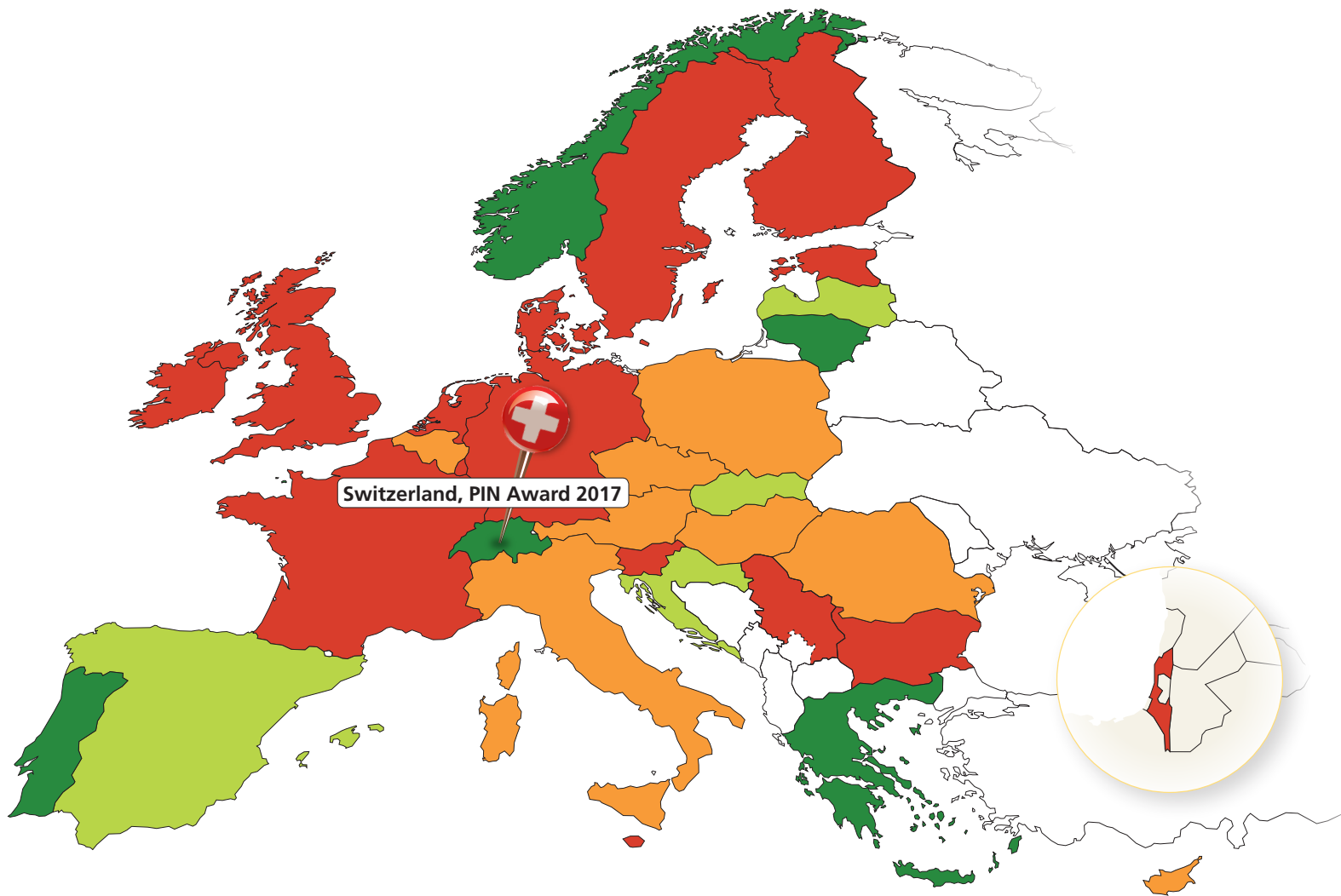


RANKING EU PROGRESS ON ROAD SAFETY

11th Road Safety Performance Index Report

June 2017



European Transport Safety Council



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RANKING EU PROGRESS ON ROAD SAFETY

11th ROAD SAFETY PERFORMANCE INDEX REPORT

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June 2017

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About the European Transport Safety Council (ETSC)

ETSC is a Brussels-based independent non-profit organisation dedicated to reducing the numbers of deaths and injuries in transport in Europe. Founded in 1993, ETSC provides an impartial source of expert advice on transport safety matters to the European Commission, the European Parliament, and member states. It maintains its independence through funding from a variety of sources including membership subscriptions, the European Commission, and public and private sector support.

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EXECUTIVE SUMMARY

In 2010, the European Union renewed its commitment to improve road safety by setting a target of reducing road deaths by 50% by 2020, compared to 2010 levels. This target followed an earlier target set in 2001 to halve road deaths by 2010.

Since 2014, progress has virtually ground to a halt. 2016 was the third consecutive poor year for road safety: 25,670 people lost their lives on EU roads compared to 26,200 the previous year - a 2% decrease. But this followed a 1% increase in 2015 and stagnation in 2014. Out of the 32 countries monitored by the PIN Programme, 15 countries registered a drop in the number of road deaths last year (Fig.1). The best results were achieved in Lithuania with a 22% reduction, Cyprus with 19%, the Czech Republic with 17%, Latvia with 16% and Switzerland with 15%. As many as 15 countries saw an increase while progress stood still in two countries.

There has been progress over a longer time frame. Since 2010 road deaths in the EU28 were cut by 19%, equivalent to a 3.4% average annual reduction. But a 6.7% year-to-year reduction was needed over the 2010-2020 period to reach the EU 2020 target through constant progress in annual percentage terms. As a result of the failure to reduce deaths at the pace required, annual reductions of 11.4% each year are now needed between 2017 and 2020 for the EU to stay on track. Significant and urgent efforts are needed to achieve this.

The political will to improve on this poor progress is important. The lack of it at EU member state level has contributed to a decline in levels of police enforcement, a failure to invest in safer infrastructure and limited action on tackling speed and drink driving in a number of countries.

At the EU level, there has also been a conspicuous lack of action. Minimum EU vehicle safety standards have not been updated since 2009 despite rapid advances in vehicle crashworthiness and new technology that can help drivers to avoid or mitigate the consequences of collisions. Plans to update the standards were postponed and the proposal is not expected until March 2018. Updates to EU infrastructure safety rules have also not materialised.

EU transport ministers recently urged the European Commission to come forward with a serious injury reduction target to cover the period 2020-2030. It is now critical that the European Commission bring forward the above initiatives and a long term road safety strategy for 2030 within the coming months.

Key recommendations to member states

- Seek to reach targets by all available means, including applying proven enforcement strategies according to the EC Recommendation on enforcement.¹
- Provide adequate government funds that allow the target-oriented setting of measures and set up financing and incentive models for the regional and local level.
- Set quantitative sub-targets based on compliance indicators.
- Use the evidence gathered to devise and update relevant policies. Make the choice of measures based on sound evaluation studies and - where applicable - cost effectiveness consideration.
- Set national targets for reducing serious injuries based on MAIS3+ alongside the reduction of road deaths.
- Include serious injuries in the impact assessment of countermeasures.
- Streamline the emergency response chain and increase quality of trauma management in order to mitigate collision consequences more effectively.
- Support an urgent revision of the EU General Safety Regulation², including live-saving technologies, such as Intelligent Speed Assistance, Alcohol Interlocks, Advanced Seat Belt Reminders on all seats, Autonomous Emergency Braking (AEB) and Event Data Recorders.

Key recommendations to EU institutions

- Adopt a fully-fledged road safety strategy for 2030, including measures to tackle serious injuries against which delivery can be made accountable.
- Adopt a target to reduce by 50% between 2020 and 2030 the number of people seriously injured based on MAIS3+ as requested by the EU Transport Ministers.³
- Within the context of the revision of the General Safety Regulation prioritise the introduction and further extension of in-vehicle safety technologies linked to the key risk factors, which include Intelligent Speed Assistance, Alcohol Interlocks, Advanced Seat Belt Reminders on all seats and Autonomous Emergency Braking. Mandate Event Data Recorders in all new vehicles.
- Within the context of the revision of the Infrastructure Safety Management Directive⁴, extend the application of the instruments of the Directive to cover all motorways and all EU (co-)financed roads, as well as main rural and urban roads.
- Within the context of the revision of the Cross-Border Enforcement Directive⁵, strengthen the enforcement chain, including mandatory notification by the country of offence of the owner of the vehicle.
- Implement priorities for 2016-2020 put forward in ETSC's position paper on the mid-term review of the road safety policy orientations including improved infrastructure, vehicle safety, and tackling speeding and drink driving⁶.

¹ ETSC (2016), PIN Flash 31, How traffic law enforcement can contribute to safer roads, <http://etsc.eu/PINflash31>

² Regulation (EC) No 661/2009 of the European Parliament and of the Council of 13 July 2009 concerning type-approval requirements for the general safety of motor vehicles, their trailers and systems, components and separate technical units intended therefor, <https://goo.gl/n9h65c>

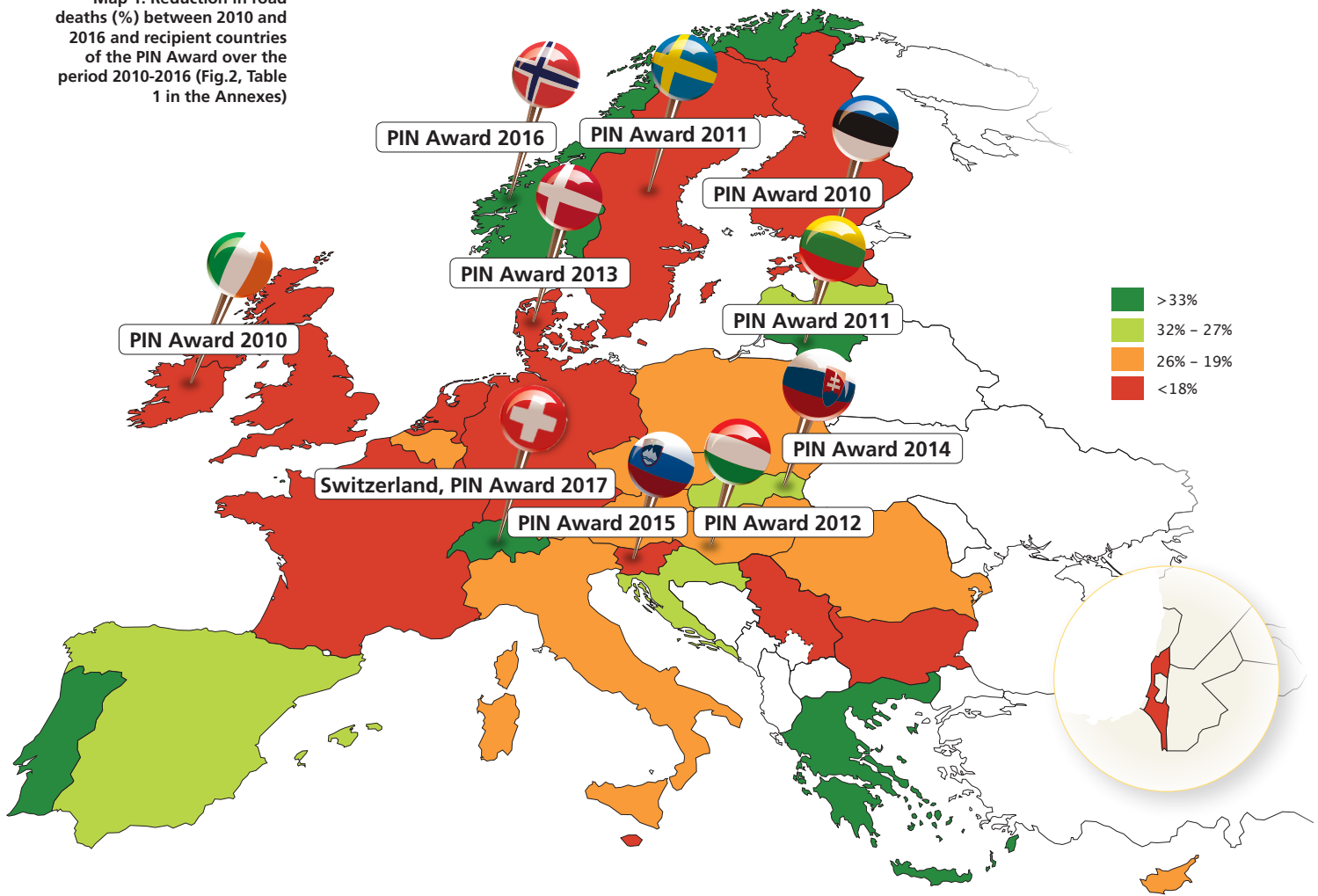
³ Transport Council conclusions on road safety, 8 June 2017, <https://goo.gl/svkUSY>

⁴ Directive 2008/96/EC of the European Parliament and of the Council of 19 November 2008 on road infrastructure safety management, <https://goo.gl/gkUmQe>

⁵ Directive (EU) 2015/413 of the European Parliament and of the Council of 11 March 2015 facilitating cross-border exchange of information on road-safety-related traffic offences, <https://goo.gl/2vvgIQ>

⁶ ETSC (2015), Mid Term Review of the European Commission Transport White Paper 2011-2020, <https://goo.gl/eYSRVM>

Map 1: Reduction in road deaths (%) between 2010 and 2016 and recipient countries of the PIN Award over the period 2010-2016 (Fig.2, Table 1 in the Annexes)



PART I

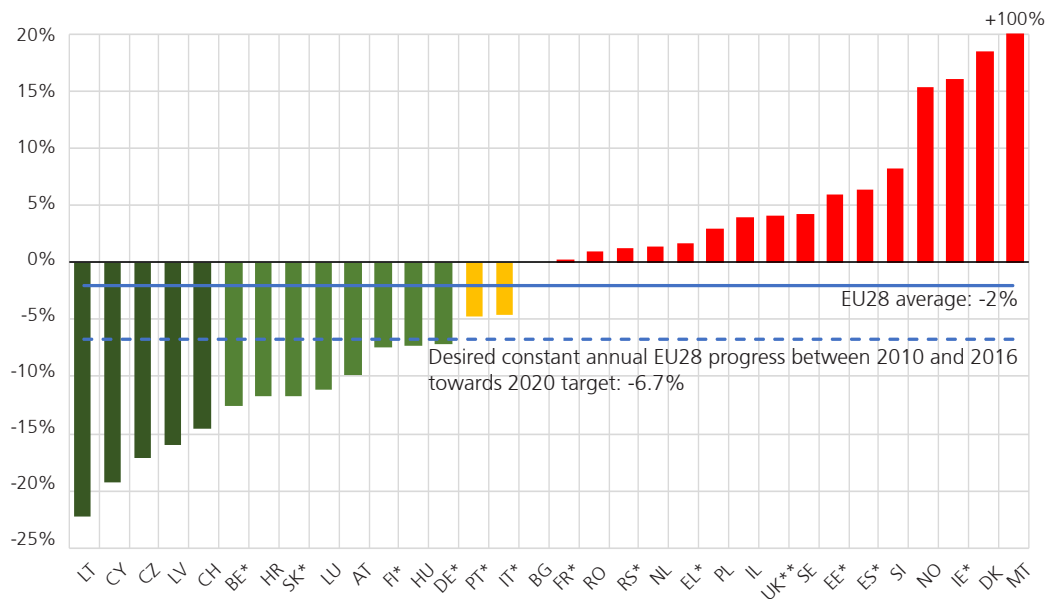
THIRD YEAR OF POOR RESULTS

1.1 Just half of EU countries reduced deaths in 2016

Out of 32 countries monitored by the PIN Programme, 15 registered a drop in the number of road deaths in 2016 compared to 2015 (Fig.1). Lithuania leads the ranking with a reduction of 22% in the number of road deaths. It is followed by Cyprus with a 19% decrease, the Czech Republic with 17%, Latvia with 16% and Switzerland with 15%. The number of road deaths went up in 15 countries, in two the progress stagnated. The biggest increase in the number of road deaths was registered in Malta (100%)⁷, Denmark (19%), Ireland (16%) and Norway (15%).

Over the last three years progress in reducing the number of road deaths in the EU has slowed down markedly. The 2% reduction in 2016 followed a 1% increase in 2015 and stagnation in 2014. As a result, the number of road deaths has declined by just 1% since 2013.

Fig.1: Relative change (%) in road deaths between 2015 and 2016. *National provisional estimates used for 2016, as final figures for 2016 are not yet available at the time of going to print. **UK data for 2016 are the provisional total for Great Britain for the year ending September 2016 combined with the total for Northern Ireland for the calendar year 2016. Annual numbers of deaths in LU and MT are particularly small and, therefore, subject to substantial annual fluctuation. Annual numbers of deaths in CY and EE are also relatively small and therefore may be subject to annual fluctuation.



The 2017 ETSC Road Safety PIN Award was presented to Switzerland at the 11th PIN Conference in Brussels on 20 June 2017. The award recognises Switzerland's long-term performance in improving road safety. The background to the country's recent progress is detailed in an interview with Jürg Röhliberger, Director of the Swiss Federal Road Office (ASTRA/OFROU) in Part III.

⁷ Numbers of road deaths in Malta are particularly small and therefore, are particularly subject to substantial fluctuations.



INDICATOR

The EU has set a target to halve the number of road deaths by 2020, based on their level in 2010. In this chapter, we track progress against this target using, as main indicators, the relative changes in the numbers of people killed on the road between 2015 and 2016 (Fig.1), between 2010 and 2016 (Fig.2) and since 2001 (Fig.6).

A person killed in traffic is someone who was recorded as dying immediately or within 30 days from injuries sustained in a collision. We also use road mortality - the number of road deaths per million inhabitants - as an indicator of the current level of road safety in each country (Fig.7). Additionally, the risk, i.e. the number of road deaths per billion km travelled is presented where the data are available (Fig.8).

The data used are from national statistics supplied by the PIN panellist in each country. The numbers of road deaths in 2016 in Belgium, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Portugal, Spain, Slovakia, the UK and Serbia are provisional as final figures were not yet available at the time this report went to print. Numbers of deaths in Luxembourg and Malta are particularly small and are therefore subject to substantial annual fluctuation. Annual numbers of deaths in Cyprus and Estonia are also relatively small and therefore may be subject to annual fluctuation. The UK figure for 2016 is the provisional total for Great Britain for the year ending September 2016 together with Northern Ireland's total for the calendar year 2016.

The full dataset is available in the Annexes.

Population figures were retrieved from the EUROSTAT database.



Germany: reduction in motorcycle rider and car occupant deaths

In 2016 the number of road deaths in Germany decreased by 7% compared to 2015, it went down from 3459 to 3214. This follows two consecutive years of increases.

„The positive results in Germany were mainly due to 98 fewer motorcyclist deaths (a 16% decrease). Rainy weather conditions led to less exposure for this group. We also saw 45 fewer car occupant deaths (a 3% decrease). Nevertheless, the number of deaths of small PTW riders and cyclists went up. The number of overall road collisions reached 2,6 million – the highest number since Germany's reunification. We see a gap between Federal States in Germany between safe and less safe states, so there is still potential for improvement. North Rhine-Westphalia had a better performance than other federal states with just 29 road deaths per million inhabitants, as low as the best performing countries in the EU.“

Jacqueline Lacroix, the German Road Safety Council (DVR)



Netherlands: road deaths increase for the second consecutive year

While the Netherlands have been one of the leaders in road safety in Europe, recent years have seen stagnation and an increase in the number of road deaths. The number of road deaths reached 629 in 2016 representing a 1.5% increase compared to 2015. This is the second consecutive year of increase in the number of road deaths. According to the Institute for Road Safety Research (SWOV), the target of a maximum of 500 road deaths annually by 2020 is now effectively out of reach. Only an exceptional decline could help to achieve the target.⁸

Road safety experts from SWOV, driver groups, insurers, cities and other stakeholders, including the public prosecutor's office, have published a road safety manifesto for the Netherlands' government in response to poor recent performance by the country

⁸ SWOV (2017), Number of road deaths in the Netherlands increases to 629 in 2016, <https://goo.gl/C4Fcjb>

in cutting road deaths. The coalition is calling for better enforcement of drink driving offences, improvements to infrastructure, especially for cyclists, 30km/h limits as well as action on distraction and speeding. The groups say the social costs of traffic collisions in the Netherlands is € 14 billion per year.⁹

“An increase in the number of road deaths is extremely worrying and underlines the appeal that SWOV made in April 2017 together with more than 30 other organisations: 'Make road safety a national priority for the next government'. Mobility in our country is growing in each of the scenarios projected by the planning agencies. A systematic road safety approach is therefore of greater importance than ever before. We must continue to look at speed limits, especially in urban areas, and further increase the number of roads with bicycle tracks. With a decentralisation of tasks in the social domain, however, many municipalities indicate it is increasingly difficult to find the necessary budgetary means for road safety measures.”
Peter van der Knaap, SWOV, the Netherlands



Ireland: increase in the number of road deaths in three of the last four years

A total of 188 people lost their lives on Irish roads in 2016, compared to 162 in 2015. This represents a 16% increase. The number of driver deaths in all types of vehicle went up by 17%, passengers by 41%, pedestrians by 6% compared to the same period in 2015.

In response to the slowdown, a Road Traffic bill, containing a series of reforms was passed at the end of 2016. The new bill introduces roadside drug testing for a wide range of drugs.¹⁰ The bill also creates a new option for local authorities to impose a special speed limit of 20km/h in built-up areas. This will be in addition to the existing speed limits for built-up areas of 50km/h, 40km/h and 30km/h.¹¹ The bill also gives effect to an agreement between Ireland and the UK on mutual recognition of driver disqualifications. UK licence holders who are disqualified from driving in Ireland will also be disqualified in the UK and vice-versa.

“2016 has been a very bad year for road safety in Ireland. The increase in deaths is part of a broader trend which has seen road deaths rise in three out of the last four years. This is unacceptable and we must all redouble our efforts to prevent more needless loss of life. Looking ahead to next year there are grounds for optimism. I certainly welcome a firm commitment to increasing the numbers in the Garda Roads Policing Unit, which will allow for more visible policing. The new Road Traffic Act and the implementation of its life-saving measures will also be hugely important to reversing the upward trend.”
Liz O'Donnell, Road Safety Authority



Denmark: the number of road deaths and serious injuries went up in 2016

Road deaths increased by 19% in Denmark, from 178 people killed in 2015 to 211 in 2016. The number of serious road injuries, as recorded according to the national definition, grew by 1%, from 1780 in 2015 to 1797 in 2016.

“After years of stagnation, Denmark had a 19% increase in road deaths in 2016 and, for the first time in many years, also an increase in the numbers seriously injured. There are only a few years left to reach the Danish and EU targets for 2020, so it is important to take action now and focus on interventions where there are the greatest benefits in terms of reducing deaths and injuries.”

⁹ ETSC (2017), Dutch organisations call for increased enforcement on road safety, <https://goo.gl/3wZDik>

¹⁰ RSA (2017), Gardai can now test motorists for drugs at the roadside, <https://goo.gl/nw8V0p>

¹¹ PARC, Road Traffic Act 2016, <https://goo.gl/NWbGGB>

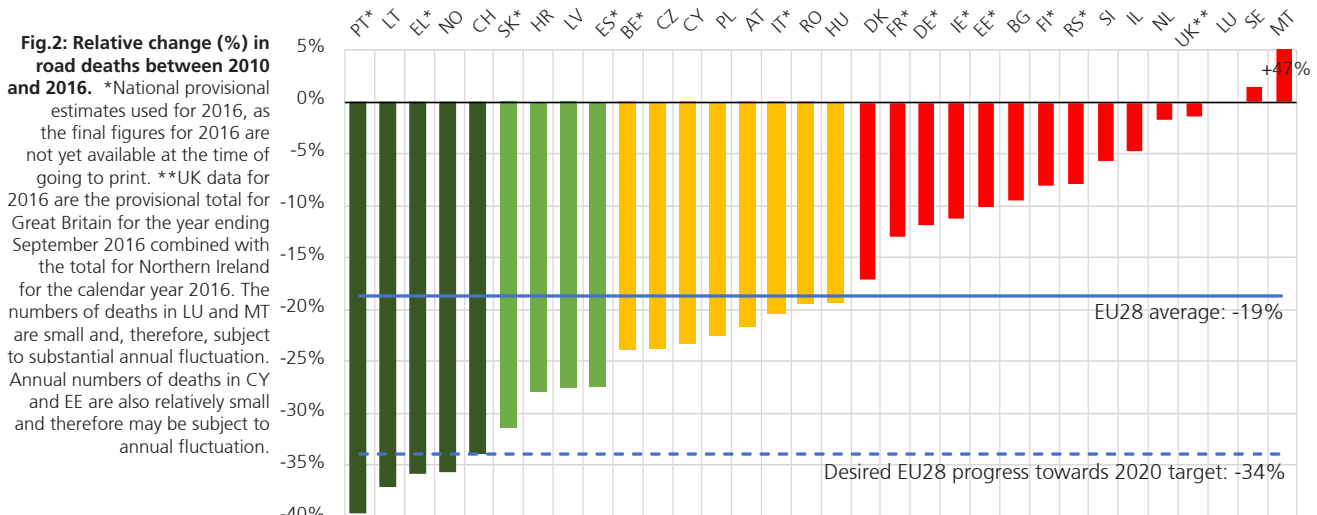
The increases in deaths and serious injuries are mainly related to car occupants, pedestrians and cyclists. The increase in deaths in cars is primarily related to single motor vehicle collisions and head on collisions. It indicates inattention as a major collision factor. The high proportion of deaths and serious injuries among cyclists and pedestrians, and an increasing number of elderly people killed, underlines the need for special initiatives to stimulate faster uptake of new cars with advanced emergency braking systems that can detect vulnerable road users. Also measures to increase the spread of advanced lane keeping systems are important.”
 Jesper Sølund, Danish Road Safety Council

1.2 Only three EU countries on track to reach the 2020 target

The EU28 collectively reduced the number of road deaths by 19% over the period 2010-2016, far less than the 34% cut needed to stay on course to meet the 2020 target (Fig.2). Portugal, Lithuania and Greece are the only EU member states that have achieved the required reduction. Norway and Switzerland, non-EU countries, reduced the number of road deaths by 36% and 34% respectively.

The UK and the Netherlands are the EU countries with the slowest progress since 2010; in Malta and Sweden the number of road deaths recorded in 2016 was actually higher than in 2010.

Fig.2: Relative change (%) in road deaths between 2010 and 2016. *National provisional estimates used for 2016, as the final figures for 2016 are not yet available at the time of going to print. **UK data for 2016 are the provisional total for Great Britain for the year ending September 2016 combined with the total for Northern Ireland for the calendar year 2016. The numbers of deaths in LU and MT are small and, therefore, subject to substantial annual fluctuation. Annual numbers of deaths in CY and EE are also relatively small and therefore may be subject to annual fluctuation.



Lithuania: from 95 to 65 road deaths per million inhabitants in six years

In 2016 the number of road deaths in Lithuania went down by 22% compared to 2015 – this was the highest reduction among the PIN countries in 2016. The number of people killed on Lithuanian roads was 37% fewer in 2016 than in 2010. There were 65 road deaths per million inhabitants in 2016 compared to 95 in 2010, the lowest road mortality rate in Lithuania since 1952.

In recent years the priority road safety areas in Lithuania were road infrastructure, speed management, driver training and stricter sanctions for traffic law offences, in particular for drink driving.

Over the period 2010-2017 nearly 190 high risks sites have been treated while 15 dangerous intersections and 79 dangerous pedestrian crossings have been redesigned. Speed management has been addressed by infrastructure modifications and by the use of safety cameras. Roundabouts, safety islands, speed bumps and other infrastructure elements have been introduced widely. The first time-over distance camera was installed in 2016, 25 more stretches of road are expected to be covered by such a system by the end of 2017.

In 2015 novice driver training was improved and a zero BAC limit was introduced for novice and professional drivers as well as PTW riders. All drivers or riders stopped by traffic police are breath-tested.

“We are very proud of the progress made on road safety in Lithuania. One of our greatest achievements is the improved novice driver training system. In 2010 we introduced tougher requirements for driver training and examination as well as stricter controls on driving schools. The upgraded novice driver training system has already borne fruit: the proportion of novice drivers involved in fatal collisions dropped by 41% over the period 2012-2017. We still need to work harder on a long-term perspective. In the coming years one of our priorities will be to find solutions to reduce the large number of pedestrian killed on rural roads where they account for 37% of deaths.”
 Vidmantas Pumputis, Ministry of Transport and Communications, Lithuania



Sweden: 1.5% more road deaths in 2016 compared to 2010

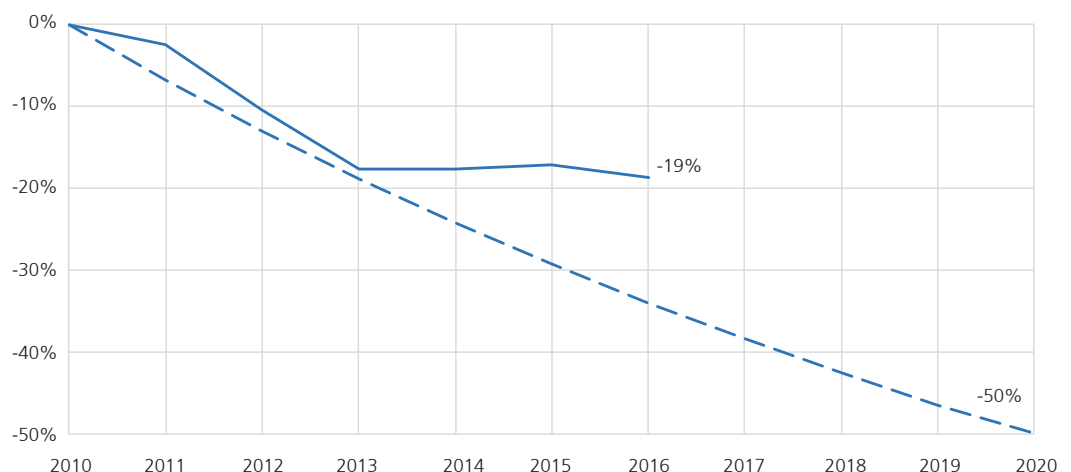
The number of people killed on the roads in Sweden was 1.5% more in 2016 than in 2010, 270 compared to 266.

“As a consequence of the stagnation we have seen in Sweden for the last 5-6 years, the Swedish Government relaunched Vision Zero in September 2016. The aim of the relaunch is to secure elements that work well and develop elements that work less well and show the ambition of the Government. Among other things, the relaunch included an investigation of a new, lower, default speed limit in urban areas of 40 km/h. The main challenges for Sweden to reach the national target of less than 220 road deaths in 2020 is to reduce mean speed and increase speed compliance. Other important areas are to reduce drink driving, continue to build safer roads and reduce the number of seriously injured vulnerable road users.”
 Anna Vadeby, National Road and Transport Research Institute (VTI), Sweden

1.3 A widening gap between the actual and desired progress towards the 2020 target

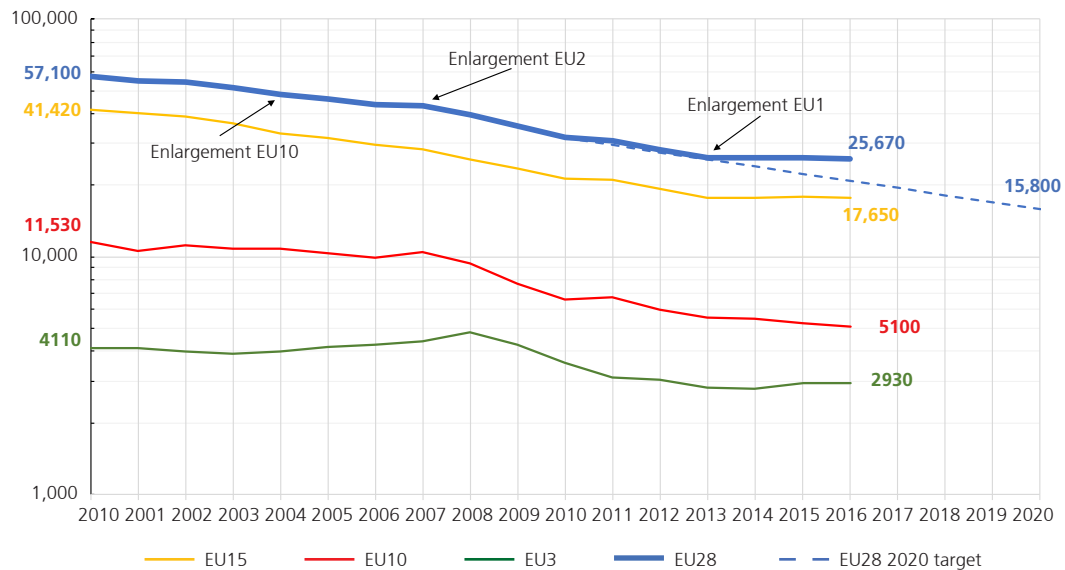
Since 2010, the average annual progress in reducing the number of road deaths in the EU has been 3.4%, equivalent to a 19% reduction between 2010 and 2016 (Fig.3). A 6.7% year-to-year reduction was needed over the 2010-2020 period to reach the 2020 target through consistent annual progress. As a consequence of the poor progress between 2014 and 2016, road deaths will now have to be reduced by around 11.4% annually over the period 2017-2020 for the EU to meet the target.

Fig.3: Reduction in the number of road deaths since 2010 (blue line) plotted against the EU target for 2020 (blue dotted line).



The EU28 reduced the number of road deaths by 19% between 2010 and 2016 (Fig.4). The EU15¹² reduced the number of road deaths by 18% between 2010 and 2016, the EU10¹³ by 23% and the EU3¹⁴ by 18%.

Fig.4: Reduction in road deaths since 2000 in the EU28 (blue line), the EU15 (yellow line), the EU10 (red line) and the EU3 (green line). The logarithmic scale is used to enable the slopes of the various trend lines to be compared.



1.4 Only around 5900 road deaths prevented in the EU in 2016 compared to 2010

There were 5900 fewer road deaths in 2016 than in 2010 in the EU28. This reduction is about 4040 road deaths short of the reduction that would have occurred in 2016 if annual EU progress had been on track towards the 2020 road safety target by a constant year-to-year reduction of 6.7%.

The reduction in the number of deaths over the period 2011-2016 compared with six years at the 2010 number was 26,580 which is 13,230 fewer deaths prevented than if the annual reduction of 6.7% had been achieved.

Putting a monetary value on prevention of loss of human life and limb can be debated on ethical grounds. However, doing so makes it possible to assess objectively the costs and the benefits of road safety measures and helps to make the most effective use of generally limited resources.

The monetary value of the human losses avoided by preventing one road fatality is estimated to be €2.02 million.

The Value of Preventing one road Fatality (VPF)¹⁵ estimated for 2009 in the 5th PIN Report has been updated to take account of changes to the economic situation in the intervening years. As a result, we have taken the monetary value for 2016 of the human losses avoided by preventing one road fatality to be € 2.02 million at factor cost.¹⁶

The total value of the reductions in road deaths in the EU28 for 2016 compared to 2010 is thus estimated at approximately € 11.9 billion, and the value of the reductions in the years 2011-2016 taken together compared with five years at the 2010 rate is about € 53.8 billion.

¹²The EU15 were the first fifteen countries to join the EU: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and the United Kingdom.

¹³The EU10 were the group of countries that joined the enlarged EU in 2004: Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia.

¹⁴The EU3 includes the three latest countries to join the EU: Romania and Bulgaria joined the EU in 2007 and Croatia in 2013.

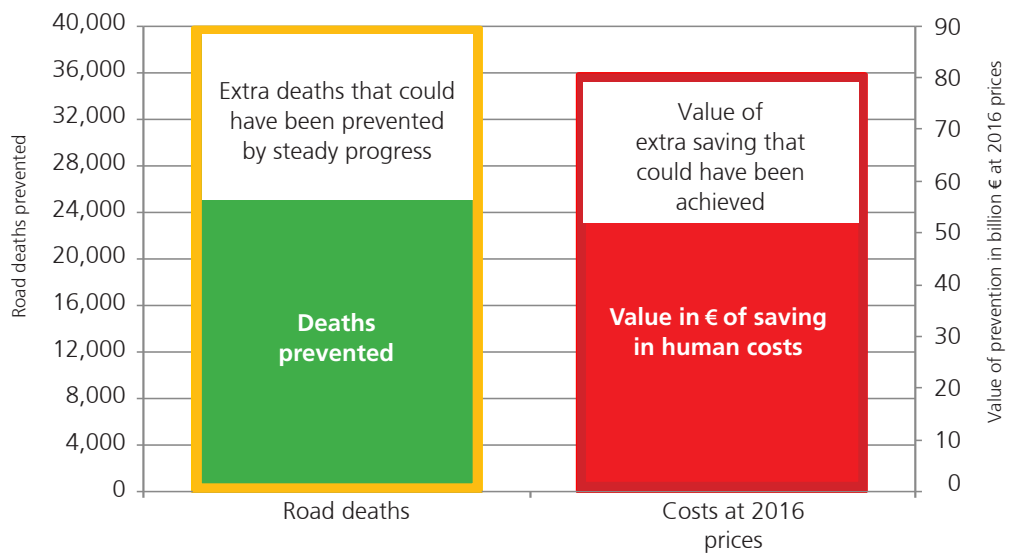
¹⁵In countries where the monetary Value attributed to human losses avoided by Preventing one Fatality (VPF) is estimated on the basis known as Willingness-To-Pay (WTP). The use of WTP valuations in transport safety has been advocated by ETSC since 1997. ETSC (1997) Transport Accident Costs and the Value of Safety.

¹⁶See Methodological Notes, PIN Report 2017, www.etsc.eu/PIN

If the EU had moved towards the 2020 road safety target through constant progress of 6.7%, the greater reductions in deaths in the years 2011-2016 would have increased the valuation of the benefit to society by about € 26.8 billion to about € 80.6 billion over those years (Fig.5).

Given the financial constraints that many EU countries face, the value to society of improving road safety should be taken into account in the policy and budgetary planning processes, expressing in monetary terms the moral imperative of reducing road risk. The high value of societal costs avoided during 2011-2016 shows once more that the saving potential offered by sustained road safety improvements is considerable, making clear to policy-makers the potential for road safety policies to provide a sound investment.¹⁷ Unfortunately, following pressure to reduce public spending, the number of police officers on the roads enforcing driving laws has dropped in several countries¹⁸, as well as budgets for road maintenance.

Fig.5: Reduction in the number of road deaths in EU28 2011-2016 and valuation at 2016 prices and value, together with the additional savings – both in lives and in € of preventing this number of deaths – that could have been achieved if the EU had moved towards the 2020 road safety target by steady progress (%).

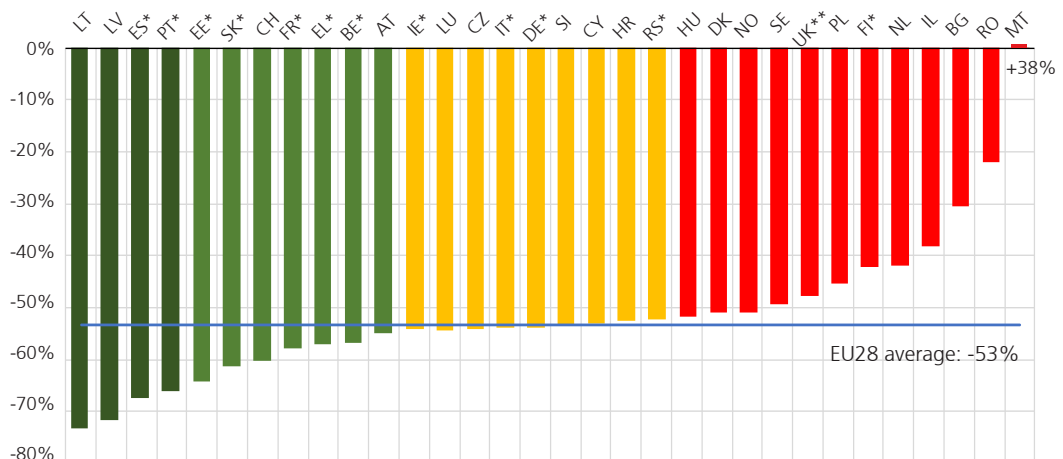


1.5 A 53% reduction in the number of road deaths since 2001

Since the first EU target for reducing the number of road deaths was introduced in 2001, Lithuania achieved a reduction in the number of road deaths of 73% (Fig.6). Latvia, Spain and Portugal follow with reductions of more than 66%. However, the progress has been slow in Romania, Bulgaria, Israel, the Netherlands and Finland.

Fig.6: Relative change in road deaths (%) between 2001 and 2016.

*National provisional estimates used for 2016, as the final figures for 2016 are not yet available at the time of going to print. **UK data for 2016 are the provisional total for Great Britain for the year ending September 2016 combined with the total for Northern Ireland for the calendar year 2016. Numbers of deaths in LU and MT are particularly small and are therefore particularly subject to substantial annual fluctuation. Annual numbers of deaths in CY and EE are also relatively small and therefore may be subject to annual fluctuation.



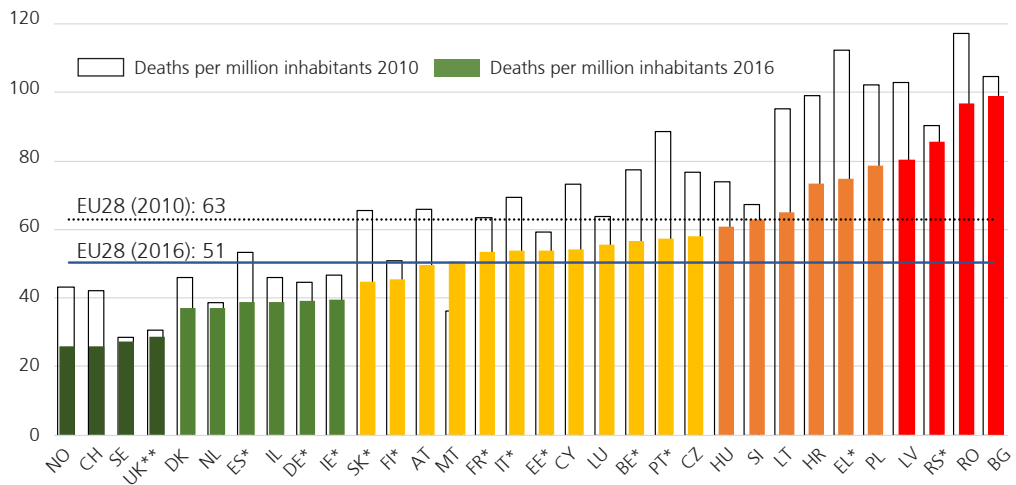
¹⁷ ETSC (2016), PIN Flash Report 31, How traffic law enforcement can contribute to safer roads, <http://etsc.eu/PINflash31>
¹⁸ Ibid

1.6 Norway and Switzerland lead the road safety league

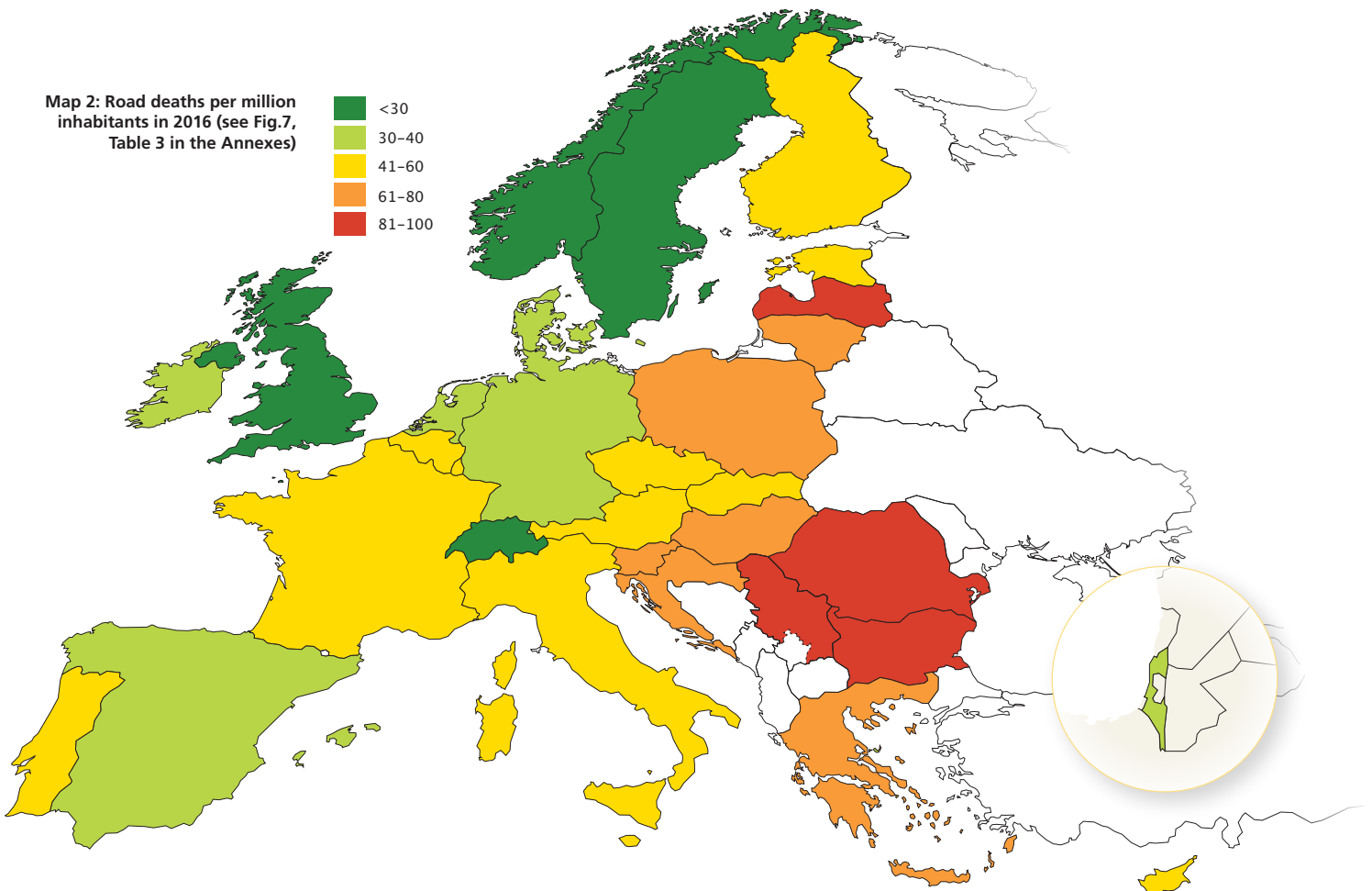
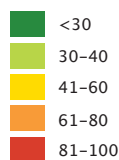
In the EU28 the overall level of road mortality was 51 deaths per million inhabitants in 2016, compared with 63 in 2010 (Fig.7). The mortality in the PIN countries still differs by a factor of three between the groups of countries with the highest and the lowest risk.

In 2016, Norway and Switzerland were the joint leaders with 26 road deaths per million inhabitants, followed by Sweden and the UK with fewer than 30 deaths per million inhabitants. In Denmark, the Netherlands, Spain, Israel, Germany and Ireland, deaths per million inhabitants are between 37 and 40. The highest risk per head of being killed as a road user is in Bulgaria and Romania, with 98 and 97 road deaths per million inhabitants respectively.

Fig.7: Mortality (road deaths per million inhabitants) in 2016 (with mortality in 2010 for comparison). *National provisional estimates used for 2016, as the final figures for 2016 are not yet available at the time of going to print. **UK data for 2016 are the provisional total for Great Britain for the year ending September 2016 combined with the total for Northern Ireland for the calendar year 2016. Numbers of deaths in LU and MT are particularly small and are therefore particularly subject to substantial annual fluctuation. Annual numbers of deaths in CY and EE are also relatively small and therefore may be subject to annual fluctuation.



Map 2: Road deaths per million inhabitants in 2016 (see Fig.7, Table 3 in the Annexes)

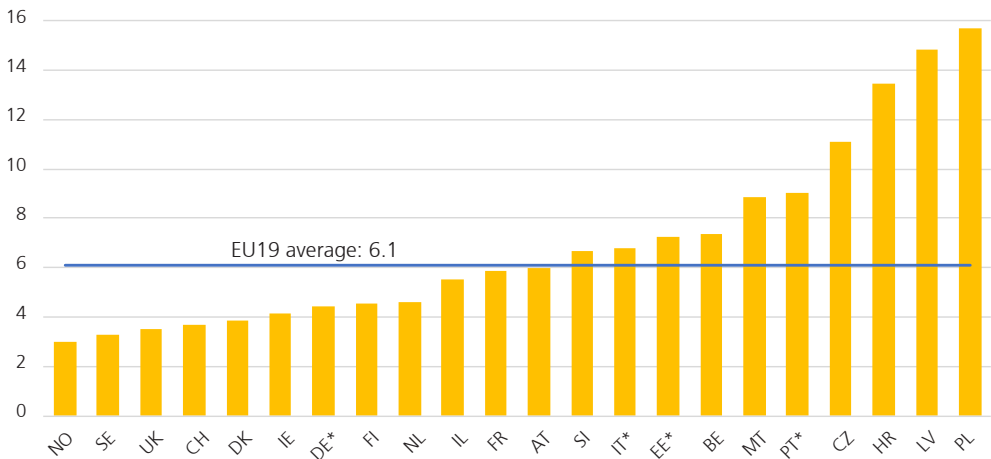


1.7 Road deaths per vehicle-distance travelled

Fig.8 shows the road risk, i.e. deaths per vehicle-km travelled for the 22 countries where up-to-date data are available. This indicator complements the well-established indicator of road mortality (Fig.7).

Norway, Sweden, the UK, Switzerland and Denmark have the lowest risk among the countries collecting up-to-date data. Road risk in Poland, Latvia and Croatia is almost four times higher than in Norway, Sweden, the UK and Switzerland.

Fig.8: Road deaths per billion vehicle-km. Average for the latest three years for which both the road deaths and the estimated data on distance travelled are available. 2014-2016 (DE, EE, CZ, HR, IT, LV, MT, PT, SE, CH, NO), 2013-2015 (BE, DK, FI, FR, IE, NL, SI, IL), 2012-2014 (AT, PL, UK). *Provisional figures for road deaths in 2016.



Differences between the relative positions of countries in Fig.7 and Fig.8 can arise from differences in aspects such as the levels of motorcycling, cycling or walking, the traffic volume, the proportions of traffic on motorways or rural roads and different methods for estimating the distance travelled.

ETSC's recommendations to member states

- Seek to reach targets by all available means, including applying proven enforcement strategies according to the EC Recommendation on enforcement.¹⁹
- Provide adequate government funds that allow the target-oriented setting of measures and set up financing and incentive models for the regional and local level.
- Set quantitative sub-targets based on compliance indicators.
- Use the evidence gathered to devise and update relevant policies. Make the choice of measures based on sound evaluation studies and - where applicable - cost effectiveness considerations.
- Support an urgent revision of the EU General Safety Regulation²⁰, including live-saving technologies, such as Intelligent Speed Assistance, Alcohol Interlocks, Advanced Seat Belt Reminders on all seats, Autonomous Emergency Braking (AEB) and Event Data Recorders.

¹⁹ ETSC (2016), PIN Flash 31, How traffic law enforcement can contribute to safer roads, <http://etsc.eu/PINflash31>

²⁰ Regulation (EC) No 661/2009 of the European Parliament and of the Council of 13 July 2009 concerning type-approval requirements for the general safety of motor vehicles, their trailers and systems, components and separate technical units intended therefor, <https://goo.gl/n9h65c>

ETSC's recommendations to the EU institutions

- Within the context of the revision of the General Safety Regulation prioritise the introduction and further extension of in-vehicle safety technologies linked to the key risk factors, which include Intelligent Speed Assistance, Alcohol Interlocks, Advanced Seat Belt Reminders on all seats and Autonomous Emergency Braking. Mandate Event Data Recorders in all new vehicles.
- Within the context of the revision of the Infrastructure Safety Management Directive²¹, extend the application of the instruments of the Directive to cover all motorways and all EU (co-)financed roads, as well as main rural and urban roads.
- Within the context of the revision of the Cross-Border Enforcement Directive²², strengthen the enforcement chain, including mandatory notification by the country of offence of the owner of the vehicle.
- Implement priorities for 2016-2020 put forward in ETSC's position paper on the mid-term review of the road safety policy orientations including improved infrastructure, vehicle safety, and tackling speeding and drink driving²³.

²¹ Directive 2008/96/EC of the European Parliament and of the Council of 19 November 2008 on road infrastructure safety management, <https://goo.gl/gkUmQe>

²² Directive (EU) 2015/413 of the European Parliament and of the Council of 11 March 2015 facilitating cross-border exchange of information on road-safety-related traffic offences, <https://goo.gl/2vvgIQ>

²³ ETSC (2015), Mid Term Review of the European Commission Transport White Paper 2011-2020, <https://goo.gl/eYSRVM>

PART II

PROGRESS IN REDUCING SERIOUS ROAD TRAFFIC INJURIES IS STANDING STILL

2.1 EU transport ministers call for a serious road injury reduction target

Since 2010, the European Commission has been committed to introducing an EU-wide strategic target to reduce serious road traffic injuries.²⁴ In its White Paper on the future of transport, the European Commission committed to following a vision to move close to zero road deaths in the EU by 2050 and to help in this by developing “a comprehensive strategy of action on road injuries and emergency services, including common definitions and standard classifications of injuries and fatalities, in view of adopting an injury reduction target”.²⁵

In 2010, the Council of the European Union underlined the ‘urgent need to address serious injuries, supporting the development of a common definition and agreeing to the principle of a specific quantitative target’.²⁶

The European Parliament’s 2015 Report on the Mid Term Review of the Transport White Paper supported “the adoption of a 2020 target of a 40% reduction in the number of people seriously injured, accompanied by a fully-fledged EU strategy”.²⁷ 275 MEPs from across the political spectrum also signed a Written Declaration in 2016 repeating the call for such a target.

The United Nations also adopted its first formal target to “halve the number of global deaths and injuries from road traffic accidents (between 2010 and 2020)” in September 2015, as part of a far-reaching package of sustainable development goals (SDGs). The UN target, in line with that agreed by the EU in 2010, goes further as it also includes serious injuries. The ambitious global target applies to all member states of the UN, including the EU28 member states.

Despite this strong political support to take action, the European Commission has failed to adopt a serious injury reduction target for 2020. Meanwhile, at least 14 EU member states have adopted national targets to reduce the number of people seriously injured.²⁸ The European Commission has also begun collecting serious injury data from member states, according to an agreed standard – and published a total for the year 2014 (see next section).

On the 8th of June, ministers formally agreed to set a target of halving the number of serious injuries on roads in the EU by 2030 from their 2020 level by endorsing the Valletta declaration on improving road safety.²⁹ It is now critical that the European Commission brings forward a long term road safety strategy for 2030 including targets to reduce deaths and serious injuries and measures to achieve those targets.

²⁴ European Commission (2010), Towards a European road safety area: policy orientations on road safety 2011-2020, <http://goo.gl/hU5jnw> and European Commission (2011), Transport White Paper, <http://goo.gl/Bc3YZ9>

²⁵ Ibid

²⁶ Council conclusions on road safety, 3052nd Transport, Telecommunications and Energy Council meeting, Brussels, 2–3 December 2010, <http://goo.gl/zrinpE>

²⁷ European Parliament (2015), on the implementation of the 2011 White Paper on Transport: taking stock and the way forward towards sustainable mobility, <http://goo.gl/f08mTy>

²⁸ Source: PIN Panellists.

²⁹ Transport Council conclusions on road safety, 8 June 2017, <https://goo.gl/svkUSY>

2.2 Serious road injury data collection according to the MAIS3+ definition

The Abbreviated Injury Scale (AIS) is a globally accepted trauma classification of injuries, which ranges from 1 (minor injuries) to 6 (non-treatable injuries) and is used by medical professionals to describe the severity of injury for each of the nine regions of the body (Head, Face, Neck, Thorax, Abdomen, Spine, Upper Extremity, Lower Extremity, External and other). As one person can have more than one injury, the Maximum Abbreviated Injury Score (MAIS) is the maximum AIS of all injury diagnoses for a person.

In 2016 the European Commission, for the first time, published an estimate for the number of people seriously injured on Europe's roads: 135,000 in 2014.³⁰ This move required the adoption by all EU member states of a common definition of what constitutes a serious road injury, i.e. an in-patient with an injury level of MAIS3 or more.

The official figures for numbers seriously injured in 2015 according to the MAIS3+ definition had not been published by the European Commission by the time this report went to press. Similarly there is no data available for earlier years.

How is serious injury data collected across the EU?

The High Level Group on Road Safety representing all EU member states identified three main ways member states can choose to collect the data in accordance with the MAIS3+ definition:

1. continue to use police data but apply a correction coefficient;
2. report the number of injured based on data from hospitals;
3. create a link between police and hospital data.

ETSC recommends the third option but, as matching police and hospital data is not straightforward, member states that have not yet started this process should make use of option 1 or 2. Germany is applying a unique method which consists in calculating a projection based on data from the in-depth database GIDAS. Within the framework of the SafetyCube project financed by the European Commission, a study was published on serious road traffic injury data reporting practices. The study provides guidelines and recommendations for each of the three main ways to estimate the number of serious road traffic injuries in order to assist member states in MAIS3+ data collection.³¹

In addition to MAIS3+ data, member states should also continue collecting data based on their previous definitions so as to be able to monitor rates of progress in the same way as prior to 2014 at least until these rates of progress can be compared with those under the new definition.

³⁰ European Commission Press release (March 2016), <http://goo.gl/w0IQkv>

³¹ SafetyCube (2016), Practical guidelines for the registration and monitoring of serious traffic injuries, Deliverable 7.1, <https://goo.gl/hWHPCG>

2.3 Large differences in the numbers of MAIS3+ injuries

In this section, ETSC provides an overview of the number of serious injuries based on the MAIS3+ definition per one road death. The number of serious injuries based on MAIS3+ definition were supplied by the PIN panellists or were extracted from the SafetyCube publication "Practical guidelines for determining the number of serious road injuries".³²

Austria, Belgium, Bulgaria, Finland, France, Germany, Italy, the Netherlands, Poland, Portugal, Sweden, Slovenia, Spain, Switzerland and the UK collect data on the total number of people seriously injured based on the MAIS3+ definition (Fig.9). Other countries are discussing the method for adapting their data collection and reporting systems to the EU-wide serious injury definition.

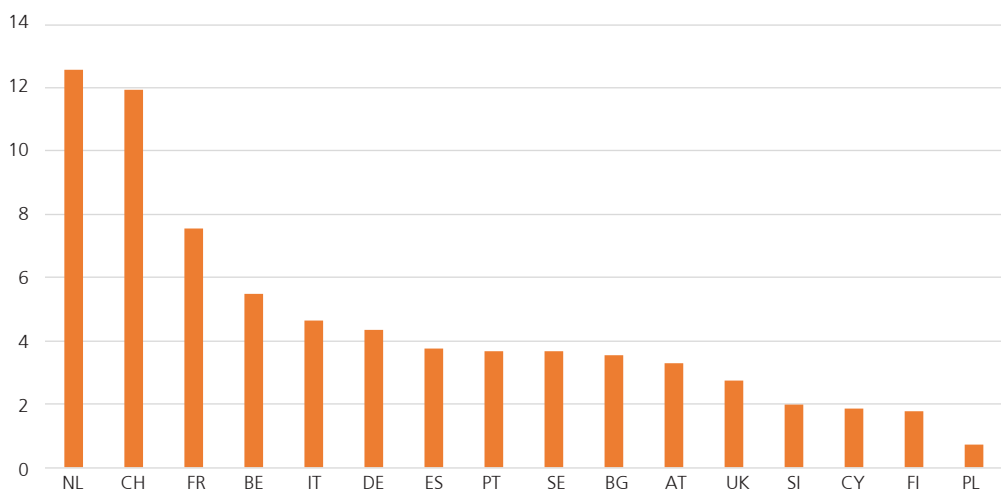
The numbers of serious injuries based on MAIS3+ are not yet fully comparable between the EU member states due to different methods used for MAIS3+ data collection and varying quality of the data.

There are around 13 seriously injured people (MAIS3+) for each road death in the Netherlands, 12 in Switzerland, eight in France, six in Belgium and five in Italy. There is less than one reported injured person (MAIS3+) per road death in Poland. The differences in serious injury based on MAIS3+ definition per death do not necessarily mean that fewer people are injured for every road death in Poland. Poland, as well as other countries, is in the process of improving the quality of the data on the number of seriously injured. The differences in the proportion of MAIS3+ injuries between countries can also arise due to differing modal share.

It is likely the higher proportion of cyclists in the Netherlands contributes to higher proportion of serious road injuries.³³ Falling off a bike can cause serious injuries, but leads relatively less often to road deaths. It should be noted that the number of seriously injured according to the national definition per one road death also differs greatly among countries.

All methods used for estimating the number of serious traffic injuries (MAIS3+) are in one way or another based on hospital records. Even when applying correction to police data, it is necessary to have samples of hospital data to derive the correction factors.³⁴ The challenge with the hospital data is to capture all injuries that occur in traffic collisions as hospitals record injuries from all causes. Therefore, mechanisms for separating serious road traffic injuries from other injuries have to be established.³⁵

Fig.9: Number of seriously injured recorded in national statistics according to MAIS3+ definition per one road death.
AT, BE, CH, CY, DE, ES, FR, PL, SI, UK - 2014; FI, IT, NL, PT - 2015, BG, SE – 2016.



³² ibid
³³ Ibid
³⁴ Ibid
³⁵ Ibid

2.4 A 0.5% reduction in the number of serious road traffic injuries based on national definitions since 2010

It is not yet possible to compare the number of seriously injured between PIN countries according to national definitions of serious injury as the definitions and levels of underreporting vary. The comparison therefore takes as a starting point the changes in the numbers of seriously injured according to the national definitions since 2010 (Fig.10).

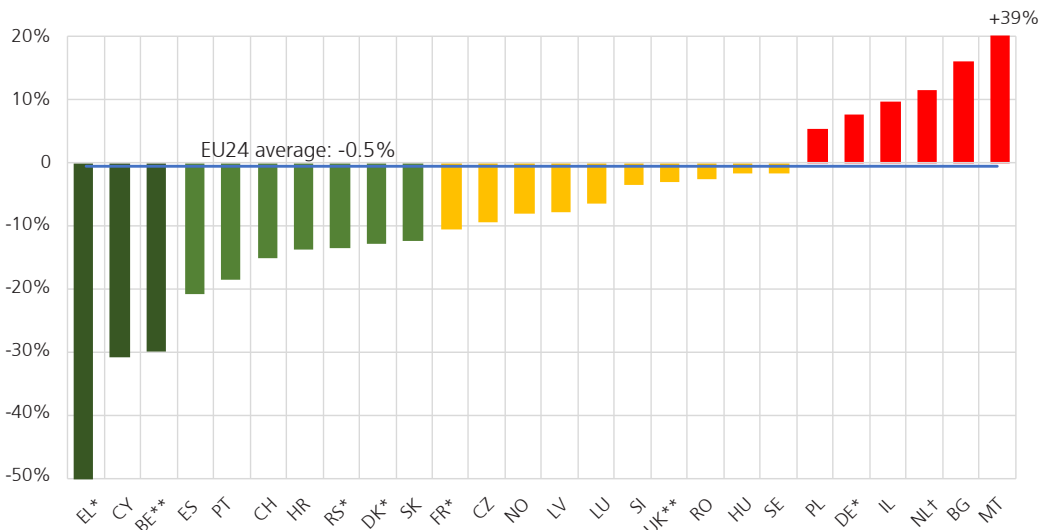
In most of the PIN countries serious road injuries based on the national definition are recorded by the police. Sample studies have shown that the number of serious injuries is considerably higher than the officially recorded number based on police reports. In general, the lower the injury severity, the higher the underreporting in police accident statistics tends to be. The level of reporting tends also to be lower for pedestrians, cyclists and motorcyclists than for car occupants. This is especially the case when no motor vehicle is involved in a collision. Underreporting also occurs when a collision between one motor vehicle and a pedestrian or a cyclist does not result in the immediate death of a victim. In such cases the driver involved or eyewitnesses calls the emergency services but not necessarily the police.

Fig.10 shows the relative change in the number of seriously injured over the period 2010-2016 using current national definitions of serious injury. National definitions supplied by PIN Panellists are available in the Annexes.

Greece achieved the biggest reduction since 2010 in the number of recorded serious road injuries (-50%), followed by Cyprus (-31%) and Belgium (-30%). The number of seriously injured however increased by 39% in Malta, by 16% in Bulgaria, 12% in the Netherlands. Collectively the number of serious injuries in the EU24 has decreased by only 0.5% since 2010, compared to a 19% decrease in the number of road deaths.

Fig.10: Relative change (%) in recorded serious injuries (national definitions) between 2010 and 2016.

*2016 data is provisional. **2010-2015. †National definition is MAIS2+, linked police and hospital records, 2010-2015. Substantial changes in reporting system were introduced in AT in 2012 and in IE in 2014, therefore, the number of serious road injuries in AT and IE are excluded from the figure but these numbers of serious injuries are included in the EU average. EU countries using a definition of seriously injured similar to having injuries requiring at least one night in a hospital as an in-patient: AT, BE, CY, DE, EE, ES, FR, EL, IE, LV, LU, PT, UK, CH, IL.

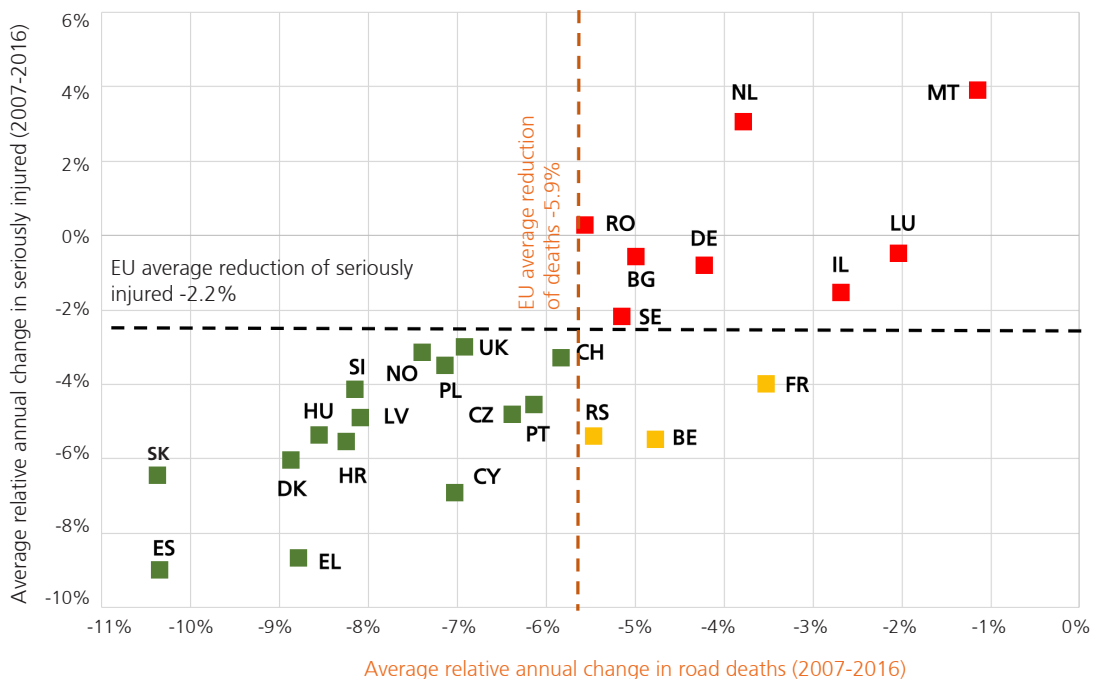


2.5 Annual reduction in serious injury lags behind reduction in road deaths

Fig.11 gives an overview on national progress in reducing the number of road deaths and the number of seriously injured (based on each national definition) in the last ten years. The figure aims to indicate to what extent the two have moved at a similar pace. The average annual relative change in road deaths is plotted on the horizontal axis, and the average annual relative change in seriously injured on the vertical axis, with the EU averages are shown by dotted lines. Green markers are used for countries having performed better than the EU average in both deaths and serious injury reduction, red markers for those below the EU averages in both deaths and serious injury and amber markers for all the others - better than average in deaths but not in serious injury or vice-versa.

Slovakia, Spain, Denmark, Greece, Hungary, Croatia, Slovenia, Latvia, Norway, Poland, the Czech Republic, Cyprus, Portugal, the UK and Switzerland have performed better than the EU average in reducing both seriously injured and road deaths. Belgium, Serbia and France reduced serious road injuries at a faster pace than road deaths.

Fig.11: Estimated average annual change in the numbers of seriously injured by national definition over the period 2007-2016 for countries where data are available, plotted against the estimated average annual change in road deaths over the same period. BE, BG, ES, HU, MT, NL, PT, RO, SI, SK 2006-2015 as serious injury data for 2016 are not available, NL – data on MAIS2+ or more, SE – hospital data. Substantial changes in the police reporting system were introduced in AT in 2012 and in IE in 2014, therefore, the number of serious road injuries in AT and IE are excluded from the figure but the numbers of serious injuries from AT and IE are included in the EU average.





INDICATOR Fig.10 and 11

The numbers of seriously injured were supplied by the PIN panellist in each country using the prevailing national definition.

The full dataset, together with the national definitions, are available in the Annexes. Numbers of people seriously injured based on national definition in 2016 are provisional in Denmark, France, Germany, Greece and Serbia.

Fifteen countries (AT, BE, CY, DE, EE, ES, FR, EL, IE, LV, LU, PT, UK, CH, IL) use similar definitions of severe injuries, spending at least one night in hospital as an in-patient or a close variant of this. In practice, however, in most European countries, there is unfortunately no standardised communication between police and hospitals and the categorisation as “serious” is often made by the police.

Within each country, a wide range of injuries is categorised by the police as serious under the applicable definition. They range from lifelong disablement with severe damage to the brain or other vital parts of the body to injuries whose treatment takes only a few days and which have no longer-term consequences.

ETSC's recommendations to member states

- Set national reduction targets for seriously injured based on MAIS3+ alongside the reduction of deaths.
- Collect serious injury data according to the MAIS3+ definition.
- Include serious injuries in the impact assessment of countermeasures.
- Streamline the emergency response chain and increase the quality of trauma management in order to mitigate collision consequences more effectively.

ETSC's recommendations to EU institutions

- Adopt a target of a 50% reduction between 2020 and 2030 in the number of people seriously injured.
- Involve all relevant directorates general, in particular DG Health and Food Safety (SANTE), in identifying preventive measures, adopting the joint strategy to tackle serious injuries and implementing it. The joint strategy should include measures against which delivery can be made accountable.
- Allocate the resources necessary for the implementation of the strategy and encourage member states to do the same.
- Prioritise short-term measures that can be implemented with existing knowledge, e.g. measures to improve speed limit compliance will reduce injury severity and have immediate effect.
- Support member states with an exchange of best practice in recording procedures and in training of data-handling professionals.
- Continue to review the procedures used by member states to estimate the number of people seriously injured with a view to achieving comparability even though a variety of methods will be used in practice to implement the common definition.
- Include numbers of seriously injured in the impact assessment of countermeasures.
- Treat road injuries and deaths as a public health problem as well as a mobility issue.
- Adopt a new EU Health strategy including road traffic injury prevention measures.

PART III

SWITZERLAND: WINNER OF THE 2017 ROAD SAFETY PIN AWARD

Road deaths in Switzerland have been cut by 60% since 2001, going down from 544 in 2001 to 216 in 2016 (Fig.6). Between 2010 and 2016, the country recorded a 34% decrease in the number of road deaths (Fig.2). Switzerland registered a 15% drop in 2016 compared to 2015 levels (Fig.1).

Switzerland, together with Norway, have the lowest road mortality rate in Europe with 26 road deaths per million inhabitants. Five years ago Switzerland was the 5th best performing country in Europe with 42 road deaths per million inhabitants (Fig.7). In this interview Jürg Röthlisberger, Director of the Swiss Federal Road Office (ASTRA/OFROU), gives his insights into the country's recent success and future plans.



Jürg Röthlisberger,
Director of the Swiss Federal
Road Office

Interview with Jürg Röthlisberger, Director of the Swiss Federal Road Office (ASTRA/OFROU)

ETSC: What were the key measures that helped Switzerland become one of the leading countries in Europe for road safety?

In a nutshell: safer vehicles, better rescue services, safer and better-maintained roads, and constantly improving behaviour of road users.

Several decades ago we implemented several key measures including lower blood alcohol concentration (BAC) limits, lower speed limits and compulsory use of seatbelts. And of course these measures are still in effect today.

In recent years the Federal Council also introduced an action programme called "Via sicura" with the aim of further enhancing road safety. This programme encompasses twenty measures that have entered into force on a step-by-step basis since 2013.

One measure that has been particularly effective is the requirement for motor vehicles to travel with their lights on during the day. Since this measure was introduced, the number of vehicles travelling with their lights on during the day has increased by around 25 percentage points to a level of 95 percent. The fact that vehicles are more visible during the day has resulted in a decrease in the number of collisions.

With respect to the reduction of collisions resulting in road deaths and severe injuries, the regulation governing excessive speeding offences, the complete ban on driving under the influence of alcohol for certain road users (e.g. commercial drivers) and various infrastructure-related measures are proving to be especially effective.

ETSC: Switzerland is a federal country with three different political levels: the federal government, the cantons and the municipalities. How do different institutions and stakeholders cooperate on road safety in Switzerland?

One of the measures in the Via sicura programme requires the federal government, the cantons and the municipalities to analyse their respective road networks

in order to identify collision high risk sites and other danger areas and take appropriate action to make them safer. In order to provide the owners of the road networks with the best possible support in performing their demanding tasks, various enforcement tools and infrastructure-related safety instruments have been developed. Furthermore, platforms have been created for cantonal and municipal road safety officers in order to foster exchanges at all three levels.

ETSC: What are the key road safety challenges that Switzerland faces today? What has been done so far and how are you planning to address these challenges in the long term?

Increasing the safety of cyclists, including users of e-bikes, is a major challenge. The number of cyclists involved in serious collisions has remained more or less constant over the past ten years or so: in 2016 there were 24 deaths and 854 serious injuries. But the number of serious injuries of e-bike users is increasing sharply. The rapid growth in the use of e-bikes in the past few years has led to a sharp rise in the number of collision victims. And the fact that two-thirds of these victims are people over the age of 50 is particularly alarming. Here we are initially focusing on education campaigns aimed at sensitising e-bike users to the involved risks.

Young and novice drivers and motorcycle riders are particularly at risk of becoming involved in collisions resulting in injuries. They are much more likely to cause a collision than road users in other age groups, with the exception of senior citizens. In view of this, we are currently taking steps to improve the standard of driving instruction; draft legislation is in preparation.

Senior citizens also cause more collisions than middle-aged drivers, though not as many as young drivers. Due to the fact that senior citizens tend to be more vulnerable, collisions more frequently prove to be fatal for this age group. People over the age of 70 currently have to undergo a special medical examination every two years: here, the physician has to determine whether the person concerned meets the minimum medical requirements for the safe operation of a motor vehicle.

ETSC: What is Switzerland's long-term target for reducing deaths and injuries?

In its current strategy, the Swiss Federal Roads Office (FEDRO) has set the goal of reducing the annual number of road deaths on our roads to 100, and the annual number of serious injuries to 2500, by 2030.

We feel confident that Via sicura and other measures such as the above-mentioned improvement of driving instruction will lead to a further reduction in the number of collision victims if all the introduced measures are able to take full effect. In addition, the safety of motor vehicles is constantly increasing. We are also developing new information systems that can be used for more precisely analysing the causes of road collisions, as well as their consequences. In this way we are able to react to safety deficits in road traffic more efficiently and in a more targeted manner.

ETSC: What are the Via sicura measures that still have to be implemented in Switzerland?

One of the measures that is highly promising but has not yet been implemented is to be introduced in 2019: the requirement for drivers whose licence has been confiscated due to driving under the influence of alcohol or drugs, or has been confiscated more than once, to attend a rehabilitation course.

ETSC: How does research contribute to improving road safety in Switzerland?

Research results provide a valuable basis for improving road safety. Within the scope of the research programme "Road safety gains through data pooling and structured data analyses (VeSPA), a data pool was created by linking the statistics contained in the register of road traffic collisions with other data sources. This pool permits detailed evaluations of a broad variety of factors relating to road collisions, and has resulted in the development of a list of measures and their potential effectiveness from the point of view of road safety.

A new research programme called "SERFOR – Self Explaining and Forgiving Roads" is currently in preparation.

ETSC: How is the drink driving problem addressed in Switzerland?

In a 1963 ruling, the Federal Supreme Court specified 0.08 percent as the maximum permissible blood-alcohol level. In 1980, the Federal Council adopted this as the official limit for the first time. Then in 2005 the limit was reduced to 0.05 percent, and since 2014 driving under the influence of alcohol has been completely prohibited for certain categories of drivers e.g. novice and commercial drivers. In practice, the limit for these drivers was reduced to 0.01 percent. Anyone who drives a vehicle while strongly intoxicated (blood-alcohol level above 0.16 percent) has to undergo an assessment of suitability to drive a motor vehicle. This regulation was introduced in 2014.

ETSC: How is the speed problem addressed in Switzerland?

Speed limits of 100 km/h on roads outside built-up areas and 130 km/h on motorways were introduced on a temporary basis in 1973, and were declared definitive as of 1977. Lower limits were introduced in 1990: 80 km/h on roads outside built-up areas, and 120 km/h on motorways. Fifteen years ago, comprehensive legislation was created in order to regulate residential/pedestrian zones and zones in which a speed limit of 30 km/h applies.

Within the framework of Via sicura, Parliament defined excessive speeding offences and stipulated how these were to be penalised. With effect from 2013, drivers who commit excessive speeding offences and other severe offences such as illegal racing, harassment of other road users, reckless overtaking, have had their driving licence confiscated for a minimum period of two years, and received prison sentences ranging from a minimum of one year to a maximum of four years. Furthermore, their vehicles can be confiscated.

The above measure is primarily targeted at drivers who massively exceed the applicable speed limit, but it also has an effect on the behaviour of other road users in that the debate on the proposed measure and its subsequent implementation sensitised them to the collision risk associated with driving at very high speeds.

As a further measure, Parliament prohibited commercial and public warnings about speed controls. As a consequence of this move, radio stations throughout Switzerland discontinued their practice of broadcasting such warnings, and a variety of Facebook and Internet sites were classified as illegal and subsequently blocked.

ETSC: What has Switzerland been doing to improve pedestrian and cyclist safety?

The number of pedestrians killed on the road fell from 148 in 1992 to 50 in 2016, i.e. by two-thirds. During the same period, the number of severely injured pedestrians fell from 1239 in 1992 to 622 in 2016.

Within the framework of Via sicura, in order to improve the safety of infrastructure, the standards relating to pedestrian crossings were comprehensively revised, and the new standards entered into effect in 2016.

As already noted, the number of cyclists involved in collisions is more or less stable, but the trend in the statistics relating to e-bikes is alarming. In response, we aim to launch education campaigns in order to raise awareness among users of fast e-bikes to the associated risks. Many of the serious e-bike collisions occur without the involvement of another vehicle.

ETSC: How much do you attribute the use of public transport to the low level of road mortality in Switzerland?

Switzerland is probably number one in the world in terms of the percentage of the population using the railways, and this undoubtedly has an effect on road collision statistics. Nonetheless, most people (around 80 percent) still travel daily by road. The already-implemented measures have made a significant contribution towards the current situation, and additional measures will result in further improvements.

ETSC: How is Switzerland tackling the problem of serious road traffic injuries?

The severity of injuries recorded in road collision reports is compared with the medical statistics recorded in hospitals. In this way it is possible to determine the maximum abbreviated injury scale (MAIS) figures. This comparison makes it possible to verify the data from road collision reports, more precisely assess the severity of injuries sustained by victims and, in future, compare the severity of injuries with figures from other countries. The findings are delivered annually to the European Union's CARE (Community Database on Accidents on the Roads in Europe) and to IRTAD (International Road Traffic and Accident Database).

ETSC: What is Switzerland doing to address work-related road safety? Do public authorities contribute to improving road safety for their own employees?

FEDRO offers periodical road safety courses for its personnel. It also places high demand on workplace safety, e.g. concerning the design and signalling of roadwork sites and the safety of those who work on the roads.

ETSC: What is Switzerland's role in the EU in terms of knowledge sharing and best practice exchange in road safety? Which EU road safety legislation has been adopted?

Switzerland is involved in a variety of international bodies, for example CARE and IRTAD – mentioned above. We have also adopted the Directive on Road Infrastructure Safety Management and the Directive on Minimum Safety Requirements for Tunnels.

ANNEXES

Country	ISO Code
Austria	AT
Belgium	BE
Bulgaria	BG
Croatia	HR
Cyprus	CY
The Czech Republic	CZ
Denmark	DK
Estonia	EE
Finland	FI
France	FR
Germany	DE
Greece	EL
Hungary	HU
Ireland	IE
Italy	IT
Latvia	LV
Lithuania	LT
Luxembourg	LU
Malta	MT
The Netherlands	NL
Poland	PL
Portugal	PT
Romania	RO
Slovakia	SK
Slovenia	SI
Spain	ES
Sweden	SE
United Kingdom	UK
Israel	IL
Norway	NO
Serbia	RS
Switzerland	CH

Table 1 (Fig.1,2) Road deaths and relative change in road deaths between 2015 and 2016 and between 2010 and 2016.

	2010	2011	2012	2013	2014	2015	2016		Fig.1 2015-2016	Fig.2 2010-2016
LT	299	297	302	258	267	242	188	LT	-22.3%	-37.1%
CY	60	71	51	44	45	57	46	CY	-19.3%	-23.3%
CZ	802	773	742	654	688	737	611	CZ	-17.1%	-23.8%
LV	218	179	177	179	212	188	158	LV	-16.0%	-27.5%
CH	327	320	339	269	243	253	216	CH	-14.6%	-33.9%
BE*	841	862	770	724	727	732	640	BE*	-12.6%	-23.9%
HR	426	418	393	368	308	348	307	HR	-11.8%	-27.9%
SK*	353	324	295	223	258	274	242	SK*	-11.7%	-31.4%
LU	32	33	34	45	35	36	32	LU	-11.1%	0.0%
AT	552	523	531	455	430	479	432	AT	-9.8%	-21.7%
FI*	272	292	255	258	229	270	250	FI*	-7.4%	-8.1%
HU	740	638	605	591	626	644	597	HU	-7.3%	-19.3%
DE*	3,651	4,009	3,601	3,340	3,368	3,459	3,214	DE*	-7.1%	-12.0%
PT*	937	891	718	637	638	593	565	PT*	-4.7%	-39.7%
IT*	4,114	3,860	3,753	3,401	3,381	3,428	3,270	IT*	-4.6%	-20.5%
BG	776	658	605	601	655	708	708	BG	0.0%	-8.8%
FR*	3,992	3,963	3,653	3,268	3,384	3,461	3,469	FR*	0.2%	-13.1%
RO	2,377	2,018	2,042	1,861	1,818	1,893	1,913	RO	1.1%	-19.5%
RS*	660	731	688	650	536	599	607	RS*	1.3%	-8.0%
NL ⁽³⁾	640	661	650	570	570	620	629	NL ⁽³⁾	1.5%	-1.7%
EL*	1,258	1,141	988	879	795	793	807	EL*	1.8%	-35.9%
PL	3,907	4,189	3,571	3,357	3,202	2,938	3,026	PL	3.0%	-22.5%
IL	352	341	263	277	279	322	335	IL	4.0%	-4.8%
UK ^{*(2)}	1,905	1,960	1,802	1,769	1,854	1,804	1,878	UK ^{*(2)}	4.1%	-1.4%
SE	266	319	285	260	270	259	270	SE	4.2%	1.5%
EE*	79	101	87	81	78	67	71	EE*	6.0%	-10.1%
ES ^{*(1)}	2,478	2,060	1,903	1,680	1,688	1,689	1,797	ES ^{*(1)}	6.4%	-27.5%
SI	138	141	130	125	108	120	130	SI	8.3%	-5.8%
NO	210	168	145	187	147	117	135	NO	15.4%	-35.7%
IE*	212	186	163	188	193	162	188	IE*	16.0%	-11.3%
DK	255	220	167	191	183	178	211	DK	18.5%	-17.3%
MT	15	17	9	18	10	11	22	MT	100.0%	46.7%
EU28	31,595	30,804	28,282	26,025	26,020	26,190	25,671	EU28	-2.0%	-18.7%

Source: national statistics provided by the PIN panellists for each country.

*National provisional estimates used for 2016, as the final figures for 2016 were not yet available at the time of going to print.

⁽¹⁾ ES - decrease in 2011 in Spain is partly due to change in reporting methods. Like Portugal, prior to 2010 the number of people killed are people killed on the spot multiplied by a coefficient. Since 2011 Spain is able to report data according to the EU common definition of any person killed immediately or dying within 30 days as a result of an injury accident by matching police and national deaths register.

⁽²⁾ UK - 2016 estimate is based on GB provisional total for the year ending September 2016 (1,810) and the final data for Northern Ireland for the calendar year 2016 (68 deaths).

⁽³⁾ NL - figures have been corrected for police underreporting. In the Netherlands, the reported number of deaths is checked by Statistics Netherlands (CBS) and compared individually to the death certificates and Court files of unnatural death.

Table 2 (Fig.6,11) Road deaths and relative change in road deaths between 2001 and 2016 and estimated average relative annual change 2007-2016.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Fig.6 2001- 2016	Annual relative change Fig.11 2007-2016	
LT	706	697	709	752	773	760	740	499	370	299	297	302	258	267	242	188	-73.4%	-11.1%	
LV	558	559	532	516	442	407	419	316	254	218	179	177	179	212	188	158	-71.7%	-8.1%	
ES*(¹)	5,517	5,347	5,399	4,741	4,442	4,104	3,823	3,100	2,714	2,478	2,060	1,903	1,680	1,688	1,689	1,797	-67.4%	-10.3%	2006- 2015
PT*(²)	1,670	1,668	1,542	1,294	1,247	969	974	885	840	937	891	718	637	638	593	565	-66.2%	-6.1%	
EE*	199	223	164	170	169	204	196	132	100	79	101	87	81	78	67	71	-64.3%	-8.8%	
SK*	625	626	653	608	600	608	661	606	385	353	324	295	223	258	274	242	-61.3%	-10.4%	
CH	544	513	546	510	409	370	384	357	349	327	320	339	269	243	253	216	-60.3%	-5.8%	
FR*(⁶)	8,253	7,742	6,126	5,593	5,318	4,709	4,620	4,275	4,273	3,992	3,963	3,653	3,268	3,384	3,461	3,469	-58.0%	-3.5%	
EL*	1,880	1,634	1,605	1,670	1,658	1,657	1,612	1,553	1,456	1,258	1,141	988	879	795	793	807	-57.1%	-8.8%	
BE*	1,486	1,355	1,213	1,162	1,089	1,073	1,071	944	943	841	862	770	724	727	732	640	-56.9%	-4.8%	2006- 2015
AT	958	956	931	878	768	730	691	679	633	552	523	531	455	430	479	432	-54.9%	-5.7%	2006- 2015
LU	70	62	53	50	47	43	45	35	48	32	33	34	45	35	36	32	-54.3%	-2.0%	
IE*	411	376	335	374	396	365	338	279	238	212	186	163	188	193	162	188	-54.3%	-9.3%	2005- 2014
CZ	1,334	1,431	1,447	1,382	1,286	1,063	1,222	1,076	901	802	773	742	654	688	737	611	-54.2%	-6.4%	
DE*	6,977	6,842	6,613	5,842	5,361	5,091	4,949	4,477	4,152	3,651	4,009	3,601	3,340	3,368	3,459	3,214	-53.9%	-4.2%	
IT*	7,096	6,980	6,563	6,122	5,818	5,669	5,131	4,725	4,237	4,114	3,860	3,753	3,401	3,381	3,428	3,270	-53.9%	-4.7%	
SI	278	269	242	274	257	262	293	214	171	138	141	130	125	108	120	130	-53.2%	-8.2%	
CY	98	94	97	117	102	86	89	82	71	60	71	51	44	45	57	46	-53.1%	-7.0%	
HR	647	627	701	608	597	614	619	664	548	426	418	393	368	308	348	307	-52.6%	-8.3%	
RS*	1,275	854	868	960	843	911	968	905	809	660	731	688	650	536	599	607	-52.4%	-5.5%	
HU	1,239	1,429	1,326	1,296	1,278	1,303	1,232	996	822	740	638	605	591	626	644	597	-51.8%	-8.6%	2006- 2015
DK	431	463	432	369	331	306	406	406	303	255	220	167	191	183	178	211	-51.0%	-8.9%	
NO	275	310	280	258	224	242	233	255	212	210	168	145	187	147	117	135	-50.9%	-7.4%	
SE(³)	534	515	512	463	423	428	454	380	341	266	319	285	260	270	259	270	-49.4%	-5.1%	
UK*(⁴)	3,598	3,581	3,658	3,368	3,337	3,300	3,056	2,718	2,337	1,905	1,960	1,802	1,769	1,854	1,804	1,878	-47.8%	-5.1%	2006- 2015
PL	5,534	5,827	5,640	5,712	5,444	5,243	5,583	5,437	4,572	3,907	4,189	3,571	3,357	3,202	2,938	3,026	-45.3%	-7.1%	
FI*	433	415	379	375	379	336	380	344	279	272	292	255	258	229	270	250	-42.3%	-4.0%	
NL(⁵)	1,083	1,069	1,088	881	817	811	791	750	720	640	661	650	570	570	620	629	-41.9%	-3.8%	2006- 2015
IL	542	525	445	467	437	405	382	412	314	352	341	263	277	279	322	335	-38.2%	-2.7%	
BG	1,011	959	960	943	957	1,043	1,006	1,061	901	776	658	605	601	655	708	708	-30.0%	-5.0%	
RO	2,450	2,412	2,229	2,444	2,629	2,587	2,800	3,065	2,797	2,377	2,018	2,042	1,861	1,818	1,893	1,913	-21.9%	-5.7%	
MT	16	16	16	13	16	10	14	15	21	15	17	9	18	10	11	22	37.5%	-1.1%	
EU28	55,092	54,174	51,165	48,017	45,981	43,781	43,215	39,713	35,427	31,595	30,804	28,282	26,025	26,020	26,190	25,671	-53.4%	-5.8%	

Source: National statistics provided by the PIN panellists for each country.

*National provisional estimates used for 2016, as the final figures for 2016 were not yet available at the time of going to print.

(¹)ES - decrease in 2011 in Spain is partly due to change in reporting methods. Like Portugal, prior to 2010 the number of people killed are people killed on the spot multiplied by a coefficient. Since 2011 Spain is able to report data according to the EU common definition of any person killed immediately or dying within 30 days as a result of an injury accident by matching police and national deaths register.

(²)PT - increases in Portugal 2010 and 2011 are partly due to change in reporting methods. Like Spain prior to 2010 the number of people killed are people killed on the spot multiplied by a coefficient of 1.14. Since 2010 Portugal is able to collect deaths according to the EU common definition of any person killed immediately or dying within 30 days as a result of an injury accident. The number of people killed in 2010 would have been 845 in 2010, 785 in 2011 and 653 in 2012 using the old methodology.

(³)SE - the definition of road deaths changed in 2010 to exclude suicides. The time series was adjusted so figures for previous years exclude suicides as well.

(⁴)UK - 2016 estimate is based on GB provisional total for the year ending September 2016 (1810) and the final data for Northern Ireland for the calendar year 2016 (68 deaths).

(⁵)NL - figures have been corrected for police underreporting. In the Netherlands, the reported number of deaths is checked by Statistics Netherlands (CBS) and compared individually to the death certificates and Court files of unnatural death.

(⁶)FR - Data for years 2001-2004 were recalculated: estimation of the number of persons killed within 30 days from the number of persons killed within 6 days, by applying a coefficient of 1.069.

Table 3 (Fig.7) Road deaths per million inhabitants in 2016 and 2010.

2016				2010		
	Road deaths	Inhabitants	Deaths per mln inhabitants	Road deaths	Inhabitants	Deaths per mln inhabitants
NO	135	5,213,985	26	210	4,858,199	43
CH	216	8,325,194	26	327	7,785,806	42
SE	270	9,851,017	27	266	9,340,682	28
UK*	1,878	65,382,556	29	1,905	62,510,197	30
DK	211	5,707,251	37	255	5,534,738	46
NL	629	16,979,120	37	640	16,574,989	39
ES*	1,797	46,438,422	39	2,478	46,486,619	53
IL ⁽¹⁾	335	8,630,700	39	352	7,695,100	46
DE*	3,214	82,162,000	39	3,651	81,802,257	45
IE*	188	4,757,976	40	212	4,549,428	47
SK*	242	5,426,252	45	353	5,390,410	65
FI*	250	5,487,308	46	272	5,351,427	51
AT	432	8,700,471	50	552	8,375,290	66
MT	22	434,403	51	15	414,027	36
FR*(1)	3,469	64,859,599	53	3,992	62,765,235	64
IT*	3,270	60,665,551	54	4,114	59,190,143	70
EE*	71	1,315,944	54	79	1,333,290	59
CY	46	848,319	54	60	819,140	73
LU	32	576,249	56	32	502,066	64
BE*	640	11,267,910	57	841	10,839,905	78
PT*(1)	565	9,839,140	57	937	10,573,479	89
CZ	611	10,553,843	58	802	10,462,088	77
HU	597	9,830,485	61	740	10,014,324	74
SI	130	2,064,188	63	138	2,046,976	67
LT	188	2,888,558	65	299	3,141,976	95
HR	307	4,190,669	73	426	4,302,847	99
EL*	807	10,783,748	75	1,258	11,183,516	112
PL	3,026	38,432,992	79	3,907	38,167,329	102
LV	158	1,968,957	80	218	2,120,504	103
RS*	607	7,076,372	86	660	7,306,677	90
RO	1,913	19,759,968	97	2,377	20,294,683	117
BG	708	7,153,784	99	776	7,421,766	105
EU 28	25,671	508,326,680	51	31,595	503,402,952	63

Source: National statistics provided by the PIN panellists for each country, completed with Eurostat for population figures.

*National provisional estimates used for 2016, as the final figures for 2016 were not yet available at the time of going to print.

⁽¹⁾ Population data provided by PIN panellists.

Table 4 (Fig.8) Road deaths per billion vehicle-kilometres.
Average of the last three years available.

	Average number of road deaths	Average distance travelled (in millions) ⁽¹⁾	Deaths per billion vehicle-km	Time period covered
NO	133	44,397	3.0	2014-2016
SE	266	80,910	3.3	2014-2016
UK	1,808	512,100	3.5	2012-2014
CH	237	63,957	3.7	2014-2016
DK	184	47,616	3.9	2013-2015
IE	181	43,385	4.2	2013-2015
DE*	3,347	752,933	4.4	2014-2016
NL	587	127,417	4.6	2013-2015
FI	252	54,632	4.6	2013-2015
IL	293	52,809	5.5	2013-2015
FR	3,371	575,033	5.9	2013-2015
AT	472	78,481	6.0	2012-2014
SI	118	17,626	6.7	2013-2015
IT*	3,360	495,115	6.8	2014-2016
EE*	72	9,945	7.2	2014-2016
BE	728	99,076	7.3	2013-2015
MT	14	1,624	8.8	2013-2015
PT*	599	66,483	9.0	2014-2016
CZ	679	50,817	11.1	2014-2016
HR	321	23,856	13.5	2014-2016
LV	186	12,564	14.8	2014-2016
PL	3,377	215,066	15.7	2012-2014
EU19	19,921	3,264,679	6.1	2014-2016

BG	690	n/a		2014-2016
CY	49	n/a		2014-2016
ES	1,725	n/a		2014-2016
EL	798	n/a		2014-2016
HU	622	n/a		2014-2016
LU	34	n/a		2014-2016
LT	697	n/a		2014-2016
RO	1,875	n/a		2014-2016
SK	258	n/a		2014-2016
RS	581	n/a		2014-2016

⁽¹⁾Data provided by PIN panellists. PIN countries are using different methods for estimating the numbers of distance travelled.

*National provisional estimates used for 2016, as the final figures for 2016 were not yet available at the time of going to print.

Table 5 (Fig.10,11) Number of seriously injured according to national definition (see table 7 for definition) and relative change in serious injuries between 2010-2016 and annual average relative change over the period 2007-2016. Some countries are taking the lead in collecting number of people seriously injured as MAIS3+.

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Fig.10 relative change 2010-2016	Fig.11 Annual relative change 2007-2016 ⁽¹⁾	
AT	6,774	7,147	6,783	6,652	6,370	6,397	8,017	7,344	7,434	7,486		17.5%	1.3%	2006-2015
AT MAIS3+									1,410					
BE*	6,999	6,997	6,782	6,647	5,982	6,168	5,277	4,947	4,502	4,201		-29.8%	-5.8%	2006-2015
BE MAIS3+									3,979					
BG	10,215	9,827	9,952	8,674	8,080	8,303	8,193	8,776	8,640	8,971	9,374	16.0%	-0.6%	
BG MAIS3+					2,451	2,366	2,204	2,034	2,175	2,295	2,503			
CY*	730	717	661	647	586	561	551	407	467	377	406	-30.7%	-6.9%	
CY MAIS3+									83					
CZ	3,883	3,861	3,725	3,467	2,774	3,026	2,925	2,711	2,703	2,462	2,514	-9.4%	-4.8%	
DE*	74,502	75,443	70,644	68,567	62,620	68,985	66,279	64,045	67,709	67,706	67,399	7.6%	-0.8%	
DE MAIS3+									14,645					
DK	2,911	3,138	2,831	2,498	2,063	2,172	1,952	1,891	1,798	1,780	1,797	-12.9%	-6.0%	
EE*	n/a	n/a	n/a	n/a	n/a	n/a	476	501	455	449	469			
ES*	21,382	19,295	16,488	13,923	11,995	11,347	10,444	10,086	9,574	9,495		-20.8%	-9.0%	2006-2015
ES MAIS3+					7,331	7,420	7,047	6,613	6,343					
FI MAIS3+	n/a	n/a	n/a	n/a	1,326	1,308	n/a	n/a	519	477				
FR*	40,662	38,615	34,965	33,323	30,393	29,679	27,142	25,966	26,635	26,595	27,214	-10.5%	-4.0%	
FR MAIS3+									25,500					
EL*	2,021	1,821	1,872	1,676	1,709	1,626	1,399	1,212	1,016	999	850	-50.3%	-8.7%	
HR	4,308	4,544	4,029	3,905	3,182	3,409	3,049	2,831	2,675	2,822	2,747	-13.7%	-5.5%	
HU	8,431	8,155	7,227	6,442	5,671	5,152	4,921	5,369	5,331	5,574		-1.7%	-5.4%	2006-2015
IE*	907	860	835	639	561	472	474	508	759			35.3%	-6.8%	2005-2014
IT	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a			
IT MAIS3+							13,112	12,899	14,943	15,901		21.3%		
LU*	319	286	290	288	266	317	339	316	245	319	249	-6.4%	-0.5%	
LV*	630	638	791	681	569	531	493	452	434	479	525	-7.7%	-4.9%	
LT	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	142	55			
MT	277	246	248	199	211	235	300	265	292	306	294	39.3%	3.7%	
NL	15,400	16,600	17,600	18,800	19,100	19,700	19,500	18,800	20,700	21,300		11.5%	3.0%	2006-2015
NL MAIS3+	4,500	5,000	5,300	5,500	5,700	6,100	6,400	6,500	7,500	7,800		36.8%		
PL	14,659	16,053	16,042	13,689	11,491	12,585	12,049	11,669	11,696	11,200	12,109	5.4%	-3.5%	
PL MAIS3+								1,859	2,263	n/a	n/a			
PT*	3,483	3,116	2,606	2,624	2,475	2,265	1,941	1,946	2,010	2,089	2,015	-18.6%	-4.5%	
PT MAIS3+					2,290	2,368	2,111	2,074	2,055	2,171				
RO	5,780	7,091	9,403	9,097	8,509	8,768	8,860	8,156	8,122	9,057	8,285	-2.6%	0.3%	
SE		5,470	5,594	5,208	4,662	4,518	4,450	4,826	4,889	4,313	4,583	-1.7%	-2.2%	
SE MAIS3+		1,394	1,570	1,480	1,217	1,102	1,032	1,091	1,159	906	987	-18.9%		
SI	1,259	1,295	1,100	1,061	880	919	848	708	826	926	850	-3.4%	-4.1%	
SI MAIS 3+									213					
SK	2,032	2,036	1,806	1,408	1,207	1,168	1,122	1,086	1,057	1,121	1,057	-12.4%	-6.5%	
UK*	29,884	28,871	27,024	25,725	23,552	23,947	23,834	22,377	23,517	22,855		-3.0%	-3.0%	2006-2015
UK MAIS3+									5,070					
CH*	5,066	5,235	4,780	4,708	4,458	4,437	4,202	4,129	4,043	3,830	3,785	-15.1%	-3.3%	
CH MAIS3+	n/a	n/a	n/a	n/a	n/a	3,428	3,262	3,204	2,899					
IL*	2,304	2,096	2,063	1,741	1,683	1,340	1,611	1,624	1,562	1,796	1,845	9.6%	-1.6%	
NO	940	879	867	751	714	679	639	640	674	682	656	-8.1%	-3.1%	
RS	4,778	5,318	5,197	4,638	3,883	3,777	3,544	3,422	3,275	3,448	3,363	-13.4%	-5.4%	
EU 24⁽²⁾	262,918	262,122	249,298	235,840	214,908	222,250	214,359	206,694	213,031	213,192	213,938	-0.5%	-2.2%	

Table 6 (Fig.9) Number of seriously injured recorded in national statistics according to MAIS3+ definition per one road death in the latest year available.

	Number of MAIS3+ injuries	Number of road deaths	Serious injuries per one road death	Latest year of MAIS3+ data available
PL MAIS3+	2,263	3,202	0.7	2014
FI MAIS3+	477	270	1.8	2015
CY MAIS3+	83	45	1.8	2014
SI MAIS3+	213	108	2.0	2014
UK MAIS3+	5,070	1,854	2.7	2014
AT MAIS3+	1,410	430	3.3	2014
BG MAIS3+	2,503	708	3.5	2016
SE MAIS3+	987	270	3.7	2016
PT MAIS3+	2,171	593	3.7	2015
ES MAIS3+	6,343	1,688	3.8	2014
DE MAIS3+	14,645	3,368	4.3	2014
IT MAIS3+	15,901	3,428	4.6	2015
BE MAIS3+	3,979	727	5.5	2014
FR MAIS3+	25,500	3,384	7.5	2014
CH MAIS3+	2,899	243	11.9	2014
NL MAIS3+	7,800	620	12.6	2015

CZ MAIS3+			n/a	
DK MAIS3+			n/a	
EE MAIS3+			n/a	
EL MAIS3+			n/a	
HR MAIS3+			n/a	
HU MAIS3+			n/a	
IE MAIS3+			n/a	
LU MAIS3+			n/a	
LV MAIS3+			n/a	
LT MAIS3+			n/a	
MT MAIS3+			n/a	
RO MAIS3+			n/a	
SK MAIS3+			n/a	
IL MAIS3+			n/a	
NO MAIS3+			n/a	
RS MAIS3+			n/a	

Source: national statistics provided by the PIN panellists for each country.
 MAIS3+ data source for BE, CY, DE, FR, SI, UK: SafetyCube publication <https://goo.gl/hWHPCG>

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Source: national statistics provided by the PIN panellists for each country. MAIS3+ data source for BE, CY, DE, FR, SI, UK: SafetyCube publication <https://goo.gl/hWHPCG>

⁽¹⁾The relative change shown in Fig.10 is calculated only from the numbers of serious injuries in 2010 and 2016 and comparison between countries can be misleading if these two numbers are unusually high or low in different ways in the countries compared. To assist such comparison, the average annual percentage change shown in Fig.11 has been estimated for each country from its numbers of serious injuries in each of the 10 years 2007-2016.

*Similar national serious injury definition.

EU24⁽²⁾ Seriously injured according to each country national definition.

Table 7. Current national definition of seriously injured person in a road collision as used in Fig.10 and 11.

AT*	Whether an injury is severe or slight is determined by §84 of the Austrian criminal code. A severe injury is one that causes a health problem or occupational disability longer than 24 days, or one that "causes personal difficulty". Police records. As of 1.1.2012, only 2 instead of 3 degrees of severities, slight, degree unknown, severe. Therefore and because of lower underreporting due to the new police recording system, the figure increased substantially.
BE*	Hospitalised more than 24 hours. But in practice no communication between police and hospitals so in most cases allocation is made by the police. Police records.
BG	The level of "body damage" is defined in the Penalty code. There are 3 – light, medium and high level of body damage. Prior to introducing MAIS in the Police records the first level is "light injured", the second and third is "heavy injured". The medium and high level corresponded to MAIS3+ levels, as it is defined in the CADaS Glossary.
CY*	Hospitalised for at least 24 hours. Police records.
CZ	Determined by the treating doctor, if serious health harm (specified approximately along the types by the law) occurs. Police records.
DE*	Hospitalised for at least 24 hours. Police records.
DK	All injuries except "slight". Police records.
EE*	Hospitalised for at least 24 hours. Hospital data is used to find out how long the person (involved in an accident according to the police data) was hospitalised.
ES*	Hospitalised for at least 24 hours. Police records.
FI	Serious injury in official statistics is defined as MAIS3+ (AAAM, Association for the Advancement of Automotive Medicine). The number of seriously injured MAIS3+ is formed by combining the official road accident participant statistics maintained by Statistics Finland and the Hospital Discharge Register (HILMO), using personal identity numbers as the link.
FR*	Until 2004: hospitalised for at least 6 days. From 2005: hospitalised for at least 24 hours. Police records. People injured are asked to go to the police to fill in information about the collision, in particular if they spent at least 24 hours as in-patient.
EL*	Injury and injury severity are estimated by police officers. It is presumed that all persons who spent at least one night at the hospital are recorded as seriously injured persons. Police records.
HR	ICD-International Classification of Diseases - used by medical staff exclusively, after admission to the hospital.
HU	Serious injury which necessitates hospitalisation for more than 48 hours within seven days after occurrence or caused fracture, except for finger, toe, nose fractures; or caused cut wounds, which resulted in serious bleeding or nerve, muscle or tendon injuries; or caused injury of inner organs; or caused burn of second or third degree or burn affecting more than 5% of body surface.
IE*	Hospitalised for at least 24 hours as an in-patient, or any of the following injuries whether or not detained in hospital: fractures, concussion, internal injuries, crushing, severe cuts and lacerations, several general shock requiring medical treatment. Police records.
IT	Separate statistics on seriously and slightly injuries are n/a in the Road accidents dataset. Despite that, Italy calculated the number of serious injured according to EU recommendations (MAIS 3+) and using data based on hospitals discharge records.
LU*	Hospitalised for at least 24 hours as in-patient. Police records.
LV*	From 2004: hospitalised more than 24 hours as in-patient. Police records.
LT	Serious injury: seriously injured person loses more than 30 % of his/her working capacity or/and his or her body is being incurably mutilated.
MT	An injury accident is classified as 'Serious' injury (referred to in Malta accident statistics as 'Grievous' injury) if the person does not recover his/her previous health condition with 30 days. Police records.
NL	Definition: "A serious road injury is a road crash casualty who has been admitted to hospital with a minimum MAIS (Maximum Abbreviated Injury Score5) injury severity of at least 2 on a scale of 6, and who has not died within 30 days from the consequences of the crash." Method: MAIS=2 or higher. Linked Police-Hospital records + remainder file + estimate of unobserved C/RC. MAIS3+ is a subset of MAIS2+

PL	A person who sustained a serious disability, a serious incurable disease or a chronic life threatening disease, permanent mental disease, complete or substantial permanent incapacity to work in their current occupation or a permanent or substantial scarring or disfiguration of the body; the definition also includes persons who have suffered other injuries incapacitating their bodies or causing ill health for longer than 7 days". Police records.
PT*	Hospitalised for at least 24 hours. Police records.
RO	Person seriously injured in traffic accident, person who has suffered: a) loss of a sense or organ or cessation of their operation; b) permanent physical or mental disability; c) a serious and permanent aesthetic wound; d) an abortion; e) fractures, except for nasal or zygomatic bone fractures, fingers, clavicle, unifocal fractures of 1-3 ribs or 1-3 tooth pulsations, if they did not require hospitalization for more than 24 hours; f) shock, concussion, internal injuries, crushing, severe cuts and tears or polytrauma that required hospitalization for more than 24 hours; g) abrasions, sprains, contusions or other such injuries that required hospitalization for more than two working days. Serious shock, or any other injury which leads to death more than 30 days after the collision. Police records.
SE	The definition of seriously injured was updated in 2007. A serious injury is now defined as a health loss following a traffic injury reflecting that a person does not recover the previous health condition within a reasonable amount of time. This series is used in the national annual follow up and there is a goal for 2020 (-25 % since 2007). Hospital records.
SI	Any injured persons who were involved in a road traffic accident and sustained injuries due to which their lives were in danger or due to which their health was temporarily or permanently damaged or due to which they were temporarily unable to perform any work or their ability to work was permanently reduced (Penal Code of the Republic of Slovenia). Police records.
SK	Serious bodily harm or serious disease, which is a) mutilation, b) loss or substantial impairment of work capacity, c) paralysis of a limb, d) loss or substantial impairment of the function of a sensory organ, e) damage to an important organ, f) disfigurement, g) inducing abortion or death of a foetus, h) agonising suffering, or i) health impairment of longer duration. health impairment of longer duration is an impairment, which objectively requires treatment and possibly involves work incapacity of not less than forty-two calendar days, during which it seriously affects the habitual way of life of the injured party.
UK*	Hospitalised for at least 24 hours or any of the following injuries whether or not they are detained in hospital: fractures, concussion, internal injuries, crushing, burns (excluding friction burns), severe cuts and lacerations, severe general shock.
CH*	Up to 2014: Hospitalised for at least 24 hours or if the injury prevented the person from doing its daily activity for 24 hours. Since 2015: Hospitalised for at least 24 hours. Police records. Further comments: In Switzerland, injury severity is still assessed by means of a simple definition by the police force present at the scene. Nothing is known of the type and long-term outcome of injuries. In order to improve the assessment of injury severity a first step was taken: since January 2015 the definition of injury severity was further specified and the police corps were trained. Also a new category "life-threatening injury" was introduced. For a further standardization the severity scale was linked to the NACA-Codes, used by all emergency services in Switzerland.
IL*	Hospitalised more than 24 hours as in-patient. Police records.
NO	Very serious injury: Any injury that is life-threatening or results in permanent impairment. Serious injury: Any injury from a list of specific injuries; these would normally require admission to hospital as an in-patient. Police records.
RS	Using of the ICD-International Classification of Diseases. Categorization of an injury as a "serious injury" is made on the basis of expert assessment given by doctors during admission to hospital, during hospitalization or after the hospitalization. The Republic of Serbia has not yet adopted a definition for serious injury. Police records.

Source: National definition provided by the PIN Panellists in each country.

* Group of countries considered as using similar definitions of serious injuries, spending at least one night in hospital as in-patient or a close variant of this. The definition may include also a quite wide list of injuries and the allocation of "serious" is made by the police officer at the scene. Errors in the categorisation cannot be excluded.

Table 8 Countries' progress in collecting data on seriously injured based on MAIS3+.

AT	<p>The KFV carried out a feasibility study on MAIS3+ assessment on behalf of the Austrian Transport Ministry (bmvit) in 2014 and 2015. The study covered two methods to estimate the number of serious road injuries: a) application of a (hospital data based) correction factor to the police reported number of serious injuries, and b) use hospital data alone to arrive at an estimate for serious injuries.</p> <p>The latter method was selected for further use. In late 2015, the number of MAIS3+ injuries was estimated for the first time (at 1410) for the year 2014. For the same year, the number of fatalities was 430, resulting in a ratio of 3.28 between serious injuries and fatalities.</p>
BE	<p>We are finetuning our estimation procedure of MAIS3+ estimation on the basis of hospital discharge data (coverage: whole of Belgium) and the conversion of (all) diagnoses from ICD-9-CM to AIS. We will be able to provide breakdowns according to age, road user type, gender, month, year, accident type. We use option one (correction factors applied to police data) and option two (use of hospital data) that are proposed by the European Commission.</p>
BG	<p>The only source is Police records.</p>
CY	<p>The MAIS3+ data for 2014 were estimated for the SafetyCube publication. Estimation of the number of MAIS3+ injuries for the years 2015 onwards will be available in the near future.</p>
CZ	<p>Under discussion.</p>
DE	<p>An MAIS3+ injured persons estimation based on GIDAS data, data from the German Trauma Register and data from the official accident statistics is being calculated by Bast.</p>
DK	<p>No systematic linkage between police and hospital data. Denmark is working on a process to convert ICD diagnose codes into AIS and MAIS.</p>
EE	<p>ICD-10 diagnose info exists, technologically ready to link accident data with health registry data. Need to change legislation and due to that issue we cannot start linking process. We haven't got any possibility to test EU proposed ICD - AIS conversion tool yet.</p>
ES	<p>Data available from 2010. Since 2011 MAIS3+ is published in official reports. In a near future Spain will add MAIS3+ to the current definition of seriously injured.</p>
FI	<p>MAIS3+ is used in official data (from 2014 onwards). A pilot study has been made in 2014. In this study the number of seriously injured MAIS3+ was formed by combining the official road accident participant statistics maintained by Statistics Finland and the Hospital Discharge Register (HILMO), using personal identity numbers as the link. Number of serious injuries (MAIS3+) in road traffic were estimated for the years 2010-2011.</p>
FR	<p>Linking between police and health data is done in the Rhone county and then used to build an estimate comparing the structure of Rhone and national accident data. Estimates of the number of people in road traffic crashes with a MAIS3+ injury are currently being evaluated.</p>
EL	<p>Hospitals do not systematically collect data on the injury severity of road casualties.</p>
HR	<p>Link between police and hospital is based on the law. Only ICD based number is available.</p>
HU	<p>At the moment the real possibility can only be the transformation of ICD codes to AIS ones. This solution makes necessary the modification of the legislation. According to the latest information, the system will work in the first part of 2017.</p>
IE	<p>Serious injury figures were estimated by converting hospital data to MAIS3+ but were found to be lower than that of police data which is counterintuitive. The RSA and the Health Intelligence Unit (HIU) of the Health Services Executive are working on refining the methodology. Matching of hospital and police data continues to be the long term goal.</p>
IT	<p>The current data architecture does not provide direct linkage between police and hospital data. MAIS3+ will be adopted for coding the level of injury and calculated on the basis of data sources such as the hospital discharge register. An estimate of the number of seriously injured has been calculated for years 2012-2015 according to the conversion tables made available by EC.</p>
LU	<p>MAIS3+ will be used in the near future, but is still under discussion. ICD codes not provided by all hospitals yet.</p>
LV	<p>MAIS3+ under discussion.</p>
LT	<p>Under discussion.</p>
MT	<p>Some ICD diagnosis information exists, working on linking the data from ICD to MAIS and working on improving the data quality to enable statistical reporting by year 2018.</p>
NL	<p>Data on MAIS3+ already available 1993-2015.</p>
PL	<p>The work is coordinated by the National Road Safety Council, National Institute of Public Health and Motor Transport Institute. Poland transfer data from 2013 and 2014 according to the recommendations of the CARE group (DG MOVE).</p>

PT	A technical working group was created by Ministerial Order no. 3578/2015 including the National Authority for Road Safety (ANSR), General Health Directorate (DGS), National Institute for Medical Emergency (INEM), Public Security Police (PSP), National Republican Guard (GNR) and the National Statistical Institute (INE). This work group has developed a methodology based on national hospital discharge database to assess the number of serious injuries using MAIS3+. According to this method, the Central Administration of the Health System (ACSS - Administração Central Sistema de Saúde) applies the AAAM converter provided by the EU Commission to the ICD9-CM codes and then calculates the MAIS score.
RO	Under discussion.
SE	Data already available since 2007.
SI	We have made experimental linking between police and hospital data. MAIS3+ data are incomplete and not ready for publication and still under discussion.
SK	n/a
UK	MAIS 3+ serious injuries collection methodology under review.
CH	Linking of health and police data has started in 2014. This allows to code the recommended maximum AIS score based on ICD-10. According to ASTRA (Federal Roads Office), the number of serious injuries (MAIS3+) for the years 2011 to 2014 were reported to the European Commission on July 2016.
IL	Israel currently uses ISS data, and is considering collecting data based on MAIS 3+ in the future.
NO	Under consideration.
RS	Road Traffic Safety Agency intends to initiate activities on MAIS3+ definition of serious injuries in road traffic accidents in the next period.

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