



## Road safety for motorcyclists

### Nordic position paper



## Nordic Motorcycle Council NMR

The Nordic Motorcycle Council, NMR, is a coordinating body for the Nordic national motorcycle organizations that organize road riding motorcyclists. NMR was founded in the mid-1970s. The Council is responsible for common positions in Nordic issues and aims to increase understanding of the special problems and needs of motorcyclists in the Nordic region. NMR is also promoting contact between the Nordic motorcyclists and stimulating exchange of experience. NMR has 150 000 members in seven organizations and are representing 850 000 motorcyclists in Scandinavia. All Nordic motorcycle organisations are also members of FEMA.

### Members of NMR's are:

BLS Sniglar, Iceland	<a href="http://www.sniglar.is">www.sniglar.is</a>
Danske MotorCyklister, Denmark	<a href="http://www.dmc-org.dk">www.dmc-org.dk</a>
MC Touring Club (MCTC), Denmark	<a href="http://www.mctouringclub.dk">www.mctouringclub.dk</a>
Norsk Motorcykel Union (NMCU), Norway	<a href="http://www.nmcu.org">www.nmcu.org</a>
Moottoripyöräkerho 69 (MP 69), Finland	<a href="http://www.mp69.fi">www.mp69.fi</a>
Suomen Motoristit r.y. (SMOTO), Finland	<a href="http://www.smoto.fi">www.smoto.fi</a>
Sveriges MotorCyklister (SMC), Sweden	<a href="http://www.svmc.se">www.svmc.se</a>

## Introduction

Regardless of all road safety initiative, by the authorities or by the motorcyclists themselves, riding a motorcycle will never be entirely risk-free - a fact that was confirmed already in 1972 by the U.S. Supreme court. "Security is not synonymous with risk-free." Most motorcyclists are aware of the fact that they are vulnerable road users and that it requires special skills to ride a motorcycle, as well as a focused and conscious riding style.

If everyone involved in the road traffic does everything right; the motorcyclist, other road users and the road manager, the number of killed and seriously injured motorcyclists in the Nordic countries can meet EU targets 2020.

It is often said that there are five, ten or twenty times more dangerous to ride a motorcycle compared to drive a car. In one aspect, this is true, because the rider is exposed to a much greater risk of being killed or injured when an accident occurs. A minor crash between two cars usually causes only material damage, while a similar collision between a car and a motorcycle more often results in an injured rider. Motorcyclists are a vulnerable road user group and therefore have a higher risk of injury. However, insurance statistics shows that motorcyclists are *not* involved in more traffic incidents than cars. In other words: Motorcyclists are not involved in more accidents than motorists, but riders do have a higher risk of injuries when an accident happens.

Nordic motorcyclists buy protective equipment, not required by law, worth several million Euros each year - a fact showing that motorcyclists are safety conscious. In addition, all Nordic motorcycle organizations organize voluntary advanced training and first aid courses that gather thousands of motorcyclists - at their own expense. These are additional facts showing that motorcyclists want to improve their own safety. The safety dialogue in the motorcycling community is an important, but often overlooked instrument in communicating information on safety and creating a positive attitude towards road safety. In the Nordic countries, motorcyclists and motorcycle organizations have reduced the risk of accidents dramatically over the past 20 years, without significant efforts by the authorities.



*Most motorcycle riders in Scandinavia owns personal protective equipment, not required by law. worth several hundreds of Euros*

## Road environment

Design, maintenance and construction of roads are generally directed toward the needs of persons travelling in cars, while the needs of motorcyclists are seldom taken into account. Road design and lack of maintenance contribute to motorcycle accidents, especially single-vehicle accidents.

NMR thinks some of the necessary improvements will take time to implement because they require both research and investment. Other improvements, however, can be easily performed by a change of focus and an increased level of awareness with road authorities and contractors.

Therefore, road standards be reviewed and developed to also meet the needs of motorcyclists by encouraging motorcycle-friendly design, construction and maintenance. As a result, road construction and maintenance staff should be trained in circumstances that are a danger to motorcyclists. Above all, there is a need for regular quality controls, making sure motorcyclists' needs are guaranteed.

## Operation and maintenance

Sufficient and predictable friction is important for a motorcyclist, riding a vehicle with only two wheels. Changes of the road surface which leads to a friction decrease may create problems for a motorcycle rider while barely being noticed by a car driver. Common road deficiencies like loose gravel on paved roads, diesel and oil spills, slippery road markings and manhole covers, bleeding asphalt repairs, longitudinal grooves, cracks and holes are each year causing a large number of motorcycle accidents. Swedish insurance statistics show that gravel is a contributing factor in ten percent of all motorcycle accidents.

There are defined rules and guidelines in all Nordic countries that clearly indicate how these problems should be tackled. However, the responsible contractors do not always follow the regulations, leading to motorcyclists being killed and injured.

To increase compliance, addressing acute shortages and warn motorcyclists of the specific problem, the NMR proposes:

**1. Road patrol:** Establish a control function, «road patrol», which inspects the state road network every weekday throughout the year. Responsible for this should be the Public Roads Administration in each country. The road patrol should consist of two people in a pickup truck in each county. The people should have good knowledge of operation and maintenance. They should have knowledge of deficiencies in the road environment that can lead to increased risk of injury for different road users and the competence to fix problems immediately and the power to request action by the contractor and road managers. Each pickup truck should have the equipment that makes it possible to do emergency repairs, perform friction measurements, put up warning signs and the like. The road patrol should cover all paved roads in their county on a schedule, and also set out by public requests and by serious accidents to investigate possible problems on the road. At the same time, the road patrol should check how the contractors fulfil their contract with the Public Roads Administration.

**2. Special signposting for motorcyclists:** Conditions on the roads causing a danger to motorcyclists are rarely signposted, because they do not pose a danger to the majority of other road users. Special signposting, specifically warning motorcyclists of hazards is an easy way to increase awareness of motorcyclists. NMR is convinced that a motorcyclist who sees such special signposting immediately slows down, becomes more focused and gets prepared for possible emergency braking. Warning signs for motorcyclists would be a cost-effective road safety measure.



## Crash barriers

Motorcyclists are over-represented in crash barrier accidents in relation to other road users. Crash barriers are the most common cause of fatal crash violence in single vehicle motorcycle accidents.

Before a crash barrier is installed the question if a crash barrier is needed need to be answered. If a crash barrier is installed, the distance from the roadway is of great importance. The closer it is installed to the roadway, the higher is the risk of injury to a motorcyclist riding/sliding into it.

Installing crash barriers costs large amounts of money for road authorities, which is the reason why barriers with low purchasing costs are preferred. More recently, however, the lifetime cost has been highlighted since the repair costs often exceed the installation cost. There is also a lack of knowledge about the society's total cost for those who are killed and seriously injured in crash barrier accidents. A motorcyclist being killed or seriously injured in a crash barrier accident means no cost for the road owner, but will cost the society a lot. At the same time we know that motorcyclists are overrepresented in crash barrier accidents. It is therefore probably economically viable to always choose the most motorcycle friendly crash barrier from the very beginning.

### *Median crash barriers*

NMR supports the installation of median barriers on roads where it is appropriate. NMR requires that the road owner always chooses the type of crash barrier which is the least dangerous for motorcyclists. When mounting median barriers the distance to the road is of great importance.

In a study from VTI 2011, Jan Wenäll says: «The smoother the barrier is, the greater the chance is that the outcome of an incident is just an incident, and not a fatality». The best option from a motorcyclist's perspective is a smooth crash barrier without unprotected poles. With the support of a study of DEKRA / Monash University, NMR believes that of all existing crash barrier types, cable barriers have the highest risk of injuring motorcyclists in a collision. Better options from a motorcycle point of view are barriers with rounded poles and rails, such as for example Z-ellipse or Monorail.

### *Crash barriers at road sides*

A crash barrier means almost always an increased risk of injury to a motorcyclist. Before a new crash barrier is installed one should always ask if a barrier is really needed. Forgiving roadsides are always preferable for a motorcyclist who for some reason is riding off the road. Most single vehicle motorcycle crashes occur in outer curves when the motorcyclist loses control, falls over and slides into the barrier post. At the same time, crash barriers are the most common cause of fatal crash violence in single-vehicle accidents. In such accidents, a secondary rail protecting against the poles, would substantially reduce the risk of injuries to a motorcyclist.



*An accident prone highway exit in Ljungarum, Sweden before the crash barrier was changed in 2012*



*The same exit with new guard rail and motorcycle protection system installed*

To reduce the number of killed and seriously injured motorcyclists in crash barrier accidents, NMR proposes:

**1. Motorcyclists must be included in the European crash barrier standard:** A process was initiated by CEN and ended in a technical specification, EN 1317-8. NMR encourages all Nordic countries to work for including motorcyclists in the European crash barrier standard. Waiting for a European standard, NMR suggests that the Nordic road authorities choose crash barriers which pose the least hazard to motorcyclists (see above).

**2. Motorcycle Protection System (MPS):** NMR realizes that it is impossible to provide every crash barrier in the Nordic region with a motorcycle protection system. However, there are Norwegian guidelines pointing out where motorcycle protection should be used. These guidelines are based on the basic criteria of collisions described in Vision Zero. NMR believes that the guidelines could be adopted in all the Nordic countries. Dangerous outer curves with decreasing radius on roads with high speed should be the top priority road sections to be fitted with MPS.

**3. The Trans-European Road Network:** Directive 2008/96/EC on road infrastructure safety is very clear and states that motorcyclists are vulnerable road users that requires special consideration in the planning and detailed design of new roads. The directive covers the trans-European roads, the so-called TEN roads. Predictability is the most important factor, because these roads that cross the Nordic countries are high-traffic and high speed roads. NMR requests that the Nordic road authorities have motorcyclists in mind when choosing crash barriers on TEN roads and that they agree at a Nordic level of a uniform design for these roads.

**4. Socio- economically viable:** NMR claims that it is profitable for the society to choose crash barriers with a minimum risk of injury to a motorcyclist, although the initial costs may be higher. When selecting crash barriers, emphasis should not only be put on investment and maintenance costs, but also on the social costs of injuries and death.

## Traffic management

Motorcycles and mopeds class I and II are vehicles which unfortunately are often forgotten. The OECD conference in Lillehammer 2008 clarified that it is a fundamental requirement to the safety of motorcyclists and moped riders that they are included in all transport and infrastructure policies. Motorcycles and scooters are reasonably priced commute vehicles, being part of the solution to congestion and environmental problems in cities.

Thus, NMR proposes:

### 1. Motorcycles in bus lanes:

Motorcycles and mopeds are allowed in bus lanes by law in Norway and in some bus lanes in Stockholm. The reasons behind this are increased safety and accessibility for powered two-wheelers helping to reduce congestion. NMR is of the opinion that motorcycles and mopeds should be allowed to use bus lanes in all Nordic countries and calls on Nordic road authorities to allow motorcycles and mopeds on bus lanes, by law.

### 2. ISA (Intelligent Speed Adaptation):

A motorcyclist riding a two-wheeled vehicle is dependent on the throttle control to steer and balance the vehicle. Therefore, NMR demands that motorcycles are exempted from external electronic speed adaptation.



**3. Moped class I in bicycle lanes:** Mopeds Class I shall be ridden on the road, not in the pedestrian and bicycle lane. This is however a problem on roads where there is no road shoulder, as is the fact on so-called 2 + 1 roads. Moped class I may only be ridden at 45 km/h and thus becomes a stumbling

block that everyone wants to overtake, regardless of whether there is room or not. NMR believes that where there is a parallel bicycle lane to this type of road, the moped class I should be allowed to use it. It can be solved by an additional sign on the GCM-road.

## **Extreme behaviour on motorcycle**

Analyses of fatal accidents in Sweden and Norway shows that one third of all those who died in motorcycle accidents did it as a consequence of his own extreme behaviour. The same correlation was established in a Danish survey of motorcycle accidents. With extreme behaviour NMR means: Riding without a valid license, riding under the influence of alcohol and /or drugs, dangerously aggressive riding style and at speeds much over the limit for license suspension.

The Norwegian analysis shows that 80% of the riders dying as a result of their own extreme behaviour were registered by the police for offences like violence, drug trafficking and theft. The Swedish in-depth studies show that more than a quarter of those killed never had a motorcycle license and that two-thirds of this group did not own the motorcycle they were riding at the time of the accident. More than a fifth of those who died were under the influence of alcohol and/or drugs in Norway and Sweden.

For persons who neither have a motorcycle license, nor own a motorcycle, traditional road safety measures will not work. It is only the police who have the power and the means to take action against this group of non-motorcyclists. It should, however, be emphasized that many of those who died because of extreme behaviour belonged to the established motorcycling community.

NMR distances itself from extreme behaviour and road rage. Extreme behaviour gives the entire motorcycling community an undeserved bad reputation and leads to authorities and policymakers proposing restrictions of various kinds. At the same time, NMR understands that motorcyclists need to live out their joy of life when riding a motorcycle. This must however be done in areas where it is legal and appropriate, without danger of harming themselves or others. Therefore NMR proposes:

**1. Measures by the police:** Society must focus on those with "extreme behaviour" and use the measures it considers to be most effective, for example licence- and drunk-driving controls. The police should also implement measures aimed directly at people who show extreme behaviour in other areas of life. There are persons who in certain phases of their life neither should hold a license, nor own a vehicle - for their own safety and for the safety of others. They should of course get their full rights back when they again live an ordered life.

**2. Alternatives to roadriding:** The high risk takers should be motivated to practise their extreme "joie de vivre" in closed circuit riding, instead of on public roads, where they often violate Highway Codes and put their own and other people's safety in danger. Thus, participation in track days should be easier and less expensive.

**3. Choose time and place:** Through campaigns and information to motorcyclists, NMR wants to influence high risk takers to choose the right time and place for test the limits of their motorcycle. Testing the top speed of a motorcycle can only be done on those stretches of the Germany Autobahn that allows free speed, or in closed circuits. If one wants to ride extremely fast in curves, it can only be done closed circuit track days or through participating in motorcycle sport. If one wants to experience the joy of mastering cornering technique on public roads, one should choose a curvy, isolated stretch of road that is so demanding that one can never even come close to the existing speed limit. Done the right way a ride like this will neither violate the Highway Code or the interaction with other road users.

## **Licensing and initial rider training**

Riding a motorcycle with an acceptable level of safety requires skills, knowledge, a focused attitude and a conscious riding style. No one should ride a motorcycle without having undertaken structured, relevant and cost-effective training. However, an overly advanced and very expensive rider training does not necessarily give the best road safety outcome.

The licence training is always influenced by the existing test. Thus, it is inevitable that the riding test is reflected in the quality of the training. NMR believes that this leads to candidates learning the skills needed to pass the riding test, rather than the skills and knowledge needed to survive on the road.

The Nordic countries have always had a high quality driver/rider training compared to many other countries in the EU. The EU legislation has brought unnecessary high age limits and other extensive external condition requirements. This does not give better rider training, it only makes it more difficult and more expensive to obtain a licence. The extensive EU requirements are now reflected in the dropping number of license holders throughout the Nordic region. Meanwhile, NMR is very aware of the increasing numbers of killed motorcyclists without an A-license.

Therefore NMR proposes:

**1. A common Nordic syllabus:** Nordic authorities should work together to develop a common curriculum for initial rider training in the Nordic countries. The initial rider training should teach an automated and effective riding technique and thorough riding strategies.

**2. The 4th EU driving license directive:** To stop the negative trend of fewer license holders, NMR encourages the Nordic governments to unite in working for a new direction of the A licence requirements in the context of a possible 4th Driving License Directive. NMR urges the Nordic governments to work actively within the EU to change the current unnecessary complicated stepped approach. NMR believes that motorcyclists that are trained and have passed a test for a motorcycle licence automatically can get access to a motorcycle with more effect, without need for a repetition of training and testing. NMR also wants the requirements for three different test vehicles to be abolished and that the direct access age of 24 years for the A license should be reversed back to 21 years. NMR wants the stepped license to start at 16 years in all Nordic countries. The restrictive and complicated license system for motorcycles may be one reason for the high proportion of fatal motorcycle accidents where the riders did not have a license.

## Conspicuity and awareness

Many motorcyclists are killed in collisions with cars in accidents where the car driver was not paying attention or did not observe the motorcyclist's right of way. Many more are injured in this type of accidents. Experienced motorcyclists often solve these situations by reducing speed and making themselves visible by sideways manoeuvres. This way experienced riders take responsibility, not only for own conduct, but also for the errors made by car drivers.

Studies from TOI/Norway and the Dutch research institute, SWOV, show that the most effective way of increasing awareness are regular reminders to car drivers about the existence of two-wheelers, for example through campaigns.

NMR is not opposed to the use of personal protective equipment with reflective details. However, we know that this type of clothing can give the motorcycle rider a false sense of safety. The SWOV report also shows that it is the contrast against the background that is most important for visibility. In some situations this means that you are in fact more visible with black clothing.

Also, the physical road environment at intersections and roundabouts are sometimes designed with obstacles that impair visibility and thus the awareness of other road users, especially motorcycles and mopeds. It can be plantings, or signs and poles or artistic installations in roundabouts.

Also, modern cars are often equipped with ever wider A-pillars which may increase the safety of the car occupants, but at the same time deteriorating the visibility, creating dangerous situations at intersections and zebra crossings.

NMR proposes:

**1. Riding strategies:** Both motorcycling organizations and riding schools should continue to communicate to motorcyclists how to best position themselves in order to be seen and how to always be prepared to take responsibility for errors by other road users.

**2. Campaigns:** Motorcycling organizations should, in cooperation with other motor organizations and authorities, organize campaigns to remind motorists of the presence of motorcycles and mopeds.

**3. Awareness of motorcycles in B-licence training:** NMR requires that awareness of motorcycles and mopeds are included in the syllabus for B-licence training and testing.

**4. Research:** In light of the SWOV report, NMR requires that research is started to see if other light configurations on motorcycles and mopeds that can provide increased conspicuity.

**5. Visibility at intersections:** There is a potential for improvement in both design and maintenance to improve visibility at intersections and roundabouts. NMR believes that this issue can be resolved within the framework of road-design.

## Vehicle

The circulating park of motorcycles and mopeds has increased throughout the Nordic countries since the early 1990s. There are currently about 850 000 motorcycles and 750 000 mopeds in the five Nordic countries. The technical characteristics of motorcycles have improved significantly over the past decade. These improvements, together with the fact that motorcyclists carefully maintain their motorcycles, have led to very few accidents due to technical defects. However, there is always a potential for improvement.

To modify, or build your own motorcycle, is an important part of the motorcycling culture in the Nordic countries. It has created well-functioning systems in Finland and Sweden. Also Norway is on its way to establish a national approval regime. Notwithstanding the EC regulatory framework, national regulation is needed to protect the vehicle modification culture, while at the same time keeping control that approved bikes are roadworthy. In the Nordic countries the authorities and motorcycle organizations have agreed on a well functioning regulatory framework that respected by everyone.

Motorcycles are tested in roadworthiness testing in Sweden, but not in the rest of Scandinavia. No Nordic country has periodic inspection of mopeds. Motorcycles are the vehicle category in Sweden that has the lowest failure rate, in 2004 leading to longer inspection intervals. The longer intervals between inspections have not led to a higher failure rate.

Accident statistics from Finland, Denmark, Norway and Iceland clearly shows that lack of periodic inspections of motorcycles does not lead to more motorcycle accidents. A study by the Transport Economic Institute in Norway shows that inspection of cars provide better technical standard, but not less accidents. It is therefore no reason to, through an EU Regulation, to oblige the Nordic countries to introduce frequent periodic inspections of motorcycles for safety reasons.

NMR regards the introduction of periodic inspections for moped as an impossible administrative task. It would require registration of hundreds of thousands of scooters, mopeds and force the owners to ride unreasonably long distances, not intended for mopeds.

NMR's opinion:

**1. Safety equipment on motorcycles:** NMR welcomes any technological development leading to improved vehicle safety as long as it does not have significant effects on the purchase price and maintenance costs. In the coming years it is probably advanced braking systems (ABS / CBS), anti-spin, improved lights, better ergonomics and better information from instruments that can contribute to increased safety for motorcyclists.

**2. Quads:** NMR believes that quads should be treated as a separate vehicle category from motorcycles. By 2013 quads will not be allowed ridden with an A license. There are, apart from mandatory use of helmets, few similarities with a two-wheeled motorcycle.

**3. Continue of the Nordic building and modification culture:** NMR urges the Nordic governments and Public Roads Administrations to safeguard the building and modification culture in close cooperation with the user's organizations. NMR also asks the Nordic countries to monitor and protect the interests of the building and modification culture towards the EU institutions and see to it that we



can keep the national regulatory framework that enables the Nordic tradition of modified and amateur built motorcycles.

**4. Mandatory roadworthiness tests:** Periodic technical inspection of motorcycles and mopeds will not increase road safety. Therefore NMR urges the Nordic governments to reject the EU proposal requiring such inspections. NMR believe that every country in the EU / EEA should continue to choose if motorcycles and mopeds should be inspected and at what intervals.

## Request

Motorcyclists are vulnerable road users with special needs. Well conceived and motorcycle-friendly policies can save lives and reduce injuries. NMR calls for a common view on motorcycle safety by the Nordic authorities and that this common view is developed in cooperation with the Nordic motorcycling organizations.

Each organization within NMR is of course willing to discuss all matters related to motorcycle safety.

## Bibliography:

Publisher / author / Country	Name and year of publication
Haverikommisionen (DK) Statens Vegvesen (N)	Motorcykelulykker, Rapport nr 6 (2009) Temaanalyse, Dødsulykker på motorsykel 2005-2009, VD rapport 45 (2011)
Trafikverket (S)	Djupstudier av dödsolyckor på motorcykel 2005-2011 (2012)
Statens Vegvesen (N)	MC-sikkerhet – handbok 245 Utforming og drift av veg- og trafikksystemer (2007)
Trafikverket (S) SMC och NTF (S)	Säkrare vägar och gator för motorcyklister (2011) Undersökning om motorcyklisters beteende och inställning till trafiksäkerhet (2010)
NMCU och Trygg Trafikk (N) VTI, Jan Wenäll (S)	Motorcyklisters forhold til trafiksikkerhet (2011) Motorcyklister som kolliderar med vägräcken, VTI Notat 20-2011 (2011)
KTH, Hawzheen Karim (S)	Road Design for future maintenance- Life-cycle costs analyses for road side barriers (2011)
DEKRA/Monash University (D/AUS)	Motorcycle impacts to roadside barriers – real-world accident studies, crash tests and simulations carried out in Germany and Australia (2005)
SWOV (NL)	The roles of motorcyclists and car drivers in conspicuity-related motorcycle crashes, (2011)
TÖI, Alf Glad (N) Utrykningspolitiet (N)	Motorsyklers/mopeders synlighet (1999) Hvem fortjener politiets oppmerksomhet? En studie av dødsulykkene i trafikken i 2004 og 2005 (2009)

