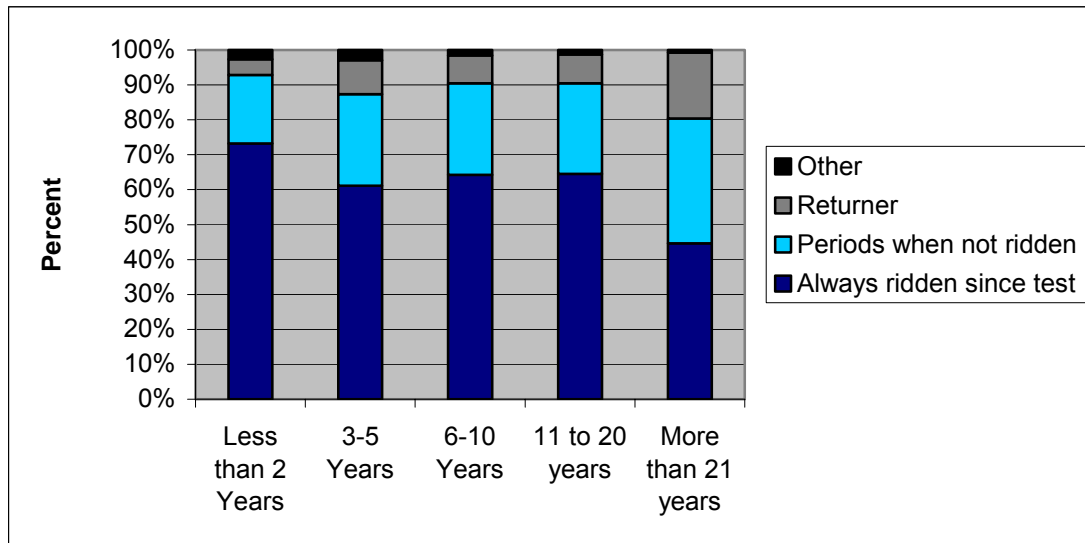
Figure 31 Range of Experience in Years



57% of respondents indicated that they have always ridden their motorcycle since passing their test, 28% indicated that there have been periods of time since passing the test when they have not ridden, and 13% said they have returned to motorcycling after not having ridden for years (4% selected 'other'). The chart below shows a cross-tabulation between the years since

passing their test and the degree to which they have ridden a motorcycle in the intervening period:

Figure 32 Years Since Test v Exposure to Motorcycling



The chart shows a higher proportion of those who have had their test for more than 21 years having not ridden for period of time or designated as a ‘returner’ to motorcycling after a number of years not having ridden²³. Less than half of the motorcyclists in this category have regularly ridden a motorcycle since passing their test. The table below highlights the percentage of those in each category who have experienced a collision in the past three years or near miss in the past 12 months:

Table 21 Involvement in Collisions/Near Miss by Rider exposure

	Frequency	Percent	Collision	Near Miss
Always ridden since test	500	52.9	22.3%	70.3%
Periods when not ridden	245	25.9	18.9%	60.0%
Returner	112	11.9	12.0%	61.3%
Other	19	2.0	11.8%	58.8%
No answer	69	7.3		
	945			

²³ The latter is generally referred to as a ‘born again biker’, a category of motorcyclists who are commonly thought to be vulnerable on the roads. We will examine the motorcycling experience of this subset of respondents later in this chapter.

Participation in Assessed Rides/Training:

We asked respondents to highlight whether they had participated in assessed rides or training including motorcycle instruction with an instructor, BikeSafe, IAM Advanced Training or ROSPA Training.

The table below shows a crosstabulation of the percentage of those who have completed training with those who have been involved in a collision in the past three years or near miss in the past 12 months:

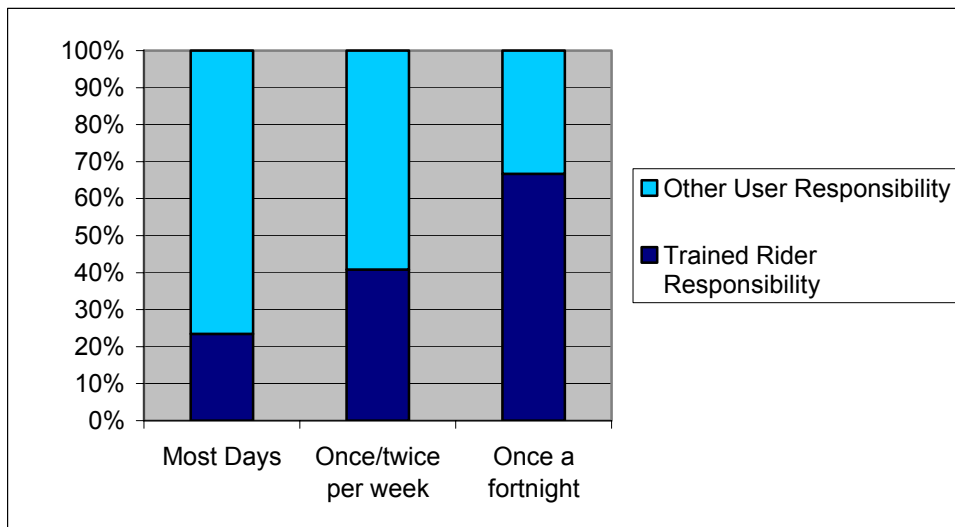
Table 22 Those involved in collisions/near miss by Training completed/not completed

	Number	Collision	Near Miss
Training Completed	535	21.1	65.9
No training indicated	316	17.8	66.5
All respondents	945	19.8	66.1

We would have expected to see overall a decrease in the number of ‘trained’ riders involved in collisions. However, this accounts for all collisions irrespective of rider responsibility. A theory entitled ‘The Pelzman Effect’ has suggested a hypothesis of ‘risk compensation analysis’, which basically suggests that the introduction of any safety measure results in changes of behaviour of road users which may negate the supposed effects of the measure. A recent article in the British Medical Journal has refuted the theory though arguing that “research – as opposed to speculation – shows that when risk taking behaviour by drivers is studied, those who wear set belts (for example) in fact take fewer risks than those who do not wear seatbelts”^v.

Further analysis of the data, factoring in collisions where the rider was responsible however shows a trend that those riders who have completed motorcycle training/assessment and ride frequently were significantly less likely to have been responsible for a collision in which they have been involved.

Figure 33 Trained and Frequent Riders Responsibility for Collisions



Of those respondents who had been in a collision in the past three years, 23.4% of those who have completed training and ride their motorcycle most days were responsible for the collision. This rises to just over 40% for those who ride once or twice per week and to almost 67% for those who ride once a fortnight.

The table below shows more detailed analysis of the type of assessed ride/training completed and the percentage of each that have been involved in either collisions in the past three years or near miss in the last 12 months:

Table 23 Percentage of Trained Riders involved in Collisions/Near Miss

	Number	Percent	Collisions	Near Miss
Training with instructor	288	30.5%	21.4%	66.5%
Bikesafe	297	31.4%	22.5%	68.0%
IAM Advanced	117	12.4%	23.7%	63.4%
ROSPA	30	3.2%	14.3%	44.8%
Other	42	4.4%	27.5%	55.0%
Total	774			

The table highlights that more than 31% of total respondents to the questionnaire had participated in the Bikesafe Scheme and more than 30% had completed training with a motorcycle instructor. The table highlights that a lower percentage of those who had completed ROSPA Training indicated that they had been involved in collisions or near misses. The type of training completed by those who indicated 'other' includes in order of frequency:

- Star rider scheme²⁴
- Police standard and advanced courses
- Race schools:
 - Woosley Coulter
 - Ron Haslam race school

²⁴ A rider Training scheme developed in the 1970's but not now in existence.

- California Superbike School
- BMF
- 2 Honda Mac (Motor Appreciation Course) Scheme²⁵
- Off road/motocross training
- Qualified DOE instructors
- Garda Motorcycle Training
- The Edge
- NTS STEP scheme Gold Star
- RAC/ACU Training
- Low control workshops
- BMF
- Military Training
- BMF blue riband
- Advanced riding OXOCN²⁶
- National m/c Training (Gold Star) scheme circa 1986
- Did my test again, to be sure
- Insurance assessment training and test
- Hibernian Advanced M/C course

We then asked whether motorcyclists have planned to partake in any voluntary training in the future. The table below shows the responses:

Table 24 Future Training Aspirations by Training Completed

	Instructor		Bikesafe		IAM		ROSPA		Other	
	Num.	%	Num.	%	Num.	%	Num.	%	Num.	%
Instructor	27	9	108	37.5	115	39.9	65	22	6	2.1
Bikesafe	31	10.4	13	4.4	106	35.7	56	18.9	5	1.7
IAM	3	4.3	12	10.3	6	5.1	18	15.4	1	0.9
ROSPA	2	6.7	2	6.7	4	13.3	0	0	0	0
Other	4	9.5	8	19	11	26.2	11	26.2	1	2.4

Respondents were asked to outline the reasons why they have not participated in training to date or do not wish to take part in training in the future. The table overleaf outlines the responses:

²⁵ Honda Mac (Motor Appreciation Course) was a course open at a discounted rate to all riders purchasing a Honda motorcycle over 500cc and members of the Honda UK Riders Club (HUKRC). At the time it was free to anyone who brought a Honda Motorcycle over 500cc, whether new or second hand. Members of the HUKRC were eligible to go on the MAC course for £295, whilst all purchasers of an officially imported Honda over 500cc could access the course for £100.

²⁶ Advanced Motorcycle Training offered in conjunction with UK Advanced and accredited through the Oxford Open College Network (OXOCN) Courses are an 'Exclusive' 4 day Advanced Course, consisting of 2 days classroom and 2 days on the road.

Table 25 Reasons for not participating in Training Schemes

	Percent of respondents
Don't have time	34%
Costs too much	28.1%
Don't know about it	22.1%
Other reason	15.8%
Don't need it	10.6%
Couldn't be bothered	6.0%

N=480

More than 28% of respondents highlighted that they have not participated in voluntary training as it 'costs too much' and more than 22% because they 'did not know about it'. This would tend to suggest that with the right incentives and promotion, there is a substantial proportion of the motorcycling community who would participate in voluntary/advanced training.

While training is widely perceived to be the one area that people believe will make a difference to road safety, the figures presented here suggest that while training may reduce the risk of motorcycle riders causing collisions, it may not reduce the overall number of motorcycle collisions in Northern Ireland.

Compulsory Basic Training:

We asked respondents whether or not they believed that all new motorcyclists should be required to complete Compulsory Basic Training. Overall, 85% of respondents felt that all new riders should complete CBT, 5.4% said No, 3.2% didn't know and 6.6% did not answer the question²⁷. The introduction of CBT was the focus of much debate at the stakeholders focus group discussion with attendees feeling that the decision to introduce CBT has been left for too long in Northern Ireland²⁸, and given changes in the 3rd Directive, maybe it has been left too late:

"The decision to introduce CBT in Northern Ireland has been left for much too long. This has been stalled, despite the fact that the vast majority of motorcyclists, instructors and industry professionals have been calling for its introduction. Now it seems with developments in mainland Europe that it may have been left too late for Northern Ireland."

When asked whether or not new riders should have restrictions placed on the motorcycles they ride, the largest proportion of respondents indicated that they should have restrictions placed on the BHP²⁹ of motorcycle they can ride:

²⁷ This compares to 79% of consultees for the NI Road Safety Strategy, Session 2007-08, 4th September 2007

²⁸ The NI Road Safety Strategy stated that "DOE will, within the first three years of the strategy, review the voluntary training arrangements and consider the merits of introducing Compulsory Basic Training (CBT) for all new riders on the basis operated in Great Britain."

²⁹ Readers should note that BHP (Brake Horsepower) is not necessarily related to the CC (cubic capacity) of motorcycles. Many lower capacity motorcycles may have a higher BHP than higher capacity machines. This varies depending on the engine characteristics, focus and 'tuning' of the motorcycle.

Table 26 Respondents Perception on whether new riders should be restricted

Restrictions:	Percent of respondents
BHP should be restricted	58.3%
CC should be restricted	32.9%
No we should be able to ride what we want	14.0%
Other	8.1%

114 of respondents had passed their test less than two years ago, therefore would fall within the present 'restricted' BHP limit. Of those riders, 60% agreed that BHP should be restricted, 22% said that cc should be restricted and 23% said motorcyclists should be able to ride what they want³⁰.

The open response field for this question provided opportunity to gather feedback on the licensing issue in Northern Ireland and given the range and level of responses, it is obvious that licensing is a contentious issue among motorcyclists in the Province. 77 motorcyclists answered the question. More than one-third of them indicated that in their opinion there was no point in limiting the BHP nor the CC of motorcycles as restrictions were in many cases either unenforceable or if enforcing restrictions on motorcyclists, then this should equally apply to all road users:

"If restrictions must be used then relevant restrictions should be applied to all road users, not just riders of powered two wheelers"

"It's too long should be based on age - many people illegally remove restrictors anyhow."

More than 20% said they would like to see a graduated licensing scheme introduced in Northern Ireland:

"BHP should be restricted for a documented number of miles, currently you could pass the test then wait two years and get on a large bike with full power, having covered little mileage and not learning about bike control"

"33 BHP is to low. Should be around 60 so as a new rider can ride with experienced riders at a safe pace."

20% said that they would like to see a Direct Access Scheme³¹ for Northern Ireland to bring NI in line with England, Scotland and Wales:

³⁰ Figures add up to more than 100% as this was a multiple response question.

³¹ The Direct Access Scheme is available in England and Wales, which enables a rider aged 21 or more to train and take their test on a larger capacity motorcycle (than the limit of 125cc). The theory behind the scheme is to enable a rider to train and take their motorcycle test on a machine with similar characteristics to the one they may purchase once they pass their test. This in theory bridges the large gap in power and weight of the machine on which riders learn and end up riding in future.

“... there should be a Direct Access option for NI, as in England, to allow riders over 21 to take their test on a big bike and gain immediate access to all big bikes.”

“additional training should allow you to ditch the restrictor sooner. Why is there no direct access in NI 10 years after the 33bhp came in?”

“I think you should be allowed to do an open access upgrade after one year of restricted BHP not a test but riding with an instructor”

“I would like to see a program like England where you can take further test to gain a full license immediately and possible a reduced restricted period. 2 years is too long”

Other respondents felt that the 33bhp limit was too long and riders should have the flexibility given further training to remove the restrictor before the two year limit is reached:

“BHP should only be legally restricted for a short period of time 2 years is far too long, 6 months or so is enough time to get used to a bike. Maybe even after a year legally raise it to 66bhp and after 2 then it can be completely removed, i feel this would be fair.”

10% of respondents indicated that in their opinion, the rider is more of a factor in the equation than the motorcycle, making restrictions on BHP, CC or other irrelevant:

“No point - at some point someone's going to always get a bigger bike. People need to learn how to handle bigger bikes, as these are a hell of a lot different than a 125cc”

“Restricted or not, a fool on a bike is a liability regardless of cc or BHP”.

Rider Behaviour

We asked respondents whether or not they felt that motorcyclists take risks and also whether or not they as motorcyclists take risks when riding on the road³². 52.6% of respondents indicated that they think motorcyclists in general take risks while riding on the road, however only 16% of respondents indicated that they themselves take risks. We recorded the type of risks that respondents outlined:

Table 27 Perceived Risks taken by Motorcyclists in General

	Number	Valid Percent
Overtaking/Filtering	148	36.7
Speed	111	27.5
Everyone takes risks	45	11.2
Riding on roads with car drivers	49	12.2
Riding beyond abilities	26	6.5
Inappropriate clothing	4	1.0
Calculated risks	11	2.7
Inattention	9	2.2

N=403

As the table above outlines, the biggest proportion of respondents feel that motorcyclists in general take risks in overtaking and filtering. Many of the respondents indicated that in their opinion, overtaking on entry to blind corners was particularly prevalent in Northern Ireland. Some of the comments included:

“overtaking inappropriately without appreciating the acceleration capabilities of their bike - either get too fast and can't slow down safely or don't get fast enough to safely complete the manoeuvre”

“... when it comes to overtaking . If one overtakes , then sometimes others follow without making sure is safe.”

More than a quarter of the respondents to this question felt that speed was the main area of risk, with a particular emphasis on sports bike riders. More than 12% felt that simply riding a motorcycle on the roads with other road users was a risk in itself, and more than 11% felt that motorcyclists take no more risks than other road users:

“I think this is a terrible stereotype. Many things bikers do are often seen as aggressive or against Highway Code, but no biker I have ever rode with takes risks deliberately. For example, lane splitting may be seen as a car driver as an invasion of their space or even 'bullying', however a driver who is not confident of their ability to fit through a space is not in

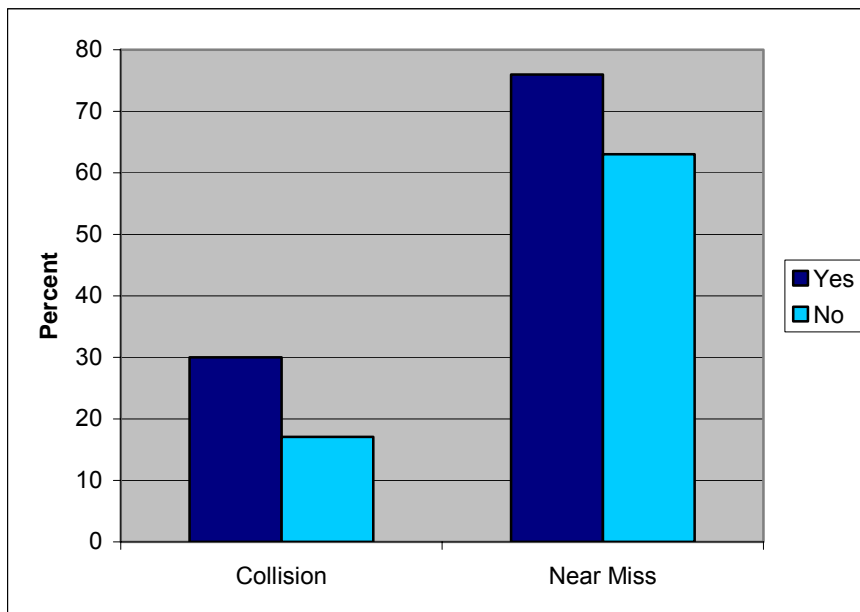
³² A study of ‘Risks and Motorcyclists in Scotland’ (Napier University) highlighted that most riders were aware of, or willing to believe, objective estimates of motorcycling risk. Furthermore, they are willing to accept these levels of risk and few would consider giving up motorcycling because of them. The research suggested that, as a group, motorcyclists do not base their behaviour on grossly under-estimating the risks of motorcycling as an activity.

their right mind going to drive towards anyone. Obviously there are a number of bad eggs... but as someone who rides daily as a commuter I use my bike as a form of transport. I use it to get from A to B, and I do my best to get there alive. If I want to take unnecessary risks I'll take it to a racetrack and leave other people out of harms way."

"... skilled motorcyclists use progressive driving skills which can be perceived as taking risks. Motorcyclists without the necessary skills do take risks in an attempt to "keep up" with the "Jones" especially in groups"

The chart below shows a comparison of those motorcyclists who indicated that they take risks/don't take risks on the road with their involvement in collisions and near misses:

Figure 34 Riders who 'take risks' V Involvement in Collisions/Near Miss



As the chart above shows, the percentage of those who indicated that they 'take risks' on the road who have been involved in a collision in the last three years is higher (30.3%) than those who indicated that in their opinion they do not take risks (17.1%). A higher proportion have been involved in near miss collisions.

Riding under the influence of Alcohol and Drugs:

16% of respondents (151) indicated that they have ridden their motorcycle after having one alcoholic drink, 2% (20) after having 2 drinks and less than 1% (6) after having had three drinks³³. 11% of respondents did not answer the question. Of those who indicated that they had consumed one drink prior to riding their motorcycle, 94% said they would rarely do this, and 5% said they would do this often.

³³ 33% of respondents to research into public attitudes towards drinking and driving (May 2008) think that it is acceptable to rive after one drink (NI Road Safety Problem Profile, 2009).

Less than 1% of respondents indicated that they have ridden their motorcycle under the influence of drugs, 88% said they had not and 11% did not answer the question. Of those respondents who said they had ridden under the influence of drugs (7 respondents), 4 said they would do this rarely, 1 said often and 1 said very often. One person did not specify how often they rode their motorcycle under the influence of drugs.

Crosstabulation to explore whether or not these riders are more likely to be involved in collisions or near miss collisions suggests that 20.5% of those rider who have ridden after having one alcoholic drink have been involved in collisions in the past three years and 64.9% involved in near miss collisions³⁴.

Perceived riding style:

We asked motorcyclists to select at random a list of words that they felt reflected their particular riding style. The table below outlines the response:

Table 28 Self-reported Riding Style V Involvement in Collisions

	Number	Percent of Cases	Collision	Near Miss
Observant	704	83.3%	18.9%	66.0%
Controlled	703	83.2%	19.6%	67.1%
Considerate	549	65.0%	19.4%	65.2%
Relaxed	525	62.1%	20.1%	64.2%
Cautious	479	56.7%	18.0%	68.0%
Fast	225	26.6%	22.3%	70.9%
Cautious	107	12.7%	18.9%	54.3%
Tentative	63	7.5%	23.8%	73.0%
Impatient	62	7.3%	38.7%	74.2%
Slow	46	5.4%	17.4%	58.7%
Inexperienced	41	4.9%	22.0%	72.5%
Aggressive	37	4.4%	32.4%	78.4%
Nervous	24	2.8%	25.0%	87.5%
Erratic	6	.7%	50.0%	50.0%
Careless	5	.6%	80.0%	20.0%
Reckless	3	.4%	66.7%	33.3%

The table shows that the majority of respondents selected the observant, controlled, considerate, relaxed options with more than two-thirds of respondents selecting these words to describe their riding style. While the numbers within the categories are small, a higher percentage of those respondents who selected erratic, careless and reckless had been involved in collisions in the three years prior to the survey. The highest proportions

³⁴ This crosstabulation is not intended to suggest that alcohol was a contributory factor to the collision or near miss in which the motorcyclist was involved.

involved in near misses were those who felt their riding style was nervous, aggressive, inexperienced, impatient and tentative.

Table 29 Motorcycle Clothing normally Worn by Respondents

	Percent of Cases
Full face helmet	91.60%
Gloves with knuckle palm guard	91.10%
Boots with reinforced padding	90.10%
Jacket with reinforced padding	86.50%
Trousers with reinforced padding	77.80%
Full Leathers	27.90%
Hi-visibility jacket/vest/belt	17.10%
Knee Sliders	15.10%
Leather jacket and denim jeans	10.30%
Other equipment	9.80%
Open face helmet	7.30%

N=945

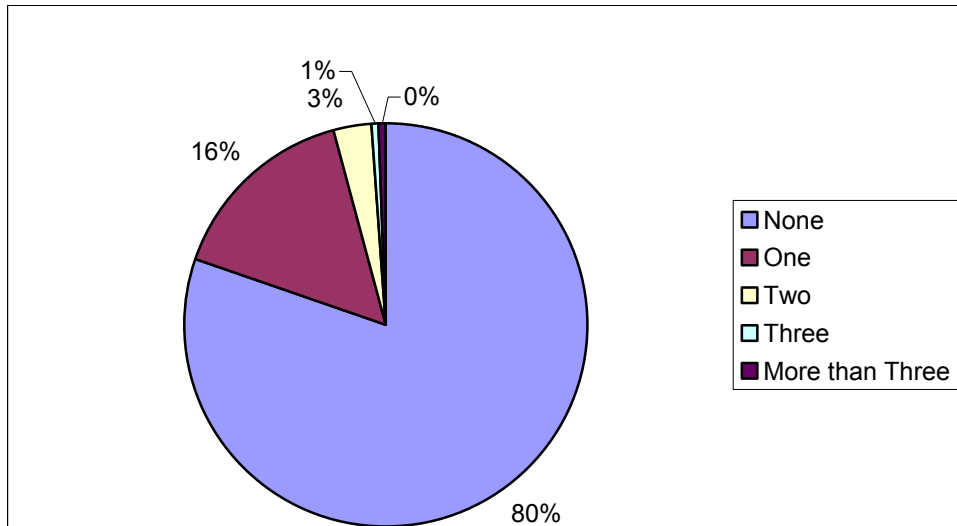
The table above shows the type of clothing normally worn by respondents to the survey. In general, it would appear that motorcyclists are well equipped from a personal clothing perspective.

More than 92% of respondents indicated that they 'always' ride with their headlight on during the day, followed by 3% 'very often' and 3% 'often'. Research completed in Europe^{vi} suggests that if measures are taken to require the use of Daytime Running Lights (DRL) throughout the EU, it could help save between 1,200 and 2,000 road fatalities per year and thus make an important contribution to the European target of saving 25,000 lives per year on European roads. Since 2003, motorcycles sold in Northern Ireland have hardwired headlights, which remain on at all times.

Collisions:

The chart below shows that 80% of respondents to the questionnaire reported having no collisions in the three years preceding the research:

Figure 35 Collisions in Last Three Years



16% had one collision, 3% had two collisions and 1% had three collisions. Of those motorcyclists who reported having collisions, 40% were Single Vehicle Collisions, 59% involved another vehicle and less than 1% involved pedestrians.

In total 173 riders indicated that they had been involved in one or more collisions in the past three years. The table below highlights the type of collision in which the respondent was involved:

Table 30 Type of Collision in which respondent involved

	Number	Valid Percent
Single Vehicle Collision	70	40.7%
Another vehicle involved	101	58.7%
Another road user involved	1	0.6%
No answer	1	
Total	173	

The table below highlights who (in the respondents' opinion) was responsible for the collision and the proportion of motorcyclists involved in the collisions who had completed voluntary training:

Table 31 Responsibility for collision by Voluntary Training Completed

	Number	Valid Percent	Completed training?
Motorcyclist	70	40.7%	60%
Other Driver	92	53.5%	71%
Other road user (e.g. pedestrian)	3	1.7%	67%
Mechanical	6	3.6%	100%
Road	1	0.6%	100%
No answer	1		
Total	173		

Of those who had been responsible for the collision in which they were involved, a lower percentage had completed voluntary training (60% compared to 71% where another vehicle was involved).

The table below highlights the principal causation factor (according to the respondent) for the collision in which they were involved:

Table 32 Principal Causation Factor for Respondent's Collision

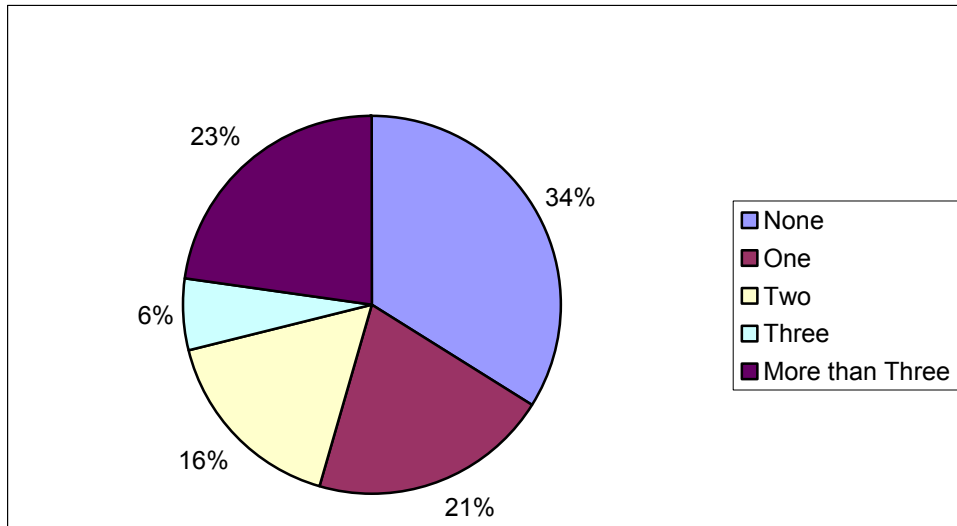
	Frequency	Valid Percent
Inattention	53	31.9
Slippery Road (Diesel and Ice)	38	22.9
Emerging from Side Road	22	13.3
Wrong course/position	10	6.0
Changing lane	10	6.0
Crossing junction	6	3.6
Mechanical failure	6	3.6
Overtaking	5	3.0
U-turning without care	5	3.0
Turing right	3	1.8
Speed	3	1.8
Inexperience	2	1.2
Animal	2	1.2
Missing	8	
Total	173	

Further analysis shows that of those collisions caused by inattention, in those that involved a trained rider, only 35% of the riders were responsible. Of these that involved a non-trained rider, rider responsibility increases to 50%.

Near Miss Collisions:

The chart below shows the proportion of near miss collisions in the past 12 months:

Figure 36 Near Miss Collisions in Past 12 months



It highlights that 66% of respondents have experienced one or more near miss collisions in the 12 months preceding the research³⁵.

The table below highlights the cause of near miss collisions reported by respondents (in the rider’s own opinion):

Table 33 Cause of Near Miss Collision

	Number	Percent of Cases
Inattention	238	45.7%
Emerging from Side Road	160	30.7%
Slippery Road (Diesel and Ice)	47	9.0%
Changing lane	33	6.3%
Speed	23	4.4%
Wrong course/position	15	2.9%
Inexperience	15	2.9%
Animal	4	.8%
U-turning without care	3	.6%
Overtaking	2	.4%
Alcohol or drugs	1	.2%
Mechanical failure	1	.2%

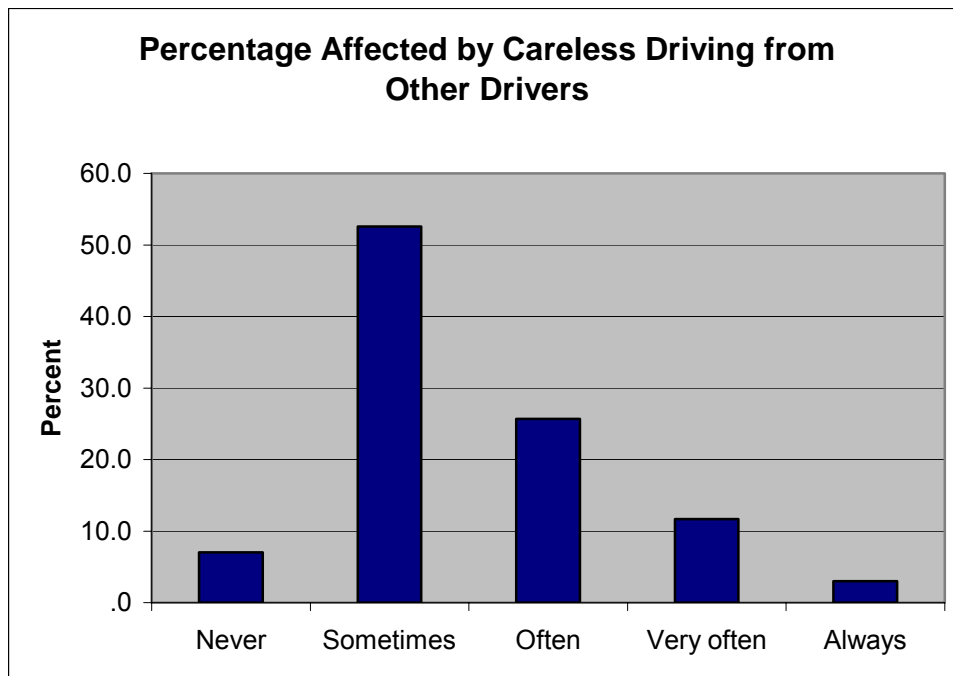
N = 521

³⁵ This compares to 78.2% of respondents to the ‘Near Miss Study of Motorcycles, Study of Motorcycles in Northern Ireland, Southern Ireland and Great Britain, October 2009, Elaine Hardy PhD – Right to Ride Ltd.

The table highlights that the biggest proportion of near miss collisions was as a result of inattention. In the vast majority of cases, respondents simply indicated that their near miss was caused by car drivers not looking or paying attention. A significant proportion of the respondents indicated that other road users inattention was as a result of, or compounded by the use of mobile phones³⁶. Violanti and Marshall estimated that mobile phone use while driving increases the risk of collision by 500%^{vii}.

More than 30% of respondents indicated that their near miss collision was as a result of a car/van or tractor pulling out of a side road. This is sometimes referred to in the motorcycling community as a 'Sorry Mate I Didn't See You' (SMIDSY) near miss collision and has been the focus of research recently in Northern Ireland, Republic of Ireland and Great Britain by 'Right to Ride'³⁷.

Figure 37 Percentage affected by Careless driving from Other Road Users



³⁶ The NI Road Safety Problem Profile highlights that recent research by RAC on Facebook, indicated that as many as 45% of members admitted to texting whilst driving. Research completed in Northern Ireland and the Cross-border Counties by Cooperation and Work Together (CAWT) suggested that over half of all driver interviewed on both sides of the Border admitted using a mobile phone whilst driving (rising to 76% of those aged 18 to 24 years).

³⁷ A Study of Near Miss Collisions, Right to Ride, Elaine Hardy PhD, October 2009

The chart shows that a high percentage of respondents have been affected by careless driving from other road users, 53% 'sometimes', 26% 'often' and almost 12% 'very often'.

Table 34 Respondents Opinion on the Main Causes of Collisions in Northern Ireland

	Percent
Other drivers	86.6%
Motorcyclists	50.1%
Roads	39.6%
Other road users	15.4%
Motorcycles	9.0%

N=945

As outlined above, the biggest percentage of respondents (86.6%) indicated that in their opinion, 'other drivers' are the main cause of collisions involving motorcyclists, followed by 50% indicating motorcyclists themselves and 39.6% suggesting the roads as the main cause of collisions.

"long lay offs over the winter and only riding on good days leave a rider with a low skill level and poor observation skills"

"Motorcyclists take risks because they make assumptions which are theoretically reasonable, but in practice foolish because car drivers are often just car conscious on the road."

"A combination, a lot of bad roads are about with blind corners after long straights with very little warning. Car drivers are usually unaware that bikers are on the road and justify me having a louder exhaust for them to notice me. New motorcyclists or young tend to feel the power of their new big cc bikes before they are able to handle them correctly, racing round corners and realising that stones on a corner can hurt and throw them off the bike. Longer training is needed."

"Some incidents are due to lack of training/experience (experience with a new bike, born again biker, braking midcorner etc). I feel that other road users are a greater cause - I have seen a rider taken off their bike 100yds after a roundabout when someone decided to do a u-turn because they took the wrong exit. I have known a rider pushed into the central reservation by a car driver who changed lanes without checking directly beside them. The majority of things I have seen/experienced lead me to believe that other vehicle users are just not as aware of what is going on around them."

The driving test is too EASY, a monkey could pass it. The training is totally inadequate, there are NO motorway lessons, in fact I say the whole syllabus needs overhauled

road furniture like the new rope barriers does not help

Respondents were asked how, in their opinion, they think that collisions involving motorcycles could be reduced in Northern Ireland. The table below highlights the recorded responses to the question, sorted by percentage of respondents:

Table 35 Respondent's Opinion on how to Reduce Collisions in NI

	N	Percent
Other driver training	306	32.4%
Don't Know/No Answer	229	24.2%
Voluntary/Advanced Motorcycle Training	162	17.1%
Awareness through Advertising	111	11.7%
Training for all road users	100	10.6%
Improve roads	91	9.6%
Enforcement	63	6.7%
Increase Bike/Rider Visibility	26	2.8%
Slow Down	25	2.6%
Through Motorcycle Restrictions	22	2.3%
Subsidise/Incentivise Training	21	2.2%
Improve Motorcycle test	19	2.0%
Ride within capability	4	.4%

The table clearly shows that the biggest percentage of respondents feel that the provision of better training and awareness for other road users (particularly car drivers) would help reduce the number of collisions in Northern Ireland. A significant proportion of these respondents suggested that car drivers should have some exposure to motorcycling prior to passing their car test³⁸. A range of suggestions here included making at least one motorcycle lesson a compulsory element of the car test; providing in-depth training on the level of vulnerability of motorcyclists to car drivers as a part of the test; educating drivers to 'think bike', particularly at junctions, etc. Suggestions included:

"drivers must be shown to look for motorcycles during the test along with a public awareness campaign, motor cyclists should be made aware of dangerous road conditions and how to read the actions of other drivers . Greater understanding & awareness from car users would go a long way. Also, I agree with motorcyclists having to be trained before taking to the roads but the restriction on CC is counterproductive in my opinion."

"Improve the roads, improve the education of car drivers (in my mind the only good car driver is a biker-you can spot them a mile off) and when middle aged men get divorced make it illegal to sell them a bike!"

A significant proportion of respondents (24%) felt they did not know how the number of collisions could be reduced, or they thought that it simply was not possible to reduce the number of collisions. More than 17% felt that there

³⁸ MAG (Motorcycle Action Group) previously produced position papers encouraging driving schools and instructors to adopt action plans for promoting motorcycle awareness among learner drivers. 'The Art of Motorcycle Awareness, A Guide for Drive Schools and Driving Instructors', 'How Close is Too Close', Car Collisions and Motorcycles, March 2006.

should be an increased emphasis or consolidation of voluntary and advanced training for motorcyclists to enable them to increase their skills, hazard awareness and the ability to cope with unexpected circumstances. Almost 12% of respondents felt that increasing awareness through the media and advertising would help reduce the number of collisions in Northern Ireland.

Overall, the range and depth of responses to this question from motorcyclists appears to underscore the fact that there would appear to be no one single underlying factor for the high number of collisions involving motorcycles.

“Public awareness advertisements and Bikesafe continuing to grow and make motorcyclists feel a shared responsibility for riding professionally. To adopt an attitude that they ought to be the Gentlemen of the road by example.”

“As it's impossible to change other road users (e.g. car drivers), motorcyclists must change. A better training and testing system is needed. For example the manoeuvres test is mostly based on very low speed riding (under 5mph). While I believe these are important basic skills to learn I don't see how someone who can do a U-turn on a 125cc bike without putting their foot down is less likely to be involved in a collision than another rider that dabbled his/her foot” during the same manoeuvre. I know there is a 50kph swerve avoidance, which is very easy, and an emergency stop from the same speed but the learners know the stop is coming and are ready for it. The "road riding" part of the test is missing some very important aspects of riding in my opinion. Most of the road ride takes place around town in 20/30/40mph zones with maybe a short run on a dual carriage way or A-road. I don't know the accident statistics but I'd guess that most serious accidents don't happen in towns at speeds of 30mph and below. I think the more serious accidents are likely to happen on rural B-roads when motorcyclists are riding too fast and lose control (e.g. in a tightening corner because they have not be taught how to counter steer or late apex to give maximum view round the bend). The other area were I see potential for serious accidents, which is not really covered by the road test, is overtaking. Basically 45mph is not fast enough for a learner to ever need to overtake, so after passing his/her test, overtaking is a new experience they will have to learn for themselves. Some just take a glance in the mirror and forget about their blind spots, some forget about the other vehicles blind spots. Personally I think learners should be allowed to do 60mph when accompanied by an instructor/examiner and take in more rural roads on test (maybe a 50/50 split between town and country). Moving on to the actual test vehicle, typically an extremely basic 125cc bike weighing about 100kg a top speed barely over 60mph and around 12hp.”

Condition of the roads in Northern Ireland:

Table 36 Condition of the roads in Northern Ireland

	Valid Percent
Very good	3.5%
Good	14.4%
OK	30.4%
Poor	34.4%
Very Poor	17.3%

N=793

526 respondents went on to give their rationale for selecting that the roads were either on good or poor conditions. The table below outlined their responses:

Table 37 Reason for Opinion on Road Conditions

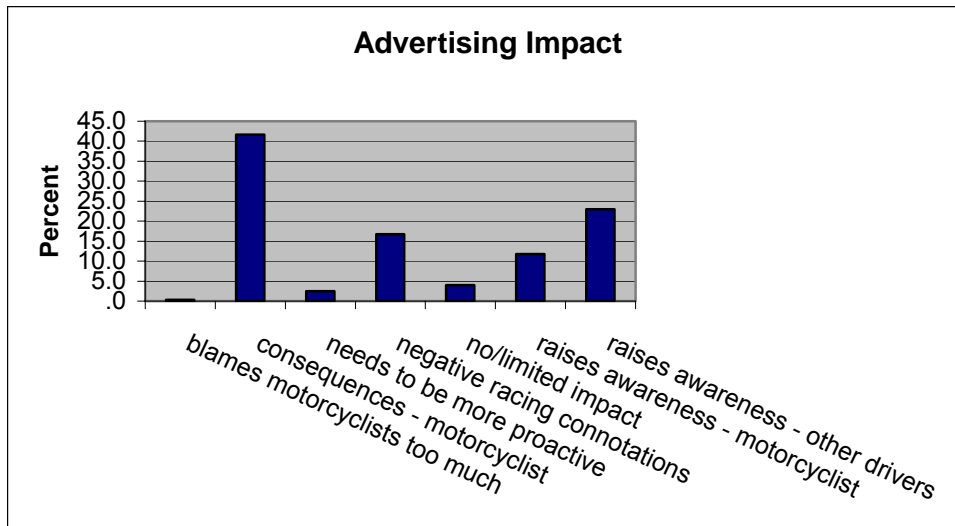
	Number	Percent of Cases
Road Repairs/Digging	120	22.8%
Potholes	120	22.8%
Poor/Uneven Surface	101	19.2%
Some good/Some Poor	91	17.3%
Slippery/Badly placed Gratings	90	17.1%
Spillages/Dirt on Roads	84	16.0%
Well maintained	71	13.5%
'Tar and Chip'	53	10.1%
Overbanding	40	7.6%
Not as good as Mainland EU	20	3.8%
Roadside 'Safety' Features	12	2.3%
Poor signage/road markings	7	1.3%
Volume of traffic	2	.4%
Total response	811	

Cable companies have made a mess of a lot of roads, and man-hole covers need to be anti-slip. If you dig up a section of road it should be legally enforced that you have to return it to a smooth and proper state.

Advertising:

53% of respondents indicated that they think advertising has an impact on Road Safety for motorcyclists.

Figure 38 Impact of Advertising on Respondents



The chart below shows the reasons why motorcyclist think that advertising has an impact on rider and other driver behaviours:

More than 41% of motorcyclists think that advertising has an impact through reminding riders about the dangers and consequences of their vulnerability. Motorcyclists

"It does promote some reflection on riding tendencies. However, it needs to be constant, it needs to resist the urge to be too dramatic or shocking otherwise it stops being taken seriously. Also, it needs to avoid making motorcyclists feeling like they are solely to blame. There is some shared responsibility here - motorcyclists are certainly no angels however other road users MUST be made aware that they have a responsibility to those who do choose to travel by motorcycle, who are among the most vulnerable groups of road users."

"Makes younger first time motorcycles be aware of road dangers , most of the older more experienced riders know them already "

"Motorcycle advertising, especially those showing the after effects of collision leave an impression that does make the biker think "

"it can make someone stop and think about their behaviour"

"On some maybe, but if it saves even one life it be worth it for the family involved. "

"Some of the recent motorcycle safety adverts have been very good. However everyone remembers the old advert Think once Think Twice Think Bike."

“Some riders take exception and think the riders are blamed wrongly, this means the advert can be counterproductive”

“The only motorcycle advertising I see is either the Think Bike campaign which is very good or the one where the fella goes for a jolly and ends up his wife feeding him through a straw. I think this fictional rider represents a real percentage of the biker population and it is well targeted. But I also think that while the majority of road users have 4 wheels, they should be targeted in campaigns to increase awareness of other road users - not just bikers; everyone. If they know who's in front, behind, to the left and right of them then it doesn't matter what they're driving, they are aware and less likely to undertake a dangerous manoeuvre.”

Almost 17% of motorcyclists think that advertising has a negative impact on riding behaviours through promotion of a 'speed' and 'racing' culture. The belief that wider influencing factors in the motorcycle culture can have more of an impact on riding behaviour than the targeted advertising campaign was also expressed quite forcibly by motorcyclists:

It could be said that adverts portray a licence to do as you please regardless, at the end of the day its commonsense that will reduce accidents or bravado

Its all about performance and speed, which is why i no longer bother with the mainstream bike magazines.

Overall there is very little motorcycle advertising out there to change opinion. Certainly not mainstream. In Northern Ireland the fact sports bike riders want to use public roads like they are one of the Dunlop's doesn't help. Possibly free/subsidised track days with instructors would go some way to assist people in education on how to ride their bikes correctly

Main findings from this Section:

- Average age of respondents to the motorcycle casualties research was 41 years of age. 92% were male and 8 female. The biggest proportion of respondents was 'Professional' (36%) followed by 'Manager/Senior Officials' (17%) and 'Other' (16%). Almost 20% of motorcyclists owned Sports Tourers, followed by 16% Adventure Tourers, 13% Naked/Street Bikes, 10% Tourer and more than 10% each for Sport and Super Sport.
- 19.8% had been involved in collisions in the three years preceding the research and 66% involved in near misses in the 12 months preceding the research. Scooter, naked/street bike, sport and super sport rider had been involved in a higher than average proportion of collisions.
- A higher than average proportion of motorcyclists riding machines with 100bhp to 150bhp had been involved in collisions and a higher proportion of those riding machines with less than 50bhp had experienced near misses.
- While a higher proportion of those who ride their motorcycles frequently have been involved in collisions and near misses, responsibility for the

collision in which motorcyclists have been involved decreases with frequency ridden.

- A slightly higher proportion of those who ride alone have been involved in collisions over the past three years (21.4% compared to 20.2% riding with friends and 20.4% riding with a club). However a higher percentage of those riding with friends or with a club have experienced near miss collisions in the past 12 months.
- More than 35% of respondents indicated that they are currently members of a motorcycling group or organisation and almost 50% of respondents indicated that they are members of a motorcycling-based website forum.
- On average, questionnaire respondents had 16 years experience riding motorcycles since passing their test. Less than half of the motorcyclists who passed their test more than 21 years ago have regularly ridden a motorcycle since passing their test.
- A slightly higher proportion of riders who had completed motorcycle training/assessment were involved in collisions. Riders who had completed motorcycle training/assessment and ride frequently were significantly less likely to have been responsible for a collision in which they have been involved.
- More than 28% of respondents highlighted that they have not participated in voluntary training as it 'costs too much' and more than 22% because they 'did not know about it'.
- While training is widely perceived to be the one area that people believe will make a difference to road safety, the figures presented suggest that while training may reduce the risk of motorcycle riders causing collisions, it may not reduce the overall number of motorcycle collisions in Northern Ireland.
- 85% of respondents felt that all new riders should complete Compulsory Basic Training; 58% agreed that new riders should be restricted by brake horse power; 33% felt that cubic capacity should be restricted, and 14% felt motorcyclists should be able to ride what they want.
- More than half of respondents feel that motorcyclists in general take risks (52.6%), while 16% felt that they themselves took risks while riding on the road. The biggest proportion of respondents felt that motorcyclists take risks in overtaking and filtering. A higher proportion of motorcyclists who indicated they 'take risks' on the roads were involved in collisions (30% compared to 17% who don't).
- 16% of respondents indicated that they have ridden their motorcycle after having one alcoholic drink, 2% after having 2 drinks and less than

1% after having had three drinks. Less than 1% of respondents indicated that they have ridden their motorcycle under the influence of drugs. 20.5% of those riders who have ridden after having one alcoholic drink have been involved in collisions in the past three years.

- 41% of those motorcyclists who had been involved in a collision indicated that they were responsible for the collision. The main principal causation factors (in the rider's opinion) were inattention, slippery roads, and vehicle emerging from a side road.
- 66% of respondents had experience one of more near misses in the previous 12 months – more than 75% of which were caused by inattention, or another vehicle emerging from a side road.
- 86.6% of motorcyclists feel that 'other drivers' are the main causes of collision in Northern Ireland, followed by 50% indicating 'motorcyclists' themselves, almost 40% 'roads', and 15% 'other road users'.
- The biggest proportion of respondents (32.4%) believe that providing training to other drivers (for example as part of the car test) would help reduce the number of motorcycle collisions in Northern Ireland. Almost one-quarter of respondents indicated that they did not know how the number of collisions could be reduced, and 17% felt that voluntary/advanced training would help reduce collisions.
- 53% of respondents indicated that they think advertising has an impact on Road Safety for motorcyclists. 41% of motorcyclists think that advertising has an impact through reminding riders about the dangers and consequences of their vulnerability. Almost 17% of motorcyclists think that advertising (mainly manufacturers) has a negative impact on riding behaviours through promotion of a 'speed' and 'racing' culture.

Section 7 Other Driver' behaviour and attitude survey:

This survey aimed to gather an understanding of drivers attitudes and behaviour towards motorcyclists given the fact that our analysis of the PSNI Collision Reports Forms suggest that car drivers were responsible for 60% of the collisions we analysed over the 10 year period from 1998-2007.

Our research shows that emerging from a minor road without care and turning right without care accounted for over a quarter of all collisions. In these cases, the other road users were primarily responsible for the collision. Similar findings in a study by Clark et al, suggested that right of way violations by other motorists led to the most motorcycle accidents^{viii}. Recent research completed by the University of Nottingham^{ix}, suggested that experience and exposure to motorcycles feed into the drivers' schemata for dealing with a variety of driving situations. "Schemata represent the accumulated understanding that an individual has about any situation, and provide guidelines and self-imposed rules for how one should behave in those situations. If the schemata of drivers is sub-optimal, then they potentially have less awareness of when and where to look, what to process (e.g. they may have higher thresholds for spotting motorcycles), and what cues to use when making a judgment about the risk posed by an approaching motorcycle".

The research completed by the University of Nottingham suggested that a framework describing the factors that influence the detection, discrimination and appraisal of a motorcycle could be categorised in two mains types, top-down issues and bottom-up issues. On agreement from the original author, we based the other road users attitudes and behaviour survey on the questions and scale developed by the University to enable comparison with data where possible. The Questionnaire was structured around the following framework:

Top down issues:

- Drivers' attitudes – the conceptions and misconceptions that drivers may hold about driving. These attitudes could concern themselves (e.g. 'I'm an excellent driver'; 'I can safely maintain a short headway') or other drivers (e.g. 'Motorcyclists are risk-takers'), or the environment (e.g. 'These traffic lights change to red too quickly. You have to jump them whenever possible').
- Drivers' knowledge – a driver's understanding of the true nature of the world (or lack of it) will inform his or her actions and help shape attitudes.
- Drivers' skills and strategies – driving skills and strategies are developed through training, practice and exposure. These skills may include knowing where to look while performing certain manoeuvres, how to handle the vehicle, and how to make informed decisions about specific driving situations.

Bottom up issues:

- Motorcycle detection and conspicuity – the degree to which motorcyclists are seen by other traffic users
- Experience and practice with particular road contexts,
- Spatial frequency of motorcycles (do drivers see motorcycles), expectations and previous exposure.

A number of Focus Group discussions held by Millward Brown for DOENI Road Safety Division in January 2008³⁹, suggested that, in the opinion of road users consulted, motorcyclists were very low down the consideration list of participants⁴⁰, were presumed to be very vulnerable, sometimes irritating and in some cases were seen as 'Phantoms of the Road'. This perception was driven by road users feelings about the invisibility of the person actually riding the motorcycle, their untouchability and speed, resulting in a dehumanisation of motorcyclists. The research steering group therefore requested within this survey to assess other road users opinions on the 'typical motorcyclist' in terms of age, gender and occupation profile.

Participants:

There was a total return on the questionnaire of 213 responses; including 46 completed face-to-face and 167 on-line. Responses were divided up into four groups by experience of driving. As a control group, we issued on-line questionnaires to those motorcyclists who completed the wider Motorcycle Casualties NI Survey. 115 questionnaires were issued to those survey respondents who had more than 10 years motorcycle experience, who rode their motorcycle more frequently than once per week and who also drove a car. 85 motorcyclists returned the questionnaire (a response rate of 75%). 128 questionnaires were completed by 'other road users' – drivers with less than 2 year experience, drivers with 2-10 years experience, and drivers with more than 10 year experience. 11% of the other road user respondents had driven for less than 2 years, 15% for 2-10 years and 74% for more than 10 years. Of those responding to the general road users questionnaire, 35% of them rode motorcycles, and 65% (n=83) did not.

Of those who did not ride motorcycles, 51% indicated that they had no interest in motorcycles, 15% said they had a friend who rides a motorcycle and 22% said they have a relative who rides a motorcycle.

³⁹ Research completed in preparation for the development of road safety advertising directed at creating awareness of motorcycling among other road users.

⁴⁰ Age range 17-44, all male, full licence holders, no involvement in KSI's in past two years

Motorcycle Related Items:

Each question in this section of the questionnaire had a seven-point scale (ranging from 1= Disagree Very Strongly, to 7 = Agree Very Strongly). Respondents were asked to choose between 1 and 7 on the scale, the answer that best fitted their opinion.

Two initial questions were asked to outline drivers feeling toward driving in general and a proxy indicator of the degree to which drivers make themselves aware of their surroundings:

Table 38 Drivers feelings about driving

	All Road Users	Gold Standard Respondents	Don't ride a M'cycle	No Interest in M'cycling
I do find driving a car is enjoyable and rewarding.	5.2	5.0	5.2	4.9
I perform all appropriate visual checks when driving or riding, e.g. mirror use, blind-spot checks, etc.	5.8	6.0	5.5	5.3

The table outlines that the average rating for finding driving enjoyable and rewarding was 5.17 (5=Agree and 6=Strongly Agree). The lowest average rating in this category was from those respondents who indicated that they have no interest in motorcycling.

In terms of the second statement, the average scores illustrate that the Gold Standard Control Group most strongly agreed that they perform all casual checks when driving or riding. This would appear to confirm the assumption that experienced motorcyclists who drive cars would tend to be more aware of their surroundings than those who do not.

Six statements were chosen to test the perceptual skills of road users in relation to motorcycling. The table below outlines the average response to each of the questions, cross-tabulated by each of the respondents category:

Table 39 Average Score for Perceptual Skills by Road User Type

	All Road Users	Gold Standard Respondents	Don't ride a M'cycle	No Interest in M'cycling
It is difficult to estimate the speed of approaching motorcycles while waiting to turn at a junction onto a main carriageway	4.2	4.2	4.4	4.6
When waiting to turn at a junction onto a main carriageway I find that approaching motorcycles are as easy to spot as approaching cars	3.8	3.8	3.7	3.8

	All Road Users	Gold Standard Respondents	Don't ride a M'cycle	No Interest in M'cycling
Motorcycles are as easy to see at night as cars	3.9	4.0	3.5	3.6
On the open road you can be suddenly surprised by the appearance of a motorcycle coming from behind you	4.6	4.5	4.9	5.1
Motorcycles are easily hidden from view by parked vehicles and other parts of the road environment, e.g. buildings or overgrown vegetation	4.8	4.9	4.9	4.9
When in slow moving traffic I am often surprised by motorcyclists filtering through the traffic	3.6	3.2	4.5	4.9

The table above shows that respondents who do not ride a motorcycle tended to agree more strongly with the statements presented in relation to perceptual skills. This was more apparent in some of the statements than others. It is interesting to note that one statement that showed a significant degree of variance from the Control group to those who do not ride motorcycles, or have no interest at all in motorcycles, was the statement in relation to the level of surprise with motorcycles filtering through traffic. In this statement, the average score in the control group was 3.16 (closer to 3 = 'Disagree' than 4 = 'Neither'). The average score for those who do not ride motorcycles was 4.54 (just over halfway between Agree and Strongly Agree) and for those who have no interest in motorcycles 4.87 (close to Strongly Agree).

Table 40 Average Score for Basic Motorcycle Knowledge Statements by Road UserType

	All Road Users	Gold Standard Respondents	Don't ride a M'cycle	No Interest in M'cycling
It is easier for motorcyclists to make sudden swerves to avoid an accident than car drivers	3.3	2.9	3.7	3.9
Motorcyclists are allowed to 'filter' past stationary or slow moving traffic.	4.9	5.4	3.8	3.4

The table above highlights that those who do not ride a motorcycle or those who have no interest in motorcycling believe more strongly that it is easier for a motorcycle to swerve to avoid a collision than car drivers. This is in contrast with the views expressed by the control group who have more than 10 years experience of riding and driving both types of vehicles. This would suggest a lack of understanding and misplaced perception on the part of car drivers in relation to the physical behaviours of a motorcycle in a potential collision/near miss situation.

The second statement focuses on the contentious issue of 'filtering' and the degree to which respondents agree that motorcyclists are allowed to filter past stationary or slow moving traffic. Control Group respondents agreed more

strongly that motorcyclists are allowed to filter past stationary or slow moving traffic than those who do not ride a motorcycle and those who have no interest in motorcycling.

Table 41 Average Score for Empathetic Attitudes towards Motorcycling by Road User Type

	All Road Users	Gold Standard Respondents	Don't ride a M'cycle	No Interest in M'cycling
I do (or expect that I would) find riding a motorcycle is enjoyable and rewarding	5.9	6.7	4.7	3.5
The average motorcyclist takes greater precautions than the average car driver in wet weather conditions	5.9	6.4	4.9	4.7
Motorcycles can be more difficult to spot in interweaving streams of fast moving traffic than under normal driving conditions.	5.0	5.0	5.2	5.1
I have similar personal characteristics to the average motorcyclist. (This is regardless of whether you actually ride a motorcycle yourself).	4.5	4.7	3.8	3.4
Motorcycles are usually easy to spot even against a 'cluttered' background (containing road signs, adverts, etc.)	3.5	3.5	3.4	3.3

The table above shows that the Control Group have a significantly higher degree of empathy towards motorcycling than those who do not. This in itself is not surprising however the fact that there is a consistent difference between those who do not ride a motorcycle and those who have not interest at all in motorcycling is notable.

Table 42 Average Score for Negative Attitudes towards Motorcyclists by Road User Type

	All Road Users	Gold Standard Respondents	Don't ride a M'cycle	No Interest in M'cycling
It is easier to pass the current motorcycle test than the current car driving test.	2.8	2.6	3.5	3.8
It costs less to repair the average motorcycle after a minor accident, compared with an average car	3.1	2.5	3.8	4.0
When riding a motorcycle, taking risks is part of the thrill	3.1	2.9	3.4	3.1
Motorcyclists tend to have headlights on more often than car drivers in the daytime to increase visibility	5.8	6.2	5.1	4.6
Other motorists should take extra care to look for motorcyclists	6.1	6.5	5.4	5.1
Car drivers are typically more law-abiding than motorcyclists	2.9	2.6	3.4	3.6
When a car and a motorcycle collide it is typically the fault of the motorcyclist	2.5	2.2	3.0	3.2

	All Road Users	Gold Standard Respondents	Don't ride a M'cycle	No Interest in M'cycling
Motorcyclists often perform manoeuvres that are risky or inappropriate	4.3	4.1	4.7	4.8

Again Table 4 shows a clear distinction between the degree to which respondents agreed with negatively-loaded attitude statements. Quite a marked difference between the respondents in relation to the statement “It costs less to repair the average motorcycle after a minor accident, compared with an average car”, “When a car and a motorcycle collide it is typically the fault of the motorcyclist”, and “Motorcyclists often perform manoeuvres that are risky or inappropriate”.

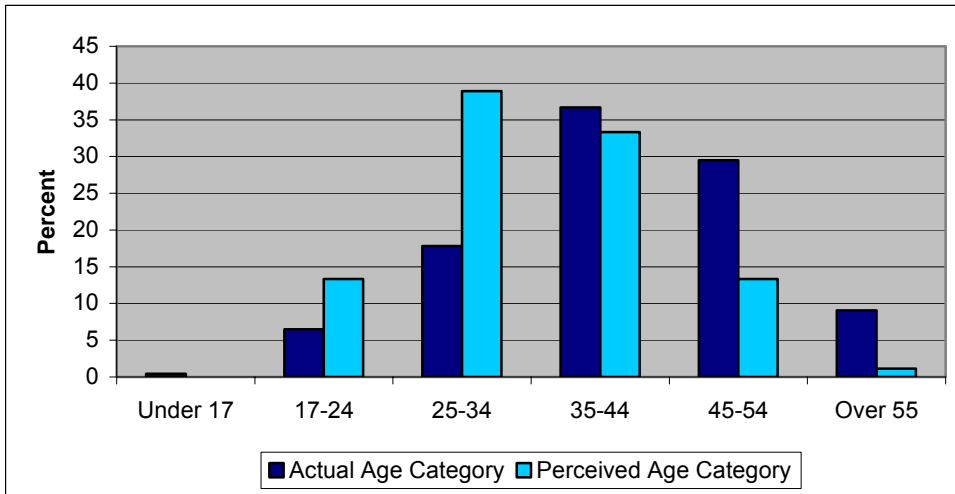
Perceived Demographic Profile:

We asked a number of questions within the research to determine what the perceived demographic profile of the typical motorcyclists was throughout the general road user population. There was a degree of negative feedback from respondents in relation to the inclusion of these questions in the research, centring on the fact that many respondents felt there was no such thing as a typical motorcyclist, nor was it possible to determine for example what their occupation might be. We decided to include the questions however on the basis of the research previously commissioned by DOENI (Millward Brown for DOENI Road Safety Division, January 2008) which suggested that a contributory factor to the lack of empathy shown towards motorcyclists was a degree of dehumanisation from the general road using population in Northern Ireland.

While we accept that the responses to the questions are based on opinion, the responses did show a significant detachment from the actual demographic profile of respondents to the Motorcycle Casualties NI Survey (See Section 6 of this report).

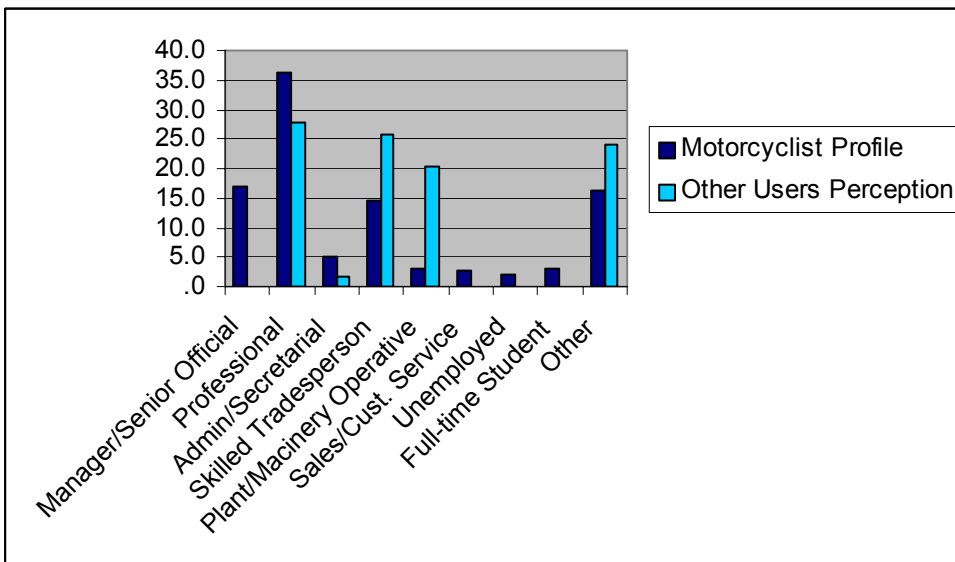
100% of road users felt that the ‘typical’ motorcyclist was male and had an average age of 33 years. The average age of respondents to the Motorcycle Casualties NI Survey was 41 years of age. The chart below illustrates the variance between the perceived age ranges from both surveys:

Figure 39 Comparison of Perceived Motorcyclists Age Range V Motorcycle Casualties NI Survey



The chart clearly shows that general road users perceive the age profile for the average motorcyclist to be younger than that actually returned in the responses to the Motorcycle Casualties NI Survey. Almost 40% of respondents felt that the average motorcyclist would be in the 25-34 age category, while the actual percentage in the Motorcyclist survey was 27%. Moreover, only 1% of respondents felt that the average motorcyclist would be aged over 55 years of age, while 9% of Motorcyclists responding to the main motorcycle survey were in this category.

Figure 40 Comparison of Perceived Occupation V Motorcycle Casualties NI Survey



The chart above shows a comparison between the actual occupation profiles of motorcyclists responding to the Motorcycle Casualties NI Research with the perceived occupation profile of a typical motorcyclist as determined by those who answered the Road Users Questionnaire⁴¹.

⁴¹ Control group Participants have been removed from the sample for this analysis.

General Driver Behaviour:

Using the internationally recognised Driver Behaviour Questionnaire, we explored general driving behaviour on scales that have been validated by the University of Manchester which could then be related to motorcycle items. Using this scale, drivers are asked to estimate how often they engaged in the described activities, ranging from 'Never' to 'Nearly Always'. The scale included 8 violations, 11 errors and 8 lapses. We added 2 scales to the violations category to assess respondent behaviour in relation to driving under the influence of drinking or drugs.

Table 43 Driving Lapses by Road User Type

Lapses	All Respondents	Gold Standard	Don't ride a m'cycle	No Interest in m'cycling
Hit something when reversing that you had not previously seen	1.5	1.4	1.7	1.7
Intending to drive to destination A, you "wake up" to find yourself on the road to destination B	1.7	1.5	1.8	2.0
Get into the wrong lane approaching a roundabout or a junction	2.2	1.9	2.3	2.5
Switch one thing, such as the headlights, when you meant to switch on something else, such as the wipers	1.7	1.5	1.9	2.1
Attempt to drive away from the traffic lights in third gear	1.5	1.3	1.5	1.7
Forget where you left your car in a car park	2.1	1.6	2.2	2.5
Misread the signs and exit from a roundabout on the wrong road	1.9	1.8	2.0	2.0
Realize that you have no clear recollection of the road along which you have just been travelling	2.0	2.0	2.2	2.1

The table above shows that in all eight of the scales measuring driving lapses, those drivers who have more than 10 years experience in driving a car or motorcycle report less frequent lapses of concentration on the roads.

Table 44 Driving Violations by Road User Type

Violations	All Respondents	Gold Standard	Don't ride a m'cycle	No Interest in m'cycling
Pull out of a junction so far that the driver with right of way has to stop and let you out	1.6	1.3	1.7	1.8
Disregard the speed limit on a residential road	2.1	1.7	2.2	2.2
Stay in a motorway lane that you know will be closed ahead until the last minute before forcing your way into the other lane	1.5	1.3	1.4	1.5
Overtake a slow driver on the inside	1.8	1.7	1.8	1.8
Race away from traffic lights with the intention of beating the driver next to you	1.9	1.6	1.8	1.7
Drive so close to the car in front that it would be difficult to stop in an emergency	1.5	1.4	1.6	1.5
Cross a junction knowing that the traffic lights have already turned against you	1.6	1.2	1.6	1.7
Disregard the speed limit on a motorway	2.6	2.7	2.4	2.3
Sound your horn to indicate your annoyance to another road user	2.2	2.1	2.1	2.1
Become angered by another driver and give chase with the intention of giving him/her a piece of your mind	1.2	1.2	1.2	1.2
Become angered by a certain type of a driver and indicate your hostility by whatever means you can	1.9	1.8	1.9	1.9
<i>Drive your vehicle after having one or more drinks⁴²</i>	1.3	1.2	1.3	1.1
<i>Drive your vehicle under the influence of drugs</i>	1.1	1.0	1.1	1.2

The table above shows that in almost all eleven of the scales measuring driving violations, those drivers who have more than 10 years experience in driving a car or motorcycle report less frequent occurrences of violations on the roads. It is interesting to note that those who do not ride a motorcycle reported higher frequency of speeding in a residential area. Conversely, Gold Standard Respondents reported disregarding the speed limit on a motorway on a more frequent basis.

⁴² Both of the scales in italics were introduced at the request of the steering group and were not included in the original University of Nottingham research

Table 45 Driving Errors by Road User Type

Errors	All Respondents	Gold Standard	Don't ride a m'cycle	No Interest in m'cycling
Queuing to turn left onto a main road, you pay such close attention to the main stream of traffic that you nearly hit the car in front of you	1.5	1.3	1.5	1.6
Fail to notice that pedestrians are crossing when turning into a side street from a main road	1.4	1.2	1.5	1.5
Fail to check your rear-view mirror before pulling out, changing lanes, etc.	1.5	1.3	1.6	1.6
Brake too quickly on a slippery road or steer the wrong way in a skid	1.4	1.3	1.5	1.6
On turning left nearly hit a cyclist who has come up on your inside	1.2	1.1	1.3	1.4
Miss "Give Way" signs and narrowly avoid colliding with traffic having right of way	1.2	1.1	1.3	1.3
Attempt to overtake someone that you had not noticed to be signalling a right turn	1.3	1.2	1.3	1.3
Underestimate the speed of an oncoming vehicle when overtaking	1.6	1.5	1.6	1.8

The table above shows that driving errors were consistently higher for those who do not ride a motorcycle, than the Gold Standard respondents.

Main Findings from this Section:

- General road users perceive the age profile for the average motorcyclist to be younger than that actually returned in the responses to the Motorcycle Casualties NI Survey. General road users also perceive the highest proportion of motorcyclists to be skilled tradesmen, rather than the actual of professional and managerial.
- Six statements were chosen to test the perceptual skills of road users in relation to motorcycling. Respondents who do not ride motorcycles tended to agree more strongly with the statements which were negatively orientated in terms of motorcycling, such as 'It is difficult to estimate the speed of approaching motorcycles while waiting to turn at a junction onto a main carriageway', and 'When in slow moving traffic I am often surprised by motorcyclists filtering through the traffic'
- Those who do not ride a motorcycle or those who have no interest in motorcycling believe more strongly that it is easier for a motorcycle to swerve to avoid a collision than car drivers.
- Five statements suggesting empathetic attitudes towards motorcycling were resented to respondents. The Control Group had a significantly higher degree of empathy towards motorcycling than those who do not. This in itself is not surprising however the fact that there is a consistent

difference between those who do not ride a motorcycle and those who have not interest at all in motorcycling is notable.

- There was a clear distinction between the degree to which respondents agreed with negatively loaded attitude statements. Quite a marked difference between the respondents in relation to the statement “It costs less to repair the average motorcycle after a minor accident, compared with an average car”, “When a car and a motorcycle collide it is typically the fault of the motorcyclist”, and “Motorcyclists often perform manoeuvres that are risky or inappropriate”.
- Using the internationally recognised Driver Behaviour Questionnaire, drivers are asked to estimate how often they engaged in driving violations, errors and lapses, ranging from ‘Never’ to ‘Nearly Always’. In the vast majority of cases, those drivers who had more than 10 years experience in driving a car or motorcycle report less frequent lapses of concentration, errors and violations on the roads

Section 8 Stakeholder Interviews and Focus Group feedback:

This section presents the results of two focus group discussions and a range of stakeholder interviews. These were designed to explore the data gathered through the statistical and primary research described above and in discussion with industry experts, identify the likely causes, influencing factors and any common trends, patterns and characteristics of motorcycle collisions and casualties in Northern Ireland. The discussions also focussed on possible options to help reduce the number of casualties which could be integrated into the new Road Safety Strategy.

A range of stakeholders were consulted from across the motorcycle industry and community including representatives from government departments, motorcycle traders, motorcycle groups, on-line motorcycle forums, police officers, Northern Ireland Ambulance Service, Northern Ireland Fire and Rescue Service, a motorcycle lobby group, Institute of Advance Motorists⁴³ motorcycle group and motorcycle promoters. A list of those organisations consulted is included in Appendix 3 of this report.

Six stakeholders attended the focus group with the Motorcycle Retailers Association and 13 stakeholders attended a stakeholders focus group held in DOE Clarence Court prior to completion of the draft report.

7.1 General Feedback on the results of questionnaires and statistical analysis:

Throughout the various stages of the research, we were pleased with the enthusiasm with which this research had been embraced by all sections of the motorcycling community. One of the research Steering Group Members commented on this level of enthusiasm:

"I think the level of response we have had to this research is tremendous and it just shows the thirst that is out there in the motorcycling community to have an input into roads safety measures for their own community throughout the Province. It is excellent to have this level of research available now on which we can start to hopefully build a strategy for motorcycling in Northern Ireland."

Across all of the stakeholders we interviewed on a one-to-one basis and those who participated in the focus group discussion, there was general agreement that the results of the research and the questionnaire reflected the views that those who have a stakeholding interest in the motorcycling community would have expected to see come forward. There were some issues however that surprised stakeholders:

"I think myself in the work we have done in the UK, Europe, and indeed globally, that NI is no surprise. The figures basically fit in with everything else that we have looked at in Europe."

⁴³ A road safety charity dedicated to increasing skills for road users, raising driving and riding standards and helping to save lives on the roads.

Northern Ireland is not unique in any particular regard. I think maybe the only real difference and surprise in what we have seen in the data was the level of alcohol consumption of motorcyclists. It is higher than what we would have expected."

Another of the stakeholders agreed that the proportion of respondents admitting to riding their motorcycle after having one alcoholic drink was higher than they expected to see:

"The alcohol figure surprises me, I would have thought it would be lower. I just have a feeling that motorcycling is a dangerous enough mode of transport and there are so many factors involved in a collision that introducing alcohol into the equation is quite high."

The age group of casualties in the PSNI collision and casualty data however did appear to surprise some of the stakeholders both within government and within the motorcycling clubs and forum who were consulted in the research. One of the stakeholders commented:

"A lot of perceptions we have are of 'power-rangers' and Sunday riders and that these two bunches make up the majority of motorcyclists – that is not what the data has shown. As a motorcyclist I have done a lot of miles in a lot of years and certainly when you are out there riding, there are occasions when you get passed by people on bikes and certainly from the way some of them handle their machinery, you would think they are novices and you always think that those are the type of people who end up as statistics on down the line. The research has shown however that it is a much widespread problem than that and the age profile is certainly something that has surprised me in the research."

The attitude of car drivers towards motorcyclists and motorcycling was discussed at the focus group and there was agreement that some motorcyclists have to take responsibility for contributing to that attitude:

"One of the things that came out was the distinction between car drivers and motorcyclists. There is a 'them and us' attitude between both parties and this is not helped by motorcyclists who do not have the experience or attitude in riding the motorcycles that they have...many car drivers express the attitude that they hate motorcyclists because they can filter through traffic while they sit and wait in traffic jams. When people read the Highway Code, they tend only to read their section of it and think they can't do it. Unfortunately some bikes do it the wrong way as well."

"There's a small proportion of motorcyclists who are irresponsible and give the rest of the motorcycling community a bad name. If an irresponsible motorcyclist cuts car drivers up on a queue of traffic, they can leave a 'wake' of irate drivers behind who will then be less courteous to following motorcyclists, however responsible the following motorcyclist may be. As police officers, we come across this quite a lot in Northern Ireland, particularly on Sundays. It comes back to the whole issue of dehumanising the motorcyclist. Because the motorcyclists is not visible to other road users, they are quite often all classified as one in the same, with the same attitudes and riding behaviour – this is obviously not the case."

7.2 Stakeholder opinion on the MAIN UNDERLYING CAUSES for the number of collisions involving motorcycles in Northern Ireland:

General opinion in the focus group discussions and the one-to-one interviews agreed that the main underlying causes of collision involving motorcyclists in Northern Ireland are human error on the part of both motorcyclists and other vehicle drivers. Stakeholders agreed that there was a fairly even split between collisions caused by excessive speed on behalf of riders, and carelessness by other road users not seeing the motorcycles (frequently emerging from side junctions or making other 'turning' manoeuvres).

"I think driver's 'look but don't see' motorcyclists when pulling out at junctions. Where motorcyclists are at fault I think this is largely due to inexperience. Young riders lack experience but are also prepared to take more risks and therefore are more prone to accidents. I also think in the older rider the inexperience of the 'born again biker' can be a problem."

"Driver carelessness, they often do not see or take into account the presence of motorcyclists. Motorcyclists though can also drive in a way that is not consistent with the road conditions either through inexperience and or risk taking. This applies to young novice riders and older returning riders riding very powerful high end machines without appropriate skills."

"The biggest thing, every single motorcyclist has been nearly knocked off on the way to work, home or to the shop. I think the level of unawareness of car drivers towards motorcyclists is the main thing."

Motorcycle dealers expressed the belief that 'attitude' on the part of some riders can account for a large proportion of the underlying causation factor:

"The issue with road safety is that people look at it from the problem of blaming someone else first...whenever somebody comes in (to the motorcycle dealership), its stamped across their forehead who's going to or not going to look at the road safety issue. It's about attitude – many of them think they can ride a bike and don't need or want any training and will just not engage with you. It's an arrogance thing."

The lack of training and basic understanding of what a motorcycle can do was an issue that was explored at both the stakeholder's focus group discussion and the focus group with the Motorcycle Retailers Association:

"Training is the main thing. In my opinion there are two main types of crashes. First one is where the car pulls out and OK the car may not have seen them in many cases, but in other cases the bike may have been travelling so fast that the car driver didn't have a chance pulling out in front of them. A lot of the second type of collision, where people crash a bike, they do it because they don't really have good bike control. I have ridden bikes all my life and even if I miss 2-3 weeks of riding, it still takes me 20 or 30 miles to 'feel' the bike again. A lot of the people who are getting hurt are mature people in life (maybe professionals, smart people) but they maybe do not ride their bike enough and they do not have the proper skills to control them. A lot of these people need an advanced training programme in this country."

Another dealer agreed:

“That’s right, no matter how much training you have you need to keep up your skill level so you can control the bike effectively. I watched a guy crashing the other week (a business man employing 50 people) and he came into a corner doing about 60-70 mph. It wasn’t a difficult corner, but as he come into the corner he panicked, braked and lifted the bike up. He went straight across the road into a telegraph pole. All he had to do was bank the bike over a bit more, but he didn’t know how to do that. Had that guy got a bit more training and maybe attended a track day to learn some advanced riding skills, then he wouldn’t have crashed and put his life, business and the jobs of 50 people at risk. Attending a few track days he would have known how hard he could pull that brake, and how hard he could bank over and it wouldn’t have happened. A big percentage of riders cannot brake properly, they don’t know about angles of lean and how a bike really works. We get bikes coming in (general agreement around the table) with no brake pads in the back of them. When we ask the rider about this they say there’s plenty of power in the front brake, but they don’t realise that the back brake is every bit as important and acts as a proper stability aid for the motorcycle. If they brake hard and stand on the back brake, they are off. I don’t know how we do this but people need to be trained.”

There was general agreement that the proportion of Learner-riders involved in collisions was another aspect of the research that exercised stakeholders:

“I’m not surprised in the slightest by the amount of learners involved in collisions. In my mind there are two types of motorcyclists. The older enthusiast who maybe has a bigger bike; and the younger person who see it as a cheap mode of transport who will probably never come forward for a motorcycle test. They ride on their L-plate as a means of getting to and from their place of business, probably don’t do a lot of leisure riding and have no aspirations to ride anything bigger than a 125cc machine. I would say the later make up the majority of motorcyclists in the city areas and 30% would not surprise me at all. I think the majority of these though would be slight collisions without big speeds involved and certainly the majority of them without fatalities. We have all seen how badly scuffed and scraped scooters can be!”

There was a general consensus among the focus group participants that there is a need or policy change in the way in which motorcyclists in Northern Ireland can remain learner drivers for life if they so wish and ride lower capacity motorcycles. This is a unique position in Northern Ireland and UK within the EU Members States and participants suggested that this should be changed as a matter of urgency.

7.3 Stakeholder Opinion on the external FACTORS THAT INFLUENCE the number of collisions involving motorcycles in Northern Ireland?

In Section 6 of this report we have focussed on the impact that roads have on the principal causation factor for the number of collisions in Northern Ireland. Throughout the stakeholder interviews and the focus group discussions, stakeholders. In the response to the Motorcycle Casualties Questionnaire there was a significant gap between riders perception in terms of the role that roads play in contributing to the high number of collisions in Northern Ireland. Almost 39% of respondents felt that roads were a contributory factor, of those who had a collision in the past three years, 22% felt that slippery road conditions were the principal causation factor, however the Collision Report From data suggested that road conditions were much less of a factor (various road condition factors accounting for 1.9% of KSI collisions).

“Its very rare that the roads would be a main causation factor for motorcycle collisions. The reason this is probably high on the agenda for motorcyclists is that they have probably experienced very many near misses and this is obviously embedded into their psyche. Riders do favour the minor road networks which were never designed to any modern safety standards. We have the densest road network in Europe per capita (25,000km) and obviously Road Service have to prioritise the strategic network for major investments. “

“Roads Service has adopted the Institute of Highways Incorporated Engineers Guidelines for motorcycling. This means that where we are designing or upgrading roads we will consider motorcyclists as well as other vehicular traffic in the overall design and also on the placement of road furniture, etc.”

Two of the main issues raised by motorcyclists as factors which are outside of their control on the roads were slippery road conditions caused by farm vehicles pulling dirt and grit out onto the road network, and secondly the practice of ‘tarring and chipping’ the minor road network during the summer months:

“For the problems with farms, this is an issue of network management and ensuring farmers take responsibility for their own actions. The police are the only ones who can take enforcement action against the perpetrator..”

Road Service stakeholders explained the practice of tarring and chipping the road network in Northern Ireland:

“We have regular inspection regimes (SCRIM) where we test the skid resistance of roads and if they fall below a certain specification, then they are surface dressed. Minor rural roads are surface dressed if they fall below a certain skid resistance and major roads are resurfaced.⁴⁴.”

Stakeholders also felt that the motorcycling culture in Northern Ireland, which has a large following of road racing, trials, etc has an influence on the way in which some people ride their motorcycles. The influence of manufacturers advertising also has a compounding impact on perpetuating this attitude:

“This is an issue that we have to deal with in the industry. The dealer that I buy from, when you go into their showroom, the advertisement for their new machine boasts ‘barely road legal’. To my mind this is impressing upon the wrong attitude. The dealers are creating the wrong attitude with this and helping to foster the racing culture on the roads.”

“Promoters of racing events are not taking responsibility for the amount of riders that are being attracted over here to Northern Ireland, or that are going to and coming from their events. We should get getting the road safety message though to these people when they are coming over and linking into any initiatives that are available.”⁴⁵

Consultation with the NI Ambulance Service highlighted that while it is crucially important to consider the causation factors underlying motorcycle

⁴⁴ Defined as carrying less than 10,000 vehicles per day

⁴⁵ Both DOE and PSNI are running campaigns at the minute to target the road safety message to these riders, including messages such as ‘Leave the Racing to the Professionals’. PSNI are also trialing the use of ‘Bluetooth’ technology to disseminate road safety messages to motorcyclists coming to and from Northern Ireland on passenger ships.

collisions, it is also important to consider the factors that impact on the severity of collisions:

“If a motorcyclist falls off their motorcycle there are a number of factors that will determine the severity of the injury received. We need to consider this as well and while it might not actually impact on the incidence of a collision, there is quite often a fine line between slight, serious and fatal injuries for motorcyclists. We need to be able to understand any factor that may have an undue influence on the resulting classification on the injury received. For example, we should look at the role that personal protective equipment has in influencing the severity of an injury resulting from a road traffic collision. If you take the guys that race at MotoGP⁴⁶ etc, they have certain types of racing leathers that they wear with ‘humps’ between the shoulders at the back of the leathers. They are functional in terms of carrying data logging equipment and fluids that top-level racers need to have on board to complete at that level. They are now appearing on the road where riders like to emulate those who are doing well in the racing world. The problem our guys within the emergency services have with these designs is that they each a rider after an accident who may be at risk of spinal injury and the head is lifted one-foot off the ground by the speed hump on the leathers. We have to roll them through 180 degrees to be able to ‘work’ with them at the side of the road therefore they place themselves at further risk of crossing the line between slight and serious injury (or worse).”

7.4 Stakeholder opinion on potential of government POLICY to help reduce the numbers of motorcyclists involved in collisions over the next 10 Years?

Many of the issues discussed at the focus group meeting and one-to-one stakeholders interviews would require specific changes in policy to enable implementation throughout Northern Ireland. Some of the issues are already under consideration by the DOE Road Safety Division and other Government Departments (including the 3rd Directive, Compulsory Basic Training and the Direct Access Scheme). Some of the issues upon which policy could have an impact are listed below:

- As the number of riders rise, other road users should be made aware of their possible presence - either by increasing publicity campaigns or develop and deploy additional signing.
- Education, Engagement, Enforcement, and Engineering. All aspects of this road safety model should be actioned to reduce number of motorcyclist collisions
- Introduce Compulsory Basic Training and restrict size of engine available to novice riders, Review rider driving test process and consider introduction of the Direct Access Scheme. There were related areas which attracted huge amounts of feedback right across the research completed for this report:

“Any sensible person would know that it is important to revise the motorcycle test and introduce CBT.”

⁴⁶ MotoGP is a prototype racing series which is the motorcycling equivalent of ‘Formula 1’ Car Racing.

“The 125 is fine for learning road sense and how to handle a bike etc, but I think there is room for a second test on a bike of maybe 4-500cc which would provide a progression for riders. They would be fast, but not fast enough to get riders into the sort of trouble that a 1,000cc superbike can get them into. These bikes would give riders the feel of a proper bike where the brakes, tyres and frame are very similar to a bigger bike. It would provide a better stepping-stone for riders. If you want to move to a bigger bike, then they should be able to show an enhanced skill level before they would be allowed on to them. As long as there is a credible reason for doing this, explain to motorcyclists why you are doing it and they can see the reason for it, then I think there would not be a huge amount of resistance to it⁴⁷. What we need to try to do is to manage that risk for motorcyclists – if we can get the grounding then we are in with a chance.”

“We do have the issue here that we have no CBT and we have a big proportion of our young riders who are going out totally ‘green’. They have no experience of riding a motorcycle and they can just jump on one and away they go. Motorcycle dealers do their part, most of them will offer them training or advice. Most of them will not take it and they will just head off up the road. Some of the scooter riders we come across do not even strap their helmets. Learners are a big percentage of the problem. On top of the CBT another issue we have that the rest of the UK doesn’t have is that, whenever you get your car licence here, you can be a ‘learner for life’ on a motorcycle. You do not have any restrictions placed on how long you can ride on L-plates for. In the UK you have to apply to get your category A on your licence and if you don’t use it or apply for your training within 2 years, you are actually barred from riding and have to reapply. I do not see the benefit in people being learner riders for life.”

- Provide incentives for riders to complete advanced driving tests
- Introduce Government incentives to promote the purchase of high visibility clothing e.g. vat exemptions, price reductions.
- One the main issues discussed was the need to focus more on first stage preventative activity. To enable government to do this though, there is a need to gather evidence in a more robust fashion:

“A lot of the police statistics we have indicate single causation factors for collisions. There are very few incidents that have one single causation factor – they are usually the combination of a number of factors. Yes speed causes injury and in itself, it can cause collisions, but in a lot of the time it is not simply down to either a car pulling out in front of a bike, or the bike speeding, but it can be a combination of both. Statistics just by the way they are recorded can give a false reality of what is actually happening out there. This is something that the police are working on at the minute – we need to get more accurate information on what is happening out there, particularly in relation to motorcycle KSI’s. The current information on our T1 forms is not enough, we need to build up a better rider profile of the people who are involved in crashes and this is going to be difficult, but until we have it, we will not be able to understand fully about the people who are involved in crashes. We need their background, how long they have been riding, what they ride, what training have they

⁴⁷ This is broadly in line with the proposals outlined in the ‘3rd Directive’ which will introduce progressive licensing for motorcyclists. Rather than motorcyclists being able to gain access to larger machines by virtue of passing one test and waiting to gain access to the larger bike, they will have to do theory and practice tests to progress to progressively larger machines. (Susan – how much can we say about what the 3rd Directive Proposal Contain?)

had? There simply needs to be more background information in there to try and target our work from an educational point of view and try to prevent them from crashing. A motorcycle is completely different from a car and we have to reflect this in the way we analyse the data. The length of time you have held a licence for a motorcycle in many cases can bear absolutely no resemblance to the amount of experience you may have."

At the other end of the scale, consultation with stakeholders also highlighted that it is important to extend this level of understanding about casualties in the weeks and months following the collision:

"As an Ambulance Service we come along and attend the incident, assess the rider, manage their injuries and then take them along to the appropriate hospital for treatment. That is the end of our involvement until the next time we ferry them back and forward for rehab, but we can't access any data on the causation factors for the accident. Then there is the data on the injury and the outcome of that injury in the short and long-term that needs to be fed back into the loop. This is no different in Northern Ireland than anywhere else, but we need to be better in closing that loop to find out what happens to riders once they go into the hospitals and what happens thereafter. We have a huge clinical database of injuries and treatment thereof that we have full access to but might be able to close the loop in terms of the aftercare and what impact this has on resources etc across the Province."

- Enforcement of motorcycle restrictions for those who have recently passed the motorcycle test was an issue that all stakeholders and focus group participants raised throughout the research:

"This is one of the problems, we sit here and talk about rider safety and restriction etc, but how many of us put motorbikes out that are not 33bhp when they should be? If a guy comes into the shop and he hasn't got a full licence, there's no law to stop you selling someone a motorcycle if they have no licence. The details on that licence then are irrelevant. Also, how many people do we know when we are servicing their motorcycles, we make no effort whatsoever to make them keep the restrictor in their motorcycle."

"I'll give you an example, we restricted an R6⁴⁸ last week and the guy was on the phone the next day. He brought the bike back in and I took it for a run, and the bike was still going very 'well' (fast). We measured it on the dyno etc and done everything properly- he was on the phone the next day asking how to take it (the restrictor) out! We wouldn't do it, but there are people who do."

"The point about restrictions, I would tend to think that this is very hard to police. There is no way that someone stopping a motorcyclist on the side of the road and on looking at their licence and discovering that they are restricted to 33bhp, there is no way possible that a police officer can say for sure whether or not that bike is restricted."

One of the police officers attending the focus group discussion agreed:

"The current restriction system is totally unenforceable. I have been riding bikes for years and I could not tell which is restricted. The ambition of most people when they pass their test is to go straight out and buy a bigger motorcycle. By and large it is going to be a 600 or so. It can be fitted with a restrictor kit for these guys, but how do I as a police officer know whether or not it really is restricted if I pull these guys over. If they hand me a piece of paper saying it's restricted, there's no easy way of fining out. The only time they are going to be found out is if there is a fatal crash and the engine

⁴⁸ A Yamaha 600cc 'sports bike'

is stripped – but it's too late then... There needs to be a form of restriction that is tamper-proof on the bike that a police officer or DOE enforcement person can clearly see that on your licence you are a restricted rider, it's on the tax disc of your bike and there a seal or something on the bike that all tally up. Again, we know that this sounds hard to do, but with technology it must be possible."

7.5 Stakeholder Opinion on PRACTICAL measures to help reduce the numbers of motorcyclists involved in collisions in Northern Ireland?

There was general agreement that various issues such as policy development, engineering and laws need to be fundamentally changed to achieve long-term impact for road safety throughout Northern Ireland, however stakeholders also felt that given the statistics presented in Section 4 of this report, there is a need to implement short-term measures to try to achieve an immediate impact on reducing the number of collisions in Northern Ireland.

Advertising was an issue which many of the stakeholders agreed could create a more immediate impact on road safety if pursued on a more frequent and innovative basis:

"The problem with some of the ads is that they are on the TV only for a focussed period of time (in this case in May on the lead up to the North West 200), but they do not take advantage of the many other mediums through which motorcyclists can be reached. They should be at least on the DOE Road Safety Website. They have not been allowed to expand themselves and reach out through the range of mechanisms that are available to motorcyclists. In our group, we would like to link videos where possible through our website to all our members and help members promote motorcycling safety where possible."

"In relation to the 'Underneath' Advertisement⁴⁹, I found that it has worked well with young people. My grandson said to me (after watching the advertisement), "Granda, why don't you give up motorcycling – and he's only eight years of age."

"May being the highest death rate is when a lot of people take their bike out after having been laid up for winter and think they have not lost any skill in the interim period. A lot of people bring their bike out for the North West and think they can ride just as well as the last time.

Come March/April, many of them get the bike out and jump on it with no thought or preparation, and maybe this is when they end up in a collision due to lack of experience and time on the bike. A lot of the advertising should be aimed at Mid March and April to prepare for the riding season, rather than leaving it to the immediate build up to the North West. It takes a lot of time to build awareness and we should be starting earlier with the advertising to help prepare for the riding season. From an advertising point of view, maybe we should invest in some signs saying, "This is the back of a silage trailer – it hurts!"

One of the suggestions at focus group meeting was to use advertising as a positive media. To see it from an educational point of view for example educating motorcyclists on the correct road positioning and stopping distances:

⁴⁹ Recently screened by DOE NI in response to research that

“One of the initiatives that happened at the FIM (Fédération Internationale de Motocyclisme) Rally in Spain last year was they brought in two bikes, one linked with ABS, one with no ABS. They got a stunt rider to show you the difference in stopping at 30mph, 60mph and 70mph. They showed the stopping differences between the speeds on a bike with ABS and a bike without. Maybe running something like this on the TV with the captions “Do you know how long it’s going to take you to stop from these speeds? This is an expert...”

“On the advertising side of things we have had for years the negative advertising, what about trying to have a more positive outlook and focussing on ‘this is what you should be doing’ for all road users? It’s not just motorcyclist, all you have do is drive around and you will see people who simply do not know how to negotiate roundabouts, how to indicate, how to use three-lane roads etc. Some of the adverts should incorporate part of a BikeSafe assessment, showing the fun of it and bring out the fact that here’s a policeman who’s not actually going to nick you. We should enable people to see motorcycling from an enjoyable perspective, with the police involved as participants rather than with a negative controlling connotation. We should capitalise more on the police as the perception of the police in Northern Ireland has totally changed over the past few years – not just within the motorcycling community but also across the community in general.”

“We need to look at the medium of how we get advertising across to motorcyclists. Most of us have broadband now and it would be quite effective to get some cheaper advertisements out there on how to check your tyre pressure, apply your brakes etc. We have an online forum that gets 250,000 visits a month – that’s a great captive audience for getting a message across to.”

There was general agreement that training for motorcyclists should be implemented more comprehensively across the Province:

“We need to make training more comprehensive, elaborate and possibly even mandatory. This goes as well for those who drive cars as part of their awareness of other road users.”

Stakeholders agreed that Bikesafe is a good opportunity to access motorcyclists who would perhaps would not otherwise be interested in attending (or paying for) advanced training:

“There is a typical personage of people who come to BikeSafe – there are those who will not come to us because they think their licence plate is too small or they are in some other way on the wrong side of the law with us. These are the types of people we need to be getting to. It doesn’t matter if you are pumping road safety 100% of the time they are still very hard to get through to. The ones who listen are those who turn up at the Bikesafe events. It’s how we as a group get to the hard core.”

In response one of the police officers commented that:

“In reality this group has broadened over the years. For years between police and motorcyclists there was a ‘them and us’ attitude, we have spent years breaking down this barrier and they now know that at 3pm I could be riding a BMW police bike and 2 hours later I will be riding home on my own Fireblade. We are motorcyclists at work and in our own private time. The most important thing is that we are bikers and we are experiencing the very same problems out on the roads as the bikers we are trying to target. Yes at the start of the assessment we will primarily get the main trained riders through. We realise that there is a hard-core of motorcyclists that we will never get to. They may be at the top of the peak in terms of who we need to get to, but as police, I definitely over the last few years know that we are pushing our way up that mountain and making it smaller. We have to be realistic that there are some that we will never get to because of the attitude they have about biking, about themselves and about the police. We are trying the best we can to do the best job that we can and make ourselves credible. We bring bikers in and try to get into their minds and let

them make the informed choice them about what they are doing and how to make themselves safer on the roads."

There was a sense among stakeholders that there is an onus on motorcyclists themselves as peers to help access those who are hardest to reach for the authorities and impress upon them the benefits of engaging in further training and reassessing their skills and riding capabilities on a motorcycle:

"The guys that are at the tip of the iceberg, we as bikers need to talk to them and let them know what is possible in BikeSafe. I have been riding bikes for 40 years and have done Bikesafe twice at this stage and every time I come along to an event like that, I can learn something. They think that if they come along they are going to get a 'telling off' from the police and that's the simple reason why they do not come along. We need to get that message out there to our peers. Perhaps the slogan by rider, for riders may help."

The Motorcycle Traders Association felt that provision of 'rider skills days' would enable riders to increase their level of riding skills in a controlled environment with the aim of equipping riders with knowledge and skills of what they and their machines can do to avoid a collision where possible:

"We were thinking on looking at how to handle the machine and give people the skills that would maybe make the difference between a near miss and a collision. Doing a subsidised 'rider skills day' on a track."

"We have done track days etc and they have been wonderful. We can get the riders out – have a look at what they are doing and bring them back in and talk to them. Even things like tyre pressure etc, some of them have absolutely no idea, yet they say they have a lot of experience. They go out again and you can see that they are much safer. It's surprising how many people come into our workshops and they have maybe only 15 pounds of pressure in their front tyre. That's one of the first things that can cause an accident."

Dealers also felt that they provided a unique opportunity to access motorcyclists who would not necessarily attend road safety or advanced training opportunities advertised in the general or specialist press. They also suggested that there is an opportunity to integrate training and road safety more innovatively with the sales of motorcycles:

"The dealer may be the one person who has the most constant contact with the riders from the very moment they purchase the bike to progressing through to larger machines. The dealer may be one of the key people then that can provide a link to training for motorcyclists if they do not know how to access it or are not getting the messages through from the various forms of advertising or promotional activities that are ongoing."

"There needs to be incentives for dealers to encourage them to get motorcyclists to buy into training as well as buy the motorcycle. Many dealers just see a sale walking into the garage and may not be too concerned with whether or not they follow it up with training. There should also be some incentive for dealers to keep in touch with the rider in the year or two years after they purchase the motorcycle and track their training and development. Whether it is inviting them along to a track day, off-road training day or something. This takes time and money though and this would take intervention from a government department."

One of the dealers gave an example where the manufacturer has taken an approach in one niche of the business to ensure that staff must give basic training to a customer, before they can purchase a machine:

“On our four-wheel side of the business, all our salesmen have to have a proper certificate to be able to sell a machine to a customer. They need to know exactly how the machines operate and be able to explain through this with a customer. They cannot actually hand a machine over to a customer to ride unless they have completed this training from the manufacturer. They take the salesmen out and show them how to turn the bike, accelerate, handle rough terrain, balance etc. Then in turn we have to cascade this training through to the customer and it is there in law that we can’t hand the machine over without providing the training. It is a benefit and limits the number of accidents.”

“If we made it (advanced training) compulsory, then our sales would halve. There are a lot of men coming into us in their 40’s and 50’s who say they just do not have the time to do advanced training. If we could get the rest of the insurance companies on board (acknowledging that Adelaide does discounts for Bikesafe) then we may be able to encourage more people to come along and to the training as well. People need incentives to do things – if we could do things like this then we would be on to something.”

“It’s a Catch 22, we need to get the customer to admit that they need proper training. If you walk in and maybe you had a bike about 20 years ago and you are back into the scene again. I would say that as high as 80% will say they do not need any training. You take a guy that has been on a bike for 20 years, he’s a mature man and we as dealers can’t argue with them and tell them your skills may have slipped as a motorcyclist since you last rode a bike. I had a guy in one time and he was about 45 or so. Bought a new scooter and when we asked him “do you want us to go through everything with you – maybe take you somewhere and show you how to ride it?”, he said no it was alright and would have none of it. He started the bike and shot straight across the main road from the garage and straight into a lamppost at the far side of the road and completely wrote the bike off.”

One of the stakeholders within the emergency services agreed:

“I have been involved in a number of quite serious and indeed fatal incidents where people who have purchased a powerful motorcycle have come to grief literally within hundreds of yards of picking it up from the shop. Many times these have been motorcyclists who have returned to motorcycling after many years and do not realise the speed with which they no accelerate, how they can corner, the power of the brakes etc. Many times they completely miss-judge stopping distances and acceleration and end up in front of another vehicle.”

7.6 Stakeholder opinion on who should be involved to help reduce the number of collisions in Northern Ireland:

There was an almost unanimous feeling among all stakeholders and some questionnaire respondents that this is an opportune time to look at the development of a multi-disciplinary Motorcycle Stakeholders Forum. The forum would “adopt a proactive role based on better availability of motorcycle collision causation factors”.

Consultees felt that a broad range of potential stakeholders is required to make an impact on reducing the number of motorcycle-related collisions in Northern Ireland.

“Government agencies should work together internally to address motorcycle collision issues and possibly appoint a motorcycle champion to ensure motorcyclists issues are kept to the fore throughout all departments. All agencies should work together to drive down motorcycle collision rates and to promote safer riding techniques. Insurance companies should offer incentives to those riders passing a recognised advanced rider test. This test

should be re-taken every 3 to 4 years to maintain the standard. Manufacturers should research new technologies in a bid to make bikes as safe as they can possibly be. Instructors and lobby groups should promote safer riding techniques”

Stakeholders felt that motorcyclists themselves, emergency services, government departments, insurance companies, traders/dealers, manufacturers, racing/motorcycling celebrities all have a role to play and need to do contribute in a cohesive fashion - no one of these groups can do this alone.

“Bikesafe, people like those sitting around this table⁵⁰ who have a vested interest and experience in motorcycling, I think too many times, the people who make decisions and the rules are not actually motorcyclists and they don’t know what they should be doing. It may sound good but they need to bring in those who have to experience in riding bikes.”

“I think it is vitally important to include those from the industry in Northern Ireland. The fact that we are sitting here today with the biggest motorcycle club in Northern Ireland in the room, Government, dealers, sport, training organisations – everyone has their own part to play. As stakeholders it is vitally important that as broad a cross-section of the industry as possible is included and their views taken on board. Each organisation brings its own special contribution to road safety and we would be quite willing to attend any group like this. Some of the rules that have been brought in before, it is quite obvious that they have been made by someone who has never sat on a bike – and we need this type of forum to act as a consultative group. It should chair itself and have a representation that can then lobby government. People who can help in training and assisting rider should be involved – IAM and Bikesafe should be definitely involved.”

“We have suggested to government departments that based on what is happening in Mainland Britain, we should put in place a group to advise on a motorcycle strategy. All interested parties came together and met and brought out a report on the problem facing UK. While this took years to achieve, it finally brought out a strategy for Great Britain. We believe motorcycling should be separated out in the Road Safety Strategy for Northern Ireland and that part of the Strategy should be guided by motorcyclists in whatever form it takes, drawn from the whole motorcycle community. In the UK this was led by the Department of Transport who had a political role, the Minister at the time pushed it through political will and this was then implemented by the Civil Service. It brought out an action plan as well as a strategy and therefore was worth doing and did not just end up as a talking shop.”

Consultation with stakeholders also confirmed that all sections of the emergency services have a contribution to make to the development and implementation of a motorcycle stakeholders forum. This would enable a more holistic picture of road traffic collisions from the initial influencing factors through to the, sequence of events during and immediately after the collision, and also the patient pathway taken in the months and years following motorcycle collisions.

At the focus group discussion with the Motorcycle Retailers Association, there was unanimous agreement that government departments have not approached dealers to involve them in road safety or channel initiatives through their dealerships.

⁵⁰ This particular focus group included Police, IAM Instructors, representative from a Motorcycle Group, On-line Motorcycle Forum, Motorcycle Lobby Group, Motorcycle Racer, Traders, Advertising Sector and Motorcycle Promotions.

“This is why we have brought this group of traders together is to try to have more contact with those in government and various other stakeholders in the industry so they can liaise with us and we can bring forward the benefit of our experience in interfacing with customers to try to help improve road safety. We are the first point of contact, but no-one else seems to come to us. This is where the two parties need to come together and have some investment in maybe training our staff and dealers. There needs to be an incentive though.”

Another stakeholder commented that government and a motorcycle stakeholder’s forum should use the contacts they have within motorcycle sport to promote motorcycle safety on the roads:

“Much as we may be seriously into motorcycle sport we have a social responsibility to bring the likes of FIM (Fédération Internationale de Motocyclisme) on board and have those within the sport promote safer motorcycling in general this is something that is taken quite seriously at FIM, but we perhaps don’t capitalise on it within each of the European Regions that are involved. This is quite right, it should not all motorcycle racing and we can only really counter this emulation of racing heroes if we get them to be up front and say they leave the racing to the track.”

Main Findings from this Section:

- Focus group discussions and one-to-one interviews with stakeholders from the motorcycle industry and community explored the main findings of this research assignment.
- There was an overwhelming level of support for the research and the potential to move towards bilateral engagement for road safety within all sections of the motorcycling community.
- Stakeholders from all sections of the motorcycling community agreed that the main causes of collisions involving motorcyclists in Northern Ireland are human error on the part of both motorcyclists and other vehicle drivers. They agreed that there was a fairly even split between collisions caused by excessive speed on the part of motorcyclists and carelessness/inattention on the part of other drivers.
- Lack of adequate participation in ongoing training and frequency of riding was an issue raised by stakeholders across the motorcycling industry and community. The proportion of learner riders involved in collisions was another area that stakeholders believed should be tackled in the forthcoming road safety strategy.
- The perception of road conditions as a contributory factor into collisions was questioned by many of the stakeholders interviewed throughout the research. The report highlights a significant discrepancy between the perceptions of riders regarding roads as a contributory factor versus the perception of investigating officers into the 4,416 collisions over the period from 1998-2007.
- Many of the issues discussed at the focus group meeting and one-to-one stakeholders interviews would require specific changes in policy to

enable implementation throughout Northern Ireland, including: increasing publicity campaigns, introducing Compulsory Basic Training, revising the current motorcycle test, providing incentives to riders to complete advanced tests, introducing government incentives for high visibility clothing and focussing on first stage preventative activity.

- Stakeholders believe that a more comprehensive system for collecting collision statistics should be put in place to enable investigating officers to collect and analyse more background data on riders involved in collisions to enable more effective profiling of the 'type' of, and experience of riders involved in collisions.
- Stakeholders felt that this (prior to development of the forthcoming road safety strategy) is an opportune time to look at the development of a multi-disciplinary Motorcycle Stakeholders Forum. The forum would "adopt a proactive role based on better availability of motorcycle collision causation factors".

Section 9 Recommendations:

The following recommendations are made based on research completed throughout the various phases of this assignment:

1. Significant emphasis should be placed on efforts to reduce motorcycle collisions where other road users are emerging from minor roads and where motorcyclists have excessive speed with regard to conditions.
2. Road safety messages for motorcyclists should be targeted to the 17-35 and over 55 age categories given their overrepresentation in the demographic profile of involvement in collisions and responsibility for the collision in which they are involved.
3. Road safety messages should focus on rider and other road user responsibility. The vast majority of consultees believe that other road users are responsible for the majority of collisions – this is the case in ‘slight injury’ collisions. However rider responsibility increases with severity of the collision. Messages should be directed towards motorcyclists to reinforce the fact that in 2 out of every 3 fatal collisions, the rider is responsible.
4. Collision Report Forms should be amended to enable investigating police officers to more accurately record the combination of causation factors leading to a collision. Consultation with stakeholders showed that few Road Traffic Collisions have one causation factor. In many cases collisions are caused by a sequence of events and/or a combination of causation factors. It is also recommended that Collision Report Forms include increased background data on the casualty and the motorcycle they were riding. Increased background and causation data would enable more informed analysis for primary stage prevention of Road Traffic Collisions.
5. Consultation with the NI Ambulance Service highlights that there exists an opportunity to analyse the ‘patient pathways’ of motorcycle casualties following collisions. This would enable more comprehensive understanding of the long-term impact of motorcycle collisions on individuals, families and society at large. It would also contribute to the capacity to understand ways in which to reduce the severity of injuries suffered by casualties as a result of the collisions.
6. Motorcyclist road safety messages should raise awareness of the involvement of motorcyclists across all spectrums in collisions and near misses. The widely held assumption that involvement in collisions is limited somewhat to ‘weekend warriors’ is not supported by this research. Those who ride their motorcycles more frequently for commuting to and from work, at work and professionally are

equally (or more) likely to have been involved in collisions than those who ride only at weekends.

7. Motorcyclist road safety messages should raise awareness of the impact that alcohol can have as a causation factor given the percentage admitting to riding after one drink and the percentage of single vehicle collisions caused by alcohol impairment.
8. There is an overwhelming degree of support for the introduction of Compulsory Basic Training among the motorcycle community and industry. Legislation should be put in place to introduce CBT as a matter of urgency.
9. Motorcyclists holding provisional licenses are over-represented in the collision data for the 10-year study period. Government should consider the reasons underlying this over-representation and where possible implement policy to bring NI into line with other Member States throughout the EU.
10. Response from stakeholders suggests that there is a significant degree of support for the introduction of measures which would be covered by the 3rd Directive – for example progressive licensing, restrictions on cubic capacity as well as brake horse power, progressive training and direct access where appropriate.
11. Government departments should explore the potential to include motorcycle awareness in the car driving test. The majority of respondents to the research suggested that training and awareness for other road users was the number one priority in reducing the number of motorcycle collisions in Northern Ireland, followed by further promotion of voluntary and advance motorcycle training, and awareness advertising.
12. The extent of and membership of the on-line motorcycling community presents a significant opportunity for the use of innovative marketing and promotion techniques to communicate road safety messages to motorcyclists throughout Northern Ireland.
13. More proactive advertising could focus on increasing other road users perceptual skills, empathy for and knowledge of motorcycling. Respondents and stakeholders suggested this should build on positive promotion of motorcyclists and motorcycling (enjoyment of motorcycling and profiling as responsible road users), perhaps within the context of a Bikesafe assessment to also reach motorcyclists who are reluctant to come forward for such assessment. There was a strong level of support for rerunning and building upon the 'Underneath' advertisement to tackle the level of dehumanisation of motorcyclists.

14. Road safety messages should highlight that participation in voluntary training/assessed rides can help to reduce rider responsibility in collisions. More effective promotion of such training/assessment could increase the proportion of motorcyclists participating as almost half of respondents said they did not know about the training, or thought it was too expensive.
15. There was a significant level of support for increasing the promotion and saturation of training within the motorcycling community. Consultees believe that this should be taken to a different level and included at point of sale for all new and repeat purchasers throughout Northern Ireland. This would require policy level support and widespread support from manufacturers/importers.
16. More innovative approaches to rider training should be explored by the motorcycle community and supported by government departments. For example the promotion of rider skills days and motorcycle safety simulator training in association with the emergency services and motorcycle dealers.
17. Respondents suggested that further work should be undertaken to explore more widescale incentivisation of training throughout the insurance and dealer industry in Northern Ireland.
18. As the number of motorcyclists in Northern Ireland increases, other road users should be made aware of their possible presence - either by increasing publicity campaigns or develop and deploy additional signing.
19. Enforcement of motorcycle restrictions for those who have recently passed the motorcycle test. This should include implementation of innovative techniques to enable police to identify restricted machines more easily, and implementation of policy to ensure motorcycle dealers take a responsible approach to sales and servicing of restricted machinery to restricted riders.
20. There was an almost unanimous feeling among all stakeholders and some questionnaire respondents that this is an opportune time to look at the development of a multi-disciplinary Motorcycle Stakeholders Forum. Consultation with stakeholders also confirmed that the Forum should include a wide cross-section of the motorcycle community and industry and all sections of the emergency services should be involved the development and implementation of a motorcycle stakeholders forum. This would enable a more holistic picture of road traffic collisions from the initial influencing factors through to the, sequence of events during and immediately after the collision, and also the patient pathway taken in the months and years following motorcycle collisions.

21. The Motorcycle Forum should have a role in advising on policy direction, strategy and dissemination of key road safety messages throughout the motorcycle community. The group should be instrumental in the creation of a *'Motorcycle Safely Strategy'* for Northern Ireland.

Appendix 1

Variables included in the Statistical Analysis:

Field Name	Field Description
a_refno	accident reference number
a_no	accident number
a_year	year of accident e.g. 1996
month	month of accident
a_day	day of accident
a_time	time of accident
a_veh	number of vehicles
a_cas	number of casualties
a_speed	speed limit in mph
a_light	light conditions
a_stlight	street light conditions
a_ctype	carriageway type
a_jdet	junction detail
a_jcont	junction control
a_weat	weather conditions
a_roadsc	road surface conditions
a_speccs	special road conditions
a_chaz	carriageway hazards
a_pfactor	principal causation factor
a_type	type of accident
a_gd1	grid reference 1 Easting
a_gd2	grid reference 2 Northing
a_sva	single vehicle collision

Field Name	Field Description
c_refno	casualty reference number
c_id	casualty number within accident
c_age	casualty age
c_class	casualty classification
c_sever	casualty severity
c_sex	sex of casualty
c_vtype	casualty vehicle type
c_vno	casualty vehicle number
c_vresp	casualty responsibility
c_helmetu	casualty helmet usage

Field Name	Field Description
v_refno	vehicle reference number
v_id	vehicle no within accident
v_type	vehicle type
v_man	vehicle manoeuvres
v_skid	vehicle skidding
v_loc	vehicle location at impact
v_junc	junction location of vehicle at impact
v_hit	vehicle hit object in carriageway
v_hitoff	vehicle hit object off carriageway
v_leave	vehicle leaving carriageway
v_sex	driver sex
v_age	driver age
v_dtype	driver licence type
v_resp	driver responsibility
v_engine	engine size

Appendix 2

Research Steering Group Membership:

Member	<i>Organisation</i>
Susan Dolan	DOE Road Safety Division
Richard Jordan	DOE Road Safety Division
James Sampson	DOE Road Safety Division
Bill Holden	PSNI
Greg Mc Clelland	Department for Regional Development
Ian Murphy	DVA NI
Brian Morrison	DOENI
Richard Crawford	DOENI
Catherine Bloomfield	NIFRS

Appendix 3

Organisations Consulted in Focus Groups and Stakeholder Interviews:

- Police Service of Northern Ireland
- Northern Ireland Fire and Rescue Service
- Department of the Environment
- Department for Regional Development
- Northern Ireland Ambulance Service
- Lyle Bailey
- Institute of Advance Motorcyclists (Lisburn Group)
- Right to Ride
- UKGser On-line Motorcycle Forum
- Quay Vipers Motorcycle Club
- Nutt Promotions
- Mc Callen Motorcycles
- Allen's Honda
- GS Motorcycles
- Crossan Motorcycles

Appendix 4

Motorcyclists Questionnaire:

Introduction:

We are carrying out research on behalf of the DOE Road Safety Division in Northern Ireland. This questionnaire is designed to find out about your experiences of motorcycling and in particular road safety.

All information provided will be treated as completely confidential and individuals will not be identified in the analysis. If there is any question you do not wish to answer, please just leave it blank and go to the next question. Thank you.

If you would like to supply your contact details, we will enter you into a draw to win £100 voucher towards motorcycle clothing.

About you:

1. What age are you? PLEASE WRITE YOUR AGE IN THE BOX

2. What gender are you?

Male

Female

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

3. What is your occupation?

Manager/senior official

Professional

Administration/secretarial

Skilled Tradesperson

Process Plant/machinery operative

Sales Customer Services

Other

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

4. What types of motorcycling are you interested in?

Racing

Custom

Commuting

Patch club

Touring

Leisure

Professional

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

About your motorcycle...

5. Which of these best describes the bike you currently ride most often? **PLEASE TICK ONE BOX, OR WRITE IN IF "OTHER"**

Sports Bike	<input type="checkbox"/>
Tourer	<input type="checkbox"/>
Sports Tourer	<input type="checkbox"/>
All-rounder	<input type="checkbox"/>
Off road	<input type="checkbox"/>
Custom	<input type="checkbox"/>
Classic	<input type="checkbox"/>
Scooter	<input type="checkbox"/>
Other	<input type="checkbox"/>

6. What brake horsepower is the bike you normally ride most often? **PLEASE WRITE IN.**

7. What engine size is the bike you ride most often? **PLEASE WRITE IN.**

How many bikes do you own?

How you use your bike...

8. Which of the following do you regularly use your bike for? **PLEASE TICK ALL THAT APPLY**

Riding for pleasure	<input type="checkbox"/>
Social	<input type="checkbox"/>
Getting to work	<input type="checkbox"/>
Professional use (courier, instructor, police motorcyclist, etc)	<input type="checkbox"/>
Just for commuting	<input type="checkbox"/>

9. How many other bikers do you generally ride with?

PLEASE WRITE IN THE BOX, OR TICK BOX IF NONE

10. How often do you use the following forms of transport?

<input type="checkbox"/>	Most days	Once or	About once	About	Several	About	Never
--------------------------	-----------	---------	------------	-------	---------	-------	-------

		twice a week	per fortnight	once a month	times a year	once a year or less	
Motorcycle							
Car							
Other							

When do you ride your bike? **PLEASE TICK ALL THAT APPLY**

- Commuting to and from work
- During the day
- In the evening
- Weekend only

History of collisions/near misses

11. How many collisions (accidents) have you had while riding a motorbike in the last three years?

None One Two Three More than Three

If you have had a collision, please answer the following question

12. Was it your fault or someone else's?

- Own fault
- Other driver/rider

13. Which of the following types of collisions have you had?

- You hit a stationary vehicle
- Another vehicle hit your stationary vehicle
- Your vehicle hit another vehicle when you were both moving
- Your vehicle was hit by another vehicle when you were both moving
- You hit an obstacle – a lamp post, tree or wall
- Your vehicle left the road onto a verge or field
- You came off your bike while you were in motion
- You hit a cyclist
- You hit another motorcyclist
- You hit a pedestrian
- You lost control of vehicle due to deposit on road e.g. oil, mud etc
- Other (PLEASE WRITE IN BELOW)

What was the cause of the collision?

Whether or how often they commit errors/violations while riding

14. How many times in the last three years have you had a "near miss", when you felt you only just avoided having a collision or losing control of your bike?

None One Two Three More than Three

What was the cause of the near miss?

What behaviours of drivers do motorcyclists feel cause the collisions/near misses?

Do you take risks?

Never Sometimes Often Very Often Always

If yes, please specify:

Do motorcyclists in general take risks?

Never Sometimes Often Very Often Always

If yes, please specify:

Preferred and normal riding speeds on various roads

15. What would your preferred and normal riding speeds be on the following roads?
Do we need to know preferred speed?

	<i>Normal Speed</i>	<i>Preferred Speed</i>
A-class Main Road		
B-class Rural Road		
Dual Carriageway		
Motorway		

Type of road you preferred to ride on most often.

A-class Main Road
B-class Rural Road
Dual Carriageway
Motorway
Don't mind

Reason for your choice?

16. In general, do you normally ride faster than the speed limit?

Never Sometimes Often Very Often Always

17. In general, how often do you ride faster than the speed limit on the other side of the border?

Never Sometimes Often Very Often Always

18. Do any of the following words describe your riding style? **PLEASE CIRCLE ALL THAT APPLY:**

Controlled	Considerate	Relaxed	Nervous	Careless
Fast	Aggressive	Erratic	Impatient	
Observant	Slow	Reckless	Cautious	Expert

19. Do you ever ride under the influence of Alcohol?

Never Sometimes Often Very Often Always

20. Do you think other riders you know ride under the influence of Alcohol?

Never Sometimes Often Very Often Always

21. Do you ever ride under the influence of Drugs?

Never Sometimes Often Very Often Always

If 'ride under influence of drugs', what type of drugs?

22. Do you think other riders you know ride under the influence of Drugs?

Never Sometimes Often Very Often Always

If 'ride under influence of drugs', what type of drugs?

Your perception of other traffic users and their ability to see and be seen

23. In the past three years, how often have you been affected by dangerous or careless driving from other drivers on the road?

Never Sometimes Often Very Often Always

Please specify:

24. Do you ride with your headlight on during the day?

Never Sometimes Often Very Often Always

25. Which of the following items of motorcycling clothing do you mostly wear while riding your bike? Tick all that apply

Boots with reinforced padding/armour on the ankle, knee or shin
Trousers with reinforced padding/armour on the knee, outer knee

or hip	<input type="checkbox"/>
Jacket with reinforced padding/armour on the elbow, shoulders or back	<input type="checkbox"/>
Full Leathers	<input type="checkbox"/>
Knee sliders	<input type="checkbox"/>
Leather jacket and ordinary denim jeans	<input type="checkbox"/>
Open face helmet	<input type="checkbox"/>
Hi-visibility jacket/vest/belt	<input type="checkbox"/>
Full face helmet	<input type="checkbox"/>
Gloves with knuckle/palm guard	<input type="checkbox"/>
Other (PLEASE WRITE IN BELOW)	<input type="checkbox"/>

Obviously there are a high number of collisions involving motorcycles in Northern Ireland. Who or what do you feel are responsible for the problem?

Licensing:

What type of license do you hold for your motorcycle?

Full motorcycle license	<input type="checkbox"/>
Provisional license	<input type="checkbox"/>

26. How old were you when you obtained a full motorcycle licence?

27. Which of the following statements describes you best:

I have always ridden a bike since passing my test	<input type="checkbox"/>
I have had periods of time when I have not ridden the bike	<input type="checkbox"/>
I have returned to biking after not having ridden for years	<input type="checkbox"/>
Other (PLEASE WRITE IN BELOW)	<input type="checkbox"/>

28. **Have you** participated in any form of motorcycle training: PLEASE TICK ALL THAT APPLY

	YES	NO
Motorcycle instruction with an instructor	<input type="checkbox"/>	<input type="checkbox"/>
Bikesafe	<input type="checkbox"/>	<input type="checkbox"/>
IAM Advanced Riding	<input type="checkbox"/>	<input type="checkbox"/>
ROSPA	<input type="checkbox"/>	<input type="checkbox"/>
Other (PLEASE WRITE IN BELOW)		

29. If not, **would you** participate in any other form of training: PLEASE TICK ALL THAT APPLY

	YES	NO
Motorcycle instruction with an instructor	<input type="checkbox"/>	<input type="checkbox"/>
Bikesafe	<input type="checkbox"/>	<input type="checkbox"/>
IAM Advanced Riding	<input type="checkbox"/>	<input type="checkbox"/>
ROSPA	<input type="checkbox"/>	<input type="checkbox"/>
Other (PLEASE WRITE IN BELOW)		

30. Please state reason why you haven't or would not participate in further rider training?

Don't need it	<input type="checkbox"/>
Don't have time	<input type="checkbox"/>
Couldn't be bothered	<input type="checkbox"/>
Costs too much	<input type="checkbox"/>
Don't know about it	<input type="checkbox"/>
Other (PLEASE WRITE IN BELOW)	<input type="checkbox"/>

31. Do you think all new riders should complete Compulsory Basic Training?

Yes No Don't Know

32. Do you think new riders should have restrictions placed on the BHP (Brake Horse Power) or CC (cubic centimetres) of bike they can ride?

Yes, BHP should be restricted	<input type="checkbox"/>
Yes, CC should be restricted	<input type="checkbox"/>
No should be able to ride what they want	<input type="checkbox"/>
Other (PLEASE WRITE IN BELOW)	<input type="checkbox"/>

Do you think there should be any other restrictions?

33. Are you a member of any motorcycling groups/organisations?

Yes (PLEASE WRITE IN BELOW)	<input type="checkbox"/>
No	<input type="checkbox"/>

34. Do you read any of the following motorcycle magazines? PLEASE TICK ALL THAT APPLY

Don't read any motorcycle magazines	<input type="checkbox"/>
Motorcycle news	<input type="checkbox"/>
Bike	<input type="checkbox"/>
Performance Bikes	<input type="checkbox"/>
Classic Rider	<input type="checkbox"/>
Sport Bike Rider	<input type="checkbox"/>
Biker	<input type="checkbox"/>
Superbike	<input type="checkbox"/>
Northern Biker	<input type="checkbox"/>
Which Bike	<input type="checkbox"/>
RIDE	<input type="checkbox"/>
Back Street Heroes	<input type="checkbox"/>
Streetfighters	<input type="checkbox"/>
Road Racing Ireland	<input type="checkbox"/>
Irish Racer	<input type="checkbox"/>

Other, please specify:

Please give any other views you think may help with research into motorcycle collisions in Northern Ireland:

Personal details:

Please include your personal details if you would like to be entered into the draw for £100 voucher towards motorcycle clothing.

Name: _____

Postcode: _____

(We will only use your postcode to make sure we have a good cross-section of respondents from across Northern Ireland – it will not be passed on to DOE or any third party):

Contact Telephone/email: _____

Please tick if you would like to be invited to participate in a further focus group discussion for this research:

Appendix 5

Road Users Survey

1. About You...

We are carrying out research on behalf of the DOE Road Safety Division in Northern Ireland. This questionnaire is designed to find out drivers attitudes towards motorcyclists and motorcycling, with a particular focus on road safety.

This research will input directly into the development of a new road safety strategy for Northern Ireland due for publication before the end of 2010.

Please answer as many questions as you can but if there is any question you do not wish to answer, please leave it blank and move onto the next one.

Please note that all information provided will be treated as COMPLETELY CONFIDENTIAL and INDIVIDUALS WILL NOT BE IDENTIFIED in the analysis.

Thank you for your participation in this survey

1. What age are you? PLEASE WRITE YOUR AGE IN THE BOX

2. What gender are you?

- Male
- Female
- Other

3. Do you hold a full or provisional driving license?

- Full
- Provisional

4. How many years have you been driving a car (PLEASE TICK):

- Less than 2 years
- 2-10 years
- 10 Years Plus

5. Approximately how many miles would you drive in the average year?

- Less than 5,000
- 5,001 to 10,000
- 10,001 to 20,000
- More than 20,000
- Don't know

6. Have you had any collisions in the past three years?

- Yes
- No
- Don't know

If yes, please specify cause of

collision

7. If yes, how many collisions have you had in the last three years?

- None
- One
- Two
- Three
- More than three

8. Did any of the collisions involve a motorcycle?

- Yes
- No

If yes, please tell us what

happened

9. Are you interested in motorcycling?

- Are you interested in motorcycling? Not at all
- Yes, I ride a motorcycle
- Yes, I am interested in motorcycling
- I have a friend interested in motorcycling
- I have a relative interested in motorcycling

10. Do any of the following describe your driving style?

- | | |
|--------------------------------------|--|
| <input type="checkbox"/> Controlled | <input type="checkbox"/> Impatient |
| <input type="checkbox"/> Considerate | <input type="checkbox"/> Observant |
| <input type="checkbox"/> Relaxed | <input type="checkbox"/> Slow |
| <input type="checkbox"/> Nervous | <input type="checkbox"/> Reckless |
| <input type="checkbox"/> Careless | <input type="checkbox"/> Cautious |
| <input type="checkbox"/> Fast | <input type="checkbox"/> Expert |
| <input type="checkbox"/> Aggressive | <input type="checkbox"/> Tentative |
| <input type="checkbox"/> Erratic | <input type="checkbox"/> Inexperienced |

11. So we are sure we have spoken to people across the whole of Northern Ireland, please add your postcode. We will use this in the analysis and will not match it to any of the responses given in the questionnaire

2. Your experience of Driving

We have listed below a range of questions about your experiences in driving. Each question will ask you to rate how many times you carry out certain actions on a scale from 'Never' to 'Nearly all the Time'.

Please think about each statement and answer the question as truthfully as you can!

The table below presents a list of statements about LAPSES IN CONCENTRATION we as drivers sometimes make while driving.

Please think about your own behaviours when driving and tick the appropriate circle for the amount of times you carry out each action.

HOW OFTEN DO YOU (on the following scale):

Never	Hardly Ever	Occasionally	Quite Often	Frequently	Nearly All The Time
1	2	3	4	5	6

	1	2	3	4	5	6
Misread the signs and exit from a roundabout on the wrong road						
Hit something when reversing that you had not previously seen						
Attempt to drive away from the traffic lights						

in third gear						
Switch one thing, such as the headlights, when you meant to switch on something else, such as the wipers						
Realize that you have no clear recollection of the road along which you have just been traveling						
Forget where you left your car in a car park						
Get into the wrong lane approaching a roundabout or a junction						
Intending to drive to destination A, you "wake up" to find yourself on the road to destination B						

2. The table below presents a list of VIOLATIONS people sometimes make while driving.

Please think about your own behaviours when driving and tick the appropriate circle for the amount of times you carry out each action.

HOW OFTEN DO YOU (on the following scale):

Never	Hardly Ever	Occasionally	Quite Often	Frequently	Nearly All The Time
1	2	3	4	5	6

	1	2	3	4	5	6
Drive your vehicle under the influence of drugs						
Drive your vehicle after having one or more drinks						
Pull out of a junction so far that the driver with right of way has to stop and let you out						
Cross a junction knowing that the traffic lights have already turned against you						
Stay in a motorway lane that you know will be closed ahead until the last minute before forcing your way into the other lane						
Drive so close to the car in front that it would be difficult to stop in an emergency						
Race away from traffic lights with the intention of beating the driver next to you						
Disregard the speed limit on a motorway						
Sound your horn to indicate your annoyance to another road user						
Become angered by a certain type of a driver and indicate your hostility by whatever means you can						
Disregard the speed limit on a residential road						

Overtake a slow driver on the inside						
Become angered by another driver and give chase with the intention of giving him/her a piece of your mind						

3. The table below presents a list of ERRORS people sometimes make while driving.

Please think about your own behaviours when driving and tick the appropriate circle for the amount of times you carry out each action.

HOW OFTEN DO YOU (on the following scale):

Never	Hardly Ever	Occasionally	Quite Often	Frequently	Nearly All The Time
1	2	3	4	5	6

	1	2	3	4	5	6
Attempt to overtake someone that you had not noticed to be signaling a right turn						
Underestimate the speed of an oncoming vehicle when overtaking						
On turning left nearly hit a cyclist who has come up on your inside						
Fail to check your rear-view mirror before pulling out, changing lanes, etc.						
Fail to notice that pedestrians are crossing when turning into a side street from a main road						
Queuing to turn left onto a main road, you pay such close attention to the main stream of traffic that you nearly hit the car in front of you						
Miss "Give Way" signs and narrowly avoid colliding with traffic having right of way						
Brake too quickly on a slippery road or steer the wrong way in a skid						



3. Attitudes towards motorcyclists

We have outlined some statements in relation to motorcycling on the page below. On the scale for each question, please chose the extent to which you agree or disagree with the statements.

All were answered along the following scale:

Disagree Very Strongly	Disagree Strongly	Disagree	Neither agree nor disagree	Agree	Agree Strongly	Agree Very Strongly
1	2	3	4	5	6	7

1. The following statements relate to your general driving experience

	1	2	3	4	5	6	7
I do find driving a car is enjoyable and rewarding.							
I perform all appropriate visual checks when driving or riding, e.g. mirror use, blind-spot checks, etc.							

2. Your perceptual skills in relation to motorcycles

	1	2	3	4	5	6	7
Motorcycles can be more difficult to spot in interweaving streams of fast moving traffic than under normal driving conditions.							
It is difficult to estimate the speed of approaching motorcycles while waiting to turn at a junction onto a main carriageway							
When waiting to turn at a junction onto a main carriageway I find that approaching motorcycles are as easy to spot as approaching cars							
Motorcycles are as easy to see at night as cars							
On the open road you can be suddenly surprised by the appearance of a motorcycle coming from behind you							
Motorcycles are easily hidden from view by parked vehicles and other parts of the road environment, e.g. buildings or overgrown vegetation							
Motorcycles are usually easy to spot even against a 'cluttered' background (containing road							

signs, adverts, etc.)							
When in slow moving traffic I am often surprised by motorcyclists filtering through the traffic							

3. Your knowledge of motorcycling on the road

	1	2	3	4	5	6	7
It is easier for motorcyclists to make sudden swerves to avoid an accident than car drivers							
Motorcyclists are allowed to 'filter' past stationary or slow moving traffic.							
Motorcyclists tend to have headlights on more often than car drivers in the daytime to increase visibility							
It costs less to repair the average motorcycle after a minor accident, compared with an average car							
I have similar personal characteristics to the average motorcyclist. (This is regardless of whether you actually ride a motorcycle yourself).							

4. When a motorcycle overtakes a car at 40mph, what size of a gap should be left between the car and the passing motorcycle (in feet) in order to remain safe?

5. Assuming the average car is 6 feet wide - how wide (in feet) would you guess a motorcycle is:

6. Think on the position a motorcycle should be in on a road (please tick the button you think reflects the position the motorcycle should be in on the road, between the centre line and pavement):

	Beside the pavement			Halfway between pavement and centre line			Next to the white (centre) line
Motorcycles should travel in which of the following positions							

within a lane?							
-----------------------	--	--	--	--	--	--	--

7. Your feelings about motorcycling

	1	2	3	4	5	6	7
I do (or expect that I would) find riding a motorcycle is enjoyable and rewarding							
When riding a motorcycle, taking risks is part of the thrill							
Other motorists should take extra care to look for motorcyclists							
The average motorcyclist takes greater precautions than the average car driver in wet weather conditions							
Motorcyclists often perform manoeuvres that are risky or inappropriate							
When a car and a motorcycle collide it is typically the fault of the motorcyclist							
It is easier to pass the current motorcycle test than the current car driving test.							
Car drivers are typically more law-abiding than motorcyclists							

8. Do you find motorcyclists a nuisance/inconvenience on the roads?

- Yes
- No
- Don't know

9. There has been a high number of collisions involving motrcyclists across Northern Ireland. On average, 18 fatalities per year, 138 serious injuries and 285 slight injuries. What in your opinion can we do to reduce the number of collisions involving motorcyclists?

10. What do you feel is the main reason for the recent increase in motorcycle casualties in NI?

11. Do you think motorcyclists are well protected against injury should they have a collision?

- Yes
 No
 Don't know

Please explain

12. What do you think the average age of the 'typical' motorcyclist is?

13. What gender do you think the 'typical' motorcyclist is?

- Male
 Female

14. What occupation do you think the 'typical' motorcyclist may be?

- Manager/senior official
 Professional
 Administration/clerical
 Skilled trades person

- Process Plant/ machinery operative
- Sales/customer service
- Unemployed
- Other

Other (please specify)

15. What do you feel motorcyclists could do to improve their own road safety?

16. As a road user, what do you feel you could do to improve motorcycle road safety?

Appendix 6

Literature Review:

This literature review outlines a review of national and international literature relating to causes and influencing factors for motorcycle collisions. The review contains the following sections:

- **Policy Context** - for this research at Northern Ireland, GB and Republic of Ireland level
- **Research** - at national and international level on the incidence of motorcycle collisions, evaluation of interventions at Northern Ireland and GB Level, research into the cause and influencing factors for collisions, research into car drivers attitudes towards motorcyclists, engineering and design interventions to try to reduce the number of motorcycle collisions internationally.
- **Motorcycle Strategies** – summary of motorcycle strategies introduced by governments in other jurisdictions at UK, European and International level.

Policy Context NI:

The NI Road Safety Strategy 2002-2012 is the overarching road safety strategy for Northern Ireland applicable to all road users and in particular relevance to this research, motorcyclists⁵¹. The Strategy highlights that there has been a significant increase in the number of motorcycles registered in recent years throughout Northern Ireland. However, it comments that if this increase is not to lead to an increase in motorcyclist casualties, more needs to be done to ensure that other road users are made aware of motorcyclists and their vulnerability and that motorcyclists themselves are encouraged to ride safely. The strategy outlines that round 65% of collisions involving motorcyclists are caused primarily by other road users.

The Strategy comments that:

The provision of appropriate advice, training and testing will be the main thrust of the strategy to improve protection of motorcyclists. The PSNI will extend its 'Operation Bikesafe' – where police advanced motorcyclists educate riders, particularly those returning to motorcycling after several years, in the safe maintenance and suitable handling of their motorcycles and the appropriate riding skills required^x.

The Strategy outlines a range of measures which help achieve casualty reduction targets among motorcyclists in Northern Ireland:

DOE

⁵¹ A new Road Safety Strategy is under development and will be launched by the end of December 2010

- will, through targeted publicity, encourage motorcyclists to ride safely and other drivers to be aware of motorcyclists and their vulnerability.
- will continue to offer training and assessment to motorcycle instructors, to maintain a voluntary register of instructors and to promote rider training among motorcycle dealers.
- will, within the first 3 years of the strategy, review the current voluntary training arrangements and consider the merits of introducing Compulsory Basic Motorcyclist Training (CBT) for all new riders on the basis operated in Great Britain.
- will monitor EU consideration of the merits of the arrangements for accelerated access and direct access which operate at present in Great Britain and which make provision for riders over 21 years of age to gain earlier entitlement to ride more powerful motorcycles.
- will bring forward proposals during 2002/2003 for regulations to require all drivers wishing to obtain a motorcycle licence to pass the motorcycle theory test before the practical motorcycle test is taken.
- will, through the Driver & Vehicle Testing Agency (DVTA), seek to introduce changes to the motorcycle test in the area of special manoeuvres by 2005.
- will bring forward proposals during 2002 for regulations to require all drivers/riders wishing to obtain a driving licence in Category B1 (tricycle/quadracycle) to pass a test in that category.

PSNI

- will increase awareness of the 'Operation Bikesafe' days, particularly among motorcyclists and their representatives.
- will endeavour to meet the increasing demand from motorcyclists to participate in 'Operation Bikesafe'.

Policy Context UK:

The UK Government's White Paper on the Future of Transport, "A New Deal for Transport: Better For Everyone" issued in July 1998, recognised that mopeds and motorcycles can provide an alternative means of transport for many trips and that they offer an affordable alternative to the car. The White Paper also acknowledged the potential benefits offered by motorcycling for the environment and for congestion. However, it recognised that these were dependant on a number of factors and that the role of motorcycling in an integrated transport policy raises some important issues.

Policy Context ROI:

The Road Safety Strategy 2007-2012 was published in October 2007, and provides a summary of general collision statistics and trends and comparisons with other European Union (EU) Member States.

Best practice countries in the EU have achieved a reduction to 50 road deaths per million of the population and are already committed to improving this position by a further 20%. Ireland currently ranks 14th out of 25 countries in

the EU, with an annual rate of 86 deaths per million population⁵². To join best practice countries in the next 5 years the Road Safety Strategy must reduce annual deaths to between 50 to 60 deaths per million, and the first specified target contained within the National Road Safety Strategy (2007-2012) is to:

'Reduce fatalities to no greater than 60 fatalities per million by the end of 2012 and 50 or fewer in the following years with demonstrable downward reductions in each year of this Strategy'.

Although motorcyclist fatalities accounted for approximately 8% of all fatalities in 2006⁵³, this percentage was significantly higher in the three preceding years⁵⁴ and so reducing, and maintaining a low level of fatalities among these vulnerable road users will contribute much towards achieving this national target.

In addition, motorcycling has seen a rise in popularity in recent years, both nationally and internationally, for both work (commuting and beating congestion) and leisure purposes. Since 1997, motorcycle registrations have increased by 43%⁵⁵ in the Irish Republic, and so the casualty statistics and the resulting motorcycle safety strategy should be considered in this context.

Research:

Northern Ireland Road Safety Problem Profile, DOENI July 2009 V4:

The Department of the Environment's Problem Profile represents the most up-to-date understanding of the key road safety issues as supported by available data. Quantitative and where appropriate, qualitative data has been used to inform the paper which covers all sections of road users throughout Northern Ireland. The paper highlights motorcyclists as one of the road user groups most at risk and indicates that for the period 2003-2007, the number of motorcyclists' deaths (95) was 14% of all deaths on Northern Ireland's roads, despite accounting for only 3.1% of licensed vehicles. Casualties tell a similar story with bikers accounting for 12% (784) of all those killed or seriously injured during this time. Motorcyclists are now the fourth largest road casualty group on NI roads.

The Northern Ireland Road Safety Problem Profile highlighted that the top 6 causation factors for fatal collisions involving motorcycles were

1. Excessive speed (28)
2. Inattention or attention diverted (11)
3. Alcohol or drugs (11)
4. Emerging from minor road without care (7)
5. Turning right without care (6)

⁵² Source: Road Collision Facts 2006

⁵³ 29 of 365 fatal casualties in 2006

⁵⁴ 16.4% in 2003, 13.6% in 2004 and 14.1% in 2005

⁵⁵ source: Motorcyclist road collision casualties 1997-2006

6. Overtaking on offside without care (6)

Further examination of the data indicates that 56% of fatalities occurred during the spring/summer months, in May (16%), June (14%), April and July (both 13%), which would be considered “biking season”. The report outlines that motorcycle casualties are almost totally a male problem but with a wide span of ages: 34% of fatalities occurred in the 35-49 year old age group, 29% in the 25-34 age group and 28% in the 16-24 year old age group.

The Profile outlines that:

- Motorcyclists remain the fourth largest road user casualty group in Northern Ireland.
- There have been road safety improvements across most road user groups between the 196-200 average and the 2003-2007 average, with the exception of motorcycling and other road users. According to the report, motorcycling shows the largest increase with an increase of 51% over the 1996-2000 baseline.
- There has been a 100% increase in the number of children killed as pillion passengers between the 1996-2000 baseline and the 2003-2007 average.
- There has been a 59% increase in motorcyclist KSI casualties between the 1996-2000 and 2003-2007 baselines. However in saying this, with the exception of 2004, KSIs decreased slightly year on year from 2003 until 2007 when they increased from 142 in 2006 to 153.
- Motorcyclists are now a significant portion of the casualties on our roads and reducing these will have a significant impact on the total problem. In 2007, motorcyclists accounted for 13% (153) of all deaths and serious injuries.

Motorcyclist Collisions and Casualties in Northern Ireland^{xi}

The aim of this report was to help provide a clearer understanding of the patterns and circumstances of fatal and serious (KSI) motorcycle collisions in the period 1st January 2000 to 31st December 2004. This in turn may help to reduce the number of collisions involving motorcyclists through the development of appropriate road safety strategies.

There has been a marked increase in the number of motorcycles, scooters and mopeds licensed in Northern Ireland in the last decade, from 8,775 in 1994 to 26,818 in 2003. Not only are there more motorcycles on the roads, but there has also been a growth in motorcycles with an engine capacity of 500cc or more. The increase in motorcycle traffic is in turn reflected in an increase in the number of motorcyclist casualties in injury road traffic collisions.

The focus of this report was on fatally and seriously injured casualties. It showed that:

- Motorcyclist KSI's are predominantly male (96.1%) and predominantly young people aged 17-24. This age group accounts for just over a third (33.6%) of KSI casualties, while those aged 25-34 accounts for a further 29.5% and those aged 35-44 for 20.0% of KSI casualties. It has been suggested by a representative from a leading insurance company that motorcycling is growing in popularity among females. It will be important to monitor the extent to which this is reflected in casualty statistics over the coming years so that advertising campaigns and road safety policies can be tailored accordingly.
- Just over half of all fatally and seriously injured motorcyclist casualties were responsible for the collision. In these cases the most common causes of the collisions are excessive speed for the conditions, overtaking on offside without care and inattention. In collisions where the rider was not responsible, the main causes were emerging from a minor road without care and turning right without care. There is clearly a need to make motorcyclist aware of the dangers of speeding and carelessness while at the same time raising awareness among other road users of the need to look out for and respect motorcyclists on the roads.
- Over half of motorcyclist KSI casualties occur from Friday through to Sunday, which suggests that these journeys relate to leisure rather than work. There is also a clear seasonal pattern with most KSI motorcyclist casualties occurring in summer/early autumn when weather and lighting are more suitable for motorcyclists than during winter.

Motorcycle Training:

There is considerable debate about the impact and effectiveness of Compulsory Basic Training (CBT) and whether or not it should be introduced in Northern Ireland. According to the NI Audit Office Report, "participation in IAM scheme for instructors is not mandatory. Consequently motorcycle instruction can be provided by individuals who have not met any objective standard. The less rigorous standards for motorcycle instruction are somewhat surprising given that motorcyclists are a substantially more vulnerable road user group than vehicle drivers...some 79 per cent of respondents to a survey of Northern Ireland Road Strategy consultees considered that CBT would be 'effective' or 'very effective' in reducing KSI's^{xiii}"

Evaluation of Bike Safe Scheme in Northern Ireland^{xiii}:

An evaluation of the Bike Safe Scheme in Northern Ireland was carried out by the PSNI Central Statistics Unit in December 2005. 670 participants of the scheme were surveyed of whom 426 completed and returned the questionnaire. The evaluation found that 75% of participants took part in

Bikesafe programmes to 'improve their safety while riding', and 68% to 'improve road awareness'. 17% said they took part in Bikesafe as 'it been a long time since I passed my test'.

The evaluation concluded that more than 97% of respondents to the survey found the Bikesafe Scheme useful with the vast majority saying they would recommend the scheme to other people. The evaluation concluded that the scheme "seems to have struck the correct balance with the majority of respondents indicating that the scheme covered what they expected, that the ride took the right amount of time and was on roads that they usually used. The vast majority of respondents also felt that the scheme was not too theoretical."

87.1% felt that the scheme had made a difference to the way they ride their bike and 91% disagreed with the statement that they had forgotten a lot of what they learned on the scheme.

The main areas that respondents found useful with the assessed ride were:

- Good advice and assessment
- Road craft/positioning on the road
- Hazard awareness
- Cornering safely

Evaluation of Bikesafe Scotland^{xiv}:

Research completed by the Transport Planning Research Group at Napier University on the impact of Bikesafe Scotland on the behaviour and attitudes of participants were somewhat mixed in terms of overall impact.

The report showed that the vast majority of Bikesafe Scotland participants were male and 67% fell into the 35- 44 and 45-54 year-old age groups. Twenty-nine per cent of respondents to the pre-course survey were aged 35 or older when they obtained a full motorcycle licence, while around a fifth had returned to riding in the last five years after a break in riding of a year or more.

"Loss of control" was identified as the most common precipitating factor in fatal motorcycle accidents where the motorcyclist was judged to be primarily responsible in a TRL report based on analysis of police fatal accident reports (Lynam et al, 2001). Evaluation of Bikesafe Scotland suggested that there was an improvement in the proportion of respondents saying they 'never' or 'hardly ever' "brake too quickly on a slippery road" or "find your back wheel slipping away when you take a bend, almost causing you to lose control". These types of riding behaviour appear to be associated with control over the bike. This appears to be a positive outcome for Bikesafe.

Participants also felt that Bikesafe had a positive impact on their riding behaviour. Less than 5% of participants agreed with the statement "Bikesafe did not make any difference to the way I ride my bike" and over three quarters

agreed that Bikesafe had taught them to ride more defensively. Around a third of all respondents said that the most useful elements of Bikesafe were tips about 'traffic awareness, looking ahead and reading the roads correctly' – all elements associated with defensive riding – which suggests that Bikesafe was fairly successful in promoting defensive riding.

In relation to riding speed, however, while the proportion of respondents saying they would normally ride below the speed limit in roads in built-up areas increased after participation in Bikesafe, the proportion saying they would ride at 10 or more miles above the speed limit on faster roads in non-built up areas also increased. The proportion of post-course participants who say they often exceed the speed limit on motorways and on country roads is higher than the proportion of pre-course participants, while a higher proportion of post-course 3 participants say they 'never or hardly ever' exceed the speed limit in town. Although the proportion of respondents indicating increased speed post-Bikesafe is relatively small – for example, the proportion of respondents indicating 'normal' speeds above the speed limit on two faster roads increased by 13% post-Bikesafe – given that the proportion of serious and fatal motorcycle accidents is much higher in non-built up areas, findings relating to participants' speeds on these roads were a cause for concern.

In terms of improving the Bikesafe scheme, the findings on speeding, discussed above, suggests that there may be a need for a greater focus on attitudes to riding as part of the Assessed Ride programme. Findings on speeding, discussed above, suggest that there may be a need for a greater focus on attitudes to riding as part of the Assessed Ride programme. It may be that some riders are engaging in 'risk compensation' after taking part in Bikesafe – they feel that they have become better riders and are therefore better equipped to ride at speed. Focusing on attitudes to riding as part of the course could address this issue by aiming to curb riders' confidence in their ability to ride safely at speed, and in fact several forces have already modified their Bikesafe programme to focus more on riding attitudes. The research also found that two-thirds of 2002 Bikesafe participants said their assessor had not suggested they undertake any further training. This suggests that the advanced training message could also be better promoted by Bikesafe organisers.

Right to Ride Near Miss Survey^{xv}:

'Write to Ride' carried out a survey of 257 motorcyclists in 2009 throughout Northern Ireland, the Republic of Ireland and Great Britain. The survey found that 78.2% of respondents had experienced a near miss accident in the 12 months preceding the survey. According to the data gathered in the quantitative survey (and a follow-up focus group held with advanced motorcycle trainers, road safety officer and user group representatives), road maintenance in general was considered to be an overall important factor for the near misses as well as other road users:

- 82% of those who experienced a near miss had to swerve to avoid another vehicle or pedestrian entering into their space
- 75 riders indicated that their motorcycle skidded (34.7% of whom due to slippery or loose road conditions)
- 53 riders indicated that they had lost grip of their motorcycle (45.3% due to potholes or grooves in the road)
- 56 riders replied that they had nearly lost control of their motorcycle (32% of whom due to road markings or overbanding)

The authors “propose the use of error data for the design and implementation of specific strategies and counter measures in the road transport system which include:

- Training
- Error management technique
- Road infrastructure design
- Vehicle design
- Policy, regulations and legislation, and
- Advertising campaigns.”

Risks and Motorcyclists in Scotland^{xvi}:

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 (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).

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 Acceptors" 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.

Car driver's attitudes to Motorcycling:

According to research published by the University Of Nottingham, motorcyclists are over-represented in UK traffic accident statistics. Many car-motorcycle accidents are however due to the inappropriate actions of car drivers. It is predicted that car drivers at risk of collision with motorcycles have divergent attitudes and beliefs about motorcyclists compared to safer drivers, which may lead to a deficient mental model guiding their interactions with motorcyclists^{xvii}.

The report highlights that a recent analysis of motorcycle accidents^{xviii} found that right-of-way violations by other motorists (ROWVs) led to the most motorcycle accidents. A typical instance would involve a car pulling out from a junction into the path of an approaching motorcycle. Other noted accidents included drivers overtaking or making U-turns in slow moving traffic, without checking for filtering motorcycles (that is, motorcycles travelling between two lanes of stationary or slow moving traffic, or overtaking one line of stationary traffic on a single carriageway road). Typically car drivers involved in these accidents report that they looked but failed to see the approaching motorcycle (a LBFTS error). It is possible however that some of these drivers failed to

look, or failed to look in the appropriate areas of the visual scene. Alternatively, some drivers may look and see the motorcycle, but make an incorrect decision about whether it is safe to make their manoeuvre^{xix}

It is proposed that all of these behaviours are subject to experience with, and exposure to, motorcycles. There is evidence that dual drivers (those who drive cars and ride motorcycles) have a lower likelihood of accidents involving motorcycles (Magazz`uet al., 2006), and car drivers who have close friends or relatives who ride motorcycles are also less likely to be involved in collisions with motorcycles, and demonstrated better observation of motorcycles than drivers without such family and friend connections (Brooks and Guppy, 1990). Experience and exposure to motorcycles feed into the drivers' schemata for dealing with a variety of driving situations. Schemata represent the accumulated understanding that an individual has about any situation, and provide guidelines and self-imposed rules for how one should behave in those situations. If the schemata of drivers is sub-optimal, then they potentially have less awareness of when and where to look, what to process (e.g. they may have higher thresholds for spotting motorcycles), and what cues to use when making a judgment about the risk posed by an approaching motorcycle.

Motorcycle Accident Cause Factors And Identification Of Countermeasures Volume I: Technical Report (The Hurt Report)^{xx}:

This report was prepared for the U.S. Department of Transportation in January 1981. Published in 1981 and more commonly referred to as 'the Hurt study' this was a groundbreaking report on the causes and effects of motorcycle accidents. Although more than 15 years old at this time, the study still offers riders insight into the statistics regarding motorcycle accidents and tips on safer riding.

With funds from the National Highway Traffic Safety Administration, researcher Harry Hurt of the University of Southern California, investigated almost every aspect of 900 motorcycle accidents in the Los Angeles area. Additionally, Hurt and his staff analyzed 3,600 motorcycle traffic accident reports in the same geographic area. Crucially all staff involved in the research were motorcyclists themselves.

The report presented the data and findings from on-scene, in-depth investigations of 900 motorcycle accidents and the analysis of 3600 traffic accident reports of motorcycle accidents in the same study area. Comprehensive data were collected and synthesized for these accidents to cover all details of environmental, vehicle and human factors. In addition, exposure data were collected and analyzed at 505 accident sites at the same time-of-day, same day-of-week, with same environmental conditions. These exposure data define the population at risk so that comparison with accident data will reveal the factors, which are over represented in the accident

population. The analysis and review of these data identify cause factors of motorcycle accidents, relates the effectiveness of safety equipment and protective devices, and identifies countermeasures for accident and injury prevention.

Three specific areas were set as objectives in this research:

- The causes of motorcycle accidents and injuries need to be determined so that all contributions of the motorcycle rider, car driver, roadway features, and motorcycle design are defined,
- The effectiveness of safety helmets and other protective equipment must be determined because the motorcycle rider has no crash protection unless it is being worn on the body
- Countermeasures must be determined which will prevent motorcycle accidents and reduce injuries.

The most common motorcycle accident involves another vehicle causing the collision by violating the right-of-way of the motorcycle at an intersection, usually by turning left in front of the oncoming motorcycle because the car driver did not see the motorcycle. The motorcycle rider involved in the accident is usually inconspicuous in traffic, inexperienced, untrained, unlicensed, unprotected and does a poor job of avoiding the collision. The data of this accident research provided the following principal findings:

- **Accident and Injury Causes.** The automobile driver fails to detect the inconspicuous motorcycle in traffic. This is due to the lack of motorcycle conspicuity and lack of caution and awareness of the automobile driver. The lack of skill and traffic strategy increases the motorcycle rider's involvement in collisions. Injury severity increases with collision speed, but the motorcycle rider's lack of head protection accounts for the most severe but preventable injuries. Also, motorcycle rider lack of collision avoidance skills increases injury severity.
- **Protective Equipment.** The only significant protective equipment is the qualified safety helmet, and it is capable of a spectacular reduction of head injury frequency and severity. The Federal Motor Vehicle Safety Standard 218 provides a highly qualified safety helmet for use by motorcycle riders. This research shows NO reasons for a motorcycle rider to be without a safety helmet; qualified helmets do not limit vision or hearing in traffic or cause injury.
- **Countermeasures.** The basic Motorcycle Rider Course of the Motorcycle Safety Foundation is effective in training motorcycle riders and those trained riders are both less involved and less injured in motorcycle accidents. This course - or its equivalent - should be made a pre-requisite, or at least a co-requisite, of motorcycle use and should be applied in driver Improvement for those motorcycle riders who have received traffic citations. Licensing of motorcycle riders must be improved with special motorcycle licenses and improved testing such as has been developed by NHTSA-Traffic Safety Programs. Law

enforcement should act to enforce license requirements, identify alcohol involved motorcycle riders, remove dirt bikes from traffic, and effectively cite and file against culpable accident-involved automobile drivers as well as motorcycle riders. Most motorcycles in accidents are inconspicuous, and the use of the headlamp in daylight and high visibility jackets

Engineering:

Research carried out by the Scottish Motorcycling Community and endorsed by the Scottish Assembly^{xxi} highlights the DfT's present advice on bus lanes, "TAL 2/07 The Use of Bus lanes by Motorcycles" encourages a more objective assessment than the previous advice LTN 1/97 "Keeping Buses Moving" which recommended that motorcycles should not normally be permitted to use them. The onus is on the Local Authority to weigh up the benefits and disbenefits of permitting use.

The research suggested that engineers and planners should take into consideration the safety benefits for motorcyclists by permitting access, considering the possible negative impact on other vulnerable road users particularly pedestrians and cyclists, impact on bus journey time reliability, the potential for modal shift if motorcycling is seen as a more convenient form of transport and the reduction in congestion for other traffic on routes currently used by motorcyclists. The arguments about other vehicles using bus lanes revolve around the reduction in benefits for buses. This is not an issue with motorcycles. But there has been a longstanding concern about conflicts with cyclists and to lesser extent pedestrians. For cyclists the concern stems from the differential rate of travel of cyclists and motorcyclists, given the increased traffic flow in an uncongested bus lane, and the visibility of cyclists compared with buses, giving rise to a perception of greater risk and a less attractive cycling environment. For pedestrians, evaluating the differential rate of travel and the awareness of motorcycles in bus lanes generates perceived safety concerns.

A number of authorities in England have allowed motorcycles into bus lanes. To date there has been no evidence of increased accidents to substantiate the perceived higher risks of allowing PTWs into bus lanes either where motorcycle use is allowed or in Transport for London (TfL) or DfT trials. Furthermore, there are potential safety benefits to motorcyclists (a reduction in motorcycle accidents of between 0% and 31% in DfL trials) if they are able to use bus lanes rather than filter through traffic queuing alongside the bus lane. Motorcyclists contend that they are more visible to pedestrians when using bus lanes than when filtering through stationary or slow moving traffic.

Roads

Barriers To Change: Designing Safe Roads For Motorcyclists

This Position paper on motorcycles and crash barriers was published by EuroRAP (European Road Assessment Programme) in November 2008.

The paper is based on the work of the European Road Assessment Programme (EuroRAP) Motorcycle Safety Review Panel. Established in October 2007, the Panel brought together leading European experts in the field of motorcycle safety to give a synopsis of current thinking in the area.

The EuroRAP Motorcycle Safety Review Panel recommends that:

The quality of crash data and the research base surrounding how motorcyclists are killed and injured in crashes involving infrastructure needs to improve substantially;

- There is sufficient evidence to justify new and immediate interim guidance on crash barrier design to give road engineers clear guidance on where motorcycle-friendly systems should be incorporated at new sites, and to be able to review motorcyclist risk at existing sites. The Netherlands is commended for its 'decision tree' approach;
- Where data permits, as in the UK and Spain, EuroRAP should map motorcycle risk across the road network separately from other traffic so as to highlight high-risk roads by mode of road user;
- The decision in July 2008 to develop a new European testing standard for crash barriers that incorporates the needs of dismounted riders is commended – but concerns remain that testing should take place for riders striking the barrier whilst mounted and for protective equipment added to existing barriers;
- Every road safety engineering department should have a motorcycle champion, as is the case in France, to introduce a cultural change to the way in which risk is viewed by a road authority.

Regarding the wire rope barrier debate, the Panel concluded that, despite the amount of high profile coverage that wire rope barriers have attracted, limited research does not warrant the inference that they are more or less dangerous than other types of barrier on the market.

Safety Barriers And Motorcyclists

This report was prepared for Transport Scotland by TRL in January 2008. The report outlined that for a number of years, the issue of safety barriers has been raised by a number of motorcyclists' groups throughout Europe as they consider the barriers to be designed for the safety of cars and other road users, but feel that their safety would be severely compromised if they were to

impact such devices. In particular, the wire rope safety fence has been identified by such groups as having a greater potential to cause injury to motorcyclists, than other types of safety barrier.

Whilst there has been much work undertaken to examine the impacts between safety barriers and motorcyclists, much of the work dates back to the mid 1980s. Due to a requirement from the European Commission that motorcyclists' safety be more prominent in the minds of National Authorities, more recent work has begun in this area, but is not at the stage where it can be published.

The report summarised that the risk of motorcyclists receiving fatal or serious injuries during an impact with a safety fence post is high; although the number of those injured each year from such impacts on major roads is relatively low (an average of 182.8 per year in Great Britain, of which 12.4 per year occur in Scotland). Of these, an average of 20 motorcyclists per year will receive fatal injuries – two per year in Scotland.

An examination of the type of safety fence impacted has shown that, particularly in Scotland, there is a disproportionately high percentage of motorcyclists being killed or seriously injured after impacting a wire rope safety fence than other types of safety barrier, although the actual number of impacts is low (less than 1 per year). This issue should be addressed, and it is felt that the most effective approach to this would be to first better understand the circumstances surrounding these particular instances.

There are a number of other countries, which require the consideration of motorcyclists when installing or designing for the layout of such devices. Some countries provide guidance and/or requirements for the locations where motorcyclist protection devices should be installed, and these are located mostly on bends.

An examination of the location of fatal impacts between motorcyclists and safety barriers in Great Britain has shown that median barrier accidents are most likely to occur on left hand bends with a large radius, whilst verge barrier impacts are more likely to occur on right hand bends with a tight radius. However a disproportionately high number of such impacts appear to have occurred on slip roads and at roundabouts. If the number of casualties per year was considered to be sufficient that the retrofitting of devices to provide additional protection to motorcyclists is warranted, it is recommended that it is these areas where the protection would be most beneficial. This would be in addition to any incident 'black spots' which may exist.

Literature Review of Motorcycle Collisions

A Literature Review of Motorcycle Collisions completed by Oxford University in 2004 explored various aspects of secondary prevention measures to reduce the severity of accidents (and the related injuries) rather reduce the frequency of accidents per se.

The literature review suggested that, the 'risk compensation' hypothesis associated with Peltzman (1975)^{xxii} suggests that such measures might even increase the frequency of risk related accidents. These measures are normally engineering based related to the design of motorcycles, motorcycle helmets and other protective equipment. These measures were examined in turn in the Literature Review, along with the related issue of enforcement, which is particularly relevant to the wearing of motorcycle helmets. The results are outlined in the paragraphs below:

Motorcycle Design

In the past 10 to 15 years, there have been major innovations in motorcycle aerodynamic design, liquid cooling, engine counterbalances, antilock and "linked" braking, fully adjustable suspension systems, and advanced disc braking systems. Both handling characteristics and tyre technology, so crucial to the safe and efficient use of the motorcycle, have improved greatly. Recently, manufacturers have been conducting research on new concepts, including automatic transmissions, fully enclosed rider capsules, and radical chassis designs. The latter involve such ideas as new swing-arm technologies and non-traditional front ends that use flexing technologies to overcome torsion problems. Continued experimentation with improved shaft designs and aerodynamic forms can be expected to increase rider comfort and stability. In addition, improvements of the last decade in such features as fuel injection, braking systems, and engine load mapping will continue to be introduced to a wider selection of motorcycles (Bednar et al, 2000)^{xxiii}. Three aspects of motorcycle protection design are considered in more detail below: brakes, airbags and leg protection.

Brakes

For many types of vehicle incorrect or inappropriate brake application is not critical under most circumstances. With two-wheeled motor vehicles a mistake by the rider that leads to either wheel being over-braked will cause the machine to skid, become unstable and capsize. The incidence of skidding in personal injury accidents is substantially greater for motorcycles (TWMV) than for other vehicles. In Great Britain in 1997, skidding occurred in 28% of accidents in the wet involving a TWMV compared with 20% for other vehicles (DETR, 1998). Anti-lock brakes (ABS) are designed to prevent wheel locking and thus provide motorcyclists with the confidence to use the brakes up to the limit of the friction available, without fear of falling to the ground. ABS also reduces stopping distance in wet and icy conditions. A few machines are now offered with anti-lock brakes (Elliot et al, 2003). NHTSA and MSF (2000) called for more studies of the effectiveness of linked and antilock braking

system, which would form the basis for more widely deployment if these technologies prove valuable. Furthermore, information from research can be used to implement other braking-related countermeasures.

Although new technologies seem to promise shorter stopping distances and overall safer stopping for motorcyclists, assuring that motorcyclists get maximum braking performance requires additional training and education on proper braking and panic braking techniques. The BikeSafe programme in the UK could be an ideal venue for this purpose.

Airbag

The first crash tests with airbags on motorcycles were published in 1973 (Hirsch and Bothell, 1973). The results were not entirely satisfactory but gave a clear indication that an airbag system could be beneficial. In the early 1990s tests were completed in the UK in which three different types of motorcycle were fitted with an airbag (Happian-Smith and Chinn, 1990). The aim was to achieve maximum restraint by the airbag and as great a reduction in the motorcyclist's speed as possible. The results show that full restraint was not possible above a speed of 30mph, though reducing the rider's velocity and controlling his trajectory could still be beneficial. Okello and Chinn (1996) and Chinn et al. (1997) examine the effect of the airbag module, purposely designed and built for the Norton Commander. The sled test results showed that the airbag system fully restrained the rider with 100% reduction in rider kinetic energy for all test conditions assessed. A similar study by Iijima of Honda Research (Iijima et al., 1998), of airbags mounted in a large touring motorcycle, the Honda Gold Wing, demonstrated that the airbag was beneficial in four cases, harmful in two cases and had little or no effect in three cases.

Leg Protection

Injuries, particularly fractures, to the lower limbs of motorcyclists are common and a considerable amount of research has been conducted in this area. Generally, lower limb protectors incorporate a bar, 'crash bar', and/or other structure-for example a fairing designed to prevent intrusion into the spaces normally occupied by the rider's legs.

Ouellet (1990) investigated 131 crashes involving crashbar-equipped motorcycles. He stated that leg protection devices might have the ability to affect favourably those serious leg injuries, which result from direct crushing of the rider's leg against the side of the motorcycle during impact. Nairn (1993) contended that the severity of leg injuries would be reduced in approximately 50% of the crashes which involved serious leg injury if leg protection were to be fitted.

BMW have launched a TWMV, designated the C1, that is a departure from conventional designs. It is based upon a Scooter layout but also has a 'roof' whereby the frame is extended from the rear at the base of the seat base over the rider's head and joins with the front. Kalliske et al. (1998) have evaluated

the performance of the C1 in a series of impact tests and computer simulations. Specific results are not given but the paper comments that for impacts frontal to the C1, the HIC (Head Injury Criterion) was always well below the human tolerance, the neck momentum was reduced by about 50%. Lower extremities, leg forces, were very low and only about 1/12th of the values normally measured for a two-wheeler.

Motorcycle Helmet

Although protective helmets have been used to advantage for more than three millennia, the first systematic investigations of helmet function and effectiveness appeared only recently, in England in the 1940's. Cairns in 1941 reported that in a study of over a 100 motorcyclist fatalities, 92% suffered from head injury and 66% had multiple injuries (Cairns, 1941). He also discussed 7 cases of nonfatal injury in which helmets had been worn and in which the injury had been "unusually mild." He discussed the structure of the helmets, noted accident damage and speculated as to how the helmets may have intervened to prevent more serious injury. Even in the 1940's, motorcycle crash helmets had been available for some time. Dr Cairns did not discover the crash helmet but he demonstrated conclusively that motorcyclists were exposed to a substantial risk of serious head injury and that crash helmets could be used to attenuate this risk. He also began the process of relating the mechanical behaviour of crash helmets to the mechanisms of head and brain injury.

Before Dr Cairns, helmet effectiveness was anecdotal and helmet design was based on intuition. His 1941 and 1943 (Cairns and Holbourn, 1943) papers established the value of crash helmets as head protection and declared them fit subjects for medical and engineering study.

Epidemiology is now providing strong objective evidence to support the two perceptions so basic to protective helmets: that injury risks exist and that helmets are effective countermeasures (Hurt et al., 1981; Williams, 1991; Rivara and Thompson, 1996; Evans and Frick, 1988, Anderson and Kraus, 1996). Hurt et al. (1981) surveyed over 900 injured motorcycle riders, of which 60% were non-helmet wearers and 40% helmet wearers. The analysis of injuries at the critical to fatal threshold, showed that 3.5% of helmeted riders were above this threshold, compared with 8.2% above this threshold for the non-wearers. It can be concluded from this that the risk of death is more than halved if a helmet is worn. In his conclusions Hurt states that 'helmeted riders and passengers showed significantly lower head and neck injury for all types of injury at all levels of severity'.

Otte et al. (1984) studied 272 motorcyclists injured in road accidents around the Hanover area. Non-helmeted riders accounted for 72.5% of the total injuries and yet this group were outnumbered (by how many is not stated) by the helmet wearers. Overall (including figures from a previous study) Otte et al. claim that 70% of nonhelmeted riders suffer head injuries whereas only 45% of helmeted riders sustain head injuries.

Finally, NHTSA (1998c) showed when involved in a crash, an unhelmeted motorcyclist is 40% more likely to have a fatal head injury and 15% more likely to incur a disabling head injury than a helmeted motorcyclist. Helmets reduce the likelihood of death by 29% for all motorcycle crashes. From 1984 through 1996, it is estimated that helmets saved the lives of more than 7944 motorcyclists.

Other Protective Equipment for Motorcyclists

There are other protective equipment for motorcyclists with the helmet being the most common and important one. According to Elliot et al. (2003), choosing the right clothing can achieve the following protection:

- Prevention of most laceration and abrasion injuries that occur when a rider slides on the road surface after falling off.
- Prevention of contamination of open fractures by road dirt.
- Reduction in the severity of contusions and fractures, with the prevention of some fractures and joint damage.
- Reduction in the severity (or prevention) of muscle stripping and degloving injuries, particularly to the lower leg and hands.
- Prevention of accidents by maximising the conspicuity of the rider.
- Prevention of accidents by maintaining the rider in good physiological and psychological condition by keeping the rider dry, warm, comfortable and alert.

The selection of single items of clothing and their combined use should be based on the following considerations:

- Clothing must be able to protect against, wet, cold and heat even when these occur for long periods.
- If the hazard is a single event such as a collision the likelihood of it occurring should be assessed. Falls and impacts are common in all types of riding (including off-road) except on motorways. The severity of the collisions is dependent on the surface impacted. However because it is not possible to control where a rider will travel at any one time, the clothing must satisfy all requirements.
- As a set of clothing may be bought from different sources, it is therefore important that advice should be given on compatible items. For example there should not be a gap between boots and trousers. The outermost layer should always be of high conspicuity even in wet weather.
- Clothing should be designed to ensure that all tasks required of a motorcyclist are easily accomplished and in particular movement must not be restricted.
- Riders need a way of knowing the conditions for which an item of clothing is suitable, and with which other items it is compatible.

Daytime Running Lights (DRL) Saving Lives with Daytime Running Lights (DRL)

This consultation paper was published by the European Commission on 01 August 2006.

The paper states that according to research available, Daytime Running Light (DRL) has a high potential to increase road safety. This is due to assistance to road users to better and earlier detect, recognise and identify vehicles.

That paper highlights that if measures are taken to require the use of DRL throughout the EU, it could help save between 1,200 and 2,000 road fatalities per year and thus make an important contribution to the European target of saving 25,000 lives per year on European roads. The paper states that the following research findings should be noted in the course of assessing whether legislation on DRL for all vehicles is appropriate:

- Road users not having lighting devices, i.e. pedestrians, cyclists, mopeds do not become less conspicuous if all vehicles feature DRL;
- A negative effect of DRL on the visibility of motorcyclists can not be ascertained;
- Dedicated DRL and dipped headlamps do not cause glare;
- It is true that DRL increases fuel consumption and CO₂ emissions by up to 1.5% if dipped headlamps are used but this is reduced to only 0.3% in the case of dedicated DRL. However, taking into account this effect on fuel consumption and CO₂ emissions, the benefits of a legal obligation to use dipped headlights on existing vehicles and to equip new vehicles with automatic dedicated DRL outweigh the costs by a factor of 1 to 2. I.e. for one Euro invested into daytime running lights, there is a benefit to society of two Euros.
- 14 Member States have mandatory rules on the use of DRL in force so far with different requirements. Furthermore, some Member States recommend the use of light during daylight without mandating them while waiting for harmonised European legislation. In order to avoid confusion and related road insecurity, a harmonised EU-wide rule could be necessary for the benefit of the travelling citizen.

Comments were received from 14 national governments, 18 companies and research institutes, 34 associations/federations/clubs and 113 individuals.

- 83% of governments and administrations approved the EC approach.
- 62% of associations/federations/clubs approved the EC approach.
- 95% of individuals disapprove of the EC approach.

On examination of the Commission's research the UK Department for Transport concluded that the benefits of DRL are far less certain than predicted. Furthermore the cost/benefit analysis is more likely to be less than 1, i.e. there is a negative cost/benefit ratio when more realistic assumptions are made. To help inform their response to this consultation, the UK Government reviewed the studies carried out on behalf of the Commission and this review is discussed next.

Daytime Running Lights (DRL): A Review of the Reports from The European Commission

This report was produced by TRL Limited, for the UK Government in October 2006. In the past, a number of researchers have found flaws with some of the studies carried out into the effectiveness of DRL and road safety groups were concerned that they could potentially have adverse affects for some road user groups, particularly for motorcyclists. For this reason, the DfT commissioned TRL to carry out a critical review of the research carried out for the EC in order to inform the DfT's response to the EC consultation exercise.

In summary, the review reached the following conclusions:

- There is substantial evidence that the mandatory use of DRL would provide a net accident reduction. However, the evidence concerning the magnitude of the effect and particularly the relationship with accident severity is considerably weaker.
- The estimates of the fuel and emissions increases as a result of implementing DRL are reasonable and possibly slightly conservative (high).
- The research into the potential of DRL on cars to impair the conspicuity of motorcyclists and other vulnerable road users was well controlled but limited in scope and did not consider some important variables. However, some consistent conclusions could be drawn which were that it should be possible to design dedicated DRL of low intensity (e.g. about 200cd) that are beneficial to the conspicuity of cars without adversely affecting the conspicuity of motorcyclists. However, DRL of higher intensity (potentially including standard passing beam headlights) could have an adverse effect on motorcyclist conspicuity in some circumstances.
- There is considerable scientific uncertainty inherent in the values of the benefit to cost ratios presented in the EC work. The key variable is the assumption that the accident benefits would be considerably greater for fatal accidents (15%) than for serious (10%) or slight (5%) accidents. This assumption was very weakly supported by the available data and changing it to a more technically defensible assumption that the mean effect of 5.9% remained the same for all accident severities reduced the benefit to cost ratios to much less than 1 indicating that the costs would be greater than the benefits.
- It was considered that it would be more technically valid to present a range of possible benefit to cost ratios within which there could be confidence that the true answer would lie, thus reflecting the technical uncertainty. The analysis showed that a ratio of 1 would fall within this range meaning that, although an accident reduction potential exists, it is not possible to say with certainty whether the benefits of implementing DRL would outweigh the costs.

Motorcycle Strategies

The Government's Motorcycling Strategy: Revised Action Plan

This action plan was published by the UK Department for Transport in June 2007. In March 2007 the Transport Select Committee published its report on its inquiry into the Government's Motorcycling Strategy, to which the Department for Transport (DfT) responded in June 2007. The Department for Transport gave an undertaking to review and publish revised actions. The National Motorcycle Council (NMC) has since been working on revising the action plan contained in the 2005 Strategy.

The overall strategy remains as set out in 2005. This revised action plan contains two parts. Firstly, it includes the new action plan, as agreed with the NMC. This sets out what the DfT and their partners will be doing over the next few years to take forward the Strategy. The second part of the revised action plan discusses the progress on the 2005 actions, as well as explaining what the DfT have done so far, this provides the background to the new action plan and the changes that have been made.

There are 42 new actions that update the actions in the 2005 Strategy, taking account of changes since then. Some of the original actions have been completed, others are ongoing, many have developed over time and need to be revised to reflect the latest progress, while some new issues have arisen requiring entirely new actions.

Road Safety and Publicity actions:

- R1 - DfT to continue sponsorship of BSB in 2008 season and use the Think Academy to promote road safety messages to leisure motorcyclists. DfT to undertake evaluation of 2007 activity.
- R2 - DfT advertising to continue to develop, focusing on the most dangerous situations and behaviors.
- R3 - DfT to continue to publish an annual calendar of Think campaigns. Other organisations, including BMF, MAG, MCIA, LARSOA and Bikesafe, also publish calendars of their activities. Links will be provided between these websites in order to cross-refer between the calendars.
- R4 - Engage with the press to discuss how they can work with us so that irresponsible riding which endangers the riders themselves and other road users is not encouraged.
- R5 - Place a greater emphasis on different types of motorcycling, providing a wider picture of motorcycling possibilities in the UK.
- R6 - Complete and publish research projects on rider fatigue; on driver attitudes to motorcyclists; on rider training.
- R7 - Consider further research to be commissioned in 2008/09 and in 2009/10.
- R8 - DfT will provide support for local police enforcement strategies when requested to do so.
- R9 - Issue and keep up to date a compendium of motorcycle statistics.

- R10 - Continue to measure motorcyclist casualty rate and consider use as an indicator as part of the review of the post 2010 road safety strategy.
- R11 - Complete implementation of Greenaway recommendations on uninsured driving. Introduce system of Continuous Insurance Enforcement.

Technical, Engineering and Environmental actions:

- E1 - A campaign led by the motorcycle industry, retailers and rider user groups to encourage riding responsibly and to reduce noise by using only legal exhaust systems.
- E2 - Consider the feasibility, user acceptance and potential for improved safety, security and environmental performance that an assessment programme for motorcycles could deliver.
- E3 - Engage with the tyre industry to develop and disseminate information and guidance regarding selection of suitable motorcycle tyres.
- E4 - Monitor research into improved conspicuity of motorcycles.
- E5 - Motorcycle retailers to raise awareness with riders on the importance of the right clothing to reduce injury and improve conspicuity
- E6 - Investigate opportunities to improve rear vision for motorcyclists.
- E7 - Continue collecting A-pillar specific data as part of the "On the Spot" accident studies in order to quantify the risk from increasing width of windscreen A-pillars on newer cars.
- E8 - Work with stakeholders to develop best practice / supplementary information on clearing road contaminants (e.g. diesel).

Training, testing and licensing actions:

- T1 - Delivery and monitoring of the impact of the 2008 motorcycle test as required by the second EU driving licence directive, ensuring sufficient provision for testing is available.
- T2 - Consult on a trainer registration scheme as part of the 3rd Directive implementation and ultimately as part of the development of a single quality assurance scheme for all motorcycle instruction.
- T3 - Produce summary report on results and recommendations of Direct Access review.
- T4 - Consult on improvements to Compulsory Basic Training and implement as appropriate.
- T5 - Consult on improvements to Direct Access Scheme and implement as appropriate.
- T6 - Promote the take-up of Register of Post Test Motorcycle Trainers (RPMT) and Enhanced Rider Scheme (ERS).
- T7 - DSA to work with the insurance industry to promote the Enhanced Rider Scheme to riders.
- T8 - Agree programme for development and publication of interactive training aids such as CD-ROMs or DVDs.
- T9 - Implement the motorcycle element of the third EU driving licence directive, taking account of options identified during the consultation.
- T10 - Speed awareness courses to be rolled out across England

- T11 - Monitor pilot scheme for new rider improvement course and consider wider implementation in light of evaluation

Traffic management, planning and transport policy actions:

- H1 - IHIE will update its guidelines on the provision for motorcyclists on the highway in the light of experience and research.
- H2 - Revision of the Traffic Signs Regulations will include motorcycles as a permitted variant on bus lane signs.
- H3 - Review research reports on motorcycles in bus lanes
- H4 - Carry out trials into the effects of allowing motorcycles into advanced stop lines with a number of Local Highway Authorities.
- H5 - Ensure that motorcycles receive appropriate attention in future reviews of planning guidance documents.
- H6 - Pursue supplementary documents on motorcycles to use alongside Code of Practice on Maintenance Management. Pursue development of easily accessible co-ordinated reporting system for public to alert Highway Authorities to maintenance problems.
- H7 - DfT to ensure motorcyclist representatives' involvement in the development of future local transport guidance, prior to consultation, by December 2008.
- H8 - DfT to develop and publish guidance on the inclusion of motorcycles in workplace travel plans by the end of the 2008/09 financial year.
- H9 - DfT to include reference to motorcycles in future guidance and other documents published by DfT relating to sustainable travel where appropriate.
- H10 - Highways Agency to continue to include motorcycles as a mode of transport to be addressed in its Safety Action Plan. Ensure that the particular needs of motorcyclists are taken into account, where appropriate, in the design, management and maintenance of the motorway and trunk road network.
- H11 - Investigate reporting options for diesel spills and other highway defects. Disseminate options for tackling diesel spills.

The Government's Motorcycle Strategy: Government Response to the Committee's 5th Report of Session 2006-07.

This report presents a response to the individual topics appearing in the Government's Motorcycle Strategy 2005.

The responses relate to the topics listed as follows:

Training and testing – Consideration is being given to offering education on road usage including motorcycle and mopeds starting from the age of 14.

Staged access to motorcycles – The Third European Driving Licence introduces the concept of allowing access to high-powered motorcyclists to experienced riders only.

Motorcycle access to bus lanes – The balance of evidence suggests that the Government is right to revise its guidance to local authorities when deciding whether to allow motorcycles to use bus lanes.

Emissions – Government statistics show that for many of the classes of pollutant, motorcycles are often worse than cars. Limit values for motorcycle emissions were introduced in June 2003 as Euro 1, and have already been revised twice such that from January 2007, all new EC Type-Approved motorcycles must meet the motorcycle Euro 3 emission limits. When compared with the standards contained in the motorcycle Euro 1 regulations, motorcycle Euro 3 reduced the limit values for carbon monoxide by 85%, hydrocarbons by 90%, and oxides of nitrogen by 50%. This will put motorcycle emissions at levels similar to, or better than, those from cars. For the purposes of applying emissions limits, machines are divided into two categories, bikes under 150cc and those of 150cc and over. Data published by the Association des Constructeurs Europeens de Motocycles (ACEM) shows that CO₂ emissions of motorcycles are largely independent of engine size above 600cc capacity. Even for the larger machines, carbon dioxide emissions appear to be around 14% below the new car average figure.

Enforcement – Detecting and taking direct on-road enforcement action against untaxed and uninsured motorcycles poses particular challenges as untaxed/uninsured motorcycles are rarely seen on a public road. The Driving and Vehicle Licensing Authority (DVLA) works with the police where possible to detect untaxed vehicles. Untaxed vehicles are immediately clamped and taken to a pound. Automatic Number Plate Recognition (ANPR) is also used as a tool to combat untaxed vehicles. The DVLA target events popular with motorcycles and step up their enforcement on fine weather days and at weekends when motorcyclists are more likely to be on the roads. DVLA publicity material is used to deter evaders.

Mini-motos- The Home Office published advice in their document entitled 'Tackling Mini-Moto Misuse – A Guide aimed at anti-social behaviour practitioners. The Police have the power to seize and crush mini-motos if they are being driven illegally off or on-road and in an anti-social manner.

Trading Standards officers have caused a number of unfit mini moto models to be withdrawn from the market. Registration of off-road vehicles has been considered which would give police a tighter control on the mini-moto use however; a scheme of this nature is yet to be trialled. Other potential solutions to the problems of mini-motos include education and publicity. The Think! Campaign works in partnership with the engineering, enforcement and education measures in place to reduce the number of road casualties. Resources have been targeted where they will be of greatest benefit. For example, sponsorship of the British Superbikes race aims to engage leisure motorcyclists who ride only during the warmer months and have a higher risk of fatality than any other motorcyclist. It was suggested that, if the problem persists, the Government should make a case to the EU Trade Commissioner to restrict the imports of mini-motos if they are of a particularly low standard. Programmes which encourage young people to learn and ride motorcycles in a safe and controlled environment are commended.

Interim Report of the Advisory Group on Motorcycling

The Government's Advisory Group on Motorcycling was established in May 1999. The purpose of the group is to assist the government with its motorcycle strategy.

The safety of motorcyclists was a serious issue for the government which has welcomed a significant decline in motorcycle casualties. In 1999, motorcycle traffic rose by 16% compared to 1998. However, there was a 9% decrease in the casualty rate per 100 million vehicle kilometres. However, motorcycle deaths increased by 10%.

In 2000, the Government published a Road Safety Strategy (Tomorrow's Roads – Safer for Everyone) for the next 10 years which set casualty targets. In relation to motorcycling, the Strategy sets out the following measures:

- To improve training and testing for all learner drivers
- Provide guidance for people returning to motorcycling after a break
- Ensure the quality of instruction
- Help drivers become more aware of the vulnerability of motorcyclists and
- Promote improvements to engineering and technical standards which could protect motorcyclists better, including new safety helmet standards

Car and motorcycle theory tests are now distinct in terms of content. The Driving Standards Agency (DSA) is working on improving pre-test rider training supported by training log books and is working towards establishing a voluntary register for motorcycle trainers. DSA is also developing guidance for full motorcycle license holders returning to motorcycling after a break.

Other safety initiatives include:

- Occupational motorcycling – The government has set up an Inter-Agency Task Group to consider how to improve work-related casualties. Initiatives underway are the development of agreed Code of Practice for motorcycle

couriers (The Courier Code) and for fast food deliveries (the Code of Practice for Home Delivery Operators and Drivers).

- Driving skills publication – The Driving Standards Agency has reviewed and updated documents relating to safe motorcycling
- Changes to the motorcycle test – The DSA will be introducing hazard perception testing for all test candidates
- European changes to the practical test – The Second European Council Directive on driving licences sets minimum requirements for driving tests conducted by Member States.
- Road Maintenance – The Local Transport Plan (LTP), 'Guidance on Full Local Transport Plans, advises local authorities to consider the implications for motorcyclists in deciding how to remedy deficiencies in the road surface. Furthermore, the government is developing a Code of Good Practice for local road maintenance.
- Diesel Spillage – The EC Fuel Tank Directive was amended in March 2000 with new measures aimed at reducing fuel spillage. European emissions Directives are also introducing requirements for new vehicles which will minimise evaporative emissions and fuel spillage caused by a missing fuel filter cap.
- Environment and Fiscal- A new motorcycle emissions standard is currently under discussion in Brussels. The European Commission's Auto-oil programme estimated that motorcycles contribute between 0.35% and 0.37% of CO₂. Since the late 1980s all motorcycles marketed in the UK have been subject to an EC requirement under-which the largest machines are subject to a maximum noise output of 82db(A). Under the EC's type approval requirements, standards for new machines range from 66db(A) for the smallest mopeds to 80db(A) for motorcycles over 175cc.
- Enforcement- Vehicle Excise Duty statistics indicate that there is around 25% evasion of VED amongst motorcyclists. Improved enforcement of SORN (Statutory Off-Road Notification) may have a role to play in reducing evasion. The advantage of SORN enforcement is that it can be done from the vehicle record rather than catching people in the act of using unlicensed vehicles.
- Vehicle Safety and Security- A Task Force was set up to investigate how improvements in the area of vehicle safety and security could help the motorcyclist. The construction of the vehicle, in particular its braking linings and tyres was discussed. To ensure the quality of replacement braking linings, the Task Force recommended to the AGM that the UK should urge the European Union that the motorcycle replacement brake lining element of the United Nations Economic Commission for Europe's Regulation 90 should be introduced into the European Union Directive for motorcycle braking (93/14/EEC). Since then the European Commission has given an informal commitment to introduce UNECE Regulation 90 into a future planned amendment of the EU Directive. In the case of motorcycle clothing, the European Union Personal Protective Equipment Directive was welcomed as an aid to consumer guidance. Motorcycle theft is running at an average of over 20, 000 vehicles per year. The recovery rate is estimated at no more that 28%. As a result, insurance rates are going up. The Government is tackling vehicle theft in 4 ways:

- A £950,000 has been earmarked to fund three vehicle crime projects by the National Criminal Intelligence Service ((NCIS), one of which will aim to combat organised motorcycle theft.
- The provisions to regulate the salvage industry contained in the Vehicle Crime Bill will help to tackle the problem of motorcycles being stolen for spare parts, or being cloned for resale
- Local Authorities have been given enabling powers to provide secured parking facilities for motorcycles
- Future phases of the 3 year crime reduction publicity campaign will include security messages aimed at motorcycle owners.

Motorcycle Enforcement Strategy For England, Wales & Northern Ireland

This was published by the Motorcycle Casualty Reduction Working Group for the Association of Chief Police Officer of England, Wales & Northern Ireland
Implemented: 22 June 2006; Review Date: January 2008

This Strategy document has been approved by the Head of the Road Policing Business Area.

The intention of the strategy is to focus enforcement activities on key motorcycle causation factors and introduce a nationally agreed approach to enforcement, with the aim of reducing killed and serious injured casualties in this most vulnerable road user group. Noise intrusion and quality of life issues are addressed.

The strategy has two main objectives:

- To reduce the number of people killed and seriously injured as a result of motorcycle collisions
- To reduce the level of anti-social behaviour associated with a small irresponsible minority of motorcyclists that disproportionately effect the quality of life for some communities

The recommendations cover:

- Dangerous Riding and breaches of section 2 of the Road Traffic Act 1998; should in most cases be dealt with by way of prosecution, especially in cases where there is a victim. There is a need to deliver a clear message that behaviour constituting this offence will not be tolerated and that firm and positive action will be taken to address it.
- Careless riding and breaches of section 3 of the Road Traffic Act 1998; it is recommended that where this offence is committed, and there is a victim, prosecution should be the preferred option with all road users dealt with in the same manner.
- Careless and inconsiderate riding; must have been committed with the extra elements of causing or likely to cause alarm, distress or annoyance to the public before section 59 can be implemented
- Exceeding speed limits; prosecution in compliance with existing detailed ACPO guidelines and individual force policies

- Breaches of section 36 of the Road Traffic Act 1988, Failure to comply with road signs consider pre-court interventions;
- Legibility of Registration plates; the test to be applied, if not easily legible from 20.5 meters, prosecution and inform DVLA.
- Illegal exhausts; in cases with no noise annoyance, consider the use of the Vehicle Defect Rectification Scheme and appropriate advice. Where noise annoyance is a factor, prosecution is recommended, with consideration to be given to the use of Section 59 Police Reform Act 2002 for persistent offenders or excessive noise nuisance.
- Tinted visors; if used during daylight hours, advice only, if used during the hours of darkness or conditions of reduced visibility consider prosecution using 'Tintman' equipment where available.
- Coloured headlamps; intervention recommended only if the light cover is red, VDRS is recommended as the primary option. Advice to be given for colours other than white.
- Education and Advice; It is recommended that where road checks are utilised care must be taken not to unnecessarily delay motorcyclists. The checks should be well resourced and focused on specific issues. Motorcyclists should be told why they are being stopped and generalised trawling for offences is not recommended.

Essex Powered Two Wheeler Strategy

This was published by Essex County Council – Transportation & Operational Services in August 2001.

The production of a powered two wheeler strategy for Essex has been made in response to the Government's White Paper, A New Deal for Transport: Better for Everyone which highlighted the contribution that powered two wheelers (PTW) could make towards an integrated transport policy. The Government expects local authorities to include an assessment of the role of PTW in their Local Transport Plans (LTP). The County Council has outlined its thoughts in its recently published LTP but feels that greater analysis of the role to be played by PTW can only be carried out by publishing a separate document. This document outlines in detail a strategy for promoting sustainable use of PTW and suggests ways in which this mode of transport may be better integrated within transport and land use planning mechanisms.

The Essex PTW Strategy is a collection of elements and related actions that work together in an integrated way to create PTW facilities and promote PTW. They are intended to cater for the present and future needs of PTW within the broad context of transport and other related objectives within the County.

The purpose of the PTW Strategy can be summarised as:

- Setting a clear vision for PTW throughout Essex. Providing the links between PTW and other related policy initiatives

- Influencing the policy content of Local Plans, District Transportation Strategies and other key policy documents
- Providing a reference point for the PTW element of District Transportation Strategies
- Stimulating inter-agency work between local authorities and other organisations involved in the promotion of PTW and PTW facilities.
- Clarifying what is expected from the development plan process. Giving a framework for the PTW content of LTP and the annual progress reports

The objectives of the Essex Powered Two Wheeler Strategy are shown below. Each has been supported by a set of sub-objectives that relate specifically to PTW use.

Objective One: To improve the road environment for PTW and introduce facilities, which assist their usage.

- To highlight opportunities to improve highway conditions for users of PTW.
- To maximise the opportunities to provide parking facilities.
- To reduce motorcycle theft.
- To adapt traffic management systems where appropriate to assist users of PTW.
- To evaluate and pilot use of bus lanes and bus gates by PTW.

Objective Two: To promote sustainable PTW usage.

- To work with key stakeholders in encouraging PTW use as an alternative to the car.
- To contribute towards Essex County Council's strategies and targets for improving air quality and by encouraging the use of PTW as an alternative to the car.
- To highlight the contribution made by PTW in reducing congestion and contributing towards traffic reduction strategies.
- To encourage employers to include PTW users in Staff and Company Transport Plans.
- To provide information on PTW use and availability of facilities.

Objective Three: To improve Safety for those using PTW.

- To consider the safety implications of promoting the sustainable safe use of PTW as part of an integrated transport strategy for Essex.
- To investigate the best methods and means of targeting the leisure motorcyclist to ensure that they are informed of all issues related to leisure riding.
- To consider PTW users in the Safety Audit guidelines.
- To provide facilities which directly improve the safety of PTW users.
- To work with the Police to effectively target areas where PTW users cause a nuisance and present a danger to themselves and others on the highway.

Objective Four: To promote the Integration of PTW within all transportation and land use planning mechanisms and related policy areas.

- To consider the needs of PTW users at public transport interchanges.
- To seek the provision of adequate secure parking facilities as part of new developments.
- To consider the needs of PTW users in any future plans in relation to major improvements on the highway or as a result of redevelopment.
- To include the needs of PTW within District Transportation Strategies, Local and Structure Plans, and other similar strategies.

National Strategies and Studies from Continental Europe and Other Parts of the World

Strategic Plan for the Road Safety of Motorcycles and Mopeds

The Spanish Government employed Atos Consulting to complete this strategy which will be launched in 2008.

The two main targets of the strategic plan are complementary to each other, and are aimed at the pattern of the accident rate of motorbikes becoming progressively similar to that of cars:

- Reversing the rising trend of the number of deaths and serious injuries among motorbike users on our roads and in our villages and cities.
- Achieving the number of deaths per each hundred thousand motorcycles initiates a time-sustained decrease.

In order to achieve the targets of the Plan i.e. to reduce the number of casualties regarding motorcycles and mopeds, four fields of action were created. These are:

- Preparing motor bikers for safe driving
- Minimizing high accident-rate scenarios (HAS)
- Fighting risk driving (RD)
- Adopting mitigating measures

The plan comprises 36 measures and has an initial duration of four years. A total of 16 measures are to be launched within the plan's first year of effectiveness.

Under the four fields mentioned above, the 36 measures highlighted in the plan are described below:

Measure 1: Strengthening road safety training in motorbike access tests

- Road safety must be very present in the access tests for any vehicle and especially in those for motor bikers due to their condition as vulnerable road users. Theoretical training will focus especially on defensive driving, emphasizing those manoeuvres of 4-wheeled vehicles that are a serious risk for motor bikers. These new theoretical contents shall have their due counterpart in the knowledge control tests for all administrative authorizations for driving motorized two-wheeled vehicles

Measure 2: Introducing the topic “motorbikes” into the 4-wheeler license test

- Access tests for the driving license for 4-wheeled vehicles (B, B+E, C1, C1+E, C, C+E, D1, D1+E, D yD+E) will have to contribute to that the drivers of these vehicles become acquainted with and sensitive to the behaviour and practices of other road users, moreover when these are vulnerable users such as motor bikers.

Measure 3: Delaying the minimum age for the access to certain vehicle

- This field of action contemplates increasing the minimum access age to mopeds. In fact, it is considered in accordance with what is being felt in the vast majority of our neighbouring countries, that the minimum age for driving a moped should be raised from 14 years at present to 15 years. Notwithstanding this, a period of one year starting from the approval of the regulations will be established, during which it will be possible to obtain the new AM permit that replaces the present moped license from 14 years onwards

Measure 4: Progressivity according to age an experience

- It is intended to introduce a new kind of “intermediate” license between the present A1 and A licenses that will be named A2. The new A2 license will allow persons being older than 18 year to drive motorcycles up to 400 cc. So as to be able to access the A license, it will be indispensable to have held the A2 for at least tow years

Measure 5: Road safety education

- Road safety education at school is, if not the best, one of the best ways to reduce traffic accidents. The LOE (Organic Law on Education) has incorporated traffic education as a compulsory syllabus by setting forth that the target of primary education is “to foster traffic education and attitudes of respect having an impact on the prevention of traffic accidents”. The regulation establishes that the new educational area will be given in a course during Primary Education and two courses during the ESO (Compulsory Secondary Education). In Primary Education, the subject that frames road safety will comprise 50 teaching hours and in the ESO it will comprise 35 hours. Within the framework of this measure, the introduction of road safety into the educational system will be promoted and provided by carrying out tasks of raising awareness of and technical advising to Autonomous Communities, publishing houses and education professionals, so as make road safety to be considered a transversal subject that can be “subsumed” within the lessons that are being given on other subjects

Measure 6: Incentives for participating in courses and obtaining certificates

- Setting up a scheme of voluntary and incentivized road safety courses for motor bikers having an impact on a significant proportion of the universe of drivers and which strengthen three aspects: avoiding risk driving, training the driver in respect of hazardous situations, and adopting good practices regarding driving and equipment. The course will have a short duration (one or two sessions) and the contents thereof will be predominantly practical, allowing, where appropriate, to obtain a certificate. The use of driving simulators when giving the courses will be assessed.

Measure 7: Road safety courses for professional communities

- This measure pursues the inclusion of road safety courses into the training plans of all these public and private bodies. The course will focus on the avoidance of risk driving, training the driver in respect of hazardous situations, and adopting good practices in respect of driving and equipment.
- The courses will have a duration of two to five sessions, and their contents will be predominantly practical. The contents thereof will be revised by the employers as well as by the entities that have been authorized to give the courses. At the end of each course, an evaluation of the knowledge as acquired will be made. Companies will oblige themselves to maintain an updated registry of those attending or having attended the courses, and to promote attendance among their employees and subcontractors.

Measure 8: Incorporating motorbike road safety into training plans of companies

- Determining the most adequate ways and contents for introducing road safety into the training plans will be carried out within the framework of this measure, although it is possible to advance the following aspects:
 - Use of the new technologies so as to make the training as individualized and close to reality as possible (e.g. customized itinerary for each pupil coinciding with his/her usual route for going to work, using driving simulators).
 - Focusing on the use of protection equipment (use and preservation of safe helmets and adequate clothing as, for example, reflective vests, gloves, boots without laces, etc.).
 - Training in defensive driving techniques (e.g. to avoid driving on the area of the right lane being closest to the sidewalk).
- This measure also contemplates reports on accidents to include information in respect of the reason for travelling of the two-wheeled vehicle, so as to improve statistic information on “in-itinere”(on the way to work) accidents.

Measure 9: Evaluation of traffic coexistence and segregating measures between 4-wheeled vehicles and motorcycles and mopeds

- The target to reduce the accident rate by establishing rules, infrastructures and mobility mechanisms in urban areas as well as on roads, that could contribute to differentiating traffic flows between 4-wheeled vehicles and motorcycles and mopeds. Among these measures, the following could be mentioned:
 - Setting up specific lanes for motorcycles on roads with jammed traffic.
 - Combined use of bus lanes together with adaptation thereof for use by motorcycles.
 - Broader lanes on certain urban roads combined with stopping areas in advanced positions.
 - Regulation of the incorporation manoeuvres on broad lanes / verges.
 - Actions of positive discrimination by adapting the traffic regulations to the specific characteristics of the driving motorbikes. For example, introducing a measure that is similar to the existing regulations allowing 4-wheeled vehicles to overtake on certain road sections where heavy vehicles are not allowed to do so.

Measure 10: Evaluating measures to change conditions at intersections

- The target of this measure is to adapt the conditions of infrastructures and traffic management mechanisms at certain intersections so as to reduce the number of accidents. In principle, the following specific measures are being envisaged:
 - Adapting the traffic-light phases to the characteristics of motorbikes (extending the clearing phase, modifying the yellow phase, etc.).
 - Improving signposting conditions.
 - Improving the lighting and visibility conditions at intersections.
 - Installing red-photos, i.e. cameras for automatically detecting failures in respecting traffic-light discipline.

Measure 11: Improving adherence to the road

- This measure addresses urban areas and roads, and it contemplates actions addressing the improvement of the adherence on our roads on various complementary frontlines, focusing on certain intersections in urban areas which are clear scenarios of high accident rates:
- Minimizing the use and size of horizontal road markings in those areas where it is possible to do so and considered to be critical (e.g. completely painted crosswalks).
- Use of antiskid paint for marking horizontal road signs in those areas where a strong deceleration of the vehicle is probable or necessary.
- Adjusting, levelling and coating metal manholes with adherent material.
- Using high-adherence pavement at points of risk.

Measure 12: Improving preservation and condition of the road network

- The strategic plan proposes two fields of action related to the improvement of the preservation of the road network:
- Coordination with the already running initiative of the DGT which is in charge of a Civic Cooperation System on Road Safety, the target of which is to assess and to consider the great importance the preservation of the network has for the drivers of two-wheeled vehicles.
- Preparing and supporting, on the part of the competent administrations, the implementation of a proposal in respect of a minimum preservation standard for the networks and application thereof by means of a service level agreement (SLA).

Measure 13: Road safety audits

- This field of action has a double target: that road safety audits that are already a practice, as for example that which has been recently launched by the Ministry of Public Works for the whole of the roads it is competent for, take into account the special features of motor bikers, and that specific road safety audits for motor bikers are carried out in municipalities and on certain road sections where this kind of action is not being made at present.

Measure 14. Specific actions on SACs [Sections with Accident Concentration] and on points of risk

- This measure proposes to first identify and to thereafter analyse in detail these points and sections with a view on designing and putting into practice improvement actions. The final target being pursued is to reduce motorcycle and moped accidents on sections where high accident rate scenarios are

often coincident with risk driving (e.g. inadequate generic speed for the road on a one-lane road section with at-grade intersections).

Measure 15: Control systems for equipment and performance of mopeds and motorcycles

- This measure will promote furnishing certain units of officers of the authority with portable devices being capable of measuring the maximum speed of mopeds and the power of motorcycles. By virtue of Article 70 of the Traffic Law, a detection of these practices will involve the immobilization of the vehicles.
- Campaigns that will be made will moreover emphasize the control of other elements affecting the vehicle's safety (mainly tires, braking systems, lighting and suspensions).

Measure 16: Improving safety systems on vehicles

- In Europe, the market offers motorbikes with integral braking and ABS but only within the high-end range and still at a rather high cost. This measure intends to contribute by different means to that, in 2010, practically all vehicles being marketed, and not only those manufactured, in Europe will incorporate the advanced braking system.

Measure 17: Fostering research in the field of motorbikes and road safety

- Spain has a concentration of bodies and institutions which are leading in research, development and innovation (R+D+i) in the two-wheeler field, This measure pursues fostering these R+D+i activities to move towards the road safety of motorists to make this knowledge and technology benefit the competitiveness of the industries dedicated to manufacturing components and two-wheeled vehicles. For this purpose the public administrations' aids and incentives addressing the promotion of R+D+i will be fostered to consider road safety as an area to be developed as a matter of priority.

Measure 18: Promoting an assessment and scoring system of the Euro NCAP type

- The target of this measure is the analysis of the feasibility and, if appropriate, to provide aid and support to the subsequent launch of a EuroNCAP-type assessment system for motorcycles.

Measure 19: Improving the vehicle's visibility

- The target of this measure is to improve the visibility of motorbikes and suggests the following specific action:

Measure 20: Financial/fiscal incentives for renewing the fleet and for safety equipment

- RDL [Royal Law Decree] 13/2006 closed the present Prever Plan and set 2007 as the term for redefining the criteria for the environmental restructuring of the Plan, whereby it does not set a date for the new Prever Program to start. The program articulates itself in certain fiscal benefits that are applied on the occasion of the acquisition of cars and light industrial vehicles both new and second-hand ones, provided that an equivalent vehicle of a certain age and characteristics is deregistered for scrapping. In the 7 years since it was approved, the program has complied with its targets, and the fleet of cars has been renewed in respect of safety and pollution. This plan should improve safety and acoustic as well as environmental pollution within the motorized two-wheeler field.

Measure 21: Campaigns specifically addressing risk driving

- It is being envisaged to launch a number of periodic and thematic campaigns dedicated to the most common and dangerous practices: lack of respect for the traffic-light discipline, overtaking cars by the right side in urban areas, driving on lanes with double-parked vehicles and braking making use first of the rear brake.

Measure 22: Specific campaigns for 4-wheeled vehicles

- This measure suggest launching communication campaigns addressing the drivers of four-wheeled vehicles, and which tackle three key themes jointly and separately: vulnerability of motor bikers, benefits for and challenges to the coexistence of any kinds of vehicles on roads, and the most common accident scenarios regarding car-motor bike collisions.

Measure 23: Agreements against risk driving with the media

- The target is to avoid that the mass media include contents that promote or banalise risk driving (inadequate speed, skidding, driving on one wheel, acceleration, etc.). The need to avoid the use of graphic materials or contents which associate the use of motor bikes with the said risk driving, including both reports and contents of advertising, will be strengthened.
- The agreement must involve the mass media in general (daily press, journals, radio, television), specialized media of the motor world, advertising agencies, manufacturers and dealers.
- The measure will furthermore include awareness-raising and sensitising actions addressed to communications' professional, among which launching a portal being similar to "thinkroadsafety" of the British government will be included.

Measure 24: Strengthening the distinction between the use of a motor bike as mobility means versus sportive use thereof

- The target of this measure is to avoid reckless sportive driving behaviours on roads by making users of high cylinder capacity motorcycles aware of the difference between using two-wheeled vehicles as transport means and the sportive use thereof.
- Two kinds of actions must be set up for this purpose:
 - Communication campaigns and messages that emphasize this distinction. The participation of professional riders would be important in this respect.
 - Favouring the use of sportive circuits in advantageous conditions so as to strengthen this distinction. In this respect, it is envisaged to offer motor bikers one or more circuits for learning and training sportive driving techniques on two-wheeled vehicles.

Measure 25: Special measures against recidivist drivers

- The target of this measure is to adopt direct action on recidivist two-wheeler drivers so as to reduce the accident rate in this segment and to amend their conducts. Among the actions composing this measure, there are the following:
 - Designing and putting into operation specific compulsory courses for re-educating recidivist drivers.
 - Increasing the scales of fines for recidivism.
 - Direct awareness-raising communications.
 - Expediting the procedures for sanctioning files.
 - Maximum scaling of sanctions.

- Sending the files to the Public Prosecutor for penal treatment thereof.

Measure 26: Fostering companies to carry out follow-ups on risk driving and road safety courses by their employees

- The target of this measure is to achieve that companies employing professional motorcycle and moped drivers carry out efficient follow-ups on measures that foster road safety as set forth by the strategic plan addressing these professionals, by
 - Introducing road-safety courses into their training plans.
 - Effectively realizing these courses by employees and subcontractors.
 - Assessing the courses in view of a steady improvement thereof.

Measure 27: Fostering the effects of risk driving on insurance premiums

- The target is that there should be a direct relationship being clearly perceived by the users, between risk driving and an increase in the price of insurance policies, i.e. of the premiums. This measure will intend to define and implement into practice, any mechanisms that convey a lack of respect to the rules to the prices for insurance, so as to thereby make the rise in prices a deterrent element against committing offences.

Measure 28: Modifying the sanctioning scheme for risk driving

- The target is to toughen the sanctioning scheme associated to risk driving on motorcycles and mopeds. In principle, this includes the following:
 - Transporting packages and luggage on two-wheeled vehicles.
 - Classifying the sanctioning scheme with regard to infiltration manoeuvres.
 - Toughening sanctions for reckless practices.
 - Practices on four-wheeled vehicles for those who put motorcycles and mopeds on risk.

Measure 29: Increasing monitoring risk driving

- The target is to make the control over and sanctioning of risk driving on motorcycles and mopeds more efficient by launching or strengthening the following actions:
 - Positioning radars taking into account the accident rates of motorbikes.
 - Implementing red-photos that enforce traffic-light discipline at points of risk within urban areas.
 - Coordinated campaigns for tracing vehicles that are obviously intended to elude monitoring systems.
 - Monitoring actions on areas with reckless or pseudo-sportive driving.
 - Coordinated “zero tolerance” campaigns against risk driving.
 - Revision of the present control and monitoring plans in respect of Grand Prix motorcycle events.

Measure 30: Replacing and protecting safety fences

- The Ministry of Public Works has put into operation a Plan for the Adaptation of Containment System in respect of CO [Circular Order] 18/2004, a plan to replace the present containment systems by protection systems for motor bikers (PSMs) on 1,500 km of the State Road Network before 2009, and to which 43 million Euros have been assigned.
- The Strategic Plan is aware that a significant portion of motorcycle accidents on roads involving the vehicle going off the road occurs on roads

with many curves. Therefore, the plan envisages the installation of protective systems for motor bikers on the single carriageways being owned by the Provincial Commissions and town councils. For this purpose, bilateral agreements will be signed between the DGT and the local administrations. The estimated three-year budget is 30 million €.

- This measure also includes establishing a coordinated action framework for installing PSMs on the national road network. This action framework will include the carrying out of a permanent work on observing new solutions and technologies that are susceptible of being adopted.

Measure 31: Vertical signposting

- The target of this measure is to minimize the impact of vertical signposting and street furniture in general, on accidents of motor bikers. The measure contemplates three major areas of action:
 - Analyzing the effects of street furniture and vertical signposting in motorbike accidents in urban areas as well as on conventional roads.
 - Action addressing a new infrastructure (e.g. recommendations regarding instructions for vertical signposting on the state road network or installation of bits / bollards in urban areas that are made of little harmful materials such as fibre or PVC, after having carried out due analysis and assessments.
 - Action addressing the existing infrastructure (e.g. protecting metal bollards by covering them with protective materials).

Measure 32: Reducing the span of time for accident assistance

- The first and main target of this measure is to reduce the span of time for providing assistance on road sections with high concentrations of motor biker accidents. Carrying out the following action is envisaged:
 - Reinforcing the emergency services in areas with high motor biker accident rates.
 - Assessment of the possibility to put into operation itinerant ad-hoc care services (e.g. on weekends in certain areas).
 - Carrying out tests and specific training so as to improve the care provided to motorcycle drivers by the emergency services.

Measure 33: Introducing the call

- The target of the research on the installation of the eCall device in 2-wheeled vehicles is to achieve to reduce the response time of the emergency services in the case of traffic accidents.
- The eCall is activated manually or automatically in case of serious accidents, and it transmits a direct call to the nearest emergency services providing the exact location of the vehicle.
- The European Union has marked 2010 as the target term for the deployment of the system in cars, although that project appears to be piling up a considerable delay. The system requires a strong investment in modernizing the points of response for the emergency calls, but the intended savings are substantially higher. In a pilot test carried out with cars in Finland, a 5-10% reduction of fatalities was obtained.
- This measure proposes to carry out a test of the system with motorized two-wheeled vehicles showing its efficiency in those vehicles, followed by an estimation of the benefits the system would entail for motor bikers in the European Union. It is thereby intended to contribute to measures being taken to speed up the deployment of the eCall system in the Union.

Measure 34: Correct use of helmets

- The correct use of the helmet comprises three frontlines for action:
 - Removing user groups who do not yet use the helmet.
 - Correct fastening thereof, and
 - Clearly defining the criteria for certification and official approval and the implications thereof (e.g. helmets commonly called “fine removers”).
 - Informing users on the helmet (caducity, consequences of impacts, implications on official approvals and certifications, etc
- The measure will back an effective immobilization of the vehicles of drivers reported for driving without helmets.

Measure 35: Establishing a minimum standard for additional equipment

- Establishing compulsory minimum equipment for motor bikers (jacket and trousers or overall with plastic protectors on elbows, shoulders and knees when driving on roads, and gloves and suitable footwear within the cities) is very important for minimizing the consequences of accidents both on roads and in the cities.

Measure 36: Strengthening research on equipment

- New technologies have allowed equipment to become cheaper (vests with airbags and the neck-break are two good examples). This measure intends to carry out actions aimed at strengthening the development and presence on the market of this kind of equipment at affordable prices for a large group of consumers.

The South Australian Motorcycle Road Safety Strategy 2005-2010

The South Australian Road Safety Strategy 2003-2010, released in September 2003, outlined a series of directions for this State to achieve the national target of a reduction in fatalities and serious injuries which are expected to come from the following measures:

- SAFER ROADS — improving roads and roadsides and addressing issues at specific locations
- SAFER PEOPLE — ensuring road users have the necessary attitude and skills; ensuring compliance with legislation (in particular, speeding, drink driving and non-use of restraints); and educating all road users
- SAFER VEHICLES — promoting new vehicle safety standards and technology

This strategy includes a “Motorcycle Road Safety Strategy 2005-2010” and was published by the Government of South Australia in November 2005.

The South Australian Motorcycling Road Safety Strategy was developed in conjunction with the Australian Motorcycle Task Force to provide a coordinated approach to motorcycle safety in order to reduce the incidence and severity of motorcycle crashes on their roads.

This strategy sets out the goals for improving motorcycle safety in South Australia for the period 2005 – 2010 and has assigned priorities to the various initiatives that come under three headings:

- Safer Roads
- Safer Vehicles

- Safer People

Safer Roads

- Apply the Austroads “Guide to Traffic Engineering Practice: Motorcycle Safety” (Part 15) in State and local government road designs (High Priority)
 - Raise awareness of road traffic engineers of the special needs of motorcycle riders in relation to road design and maintenance
 - Recognise that the road surface is critical to the safety of motorcyclists and the control of their vehicles
 - Recognise that roadside furniture such as pavement bars (yellow bricks) can be hazardous to motorcyclists
 - Ensure that landscaping and central island treatments do not block visibility to motorcyclists and that appropriate sight lines are required in road design
 - Acknowledge that delineation, signing and lighting of roads are important for motorcyclists
 - Continue the practice of shoulder sealing of roads to reduce run off road crashes
- Ensure plans for new and existing road infrastructure are audited for motorcycle safety aspects (Medium Priority)
 - Continue to monitor road maintenance performance to ensure that bitumen road edge breaks, shoulder drop-offs and pot-holes do not exceed Maximum Defective Criteria
 - Continue to seal shoulders on all new roads and on all existing roads where appropriate, especially on highly frequented motorcycle roads, and especially on left hand corners
 - Ensure that all pavements in South Australia are safety inspected on a regular basis or when major works and upgrading are implemented
 - Explore the practice for the sealing (for at least 5 metres) of unsealed roads and driveways that encroach onto highly frequented motorcycle roads to prevent the spread of gravel
- Expand the use of high skid resistant water-based pavement markings on all State controlled roads to reduce the danger to motorcycle riders (Medium Priority)
 - Review the use of thermoplastic road markings which have low skid resistant properties
 - Implement auditing strategies to monitor road marking contractors for compliance with minimum skid resistance standards
 - Encourage Local Government authorities to be aware of these minimum skid resistance standards that also apply to Council roads
 - Review crack sealing practices, especially in the Adelaide Hills
- Upgrade the investigation and reporting of sites of motorcycle fatality and serious injury crashes to identify contributing factors and ensure remedial action is taken where appropriate (Low Priority)
 - Investigate the positioning of dangerous road side objects including trees and power poles close to the road verge
 - Review the use of selected infrastructure treatments which may affect motorcyclists
 - Review the use of applying painted signs and symbols on the carriageway, e.g., on the approaches to school crossings
 - Work with SAPOL to upgrade Police Accident Report forms to include more detailed specific information on motorcycle crashes

- Establish and recognise motorcycle users as a unique road user group with special needs (Medium Priority)
 - Continue to analyse crash data to identify sites with above average crash frequency for motorcycle riders and implement changes as necessary
 - Ensure motorcyclists' needs are taken into account when investigating the safety of sites with an above average crash frequency for motorcyclists
- Promote the South Australian telephone number for public reporting of gravel, pot-holes, slippery road surfaces (including painted surfaces), shove mounds, and oil and diesel spills on all South Australian roads (Priority High)
 - Ensure there is regular promotion of the 1800 number, especially to the motorcycling community, to allow for the prompt reporting of road conditions that may affect the safety of motorcyclists
- Monitor international and national research to keep abreast of road environmental developments and potential safety impacts for motorcycle riders, including safety barriers (Low Priority)
 - Monitor the review of the Austroads "Safety Barriers" (1987) guidelines
 - Recognise the requirement for safety barriers to comply with Australian Standard AS3845 (1999)
 - Explore the use of double rail W-beam safety barriers in motorcycle highly frequented areas
 - Continue to work with safety barrier manufacturers to promote design improvements to enhance safety
 - Explore the implementation of more "motorcycle friendly" road side barriers including barriers constructed from used tyres
- Upgrade roadside rest areas to be more amenable for motorcyclists (Low Priority)
 - Provide rest areas with amenities that are motorcyclist-friendly to entice travelling motorcyclists to stop and avoid the hazards of fatigue

Safer People

- Work with key safety partners to raise awareness of motorcycle safety for all road users (High Priority)
 - Address the high risk factors associated with motorcycle crashes through linked public education and enforcement that target drink driving, excessive speed, helmet use, repeat offender behaviour
 - Promote a motorcycle awareness campaign focusing on motorcycle safety and especially driver awareness of motorcyclists
 - Investigate partnerships with Local Government to ensure a shared approach to motorcycle safety and road management
 - Work with the motorcycle community to encourage positive media coverage of motorcycle issues
 - Work with retailers to assist in the dissemination of information on safe riding practises
 - Monitor research and trials of drug testing for drivers and riders
- Ensure the motorcycle community is informed of trends in South Australian crash data (Low Priority)
 - Ensure State Government road safety statistical publications include adequate coverage of motorcycle crash data

- Distribute the statistical ATSB publication “Road Fatalities, Monthly Bulletin” to interested members of the South Australian motorcycle community on request
- Improve opportunities for meaningful involvement of the South Australian motorcycling community in decision making processes relating to motorcycle safety (Low Priority)
 - Invite the South Australian motorcycle community to comment on proposed educational and promotional campaigns relating to motorcycles
- Improve the motorcycle licensing system to ensure that riders are adequately skilled (High Priority)
 - Introduce a specific motorcycle learner licence knowledge test (written)
 - Require successful completion of a supervised on-road practical assessment prior to issuing a motorcycle learner permit
 - Introduce a level three advanced course component to the Ridersafe program for riders coming off their 12 month restricted licence and wishing to go to a motorcycle of greater power than those allowed during the period of restriction
 - Permit motorcycle licence holders who have not ridden for some time to access the Ridersafe program to upgrade their skill levels
 - Introduce a power to weight ratio of 150 kilowatt per tonne combined with a maximum engine capacity of 660 cubic centimetres for novice riders
 - Encourage riders who initially fail the learner requirements of the Ridersafe program to seek extra professional help for remedial action with access to a learner-approved motorcycle and an off-road area in which to practice
- Implement an improved training model to complement the licensing system for motorcycle riders (High Priority)
 - Consider raising the standards for the training and assessment of learner riders, including an improved and more stringent pre-learner course to ensure that learner riders are “road-ready” before riding solo on public roads
 - Implement an audit process to ensure consistent training and testing standards throughout South Australia
 - Provide supporting documentation in the form of learning aids and resources for learner riders to be studied before commencing the Ridersafe program
 - Continue to supply, free of charge, a copy of the ATSB video or DVD “Ride On” to all Rider-safe graduates
- Address the incidence of dormant motorcycle licences (High Priority)
 - Provide information with all motorcycle licence renewal notices highlighting the risks associated with returning to riding after a break
- Address the increasing crash rate of older riders (High Priority)
 - Promote voluntary participation in refresher courses (Ridersafe and advanced off-road) for older riders
 - Consider compulsory refresher training courses for licensed riders who are unable to demonstrate that they have ridden regularly within the preceding five year period (should
 - Voluntary participation in refresher training courses not have the desired impact on rider
 - Crash statistics)

- Work with key stakeholders to enhance awareness, knowledge and skill of riders as a vulnerable road user group for all road users (Medium Priority)
 - Explore partnerships with road safety stakeholders, insurers and the motorcycle community to increase driver awareness of the vulnerability of motorcycle riders
- Investigate ways to reduce the number of unlicensed motorcycle riders on South Australian roads (High Priority)
 - Tackle the incidence of unlicensed riding on South Australian roads through targeted enforcement campaigns and conduct regular licence checks at popular motorcycle riding locations
- Promote the wearing of high visibility protective clothing (Medium Priority)
 - Conduct an awareness campaign outlining the benefits of good protective clothing, helmets and visors
 - Promote the reviewing of the appropriate Australian Standard on protective clothing, AS1698 on helmets and visors, to ensure that only articles of good quality are sold to the public
 - Include information on Police Accident Report forms regarding the condition of crash victims' helmets and protective clothing, if worn
- Raise motorcycle rider awareness of the Adelaide Hills environment (High Priority)
 - Install motorcycle-specific warning signs in areas highly frequented by motorcyclists
- Promote an awareness campaign on the hazards of fatigue (Low Priority)
 - Promote the idea that fatigue is the "silent killer" and explore ways to educate riders

Safer Vehicles

- Encourage targeted on-road enforcement to ensure motorcycle road-worthiness (including checks on carriage of licence) (High Priority)
 - Work with the South Australian Police to coordinate traffic law enforcement activities on a state-wide basis
 - Undertake targeted enforcement blitzes linked to an unregistered/uninsured campaign
- Promote safety as a key consideration when purchasing a motorcycle and associated Equipment (High Priority)
 - Encourage partnerships between retailers and motorcycle clubs to promote safety features on motorcycles
- Raise awareness of the safety benefits of well maintained motorcycles (Medium Priority)
 - Investigate the use of motorcycle alcohol interlock devices for recidivist riders with a history of BAC offences
 - Investigate partnership opportunities with the Motor Trade Association, the Federal Chamber of Automotive Industries and motorcycle clubs, e.g., motorcycle maintenance courses
- Support national initiatives and continuous monitoring of the on-road crash performance of individual motorcycle models (Low Priority)
- Monitor international and national research to keep abreast of developments in motorcycle technology and safety benefits for motorcycle riders (Low Priority)

Ohio Motorcycle Safety Strategic Plan

Prepared by Ohio Department of Public Safety Governor's Highway Safety Office and revised in 2005/2006.

Ohio, like the rest of NHTSA's Great Lake Region states, began investigating the rise in motorcycle crashes in 2004. In Autumn of 2004, Miami University conducted a telephone survey of Ohio motorcyclists to determine their view on a number of key safety issues. Motorcycle crash statistics have been analyzed and seven core components that need to be addressed have been identified as follows:

- Impaired Riding objective -Reduce crashes in which motorcyclists are impaired by alcohol or other drugs.
 - Communicate how alcohol and other drugs affect operator skills.
 - Include motorcyclists in impaired driving enforcement activities.
 - Encourage rider groups to conduct alcohol & drug-free events.
- Personal Protective Equipment Objective: Increase the number of motorcyclists who choose to wear personal protective equipment including helmets.
 - Educate motorcyclists about the benefits of protective equipment.
 - Promote the acceptability of wearing protective equipment.
 - Increase the use of FMVSS 218 compliant helmets through education and promotion.
- Training and Education Objective: Provide training to all who need or seek it; increase motorcyclists' knowledge of methods to increase their safety on the road, including awareness of hazards, motorcycle operation techniques, and conspicuity.
 - Increase capacity of state-funded training courses.
 - Promote course availability.
 - Disseminate campaigns on key issues.
- Licensing Objective: Ensure that all motorcycle operators riding on public roads are properly licensed.
 - Promote proper licensing.
 - Enforce penalties for operating a motorcycle without a proper license.
- Motorist Education Objective: Increase motorists' awareness of the presence of motorcycles on the road.
 - Educate motorists to be more aware of motorcyclists.
- Highway and Environment Objective: Accommodate the safety needs of motorcyclists in road design, construction, and maintenance.
 - Post hazardous condition warnings.
 - Reduce roadway debris.
 - Remove slippery road repair substances.
 - Educate roadway personnel on conditions hazardous to motorcyclists.
- Partnerships Objective: Expand partnerships within the motorcycling and traffic safety community to gain support for motorcycle safety programming and initiatives.
 - Include the motorcycle safety community in motorcycle safety planning and implementation activities.
 - Increase awareness of motorcycle safety issues among traffic safety partners and advocates.

Christchurch Road Safety Strategy

In 2003 the Christchurch Road Safety Co-ordinating Committee began updating the Christchurch Road Safety Strategy, using a workshop and community focus group to identify priorities and issues.

The updated strategy identifies goals, issues and objectives for continually improving road safety work in Christchurch for the next five years. It also sets out a monitoring and an implementation plan.

The five strategic goals set out in the strategy are as follows:

- Goal 1. Road safety is fully integrated and given high priority in the development, operation and maintenance of the city's transport system.
 - Make road safety a priority in transport and land use planning.
- Goal 2. The present and future road safety needs of the community are met efficiently, effectively and in a manner that safeguards the environment.
 - Provide safe and pleasant environments for energy-efficient transport modes such as walking and cycling, and work towards a Christchurch transport system that provides mobility for its community with as little risk of injury as possible.
- Goal 3. Community ownership and co-ordination of road safety activities is central to road safety work in the city.
 - Create an environment that promotes and co-ordinates road safety activities in Christchurch so that best use is made of resources, thus increasing the effectiveness of road safety interventions. Provide support and information to Christchurch community organisations and businesses, so they are aware of the economic and social costs of road crashes, are able to make informed decisions, and are encouraged to set up innovative road safety initiatives.
- Goal 4. Behavioural, attitudinal and value changes throughout the community creating a safe road environment and responsible road user behaviour are of prime importance to everyone
 - Using community-based programmes to promote road safety as integral to all road user behaviour and transportation issues. Promote the values of courtesy, sharing the road with others, and individual responsibility for the safety of all road users. Encourage promotion of road safety in all relevant areas of decision making in the community. Promote the importance of designing safe systems in organisations concerned with the road environment and encourage individuals and groups in the community to ask for road safety as a priority in policy decisions.
- Goal 5. To have road infrastructure design that takes into account the physical and mental characteristics and frailties of the humans who use it and works towards a transport system where serious casualties are unlikely.
 - To achieve this transportation will be seen as a system designed around the capacity of people who use it. Need to work towards designing it in such a way that the users are unlikely to sustain serious injury even if they make mistakes.

The strategy also names five objectives regarding motorcycling and these are as follows:

- To regularly inform all road users on the needs of motorcyclists.
- To provide and support ongoing information to motorcyclists about ways to ride defensively and make themselves safer on the road.
- To minimise risks to motorcyclists through safe road design.
 - To encourage appropriate training for motorcyclists, including older motorcyclists and those who may be taking up motorcycling again after a gap of some years.

Guide To Traffic Engineering Practice - Part 15: Motorcycle Safety
Austroads Guide to Traffic Engineering Practice - Part 15 - Motorcycle Safety (1999) is the first outcome in a systematic appraisal of motorcycle

requirements. It offers a basis for informed discussion between traffic professionals and motorcycle users on a number of aspects of road design. The guide includes an overview of motorcycle accidents, describes the principles of a safe road environment and the safe design of roads, describes motorcycle characteristics, discusses the safety needs of motorcyclists and provides guidelines for good practice. The good practice guidelines cover the road surface, road layout and alignment, delineation, signing, lighting, roadside furniture, roadwork and maintenance.

The guidelines highlight two ways practitioners can improve the safety of the road environment for motorcyclists:

- Apply established good practices which benefit all road users. However, the guide highlights the following issues *where motorcyclists are more vulnerable than most other road users*:
 - Surprises in alignment or layout
 - Unusual treatments and traffic arrangements
 - Complex decision making tasks imposed by layouts
 - Inadequate warning
 - Misleading or conflicting information
 - Inadequate delineation and guidance
 - Substandard visibility
 - An unforgiving roadside environment
- Apply practices which are directed at the particular needs of motorcyclists
- It is recommended that:
 - The use of certain practices is to be avoided if possible (e.g. the use of smooth steel plates as a means of covering trenches)
 - If the practice cannot be avoided, appropriate warning should be given where this is feasible (i.e. in situations where the message can be effectively conveyed by signing)
 - Motorcyclists should be educated to recognise these features and take care when confronting them

Regarding wire rope barriers the guide discusses how concerns about these “cheese cutter” barriers on a motorcyclist have not been realised. Given the mass of a motorcyclist with the flexing of the wire rope, this type of injury is extremely low. The guide also highlights that as with other barriers the posts present a greater potential for injury.

Workshop On Motorcycling Safety

The Norwegian Public Roads Administration, in co-operation with the Joint Transport Research Centre of the OECD and the International Transport Forum, hosted a Workshop on Motorcycling Safety in Lillehammer on 10-11 June 2008. Nearly 100 expert participants from 21 countries, representing the main stakeholders involved in motorcycling safety met.

The top priority measures identified by the Workshop’s participants were:

A. GENERAL PRINCIPLES

- 1. Co-operation between the various stakeholders
 - Improving safety for motorcyclists requires one to set up a continuing dialogue and co-operation between the various stakeholders, including the motorcyclists themselves, policy makers, researchers, and motorcycle manufacturers
- 2. Transport and infrastructure policy
 - It is a fundamental motorcycle safety requirement that, motorcycles should have a place in overall transport policy and infrastructure policy/management
- 3. Research and evaluation
 - Counter measures need to be founded on evidence-based scientific research into driver and rider behaviour, and before-and-after evaluations should be conducted.

B. PRACTICAL MEASURES

- 1. Training programmes for motorcyclists
 - Countries have different training needs, based on their vehicle fleet and riding environment.
 - Motorcycle training should therefore build on existing standards, focus on risk awareness and risk avoidance, and develop an understanding of the rider/motorcycle capacities and limitations.
- 2. Improved training for general drivers.
 - A component on awareness and acceptance of motorcyclists should be included in the general training for all drivers, with a particular emphasis on the need for appropriate traffic scanning strategies.
- 3. Braking systems
 - Manufacturers should continue to introduce advanced (better) braking systems, such as combined brake systems and anti-lock-brake systems.
- 4. Getting safety messages to the riders and portrayal of responsible riding
 - Safety messages to riders should be developed in partnership with rider groups, in order to use the effectiveness of peer advice in communicating key issues to riders on issues that will impact their communities.
 - Codes of practice should be developed in order to promote and market motorcycling responsibly; the motorcycling press and rider organisations should also promote responsible behaviour codes.
- 5. Integrated awareness campaigns.
 - There should be regular, targeted, campaigns addressing both motorcyclists and other road users. These should be supported where necessary by other actions, e.g. enforcement, on safety-related subjects that include: mutual respect, protective equipment, speed, alcohol and drug issues.
 - To develop an awareness of motorcyclists and mutual respect between road users, education activities and campaigns should be set up from childhood, to emphasise that “road safety means road sharing”.
- 6. Guidelines for the development of road infrastructure and training for road designers.

- Each level of government should include in their infrastructure guidelines, measures for accommodating motorcycles, developed with input from relevant stakeholders. The guidelines should be relevant to the needs of the jurisdiction concerned, and coordinated with other jurisdictions and levels of government. An international transfer of best practices is also recommended.
- The needs of motorcycles should be included in the basic training for road designers, and highway and traffic engineers.
- Identification and resolution of roadway design problems (e.g. accident black spots and “corridor” analysis of a sequence in the road structure) should include input from rider organizations and relevant experts.
- 7. Protective equipment for riders
 - Where standards for protective equipment exist, they should be promoted; and where they do not, they should be developed, taking into account their safety performance, rider comfort, the ergonomics of their use, costs and the climate/regions where they will be used.
- 8. Policy dialogue
 - To enable communication and build mutual confidence, meetings between motorcycle stakeholders and policy makers/road authorities (e.g. forums, councils,) should be established, in order to exchange views, discuss needs and secure the necessary financing/resources for safety counter measures.
- 9. Motorcycles in ITS
 - Enhanced awareness of motorcycles should be incorporated into the development of all vehicle ITS projects.
- 10. Innovation and pilot schemes
 - Where proposed counter-measures are not based on evidence-based objective research, but are supported by stakeholders, policy makers should test and evaluate the proposal in a pilot scheme.
- 11. Speed warning systems
 - The safe management of vehicle speeds in the road network is improved by the use of speed warning systems, which may be on the vehicle or part of the road infrastructure. Such systems should be encouraged as the technology is developed.
- 12. Global Technical Regulations.
 - The minimum safety performance of motorcycles should be based on Global Technical Regulations.
- 13. Headlamps in daytime
 - To improve rider/motorcycle conspicuity; for new motorcycles, headlamps should come on automatically when the engine is started; for other motorcycles, riders should switch on their headlamps before they start their journey.

Main Findings from this Section:

- The Northern Ireland Road Safety Problem Profile highlighted that the top 6 causation factors were:

1. Excessive speed
 2. Inattention or attention diverted
 3. Alcohol or drugs
 4. Emerging from minor road without care
 5. Turning right without care
 6. Overtaking on offside without care
- This is broadly in line with the causation factors identified in the Collision Analysis and the Motorcyclists Questionnaire.
 - The PSNI analysis of Motorcyclist Collisions and Casualties in Northern Ireland highlighted that motorcyclists KSI's are predominantly male and aged 17-24. This is in line with the gender and demographic profile presented in the collision analysis in this research report.
 - Participants in BikeSafe Evaluations in both Scotland and Northern Ireland indicate that Bikesafe had a positive impact on their riding behaviour.
 - The Write to Ride Survey highlighted that 78% of respondents had a near miss accident in the 12 years preceding the survey. 82% of those had to swerve to avoid another vehicle, 75 riders indicated that their vehicle skidded, 53 said they lost grip and 56 said they nearly lost control.
 - 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). 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.
 - According to research published by the University Of Nottingham, motorcyclists are over-represented in UK traffic accident statistics. Many car-motorcycle accidents are due to the inappropriate actions of car drivers. It is predicted that car drivers at risk of collision with motorcycles have divergent attitudes and beliefs about motorcyclists compared to safer drivers, which may lead to a deficient mental model guiding their interactions with motorcyclists.
 - The Hurt Report Found that the most common motorcycle accident involves another vehicle causing the collision by violating the right-of-way of the motorcycle at an intersection, usually by turning left in front of the oncoming motorcycle because the car driver did not see the motorcycle. The motorcycle rider involved in the accident is usually inconspicuous in traffic, inexperienced, untrained, unlicensed,

unprotected and does a poor job of avoiding the collision. The data of this accident research provided the following principal findings:

- **Accident and Injury Causes.** The automobile driver fails to detect the inconspicuous motorcycle in traffic. This is due to the lack of motorcycle conspicuity and lack of caution and awareness of the automobile driver. The lack of skill and traffic strategy increases the motorcycle rider's involvement in collisions. Injury severity increases with collision speed, but the motorcycle rider's lack of head protection accounts for the most severe but preventable injuries. Also, motorcycle rider lack of collision avoidance skills increases injury severity.
- **Protective Equipment.** The only significant protective equipment is the qualified safety helmet, and it is capable of a spectacular reduction of head injury frequency and severity. The Federal Motor Vehicle Safety Standard 218 provides a highly qualified safety helmet for use by motorcycle riders. This research shows NO reasons for a motorcycle rider to be without a safety helmet; qualified helmets do not limit vision or hearing in traffic or cause injury.
- **Countermeasures.** The basic Motorcycle Rider Course of the Motorcycle Safety Foundation is effective in training motorcycle riders and those trained riders are both less involved and less injured in motorcycle accidents. This course - or its equivalent - should be made a pre-requisite, or at least a co-requisite, of motorcycle use and should be applied in driver Improvement for those motorcycle riders who have received traffic citations. Licensing of motorcycle riders must be improved with special motorcycle licenses and improved testing such as has been developed by NHTSA-Traffic Safety Programs. Law enforcement should act to enforce license requirements, identify alcohol involved motorcycle riders, remove dirt bikes from traffic, and effectively cite and file against culpable accident-involved automobile drivers as well as motorcycle riders. Most motorcycles in accidents are inconspicuous, and the use of the headlamp in daylight and high visibility jackets
- A literature review of motorcycle collisions by Oxford University has highlighted that various engineering designed have been incorporated by manufacturers into motorcycles over the past decade to try to mitigate against the number of collisions involving motorcycles including daytime running lights, personal protective equipment and engineering such as airbags and anti-lock braking systems.

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