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Joint Position Papers FEMA-FIM Europe





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Federation of European Motorcyclists' Associations



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Technology



Infrastructure



The rider



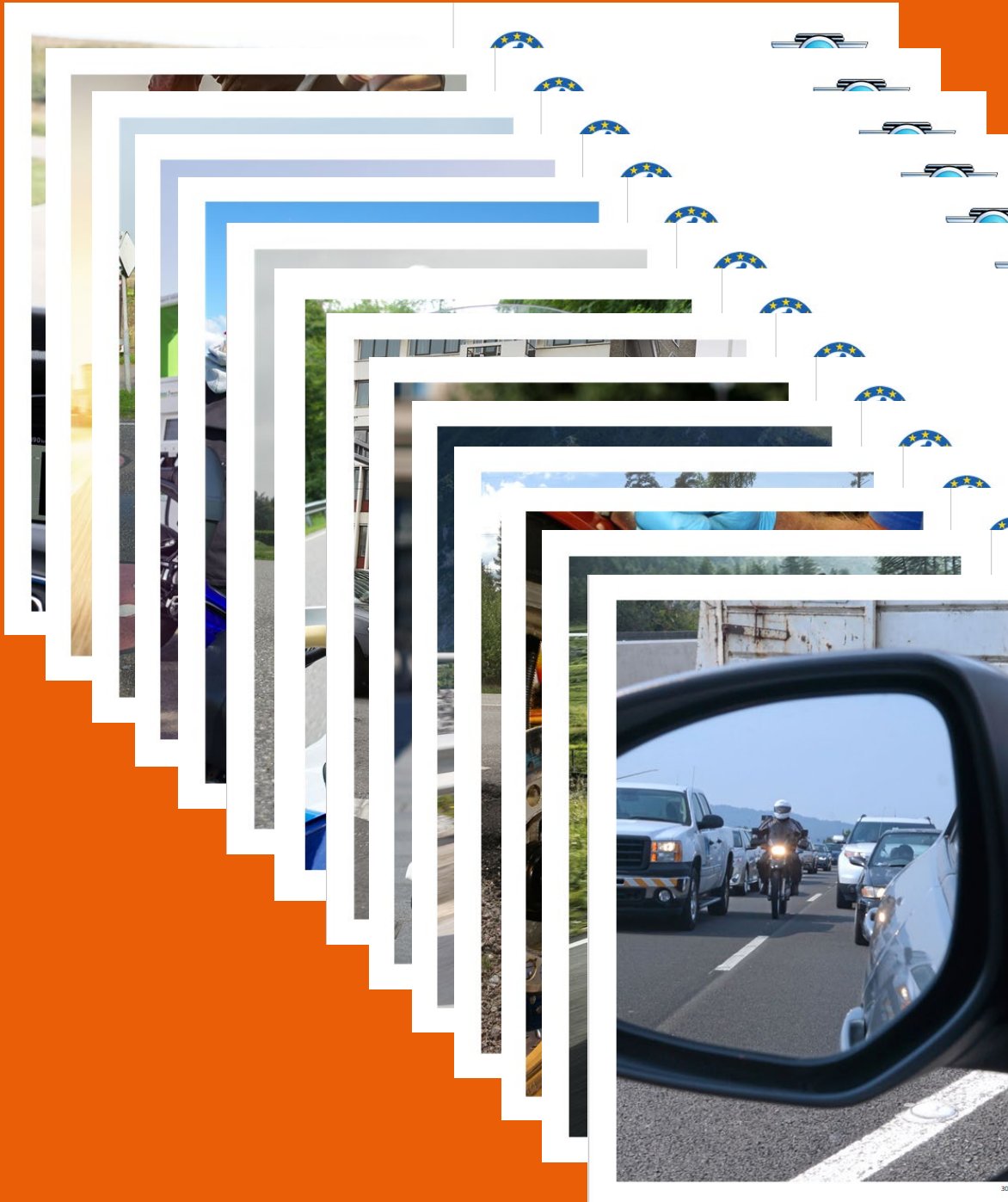
Mobility





14

joint position papers



Position paper:

POWERED TWO-WHEELERS SAFE SYSTEMS

January 2022

In general

Safe systems are an approach to road safety management, based on the principle that our lives and health should not be compromised by our need to travel. Powered two-wheeler (PTW) safe systems are especially aimed at the needs of motorcyclists. Road safety is a human right of all road users. In the Lillehammer ITF/OECD conference in 2008, and repeated in the Motorcycle Workshop 2021, it was clarified that it is a fundamental PTW safety requirement that PTWs should have a place in overall transport policy and infrastructure policy management. This still hasn't happened. PTW-riders are often excluded in guidelines for construction and maintenance. As a result, infrastructure and road furniture aren't developed including the needs of PTW-riders. PTW-riders have no protective cage like motorists, thus accident prevention measures are even more important than injury reduction measures. Next to infrastructural issues there is need for improved basic and advanced training for motorcyclists, since the basic and advanced rider training is still focused on technical skills and less on risk awareness. Another aspect that needs attention is the development of ITS (Intelligent Transport Systems) for cars that should consider PTWs better.

How PTW safe systems should be improved

- PTW-riders are road users with specific needs that must be taken into account in the Safe System Approach
- Accident prevention measures are even more important than injury reduction measures
- PTW-riders should be included in national guidelines for planning, constructing and maintaining roads and road infrastructure
- Improving safety for motorcyclists implies setting up a continuous dialogue and co-operation between the stakeholders, including PTW-riders, policy makers, researchers and PTW manufacturers
- All measures need to be founded on evidence-based scientific research into driver and rider behaviour, and before-and-after evaluations should be conducted
- Funding effective road safety activities
- Launching public awareness campaigns for drivers and riders
- Better training systems for riders with focus on risk awareness, risk avoidance and risk management
- Make PTWs safer by the use of appropriate and tested intelligent transport systems
- ITS developments for cars and trucks should always include PTW-riders and other road users
- C-ITS devices for other vehicles should always be developed keeping in mind that PTW often are not equipped with C-ITS devices.



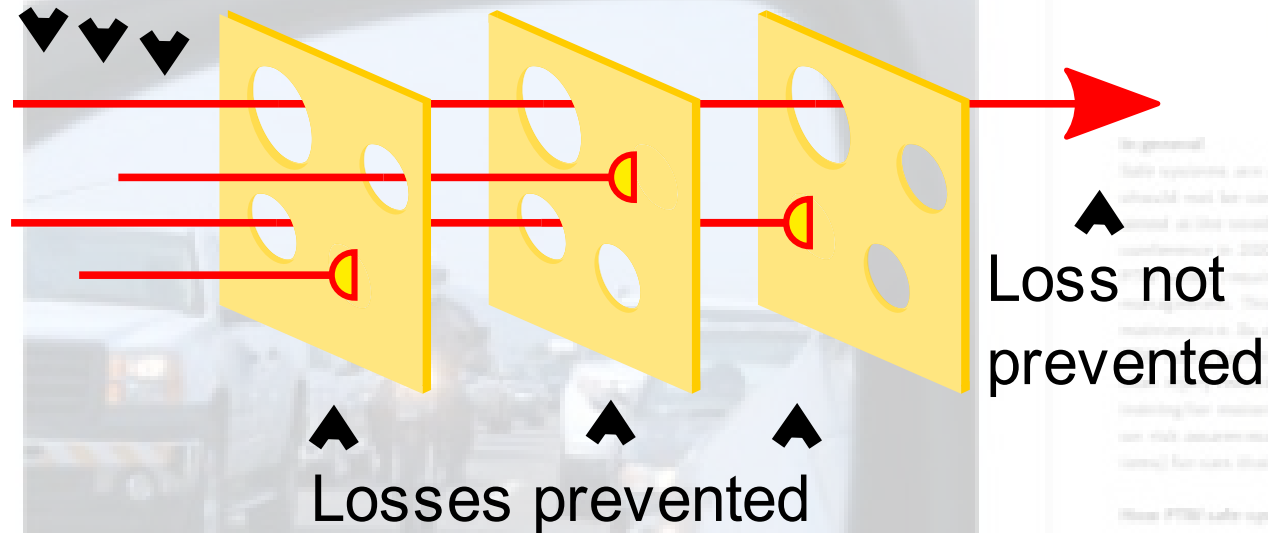
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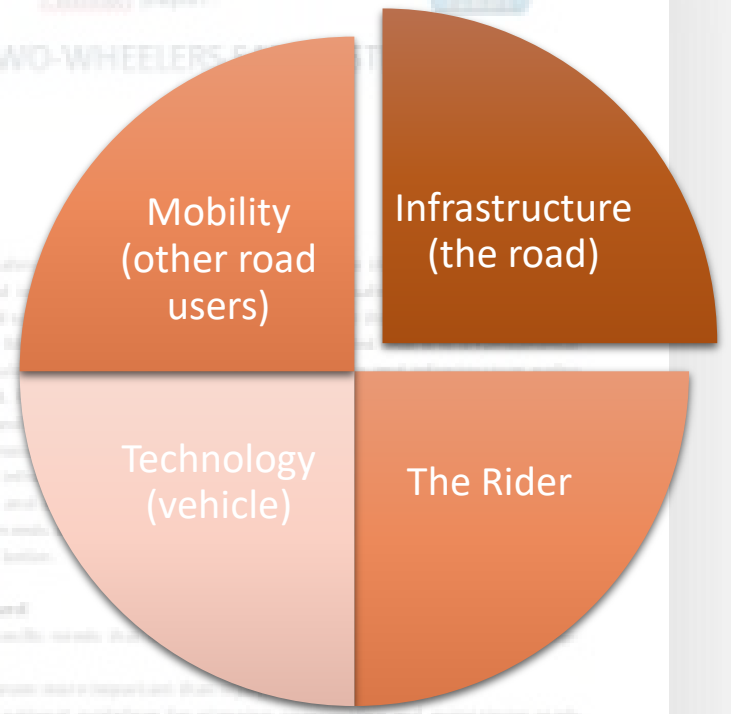


National
Motorcyclists
Council

Hazards



- Need to address PTWs in **policy**
- Less scope for **vehicle-based** policies
- **Prevention** is better than injury reduction
- **Infrastructure** doesn't address motorcycles
- Measures to address **other road users**
- Rider training should focus on **risk awareness** and management



FEMA **EM**

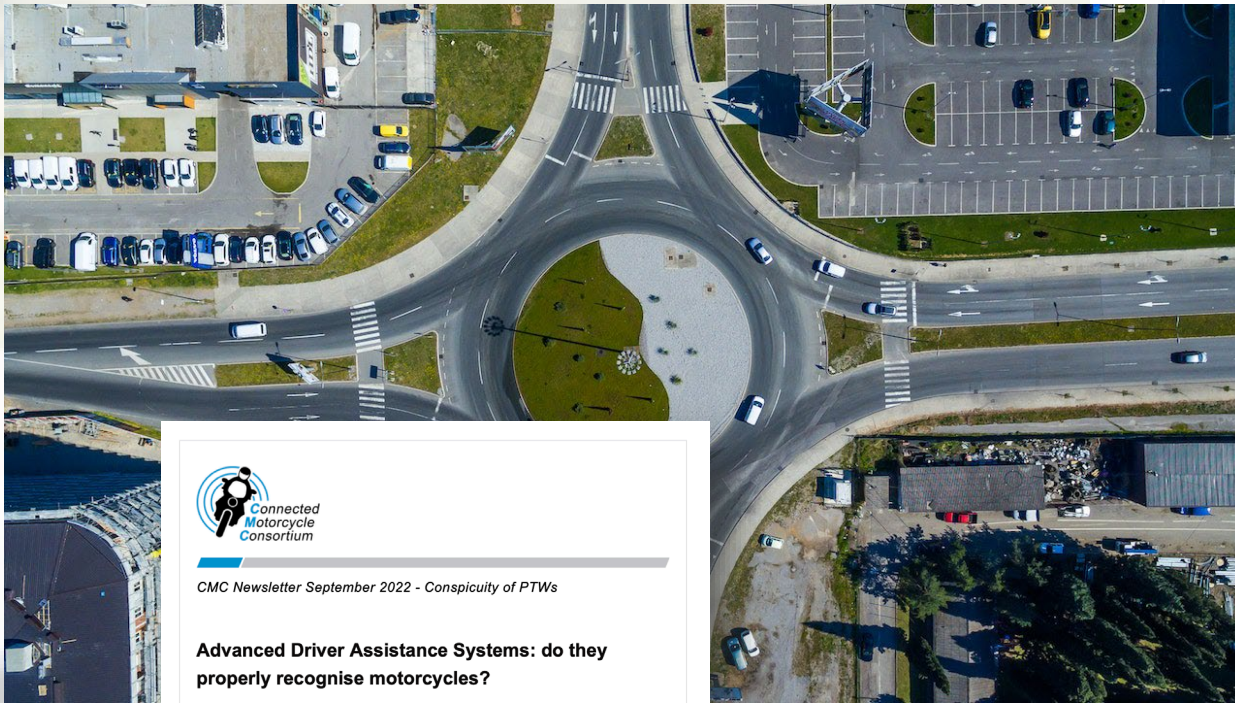
Executive Paper:
POWERED TWO-WHEELERS SAFETY SYSTEMS

January 2022

In general
Safe systems are an approach to road safety management, based on the principle that our lives and health should not be compromised by our need to travel. Powered two-wheeler (PTW) safe systems are especially aimed at the needs of motorcycles. Road safety is a human right of all road users. In the Lithuanian ITS/ECOC conference in 2020, and reported in the Motorcycle Workshop 2021, it was clarified that it is a fundamental PTW safety requirement that PTWs should have a place in overall transport policy and infrastructure policy management. This will have to happen as PTWs are often excluded in guidelines for construction and management. As a result, infrastructure and road features are not developed including the needs of PTW riders. PTW riders have no protective cage like the occupants, thus accident prevention measures are even more important than injury reduction measures. Next to infrastructural issues there is a need for improved basic and advanced training for motorcycles, since the basic and advanced rider training is still focused on technical skills and less on risk awareness. Another aspect that needs attention is the development of ITS (Intelligent Transport Systems) for cars that should consider PTWs better.

How PTW safe systems should be improved

- PTW riders are road users with specific needs that must be taken into account in the Safe System Approach.
- Accident prevention measures are even more important than injury reduction measures.
- PTW riders should be included in national guidelines for planning, constructing and maintaining roads and road infrastructure.
- Improving safety for motorcycles implies setting up a continuous dialogue and co-operation between the stakeholders, including PTW riders, policy makers, researchers and PTW manufacturers.
- All measures need to be founded on evidence-based scientific research into driver and rider behaviour, and before-and-after evaluations should be conducted.
- Funding effective road safety activities.
- Launching public awareness campaigns for drivers and riders.
- Better training systems for riders with focus on risk awareness, risk assessment and risk management.
- Make PTWs safer by the use of appropriate and tested intelligent transport systems.
- ITS developments for cars and trucks should always include PTW riders and other road users.
- ITS devices for other vehicles should always be developed keeping in mind that PTW riders are not equipped with ITS devices.



CMC Newsletter September 2022 - Conspicuity of PTWs

Advanced Driver Assistance Systems: do they properly recognise motorcycles?

Powered Two Wheelers (PTWs) are often not seen by other road users, or their speed and distance are misjudged. "Sorry mate, I did not see you" is a typical reaction in case of accidents. Advanced Driver Assistance Systems (ADAS) support passenger car drivers to avoid hazardous situations in many traffic scenarios and have a high potential to decrease the number of collision accidents with motorcycles.

These systems have strongly evolved in recent years, and as drivers become more comfortable with ADAS, they tend to rely more and more on this technology and become less attentive to the driving task. But do these systems warn properly in case of PTWs nearby?

Driven by this thesis and concerned by the potential perception failure of PTWs, the Connected Motorcycle Consortium conducted an in-depth study on PTW Conspicuity.



"Sorry mate, I did not see you"



Position paper:



ADVANCED DRIVER ASSISTANCE SYSTEMS (ADAS)

January 2022

- Benefits to ADAS for **visibility**
- Need to manage **transition**
- **Human-Machine Interface** critical
- PTWs are **different**
- **Retrofitting**

In general, Advanced Driver Assistance Systems (ADAS) cover a wide range of systems and applications and provide personal assistance to drivers. In this context we mean ADAS for cars. ADAS can draw attention to approaching traffic and stationary or slow-moving vehicles, signal road users in the driver's blind spot and provide prior knowledge of the traffic situation ahead. Some systems actively interfere by braking, by applying additional braking force or interlocking with the steering or speed of the vehicle. In a number of situations and in certain circumstances, ADAS can completely take over the task of the driver. ADAS can work autonomously or in connection with other vehicles (V2V) or with the infrastructure (V2I/V2V).

- Riders can benefit from ADAS by better visibility, especially in combination with V2V connectivity like developed by the Connected Motorcycle Consortium (CMC) of which FIM Europe and FEMA are supporters. ADAS devices can also prevent accidents where drivers are not aware of motorcyclists, especially in situations where a car is crossing the lane of oncoming traffic, or when a car driver's vision is obscured at crossings.
- In the transition period when many PTWs belong to a declining number of non-automated and non-connected vehicles, this can cause risks if ADAS devices in cars assume connectivity and digital visibility.
- ADAS can lead to an overflow of information, thus leading to distraction and diversion.

Conditions for ADAS to be safe and acceptable

- PTWs differ from other non-connected road users, therefore ADAS devices must be developed with always be tested with PTWs and must consider their specific characteristics.
- ADAS devices must be developed and tested with V2V connectivity.
- Optional retrofitting of devices, such as in the case of motorcycles, must be possible and allowed to enhance their conspicuity.



Position paper:

ADVANCED DRIVER ASSISTANCE SYSTEMS (ADAS)

January 2022



In general, Advanced Driver Assistance Systems (ADAS) cover a wide range of systems and applications and provide personal assistance to drivers. In this context we mean ADAS for cars. ADAS can draw attention to approaching traffic and stationary or slow-moving vehicles, signal road users in the driver's blind spot and provide prior knowledge of the traffic situation ahead. Some systems actively interfere by braking, by applying additional braking force or interlocking with the steering or speed of the vehicle. In a number of situations and in certain circumstances, ADAS can completely take over the task of the driver. ADAS can work autonomously or in connection with other vehicles (V2V) or with the infrastructure (V2I/V2V).

Effects of ADAS on powered two-wheelers (PTWs)

- Riders can benefit from ADAS by better visibility, especially in combination with V2V connectivity like developed by the Connected Motorcycle Consortium (CMC) of which FIM Europe and FEMA are supporters. ADAS devices can also prevent accidents where drivers are not aware of motorcyclists, especially in situations where a car is crossing the lane of oncoming traffic, or when a car driver's vision is obscured at crossings.
- In the transition period when many PTWs belong to a declining number of non-automated and non-connected vehicles, this can cause risks if ADAS devices in cars assume connectivity and digital visibility.
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Conditions for ADAS to be safe and acceptable for PTWs

- PTWs differ from other non-commercial road users, therefore ADAS devices must be developed with always be tested with PTWs and must consider their specific characteristics.
- ADAS devices must be developed and tested with V2V connectivity.
- Optional retrofitting of devices, such as in the case of motorcycles, must be possible and allowed to enhance their conspicuity.



- Existing systems work well
- Warning systems good, but **overload** a factor
- Caution over balance between **connected** and **non-connected**
- Rider must **retain control**
- **Retrofitting** should remain an option
- Rider generated **data** should be secure and controlled by vehicle owner


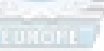



systems can give warnings to riders about speed limits, upcoming curves, traffic jams ahead, damaged roads etc. However, this can also result in information overload. Special attention is needed for fully functional human machine interfaces (HMIs) that filter the needed information and cause no danger by their own. The situation may occur where many PTWs belong to a declining number of non-automated and non-connected vehicles, which can cause risks if ITS devices of other vehicles assume connectivity and digital visibility.

Conditions of ARAS to be safe and acceptable

- + ARAS devices for PTWs must not take over control of the vehicle.
- + Mandatory devices must be tested on roads unless it is certain that they do not affect the safety of the vehicle.
- + Roads should always remain accessible for non-connected with other vehicles and/or infrastructure.
- + Retrofitting of devices that connect PTWs with other vehicles and/or infrastructure should be allowed, but should not be mandatory.



Research paper:
**ADVANCED RIDER ASSISTANCE SYSTEMS (ARAS)
ON POWERED TWO-WHEELERS (PTWs)**
January 2022

In general
ARAS covers a wide range of systems and applications that provide personal assistance to riders. ARAS can draw attention to approaching traffic, signal road users in the rider's blind spot, assist the rider in detecting his attention to release information, providing prior knowledge of the next traffic situation, warn the rider of obstacles in his path. ARAS can work autonomously or in connection with other vehicles (V2V) or infrastructure (V2I/V2X). In this case it is a Connected (C) ARAS device.

Effects of ARAS on PTWs

- Existing safety systems, such as ABS, for converting ABS and traction control, have already proved beneficial in motorcycle road safety. Other devices can be just as beneficial if the rider is allowed a full control of the throttle, both deceleration and acceleration, braking and steering.
- Systems can give warnings to riders about speed limits, upcoming curves, traffic jams ahead, damaged roads etc. However, this can also result in information overload. Special attention is needed for fully functional human machine interfaces (HMIs) that filter the needed information and cause no danger by their own design.
- The situation may occur where many PTWs belong to a declining number of non-automated and non-connected vehicles, which can cause risks if ITS devices of other vehicles assume connectivity and digital visibility.

Conditions of ARAS to be safe and acceptable for PTWs

- ARAS devices for PTWs must not take over the control of throttle and steering from the rider with present technology.
- Mandatory devices must be tested on roads unless it is certain that they do not affect safety in a negative way.
- Roads should always remain accessible for vehicles that are not controlled by electronic systems, and are not connected with other vehicles and/or infrastructure.
- Retrofitting of devices that connect PTW with other vehicles and/or infrastructure should be possible and allowed, but should not be mandatory.
- Data must be secure, controlled by the vehicle owner and privacy should be guaranteed.

POWERED TWO-WHEELERS (PTWs) SAFE INFRASTRUCTURE

January 2022

- **Poor maintenance** a common crash factor
- **Removal of roadside obstacles**
- **Removal of raised lane separations**
- **Roads should be clean**
- **PTWs should be considered at design stage**



In general

Road infrastructure is designed with two-track vehicles in mind. The design of roads, the levels of quality and maintenance, potholes, road surfaces and everything else that is part of or next to a road is done from the perspective of car drivers. Powered two-wheelers (PTWs) are by their design different from cars and have different needs. PTWs are more sensitive than cars to uneven road surfaces, potholes and damaged road surfaces, badly maintained or repaired road surfaces and poorly applied markings on the road. Motorcyclists have no protection like car drivers. Therefore, road restriction systems, curbs, poles, and other obstacles that may be beneficial, or just not dangerous to other road users, are often a hazard for motorcyclists and increase the injury risk in case of an accident. For further detail, see Road restriction systems position paper.

Why better infrastructure

- Inadequate and/or badly maintained infrastructure are common factors of crashes in which PTWs are involved.
- Inadequate and/or badly maintained infrastructure is one of the main causes of severe injuries and deaths of motorcyclists, even when it is not the cause of the crash.
- Additional costs to improve road infrastructure standards to meet the, so far neglected, needs of vulnerable road users, including PTW riders, is by far outweighed by the benefit of saving lives on European roads. Funds spent on infrastructure are not costs but investments in lives, life quality and in financial revenues.

How infrastructure should be improved

- New standards should be adopted for roadside and median road restriction systems to make them less dangerous for PTW riders.
- All unnecessary objects along the road must be removed where possible, to create an obstacle-free roadside and to provide free sight for all road users. Objects that cannot be removed should be shielded in a proper and safe way.
- The surface of the road should be free of unnecessary markings. Where markings are unavoidable they should be made of material with the same level resistance as the pavement, and the thickness of the material should be limited. This level resistance should be maintained for as long as the markings exist.
- The road should be free of all raised lane separators that cannot be distributed over distances at roundabouts.
- Road signs, and the equipment, installation and maintenance of road infrastructure and road furniture should be designed with PTWs in mind.
- Paved roads should be free of debris, including grit.
- Roads must be free of frost or ice.

- Only used where there is **no alternative**
- Technical standards should be refined and turned into **norms**
- **Posts and topsides** present the biggest hazard
- **No cable barriers**
- **Retrofitting** of existing barriers is possible and encouraged
- **Distances** from the road surface should be maximised

ROAD RESTRAINT SYSTEMS



In general

Road restraint systems (crash barriers) are usually developed for, and tested with, cars and trucks. Especially for these vehicles they can improve safety as they prevent them from hitting objects near the road or colliding with oncoming vehicles. However, for powered two-wheelers (PTWs), Motorcyclists have the highest risk of surviving a collision with a barrier. Barriers must therefore only be installed when necessary and must be safe for motorcyclists. The cost of improving standards for roadside and median barriers to meet the needs of vulnerable road users, including riders of PTWs, is far less than the benefits of saving lives or preventing serious injuries on European roads. Road restraint systems must be safe for all road users.

How road restraint systems should be improved

- Road restraint systems, of whatever type, should only be installed where there is a real risk for a collision with an object or oncoming traffic and no other solution - like removing the objects - is possible.
- New, safe, types of barriers need to be developed after extensive research of collisions of PTWs with barriers. New standards for roadside and median barriers should be adopted to make them less dangerous for motorcyclists. The existing Technical Specification CEN/TS 17342:2019-10 should be further developed and turned into an EN standard.
- New standards must include protection against hitting unprotected posts and topside protection for PTW-riders. Discontinuous protection of posts is very low. Therefore, only continuous protection should be used.
- No new cable barriers (i.e., wire rope barriers) should be installed. When old unsafe barriers need to be replaced, they should be replaced by a safer barrier type.
- Whenever a barrier is installed, the distance from the road surface to the barrier should be maximised to allow for on-site manoeuvres and maximum emergency braking in the event of a collision which might reduce the force of the collision impact with the barrier.
- Existing barriers in outer curves or other locations with heightened risk must be retrofitted with Motorcycle Protection Systems (MPS).
- Introduce a common European classification system for crash barriers, based on vulnerable road users (VRU) collision friendly features.

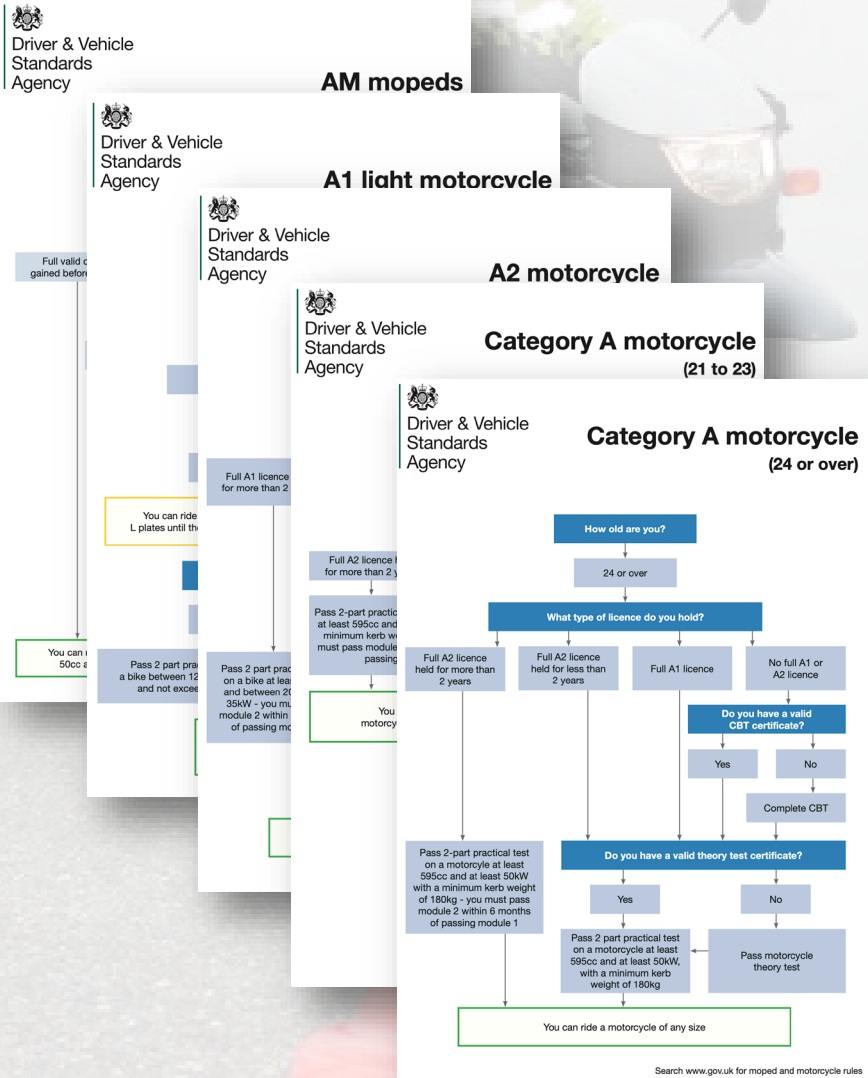


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- No new cable barriers (i.e., wire rope barriers) or other barriers with suspended posts should be installed. When old unsafe barriers need to be replaced, they must be replaced by a safer barrier type.
- Whenever a barrier is installed, the distance from the road surface to the barrier should be as large as possible to allow for on-site manoeuvres and maximum emergency braking in the event of a collision which might reduce the force of the collision impact with the barrier.
- Existing barriers in outer curves or other locations with heightened risk must be retrofitted with Motorcycle Protection Systems (MPS).
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- Knowledge and attitude is key output
- Risk management and awareness
- Exercises not always relevant to road safety
- Gender neutral
- Instructors and examiners should be qualified riders
- Graduated access simplified

High quality, cost effective initial rider training is probably the most important measure for improving power of two-wheeler (PTW) safety. Every European citizen who wants to start riding a PTW should have an easy access to training and testing. The present EU 3rd Driving Licence Directive, DLD, focuses on the regulatory framework, for example which vehicles that can be used during the test, without considering the content of training and only comments the testing briefly. The directive ignores the very purpose of training and testing.

The claimed present regulatory framework's positive effects on PTW safety are undocumented and questionable. The current regulatory framework has become complicated and overly expensive which in turn, especially for women, has resulted in significant percentage of fatal accidents by riders which didn't have a valid licence. The requirement to repeat the same training or test three times during a repeated access doesn't encourage riders to start with a smaller motorcycle. A revision to favour the access and be gender neutral could be to reconsider the limits of the test bikes taking in consideration the arrival of new models on the market. The specific demands on test vehicles in combination with a focus on the approval rate among women decreases with the higher demands from EU for test vehicles from A1 - A2 - A. A licence test bikes power should be ≤ 40 kW.



FEMA

Position paper:
INITIAL TRAINING AND LICENSING

January 2022

In general

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How to improve initial rider training

- Initial rider training must teach the skills, knowledge and attitude needed to safely operate a PTW on public roads, not just the skills needed to pass a licence test.
- Initial rider training should allow access to the EU FIM/FIMMA/ACMS Initial Rider Training Programme and should be described in detail in an agreed, national curriculum for category A.
- The licence test is a quality assessment of the candidate's competence, measuring the minimum skills, knowledge and attitude needed to safely operate a motorcycle on public roads, and it is of great importance that the licence test is designed to do exactly that.
- Risk awareness and risk management should be part of the training and licence tests.
- The licence test should not expose candidates to peculiar scenarios with little relevance to real-life safe riding, the consequence being that perfectly competent candidates may fail the test, while questionable candidates, who have "learned the tricks", may pass.
- All training, testing and demand for test vehicles should be gender-neutral.
- A stepped access with only one practical and one theoretical test after a cost-effective training course to avoid unnecessary repetition of tests to start riding on smaller and less powerful bikes.
- Instructors and examiners should be practising riders and should have participated in an officially recognised instruction/instructor's training programme derived from the agreed, national curriculum for category A.



Thank you!

Any questions?

For more information, please contact us!

You will find the joint position papers at www.femamotorcycling.eu/positionpapers

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