

Study on motorcyclist's behavior and attitude towards road safety 2010



**Authors and translation:
Maria Nordqvist - SMC
Nils Petter Gregersen - NTF**

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Address:

Sveriges MotorCyklister, SMC, www.svmc.se

Nationalföreningen för Trafiksäkerhetens Främjande, NTF, www.ntf.se

Summary

Bikers are involved in accidents like other road users. Many are injured and killed each year and their proportion of all traffic injuries has increased, mainly due to the doubling of the number of motorcycles in use in the last decade. The past two years show a downward trend of both killed and seriously injured motorcyclists. Nationally, a strategy to increase safety for motorcyclists has been developed in collaboration between authorities and organizations. One part of the strategy is to find out how motorcyclists behave in traffic and the attitude among motorcyclists toward different behaviors, protective equipment and other road safety measures.

The overall aim of this study is to increase the knowledge of motorcyclists' attitudes to road safety and road safety measures. The survey was conducted through a web-based questionnaire among members of the Swedish Motorcyclists Association, SMC. SMC and The National Society for Road Safety, NTF, developed and implemented the survey, analyzed the results and wrote the final report. The study was supported with funding from the Swedish Transport Administration.

The results show that motorcyclists use personal protective equipment to a very high extent. Although the law only requires the use of a helmet, a majority always use full protective gear. More than a quarter have ABS brakes on their motorcycles today, but 80 % will request ABS brakes when buying their next motorcycle. More than 50 % have participated in an advanced training course at least once.

Motorcyclists have a better attitude to sobriety compared with car drivers. Fewer motorcyclists have driven under the influence of alcohol or other drugs, fewer have ridden a motorcycle the day after, ridden pillion or in a group with someone who is under the influence. When it comes to speed, motorcyclists have a worse attitude than car drivers to speed limits. The type of motorcycle is also relevant for attitudes to speed. Motorcyclists do not see lower speed limits as an important measure for improving safety.

Motorcyclists are not against median crash barriers but they want them to be designed and installed from a motorcyclist' perspective. They are very critical towards the wire rope that is mainly used today.

Most of the riders say that their safety awareness is formed through information and education sources within the motorcycle community. Most important are motorcycle friends, followed by SMC. Rider education at a driving school was ranked third among the most important information and training sources.

Background

There are a lot of international research papers on motorcycle safety and on various measures to improve it. There are many examples, such as the safety dossier from BFU, Switzerland (1), an overview of measures that motorcyclists themselves consider to have a positive effect on the increased security from FEMA (2) and an overview of the accident situation and measures in different countries from ETSC (3). There are also strategies to improve motorcycle safety in other European countries, USA and Australia. However, there is a lack of knowledge of the motorcyclists's own approach to road safety in all reports and strategies. The Swedish National Road and Transport Research Institute, VTI, has recently conducted a literature review about motorcycle culture (4). The results highlight the importance of community and belonging among motorcyclists, but also the importance of different subgroups with regards to identity, lifestyle and type of motorcycle. It suggests that risk is a part of the enjoyment of many riders and experience is highlighted as

critical to the ability to manage the risks. Education is also emphasized by motorcyclists as a very important measure. In the literature survey, there are no modern Swedish studies about how motorcyclists look at road safety. A Swedish study in 2007 identified the motorcycle community as the premier counter force against the implementation of road safety reforms for motorcyclists (5). Motorcyclists are a road user group that is relatively unexplored in Sweden. NTF and SMC applied for and were granted by the Transport Administration funding for this project in September 2009.

The number of motorcycles has more than doubled in the last decade. If you compare the number of fatalities and injuries per 1,000 vehicles between motorcycle and car, the risk has been roughly constant for those who travel in a car since 1980 while the risk has reduced for motorcycles. Today the risk of being killed or injured is almost equal for motorcyclists as for car drivers, compared to the number of vehicles in traffic. Since the late 1990's, the number of motorcyclists killed has varied between 36 and 60 and the number of seriously injured between 300 and 400 (Figure 1-3).

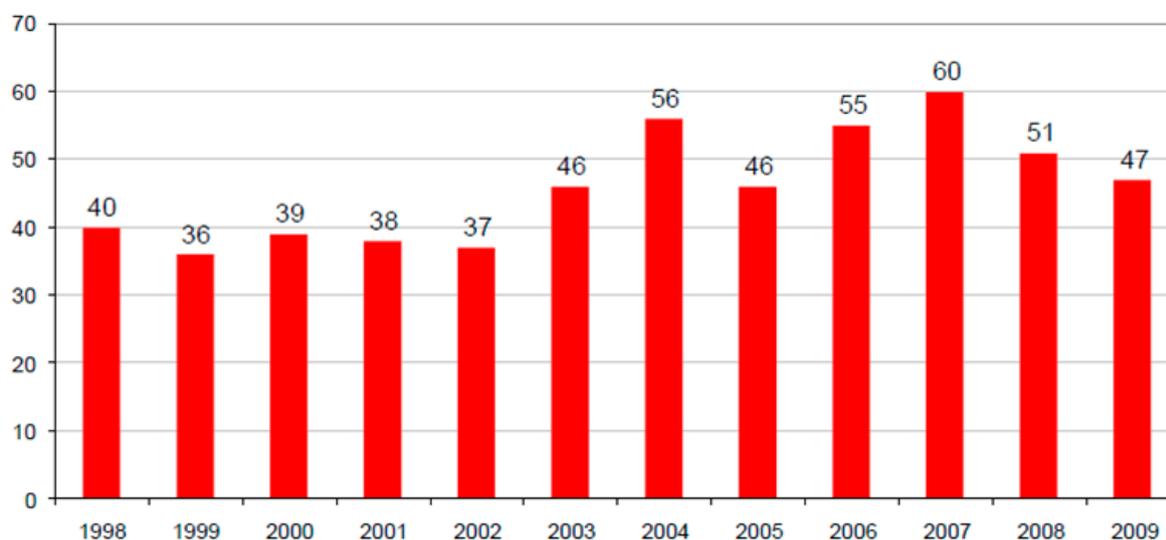


Figure 1. Number of motorcyclists killed (Source: The Swedish Transport Administration)

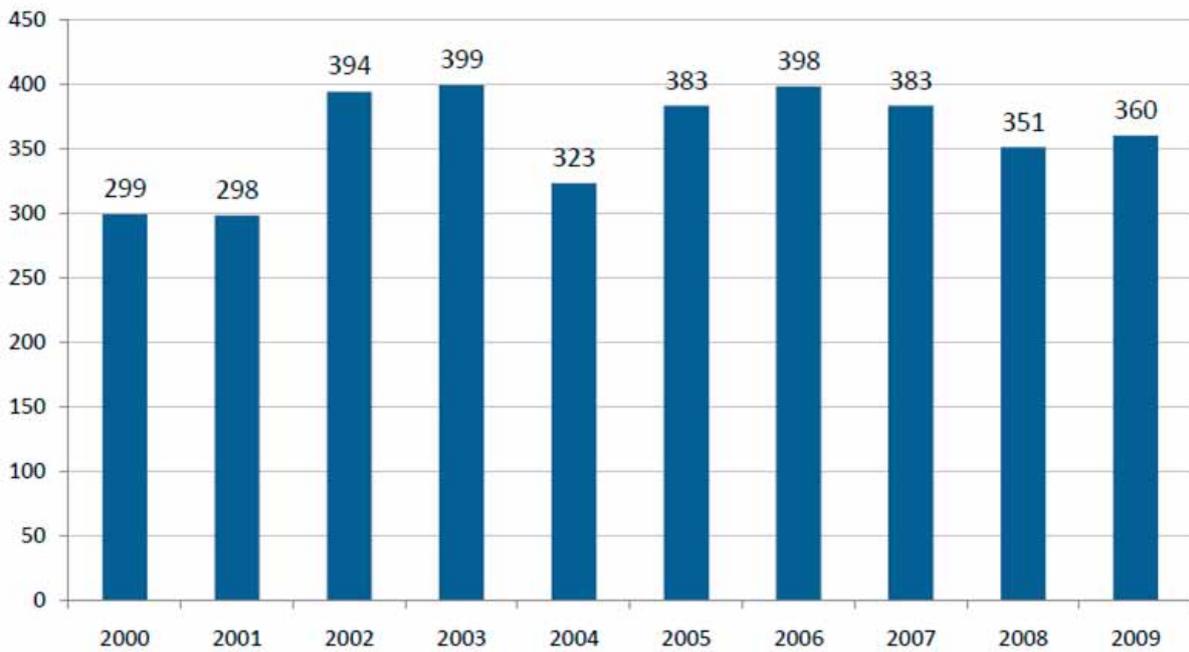


Figure 2. Number of severely injured motorcyclists (Source: The Swedish Transport Administration)

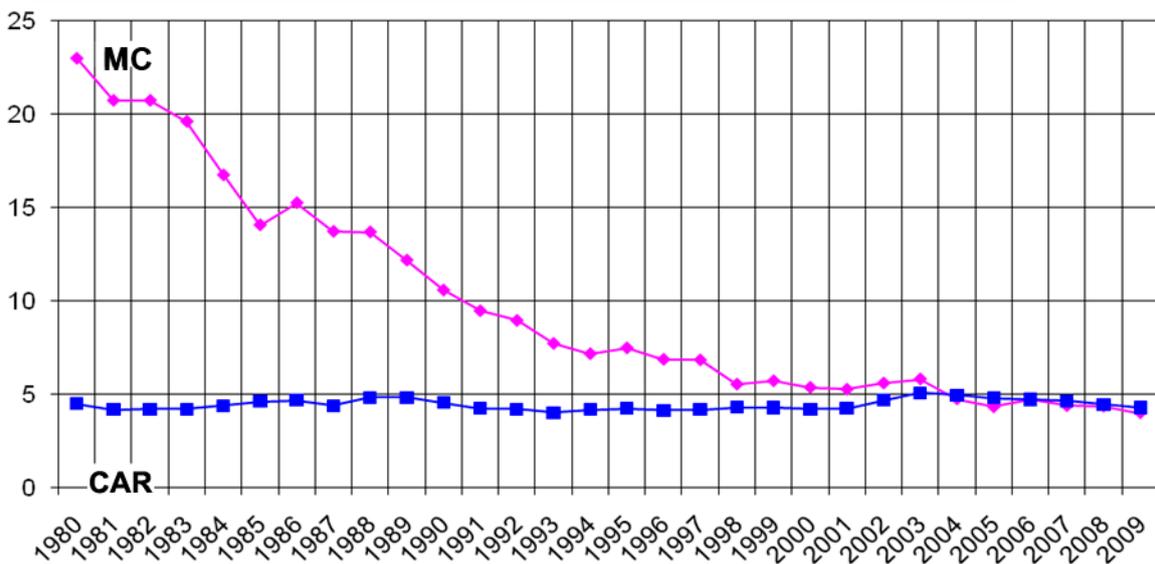


Figure 3. Killed and injured/1000 vehicles for car and motorcycle (Source: SMC and SIKÅ)

Aim

The safety of motorcyclists is an issue that has been raised during the last years as well as the importance of improving their conditions. The reasons are partly the increased interest in riding a motorcycle with an increased number of motorcycles in traffic as a result and partly the high accident rate among motorcyclists. The Swedish Transport Administration led some work during 2009-2010 to create a strategy for improved safety among motorcycle and moped riders. The ambition is to apply Vision Zero to these road users and to include motorcyclists and moped riders in the road safety targets in general. It means a halving of road deaths and a reduction in serious injuries by 25 % until 2020. This work has resulted in a national strategy "Improving safety on motorcycles and mopeds - Common strategy for the years 2010-2020, Version 1.0" The working group consisted of delegates from the Swedish Transport Administration, The Swedish Transport Agency, NTF, the National Police, Local Authorities and Regions, SMC, Swedish Motor Insurers and the Swedish Moped and Motorcycle Industry Federation.

The strategy has concluded that the model for "the safe journey" produced by the Swedish Transport Administration needs to change if it is to apply to motorcycles and mopeds. The most important difference is that riders on motorcycles and mopeds must focus on accident prevention instead of minimizing the injuries if an accident occurs. The accident prevention policy includes a clear message to all stakeholders of the shared responsibility between road users, the vehicle and the road environment.

In order to initiate effective measures required by this approach, a solid understanding is needed about measures that can be adapted for different groups of motorcyclists, what messages they are receptive to, what measures motorcyclists consider to be most effective and which communication channels that are most important to use. In order to develop this knowledge, SMC and NTF, conducted a survey among motorcyclists as a part of the national strategy.

Method and material

The study was conducted as a web based survey among members of SMC. SMC has 67 000 members and a random sample of 2000 individuals was developed from this population. One reminder was sent out. To increase the response rate, SMC was the principal author of the questionnaire. To obtain a representative sample similar to the Swedish motorcycle owning population, motorcyclists in the corresponding age range were chosen. The sample was chosen randomly among SMC members with e-mail in each age group. The survey was sent out via e-mail to 2000 individuals. 682 responded to the survey, representing 34,1%. The survey was conducted from May to June 2010. The responses have been processed in the computer program SPSS.

Content of the questionnaire

The questions were developed by the authors. The choice of issues was made to reflect the motorcyclists' attitudes to various road safety measures. A number of issues relate to common road safety measures where motorcyclists were expected to have a different view compared to other road users. Some questions were copied from surveys of car drivers done by NTF (6), which means that comparisons can be made between motorcyclists and car drivers. Some questions were copied from a web survey SMC conducted in December 2009-January 2010 about advanced training for motorcyclists (7). Some questions were taken from a British

survey published in 2009(8). Finally a few questions were inspired by an Australian study (9). This means that comparisons can be made with other surveys. (7).

The questionnaire includes questions on:

- Personal data (eg. age, gender, urban / rural)
- Information about motorcycle riding (eg, type of motorcycle, safety, annual mileage, type of riding, type of license, time on motorcycle, experience, membership in clubs and advanced training)
- Road safety information (where they get information and areas of importance)
- Own behavior in traffic (eg riding strategies, accident involvement, protective gear, sobriety, speed, and offenses)
- Attitudes to road safety (eg protective equipment, sobriety, speed and other road users) and to measures (eg training, enforcement, speed cameras, guardrails, road maintenance and rumble strips)
- Proposed measures to increase motorcycle safety
- Usage and awareness of ABS (in accordance with the conditions of project support from The Swedish Transport Administration.

The questionnaires were sent out during May and June 2010. The completed questionnaires have been checked and the responses have been converted to SPSS format. All questions are in Annex I.

Background information of the respondents

The average age of respondents was 49 years. It is identical with the average age of SMC members and just under the average age of Swedish motorcycle owners, which is 50 years (10).

The percentage of female respondents was 9%. It is slightly smaller than the proportion of female Swedish motorcycle owners, 11%, and the proportion of female SMC members, 14% (10).

A third of respondents to the survey are a member of one or several motorcycle clubs in addition to SMC (Figure 4).

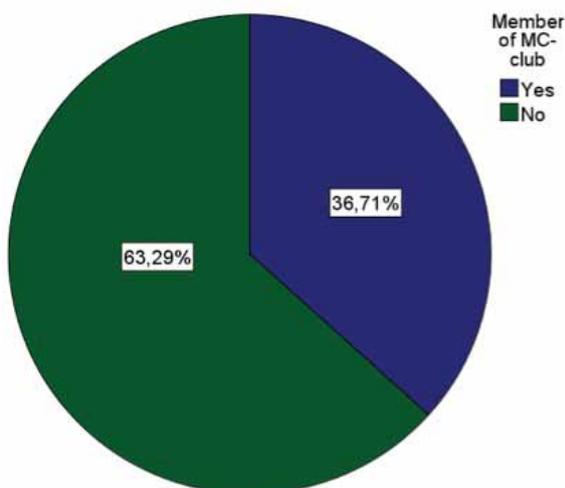


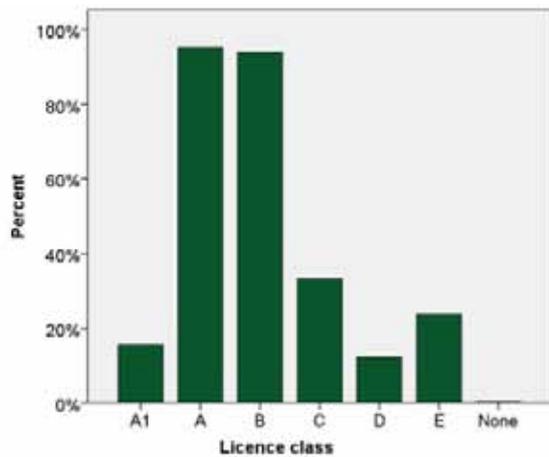
Figure 4. Membership of the motorcycle club, in addition to SMC

The respondents are evenly divided when it comes to where they live; a third live in towns with fewer than 25 000 inhabitants, one third of the localities over 100 000 inhabitants and the remaining third of the locations of 25 000-100 000 inhabitants.

Results

Driver's license, vehicle and use

The answers indicate that almost 100% have a form of driving license. More than 15% have an A1 license, while most have both A and B licenses. Only two people have indicated that they don't have a driving license (Figure 5).



One-third required an A license before 1st January, 1976, the date when a B license no longer came with an A-competence. Two-thirds, 439 people, has received the A license after 1st January 1976, passing theory and driving tests.

Figure 5. Driving licenses

One question was about the personal motorcycle history. Almost half have been riding a motorcycle without interruption. One-third are so-called re-born bikers who rode in young age, then stopped for a number of years and started riding again in older age. The smallest group are people who started riding a motorcycle late in life (Figure 6).

Figure 7 shows the relationship between age and the time period the respondents have been riding a motorcycle. If everyone would have started at a young age and rode all the time, the replies would have been accumulated around the diagonal. Instead figure 7 shows that many started riding a motorcycle later in life. Many are over 40 years and have been riding less than 10 years.

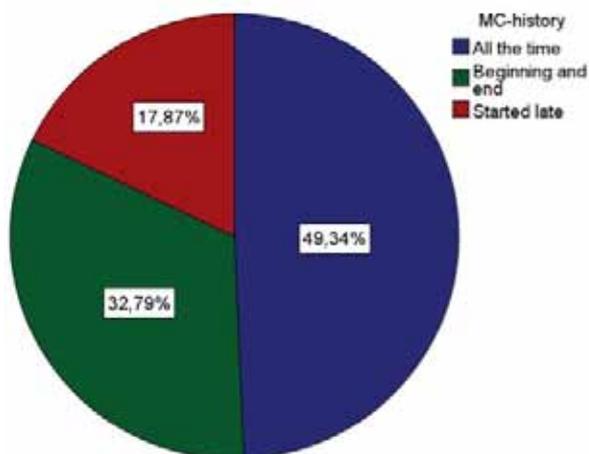


Figure 6. Motorbike history

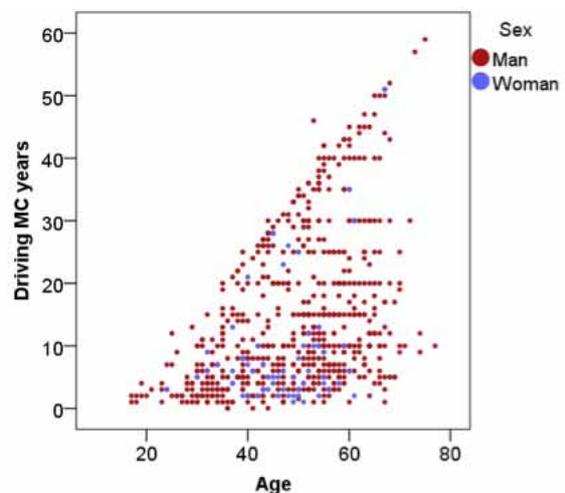


Figure 7. Motorbike history, gender and years

Motorcycle and other modes of transport

One question was about how often the respondents use different modes of transport if they don't need to take weather or season in account. The most common transport among the respondents is driving a car. Riding a motorcycle is the second most common mode and the third most common is cycling. Few travel as passengers in a car or on a motorcycle. (Figure 8).

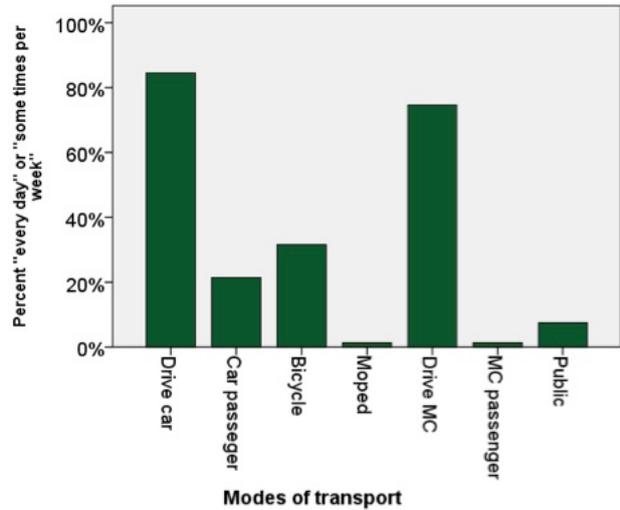
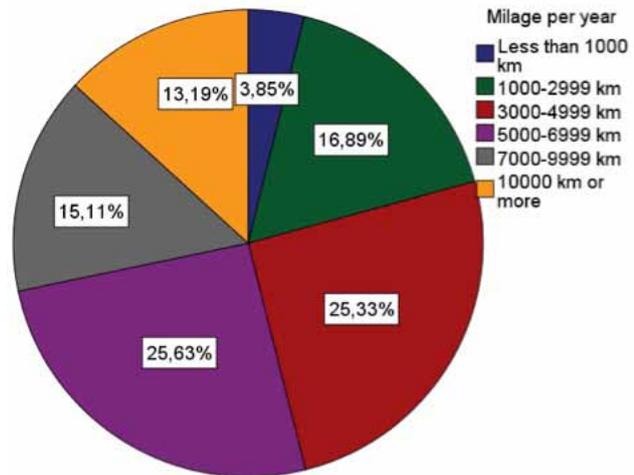


Figure 8. Choice of transport mode "every day" or "a few times a week"

Nearly 80 % of the respondents ride 3 000 kilometers or more per year. This is much more than the national average, which according to SIKa is 2 480 kilometers. The data of SIKa is based on odometer readings recorded at the periodic technical inspection (Figure 9) (10).

Figure 9. Mileage per year



Usage of the motorcycle

Nearly one tenth commute with a motorcycle to work or school every day and a quarter a few times per week. Only a quarter say they never use the motorcycle for commuting. A third use the motorcycle a few times each week for other purposes. The most common type of travel in general is short leisure trips, which more than 50 % undertake a few times a week. A third use the motorcycle a few times per month for longer leisure trips (Figure 10-14).

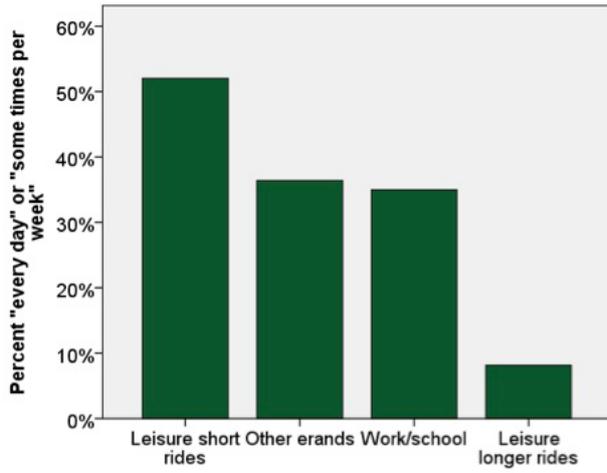


Figure 10. Motorcycle usage every day or a few times a week

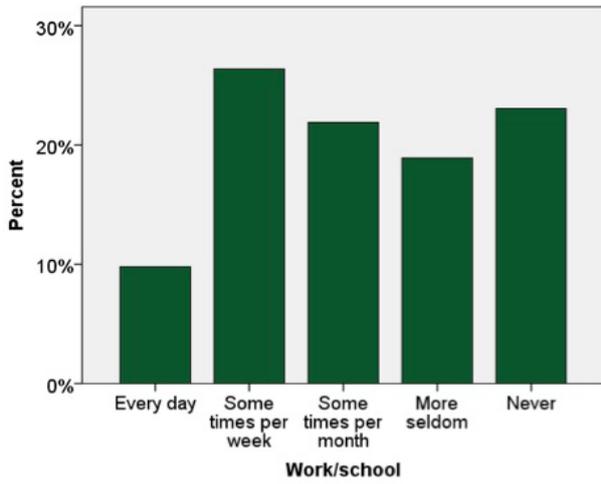


Figure 11. MC to work / school

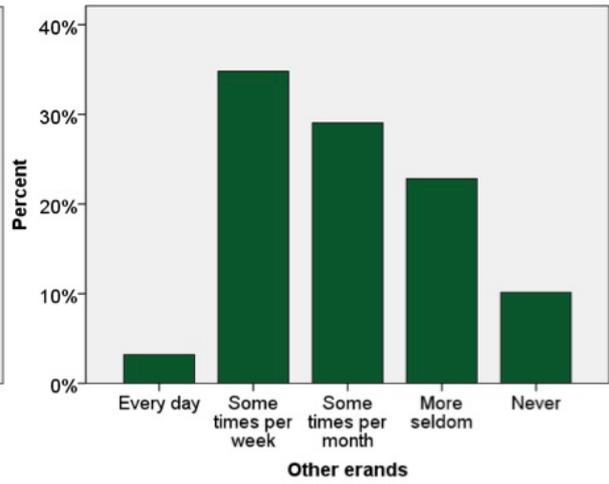


Figure 12. MC for the other purposes

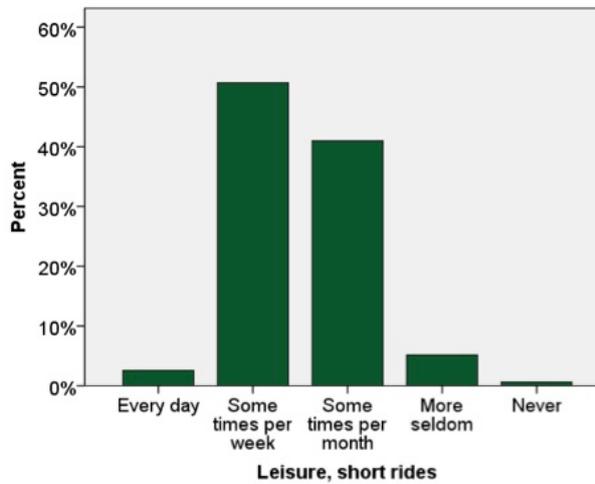


Figure 13. MC as a leisure vehicle for short trips

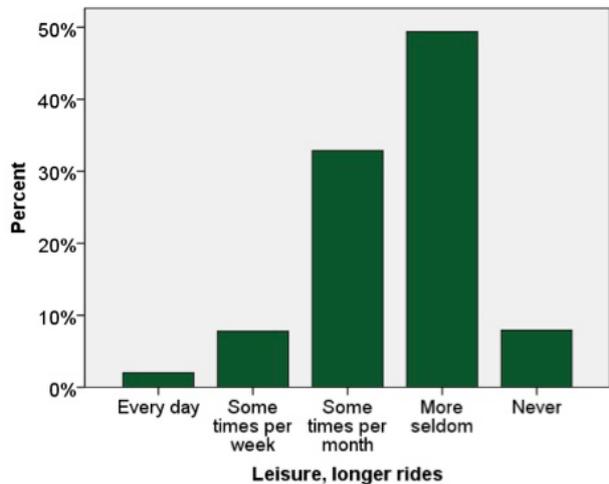


Figure 14. MC as a leisure vehicle for longer trips

Most of the respondents ride the motorcycle alone, without company. Only five individuals said that they never ride a motorcycle on their own. In contrast, many more responded that they never ride with anyone, a few others or many motorcyclists. If they don't ride alone, it is ranked second to ride with a few other bikers a few times per month (Figure 15-19).

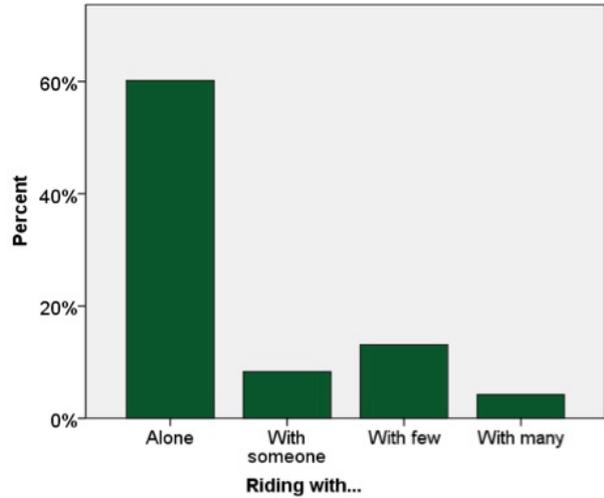


Figure 15. Ride motorcycle alone or with others

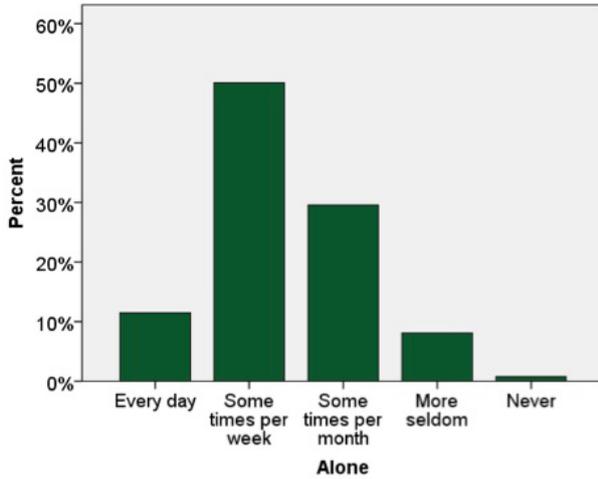


Figure 16. Ride alone

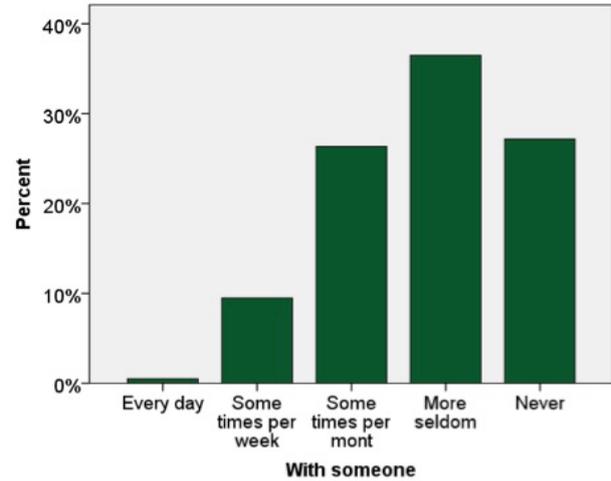


Figure 17. Ride with someone

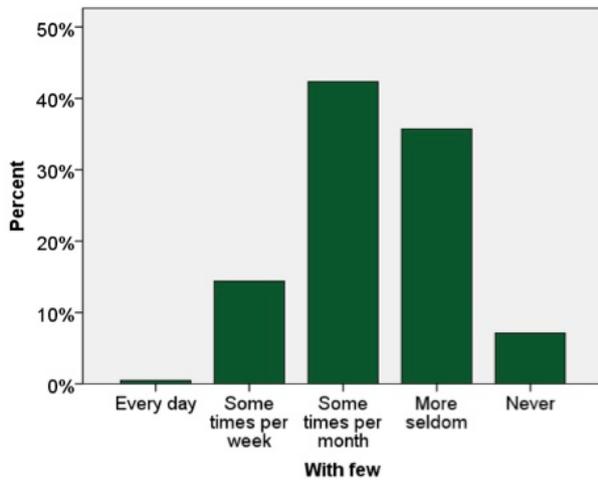


Figure 18. Ride with a few motorcyclists

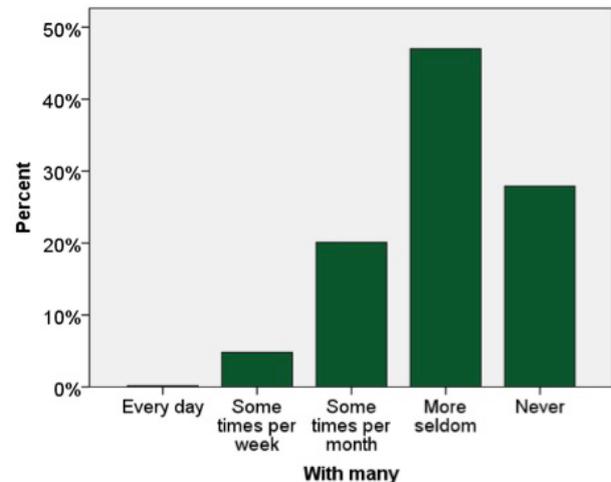


Figure 19. Ride with many motorcyclists

Borrow a motorcycle or lend your motorcycle

Over three-quarters of respondents do not lend his/her motorcycle. Just under a quarter said that they would lend the bike but only to someone they trust completely. Only two individuals said they would lend their motorcycle to anyone who asks (Figure 20).

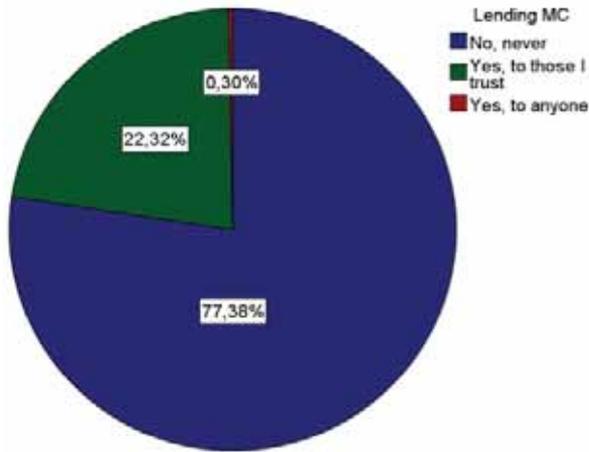


Figure 20. Lends his motorcycle

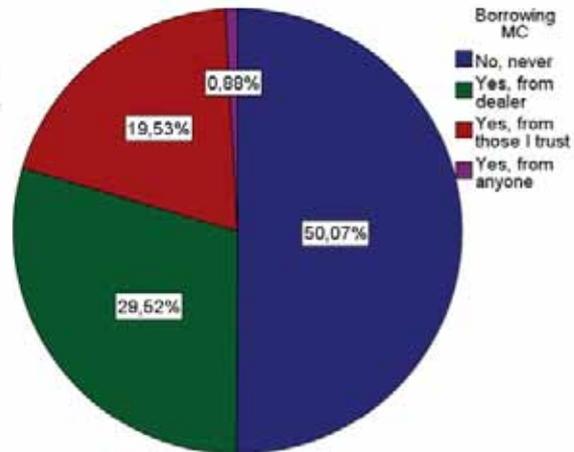


Figure 21. Borrow motorcycle from others

Half of the respondents never borrow a motorcycle. Slightly fewer borrow a motorcycle, but only in connection with trial runs at dealers or from a close friend or family member. Only six people borrow a motorcycle from anyone who is willing to lend (Figure 21).

The vehicle

Most people own a motorcycle. 20 % own two motorcycles and a few own three motorcycles or more. One person owns eight motorcycles. The respondents were asked to specify what type of motorcycle they use most. This motorcycle is the basis for the remaining responses related to the motorcycle.

Number of motorcycles	Percent
0	0,4
1	73,8
2	20,3
3	3,8
3+	1,7

Table 1. How many motorcycles you own

A large proportion of the respondents own motorcycles with large capacity engines. Nearly half have a motorcycle with more than 1000 cc. One third have a motorcycle between 701-1000 cc. Only 1 % own a motorcycle below 125 cc. (Figure 22). Compared to the total MC population in Sweden, the proportion of owners of motorcycles over 1000 cc is higher for the SMC members who responded, but fewer owners have motorcycles below 400 cc (10).

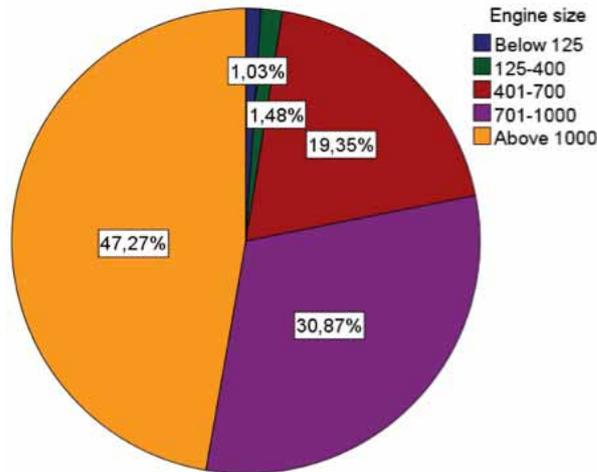
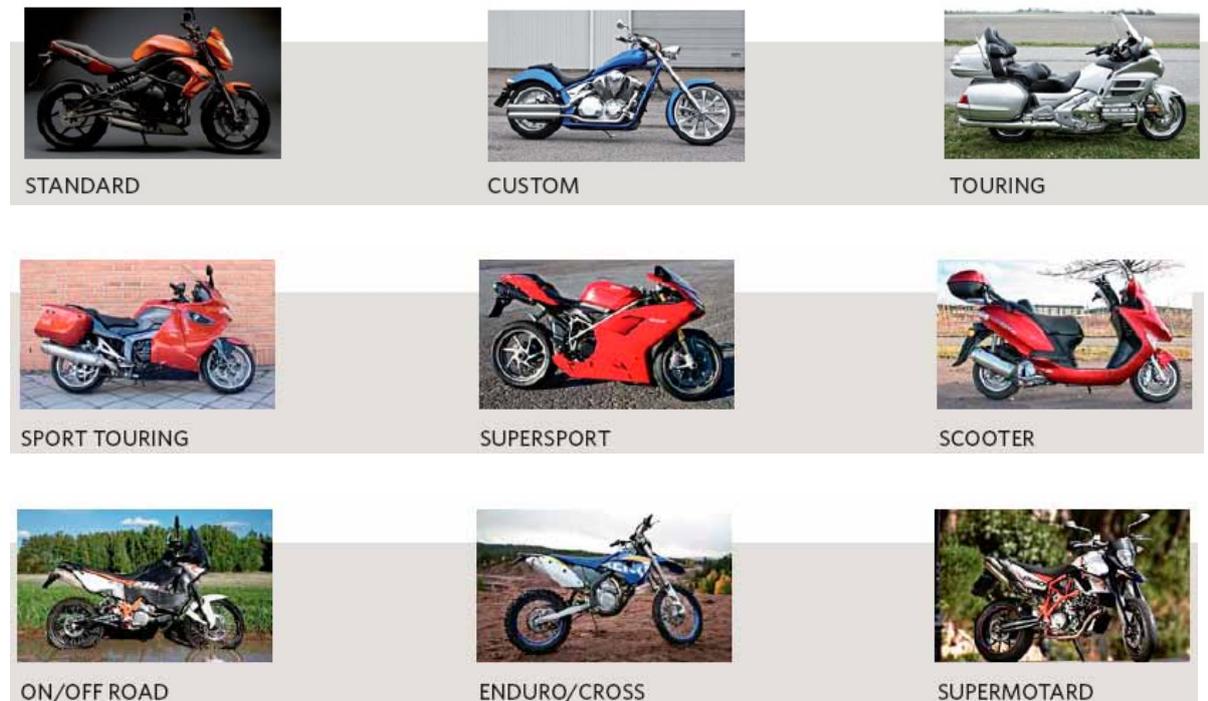


Figure 22. Motorcycles engine capacity

There are different types of motorcycles on the market and the most common category among the respondents is a touring model, followed by custom and sports bikes. There is no national database with the share in each motorcycle category. Therefore these figures can't be compared to the national motorcycle stock. Below are examples of motorcycle categories



Source: Swedish Transport Administration: Increased safety for motorcycle and moped. Common strategy for the years 2010-2020, Version 1.0

Figure 23 shows the distribution of the different motorcycle types and their engine capacities. It is obvious that the most common motorcycle type is a touring or custom and amongst those the engines above 1000 cc are the most common. Very few respondents have a vintage bike for daily use.

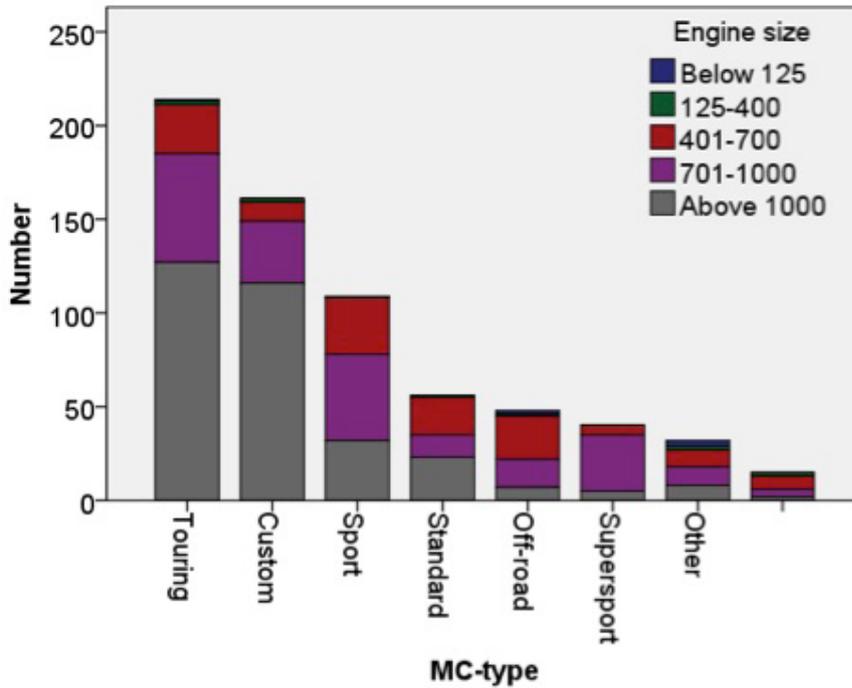


Figure 23. Number of MC by category and cubic size

One question was about if respondents planned to buy a new motorcycle. More than half responded negatively to this. About 5% planned to buy a new motorcycle in 2010, 11% intended to buy a new motorcycle in 2011 and almost 30% later (Figure 24).

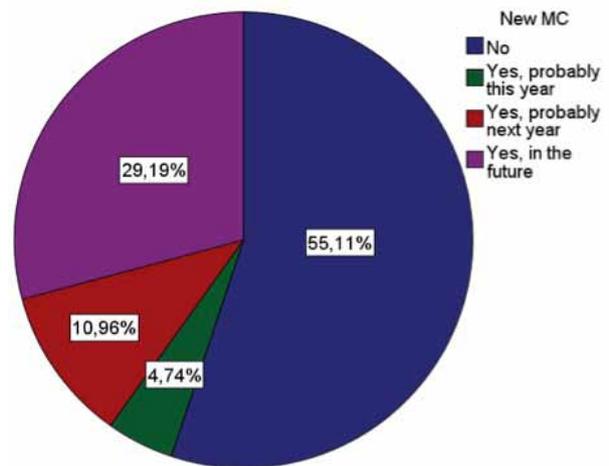


Figure 24. Plans to buy a new motorcycle

Safety equipment on the current motorcycle

The respondents were asked if their motorcycle had some kind of safety equipment. The majority, 85%, replied that the motorcycle didn't have any kind of safety equipment. ABS was the most common answer among the safety equipment, followed by linked brakes and traction control. Some answered "other" and among these responses is the most frequent comments additional lights and tyre pressure monitors. According to the insurance company Folksam, 7% of the motorcycle population in Sweden have ABS systems (11). This means that the proportion of owners of bikes with ABS is four times higher among those who completed the questionnaire. 6 % did not know if the bike had a safety system (Figure 25).

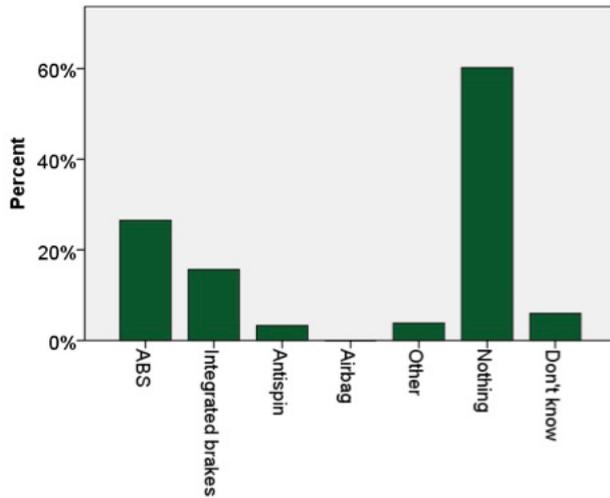


Figure 25. Safety equipment on current motorcycle

Safety equipment on the next motorcycle

More than 80 % said that they will choose a motorcycle with ABS when buying a new motorcycle. A third will demand linked brakes and a fifth traction control. Only a few will ask for an airbag. Some answered "other" where the most frequent comments were heated grips and better lighting. 15 % responded that they will not ask for any safety equipment (Figure 26).

A majority will also demand a motorcycle with ABS when buying a used motorcycle (72.7%) and 26.8% will demand a motorcycle with linked brakes. 25% replied that they will not ask for safety systems at all, when buying a used motorcycle.

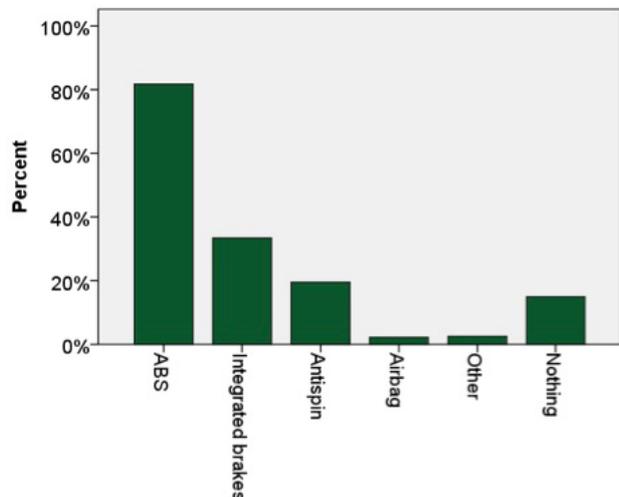


Figure 26. Safety equipment on the next MC

Activation of ABS

One question was about the activation of the ABS system. In this question we got more answers than current owners of a motorcycle with ABS. About 50 % say that they have activated the ABS. More than a quarter say they do not know if they have activated the ABS at any time. The proportion who answered 'yes' is the number of respondents with ABS (Figure 27). Most of those who activated the ABS have done so in connection with a planned exercise. 7.6 % of all respondents have used ABS in an emergency situation on the road and the same number during normal braking on slippery surfaces (Figure 28).

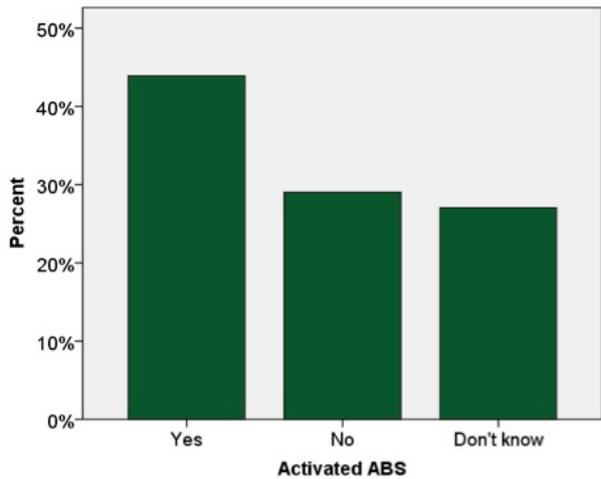


Figure 27. Activated ABS

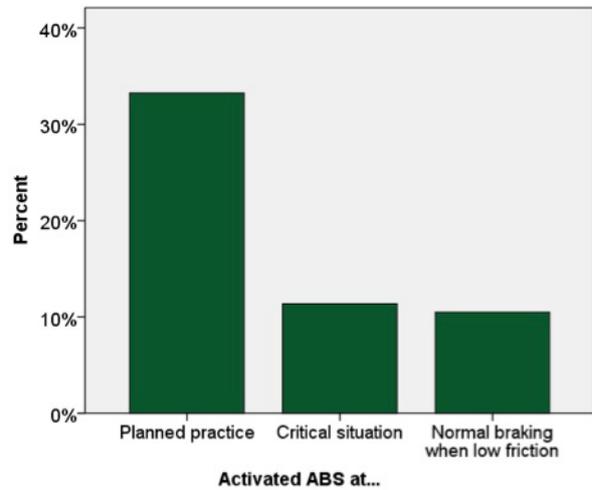


Figure 28. When ABS was activated

Personal protection

Since 1st May 1975 it is legally required to use a helmet when you ride a motorcycle in Sweden. All respondents said they always use a helmet. The most common type of helmet is the integral/full face helmet, followed by a flip front helmet and an open face helmet (Figure 32).

Most have a helmet that is 1-4 years old. Less than 15 % have a helmet which is older than five years and 16 % have an almost brand new helmet. (Figure 29). Two thirds say they plan to buy a new helmet, either directly or a bit later (Figure 30).

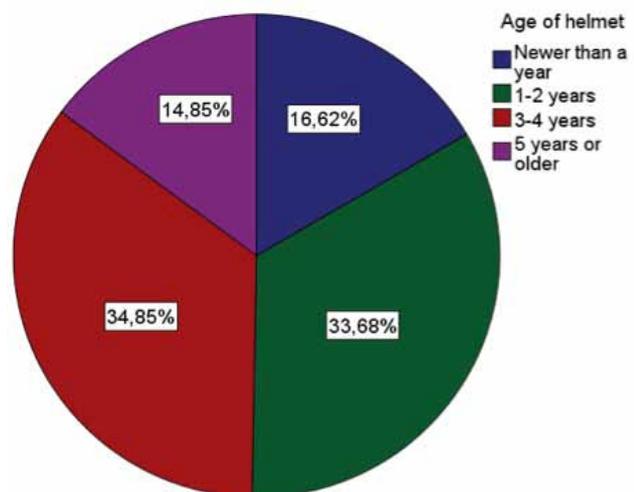


Figure 29. Age of helmet

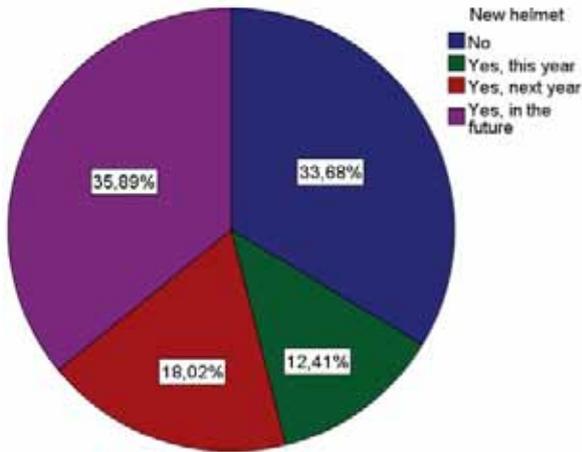


Figure 30. Buy a new helmet

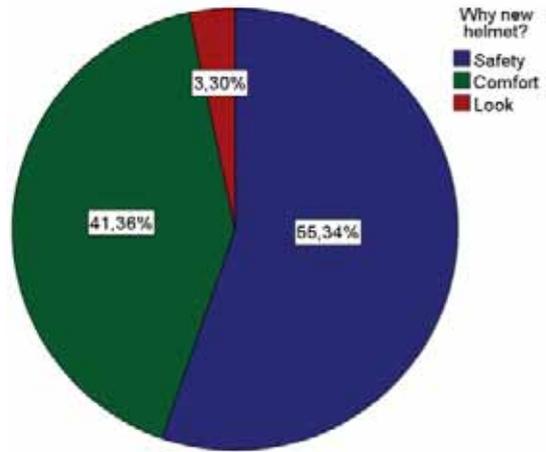


Figure 31. Why buy a new helmet

When asked why they were thinking of buying a new helmet the most common answer is safety. Increased comfort was also a common reason, while appearance was the main reason only for a few.

There is no legal requirement for personal protective equipment other than a helmet. The proportion that always use full protective equipment is high; safety trousers, safety jacket, safety gloves and motorcycle boots are used by a majority. There is potential for improvement, since there is still 10-20% that do not always use this kind of protection (Figure 32). The percentage who never use the complete equipment is very low, only a few percent (Figure 33).

The use of a separate back protector in the jacket is high. More than half of the respondents always use a separate back protection while another 17% using back protection more or less often. A quarter stated that they never use a back protector. Use of other personal protection such as separate chest protection and neck protection is low and is always used by only 2-3% (Figure 32).

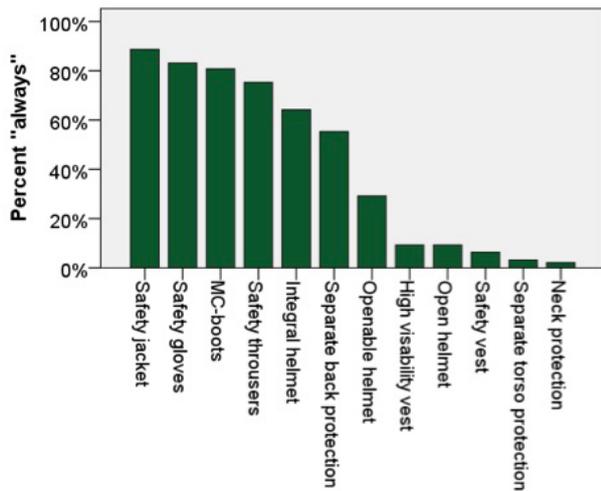


Figure 32. Always wear protective equipment

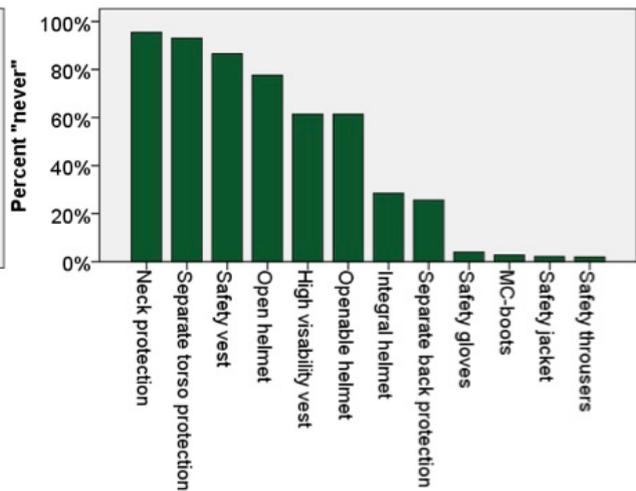


Figure 33. Never use protective equipment

Risks and risk-taking

The respondents were asked to consider a number of statements about risk and risk taking, based on a British study (8). The responses used a five point scale where 1 means totally disagree and 5 strongly agree. Two thirds felt that the risk of riding a motorcycle is something they are willing to live with. Only 6 % disagreed at all with this statement (Figure 34). The proposition "a life without risks would be boring" was agreed to by a third. There was also a high percentage that disagreed with this statement (Figure 35). Very few considered themselves as being such good motorcycle riders that risks did not apply to them. Two thirds disagreed with this statement (Figure 36). More than half had a safe return as the primary goal of riding a motorcycle. Only a few felt that this did not have any significance (Figure 37). Nearly two thirds believe that they don't take more risks riding a motorcycle than driving a car. Almost a quarter responded that they do take more risks. (Figure 38).

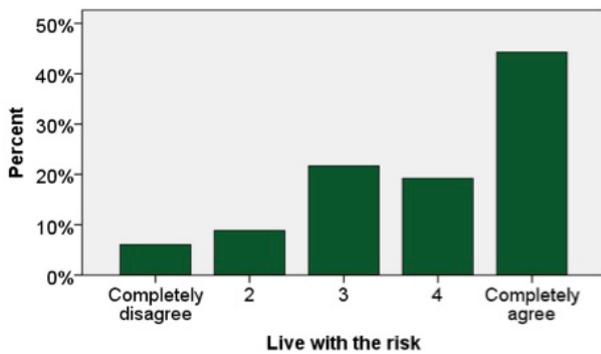


Figure 34. Willing to live with a risk to ride MC

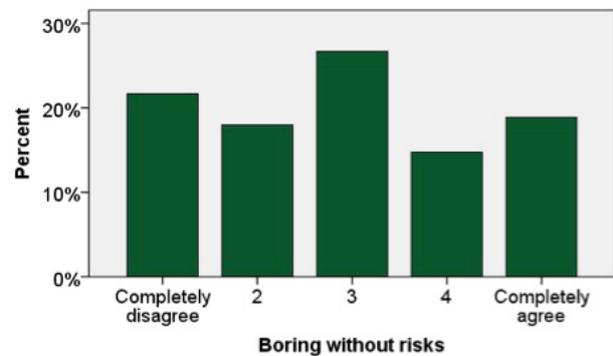


Figure 35. A life without risks would be boring

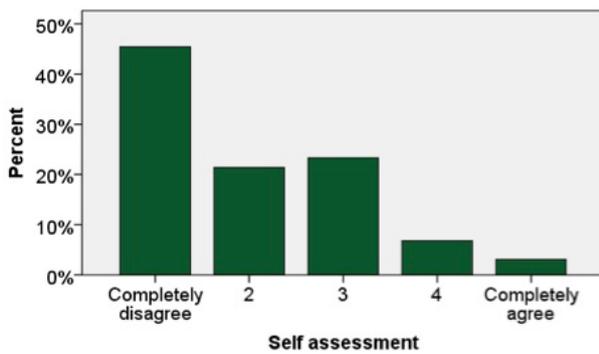


Figure 36. High risk riding MC does not apply to me

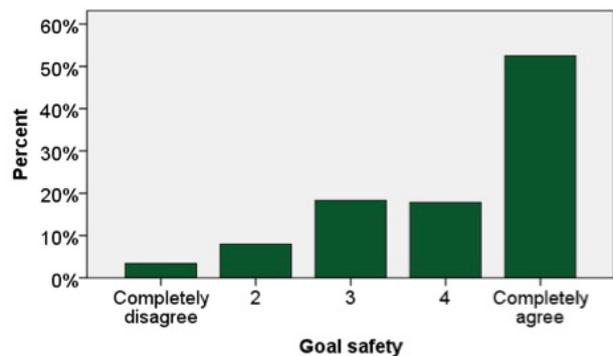


Figure 37. Goal of riding MC—a safe return

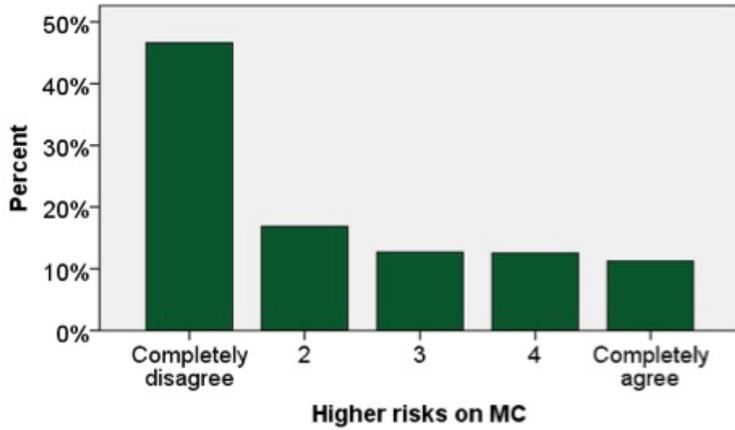


Figure 38. Take more risks when riding MC compared to car

Road accidents with a motorcycle

One question was if the respondents had been involved in an accident in any form during the last twelve months. Of the 679 whom answered this question, 53 people have experienced one or more accidents (Figure 39). Most of them had been in one accident (Figure 40).

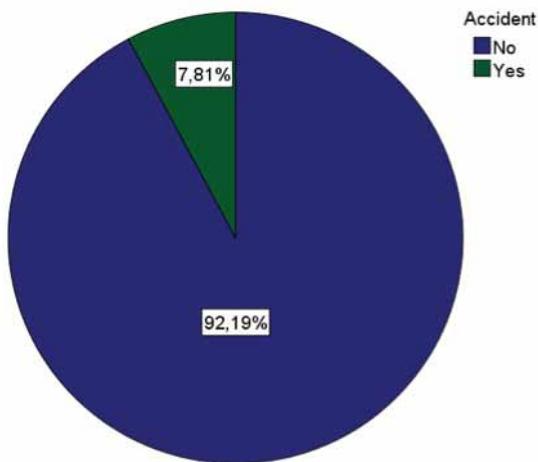
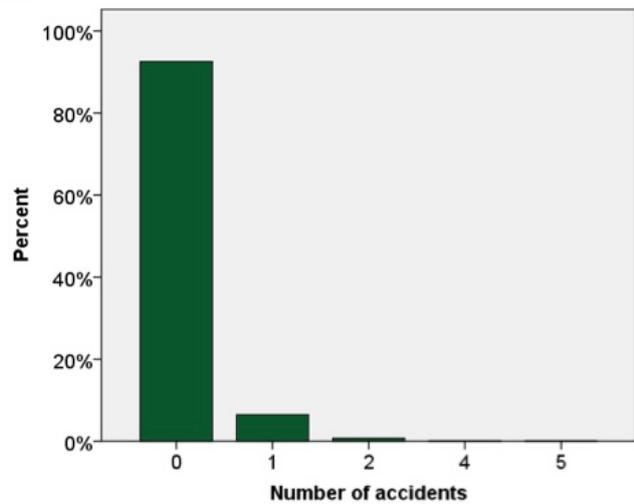


Figure 39. Road accident



40. Number of accidents

The most common consequence of the accident was vehicle damage. Just over one fifth had injuries that did not require treatment. Seven people replied that the accident required medical treatment without hospitalization. Four people were injured so severely that hospitalization was required (Figure 41).

The most common accident was a single vehicle crash whilst a collision with another vehicle was ranked second. Most of the respondents blamed themselves for causing the accident while 14 responded that another road user caused the accident. Nine people responded that the cause of the accident lay with the road owner (Figure 43). Other causes of accidents as indicated under "other" are diesel or oil spills, grit and lending an unfamiliar bike. Of those who had an accident, 19 fell when riding at or below walking pace or while standing still (Figure 42).

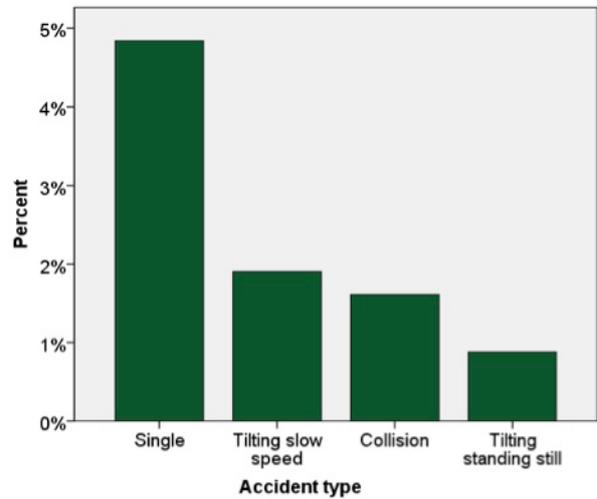
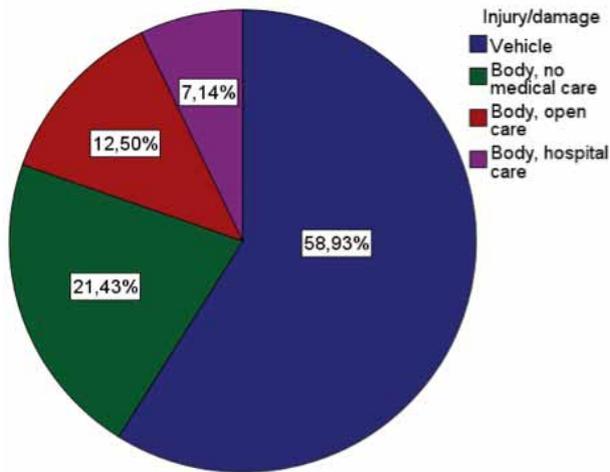


Figure 41. Damage at accident

Figure 42. Type of accident

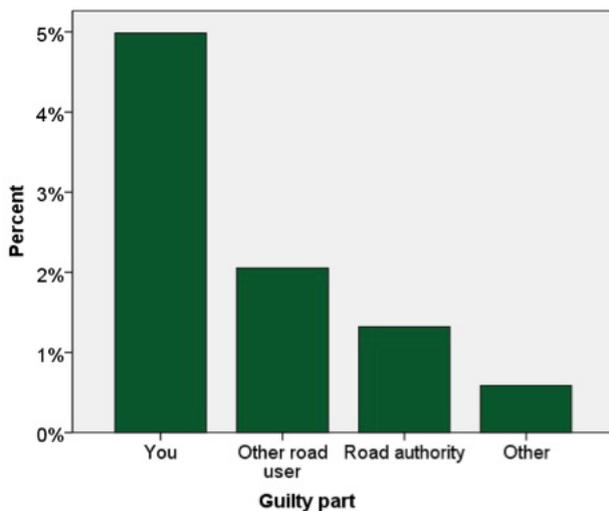


Figure 43. Causing the accident

Attitudes, behavior and actions

Conspicuity and high visibility vests

More than half of the respondents had almost collided once or several times during the last twelve months with another vehicle where they felt that the other road users had not seen him/her. The rest said that they had never experienced this (Figure 44). A question reported later in this study shows that awareness campaigns are the highest ranked measure to improve safety for motorcyclists.

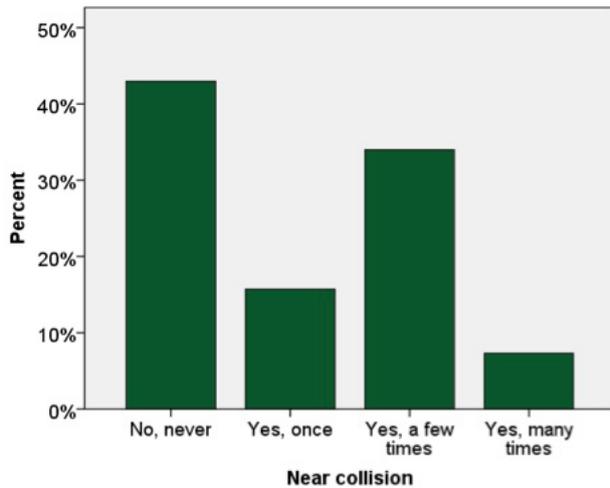


Figure 44. Near a collision during the last year

The use of a high visibility vest is relatively low. About 10 % say that they always use a high visibility vest and a third uses the vest sometimes. Just over half say that they never use a high visibility vest (Figure 45). Even if the respondents do not use high visibility vests on a regular basis, a majority believes that the vest makes a motorcycle rider more visible and therefore believes that the high visibility vest is good for road safety (Figure 46).

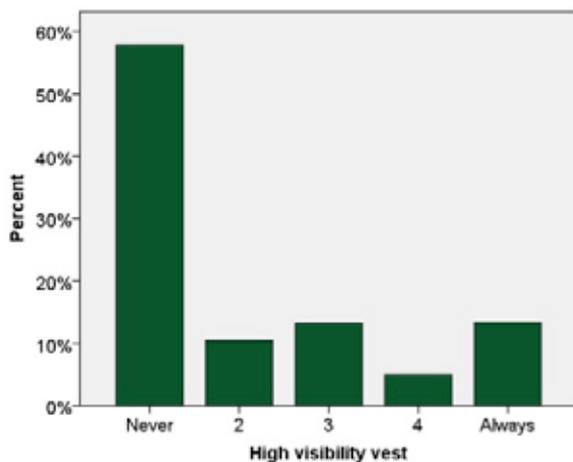


Figure 45. The use of high visibility vest

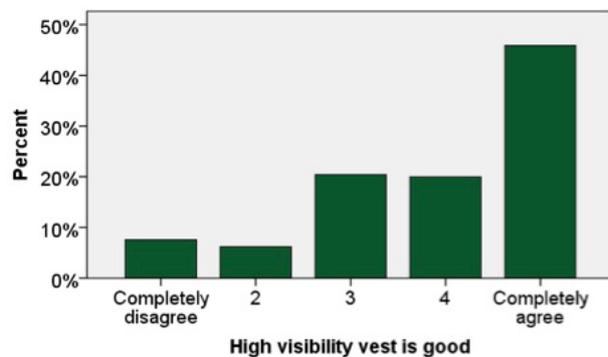


Figure 46. High visibility vest increases visibility and is good for road safety

Speed, enforcement and ITS technologies

When asked if they ever ride 30 km/h over the signed speed limit, almost two-thirds replied "occasionally" and about 20 % "many times". Quite a few responded that this never happened (Figure 47). All matters relating to speed show that motorcyclists answer with a more negative attitude about complying with speed limits compared with car drivers who responded to similar questions.

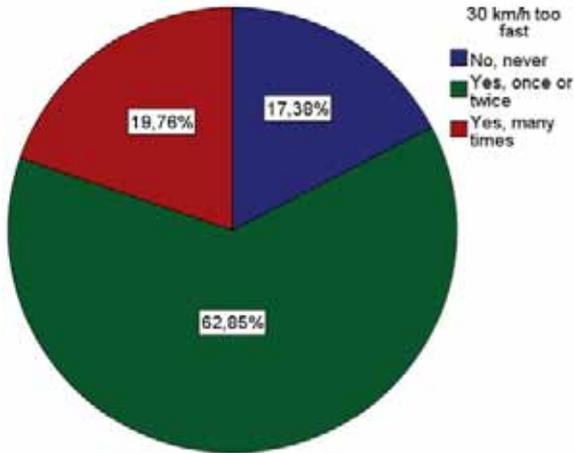


Figure 47. Riding more than 30 km/h over the speed limit

The respondents were also considering speed by assessing what is an acceptable speed and what their speed normally is on a 50 km/h and 90 km/h road. The attitudes towards following the speed limit are better on a 50 km/h road than on a 90 km/h road. About half responded that both an acceptable speed and their own speed is 50 km/h or less on a 50 km/h road (Figure 48-49). For a 90 km/h road, the corresponding proportion, ie, those indicating 90 km/h or less, is less than a third (Figure 50-51). The percentage that indicates the highest speeds are relatively equal, approximately one quarter of all assessments.

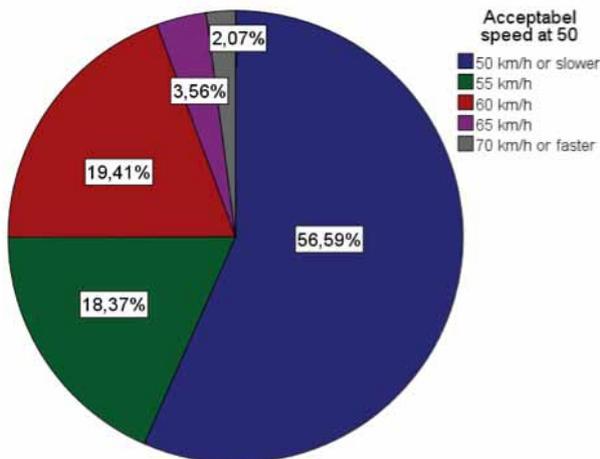


Figure 48. Acceptable speed in 50 km/h limit

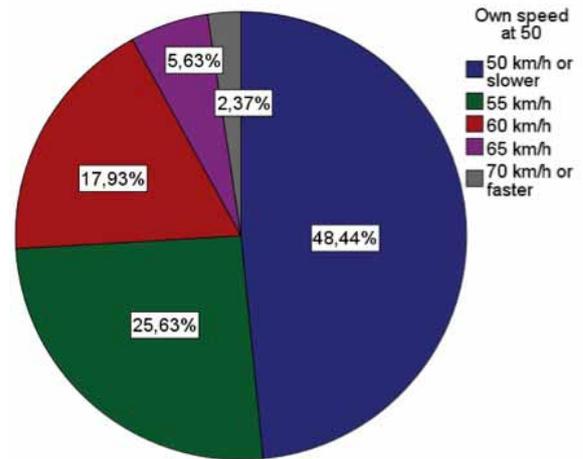


Figure 49. Own speed in 50 km/h limit

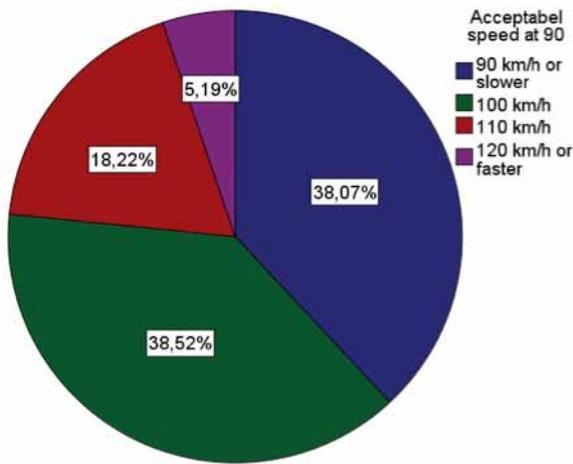


Figure 50. Acceptable speed in 90 km/h limit

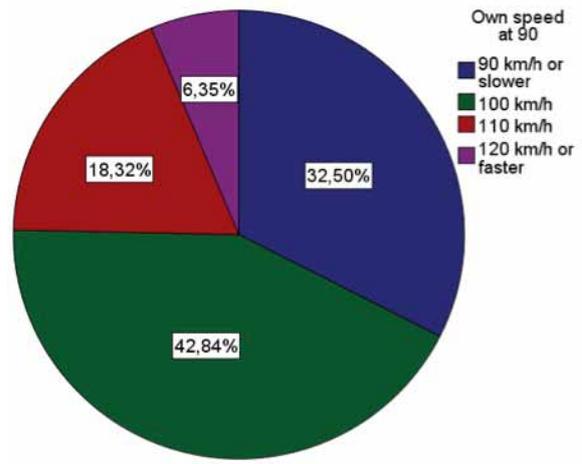


Figure 51. Own speed in 90 km/h limit

A quarter of respondents say they have a generally higher speed when they drive a car compared to riding a motorcycle. More than half did not agree at all with this statement (Figure 52).

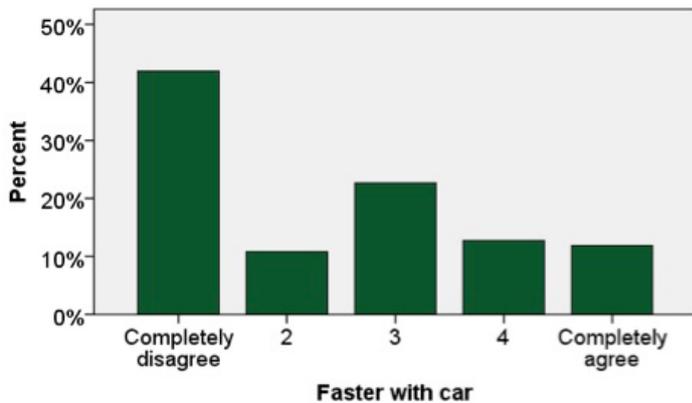


Figure 52. Generally higher speed in car than with a motorcycle

In order to allow identification and issue fines for motorcycle owners with speed cameras, the Swedish Transport Administration, NTF and individual MP's have in recent years proposed a number plate on the front of motorcycles. The proposal has never materialized. One of the questions was about how they act as motorcyclists when approaching a speed camera. More than half responded that they will slow down if they drive too fast and one third responded that they would continue in the legal speed. The rest responded that they would continue at the actual speed, even if it is too high (Figure 53). Twelve people out of 676 who answered the questionnaire had been fined for speeding in the past year.

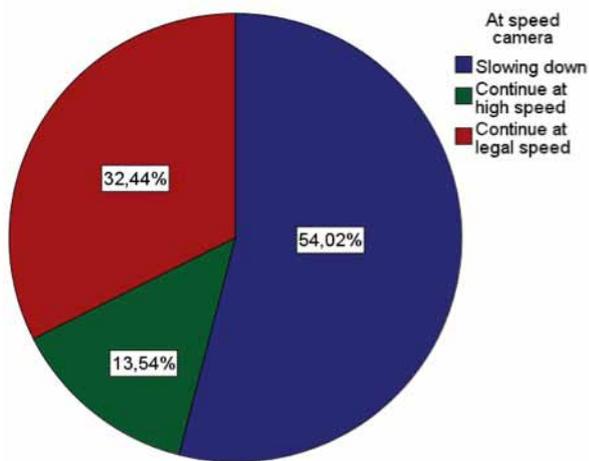


Figure 53. The behavior at speed cameras

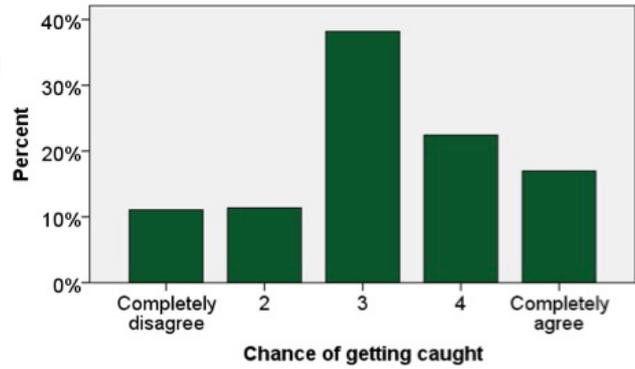


Figure 54. Chance of getting caught is small

A number of statements were related to speed and the role of the police. One-third agreed completely or almost completely with the statement that there is a little risk of being caught by a speed control (Figure 54).

A common discussion in various situations is that motorcyclists do not stop at speed enforcement controls when speeding. Instead they use the opportunity to run away from police. This question was therefore asked in the study. Only 26 people out of 675 who answered the question felt that this is entirely or almost entirely acceptable behaviour. Nearly all, 95%, said, however, that this is not an acceptable behaviour in the context of speeding (Figure 55).

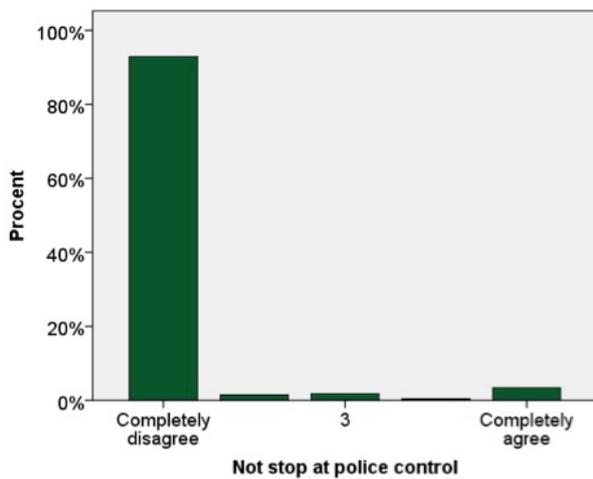


Figure 55. Acceptable not to stop at police speed control

Two thirds of respondents do not believe that the penalty for speeding should be tougher. Very few felt that the penalty for speeding should be tightened (Figure 56).

A majority of the respondents were positive to the tolerance limit of 5 km / h of the police where they refrain from reporting. Only 11% agreed completely or almost completely to lowering the limit (Figure 57).

Less than 10 % think that speed limits should be lowered to increase road safety. A clear majority, disagree with the assertion that reduced speed limits will increase road safety (Figure 58).

Over 50% consider it acceptable to ride too fast if you are following the flow of traffic while 22% disagree with this statement (Figure 59).

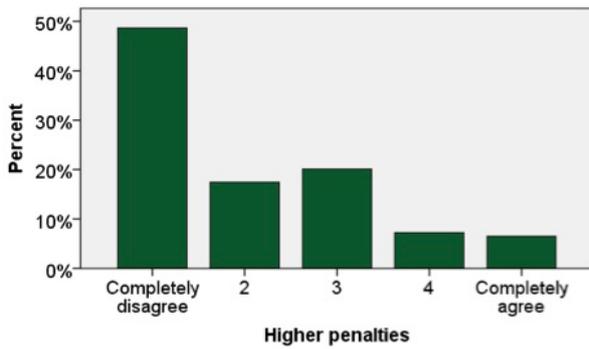


Figure 56. Higher penalties for speeding

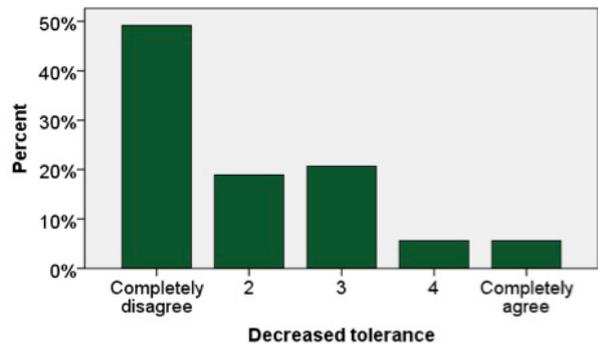


Figure 57. Decreased tolerance

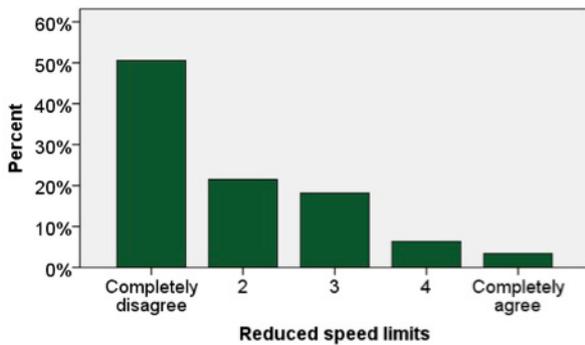


Figure 58. Reduced speed limits to increase safety

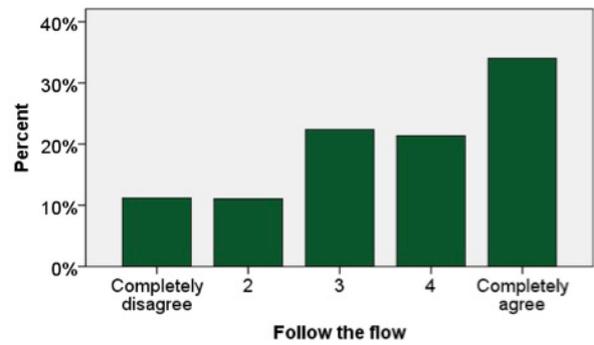


Figure 59. Acceptable to follow the flow of traffic

ISA and technical support

Less than 10 % were positive to technical systems such as ISA (Intelligent Speed Adaptation) to make it easier to follow the speed limit. In contrast, two-thirds opposed such a system (Figure 60).

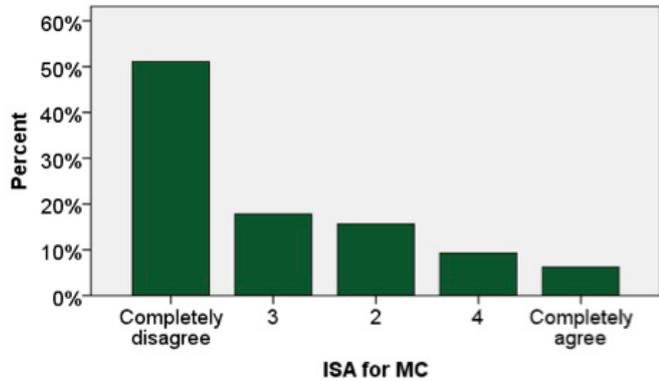


Figure 60. There should be a technical support function on the MC to make it easier to keep the speed limit

Almost 60% agreed with the statement that there is a great risk that riders rely too much on technology when there are many technical support systems. 23% disagreed with this statement.

Alcohol and drugs, surveillance and alco locks

The approach towards riding a motorcycle after drinking alcohol or using other drugs was examined through a series of claims. A few percent of those who answered the question had ridden a motorcycle sometime during the last year when they suspected that they had too much alcohol. A similar number had ridden a motorcycle when they suspected they were influenced by other drugs. A few more had ridden a motorcycle in the morning when they suspected that they had too much alcohol the night before or ridden with someone on the back or in the same group as someone they suspected were influenced of alcohol or drugs. Nearly one fifth had been stopped in an alcohol traffic control the past year. A similar number had used a breathalyser test on a motorcycle event before riding home during the last year (Figure 61).

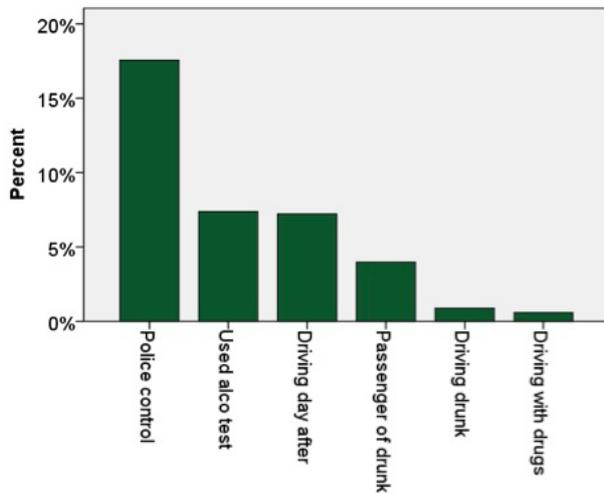


Figure 61. Percentage who replied yes to questions about alcohol and drugs

Motorcyclists have a better attitude towards riding under the influence of alcohol or drugs compared with car drivers who responded to the same questions.

The risk of getting caught in a alcohol traffic police control is considered low by 44% and high by 22%.

Nearly half agree that the blood alcohol limit should be lowered to 0.0 (0,2 today). Over 70 % believe that the punishment for drunk driving should be harsher. One third are in favor of alcolocks on motorcycles in order to make it impossible to be run by someone who is intoxicated (Figure 62-64).

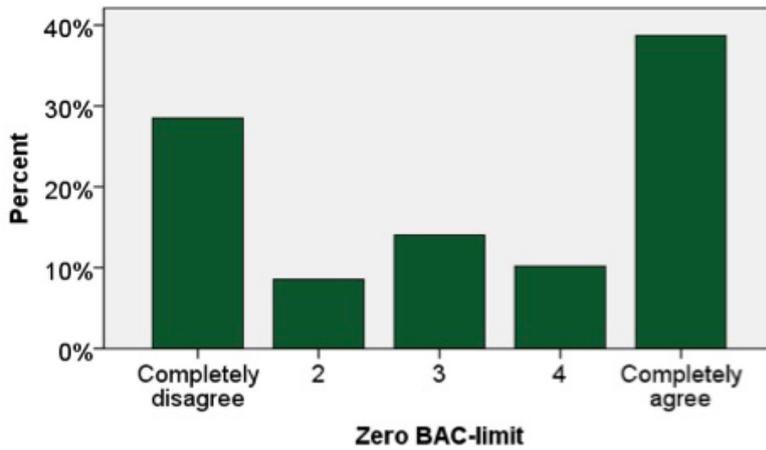


Figure 62. The blood alcohol limit should be 0,0

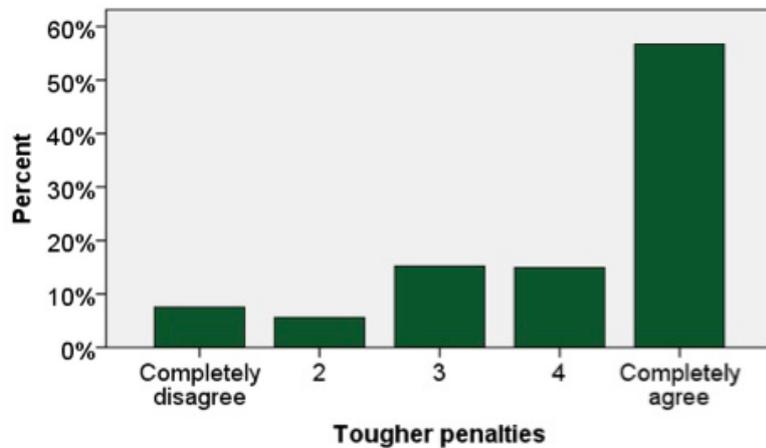


Figure 63. Tougher penalties for drink driving

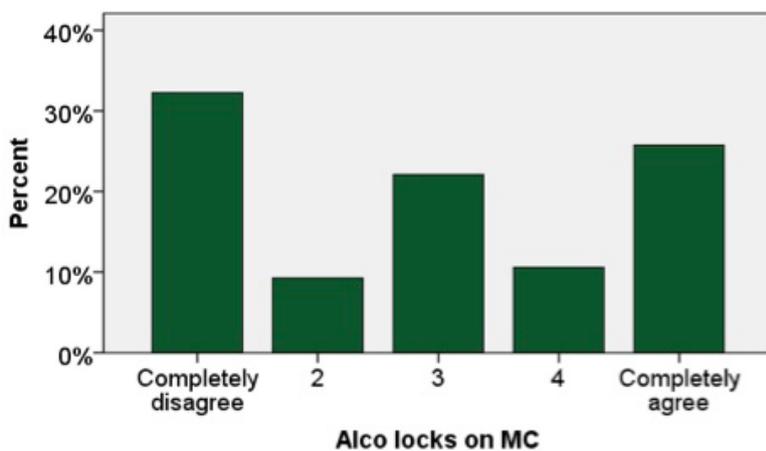


Figure 64. Alcolocks should be on all motorcycles

In the questionnaire, the respondents considered a number of statements about safety. The break downs for individual claims are reported in the context of their concern. In figure 65, the claims related to speed and alcohol are used to calculate a simple attitude index. The points gained in a five-point scale (if necessary rescaled to more positive attitudes = higher score) have been added and divided by the number of claims. The results show that, consistently, almost regardless of what type of motorcycle, they have positive attitudes to issues to do with sobriety. However, the respondents are more negative towards things that have to do with speed. Most negative are the respondents who ride sport or supersport motorcycles while the most positive are among the custom riders (Figure 65).

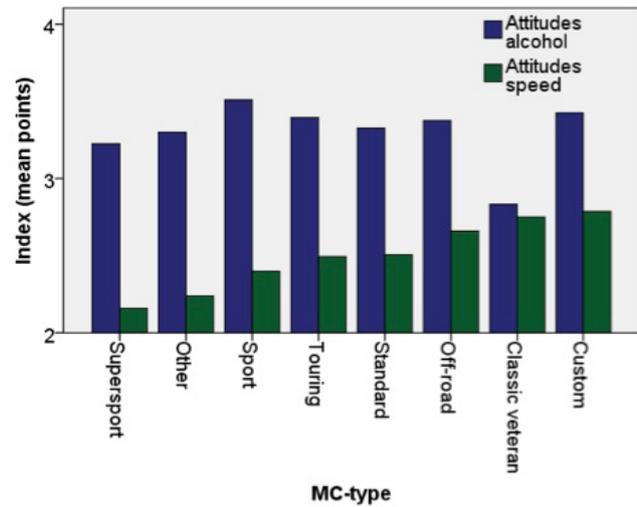
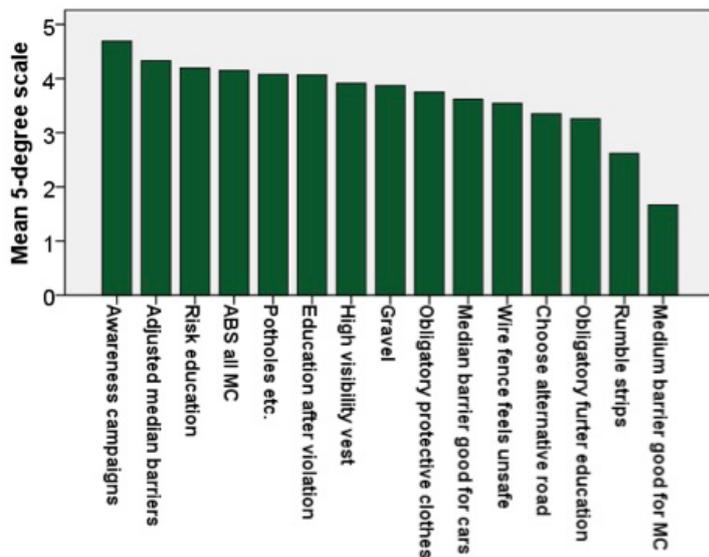


Figure 65. Attitude index of speed and alcohol by type of motorcycle

Opinions about road safety measures

The respondents were asked to consider a variety of statements about different road safety measures. The questions are based on existing road safety measures for all road users, on new measures like mandatory risk education for the A license, technical support systems and various safety measures for motorcyclists.

All road safety measures are ranked above average, except wire rope barriers and rumble strips. The highest ranked measure is awareness campaigns towards other road users. Mediancrash barriers, provided they are designed and installed from a motorcycle perspective, are ranked second highest. The new mandatory risk education for A license students is in third place. The respondents are in favour of ABS brakes, 90% believe they should be on all motorcycles. Many also believe that the motorcycle riders who commit serious traf-



fic offences should undergo road safety training. It is believed that a high visibility vest makes you more visible and is good for road safety. Many state that it should be mandatory to ride with full protective clothing. A large number are positive to mandatory advanced training for motorcyclists (Figure 66).

Figure 66. Attitudes to various road safety measures

Wire rope barriers and motorcyclists

The wire rope barrier has been an issue for motorcyclists since they started to be installed in a large scale 1998 in Sweden. A number of statements dealing with crash barriers were therefore asked. The replies clearly indicate that the wire rope barrier is more favourable from a car driver perspective than from a motorcycle perspective. Almost 60% agree completely or almost completely in the statement that median wire rope barriers are a sensible measure for car drivers. One fourth do not agree at all or hardly at all. When the same question is asked from a motorcycle perspective, only 7.5% agree entirely or almost entirely in the statement that a median wire rope barrier is a sensible measure for motorcyclists. However, over 80% said the opposite (Figure 67-68). Median crash barriers that are designed and installed from a motorcycle perspective were seen by the majority as a good road safety measure (Figure 69).

More than half agree entirely or almost entirely that roads with wire rope barriers give a sense of insecurity. Approximately 30% did not agree at all with the statement (Figure 70). More than half choose an alternative road rather than ride on a road with wire rope barriers. Again, about 30% did not agree at all with the statement (Figure 71).

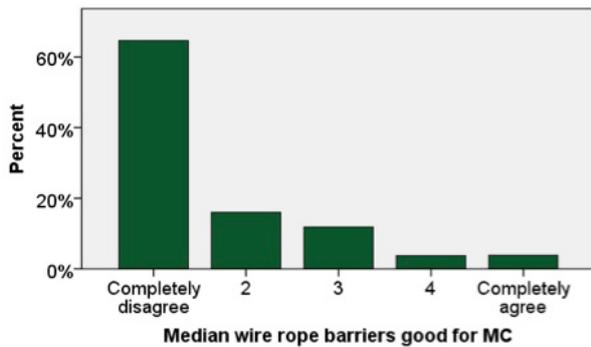


Figure 67. Median wire rope barriers are sensible for MC

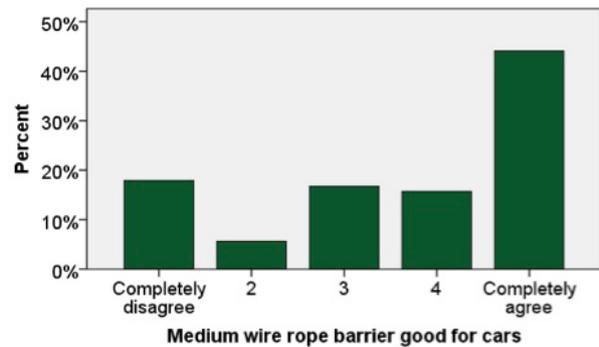


Figure 68. Median wire rope barrier are sensible for cars

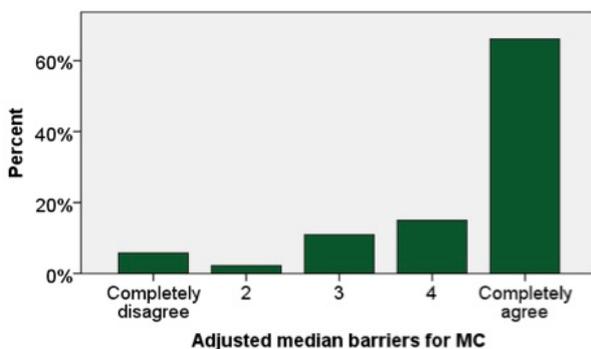


Figure 69. Median crash barriers designed and installed from a MC perspective are a good measure

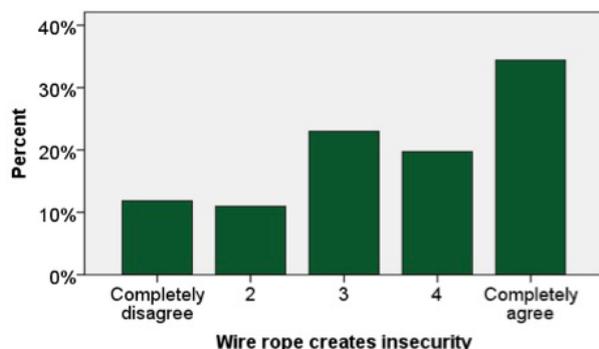


Figure 70. Wire rope creates insecurity

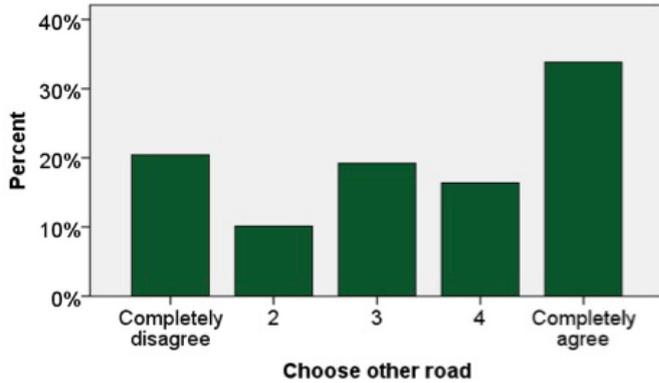


Figure 71. Choose other road to avoid wire rope barriers

Loose gravel and potholes

Loose gravel on paved roads is a common problem which is often described by motorcyclists who contact SMC. One question concentrated on whether loose gravel on asphalt is a problem they often experience. Two thirds confirmed this. Only 2.5% did not agree at all (Figure 72).

When it comes to problems on roads in the form of potholes, cracks and tracks, 76% agreed completely or almost completely that these are problems that often occur. Only 7.5% did not agree at all or hardly at all (Figure 73).

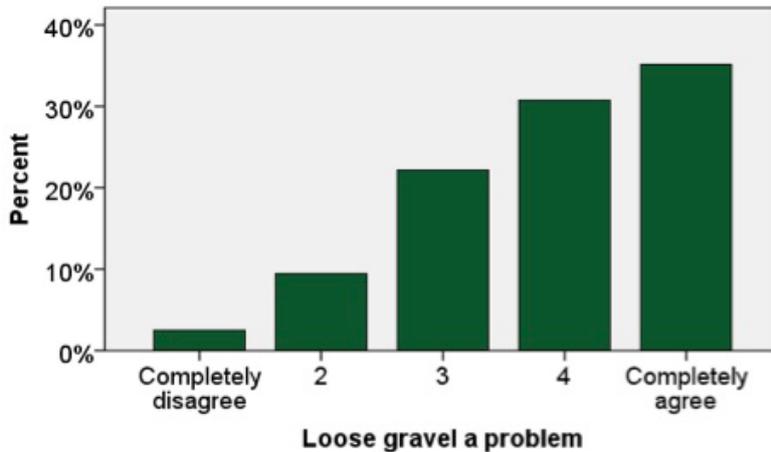


Figure 72. Loose gravel on asphalt is a problem that often occurs

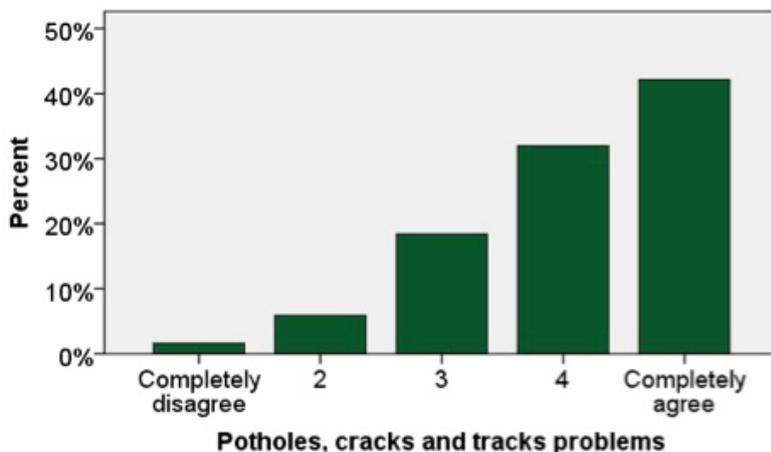
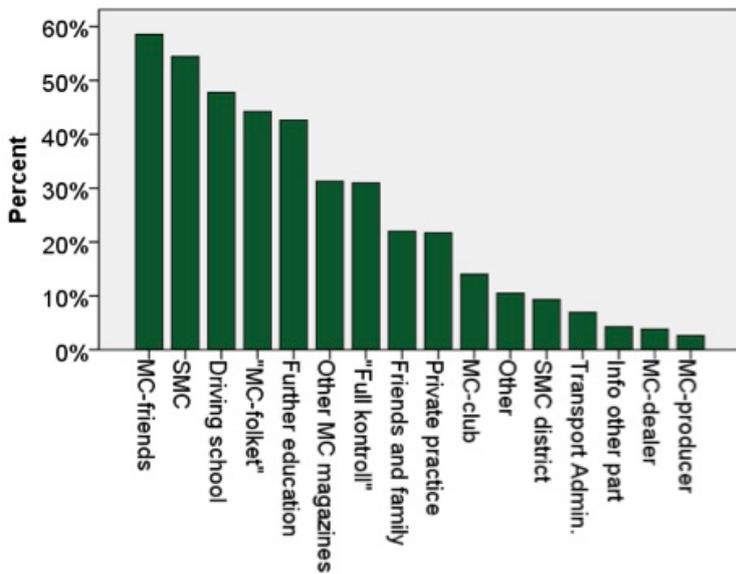


Figure 73. Potholes, cracks and tracks are problems that often occurs

Where is safety consciousness formed?

Inspired by an Australian study (9) a question was included about what are the information or education sources that mean most to their safety awareness as a motorcyclist. Each person had to select a maximum of four out of 16 factors. The results show that the motorcycle community has meant most to those who responded. The various sources that belong to the motorcycle community count for ten out of the twelve highest ranked options. Only training in driving school coming in the third place is a factor from outside the motorcycle sphere in top twelve. Of those who answered "other" the most common responses were: personal experience, better judgement, training, awareness of other road users, amount of training, riding strategies, back protector and age (see Annex V).



The highest ranked source of information is motorcycle friends, followed by SMC and education in driving school. Written material also received high ranks, like articles in motorcycle magazines and the document "Full Control". Advanced training comes in fifth place. All parties outside the motorcycle sphere, except for driving schools, including The Swedish Transport Administration, information from another stake holders, motorcycle dealers and motorcycle manufacturers are ranked lowest (Figure 74).

Figure 74. Information and education sources that have formed safety awareness

Advanced training

About 60% of the respondents have participated in advanced motorcycle training courses. The most common form is a basic course, where a third have taken part. Quite a few have also taken a course on gokart track or an advanced course on a road racing circuit. Relatively few have done a gravel course (Figure 75). The results also show that about 10% of participants in the gokart tracks and at road racing circuits completed several courses per year (Figure 76-77).

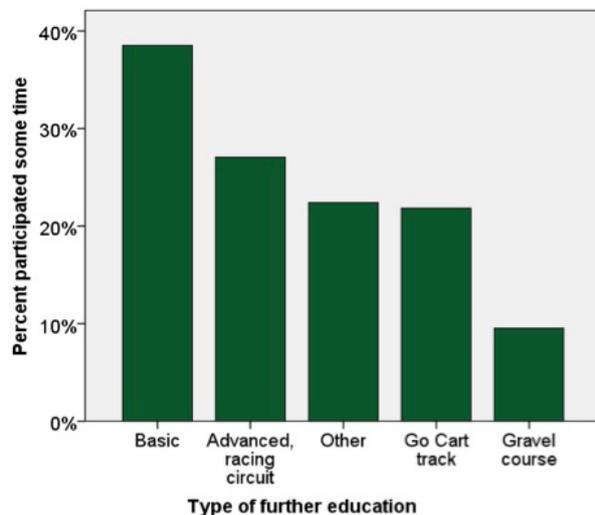


Figure 75. Participation in advanced training courses for motorcycles

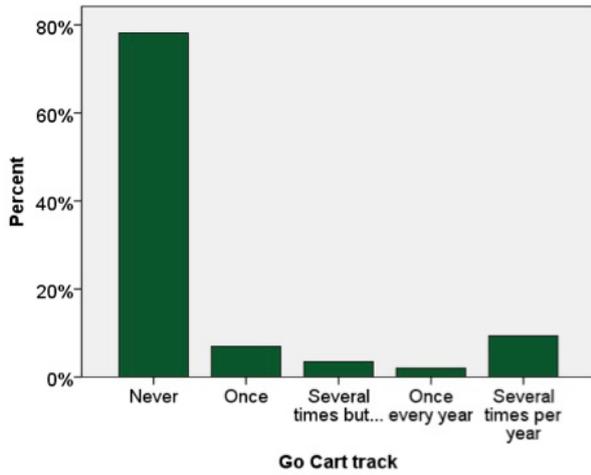


Figure 76. Participated in a basic course on go kart track

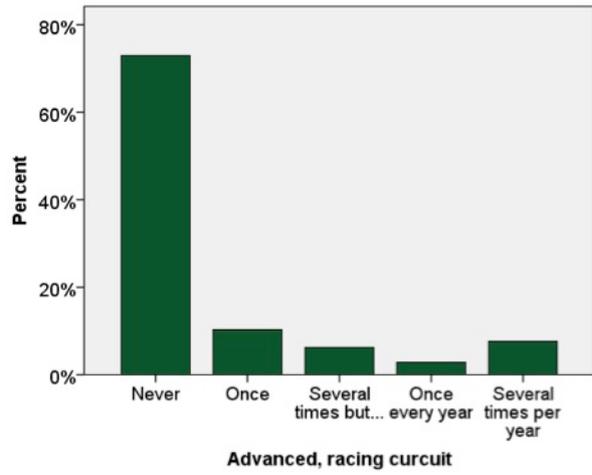


Figure 77. Participated in training on a road racing circuit

Other important measures for motorcycle safety?

The final question concerned what other measures that have meant most for their personal safety as a motorcyclist. Here they were asked to mark the four most important measures on a list of ten. The top ranked was personal protection; helmet and protective clothing. Road maintenance was ranked as number three, ABS in fourth place and high visibility vest in fifth place. The measure that motorcyclists state has meant least for the safety of motorcyclists is reduced speed limits. Both police enforcement and median crash barriers are ranked slightly higher than reduced speed limits (Figure 78). Measures listed in "other" are given in Annex VI

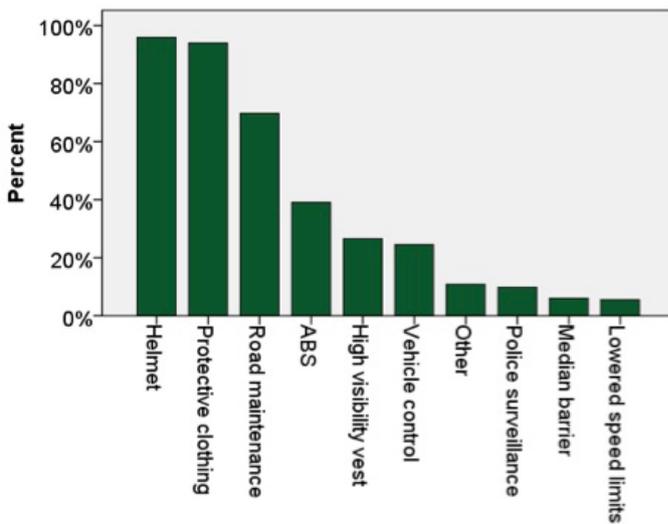


Figure 78. Other measures that were important for security

Discussion and conclusions

It will never be free of risk to ride a motorcycle. This fact does not mean that motorcyclists are not conscious about their safety. Our study shows that motorcyclists are well aware and concerned about their own safety. Motorcyclists however, have different opinions to other road users. They don't make the same priorities of actions that authorities do. Most significant is that the measures that have the highest ranks for the increased safety of motorcyclists is not among the 13 national general targets to reach the Vision Zero goals 2020.

One important question was never asked in our study and that was why people ride a motorcycle. This question was included in another web study SMC conducted in 2010. The result shows that 48 % ride a motorcycle because it is fun and 30 % because it gives a sense of freedom. A conclusion is therefore that riding a motorcycle simply makes people feel good (7). Meanwhile, results from our survey show that more people than expected use the motorcycle for other purposes than leisure travel. The motorcycle is more than a leisure vehicle for a majority of the respondents.



A significant result is where and how motorcycle riders get their safety consciousness. Information and educational sources within the motorcycle community is ranked on ten of the twelve highest ranked options. The most important source, according to motorcyclists, is motorcycle friends, followed by SMC. Only training at a driving school managed to squeeze in among the twelve highest ranked information and education sources in the motorcycle community. As a motorcyclist you choose to seek knowledge and experience of other experts: motorcyclists. Reading, talking and chatting about motorcycles is a natural part of the motorcycle culture. There is a lot of information in motorcycle magazines, websites, books and advertisements. Motorcyclists are influenced by objective and credible messages which SMC found in another survey from 2010. One example is the knowledge gained by the publication "Full Control" (13). 45.3% answered that they acquired new knowledge about counter steering while 24.4% had acquired new knowledge about survival reactions in critical situations (7). Information from authorities, motorcycle producers and motorcycle dealers are the lowest ranked.

The result is consistent with what was one of 20 key points on the OECD MC-conference in Lillehammer in 2008:

”Safety Message To Riders Should Be Developed in partnership with riding groups, in order to use the effectiveness of peer advice in communicating key issues to riders on Issues that will impact their communities” (14).

So, if you want to reach out with road safety messages to motorcyclists you should do it in cooperation with the riders and do it their way. This result is diametrically opposed to the the discussions brought up in 2007 where SMC, motorcyclists, manufacturers, motorcycle magazines and various websites were pointed out as the main counter force for road safety reforms and thus contributed to not reaching the Vision Zero targets in 2007. In this book, the motorcycle community was described as a ”strong and well organized group. Collective actions, appeals, petitions, opinion articles, lobbying of politicians are common methods to use pressure”(5).

The results show that safety consciousness is mainly created and shaped in the motorcycle community. Often, however, the message is created in a different way than the ordinary road safety information we usually face and are used to. It is important to support and respect the road safety work that is already done within the motorcycle community and to work side by side with the motorcycle community to disseminate road safety messages instead of working against. It is also important to be aware of and to consider that motorcyclists have different views on what will increase their safety compared to other road users. Our results demonstrate that the safety awareness among motorcyclists is high in many respects. There is only one area where their views are not consistent with the 13 Swedish performance indicators of Vision Zero, namely speed.

To take part in advanced training in differing forms is a common measure to improve safety among motorcyclists around the world. As many as 60% had taken part in advanced training motorcycle one or several times in our study compared with 8% in a British study (8). An SMC web survey from 2010 asked about the impact of training and 66% of respondents felt that they were at less risk to be involved in an accident than before taking advanced training.



Nearly threequarters felt they had a better ability to avoid critical situations as a result of the training. When asked about whether their driving ability had been affected, nine out of ten stated that their skills had improved. 70 % replied that they had more resources and tools to focus on different traffic situations as a result of the training (7). For motorcyclists, it is obvious that training has a positive effect on their safety. Therefore, the literature studies that indicate the contrary are met with skepticism in the motorcycle community since they are experiencing the positive effects provided through training as a participant and/or as an instructor.

An Australian survey asked motorcyclists where they most recently received a message about road safety and if they remembered the message. Over two thirds remember could recall a message and 83% felt that the message had a value. Motorcycle magazines were the primary source of this type of message followed by training, TV commercials and motorcycle clubs. Some slogans were mentioned but mainly it was about more complex messages on a personal level instead of campaigns in the media (9).

If we link the Australian results to our study, then the explanation to many of the answers is given. "Stop, I do not lend my motorcycle," was written on a sticker that SMC sent out to all new members for about 30 years. Three quarters of those responding never lend his motorbike. A reasonable explanation is that they somehow gained knowledge of the risks of lending. The same applies to the question about helmet. SMC, motorcycle dealers and motorcycle media recommend full face helmet for safety, something that almost 70% of respondents use. All respondents always use a helmet when they ride a motorcycle. The responses also suggest that helmets are replaced every now and then, something that all stakeholders in the motorcycle community recommend after impact or at a certain age.

Why do the vast majority of motorcyclists always wear personal protective equipment even though there is no legal requirement and it is associated with high costs? Everyone who rides a motorcycle is probably aware of the usefulness in any situation. This information has been based on facts, tests and motorcyclists' own experiences. Protective clothing and helmets are tested in the motorcycle press and quality, comfort and safety are discussed among motorcyclists on forums and other venues. Although the back protector is a relatively new phenomenon among motorcyclists, it is only 25 % that never use one. The result shows that if motorcyclists learn about how different types of protective equipment increase personal safety they will use it. When the riders were asked what measures that had the greatest impact on their safety, helmets came in first place followed by protective clothing.

When we compared the results of our study with a British one, it shows that Swedish motorcyclists are using protective equipment to both a higher and lower extent compared to the British bikers (8). Almost 60% of the Swedish riders always use a back protector compared to 30 % of the British. Swedish and British motorcyclists use motorcycle jackets, trousers and boots to an equal extent, while the Brits use gloves more often.



Even if the use of personal protection is high, there is some potential to increase usage. Here there might be room, for example, for objective information and education showing the risks of not using protective equipment. Everyone who does a riding test for A1, A limited or A must have comprehensive safety equipment and a back protector during the riding test which probably makes it natural for all new motorcyclists to wear personal protection before getting on a motorcycle. This, combined with factual information could be a way to increase usage.

High visibility vests are a measure that rather few respondents use. Yet, a majority believe that it increases visibility and thus is good for safety. The British study (8) shows that they have the same understanding of the benefits but the British motorcyclists use high visibility clothing to a much greater extent than Swedish motorcyclists (19% replied "always" in the UK compared with just over 13% in this study). The SMC web study shows a similar figure: 71% never use high-visibility vest. Some of the questions in the SMC study were about the color of the helmet and clothing, 41% use a helmet with a dark color and 50% use protective clothing with a dark color (7).

That the conspicuity of motorcyclists is less in rain is a well known fact which most motorcycle riders are aware of and most have therefore rain clothes in bright colours with reflective parts. We have sought but not found any study showing that use of a high-visibility vest is the best course of action aimed at increasing motorcyclists' visibility and to reduce collision accidents. On the contrary, there are several studies that say that in addition to lighting, all other measures have an uncertain effect on other drivers' ability to detect motorcyclists in traffic (15).

The issue of visibility and conspicuity is an area where we believe that more knowledge is needed. Which action is best for the motorcyclist out of lighting, tape, high visibility vest, high visibility jacket, colour of helmets and other protective equipment is still unclear. Protective gear is also not only about security but also about trends, identity and involves a high cost of purchasing for the individual motorcyclist. More knowledge is therefore needed on this subject.

The fact that motorcyclists are more difficult to see in traffic is not just about visibility, it is also about the attention from other road users. The survey shows that over half of the respondents have come close to colliding with another vehicle one or more times in the last year because the other road user had not seen the motorcyclist. The insurance company Trygg Hansa has presented statistics the last two years showing that in two thirds of the accidents where more vehicles than a motorcycle is involved, the other vehicle caused it (16). There are many studies that explain why other road users do not see motorcyclists. One example is a British study describing that motorists drive out in front of motorcyclists since they are not perceived as a threat. It also describes the size-arrival effect, i.e. the other road user misjudged the speed of the motorcycle because of the size of the vehicle (17).

Thus, research can not just focus on the visibility of the motorcyclists, when the problem also includes the attention of other road users. In addition to research in this field, other measures can be taken like



information about the problem to other road users in different contexts, the design of intersections based on this knowledge and information in driving schools for students in all types of driving licenses. Different measures have been tested in other countries.

More skills are demanded from a motorcyclist, compared to a car driver, balance is such a part of motorcycle riding. Therefore we are not surprised that motorcyclists have a stricter attitude compared to car drivers for riding a motorcycle under the influence of alcohol or drugs. Also here we believe that initiatives of SMC and other organizations had an impact in the case of "morning-after" effect. Already in the 1980s, campaigns were held and most of the SMC regions and major motorcycle clubs provide breathalysers at motorcycle rallies before returning home on the bike. When it comes to alcohol and drugs, the results suggest that it is most important is to disseminate information about the "day after effect", to lock the motorcycle so that it can't be stolen by an affected person and not to lend it to someone who had drunk alcohol or used other forms of drugs.

Motorcyclists see road maintenance as an important measure for improving safety. Loose gravel on asphalt, cracks, pot holes and tracks are seen as a problem for three quarters of respondents. The insurance company Bilsport & MC Specialförsäkring has recently shown that 12.4% of all single vehicle motorcycle accidents are due to gravel. SMC has, on behalf of the Swedish Transport Administration, calculated that the annual cost of motorcycle accidents caused by gravel on asphalt is just over SEK 92 million per year (18).



The study confirmed the criticism from SMC towards wire rope barriers. The respondents are positive towards median wire rope barriers as car drivers while they are very negative as a motorcyclist. Roads with wire rope barriers create an unsafe road environment and over half choose alternative routes to avoid the wire rope barriers. In contrast, a majority are strongly in favor of median barriers if they are designed and installed in view of the motorcyclists' needs. Motorcyclists are over represented in fatal crash barrier accidents.

In motorcycle single vehicle accidents, a crash barrier is the most common installation a motorcyclist killed by (19). The study shows that motorcyclists are aware of the risks but at the same time are positive to the median barrier if it is designed on the basis of the motorcyclists' needs. A study made by VTI (12) where motorcyclists were interviewed, revealed that motorcyclists are positive towards rumble strips since they were seen as a better option than the wire rope barrier. This is not confirmed in this study, where nearly half disagreed with the statement.

The replies in the study about road maintenance and crash barriers clearly show that motorcyclists' specific needs must be accommodated in the concept of "safe roads" and "safe streets" among the national road safety targets. This also applies to awareness problems, which is included in the concept "safe crossing." The fact that motorcyclists are still not considered as a road user group in any transport policy or governing documents relating to street and roads design, operation and maintenance is something that the Swedish Transport Administration will address in 2011. It should be done in collaboration with the local authorities who own a large number of roads and streets where motorcycle accidents happen.

The respondents oppose technical support system for speed. Many agree that there is a risk that riders rely too much on technology if there are too many technical support systems. The Federation of European Motorcyclists' Associations, FEMA, of which SMC is a member formulated in 1998 a position about ITS system. It is against equipment on vehicles that allow the control of the vehicle to be taken away from the driver (20). This position is a matter of course since a motorcycle rider always must be able to accelerate in

critical situations. This might be the background to the negativity, but it can also mean that the privacy aspect is important for motorcyclists. Another explanation may be which type of support system that is being discussed. Before various ITS systems are introduced for motorcyclists, it is important to clearly state the type of system that is designed and explore the demand for the system. SMC is co operating with a supplier of eCall and bCall in combination with applications to iPhone, which also offers maps, good MC-roads, nice MC-cafes and other things that motorcyclists ask for.

The questions asked about attitudes to risk had previously been in a British study (8). Only 3 % in our study said they are such good motorcycle riders that the risks did not apply to them compared with 24% in the British study. While almost half said that the risk of riding a motorcycle is something they have to live



with, only 3.4% felt that it is not a goal to return safely from a motorcycle tour. Although one third in our survey responded that a life without risks would be boring, the responses in the survey show that motorcyclists do not want to take more risks than other road users. To come home safe is an important goal for an overwhelming majority.

The responses in our study are confirmed by a British laboratory study which compared the behaviours that lead to accidents among motorcyclists with a group of non-motorcycling car drivers. The motorcyclists chose faster speeds than the car drivers, overtook more and pulled into smaller gaps in traffic, though they did not travel any closer to the vehicle in front. The authors concluded that the increased risk-taking behaviour of motorcyclists was only likely to account for a small proportion of the difference in accident risk between motorcyclists and car drivers.

A second group of motorcyclists was asked to complete the simulator tests as if driving a car. They did not differ from the non-motorcycling car but were better at hazard perception (21). In our study a quarter replied that they took more risks when riding a motorcycle than driving a car. It can be interpreted in several ways. Choosing a motorcycle over cars can be seen as increased risk taking. A change in driving behavior can be another explanation.

Two measures are identified as the most important factors to halve the number of fatalities and reduce the number of serious injuries by 25% by 2020 in the Common strategy for improved safety for motorcycles and mopeds 2010–2020, Version 1. (22) The two measures are increased use of ABS brakes and reducing speed. The results of the survey clearly indicate that the vast majority will buy a motorcycle with ABS the next time. It is no doubt that a number of articles in the motorcycle press and other advocacy on the issue yielded results. The future of this measure is positive because consumers will demand ABS from the manufacturers.

When it comes to speed, the study shows that motorcyclists are less likely to obey the speed limits compared to car drivers. At the same time, over 70% do not see reduced speed limits as a measure to increase motorcycle safety. In the response to the question where the respondents had to rate the impact of various measures on safety, reduced speed was placed at the very end, after both median crash barriers and police surveillance. In light of the negative attitude to crash barriers, the responses clearly show that motorcyclists do not believe that reduced speed is a measure that increases their safety.

The Swedish Transport Administration's in depth studies of all fatal motorcycle accidents show that a majority of motorcyclists killed have run over the existing speed limits, many much over the limit. That information is widely known among motorcyclists through media coverage. The answers that state that speed does

not have any significant effect, despite this knowledge, may be indicative of numerous factors. The most important is probably that they don't see speed as a risk factor. Another explanation may be that they know the risks but choose to take it nonetheless.

Since the second measure of the strategy for improving safety for motorcyclists is reducing speed among motorcyclists, we face a problem. We suggest that specific information that is aimed specifically at motorcyclists should be developed about speed and the increased risk. It can be spread in the motorcycle community through the channels that are available and that work. Information should be clear and unambiguous and formulated in a way that make motorcyclists react. It is particularly important to highlight the fact that almost half of the fatal accidents occur on curves and over a quarter at crossings. Speed is from a safety point of view most important in these locations to provide maximum impact for lowering accident rates.

The statement that motorcyclists do not respect and stop at the sign of a policeman concerns only a very small group, which require other measures than what is available today. This is being dealt with by the National Police, as part of the strategy for increased motorcycle safety. Motorcyclists are positive towards advanced training for serious traffic offences. In the United Kingdom, motorcyclists who drive too fast, are offered mitigation training through the British traffic police (23). There are several projects which indicate positive road safety effects. This may be a way forward, since the acceptance is high for such a measure among motorcyclists.

All measures for improving safety for motorcyclists are based on knowledge from in depth studies of fatal motorcycle accidents. 7 % of the respondents to the survey had an accident last year. At the same time, the study shows that nearly half of the accidents people had had were while standing still or riding very slowly. What a motorcyclist sees as an accident is not synonymous with what is normally perceived as a motorcycle accident. This may be one reason why motorcyclists and authorities have difficulty understanding each other. Many accidents are probably never reported to health care agencies and police. Statistical data from insurance companies would be likely to extend the knowledge about why accidents occur.

It is also important to have a broader focus that includes those who are injured in accidents. One example is the insurance company Bilspport & MC specialförsäkring that points out gravel as a determining factor in 12 % of all single vehicle accidents. More knowledge can give more concrete and effective measures to achieve the interim target of a reduction of 25% severely injured.



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Annex I

Questionnaire about motorcycles and road safety

A. Questions about your own motorcycle:

1. How many motorcycles do you have access to for road usage?
2. What motorcycle do you use most often? Write brand:
3. What type of motorcycle is it?
 - Sport
 - Supersport
 - Touring
 - Standard
 - Classic veteran
 - Custom
 - Off-road
 - Scooter
 - Other, what type?.....
4. Engine size of the motorcycle?
 - Below 125 cc
 - 126-400 cc
 - 401-700 cc
 - 701-1000 cc
 - More than 1001 cc
5. What safety equipment do you have on the motorcycle? Mark all with an X that is correct.
 - ABS
 - Combined brake system
 - Traction control
 - Airbag
 - Other, what?.....

6. How many kilometers do you ride per year?
- Less than 1 000 km
 - 1 000-2 990 km
 - 3 000-4 990 km
 - 5 000-6 990 km
 - 7 000-9 990 km
 - 10 000 km or more
7. Do you plan to buy a new motorcycle?
- No
 - Yes, probably this year
 - Yes, probably next year
 - Yes, but further away in the future
8. If you buy a new motorcycle, will you then choose any of the following? Add several if suitable and necessary
- ABS
 - Integrated brake system
 - Traction control
 - Airbag
 - Other, what?.....
9. If you are going to buy a used motorcycle, will you then try and find one with anything of the following?
- ABS
 - Integrated brake system
 - Traction control
 - Airbag
 - Other, what?.....
10. If you have ABS on your motorcycle, have you ever activated the ABS-system?
- Yes
 - No
 - I don't know
11. If yes, in what situation?
- A planned training situation
 - A critical situation in traffic
 - Normal brake at slippery road

B. Questions about your motorcycle riding:

12. How often do you use any of the following modes of transport if you don't have to consider weather or season? Mark with an X on every line for the alternative that suits you best.

	Every day	2 or more times/week	Once a week	2-3 times per month	More seldom	Never
Drive a car	<input type="checkbox"/>					
Passenger in a car	<input type="checkbox"/>					
Ride a bicycle	<input type="checkbox"/>					
Ride a moped	<input type="checkbox"/>					
Ride a motorcycle	<input type="checkbox"/>					
Passenger on a motorcycle	<input type="checkbox"/>					
Travel with public transport	<input type="checkbox"/>					

13. What driver license do you have? Mark with several X if needed.

- Motorcycle A1
- Motorcycle A
- Car
- Heavy truck
- Bus
- Trailer
- Don't have a drivers license

14. When did you receive your drivers license?

A1, (125 cc) year

A1, year

I have a motorcycle license from the time when I got it with the B-license, year

15. How long have you been riding a motorcycle in total?.....years

16. Have you done any advanced training for motorcycle? Mark with an X on every line on the scale that suits you best.

	Never	Once	Several but not every year	Once per year	Several times per year
Basic training course	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Basic course go-cart track	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advanced course race track	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gravel course	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other advanced training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. What does your MC-history look like? Mark the option that suits you best.

- Have been riding the whole time since I got my A-license
- Rode a motorcycle at the beginning, had a long stop and then started again
- Started riding a long time after I got my MC-license

18. How often do you use your motorcycle and for what purpose? Mark an X on every line for the option that suits you best.

	Every day	2 or more times/week	Once a week	2-3 times per month	More seldom	Never
Transport to and from work/ school	<input type="checkbox"/>					
Transport for other purposes	<input type="checkbox"/>					
Leisure vehicle for short trips	<input type="checkbox"/>					
Leisure vehicle for longer trips	<input type="checkbox"/>					

19. How often do you ride alone or together with other motorcyclists? Mark with an X on every line for the option that suits you best.

	Every day	2 or more times/week	Once a week	2-3 times per month	More seldom	Never
Ride alone	<input type="checkbox"/>					
Ride with someone on the same motorcycle	<input type="checkbox"/>					
Ride with a few others on several motorcycles	<input type="checkbox"/>					
Ride with a big group of many motorcyclists	<input type="checkbox"/>					

20. Do you lend you bike to someone else?

- No, never
- Yes, to someone I trust completely
- Yes, to everyone that asks

21. Do you borrow other motorcycles?

- No, never
- Yes, at test rides with MC-dealers
- Yes, from close friends or family members
- Yes, from anyone who wants to lend me a motorcycle

22. Are you, apart from SMC, member in a MC-club?

- Yes, name which club/clubs.....
- No

23. Have you been involved in a traffic accident with the motorcycle in the last 12 months that led to damage on the bike or personal injuries? Include accidents that only led to vehicle damages or small bruises on anyone involved. .

- No, no accident
- Yes, an accident while riding
- Yes, I fell while standing still

24. If yes, what was the most serious damage or injury in the accident?
- Damage on the vehicle
 - Personal injury that didn't require medical care
 - Personal injury that required medical care but no hospital care
 - Personal injury that required hospital care
 - Other person was killed
25. Type of accident
- Singel vehicle accident
 - Collision with another vehicle or another road user
26. Who caused the accident, according to you?
- You
 - Other road user
 - Road manager
 - Other, who ?.....
27. Have you in the last 12 months, almost collided with another vehicle while you were riding a motorcycle where you experienced that the other road user wasn't aware of you?
- Yes, once
 - Yes, many times
 - No, never

C. Some questions about road safety:

28. How often do you use following personal protection? Mark with X on every line for the option on the five grade scale that suits you best

	Always				Never
	1	2	3	4	5
Full face helmet	<input type="checkbox"/>				
Flip front helmet	<input type="checkbox"/>				
Open face helmet	<input type="checkbox"/>				
Safety trousers	<input type="checkbox"/>				
Safety jacket	<input type="checkbox"/>				
Safety gloves	<input type="checkbox"/>				
Mc boots	<input type="checkbox"/>				
High visibility vest	<input type="checkbox"/>				
Separate back protector	<input type="checkbox"/>				
Separate chest protector	<input type="checkbox"/>				
Neck brace	<input type="checkbox"/>				
Separate protection vest with built in protection	<input type="checkbox"/>				
Other, what?.....					

29. How old is your helmet?
- Less than one year
 - 1-2 years
 - 3-4 years
 - 5 years or older
30. Do you plan to buy a new helmet?
- No
 - Yes, probably this year
 - Yes, probably next year
 - Yes, but further away in the future
31. If you are planning to buy a new helmet, what is the reason?
- Improve safety
 - Improve comfort or fit
 - Improve appearance/image
 - Other reason, what?.....
32. What do you see as an acceptable MC speed when the speed limit is 50 km/h, the traffic is limited and you can choose speed yourself?
- 50 km/h or less
 - 55 km/h
 - 60 km/h
 - 65 km/h
 - 70 km/h or more
33. How fast do you normally ride on the motorcycle on a road with a 50 km/h speed limit, the traffic is limited and you can choose the speed yourself?
- 50 km/h or less
 - 55 km/h
 - 60 km/h
 - 65 km/h
 - 70 km/h or more
34. What do you see as an acceptable MC speed when the speed limit is 90 km/h, the traffic is limited and you can choose speed yourself?
- 90 km/h or less
 - 100 km/h
 - 110 km/h
 - 120 km/h or more
35. How fast do you normally ride on the motorcycle on a road with a 90 km/h speed limit, the traffic is limited and you can choose the speed yourself?
- 90 km/h or less
 - 100 km/h
 - 110 km/h
 - 120 km/h or more

36. Have you ever been riding 30 km/h or more above the speed limit?

- No, never
- Yes, a few times
- Yes, several times

37. What do you do when you approach a speed camera on a motorcycle ?

- Slow down if I ride too fast
- Continue in the same speed even if it's too high
- Continue in legal speed as I always do

38. Have you been fined for speeding on a motorcycle in the last 12 months?

- Yes
- No

39. Here are a number of statements about speed. SMark with X for on every line for the option on the five grade scale that suits you best

	Totally agree			Totally disagree	
	1	2	3	4	5
It is acceptable to speed if the rest of the traffic is travelling above the speed limit.	<input type="checkbox"/>				
The speed limits should be reduced to improve road safety.	<input type="checkbox"/>				
There should be a technical support function *on the motorcycle, which makes it easier to ride within the speed limit.	<input type="checkbox"/>				
The risk of getting caught in a police speed control is small.	<input type="checkbox"/>				
The existing tolerance limit of the police should be lowered. **	<input type="checkbox"/>				
The punishment for speeding should be stricter.	<input type="checkbox"/>				
It is acceptable not to stop at the sign of a police officer when you ride too fast with a motorcycle in a speed control.	<input type="checkbox"/>				
I normally go in a higher speed when I drive a car compared to when I ride a motorcycle.	<input type="checkbox"/>				

* With support function we mean a technique (often via GPS) that with sound or other signals calls for the attention of the rider if you go above the speed limit.

** The limit where the police normally refrains from reporting, 5 km/h above signed speed limit.

40. Here are some questions and statements about sobriety. Mark with an X on each line for the option on the five grade scale that suits you best

	Yes, often				No, never
	1	2	3	4	5
Has it happened during the last 12 months that you rode a motorcycle when you suspected that you had drunk to much alcohol?	<input type="checkbox"/>				
Has it happened that you during the last 12 months have rode a motorcycle when you suspect that you were influenced of drugs?	<input type="checkbox"/>				
Has it happened during the last twelve months that you rode a motorcycle in the morning when you suspect that you had drunk to much alcohol the evening before?	<input type="checkbox"/>				
Has it ever occurred the last 12 months that you been on the back of someone's motorcycle or riding in a group with someone that you suspect was influenced by either alcohol or drugs?	<input type="checkbox"/>				
Have you been stopped by the police in the last 12 months to do a breathalyzer test??	<input type="checkbox"/>				
Have you used a breathalyzer at a MC-event in the last 12 months before you went home on your motorcycle?	<input type="checkbox"/>				

	Totally agree			Totally disagree	
	1	2	3	4	5
The risk of getting caught in a alcotest with the police is small.	<input type="checkbox"/>				
The alcohol limit in the blood should be lowered to 0,0.	<input type="checkbox"/>				
The punishment for drunk driving should be stricter.	<input type="checkbox"/>				
There should be an alcolock on motorcycles which make it impossible to start by someone who is influenced of alcohol	<input type="checkbox"/>				

41. Here are some statements about risks and risk taking. Mark with an X on each line for the option that suits you best.

	Totally agree			Totally disagree	
	1	2	3	4	5
The risk of riding a motorcycle is something I am willing to live with.	<input type="checkbox"/>				
A life without risks would be boring.	<input type="checkbox"/>				
I am a very skilled motorcycle rider so the high risk does not apply to me.	<input type="checkbox"/>				
My main goal when riding a bike is to get a safe journey and return	<input type="checkbox"/>				
I take higher risks when I ride a motorcycle compared to when I drive a car.	<input type="checkbox"/>				

D. Attitudes and opinions about measures:

42. Here you have some statements about different road safety measures. SMark with X on each line for the option on the five grade scale that suits you best.

	Totally agree			Totally disagree	
	1	2	3	4	5
The new compulsory risk education for A license is positive for road safety.	<input type="checkbox"/>				
Advanced training should be compulsory for motorcyclists.	<input type="checkbox"/>				
Awareness campaigns about motorcycles to increase attention of other road users should be launched every year.	<input type="checkbox"/>				
Median wire rope barriers is a sensible road safety measure to minimize collisions for car drivers.	<input type="checkbox"/>				
Median wire rope barriers is a sensible road safety measure to minimize collisions for motorcyclists.	<input type="checkbox"/>				
Median barriers is a sensible road safety measure, but only if the barriers are designed and installed from a motorcycle perspective.	<input type="checkbox"/>				
Demand of road safety education should be introduced for motorcycle riders who commit serious crimes in traffic.	<input type="checkbox"/>				
Wire rope barriers make me feel unsafe.	<input type="checkbox"/>				

continuance of question 42	Totally agree			Totally disagree	
	1	2	3	4	5
If I can choose an alternative route, I avoid to ride on a road with wire rope barriers..	<input type="checkbox"/>				
Rumble strips in the middle of the road is a good alternative to median barriers.	<input type="checkbox"/>				
Loose gravel on asphalt roads is a problem I often experience.	<input type="checkbox"/>				
Tracks, cracks and potholes are problems I often experience.	<input type="checkbox"/>				
High visibility vest increases my visibility and is therefore good for road safety.	<input type="checkbox"/>				
With many technical support systems on a motorcycle there is an obvious risk that the rider rely too much on the technique.	<input type="checkbox"/>				
ABS-brakes should be installed on all motorcycles	<input type="checkbox"/>				
It should be mandatory to always use personal protection clothing, covering all body.	<input type="checkbox"/>				

43. Which information or education sources do you consider have meant most for your safety consciousness as a motorcyclist? Mark the four sources that have been most important for you.

- Motorcycle education at traffic school
- Private practise riding before license
- Advanced training
- The booklet "Full control" from SMC
- Articles in the member magazine "MC-Folket"
- Articles in other MC-magazines
- The Swedish Transport Administration
- Friends and family
- MC-friends
- Information from other stake holder, for example NTF
- SMC
- The SMC region
- The MC-club
- MC dealer
- MC producer
- Other, what?.....

44. What other measures do you think has been best for your safety as a motorcyclist?
Mark four measures that you see as most important.

- ABS-brakes
- Protective clothing
- Helmet
- High visibility vest
- Median barriers
- Reduced speed limits
- Periodic technical inspection
- Road maintenance
- Police surveillance
- Other, what ?.....

E. At last, some questions about who you are and where you live.

45. Gender

- Male
- Female

46. Age

- 16-17 years
- 18-19 years
- 20-24 years
- 25-34 years
- 35-44 years
- 45-54 years
- 55-64 years
- 65-74 years
- 75 years or older

47. Where do you live

- Rural area
- Town with less than 25 000 inhabitants
- Town with 25 000 – 50 000 inhabitants
- Town with 50 000 – 100 000 inhabitants
- Town with 100 000 – 150 000 inhabitants
- Town with more than 150 000 inhabitants

Thank you for responding to all the questions!

Annex II

Question 5. Safety equipment on current motorcycle; Other

Additional lights	7
Tyre pressure control	5
Different brake system	3
Heated hand grip	2
Sidecar	
Sidestand out = impossible to start	
Steering damper	
Crash bar	

Annex III

Question 8. Desired safety equipment when buying a new motorcycle; Other

Heated hand grip	3
Double low installed marker lights	
Cruise control	
Traction control	
Window with adjustable height	
Automatic return of turning indicators	
Fuelefficient and biodiesel	
Servo brakes	

Annex IV

Question 9. Desired safety equipment when buying a used motorcycle; Other

Heated hand grip	3
Servo brakes	
No demands of ABS or traction control, even if it is good	
Depend on what is out on the market	
Double low installed marker lights	
Cruise control	
Never buy a used motorcycle	
Something I like	
Steering damper	
Traction Control	
White DRL in front	

Annex V

Question 43. Other sources that have formed my safety consciousness

Experience, maturity and traffic habit	20
Riding on circuits, MC-instructor, racing, competition, the army	15
Common sense, logic and insight	10
Books, Youtube and different forums	10
Experience from road safety work	9
ABS	1

Annex VI

Question 44. Other important measures for improved motorcycle safety

Age and experience	18
Awareness of other road users	8
Advanced training on circuits	6
Maintained MC, new MC, good tyres	5
Good tyres, extra lights, bright clothes, GPS	5
Training with MC-friends	4
Education in traffic school	3
Information to car drivers	3
Riding strategies	3
Back protector	2
Books and MC-magazines	2
Accidents	1