

## Improving road safety for cyclists

Resolution of 6 November 2018 on the basis of the recommendation of the Executive Committee Traffic Engineering with collaboration by the Executive Committees Vehicle Engineering, Adult Road Users, Children and Young Road Users, as well as Young Drivers

### Explanation

Measures to improve road safety for cyclists are essential in order to prevent a reduction in the attractiveness of cycling due to an increasing number of accident victims.

Cyclists have hardly been able to benefit<sup>2</sup> from the success of road safety work over the past years<sup>1</sup>. The number of cycling fatalities has not reduced since 2010. The number of seriously injured cyclists has even remained almost constant since 2001. One in eight fatalities and one in five serious injuries on Germany's roads is a cyclist. In particular, the number of injured pedelec users has greatly increased over the past years<sup>3</sup>. However, between 2013 and 2017, the sale of pedelecs has increased by more than 75%.

In 2017, 382 cyclists were killed on German roads, 68 of these on pedelecs (17.8%). 14,124 cyclists were seriously injured, 1,374 (9.7%) of these on a pedelec<sup>4</sup>. 65,222 cyclists suffered minor injuries, 3,673 (5.6%) on a pedelec.

Approximately 90% of all cycling accidents involving personal injury occur in urban areas. One in four fatalities in urban areas was a cyclist.

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1 From 2009 to 2017 total reduction of injuries by 2% (DESTATIS, Monthly Report 12/2017 and DESTATIS, Fachserie 8 Reihe 7, Road Accidents 2016)

2 From 2009 to 2017 increase in injured cyclists by 5% (DESTATIS, Monthly Report 12/2017 and DESTATIS, Fachserie 8 Reihe 7, Road Accidents 2016)

3 From 2014 to 2017 Increase in injured pedelec users by 132% (DESTATIS, Monthly Report 12/2017 and DESTATIS, Fachserie 8 Reihe 7, Road Accidents 2017)

4 Pedelec: Electrically powered bicycle with an auxiliary electric motor with a maximum nominal continuous power of 0.25 kW, whose assistance progressively reduced with increasing speed and is interrupted when a speed of 25 km/h is reached, or the rider stops pedalling. According to traffic regulations, pedelecs are considered to be equivalent to bicycles.

However, the police statistics do not record all accidents. There are a considerable number of unrecorded cycling accidents. Only a third of the persons treated in hospital due to cycling accidents are known to the police. The number of cycling accidents which are not recorded in the statistics is estimated to be approximately 70%<sup>5</sup>.

The demographic change, the increasing proportion of cyclists and the increasing number of electrically assisted cycles could result in even more cycle traffic, increasing numbers of senior citizens as cyclists, as well as higher cycling speeds. This could result in an increase in the number and severity of cycling accidents. To improve road safety for cyclists, measures are therefore necessary in three areas of action, roads, people and vehicles (cycles and motor vehicles).

## **Roads**

Deficient infrastructure often plays a significant role in the cause of accidents. The high proportion of severe cycle accidents at intersections and T-junctions, when crossing lanes and on cycle tracks which are too narrow is especially pronounced. A significant reason for this is that to a growing extent, the capacity and allocation of road area is less suitable for the increasing number of motor vehicles<sup>6</sup> and cyclists. Above all in urban areas, increasing numbers of motor vehicles and cyclists have to share an obsolete and confined infrastructure. Safe guidance of cycle traffic is therefore of immense importance.

### **Use of technical rules**

Technical rules for the safe guidance of cycle traffic are mainly the Directives for the Design of Urban Roads (RASt) and the Recommendations for Cycling Facilities (ERA) by the Road Transport and Research Association (FGSV). The ERA describes in great detail how safe cycle routes can be planned, built and operated. However, these have not been introduced in all federal states.

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5 Von Below, Verkehrssicherheit von Radfahrern [Road safety of cyclists], Issue M264, Bundesanstalt für Straßenwesen, 2016

6 Increase in the number of motor vehicles from 2009 to 2016 by 10%, DESTATIS, Fachserie 8 Reihe 7, Road Accidents 2016

### **Planning of cycling networks**

The basis of a safe cycling infrastructure is network planning which is oriented to the wide variety of cyclists and anchoring the importance of cycle traffic in politics and administration. Cycle facilities are not just constructed cycle tracks. Rather, they involve all forms of guidance of cycle traffic. Increasingly, protective lanes and cycle lanes, which over the past decades have proved to be safe and low-cost elements, are used to guide cycle traffic on roads. In addition, cycleways are advisable and safe elements if the dominance of motorised traffic is eliminated and the road is sufficiently wide. Among other things, due to their freedom from intersections, their width, and the separation of pedestrians, express cycleways can be a safe supplement to the cycle traffic network.

### **Adequate dimensions and improvement of recognisability**

The RASt and especially the ERA describe detailed areas of use, construction and design parameters for safe forms of guidance on the route and in especially critical areas such as intersections and T-junctions. The cycle traffic guidance must be clearly recognisable for all road users. The visibility between cyclists and other road users must not be impaired.

The interests of children for safe road use must be taken into account. On routes with heavy traffic, separation of cycle traffic from motorised traffic has the highest priority.

### **Improvement of safety at intersections and T-junctions<sup>7</sup>**

An essential aspect is improving road safety for cycle traffic at T-junctions and intersections. This applies for the construction, the guidance of cycle traffic (visibility, see above) and traffic light control systems. For example, where cyclists and pedestrians can cross with separate traffic light phases, accidents due to motor vehicles turning right are avoided. Simple, clear and obvious cycle traffic guidance makes a considerable contribution to improving safety. This includes guidance of cycle traffic in the field of view of motor vehicles, emphasis of cycle traffic guidance with structural elements or markings, as well as reduction of the complexity of intersections.

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<sup>7</sup>See the Board resolution " Sicherheit an Kreuzungen und Einmündungen erhöhen – Innerorts"  
[Improvement of safety at intersections and T-junctions within urban areas] of 27/10/2016  
([www.dvr.de/Beschluesse](http://www.dvr.de/Beschluesse))

## **People**

Extension of traffic routes for cyclists is essential, but is not sufficient to significantly reduce the danger of accidents. The behaviour of road users also influences the probability of accidents. The traffic behaviour and atmosphere between all road users must be improved by a combination of communication and road safety education, as well as controls and enforcement. This is an ongoing task. Against this background, the prescribed education on behaviour in road use according to § 48 STVO in case of failure to observe traffic regulations becomes especial important.

### **Learning to cycle correctly**

Children must be continually prepared for safe and independent road use. A cycling test is normally carried out in the fourth grade in primary school. With the change to secondary school, the children are presented with new challenges. Further distances are now travelled more frequently and independently by bicycle. In order for children not to be unsupported, accompanying lesson units are necessary after the fourth grade. Children who have successfully passed the cycling test cannot be assumed to be capable of safely mastering complex traffic situations.

Senior citizens as well as young adults who have never learned to ride a bicycle, or who wish to ride a bicycle or pedelec after many years without cycling experience, should also participate in appropriate cycling training in advance. If a change from bicycle to pedelec is planned, familiarisation with the riding characteristics and pedelec technology should be carried out before participating in road traffic.

### **Protective clothing**

Wearing a cycle helmet as bright or reflecting clothing promotes safety and visibility. Conspicuous clothing makes cyclists more easily visible for motor vehicle drivers and a cycle helmet helps to avoid serious head injuries. According to causes of death statistics<sup>8</sup> over 50% of cycling fatalities are due to head injuries. Accident research data from the UDV (German Insurers Accident Research) shows that for collisions between cyclists and motor vehicles, the probability of head injury for cyclists without a helmet is greater (56%) than for those with a helmet (35%). In addition, cyclists without protection suffered severe head injuries considerably more frequently (18%) than those wearing a helmet (2%).

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8 DESTATIS, Fachserie 12, Reihe 4, 2015: For 203 out of 378 cycling fatalities, head injuries were the cause of death.

Even in case of accidents where motor vehicles are not involved, a cycle helmet offers protection.

### **Targeted campaigns and increased enforcement**

An essential contribution to more consideration and caution is provided by increasing hazard awareness both in the use of motor vehicles and when cycling. In addition to comprehensive information campaigns on traffic regulations, this included targeted checks and consistent enforcement of misconduct which causes hazards due to negligence. In particular, the focus should be on especially critical behaviour, such as

- Lack of mutual consideration,
- Turning right without observing cycle traffic (e.g. failure to look over the shoulder),
- Parking on cycling lanes,
- Careless opening of vehicle doors,
- Overtaking cyclists without sufficient distance (> 1.50 m),
- Performing other activities (e.g. smartphones),
- Cycling on the wrong side of the road or on pavements.
- Incorrect conduct at pedestrian crossings,
- Cycling under the influence of alcohol,
- Failure to observe traffic lights and
- Equipment which does not conform with the Road Traffic Registration Regulations (StVZO).

Use of police cycle squads is a suitable method to provide information for specific target groups in addition to checks and enforcement.

### **Consideration of cycle safety in driver training**

Furthermore, in the context of the envisaged revision of the curriculum for novice driver training, the special conflict potential and duty of care by motorists with regard to non-motorised road users must have greater emphasis.

A change in perspective which is promoted in driving school lessons can contribute to critical reflection on one's own (hazardous) behaviour as a cyclist.

## **Vehicles**

### **Motor vehicles**

Technical systems for active and passive safety always contribute to the safety of cyclists. These include e.g. energy-absorbing vehicle fronts, windscreen airbags and emergency braking assistants. Especially emergency braking assistants have a great potential for preventing severe cycling accidents.

A right turn assistant on trucks would be able to positively influence the highly problematic right turn situation. Analyses with the aid of the accident database (UDB) of the UDV show that more than 40% of all severe road accidents with cyclists and pedestrians could be prevented with these systems. In 2016, the first truck manufacturer presented an electronic right turn assistant for two of its HGV series, which should warn the driver in good time of cyclists who are travelling parallel to the vehicle. About half of the trucks which are involved in accidents are from the construction and waste disposal sectors.

### **Bicycles**

As cyclists do not normally have a pronounced "crush zone" in the sense of passive safety, the aspect of active safety must be emphasised for the bicycle itself. In general, bicycles may only be used on public roads if they are equipped with the prescribed (two independently acting) brakes, as well as a device for audible signals (bicycle bell). Corresponding lighting equipment is also prescribed: Active and passive signalling can considerably improve visibility and recognition for other road users and can help to reduce the risk of accidents. This also applies for lighting of the road surface with a correctly adjusted bicycle headlight.

Although only safe bicycles which comply with the Road Traffic Registration Regulations (StVZO) may be used on public roads, not all bicycles which are available on the market have equipment which complies with the StVZO.

Racing bikes, mountain bikes or so-called fixies (courier bicycles / track cycles) (in total about 11% of bicycles sold in 2017 (source: ZIV)) are normally not fully equipped.

In addition, in contrast to most motor vehicles, bicycles are not subject to regular technical inspections. Safety-relevant defects, especially in the area of brakes and lighting occur due to wear, corrosion or incorrect

use (e.g. transport and parking damage) and are not necessarily repaired.

For bicycles, and especially for pedelecs, safety assistance systems such as ABS or distance warning systems have now been developed or are already available.

## **Resolution**

- The federal government, states and municipalities are requested to introduce the ERA (Recommendations for Cycling Facilities) for roads in their public easement and to take into account the measures and standard widths for new constructions, extensions and rebuilding.
- For the current revision of the ERA, the increasing number of pedelecs and tricycles (including large delivery bicycles) must be taken into account with regard to routing and dimensioning. The present minimum dimensions must be abandoned in favour of the standard dimensions.
- Municipalities, states and the federal government should plan and construct safe cycle route networks within their particular areas of responsibility.
- The competent authorities should target the elimination of safety issues for cycle traffic in their regular road safety inspections and in the work of their accident commissions. In addition, auditing of the existing infrastructure (inventory audit) according to the road safety audit guidelines (RSAS) should be used. Non-compulsory cycle routes must also comply with the standard.
- In urban areas, clearly recognisable cycle guidance in the field of view of motor vehicle traffic must be implemented, especially at intersections, T-junctions and access routes. The necessary sight triangles must be created and kept clear of parked motor vehicles.
- Separation of traffic turning right from traffic which is travelling straight on can minimise conflicts at accident-prone intersections and T-junctions.
- The Road Traffic Regulations (StVO) must be revised with regard to the safety of cyclists.
- The regulatory authorities are requested to increasingly prosecute offences by and against cyclists. This also includes checks of the road-worthiness of bicycles.

- Police authorities are requested to increasingly establish bicycle squads. At least one bicycle squad should be established in every large town.
- The road authorities are requested to increasingly compel road users who offend against traffic regulations to participate in road safety instruction according to § 48 StVO. The federal states are called on to create the outline conditions for this.
- The Ministries of Education and Cultural Affairs of the federal states are requested to implement the Standing Conference of the Ministers of Education and Cultural Affairs (KMK) recommendation, in particular to supervise and ensure the implementation of mobility education, cycling tests, as well as to supervise and the planning of cycle routes to schools.
- During their driving lessons, learner drivers should be increasingly sensitised with regard to unprotected road users and supported in a change of perspective for reflection on their own behaviour as cyclists.
- The federal government, states and municipalities should increasingly promote the extension of cyclist training for adults and training for pedelec users.
- The federal government, states and municipalities should design and implement detailed information campaigns (e.g. on the correct use of cycle routes in general, the "Dutch grip"<sup>9</sup> to ensure a glance over the shoulder, turning right, zebra crossings, safety distances, alcohol, etc.). This information also includes promotion of awareness of the protective effect of a cycle helmet as well as light coloured or reflective clothing.
- The further increase in the number of serious head injuries is a reason to discuss the introduction of mandatory wearing of helmets by cyclists. For this, the existing facts must be more sustainably evaluated and new facts which provide objective arguments in this discussion must be established.

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<sup>9</sup> Opening of the driver's door with the right hand instead of with the nearer left hand. With this, the driver's body automatically turns to the left, so that passing cyclists are considerably in view due to the view over the shoulder which has been initiated. The same applies for passengers on the right hand side who have to use the left hand.

- The federal government is still requested to campaign at a European level for the mandatory use of right turn assistants for trucks, which cannot be switched off permanently while driving, and for emergency braking assistants in all motor vehicles.
- Vehicle manufactures are requested to work consistently on the further development of passive and active safety systems to prevent accidents with cyclists and to reduce the severity of injuries, and to install these as standard in the entire range of their vehicles.

Signed

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President