



National strategy for motorcycles and mopeds 2014–2017 including follow-up measures



Foreword

It is a well-known fact that motorcyclists run a significantly higher risk than car drivers. Based on statistics for 2009 and 2010, the risk of death per kilometre is nearly ten times higher for heavy motorcycles than for cars, and it is twenty times higher for light motorcycles. For heavy motorcycles, there has been a significant decrease in risk compared to the mid-1980s, when the risk was around eight times higher than it is at the present time. One likely contributing factor in this development is that heavy motorcycles have gone from being a typical young people's vehicle to an "adult" vehicle.

In addition to the fact that motorcycles are frequently used for recreation and fun, they are an important means of transportation for many people. It is therefore important to make provisions for implementing measures to further reduce risk for the approximately 250,000 motorcycle and moped users.

Strategies and reports have been developed at the international level that can be used in the effort to enhance traffic safety for motorcycle and moped users. Norway has been an active participant in this effort, represented by members of the NMCU (Norwegian Motorcycle Union) and officials from the Norwegian Public Roads Administration.

International work has been done under the auspices of the International Transport Forum Joint OECD/ITF Transport Research Committee. In June 2008, Norway arranged a «Workshop on Motorcycling Safety», with the participation of experts on traffic safety and motorcycles representing 22 countries and four major areas of the world. The conclusions from this workshop resulted in a top-20 list of prioritized measures. This list has been transferred to and summarized in the ITF/OECD/JTRC/MOTO (2015) report that was developed by an international working group with participants from 18 countries.

In line with the NPRA's values – Professional, Inclusive and Future-oriented – a working group from the NPRA and the NMCU have developed the present strategy. The members of the working group have broad experience and expertise from national and international work in the area of motorcycle safety.

The strategy is intended to be an aid and provide direction for people who work with motorcycle/moped traffic safety at all levels, from those who develop the management documents to those who implement the measures practically with a view to reaching the user group.



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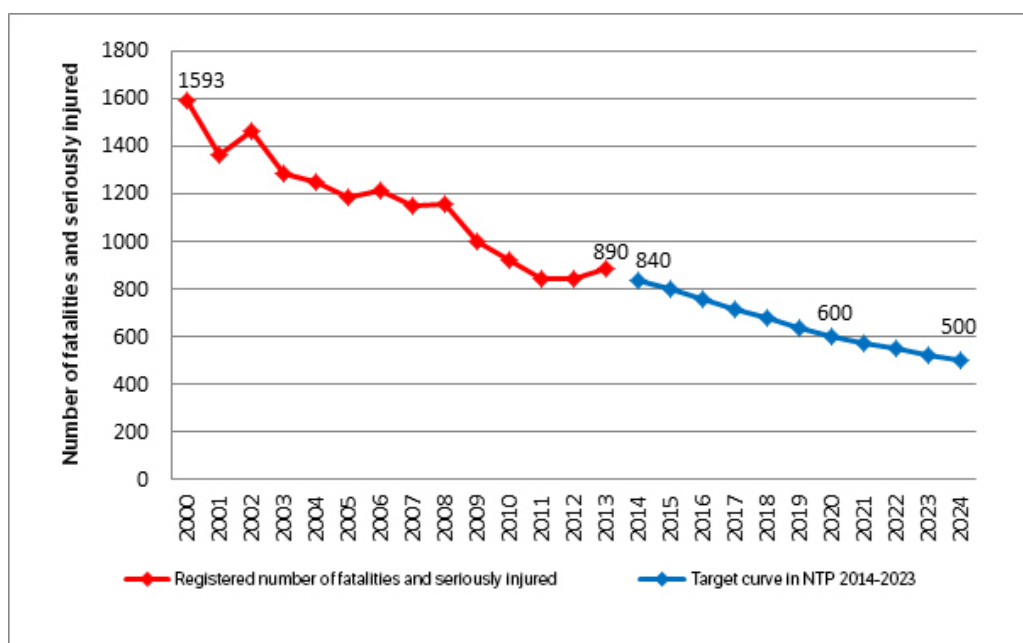
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1. Introduction

1.1 Background and objectives for the strategy

The National Transport Plan 2014-2023 proposes that by 2024, the maximum number of fatalities and seriously injured as a result of road traffic should be 500. Based on projected trends derived from developments over the past decade, it is anticipated that the number of fatalities and serious injured in 2014 will probably be around 840. This objective is ambitious and will require the active collaboration of all road traffic groups.



Figur 1.1 Historical overview of fatalities and seriously injured – registered situation and objective for the development up until 2024.

About 20–30 motorcyclists are killed in traffic annually. Although there has been a marked decrease in risk for motorcycle and moped riders over time, the risk still remains high when compared with that of car drivers. Therefore, the Norwegian Public Roads Administration, in cooperation with the Norwegian Motorcycle Union (NMCU), has developed a separate motorcycle and moped strategy¹.

1: The strategy does not encompass snow scooters and ATVs (All Terrain Vehicles).

The strategy comprises the following objectives for motorcycle and moped riders: To increase traffic safety and reduce the number of accidents

The motorcycle and moped strategy will emphasize that enhanced traffic safety is a responsibility shared between

- the road authorities who build and maintain the road network
- the road users and
- the vehicle manufacturers

The strategy will visualize those areas in which motorcyclists have special needs and will describe both road user oriented measures and measures aimed at improving roads.

The strategy will provide direction for traffic safety-related work and will lay the foundation for new policies pertaining to motorcycles and mopeds.

The target group for the strategy includes the Norwegian Public Roads Administration, the county municipalities and municipalities that work generally with traffic safety and with motorcycle and moped safety specifically. The strategy will also be important for the police, Trygg Trafikk (Norwegian Council for Road Safety) and the driving schools' branch organizations, along with the MC organizations, clubs and the voluntary associations that are involved in the effort to ensure traffic safety for motorcycle and moped riders.

1.2 Facts about motorcycle and moped riding in Norway

Who are the Norwegian motorcyclists and how are they organized?

The number of motorcycles in Norway has increased from fewer than 20,000 in 1980 to nearly 160,000 in 2012. The large increase in the number of motorcyclists is in part due to the perception of motorcycle riding as a meaningful leisure activity that enhances quality of life. In addition, the motorcycle is an inexpensive and efficient means of transportation to and from work and school.

Motorcycling is no longer an adolescent phenomenon. The members of the Norwegian Motorcycle Union (NMCU) are currently 46 years old on average. Members from all social strata ride motorcycles. Moreover, there are now more women motorcyclists than at any time before. Women represent 25 per cent of NMCU's membership.

The myth is that the typical motorcyclist is an extreme individualist; however, a large proportion of the motorcyclists prefer to ride in the company of others. Many motorcyclists belong to an MC club. There are more than 500 motorcycle clubs for ordinary street motorcyclists, and these have no contact at all with the so-called "one-percent clubs" that are designated as undesirables by the police and municipal authorities.

Motorcycling has been frequently challenged by society, and this has resulted in street motorcyclists becoming well organized through the Norwegian Motorcycle Union and the network of clubs and events. Motorcyclists are also closely affiliated with international motorcycle-related social and political networks. NMCU, for example, is an active member of both the Nordic Motorcycle Council (NMR) and the Federation of European Motorcyclists' Associations (FEMA).

Who rides mopeds in Norway?

There were more than 170,000 registered mopeds in Norway in 2012. The moped users are often upper secondary school students. This age group (16–18 years of age) use mopeds primarily as a means of transportation to and from school and leisure activities. There is also a smaller group of adult moped drivers who use the moped as a utility vehicle. With a maximum speed of 45 km/h, the moped is most suitable for shorter trips in speed zones of 60 km/h and below.

Moped riders, unlike motorcyclists, are not organized in clubs or interest organizations. For this reason, the NMCU often serves the interests of moped riders, for example by responding to consultation rounds pertaining to mopeds or by working for general traffic safety for two-wheeled vehicles.

Developments in licensing riders of motorcycles and mopeds

The number of people taking licences to ride motorcycles and mopeds has fluctuated somewhat over the past decades. However, since 2007, the figures have remained relatively stable.

- About 5,000 persons per year are licensed to operate heavy motorcycles. In 2013, category A2 (semi-heavy motorcycle) was introduced as a separate driving licence category with the appurtenant requirement to take extra training if one wishes to upgrade the licence to category A (heavy motorcycle). The new requirements resulted in a slight increase in the number of people who took their licence for heavy motorcycle in 2012, because they wanted to take advantage of the still valid direct qualification in Category A.
- The driving licence category that has remained almost constant over time is the light motorcycle (A1). During the past decade, some 2,000 people per year have been licensed in this category.
- In 2005, regulations went into force requiring a driving test and driving licence to operate a moped. Prior to 2005, moped licences were issued after the rider had completed the mandatory training. In 2012, approximately 16,000 moped licences were issued.

Licence regulations and driver training

Provisions pertaining to driver training for moped and motorcycle are found in the regulations relating to traffic training and driving licence etc. and are described in more detail in separate curricula (NPR Manual V850 and V852²). To enable licence holders to use a Norwegian-issued licence to drive freely in other countries, the regulations are continually amended to be in compliance with international agreements and the requirements laid

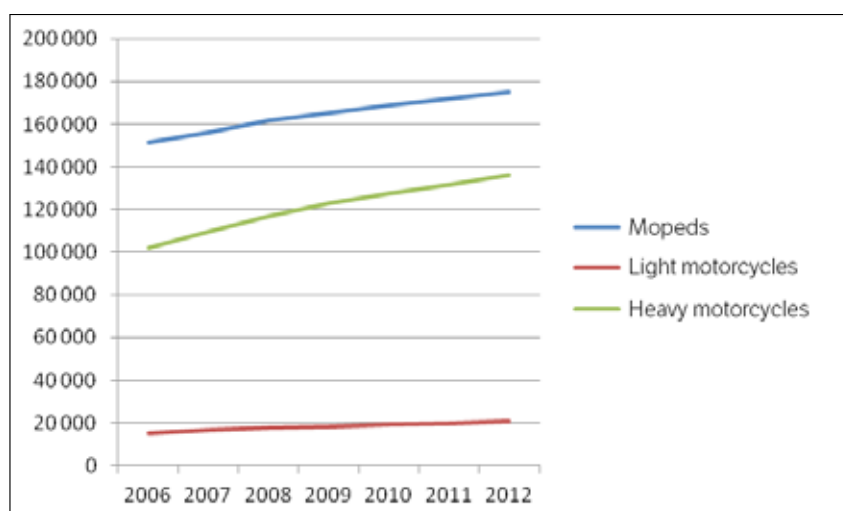
2: See <http://www.vegvesen.no/Fag/Publikasjoner/Handboker>

down in EU directives. The Norwegian model for driver training is based on international research projects such as the "GDE-framework"³ as well as the accident scenario that characterizes Norwegian road traffic. The preparatory work for the current curricula is gathered in the Norwegian Public Roads Administration's Manual V858E Driver Training in Norway⁴.

Through a conscious choice of content in the mandatory training, the driving instructor and students are given the time to work with topics that are difficult or time-consuming to evaluate through a traditional assessment or examination. This initiative is unique in a European context, and it has received much attention. The training programme for motorcycle and moped places focus on manoeuvring skills and strategy.

Development in terms of number of motorcycles and mopeds on the market in Norway

The number of mopeds has increased from about 150,000 in 2006 to more than 170,000 in 2012 (see Figure 1.2). The number of heavy motorcycles has increased from 100,000 to almost 140,000 in the same period, whereas the number of light motorcycles has seen a slight increase to more than 20,000.



Figur 1.2 - Historical overview, number of mopeds, light and heavy motorcycles in Norway, 2006–2012.

1.3 The accident situation for motorcycles and mopeds

Developments in accidents and risks for motorcycle and moped riders

The development in accidents for mopeds and heavy motorcycles has largely been positive during the past 10–15 years. There has been a particularly sharp decline in the number of heavy motorcycle accidents resulting in fatalities and serious injuries. There has also been a decrease in the number of moped accidents. For light motorcycles, however, there is no clear-cut tendency (see Figure 1.3).

3: M. Peräaho, E. Keskinen, M. Hatakka June 2003: Goals for Driver Education. University of Turku, Traffic Research

4: The strategy does not encompass snow scooters and ATVs (All Terrain Vehicles).

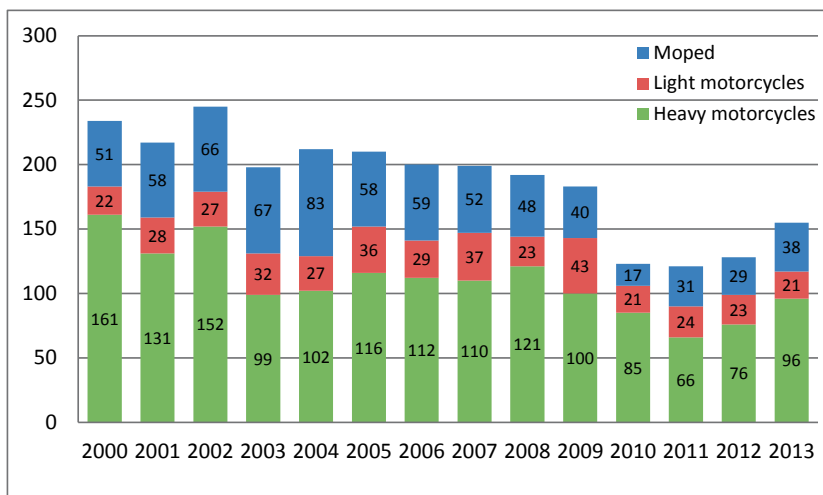


Figure 1.3 - Number of accidents involving mopeds, light motorcycles and heavy motorcycles in which at least one person was seriously injured or killed, Figures from 2000-2013.

All groups of road users, except riders of light motorcycles, show a distinct improvement in risk profile since 1992. The improvement has been particularly noteworthy for heavy motorcycles. The risk for light motorcycles, however, has increased and is very high compared with the other groups.

	1992	1998	2001	2005	2009
Car drivers	24,0	20,0	16,2	13,1	9,9
Car passengers	21,0	18,5	12,8	13,8	9,3
Pedestrians	197,2	145,3	123,9	72,8	39,6
Cyclists (r + p)	191,6	200,3	89,7	79,5	30,3
Moped (r + p)	257,7	198,4	135,7	122,5	70,0
Light MC (r + p)	306,0	229,9	368,1	404,2	506,9
Heavy MC (r + p)	402,4	353,2	222,1	199,2	143,9

Tabell 1.1 - Fatalities and seriously injured per billion vehicle/pedestrian km for different road user groups⁵.

r = rider, p = passenger

Table 1.1 is based on figures retrieved by TØI (Institute of Transport Economics) for the number of kilometres driven per year. Trygg Trafikk (Norwegian Council for Road Safety) and NMCU's survey on motorcyclists' relationship with road safety (1728 answers published in 2011 on Trygg Trafikk and NMCU's homepages), operates with a higher average for driving distance than TØI. This means that the risk for heavy motorcycle riders may be somewhat lower.

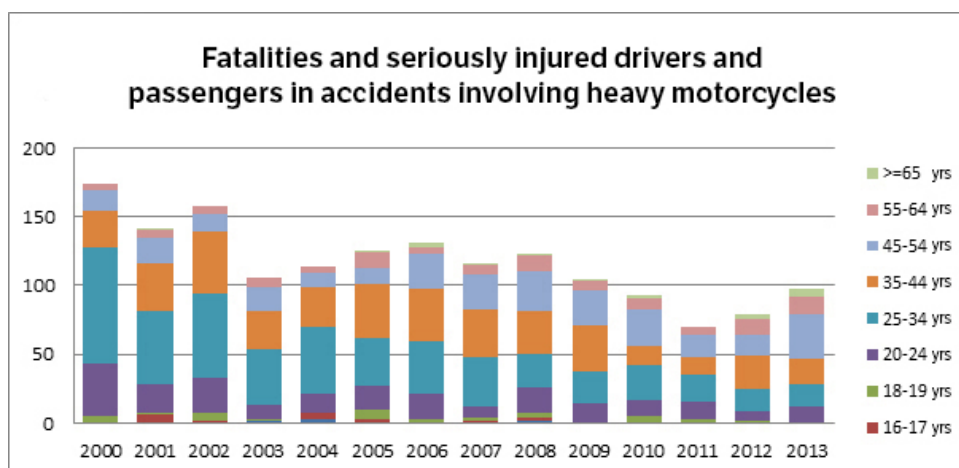
5: The exposure figures are taken from the following sources:

- Car drivers, car passengers: Vågane & Rideng (2010): Transportytelser i Norge [Transport Capacities in Norway] 1946-2010. TØI report 1165/2011

- Pedestrians and cyclists: Den nasjonale reisevaneundersøkelsen [The National Travel Trends Survey] (RVU). TØI.

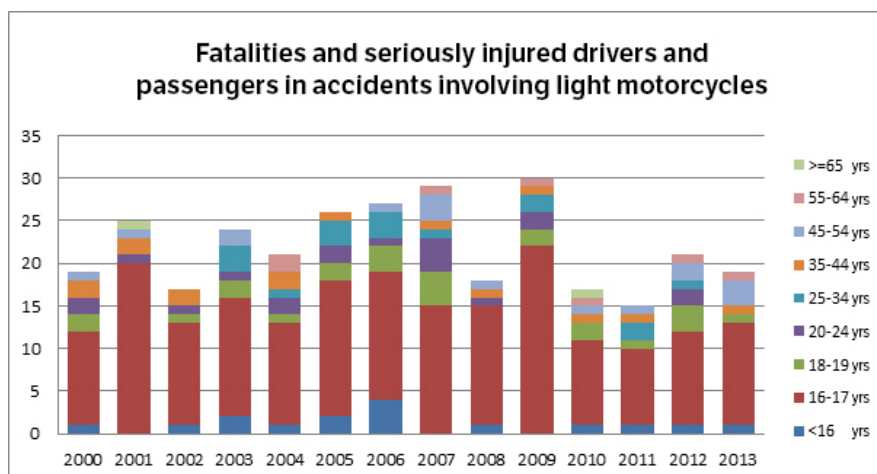
- Moped, Light motorcycle and heavy motorcycle: Bjørnskau et al. (2010). Trafikksikkerhet blant mc-førere [Traffic safety among MC drivers]. TØI report 1075/2010

Bjørnskau, T. 2011: Risiko i vegtrafikken 2009-2011. TØI report 1164/2011



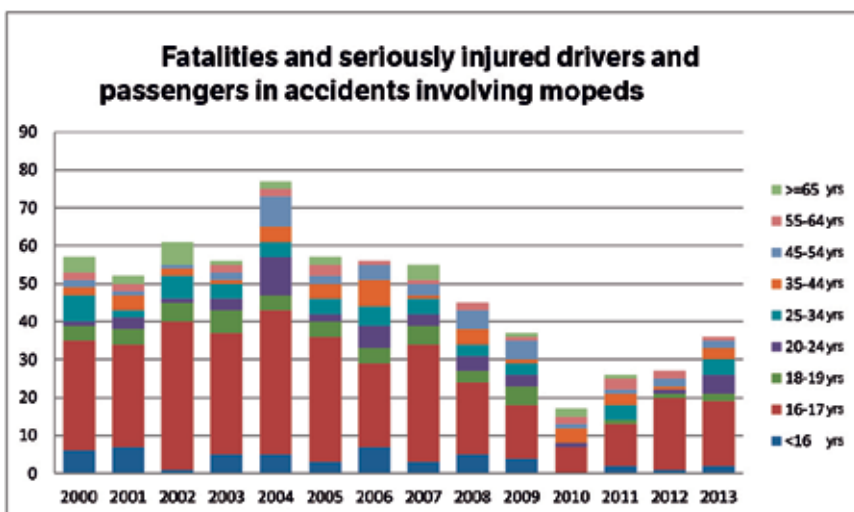
Figur 1.4 - Fatalities and seriously injured drivers and passengers in accidents involving heavy motorcycles during the period 2000–2013, distributed by age .

The 25–34 and 35–44-year-old age groups have long dominated the statistics for fatalities and serious injuries as a result of heavy motorcycle accidents. However, the proportion of 25–34-year-olds has decreased in recent years. The tendency has been that the proportion of fatalities has increased for the 45–55 age group.



Figur 1.5 - Fatalities and seriously injured drivers and passengers in accidents involving light motorcycles during the period 2000–2013, distributed by age.

Accident trends show that 16-17-year-olds are those who are killed or seriously injured as a result of light motorcycle accidents. For other age groups, there are large annual fluctuations in accident trends.

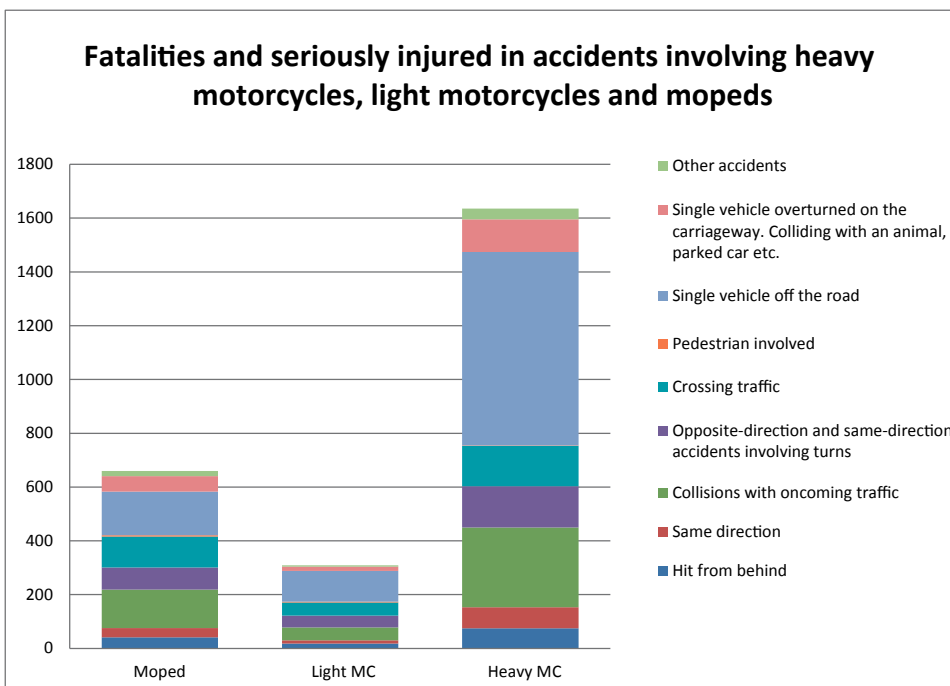


Figur 1.6 - Fatalities and seriously injured drivers and passengers in accidents involving mopeds during the period 2000–2013, distributed by age.

As for light motorcycles, the highest proportion of fatalities and serious injuries is found among 16–17 year-olds. The other age groups vary from year to year, very likely because of the low total number of accidents.

The most important causes of motorcycle and moped accidents

Figures from the past decade show that off-the-road accidents predominate in the statistics for both heavy and light motorcycles. Off-the-road accidents also account for a large proportion of the moped accidents. The other major accident groups are head-on collisions or accidents at intersections.



Figur 1.7 - Fatalities and seriously injured in accidents involving heavy motorcycles, light motorcycles and mopeds, distributed by age. during the period 2000–2013.

Figure 1.7 shows that single vehicle accidents dominate for heavy motorcycles. There are also many head-on collisions. For light motorcycles and mopeds, the scenario is more varied. The Norwegian Public Roads administration has analysed the causes of all fatal accidents involving motorcycles for the period 2005–2009. This encompassed a total of 153 motorcycle accidents resulting in 157 fatalities. The analysis reveals that driver error is the most common cause of accidents. In brief, the report shows that:

Rider

- The motorcyclist himself/herself was the triggering factor for the accident in 66 per cent of the cases.
- A second party involved in the accident was the triggering factor in 20 per cent of the cases.
- Faulty judgement was a triggering factor for the accident in 62 per cent of the cases; lack of technical skills was a triggering factor in 47 per cent of the accidents. In several accidents, both of these were triggering factors.
- In half the accidents, the motorcycle driver possessed less than two years of driving experience.
- One-third of the accidents occurred in conjunction with extreme behaviour, which means riding without a licence, riding while under the influence of intoxicating substances, riding irresponsibly at excessive speed or aggressive behaviour with regard to other road users.
- Some 80 per cent of the riders exhibiting extreme behaviour had a police record for illegal gain, narcotics, violence, damage to property, traffic violations or other offences.
- The rider was under the influence of alcohol/substances in 20 per cent of the accidents.
- The rider was not licensed to drive a motorcycle in 20 per cent of the accidents.

Road environment

- Roads and road environments were the cause or a contributing factor in 6 per cent of the fatal accidents (most often gravel or spilt diesel on the roadway). However, the analysis showed that in 22 per cent of the accidents, the road environment was the cause or a contributing factor to an increase in the scope of the damage (road-guard rails, fences etc.)

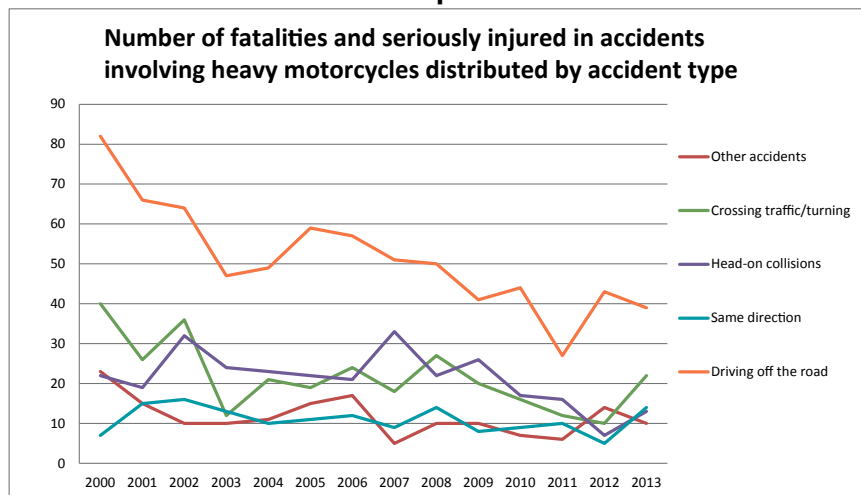
Vehicles

- In 31 per cent of the accidents, the motorcycle fell in the category of a supersport motorcycle in 29 per cent of the accidents, the vehicle was categorized as a touring motorcycle. In half the accidents in which a supersport motorcycle was involved, extreme behaviour was shown in conjunction with the accident.
- Technical defects in the motorcycle were recorded as the cause or a contributing cause in only 3 per cent of the accidents.

The findings in the topic analysis are in accordance with findings in previous studies. Drivers of supersport motorcycles are those who are at particular risk. The same applies to drivers younger than 19 years of age, particularly riders of light motorcycles. Excessive speed in disregard of road conditions is the most important risk factor linked with motorcycle-riding, at least in relation to serious accidents.

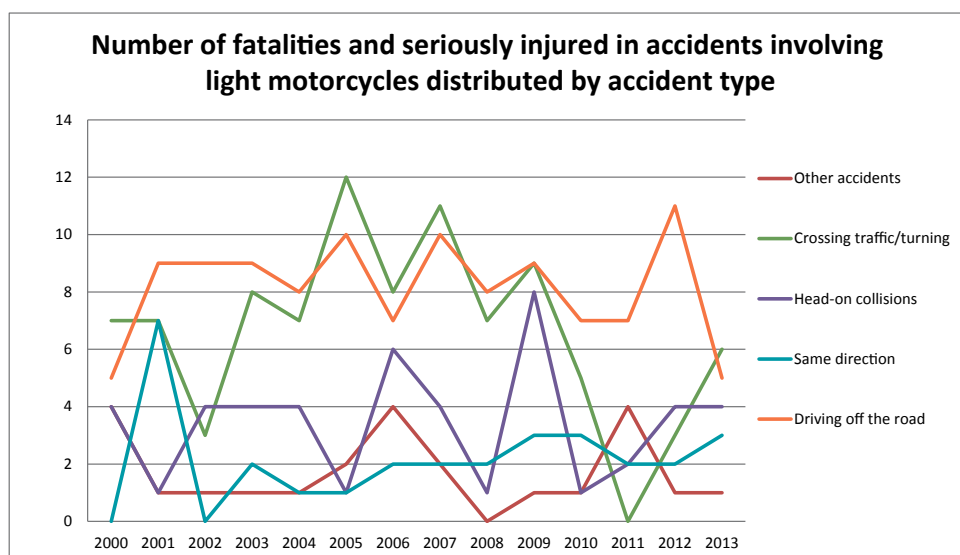
Few analyses have been done with regard to moped accidents. A study from 2004⁶ shows that single-vehicle accidents are typical for mopeds. Nevertheless, mopeds have more collisions than single-vehicle accidents, and passenger cars are the most common second vehicle involved. This may be due to the fact that mopeds are largely used in urban traffic and built-up areas.

Causes of accidents - development over time



Figur 1.8 – Distribution of killed and seriously injured motorcyclists (heavy motorcycle) by accident type during the period 2000–2013 (absolute figures).

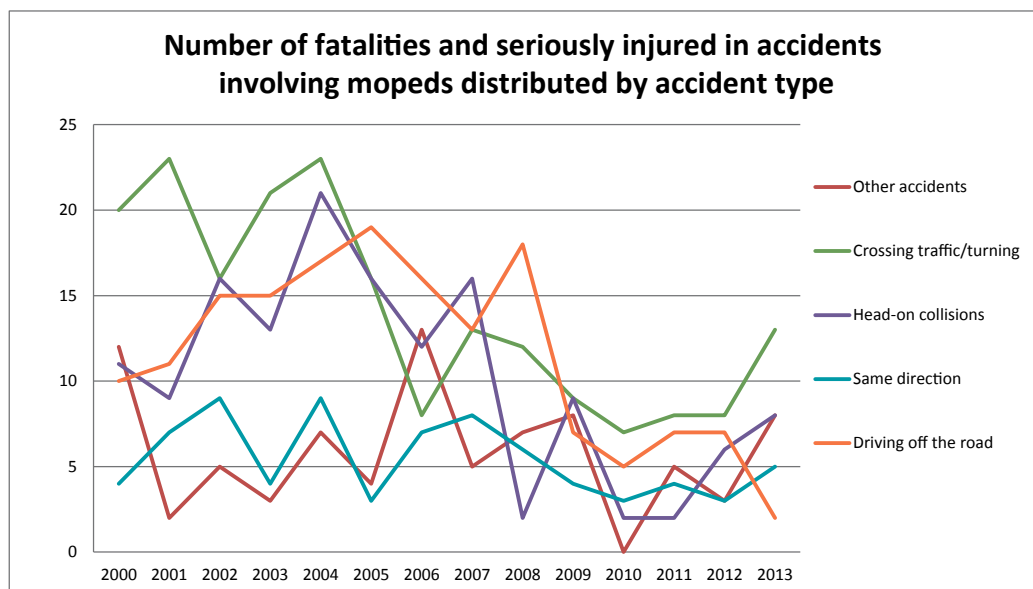
For heavy motorcycles there has been a positive decrease since 2003 in the number of off-the-road accidents. The figure did rise again, however, in 2012 before it declined in the following year. Accidents in the lane of oncoming traffic (i.e. head-on collisions) have also decreased. There are only minor changes in the number of other kinds of accidents.



Figur 1.9 – Distribution of killed and seriously injured motorcyclists (light motorcycle) according to accident type during the period 2000–2013 (absolute figures).

6 Bjørnskau, Torkel 2004: Ulykker med moped og lett motorsykel [Accidents involving mopeds and light motorcycles]. TØI report 749/2004

If one examines accidents involving light motorcycles, it is difficult to identify any special tendencies during the past ten years. Although the risk of accidents involving light motorcycles is very high, the extent of light motorcycle driving is relatively low in Norway. Therefore, the number of accidents is modest; as a consequence, fluctuations in the figures may be purely due to chance.



Figur 1.10 – Distribution of killed and seriously injured moped riders by accident type during the period 2000–2013 (absolute figures).

In terms of mopeds, there are also large variations from year to year because of low figures and chance circumstances. However, there has been a decrease in the number of off-the-road accidents and in accidents involving intersecting vehicle traffic. There have also been fewer accidents of the oncoming-traffic type (head-on collisions).

Important reports on motorcycle and moped accidents

For additional information and statistics on motorcycle accidents, your attention is invited to the following reports:

- Bjørnskau, Torkel, Nævestad, Tor-Olav and Akhtar, June 2010. Trafikksikkerhet blant mc-førere. En studie av risikoutsatte undergrupper og mulige tiltak [Traffic safety among motorcycle drivers. A study of sub-groups vulnerable to risks and possible measures]. TØI report 1075/2010
- Norwegian Public Roads Administration 2011. Temaanalyse. Dødsulykker på motorsykel [Fatal motorcycle accidents] 2005-2009. VD report no. 45.
- Bjørnskau, Torkel 2004. Ulykker med moped og lett motorsykel [Moped and light motorcycle accidents]. TØI report 749/2004
- International Transport Forum, Joint OECD/ITF Transport Research Committee 2008: Workshop on Motorcycling Safety held in Lillehammer (Norway) on 10-11 June 2008. Final report. ITF/OECD/JTRC/TS6(2008)1
- MAIDS 2009: In-depth investigations of accidents involving powered two wheelers. Final report (www.maids-study.eu/)

- ITF/OECD/JTRC SAFETY OF POWERED TWO-WHEELERS Final Report, 2015
- NMCU and Trygg Trafikk 2011: Motorsyklisters forhold til trafikksikkerhet. Rapport fra spørreundersøkelse [Motorcyclists' relationship to traffic safety. Survey report] 2011.

1.4 Road safety for motorcycles and mopeds

When an accident occurs, the harms to motorcyclists and moped drivers will be greater than for car drivers because the former are not protected by airbags, safety belts and a surrounding metal car frame. This is why WHO, the EU, the OECD and others define motorcyclists as «Vulnerable Road Users». It is very important to pursue the measures that have led to the large reduction in risk, while at the same time implementing new measures to maintain the positive development.

Although the number of light motorcycle accidents is somewhat low, the risk of an accident is high and the percentage of young drivers who are injured riding these lighter cycles is higher than the number of adults injured when riding heavy motorcycles. Therefore, it is necessary to initiate measures aimed at protecting the youngest motorcyclists.

Motorcyclists and road safety measures

The Norwegian Ministry of Transportation and the Norwegian Public Roads Administration have a particular responsibility to ensure traffic safety in Norway. Other important actors are the police, the Norwegian Directorate of Health, the Norwegian Directorate for Education and Training, Trygg Trafikk and other traffic sector and road user organizations. The NMCU works actively to enhance traffic safety for motorcyclists and has entered into a collaborative agreement with the Norwegian Public Roads Administration.

Part of the effort to ensure national motorcycle safety is channelled through the national MC Council, on which the sector, the NMCU, Trygg Trafikk, The NPRA and the police have representatives. There is also a separate MC-Forum in many Norwegian counties. These have approximately the same composition as the national MC Council. The MC forum is an advisory organ for the road authorities in the respective counties. Many of the measures adopted at the national level can be made operative through the county MC-Forums. Three good examples are the Vision Zero roads for motorcycles, sub-rails mounted on guard rails and traffic-safety days for motorcyclists.

Over the past 20 years, the motorcycle safety effort in Norway has been enhanced by continually closer cooperation between the authorities, the user organizations and the sector organizations. There are obvious advantages to be gained by having decision-making processes in which all affected parties are involved, can collaborate and are able to reach good, viable solutions together. Not least, all the parties are able to play a responsible role in implementing the decisions that are made.

Norway is active in international motorcycle safety work at the level of both the users and the authorities. This involvement influences national safety-related efforts and results in Norway's often choosing to initiate measures based on newly acquired knowledge. This is

probably one of the reasons why Norway is one of the safest countries in Europe in which to ride a motorcycle or moped.

Accident statistics show that motorcyclists have a relatively higher risk of being injured when they are involved in an accident. This higher risk of injury has given the entire motorcycle community a reputation for increased risk. However, motorcyclists as a road user group have become much more safety-conscious. Campaigns such as "Full Control" and "See Us", participation in voluntary driver training programmes and the comprehensive use of non-mandatory safety equipment are all good examples of motorcyclists' own safety-conscious initiatives.

2. Means and measures

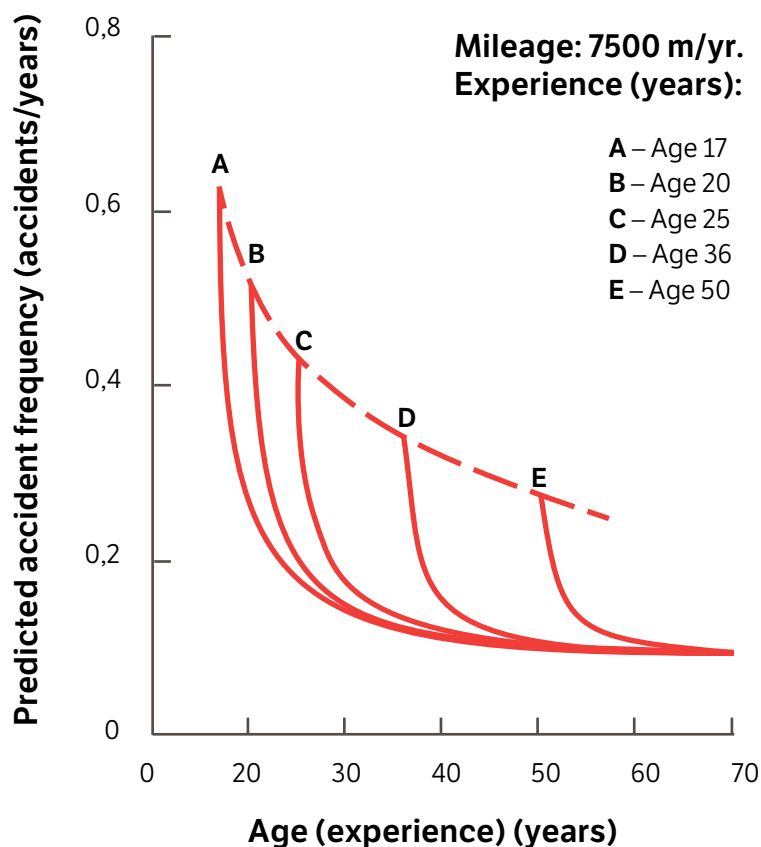
To attain the goal of reduced fatalities and serious injuries among motorcycle and moped drivers, measures must be aimed not only at the drivers themselves, but at enhancing the road network and vehicles.

2.1 Road user measures

Knowledge about the cause of accidents is key when measures are to be implemented. There is usually more than one cause for accidents, but the human factor is one cause or contributing factor in more than 90 per cent of all accidents, irrespective of vehicle group. Road user-oriented measures are important in all traffic safety work.

Bridge the gap of experience

All surveys reveal that drivers become less accident-prone inversely proportionate to experience and age. Experience is the single, most crucial factor in deciding whether or not a potentially hazardous situation will become an accident. If one is able to decrease the gap between the inexperienced and very experienced driver, that is, if one can shorten the dangerous period of time it takes to build vital experience, many accidents can be avoided. There are three measures that are particularly important to filling the experience gap, namely rider training, the safety dialogue within the motorcycling community and post licence training.



Figur 2.1 -Connection between accident-proneness, age and experience. Maycock et al. 1991

Drivers become less accident-prone with increased age and experience; this is visualized in several studies – see, for example, Maycock et al. from which Figure 2.1 is borrowed. The figure shows drivers' proneness to accidents upon becoming licensed at different ages, as well as how quickly this proneness declines with age and experience.

Rider training



A good and cost-effective rider training programme aimed at building experience is the best start for bridging the gap of experience. Driving schools that carry out the training are important in this effort. The current model for rider training comprises a large portion of mandatory training designed to inculcate good attitudes and motivation in relation to safe behaviour in traffic. Through stipulated requirements for mandatory training, the driving schools are ascribed an important societal responsibility in the Vision Zero campaign to educate riders who are safety-conscious and are safe riders themselves.

Since 2005, motorcycle training in Norway has been strongly focused on technical riding competence in order to combat single vehicle accidents. This has been a correct and important priority, and the number of single vehicle accidents has been significantly reduced (see Figure 1.8 in Chap. 1.2) Rider training is to be further developed on the basis of recommendations made after an assessment of the training scheme (to end in 2014), knowledge acquired from accident analyses and other relevant research in Norway and abroad. It appears that the greatest potential for development is found in the part of the training that enables motorcyclists to make good strategic and tactical decisions. Development of

the training will occur in cooperation with the users, the driving school sector, the voluntary riding-course providers and the research environment so that the programme can be further strengthened.

Riding instructors' competence

Rider training requires good and clear curricula that ensure structure and relevant content. The curricula will have little or no value, however, if the driving instructor who is doing the teaching does not possess the proper competence. It is also important to maintain and update the professional competence of the staff at educational institutions and driving schools.

Norway has one of Europe's most comprehensive education programmes for driving instructors, with additional training for separate vehicle groups such as heavy vehicles, snow scooters and motorcycles. In the further development of rider education, the instructor training programme will become a part of the revision and will be developed in line with the changes made in driver education.

The riding test

The driving test provides support for the rider training programme as well as a quality assurance to ensure that the novice drivers who will begin building experience on their own possess sufficient training so that the experience they set out to get can be acquired as safely as possible. The riding test, as an examination at the end of the training programme, must be developed along with the driver training and be so designed that it effectively ensures that novice drivers acquire the proper competence.

The examiner's competence

The competence possessed by the examiner is just as crucial for enabling chosen criteria for the driving test to be met as the driving instructor's competence is for meeting the objectives of good curricula. Development of the examiners' training programme will be based on developments in the riding test and the riding instructor programme.

Follow-up measures

The Norwegian Public Roads Administration, in cooperation with other actors, will work to develop the rider training programme, riding instructor training, the riding test and examiners' training programme.

Safety dialogue within the motorcycle community – changes in attitude

Informational material such as «Stiv av Skrekk⁷» [Scared Stiff] and «Full Kontroll⁸» [Full Control] have proven to be very important for the safety dialogue within the motorcycle community. One must see to it that this interest in discussing safety issues and in acquiring knowledge is maintained. To achieve this, NMCU will establish a separate website for

7: Motorsykkelgrossistenes Forening, NMCU og Statens vegvesen 1999: Stiv av Skrekk [Scared Stiff].

8: NMCU 2001: Full Kontroll [Full Control]

motorcycle competence, including an electronic, interactive version of the booklets Full Control/Good Thinking. The website will have a forum and a continually active question/answer service. The website will also launch self-produced videos and will offer simple simulator training applications as soon as these become available, presumably soon. An application will be made that makes the website available on all types of SMART telephones. This will also provide options for posting road trap notifications via mobile telephones. The development is resource-intensive and costly, so that NMCU will seek possibilities for collaboration with other MC organizations and relevant potential stakeholders.

Another method by which to systematically maintain a dialogue within the motorcycle community about safety issues is to arrange annual traffic safety days for motorcyclists in the various counties. This has been done in Telemark for many years and has met with success. Riding instructors and examiners can be given clear roles in traffic safety days for motorcyclists. The annual traffic safety days for motorcyclists can probably best be anchored in the MC-Forum of the given county; the Norwegian Public Roads Administration has established MC-Forums in most of Norway's 19 counties.

Follow-up measures

The NMCU will establish a designated website for motorcycle competence, including appurtenant applications for SMART telephones.

The Norwegian Public Roads Administration will make provisions for conducting an annual traffic safety day for motorcyclists in each region, preferably hosted by the county MC-forums.

Post licence training



Foto: Hans Vestre

Rider training is a long-term traffic safety measure. Nevertheless, rider training alone is insufficient to maintain motorcyclists' riding competence. Therefore, it is important to

strengthen voluntary training, by seeing to it that many more inexpensive, low-threshold courses are offered. Courses of this type should be attended by thousands of motorcyclists each year. The courses should be conducted on small tracks and public roads; they should be unpretentious and inexpensive, be straight to the point, have a steep learning curve for the inexperienced rider and clearly confirm the skills of the experienced rider. The courses need to be dialogue-based and have a high enjoyment factor. The organizational platform for courses of this type can be the MC clubs, motorcycle dealerships and the driving schools. The courses require a carefully considered plan for the course and training of competent instructors. In this respect, riding instructors, examiners and course instructors can all play an important role in developing the course plans.

If post licence training on a voluntary basis fails to provide the desired volume within a reasonable period of time after the introduction of a nationwide, comprehensive offer, it may be appropriate to initiate some form of mandatory post licence training, perhaps primarily in the form of a post-licence part of the regular driver training programme.

It is important to address the problem of young motorcyclists riding light motorcycles and mopeds being overrepresented in the accident statistics in comparison to adult motorcycle riders operating heavy motorcycles. Many accidents involving light motorcycles occur in late August/early September, at the start of upper secondary school, and are triggered by a combination of personal immaturity and a recently acquired licence. Small teams of motorcycle experts, therefore, should go into the upper secondary schools with concise and clear advice that will help these young people to make the correct tactical and strategic decisions in the time frame during which they are particularly vulnerable. The Norwegian Public Roads Administration will initiate the establishment of this kind of traffic safety teams and will create a teaching plan that can be used in awareness-raising and attitude-building work with drivers of light motorcycles and mopeds.

The age at which one is eligible to be licensed to ride a light motorcycle is controversial. If the age for a light motorcycle licence were to be raised, it would preclude young people from using an effective means of transportation. It is important to study thoroughly how young people would replace transportation by light motorcycle and the extent to which such a change would only move the risk elsewhere, or whether a raised age threshold would have a beneficial effect on safety in a total perspective.

Follow-up measures

The Norwegian Public Roads Administration and the NMCU will work to strengthen voluntary post licence training through additional, inexpensive, low-threshold courses.

The Norwegian Public Roads Administration will initiate the establishment of traffic safety teams including motorcycle experts who can be used in awareness-raising and attitude-building work with riders of light motorcycles and mopeds.

The NPRA will examine the negative and positive consequences of raising the age threshold for taking a licence to ride light motorcycles from 16 to 18 years of age.

Extreme behaviour on public roads

The Norwegian Public Roads Administration's analysis of fatal motorcycle accidents for the period 2005-2009⁹, reveals that as many as one-third of the victims died as a result of their own extreme behaviour. Some 80 per cent of these had also demonstrated extreme behaviour in other areas of life. Twenty per cent were not licensed to ride a motorcycle, and many had never owned a motorcycle and therefore cannot be defined as motorcyclists. Surprisingly many rode while under the influence of intoxicating substances (20%).

Enforcement

This group of motorcyclists can be influenced only to a minor extent by the measures that may be used by the NPRA or the NMCU. The best policy instruments are more frequent checks by the police and proper control methods aimed at preventing driving while under the influence of all types of intoxicants. The police can also implement measures aimed directly at non-motorcyclists exhibiting extreme behaviour so that these are prevented from being a danger to themselves and others on public roads.

Alternative arenas

Many of the fatalities as a result of extreme behaviour are motorcyclists from the established motorcycle community. The NMCU, the MC sector and MC press must all take a public standpoint against extreme behaviour on public roads. At the same time, representatives for the motorcyclists need to point out alternative arenas where one may legally, and without the risk of harming others, gain good experience in mastering traffic situations. One alternative is to channel extreme behaviour away from public roads and onto closed circuits. Such track days must however become simpler to attend and less expensive. Therefore, one should assess whether to recommend the introduction of separate regulations for such track days, which may be considered to be a mix between a training course and a sport.

9: Norwegian Public Roads Administration (2011) Temaanalyse. Dødsulykker på motorsykel [Fatal motorcycle accidents] 2005-2009. VD report no. 45.

Through campaigns, the MC press, websites and other channels of communication, the representatives for the motorcyclists must encourage motorcycle riders to "choose the right time and the right place". This means that if one wishes to test the maximum speed of a motorcycle or drive fast in curves, one has to do this on closed circuits where it is safe and lawful. Motorcyclists who wish to practise riding techniques should be encouraged through such campaigns to find times, and stretches of roads, where practice of this kind is within laws and regulations and presents the least possible risk and nuisance to other road users.

Follow-up measures

NMCU and other motorcycle representatives will work to channel extreme behaviour away from public roads and onto closed circuits.

NMCU and other motorcycle representatives will encourage motorcyclists to "choose the right time and right place" for practising riding techniques.

Visibility – «SEE US» - campaigns and training initiatives



Many motorcyclists die in collisions with cardrivers failing to yield right of way or are inattentive. Experience-based knowledge indicates that even more people are injured in these types of accidents. Experienced motorcyclists often manage to cope with this type of situation by anticipating car drivers' errors. The challenge for inexperienced motorcyclists is to understand the potential hazard, and they may become innocent victims of the

errors made by other road users. Therefore, it is important to further develop the training of novice motorcycle riders in this particular area. This applies to both the technical driving training but perhaps even more, to tactical and strategic training.

Studies reveal that the most effective way to get car drivers to "watch out for" motorcyclists and moped riders is to constantly remind the car drivers that they are there. Therefore, the NMCU will continue to organize the SEE US campaign each spring. The message of these campaigns should continue to be "Here we are again – can you see us?" There is a great potential for participation in these campaigns, including the participation of the Norwegian Public Roads Administration and the motor car sector organizations.

At the same time, revisions of the curricula in the other licence categories should also carry over and further develop objectives in the curriculum that provide for being observant of and actively looking out for mopeds, motorcycles and other vulnerable road users.

A report prepared by SWOV, the Institute for Road Safety Research in the Netherlands¹⁰, states that motorcyclists can enhance their visibility in traffic by being aware of their contrast against the background of the traffic environment in which they are travelling at any given time. The report also calls for research on different light configurations that can enhance the visibility of motorcyclists and moped riders.

Follow-up measures

The NMCU, in collaboration with other stakeholders, will continue to organize the SEE US campaign each year.

When revising the curricula in the other licence categories, the Norwegian Public Roads Administration will carry over and further develop objectives in the curriculum that provide for being observant of and actively looking out for mopeds, motorcycles and other vulnerable road users.

Protective riding equipment

For motorcyclists, accident prevention will always be more important than measures aimed at preventing injuries. Nevertheless, most motorcyclists, drivers and passengers, almost always use protective equipment when riding, even on short trips. For motorcyclists, the shoulders, elbows, hips and knees are protected by proper shock-absorbent materials, while riding boots protect the ankles, feet and joints. Manufacturers of equipment deliver high-quality driving equipment designed to ensure safety and appropriate to the many areas of application for motorcycles.

¹⁰: Dr. S. de Craen, dr. M. Doumen, N. Bos & dr. Y. van Norden: The roles of motorcyclists and car drivers in conspicuity-related motorcycle crashes. SWOV. R-2011-25



The choice of equipment designed to prevent injuries has been somewhat limited for moped riders. This is beginning to change, however, and is a positive development. The speed level of mopeds indicates that not much energy is absorbed in the event of an accident/collision. Proper equipment, however, will be effective in preventing injuries. The challenge is to offer moped riders protective equipment that either can be combined with the activity the rider will participate in after driving, or can be easily put on and taken off.

The analysis of fatal motorcycle accidents for 2005-2009¹¹ showed that in many accidents, the rider's helmet fell off in the collision either because it did not fit the driver or because the fastening devices came apart. Measures should be put in place to make dealers conscious of their responsibility to ensure that the helmets fit the customer's head. Through rider training and the safety dialogue within the motorcycle community, motorcyclists must be made aware of the lifetime of a helmet and must be encouraged to replace helmets when it no longer fits or when the fasteners are worn out.

More and more, manufacturers are developing "intelligent driving equipment", such as air-bag jackets, temperature-regulating driving overalls and helmet visors with head-up display. After these products have been quality-assured, the NMCU can urge the MC dealers and the MC press to inform motorcyclists about the equipment so that they will begin using it.

11: Norwegian Public Roads Administration 2011. Temaanalyse. Dødsulykker på motorsykel [Fatal motorcycle accidents] 2005-2009. VD report no. 45.

To a greater extent than earlier, motorcyclists are using riding gear with high-visibility colours. It is proper to encourage motorcyclists to use this kind of equipment, but one must continue to tell motorcyclists that they need to actively position themselves so that they can be seen and be continually ready and able to take responsibility for other roadusers' driving errors.

Follow-up measures

The NMCU, in collaboration with other stakeholders, will work to make dealers aware of how important it is that the helmets they sell fit the customer's head.

The Norwegian Public Roads Administration, through rider training and the safety dialogue within the motorcycle community, will work to make motorcyclists aware of the lifetime of a helmet, a proper fit and fastening devices.

The NPRA and the NMCU will continue to encourage motorcyclists and moped riders to use driving equipment with high-visibility colours.

Accident analyses

Analyses of accidents conducted by the Norwegian Public Roads Administration are important tools enabling traffic safety measures to be tailored to all driver and vehicle categories. It is important that topic analyses be conducted, such as "topical analysis of fatal motorcycle accidents 2005–2009". Analyses of this kind shall be conducted at regular intervals, approximately once every five years, in order to have up-to-date knowledge that can be applied in designing specific measures.

2.2 Road improvement measures

Challenges facing motorcyclists and moped riders in light of the modern road network

The physical road environment is designed to meet requirements for the safety of all road user groups. Thus, it is important to identify the changes in the design that may result in improvements for motorcyclists without at the same time negatively affecting other road users' safety.

Installations that protect drivers and passengers in cars may represent an increased hazard for motorcyclists, moped riders and bicyclists. One example is abutments on the ends of guardrails, which from a motorcyclist's perceive is a rigid steel plate with a 5-cm sharp edge around it. Motorcycles are manoeuvred according to different principles than cars and are more sensitive to irregularities in the carriageway, particularly in curves. If

road grip becomes poor as a result of oil spill, gravel or other pollution of the roadway, a motorcycle can easily flip over. Motorcyclists therefore have a greater need than car drivers for predictable road conditions.

Colliding with a guardrail or poles inside the safety zone will frequently result in serious injuries to a motorcyclist. Road markings, manhole covers and cattle grids will be more slippery than the road surface itself, particularly when wet. This can cause problems for motorcyclists when they brake or negotiate curves.

Unanticipated changes in the condition of road surfaces can cause problems for motorcyclists. The Norwegian Public Roads Administration will review the procedures associated with operational and maintenance measures, particularly those linked with road surface and signposting for good predictability.

Motorcycles and mopeds in transport plans

There are more than 300.000 registered Powered Two Wheelers in Norway. Nevertheless, this vehicle group is given little attention in existing transport plans. However, a binding and comprehensive collaboration is currently on-going between the authorities, the MC sector and motorcycle users concerning measures for better motorcycle traffic safety. Several of the measures in this effort are part of the Agreement on road safety between the Norwegian Public Roads Administration and the NMCU.

In a report published in 2008, the OECD recommends¹² that motorcycles should be automatically integrated in local, regional and national transport plans. This will ensure that motorcycles and mopeds do not fall by the wayside in established transport policy.

Follow-up measures

The Norwegian Public Roads Administration and the NMCU will work to ensure that motorcycles and mopeds are integrated to a greater extent in local and national transport plans.

Vision Zero stretches of road for motorcycles

In several places in Norway, the NRPA has conducted traffic safety audits with particular focus on MC safety. Based on these audits, a short stretch of road has been defined as a “Vision Zero stretch for motorcycles”, and measures have been implemented to improve safety conditions for motorcyclists. Such measures might include, for example, sub-railson guardrails in hazardous curves, clearing vegetation that obstructs vision, moving signs and light-poles that stand inside the safety zone and improvement of the roadside terrain.

To enhance competence in the field of MC safety, the Norwegian Public Roads Administration will use the new and existing “Vision Zero stretches for motorcycles” to document

¹²: OECD_Workshop Motorcycle Safety 2008_Final Report

new knowledge about the effect on traffic safety from changes in design and maintenance of roads. New knowledge that emerges will be included in revisions of NPRA Manual V621 to ensure a good process for using the knowledge in revising and developing road norms.

Follow-up measures

The Norwegian Public Roads Administration will work to establish a "Vision Zero stretch of road for motorcycles" in each region and in line with the Agreement on road safety between NMCU and the NPRA.

Roadside terrain

"Forgiving" roadside terrain is better for motorcyclists than a guardrail along the edge of the road. Where it is practically feasible, the NPRA should work to replace -guardrails with "forgiving" roadside terrain. Another objective of the NPRA is that all national roads with a speed limit of 70 km/h or higher shall meet the following minimum requirements:

- The current requirements in the NPRA's manuals relating to the design and scope of roadside guardrails, ductile poles and profiled edge-markings.
- All sudden and hazardous curves are to be improved or sign-posted.
- Necessary improvements of roadside terrain will be implemented in areas where roadside guardrails have not been set up.

The Norwegian Public Roads Administration will implement a systematic review of the national roads network and will carry out necessary measures to ensure that the roads meet the given minimum requirements. The current ambition is that the entire national roads network shall meet the minimum requirements by 1 January 2024. This ambition level will be reassessed in the work with the National Transport Plan 2018–2027.

The challenges with regard to the single vehicle accidents are even greater on the county roads network than on the national roads network. It is also desirable for the county administrations to take the initiative to ensure that a similar implementation be made for the county roads network.

By achieving the indicated minimum requirements, the risk of a serious accident involving leaving the road can be alleviated for motorcyclists.

The effort to achieve the minimum requirements depends on an efficient registration of the state of the roads. The Norwegian Public Roads Administration, Eastern Region, has developed a simplified registration method to capture the need for preventive measures to counteract single vehicle road accidents. The method will be further developed with a view to distributing it for use throughout the country.

Follow-up measures

The Norwegian Public Roads Administration will develop and implement a registration method to capture the need for measures designed to prevent serious off-the-road accidents.

Crash barriers



An in-depth Swedish study of fatal accidents (2011)¹³ reveals that motorcyclists are over-represented in accidents involving crash barriers. The Swedish Traffic Administration writes that for motorcyclists, as opposed to car drivers and passengers, crash barriers on the edge of the road often represent a greater hazard than what they are designed to protect against. When a crash barrier is used, the NPRA should choose the type of crash barrier that is the least dangerous for motorcyclists, given that the facility's lifetime and utility for all traffic groups is taken into account.

The Norwegian analysis of fatal motorcycle accidents 2005-2009¹⁴ reveals that as many as 34 motorcyclists were killed in collisions with objects inside the safety zone. Seventeen of these died in collisions with an unprotected guardrail post. Therefore, on roads with heavy motorcycle traffic, the NPRA should equip guardrails located on dangerous outer curves with motorcycle-friendly sub-rails. This should be done in accordance with the criteria in NPRA Manual N101 relating to guardrails and roadside areas, and according to a prioritized escalated plan. Guardrails with rigid and sharp-edged poles and/or projections are significantly more hazardous than rails with soft, rounded poles and smooth surfaces.

13: Trafikverket 2011: Olycksutveckling och djupstudier av dödsolyckor på motorcykel och moped [Accident development and in-depth studies of fatal accidents involving motorcycles and mopeds] (www.trafikverket.se)

14 Norwegian Public Roads Administration 2011. Temaanalyse. Dødsulykker på motorsykkel [Fatal motorcycle accidents] 2005-2009. VD report no. 45.

When guard rails are to be set up using pole supports, round plastic poles should be used whenever possible, taking into account all traffic groups and circumstances.

Follow-up measures

The Norwegian Public Roads Administration will work to equip guardrails in hazardous outer curves with sub-rails in accordance with the criteria in NPRA Manual N101.

Prevention of road hazards

Since 1995, the NPRA and the NMCU have collaborated constructively on registering reported road hazards (electronic road hazard form) and ensuring reporting and rapid action on the part of the NPRA to remedy road hazards. In order to prevent serious accidents, it is crucial that the Norwegian Public Roads Administration identifies road hazards as early as possible. In addition to NPRA safety checks and audits of the road network, the motorcyclists' own reports on road hazards is very helpful in ensuring the quickest possible response time for remedying the hazards. The collaboration in the use of the electronic road hazard form will be maintained and continued. The NMCU and the Norwegian Public Roads Administration will cooperate on making as many motorcyclists as possible aware of this measure.

Follow-up measures

The Norwegian Public Roads Administration and the NMCU will maintain and continue cooperation on reporting road hazards.

The Norwegian Public Road Administration's manual relating to motorcycle safety

NPRA Manual V621 relating to MC safety was issued in 2004 and was updated in 2007. The handbook is intended to be a guide and reference source for everyone who works in the areas of planning, construction, operation and maintenance of roads and traffic systems. These include resource departments, consultants, planning and regulations sections, contracting builders and roads sections, traffic safety auditors and contractors who perform construction and maintenance work on roads and traffic systems. Those who do not drive or have not driven motorcycles or mopeds themselves have a limited opportunity to understand how road conditions affect safety in relation to these vehicles, and for these people, the manual will serve as an aid in choosing proper solutions.

New knowledge about motorcycle safety that emerges through defined projects on the "Vision Zero roads for motorcycles", other projects or research will be included in revisions of the manual. An updated Manual V621 will be a quality assurance that provisions are made to ensure motorcyclists' traffic safety during the process of developing and revising other relevant manuals and road norms.

Follow-up measures

During the National Transport Plan period 2014-2017, the Norwegian Public Roads Administration will revise Manual V621 relating to motorcycle safety and include new knowledge from defined projects on the "Vision Zero roads for motorcycles", other projects and research.

Special signposting for motorcycles

In 2008, the NMCU joined the Norwegian Public Roads Administration in a process to improve safety for motorcyclists in conjunction with roadwork. A first step in this effort resulted in 2012 in new and improved routines for signposting and road clean-up after work that leaves loose gravel on the road surface. One of the measures involves posting the stretches of road with signs saying "112 gravel spray", "804 Area" and "807.7 Motorcycle and moped", all on a yellowish-green background. These routines are included in Manual N301 Work on Roads. Special signposting for motorcyclists is a measure recommended in the NPRAs Manual on MC Safety. The NPRAs and the NMCU intend to identify other factors that may be a hazard to motorcycle and moped riders, and they will assess whether the recommendation in Manual V621 should be expanded to include factors in addition to roadwork.



Motorcycles and ATC

Automatic Traffic Control (ATC) does not currently measure the speed of motorcycles and mopeds. The reason for this is that it is the driver of a vehicle, not the owner, who is responsible for its speed at any given place. The law currently requires that vehicle operators and the vehicle registration number must be identified. It is impossible to identify drivers wearing helmets when pictures are taken, and motorcycles and mopeds are not equipped with front registration plates. ATC is an efficient and accepted method of reducing the risk of accidents on heavily trafficked stretches of road. As in other vehicle categories, high speed is a significant factor in serious motorcycle accidents. Because of the difficulties involved with ATC, the police must instead focus on manual control of motorcycles.

Motorcycles and mopeds in buslanes

Motorcycles and mopeds today are exempted from the rule prohibiting use of buslanes. The Ministry's rationale for the exemption is that it is safer for Powered Two Wheelers to use buslanes than filter through slower traffic queues in the ordinary lanes. Accident statistics from Oslo show that there are few serious accidents involving motorcycles and mopeds

on the traffic arteries entering the city where there are buslanes. The positive effect is the important information that should be taken into account when assessing new solutions for buslanes.



2.3 Measures targeting vehicles

Technical development

The technical quality of motorcycles has improved greatly during the past ten years. Improved tyres, suspension components, brakes and lights have continually made motorcycles safer. These things, along with the fact that most Norwegian motorcyclists are very attentive to technical maintenance, add up to technical failures seldom being the cause of motorcycle accidents.

Technical developments provide new possibilities for improved safety for motorcyclists. Blocking-free (ABS) brakes are an effective safety measure that has gradually become standard on new motorcycles. Moreover, many other safety systems that have been developed for cars can be transferred and applied to motorcycles. Eventually even more driver support systems will emerge that can become effective.

Motorcyclists support all technical development that can result in truly improved driving safety. In the immediate years to come, advanced braking systems such as ABS and combined braking systems (CBS) are the technologies that will be most important. In the longer term, anti-spin, better driving lights, better tyres, improved ergonomics and better information displays from instruments will be specific contributions to vehicle safety. The technical requirements placed on motorcycles by the authorities are currently mandated by the EU through the EEA Agreement. Requirements pertaining to lights, brakes and other safety equipment, exhaust and noise are regulated by EU legislation, which has been harmonized into Norwegian regulations. The EU regulations are in a continual process of development. The working groups and committee that develop the regulations

are good arenas in which to improve safety and the environmental properties of motorcycles. Therefore, it is important to stay abreast of and participate in these processes. The Norwegian Public Roads Administration participates in this work and will support development of regulations that enhance safety for motorcyclists.

Follow-up measures

The Norwegian Public Roads Administration will continue to participate in the EU's work to improve vehicle technology for motorcycles and will support the development of regulations that enhance safety.

New criteria for approval

The EU's preliminary regulation 168/2013 introduces new approval criteria for motorcycles and mopeds. These will enter into force in 2016. In addition to implementing new environment and safety requirements, the preliminary regulation distributes responsibility and mandates along all links in the sales chain for motorcycles and mopeds. This is intended to ensure that vehicles entailing special risks will not be sold.

The preliminary regulation introduces the requirement that motorcycles must have advanced braking systems. The latter include ABS for heavy and semi-heavy motorcycles and CBS or ABS for light motorcycles. In addition, stricter exhaust requirements are introduced, as well as mandatory listing of CO₂-emission figures.

Intelligent transport systems (ITS) for motorcycles and mopeds

Advanced driver support systems can help enhance safety for drivers of motorcycles and mopeds. These may include both intervention systems such as anti-spin/stability control, and informational systems. It is important to be aware of the fact that motorcycles have totally different dynamic properties than cars, and that systems that work well on cars do not necessarily function well on motorcycles. Nevertheless, there are many systems that are transferable and can provide better safety. The Norwegian Public Roads Administration will follow the development closely and support proliferation of systems that result in better traffic safety for motorcycles and mopeds.

Intelligent speed adaptation (ISA) is frequently cited as a tool for reducing the overall speed rate on Norwegian roads. Motorcycle manoeuvrability depends on throttle control, and it is the consensus of the motorcycle experts that it would be outrightly dangerous to equip two-wheeled vehicles with Intelligent Speed Adaptation that overrides the motorcyclists' manual control over throttle. If it is determined that motorcycles and mopeds cannot be included in ISA initiatives, this should not restrict the vehicle group from access to and use of all parts of the public roads network. Instead of external throttle control, motorcycles and mopeds should be equipped with the variant of ISA that is an informational system. The latter alerts the rider in the event that he/she exceeds the speed limit on the given stretch of road.

Follow-up measures

The Norwegian Public Roads Administration and NMCU will support the proliferation of rider-support systems that enhance traffic safety for motorcycles and mopeds.

Motorcycle visibility

In countries requiring daytime running lights, it may be difficult to distinguish motorcycles from other vehicles on the road. It may be reasonable, therefore, to initiate Norwegian or Nordic research to determine whether or not a different light configuration for motorcycles and mopeds would improve their visibility.

Electronic transponders that will be able to alert car drivers that there is a motorcycle in the immediate vicinity are currently being developed, and both the NPRA and the NMCU are positive to this type of measure.

Periodic Technical Inspection (PTI) for motorcycles and mopeds

In December 2013, the EU adopted the resolution that periodic technical inspection (PTI) of heavy motorcycles will be introduced effective 2022. However, the compromise between the Council of Ministers, the European Parliament and the European Commission states that the member states in the EEA are exempted from requiring periodic inspection of heavy motorcycles if, during the period 2017–2022, other road safety measures are implemented that have the same effect as PTI, for example, measures that are oriented towards changing rider behaviour (rider training, supplementary training, campaigns etc.).

The member states are free to stipulate the frequency and testing methods for inspections. Historical motorcycles, light motorcycles and mopeds are exempted from the scheme.

Tampered moped engines

It is illegal to tamper with moped engines. It is inadvisable to enhance the engine output because it frequently results in the moped reaching a top speeds that is far faster than what the vehicle was designed for. Besides, most moped riders lack the necessary training and expertise to handle the vehicle at such high speeds.

Sanctions against engine alteration have up until the present time been aimed at young moped owner. However, it is a known fact that engine alterations are also performed, with parents' permission, by authorized workshops. Therefore, it is desirable to make adults more aware of their responsibility in this regard. The person(s) who perform, or are instrumental in performing, the engine alterations are the ones who should be the targets of sanctions. After mopeds were defined in the motorcycle workshop category, one possible sanction is that the workshop loses its authorization.

Among the consequences entailed by riding a moped with an altered engine is the possibility that one will not receive full insurance compensation in the event of an accident, or

no compensation at all. Both the National Motorcycle Council and the county MC-Forums should develop an effective communication strategy to make young riders aware of the potential consequences of illegally altering moped engines.

3. Motorcycles and mopeds as transport alternatives



Increased use of use of cars has led to environmental and congestion problems in urban areas. It is therefore important to develop measures that motivate the population to change the transportation pattern from private vehicles over to mass public transport, bicycles and walking, cf. the Norwegian National Transport Plan 2014-2023. Nevertheless, motorcycles and mopeds are additional alternatives to cars. They require little space and cause fewer traffic queues and less air pollution.

Some people use motorcycles and mopeds as a transport alternative in areas where there is insufficient public transport. It may be attractive to use Powered Two Wheelers commuting to and from work, as one is given the opportunity to use buslanes and is exempt from toll going in to the major cities. In rural areas, motorcycles and mopeds may be a suitable means of transportation for young people going to and from school and leisure activities.

The traffic scenario in cities and urban areas is complicated, and good interaction is the key to ensuring safety. Interaction is particularly important for vulnerable road user groups such as motorcyclists, moped riders and bicycle riders. The needs of different road user groups should be publicized through, for example, information campaigns.

The design of physical traffic environments is also very important for safety, primarily through well-reasoned designs that provide predictable driving conditions for all road users. There are reasons to believe that, for example, the decision to allow motorcyclists and moped riders to use buslanes has resulted in increased safety for this road user group.

Accidents involving motorcycles and mopeds are not especially linked with cities and urban areas. If traffic continues to increase, it may well be that motorcycles and mopeds are the vehicle category that will represent the bulk of the growth in road traffic. However, Powered Two Wheelers entail a safety issues that make it all the more important to follow the development carefully, so that the need for new road safety measures can be assessed on a continual basis.

4. Strategy follow-up

The strategy follows the plan period of the National Transport Plan, and the objective is to update the strategy every four years.

The measures of the NPRA are followed up through the Administration's running activities and through follow-up of the National Plan of Action for Road Traffic Safety 2014–2017, the road user and vehicle department's plan of measures and the NPRA's Action Programme for 2017–2017 (2023). Financial coverage must be secured in the coming budgets. The NMCU follows up its measures through its own work, own projects and own budget.

Enclosure 1

Follow-up measures		
	2.1 Road user-oriented measures	Anchoring
1	The Norwegian Public Roads Administration, in cooperation with other actors, will work to develop the rider training programme, rider instructor training, the riding test and examiners' training programme.	National Plan of Action for Road Traffic Safety Chap. 5 3.
2	The NMCU will establish its own website for motorcycle competence, including appurtenant applications for SMART telephones.	National Plan of Action for Road Traffic Safety Chap. 12.12
3	The Norwegian Public Roads Administration will make provisions for conducting an annual traffic safety day for motorcyclists in each region, preferably hosted by the county MC-Forums.	National Plan of Action for Road Traffic Safety Chap. 5 6.
4	The Norwegian Public Roads Administration and the NMCU will work to strengthen voluntary post licence training through additional, inexpensive, low-threshold courses.	National Plan of Action for Road Traffic Safety Chap. 5.6 and 12.12
5	The Norwegian Public Roads Administration will initiate the establishment of road safety teams including motorcycle experts who can be used in awareness-raising and attitude-building work with riders of light motorcycles and mopeds.	National Plan of Action for Road Traffic Safety Chap. 5 6.
6	The Norwegian Public Roads Administration will examine the negative and positive consequences of raising the age threshold for taking a licence to ride light motorcycles from 16 to 18 years of age.	National Plan of Action for Road Traffic Safety

7	NMCU and other motorcycle representatives will work to channel extreme behaviour away from public roads and onto closed circuits.	NMCU's TS strategy 2013--2023
8	MCU and other motorcycle representatives will encourage motorcyclists to "choose the right time and right place" for practising riding techniques.	NMCU's TS strategy 2013--2023
9	The NMCU, in collaboration with other actors, will continue to organize the SEE US campaign each year.	National Plan of Action for Road Traffic Safety Chap. 12:12
10	When the curricula for Category B are revised, the Norwegian Public Roads Administration will emphasize teaching relating to being on the watch for, and spotting motorcyclists and moped riders.	Agreement on traffic safety between NPRA and NMCU
11	The NMCU, in collaboration with other actors, will work to make dealers aware of how important it is that the helmets they sell fit the customer's head.	NMCU's TS strategy 2013--2023
12	The Norwegian Public Roads Administration and the NMCU will, through rider training and the safety dialogue within the motorcycle community, work to make motorcyclists aware of the lifetime of a helmet, a proper fit and fastening devices.	Agreement on traffic safety between NPRA and NMCU
13	The Norwegian Public Roads Administration and the NMCU will continue to encourage motorcyclists and moped riders to use riding gear with high-visibility colours.	Agreement on traffic safety between NPRA and NMCU
2.2 Measures on the roads		Anchoring
14	The Norwegian Public Roads Administration and the NMCU will work to ensure that motorcycles and mopeds are integrated to a greater extent in local and national transport plans.	Summary, workshop at Lillehammer ITF/OECD/JTRC/TS6(2008)1
15	The Norwegian Public Roads Administration will develop and implement a registration method to capture the need for measures designed to prevent serious single vehicle accidents.	National Plan of Action for Road Traffic Safety Chap. 8.2.2
16	The Norwegian Public Roads Administration will work to establish a "Vision-Zero stretch of road for motorcycles" in each region and in line with the Agreement on road safety between NMCU and the Norwegian Public Roads Administration.	Agreement on traffic safety between NPRA and NMCU
17	The Norwegian Public Roads Administration will work to equip guardrails in hazardous outer curves with sub-rails in accordance with the criteria in NPRA Manual N101.	Manual N101 Road-guard rails and road-side areas
18	The Norwegian Public Roads Administration and the NMCU will maintain and continue cooperation on reporting road hazards.	National Plan of Action for Road Traffic Safety Chap. 12.12

19	The Norwegian Public Roads Administration will revise Manual V621 relating to MC safety and include new knowledge from defined projects on the "Vision Zero stretches of road for motorcycles", other projects and research.	National Plan of Action for Road Traffic Safety Chap. 5 6.
	2.3 Vehicle measures	Anchoring
20	The Norwegian Public Roads Administration will continue to participate in the EU's work to improve vehicle technology for motorcycles and will support the development of regulations that enhance safety.	National Plan of Action for Road Traffic Safety Chap. 7
21	The Norwegian Public Roads Administration and NMCU will support the proliferation of rider-support systems that enhance road safety for motorcycles and mopeds.	National Plan of Action for Road Traffic Safety Chap. 7



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