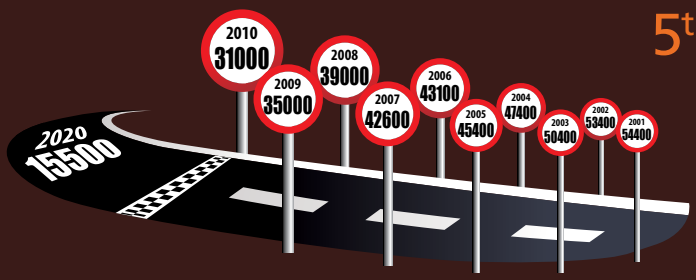
2010 Road Safety Target Outcome: 100,000 fewer deaths since 2001

5th Road Safety PIN Report



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Road Safety PIN

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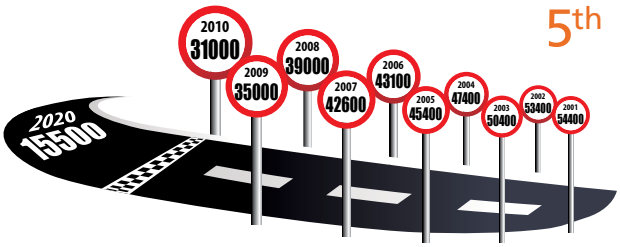

Written by

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21 June 2011

ETSC
European Transport Safety Council

Road Safety PIN

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This report is part of ETSC's Road Safety PIN Programme. The PIN Programme relies on the Panellists in the participating countries to provide the data for their countries and to confirm the quality of the data. This forms the basis for all PIN publications, which are circulated in draft to the PIN Steering Group and Panel for comment and are finalised after taking account of comments received from them.

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The European Transport Safety Council

The European Transport Safety Council (ETSC) is an international non-governmental organisation which was formed in 1993 in response to the persistent and unacceptably high European road casualty toll and public concern about individual transport tragedies. It brings together experts of international reputation and representatives of 45 national and international organisations concerned with transport safety from across Europe to exchange experience and knowledge and to identify and promote research-based contributions to transport safety. ETSC provides an impartial source of advice on transport safety matters to the European Commission, the European Parliament and to national governments and organisations concerned with safety throughout Europe.

Contents

Executive summary

This 5th PIN Report provides an overview of European countries' performance in three areas of road safety. It builds on the four previous Road Safety PIN Reports published in June 2007, 2008, 2009 and 2010 . The report compares developments in reducing road deaths between 2001 and 2010 and reveals which countries have achieved the EU 2010 target and how other countries have progressed towards it. It estimates the monetary value of the benefit to society from the reduction in deaths and looks ahead to the target for 2020. It also shows how countries perform in reducing deaths on rural roads, as well as progress in reducing deaths among three groups of unprotected road users: cyclists, pedestrians and riders of powered two-wheel vehicles.

These rankings have been carried out during the fifth year of the Road Safety Performance Index (PIN) between September 2010 and June 2011. They cover 30 countries: the 27 Member States of the European Union, together with Israel, Norway and Switzerland.

Results in reaching the 2010 Road Safety Target

Great progress has been made across the EU. **Latvia**, **Estonia**, **Lithuania**, **Spain**, **Luxembourg**, **Sweden**, **France** and **Slovenia** all reached the EU 2010 target. **Portugal** very nearly made it with a reduction of 49.4%. **Ireland**, **Germany**, the **UK**, **Italy**, **Slovakia** and **Belgium** achieved reductions above the EU average, while the other countries progressed to a lesser extent. There was no PIN country where the number of deaths recorded in 2010 exceeded that of 2001.

Since 2001, road deaths have been cut by **43**% in the EU27. In the EU15, the countries who originally set the target, road deaths have been cut by **48**%. Reductions have gathered pace towards the end of the decade in the EU10, the group of countries who joined in 2004, to reach **38**% in 2010. They are also gathering pace in **Bulgaria** and **Romania**.

The adoption of the quantitative target in 2001 has proved to be a turning point in motivating countries, in particular those facing the greatest challenges, to reduce the numbers of people killed on the roads. Had the same number of road deaths as in 2001 been registered throughout the decade, there would have been **102,000** more deaths in the EU. The road safety community has long been advocating that investing in road safety offers a great potential for saving human suffering and reallocating resources for a more productive use. Based on updated valuations currently used in eight countries using a similar method of valuation in road safety, ETSC estimates the monetary value to society of the human losses avoided by preventing one fatality to be **1.70 million euro** (at factor cost adjusted to 2009 prices, purchasing power and GDP/head). On this basis the total value to society of the reductions in road deaths in EU27 over the years 2002-2010 compared with 2001 is estimated as **176 billion euro**.

Preventing deaths on EU roads is supported by a strong business case and this potential for saving is far from being exhausted. Almost **31,000** people still lost their lives in road collisions in 2010. The EU has adopted a new 2020 target of no more than **15,500** road deaths per year by 2020. The total value to society of the further reductions in road deaths in EU27 over the years 2011-2020 compared with 2010 that would be achieved by reaching the 2020 target by a steady progress over the decade is estimated as **182 billion euro**. Moreover, both safety champions and countries faced with challenges have reached the 2010 target domestically, and important safety measures remain to be implemented fully or are being developed. This means that the new EU target for 2020 should be

seen as achievable from their present situation by all Member States, given the political will to invest in road safety.

Unprotected road users

A total of **170,000** pedestrians, cyclists and powered two-wheeled (PTW) riders have been killed on EU roads since 2001, **15,400** of them in 2009. Deaths among this category of unprotected road users have been decreasing at a lower rate than for vehicle occupants. Deaths among pedestrians and cyclists decreased by **34%** between 2001 and 2009 and those among PTW riders by only **18%**, compared with **39%** for car drivers. While the number of road deaths has declined considerably in the past decade in Europe, the number of PTW riders killed rose in 13 out of 26 countries.

Initiatives targeted at improving the safety of vulnerable road users will be crucial in reaching the new EU 2020 Road Safety Target. The EU must address the risks faced by unprotected road users, not least to achieve the ambitious safety, health and sustainability goals set out in the recently published **EU White Paper on Transport**. With nearly 50% of car trips being shorter than 5km, governments want to promote walking and cycling, but people will not choose these means of travel unless they are made safer.

Reducing deaths on rural roads

At least **21,500** people lost their lives on **rural roads other than motorways** in the EU during 2009. Rural roads are the most dangerous type of road because of the risks posed by high speeds, the mix of different road users, multi-functionality, lower infrastructure safety and relatively low enforcement levels. Out of the total number of road deaths in the EU, the share of those occurring on rural roads is 55% and it is as high as 70% in some Member States.

Yet road users are safer on rural roads today than in 2001. **Luxembourg, Portugal** and **France** achieved the highest annual reductions of more than 9% on average since 2001. **Latvia**, **Belgium**, **Israel**, **Germany**, **Spain,** the **Netherlands** and **Ireland** follow closely behind with better-than-EU average reductions. The reduction in speed has been the single most important factor in the recent French road safety success, and this has been especially marked on rural roads.

The **European Commission's Road Safety Policy Orientations 2011-2020** published in July promote the application of the four relevant principles of infrastructure safety management as set out in the Infrastructure Safety Directive not only to the Trans-European Road Network but also to all rural roads.

Introduction

In 2010, nearly **31,000** people were killed in the EU27 as a consequence of road collisions. Around 300,000 were seriously injured and many more suffered slight injuries. While the number of deaths and seriously injured people is falling, studies have shown that faster progress is possible if all effective means are applied (Elvik et al. 2009).

The European Union had set itself a target of halving the yearly number of road deaths between 2001 and 2010. Against this background, the European Transport Safety Council (ETSC) set up in April 2006 the Road Safety Performance Index (PIN) as an instrument to spur European countries to greater efforts to enhance road safety. By comparing Member States' performance, it serves to identify and promote Best Practice in Europe and bring about the kind of political leadership that is needed to create what citizens deserve - a road transport system that offers all practicable safety.

The Index covers all relevant areas of road safety including road user behaviour, infrastructure and vehicles, as well as road safety policymaking more generally. Since 2006, comparisons of countries on fourteen different areas of road safety have been presented in a series of **PIN Flashes,** gathered in five **PIN Reports**. The findings from those country rankings have been discussed in 27 **PIN Talks** gathering key road safety policymakers to an informal lunch to discuss national road safety policy, targets and strategies. National decision-makers were confronted with both the successes and shortcomings of their road safety policies.

The **4th PIN Report (2010)** presented the progress in reducing road deaths up to 2009, country rankings on reducing the number of serious injuries occurring on the roads, as well as country rankings related to road users' behaviour – seat belt use, drink driving and speeding – which were updated from their initial publication in the 1st PIN annual report.

The current **5th PIN Annual Report** presents in Chapter 1 the results of achieving or striving towards the EU target of halving road deaths between 2001 and 2010. Chapter 2 shows how countries performed in reducing road deaths among three groups of unprotected road users – pedestrians, cyclists and riders of powered two-wheelers – which face specific challenges and require to be addressed with targeted road safety policies (PIN Flash 19). The third chapter shows how countries progressed in reducing the number of road deaths on rural roads (PIN Flash 18). The last chapter presents recommendations to the EU institutions and responsible authorities in the Member States.

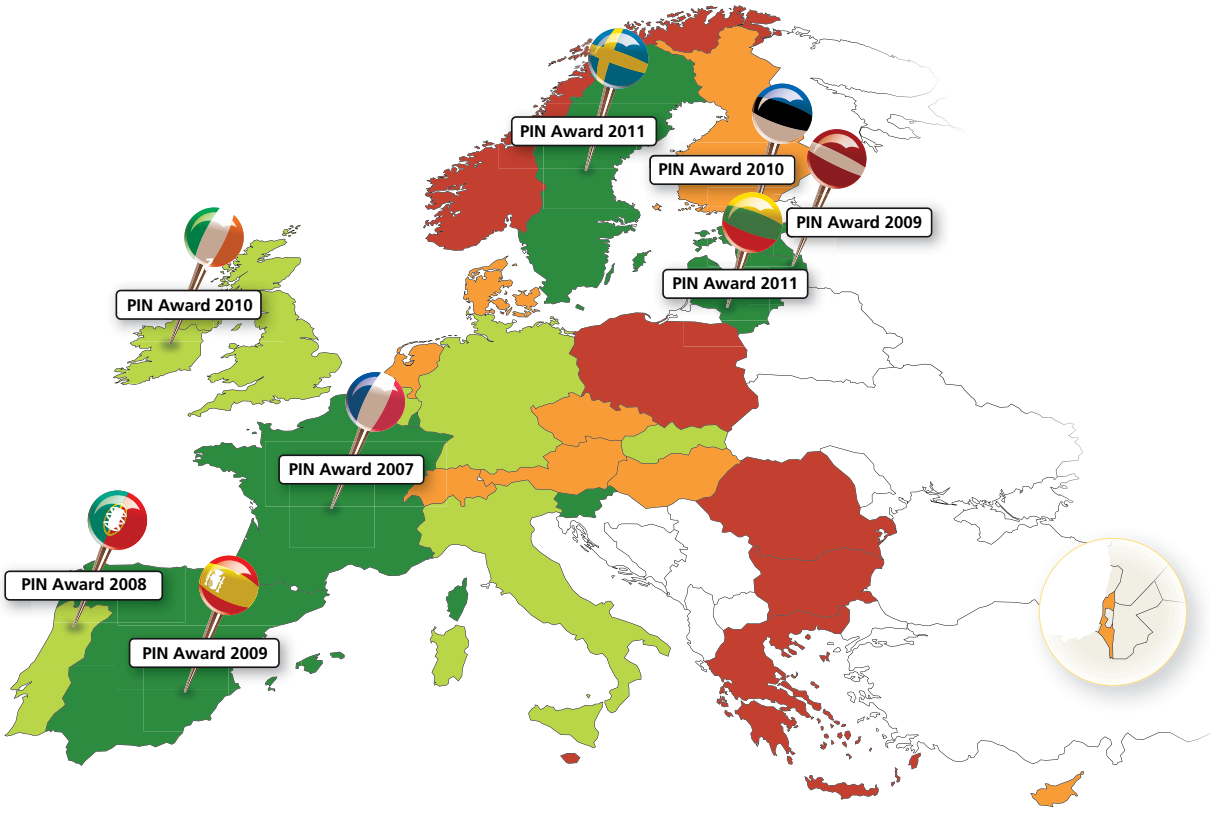
1| Eight countries reach the EU 2010 road safety target – and all gain by trying to reach it

The European Union set itself in 2001 the ambitious target of halving the number of road deaths between 2001 and 2010. These country rankings comparing developments up to 2010 reveal which countries have achieved the EU 2010 target and how other countries have progressed towards it.

Great progress has been made across the EU. **Latvia**, **Estonia**, **Lithuania**, **Spain**, **Luxembourg**, **Sweden**, **France** and **Slovenia** all reached the EU 2010 target. **Portugal** very nearly made it with a reduction of 49.4%. **Ireland**, **Germany**, the **UK**, **Italy**, **Slovakia** and **Belgium** achieved reductions above the EU average, while the other countries progressed to a lesser extent. There was no PIN country where the number of deaths recorded in 2010 exceeded that of 2001.

Since 2001, road deaths have been cut by **43%** in the EU27. In the EU15, the countries who originally set the target, road deaths have been cut by **48%**. Reductions have gathered pace towards the end of the decade in the EU10, the group of countries who joined in 2004, to reach **38%** in 2010.

In 2010, progress continued at the same pace as in 2009 and road deaths were cut by 11% across the EU compared to 2009. **Luxembourg** and **Malta** achieved reductions of more than 25% in 2010 compared to 2009, and **Estonia**, **Sweden**, **Slovenia** and **Latvia** built on their recent progress with further reductions of around 20%. Taken together the EU10 achieved a better reduction than the EU15, with 14% compared with 10%. For the first time, **Romania** and **Bulgaria** achieved better-than-average reductions of 15% and 14% respectively.



The adoption of the quantitative target in 2001 seems to have been a turning point in motivating countries, in particular those facing the greatest challenges, to reduce the number of people killed on the roads. The adoption of the target has been followed by markedly faster progress across the EU compared to previous decades.

There have been over **102,000 fewer** deaths on EU roads since the adoption of the EU target in 2001 than there would have been if deaths had continued at the 2001 numbers. The road safety community has been advocating for some time now that investing in road safety offers a great potential for saving human suffering and reallocating resources for a more productive use. Based on updated valuations currently used in ten countries using a similar method of valuation in road safety, ETSC estimates the monetary value to society of the human losses avoided by preventing one fatality to be **1.70 million euro** (at 2009 prices). On this basis the total value to society of the reductions in road deaths in EU27 over the years 2002-2010 compared with 2001 is estimated at approximately **175 billion euro**.

Preventing deaths on EU roads has a strong business case and this potential for saving is far from being exhausted. Almost **31,000** people still lost their lives in road collisions in 2010. The EU has adopted a new 2020 target of no more than 15,500 road deaths per year by 2020. The total value to society of the further reductions in road deaths in EU27 over the years 2011-2020 compared with 2010 that would be achieved by reaching the 2020 target by steady progress over the decade is estimated at approximately **180 billion euro**.

1.1 The three Baltic States lead reductions in road deaths in the EU

The three Baltic States top the ranks for reduction in road deaths between 2001 and 2010 (Fig. 1). **Latvia** and **Estonia** reduced road deaths by 61%, **Lithuania** by 58%. **Spain**, **Luxembourg**, **France**, **Slovenia** and **Sweden** have also reached the EU 2010 target. There was no PIN country where the number of deaths recorded in 2010 exceeded that of 2001.

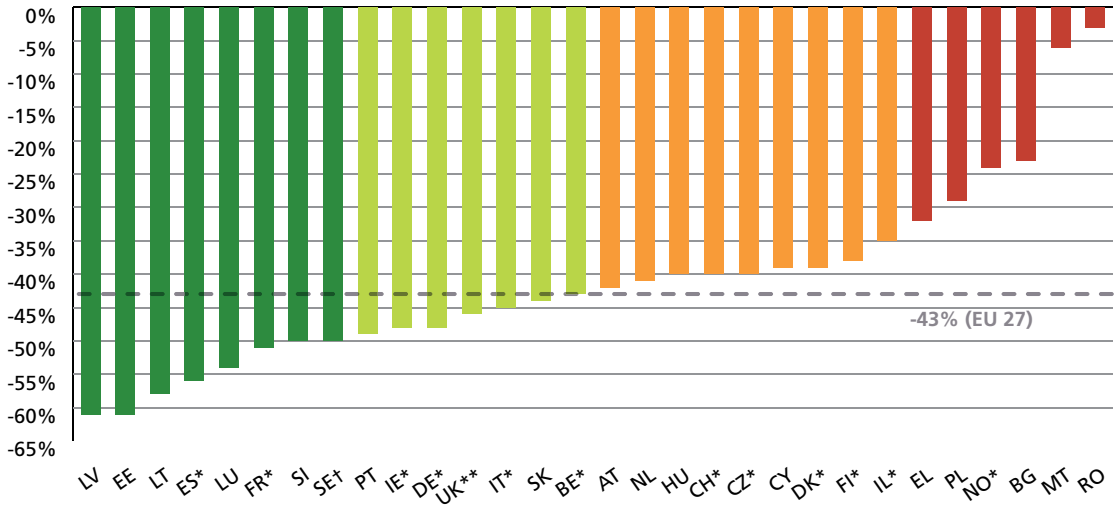


Fig. 1: Percentage change in road deaths between 2001 and 2010

** Provisional estimates were used for 2010 as final figures for 2010 were not yet available at the time of going to print.*

***UK 2010: ETSC estimate for the UK based on EC CARE Quick Indicator.*

†Sweden 2010: the definition of road deaths has changed and suicides are now excluded. The time series was adjusted so that figures for previous years exclude suicides as well.

Latvia, **Estonia**, and **Spain** are among the countries which had already reduced the number road deaths by 50% or more by 2009, and in 2010 they continued their positive trend[1]. Great progress in 2010 in **Lithuania** (-19%), **Luxembourg** (-33%), **Sweden** (-22%) and **Slovenia** (-19%) have propelled them into the group of countries reaching the target.[2]

Portugal only just missed the EU target, with a reduction of over 49%. **Germany**, the **UK**, **Italy**, **Slovakia** and **Belgium** achieved better-than-average reductions. Slower progress has been made in **Romania**, **Malta**, **Bulgaria**, **Norway**, **Poland** and **Greece**.

Progress in **Latvia**, **Estonia**, **Lithuania**, **Spain**, **Sweden**, **France**, **Ireland**, **Portugal**, **Lithuania** and **Sweden** has been recognised by ETSC through its Road Safety PIN Awards (Map)[3] .

"We are pleased to see that all the countries to which ETSC has made its Road Safety PIN Awards in previous years since 2006 have lived up to our expectations."

Antonio Avenoso, ETSC Executive Director.

The indicator

This ranking uses as main indicators the **percentage change** in the numbers of people killed on the road between 2001 and 2010 (Fig. 1). 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 used **road mortality** as an indicator of road safety (Fig. 6). It refers to the numbers of road deaths per million inhabitants.

The data collected to calculate the indicators are from the national statistics supplied by the PIN Panellist in each country. CARE and IRTAD databases were used for verification. Population figures were retrieved from the EUROSTAT database. The full dataset is available in the Annexes – Chapter 1.

The numbers of road deaths in 2010 in Belgium, Czech Republic, Denmark, Finland, France, Germany, Ireland, Israel, Italy, Norway, Spain and Switzerland are provisional as final figures were not yet available at the time of going to print. The number of road deaths in 2010 in the UK is an ETSC estimate based on EC CARE Quick Indicator. The final count for GB will be available on www.dft.gov.uk/pgr/statistics.

In Sweden, the definition of road deaths changed in 2010 and suicides were excluded in 2010 if the accident investigation team had good evidence that the person killed in a collision was trying to kill themself. To ensure the data is comparable the time series was adjusted to exclude suicides for previous years. The average number of suicides per year was 17. Numbers of deaths in Luxembourg and Malta are small and are therefore subject to substantial annual fluctuation.

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1 To learn about the reasons of the success of Spain and Latvia, please see the interviews with Pere Navarro, Director General of DGT at the Ministry of Interior, Spain and Aldis Lama, Road Traffic Safety Directorate, Latvian Ministry of Transport in ETSC (2009), 3rd PIN Report. Estonian Minister, Juhan Parts, gives to background to Estonia's success in ETSC (2010), 4th PIN Report.

2 The interviews with the responsible ministers from Lithuania and Sweden at pages 21 and 23 give more insight into the success stories of the two countries.

3 See the interviews with Paolo Marques, Director of the Portuguese National Road Safety Authority, in ETSC (2008), 2nd PIN Report, to learn more about Portugal's experience and with Noel Dempsey, former Transport Minister, and Noel Brett, Director of the Road Safety Authority, to find out about the Irish success story.

1.2 Efforts to meet the EU target: 102,000 fewer deaths...

Since 2001, road deaths have been cut by **43%** in the EU27. In the EU15, the countries who originally set the target, road deaths have been cut by **48%**. Reductions have gathered pace towards the end of the decade in the EU10, the group of countries who joined in 2004, to reach **38%** in 2010. They are also gathering pace in **Bulgaria** and **Romania**.

Until 2007, the main contributions to the EU target were being made by the EU15 (Fig. 2). In the last three years, Member States that joined the EU in 2004 (EU10) have improved their road safety level, substantially for most of them and impressively for some. It is hoped that they will continue deliver their share to the 2020 target, taking advantages of EU legislation, EU funding and the motivation given by contributing to the EU shared target.

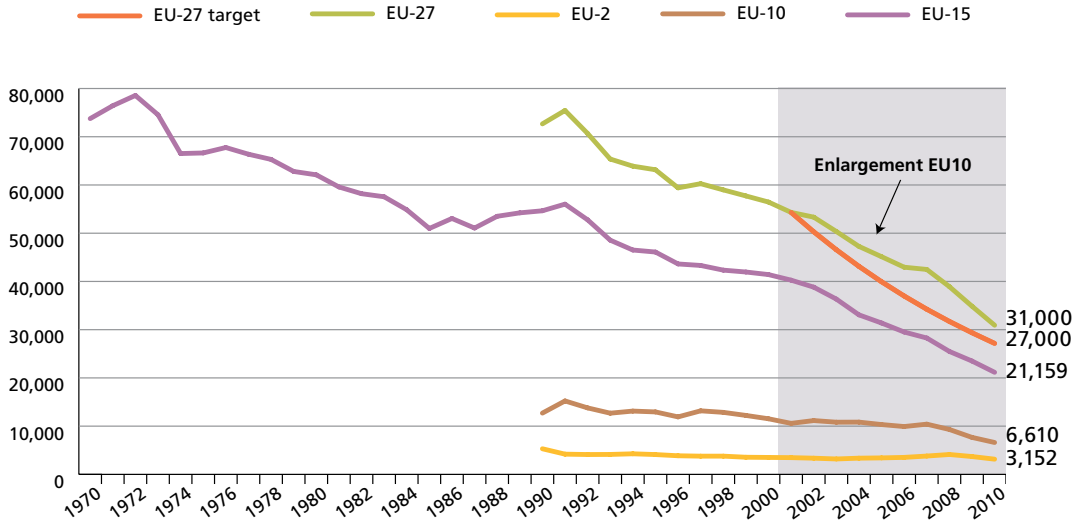

Fig.2: Reduction in road deaths since 1970 in the EU15 (purple line) and since 1990 in the EU27 (green line), the EU10 (brown line) and Bulgaria and Romania (EU2, yellow line).
Source: CARE database (except for 2010: PIN data as provided by Panellists).

Reductions in the number of road deaths have been much steeper in 2001-2010 than in preceding decades (Table 1). This is consistent with the adoption of the EU target in 2001 having given a boost to the combined effort at national and EU levels. There have been over **102,000** fewer road deaths since the adoption of the EU target in 2001 than if the 2001 numbers had continued.

Period	EU-15		EU-10	
	Reduction	Annual average reduction	Reduction	Annual average reduction
1971-1980	19%	2.4%	n/a	n/a
1981-1990	8%	1.7%	n/a	n/a
1991-2000	22%	4.0%	18%	1.5%
2001-2010	47%	6.2%	38%	4.7%

Table 1: Reduction in annual road deaths since 1970 for the EU15 and EU10.
Source: CARE database (except for 2010: PIN data as provided by PIN Panellists).

... valued at billions of euros

Road collisions result in many kinds of social and economic costs, such as human losses, medical costs, production loss, property damage, settlement costs and costs due to congestion. In the case of deaths on the road, human losses make up most of the total costs and other kinds of cost represent only a very small part of them[4].

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

Based on updated values in use in ten European countries, we have taken the monetary value of the human losses avoided by preventing one fatality (VPF) to be **1.70 million euro.**[5]

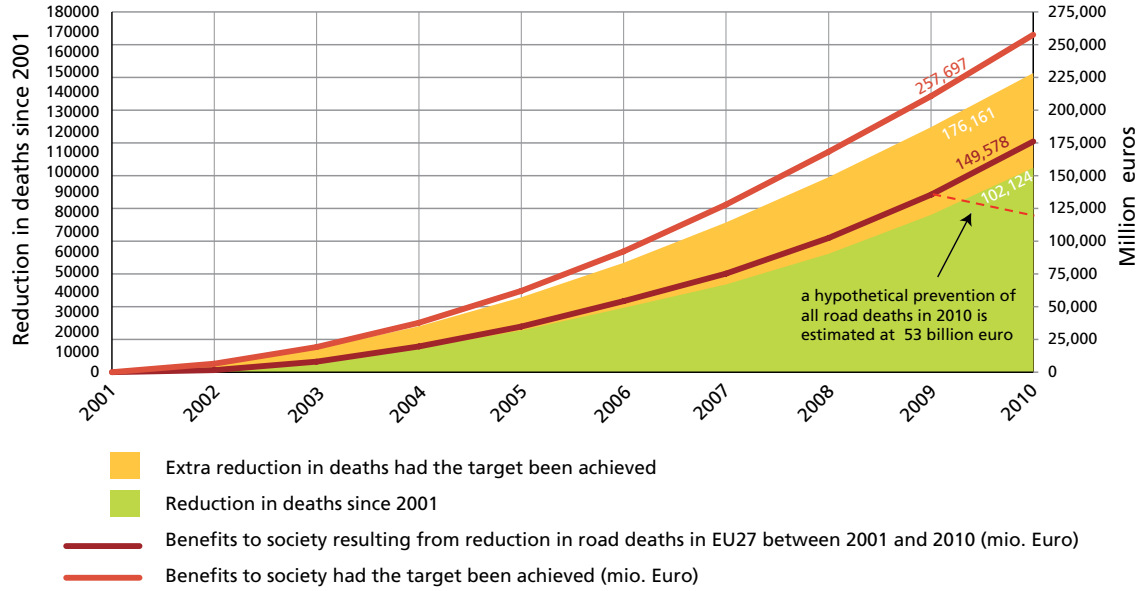

Fig. 3: Reduction in road deaths in EU-27 2001-2010 and valuation at 2009 prices

The total value of the reductions in road deaths in EU27 over the years 2002-2010 compared with 2001 is estimated estimated at approximately 175 billion euro. 175 billion euro exceeds the amount of the combined bailout loans given last year to Portugal (78 billion euro)[6] and Ireland (85 billion)[7]. The politically strenuous debate involved in extending the two loan packages can thus be seen as a reminder of the social and economic value of investing in road safety. While it would be wrong to attribute the whole of the reduction in deaths since 2001 to explicit road safety policies and efforts, the sheer size of the total amount points strongly to the importance to society of striving to improve road safety.

Analyses from countries that have made comprehensive estimates of the value of preventing collisions indicate that the valuation of the reduction in the human costs of road deaths probably represents of the order of 25% of the value to society of proportionate reductions in collisions of all severities, with a broadly similar proportion accounted for by prevention of serious injuries.[8]

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[4] In 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. 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.

[5] At factor cost, 2009 prices and GDP/head, and purchasing power parity – EU27 = 1

[6] http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/11/275

[7] http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ecofin/118051.pdf

[8] See Methodological Notes, PIN Report 2011, www.etsc.eu/PIN-publications.php

If no one had been killed in road traffic collisions in 2010, the benefits to the society would have been valued at **53 billion euro**. If no one had been killed nor seriously injured, the benefits to society would have been of the order of **105 billion euro** and they would have been of the order of **210 billion euro** if there had been no collisions at all on EU roads. **The value of preventing all road collisions in 2010 would have been more than 50% greater than the EU budget**[9] **or 1.8% of EU GDP.**[10]

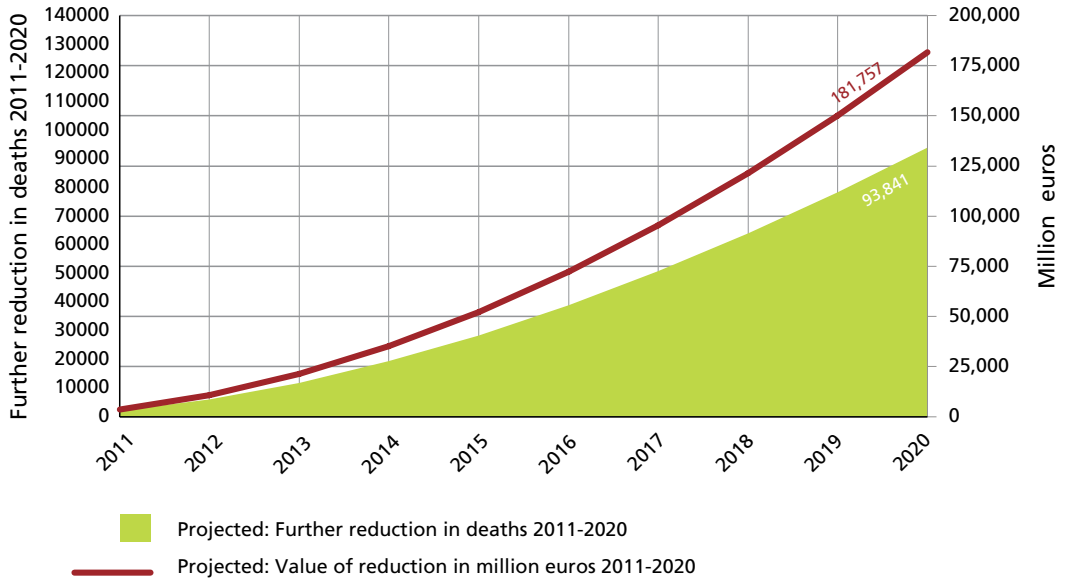

Fig. 4: Further reduction in road deaths in EU-27 2011-2020 if the target for 2020 is achieved by steady progress over the decade, and valuation at 2009 prices

These estimates illustrate the continuing social and economic importance of working to reduce collisions, injury and deaths on EU roads. This potential for saving is far from being exhausted. The EU has adopted a new target of no more than 15,500 road deaths per year by 2020. The total value of the further reductions in road deaths in EU27 over the years 2011-2020 compared with 2010 that would be achieved by reaching the 2020 target by equal annual percentage reductions is estimated at **180 billion euro**.

1.3 Another 11% reduction in 2010 compared to 2009

In 2010, progress continued at the same pace as in 2009 and road deaths were cut by 11% across the EU (Fig. 5). **Luxembourg** and **Malta** achieved reductions of more than 25% in 2010 compared to 2009, and **Estonia**, **Sweden**, **Slovenia** and **Latvia** built on their recent progress with further reductions of around 20%. Taken together the EU10 achieved a better reduction than the EU15, with 14% compared with 10%. For the first time, **Romania** and **Bulgaria** achieved better-than-average reductions, with 15% and 14% respectively.

[9] http://www.europarl.europa.eu/sides/getDoc.do?language=en&type=IM-PRESS&reference=20091215IPR66441

[10] Eurostat, Gross domestic product at market prices http://epp.eurostat.ec.europa.eu/tgm/refreshTableAction.do?tab=table&plugin=1&init=1&pcode=tec00001&language=en.

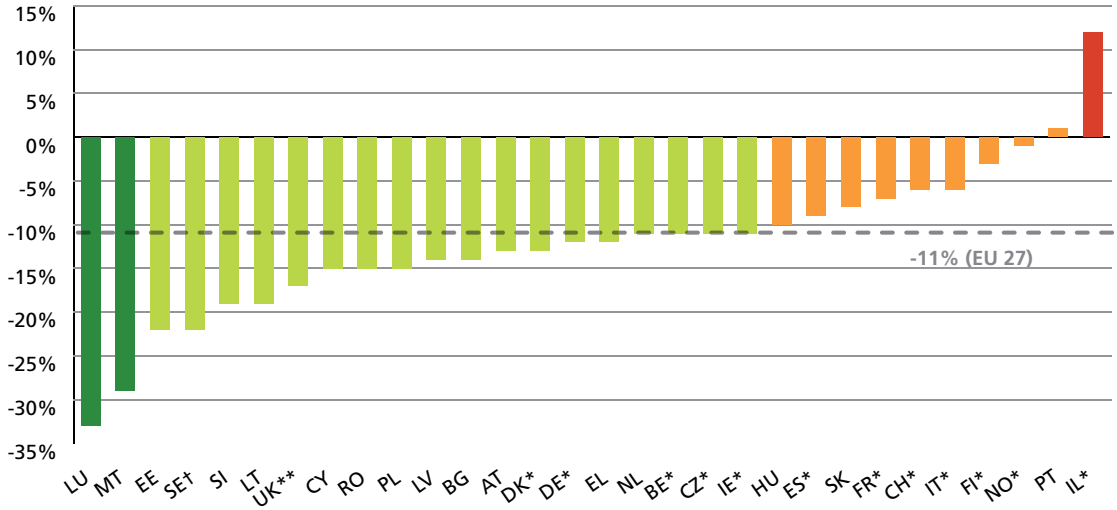

Fig. 5: Percentage change in road deaths between 2009 and 2010

** Provisional estimates were used for 2010 as final figures for 2010 were not yet available at the time of going to print.*

***UK 2010: ETSC estimate for the UK based on EC CARE Quick Indicator.*

†Sweden 2010: the definition of road deaths has changed and suicides are now excluded. The time series was adjusted so that figures for previous years exclude suicides as well.

In Luxembourg and Malta, the numbers of road deaths are small and thus subject to substantial annual fluctuation.

Luxembourg achieved a 33% reduction in road deaths in 2010 after a 34% increase in 2009.

"The previous year had unfortunately not been confirming the positive trend of 2008, so we are glad that in 2010 we managed to once again reduce the number of people who died on our roads and to reach the EU 2010 target again, as we did in 2008. Despite this overall positive development during the last decade, we need to be vigilant and keep a constant watch on the main killers. Speeding and drink driving are therefore still among our first priorities."

Guy Heintz, Ministry of Sustainable Development and Infrastructure, Luxembourg

Estonia has seen a 22% drop in road deaths in 2010, following a 24% decrease in 2009. The network of speed enforcement cameras has been expanded to include some additional 160km of dangerous road sections. The EU 2008 Directive on Infrastructure safety was transposed into national law: road safety audits and inspections will be mandatory on the TEN-T network and voluntary on rural roads.

"After being presented with the PIN Award in 2010, Estonia's government did not feel complacent and adopted new measures. If the government continues to communicate its policies and reasons for introducing them effectively, there is a bright road ahead of us."

Dago Antov, Tallinn Technical University.

Slovenia built on the positive trend from the previous years and has adopted a new road safety programme with the objective of reaching the EU target of halving road deaths by 2020.

"Our new national road safety programme for 2012–2021 sets the objective of no more than 70 people killed and 420 seriously injured on Slovenian roads by the end of 2021. Tackling speed is a priority to achieve this target. We are calling all road users to reduce their speed and invite all actors, in particular the police, to engage with drivers and explain that reducing speed will save lives."

Ljubo Zajc, Slovenian Traffic Safety Agency.

Romania stepped up its efforts to make up for the lost time, achieving a drop in road deaths of 15% in 2010, following a 9% drop in 2009. 2010 was the first year when Romania ranked above the EU average for year-to-year reductions in road deaths.

"We must now keep up our law enforcement efforts and ensure the traffic laws are also internalised by the road users. We must continually look out for good practice examples to other EU countries and decide which policies would be feasible in the Romanian context."

Mihai Calinoiu, Romanian Police.

Poland has reduced the number of people killed on its roads by 15% in 2010 compared with 2009. Yet 3907 people died last year in road collisions, a far cry from the maximum of 2800 set in the national road safety plan for 2013. The number of people who died in road collisions in Poland in 2010 represents about 13% of the total number of road deaths in the EU27, while Poland's population represents only 8% of the total EU27 population.

"The Polish Parliament just passed a new traffic code law, including stricter provisions for drink driving. The new law also mandates automated speed enforcement on the Polish highway network, a measure currently being implemented. Unfortunately, automated speed enforcement has been coupled with an increase in the maximum speed limits. Poland is now the country with the highest speed limits in Europe, 140 km/h on motorways."

Ilona Buttler, PIN Panelist for Poland.

The number of people killed in traffic collisions in **Portugal** unfortunately increased by 1% in 2010 compared to 2009, just preventing Portugal reaching the 50% target.

"The Portuguese Road Safety Strategy adopted in 2008 showed vision and leadership. We must translate this strategy into actions and implement measures to further improve driver behaviour, in particular as regards speeding and driving under the influence. Explicit consideration of road safety issues in local and national sustainable mobility plans is also needed, especially to enhance pedestrian and cyclist safety."

Joao Cardoso. National Laboratory of Civil Engineering.

Despite reaching the 50% reduction target in 2010, **France** has lost its lead role as the driving force in contributing to the EU target. Road deaths decreased by only 7% in 2010, following a stagnation in 2009. **3,992** people died in road collisions in 2010, far more than the maximum of 3,000 deaths set by President Sarkozy for the end of his presidential term in 2012.

"Last year we managed to pass below the bar of 4,000 people killed on French roads, but unfortunately the early estimates for the first half of 2011 predict around 4,400 deaths in 2011. The main causes are the lack of new road safety measures and the devastating effect of making it easier for drivers to regain penalty points that were withdrawn from their driving licence. The government reacted to the bad results of the first half of 2011 by approving some new measures during the last meeting of the inter-ministerial road safety committee, such as the removal of panels announcing the speed cameras, or the prohibition of in-car systems warning drivers of the presence of the cameras".

Jean Chapelon, PIN Panellist, France.

1.4 Road safety league

Sweden, the **UK** and the **Netherlands** remain the safest EU countries for road use, together with **Malta** (Fig. 6). **Sweden** reaches another historically low level of road mortality with 28 people killed per million inhabitants.

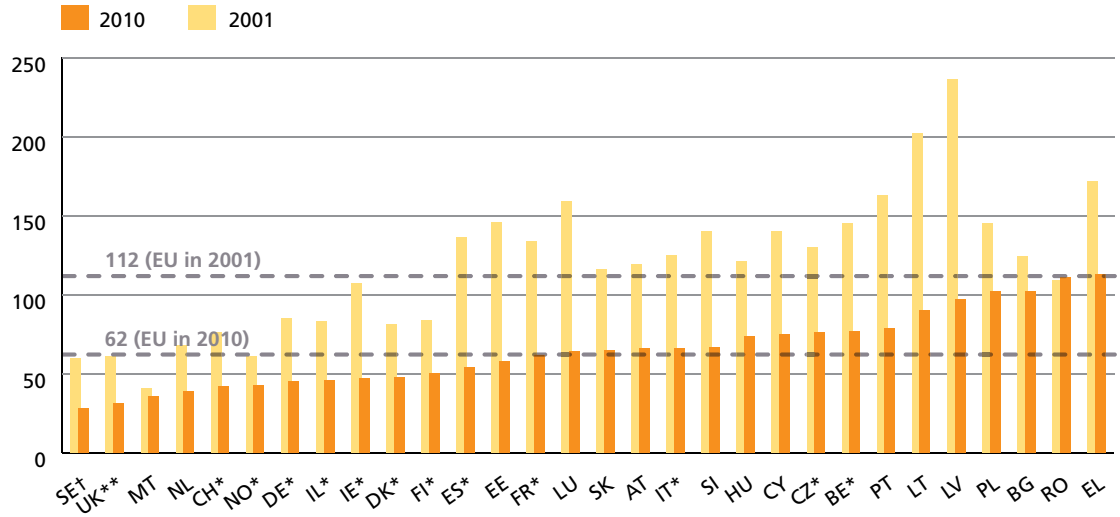

Fig.6 Road deaths per million inhabitants in 2010 (with road deaths per million inhabitants in 2001 for comparison).

European roads belong to the safest in the world. In the EU27, in 2010 **62** people per million inhabitants were killed on the roads, compared with 45 in Japan, 61 in Australia but 107 in the USA (IRTAD) [11].

[11] USA: Provisional figures for 2010 (NHTSA).

1.5 Recent road mortality versus annual reduction over the last decade

In Fig. 7, road mortality in each of the 30 PIN countries is plotted horizontally against the estimated average annual percentage change in road deaths over the period 2001-2010. The EU averages of the two indicators are used to divide the diagram into four quadrants.

France, **Spain**, **Germany**, **Estonia**, **Switzerland**, **Ireland**, **Israel**, **Sweden**, the **Netherlands** achieved lower than average mortality after higher than average reductions. The above-average progress made by **Portugal**, **Luxembourg**, **Latvia**, **Belgium** and **Italy** over the period 2001-2010 has not been quite sufficient to bring them into the favourable lower left quadrant. **Malta**, the **UK**, **Finland**, **Norway** and **Denmark** have lower than average mortality despite lower than average progress in reducing road deaths. **Romania**, **Bulgaria** and **Poland** not only have high mortality but were also scarcely able to reduce deaths over the past decade.

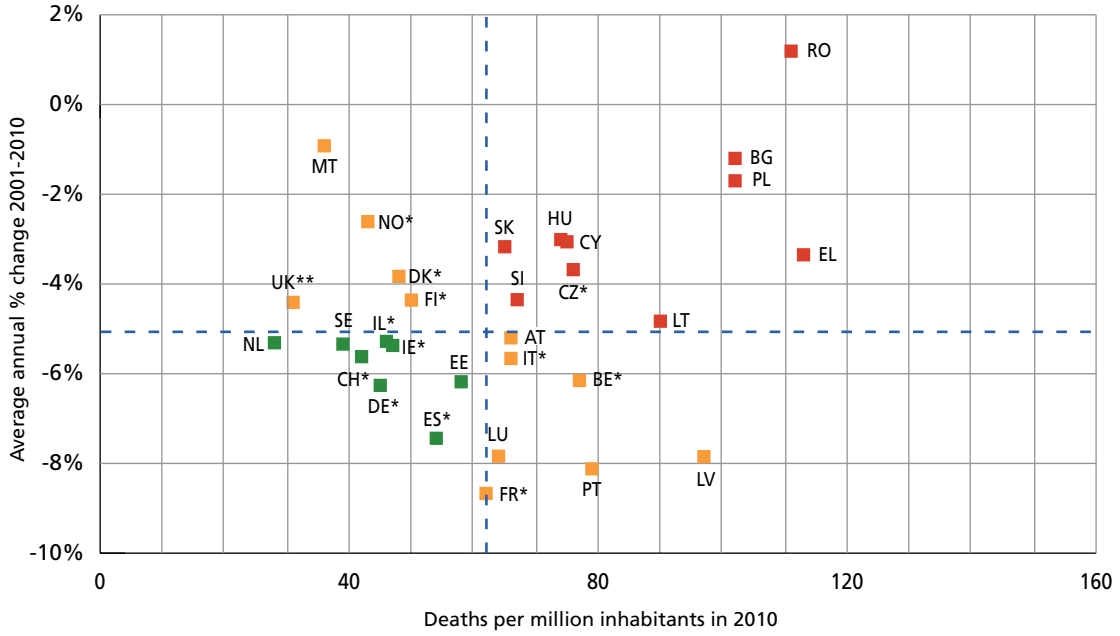

Fig.7: Road mortality in 2010 plotted against the percentage change in road deaths over 2001-2010.

1.6 Reduction in serious injuries compared with reduction in deaths

In addition to the **31,000** people killed in road collisions in the EU, more than **340,000** people were recorded seriously injured in police records in 2010. Road deaths represent only the "tip of the iceberg" of traffic collisions. Each country should aim to reduce serious injuries, according to its own definition, at the same pace as deaths.

In Fig. 8 the annual average percentage change in road deaths since 2001 in 27 of the PIN countries for which data on serious injuries is available is plotted horizontally against the annual average percentage change in serious injuries plotted vertically. The EU averages of the two indicators are used to divide the diagram into four quadrants.

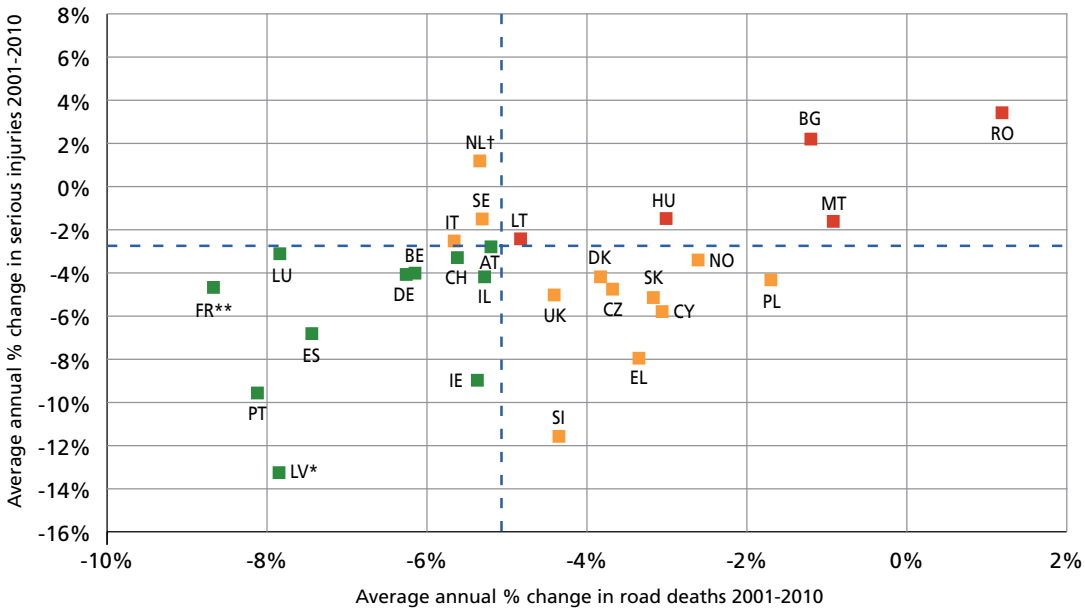

Fig. 8: Annual average percentage change in road deaths plotted against the annual average percentage change in serious injuries over the period 2001 to 2010.
**LV: Serious injuries 2004-2010; **FR: Serious injuries 2005-2010.*
†NL: The serious injury definition has been changed in 2010. The time series for the previous years has been adjusted according to the new definition.

Latvia, Portugal, Ireland, Spain, Germany, Belgium, France, Switzerland, Austria, Luxembourg and **Israel,** achieved better than average reductions in both the number seriously injured and the number killed since 2001[12]. In most countries the rate of reduction in deaths has been greater than that in serious injuries.

In the group of EU countries using a similar definition of serious injuries, the number of seriously injured survivors registered in national statistics was 31% fewer in 2010 than in 2001, compared to 43% fewer for road deaths[13].

In 2010, the Netherlands changed their definition of seriously injured to "an in-patient, with injury level MAIS=2 or more".[14]

"Using the real number of injuries according to some minimum injury level, we can correct for three different accuracies in the Police reporting. Around 50% of the people injured were never recorded by the Police. Also, it was shown that many of the injured that were hospitalised according to the Police were in fact outpatients, only treated in the emergency care department. Further, hospital data show that about 15% of all hospitalised injured were not seriously injured, i.e. had an injury of MAIS=0 or MAIS=1. By presenting the 'Real number of seriously injured traffic casualties' we show a more accurate picture of the situation on Dutch roads."

Henk Stipdonk, SWOV, the Netherlands

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[12] The reader should bear in mind that large differences in definition and reporting practices for seriously injured road users exist between countries and that changes in reporting practices might have affected the trend in some Member States.

[13] 14 Member States use similar definitions of serious injury, spending at least one night in hospital as in-patient or a close variant of this. See Annex for national definitions provided by PIN Panelists.

[14] The Abbreviated Injury Scale (AIS) is a specialised trauma classification of injuries, ranging from 1 (minor injuries) to 6 (fatal injuries). 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.

1.7 Interviews with the recipients of PIN Awards 2011

"I am happy to pass the baton to Lithuania and Sweden. Receiving the PIN Award last year gave Ireland an incentive to achieve even greater reductions in road deaths. This year we brought in another significant safety measure, by requiring our police to conduct breath tests on motorists at the scene of a road traffic collision. These measures were introduced in the Road Traffic Act (2011). This Act was the first piece of legislation debated by the national parliament after the general election, demonstrating the Government's commitment to road safety. Later this year, lower blood alcohol concentration levels for all drivers will be introduced, including a reduction to 0.2g/l for learner and professional drivers. I also hope to bring a second piece of legislation forward to introduce further new road safety measures. Options being considered as part of the development of a Graduated Driver Licensing System include increasing penalty points for learner and novice drivers for certain high-risk driving offences, and a requirement for novice drivers who have recently passed a driving test to display 'R' plates."

Minister Varadkar, Minister for Transport, Ireland

The Lithuanian experience

Road deaths have been cut by 58% in Lithuania since 2001, the third best reduction in road deaths among EU countries. But little is known about road safety policy in this Baltic State which joined the EU in 2004. ETSC talked with Mr. Eligijus Masiulis, Minister of Transport and Communications of the Republic of Lithuania to learn more about past and future road safety challenges in the country.

ETSC: Your country achieved a spectacular reduction in road deaths between 2001 and 2010, exceeding the EU 2010 target of halving road deaths. Can you tell us which measures yielded the best results in reducing the number of people killed on Lithuanian roads?

Minister Masiulis: These results have been achieved through a concerted effort of energetic traffic controls, activities to educate traffic participants and improvements in infrastructure. Advertisement and awareness raising campaigns have been conducted intensively on television, radio, as well as outdoor billboards and panels. The Lithuanian infrastructure has been constantly audited, improved and renewed. We have tightened our policies to counter irresponsible road behaviour: the legal BAC limit was lowered to 0.2g/l for novice and professional drivers and 0.4g/l for other drivers. We have also increased fines for excessive speeding – 30km/h above the limit – with novice drivers facing license suspension. We have introduced the practice of administrative arrest for dangerous traffic code violations, such as repeated drink-driving and driving without a licence, a measure which proved very effective. The results we have achieved are due to the cooperation and hard work of all responsible institutions and they give us inspiration for the future.

ETSC: Much of the progress was made possible because drivers have slowed down, reduced drink-driving and generally better respected traffic laws. How did the Lithuanian public react to the road safety measures, in particular increased enforcement? What would be the next priorities in terms of improving driver behaviour?

The Lithuanian people have realised that the road safety programme has been implemented for their own benefit and that it is a prerequisite for improving the level of traffic safety.
We have recently conducted a survey polling the public on the introduction of several innovations, such as a demerit penalty point system or fixed cameras for speed enforcement. The responses show the public as reluctant to change their behaviour, but they also want the government to be strict on road safety. Given these responses, our upcoming priorities in seeking to improve drivers' behaviour are introducing education campaigns, improving the legislative framework and the infrastructure, as well as seeking to improve the speed and quality of first aid services.

ETSC: Lithuania has moved from 202 deaths per million population in 2001 to 90 in 2009. While the reduction in deaths is impressive, your country still has one of the highest numbers in the EU of people killed per million inhabitants. Can you tell us what you plan to do to close the gap with the road safety champions?

According to the National traffic safety development programme 2011–2017, an Inter-institutional Action Plan 2012–2014 has been adopted, which includes major aims such as ensuring that all traffic participants have a good level of safety education. The major tasks of our development programme are to train traffic safety specialists, teachers and improve their skills, to introduce traffic safety culture skills in education institutions from a very early age, to improve the quality of driving training, and to generally educate society on road safety.

ETSC: To what extent do you think Lithuanian membership of the EU contributed to the reduction in road deaths? How do you think that the EU can help Lithuania maintain its positive trend and further reduce road casualties?

First, the most important is financial support, the absorption of EU funds can really help us improve our infrastructure. We have to build more bypass roads and start making use of ITS technologies. We have received a lot of help through the exchange of experiences and best practices with other Member States.

We have carefully applied the different past EU Directives and regulations. The new Directive 2008/96/EC on Infrastructure Safety which requires Member States to carry out road safety impact assessments, audits and inspections on new and existing infrastructures has been fully transposed into national law as we were required to do so by December 2010.
Road safety impact assessments, audits and inspections on new and existing infrastructures are currently being carried out by road safety specialists. We are looking forward to making progress in the afore-mentioned area, which is why road safety experts and specialists are constantly being trained.

ETSC: What are your ambitions for road safety beyond 2010?

Our main ambition is no more than 200 road deaths in 2017, which means no more than 60 deaths per million inhabitants. Achieving these targets would get us into the list of the top 10 safest countries in the European Union. We have also adopted the Vision Zero. We want Lithuania to be a safe and friendly country for its citizens and guests.

Mr. Eligijus Masiulis was a Member of the Seimas, the Lithuanian parliament for eight years. Since 2008, he has been Minister of Transport and Communications. Website of the Ministry of Transport and Communications http://www.transp.lt/

The Swedish experience

Road deaths in Sweden have been cut by 50% since 2001. The figure is impressive not only because Sweden reached the EU target of halving road deaths between 2001 and 2010, but also because overall mortality on Swedish roads is the lowest in the EU with only 28 deaths per million inhabitants. Sweden has adopted 'vision zero' as its road safety goal, considering the renewed EU target of halving road deaths for the 2011-2020 period as an intermediate target only. ETSC talked to Ms. Catharina Elmsäter-Svärd, Minister for Infrastructure, to get an insight into the country's leadership position in European road safety.

ETSC: The renewed target of halving road deaths over the 2011-2020 period is seen as ambitious by many, but for Sweden it is only an intermediate target, with 'vision zero' being the ultimate goal. How do you think this approach helps your country rank better than others in terms of road safety?

Minister Elmsäter-Svärd: The Vision Zero decision was approved in 1997 by all political parties in the Swedish Parliament. Vision Zero is an ethical approach about not accepting that people die or get seriously injured in road traffic. The strength of Vision Zero is that it gives a common goal for all stakeholders to strive for and to contribute to, even if each groups prefer different ways to get there. A shared responsibility between system builders and road users gives all stakeholders the opportunity to be innovative, to think and act in new ways, taking onboard new strategies and evaluating former ones. Vision Zero gives energy and puts pressure on everybody to perform better and not to lose impetus.

ETSC: Rural roads are considered a particular problem area in many European countries. What are your special policies targeted to increase the safety rating of such roads, and how effective are they proving to be?

We have focused on speed, as well as the quality and design of the roads. In the late 90's, many rural roads had high speed limits but not enough traffic volume to motivate building motorways. Instead, we introduced separated rural roads, the so called 2+1 lane-highways with a median barrier. This has proven very successful. Mortal collisions have decreased by up to 80% on these roads. We have invested in more than 4000km of roads with separated lanes since 2000, saving more than 50 lives. To complement this measure, we have installed 1 100 traffic safety cameras and we have recently re-assessed all speed limits to adjust them to road safety standards. These are the main factors that explain Sweden's historically low figures. For the future, I have great confidence in the technical development of vehicles. I am sure that the vehicle industry will continue to perform well and develop safety techniques supporting the driver even more, to enable the implementation of better alcolocks, distraction warning systems and systems to avoid frontal collisions and single crashes. To support the development and implementation of such technologies the future road networks have to be prepared for the modern cars, for example with markings and signs that can be read by the car.

ETSC: The European Commission has made Unprotected Road Users, particularly motorcyclists and other riders of PTWs, a priority for the next decade. How is your government addressing the issue?

We have increased traffic education for all moped drivers and introduced compulsory risk awareness education for motorcyclists. All the relevant stakeholders in Sweden have a common strategy for PTWs with the goal to halve the number of killed on powered two-wheel vehicles, including both motorcycles and mopeds. The main action is to support ABS brakes on motorcycles and to improve speed compliance. For mopeds the main issues are to focus on helmet wearing and to fight against tampering. I am sure that working together in this manner will continue to yield positive results. For cyclists we have planned investments of over 90 million Euro the coming 10 year period to increase the standards of the bicycle infrastructure. There is also ongoing work to draft a common strategy for "More and safe cycling", which I am looking forward to receive by the end of this year. For pedestrians we have no special national strategy so far. Cities have been doing a great job at building safe cities, ensuring that speed limits are respected and building safe street crossings.

ETSC: Young and novice drivers are increasingly identified as a particular group requiring special attention in terms of regulations. Can you tell us how you view this issue?

I am deeply concerned about this issue. We have introduced risk education as a part of the driving curriculum and we have driving licenses for mopeds. Many young people are taking high risks, thinking they are immortal. Lately we have had several collisions involving young drivers and excessively illegal behaviour: high volumes of alcohol and drugs, extremely high speed and no seat belt. I hope the technical developments will help us solve some of the problems, with technology coming to the aid of the driver to avoid collisions. But we also have to encourage the good work of the police, good education and risk awareness. And we have to promote the civil courage of saying NO when a drunken friend wants to drive.

ETSC: What are the new challenges you will have to address to maintain the good Swedish record in terms of road safety?

One can only evaluate and make improvements based on measurable indicators. We have to continue monitoring our performance towards both national and European targets as a way to maintain our focus on the Vision Zero. I welcome even more benchmarking between countries on different strategies, actions taken and evaluations. The ETSC PIN project and receiving the PIN Award have given us new energy in Sweden.

We have to keep up the good work to involve all relevant stakeholders to take their responsibility. One example is that the employers should take much more responsibility for their employees' way of driving and the vehicles used. I think this is particularly the case with regards to speeding and driving under the influence of alcohol, drugs or tiredness.

We will continue to conduct research on implementation processes and innovation, particularly within the Vision Zero Academy, which is currently being created. One challenge for a country is thinking outside of the box and trying new ways that have been successful in other countries.

Mrs. Catharina Elmsäter-Svärd has been Minister for Infrastructure since 2010. Website of the Ministry of Enterprise, Energy and Communications, to which the Ministry of Infrastructure belongs http://www.sweden.gov.se/sb/d/2067

2| Unprotected road users left behind in efforts to reduce road deaths

On the 11th of May 2011, the UN launched the **Decade of Action for Road Safety 2011-2020.** Many vulnerable road users are being killed worldwide and the situation in the EU is no exception. A total of **170,000** pedestrians, cyclists and powered two-wheeled (PTW) riders have been killed on EU roads since 2001, **15,400** of them in 2009. Deaths among this category of unprotected road users have been decreasing at a lower rate than for vehicle occupants. Deaths among pedestrians and cyclists decreased by **34%** between 2001 and 2009 and those among PTW riders by only **18%**, compared with **41%** for vehicle occupants (Fig. 9). While the number of road deaths has declined considerably in the past decade in Europe, the number of PTW riders killed rose in 13 out of 26 countries. This rise can be attributed only partly to the increase in use of PTWs and should urgently receive special attention from policy makers at the national and European levels. The safety of walking and cycling also needs special attention if public health is to be improved by encouraging these forms of active travel.

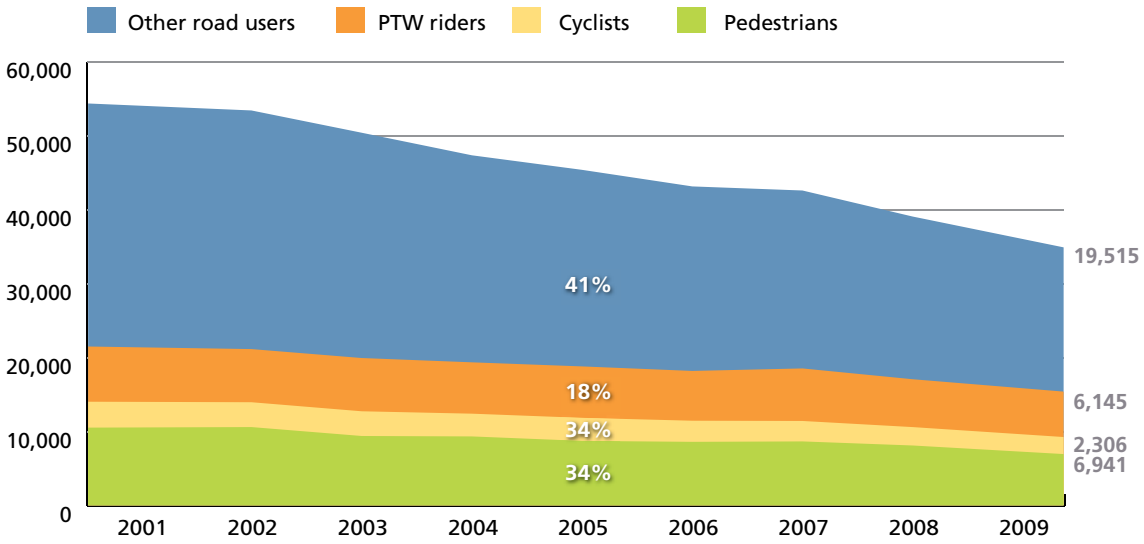

Fig. 9: Reduction in road deaths since 2001 for pedestrians, cyclists, PTW riders and other road users.

Experiences from fast progressing and well performing countries show that measures exist which are both affordable and effective in saving the lives of many unprotected road users. The fastest reductions in pedestrian deaths have been recorded in **Portugal**, **Sweden**, **Norway** and **Belgium** and in cyclist deaths in **Finland**, **Israel**, **Slovakia** and **Latvia**. Best progress in reducing deaths among motorcyclists and moped riders has been achieved by **Portugal** and **Latvia** and to a lesser extent by **Ireland** and **France**.

Initiatives targeted at improving the safety of vulnerable road users will be crucial in reaching the new EU 2020 Road Safety Target. If the EU wants to be at the forefront of the UN Decade of Action it must address the risks faced by unprotected road users, not least to achieve the ambitious safety, health and sustainability goals set out in the recently published **EU White Paper on Transport**. With nearly 50% of car trips being shorter than 5km, governments want to promote walking and cycling, but people will not choose theses means of travel unless they are made safer.

2.1 Progress in reducing deaths among pedestrians

Road safety of pedestrians has improved in all PIN countries (except one) since 2001. Yet, as many as **6,900** pedestrians were killed in the EU27 in 2009 alone; **80,800** since 2001.

Portugal achieved an outstanding 11% average year to year reduction in pedestrian deaths over the period 2001-2009 (Fig. 10), cutting numbers of pedestrians being killed by 56% between 2001 and 2009. Two countries that are already performing well, **Sweden** and **Norway**, have also achieved fast progress with average annual reductions of 9% and 8% respectively. Progress since 2001 has been disappointing in **Slovakia**, **Austria**, **Poland** and **Romania**, but it is encouraging that in Poland and Slovakia the numbers in 2009 showed substantial reductions from 2008. The number of pedestrians killed in **Denmark** increased by 2% per year on average.

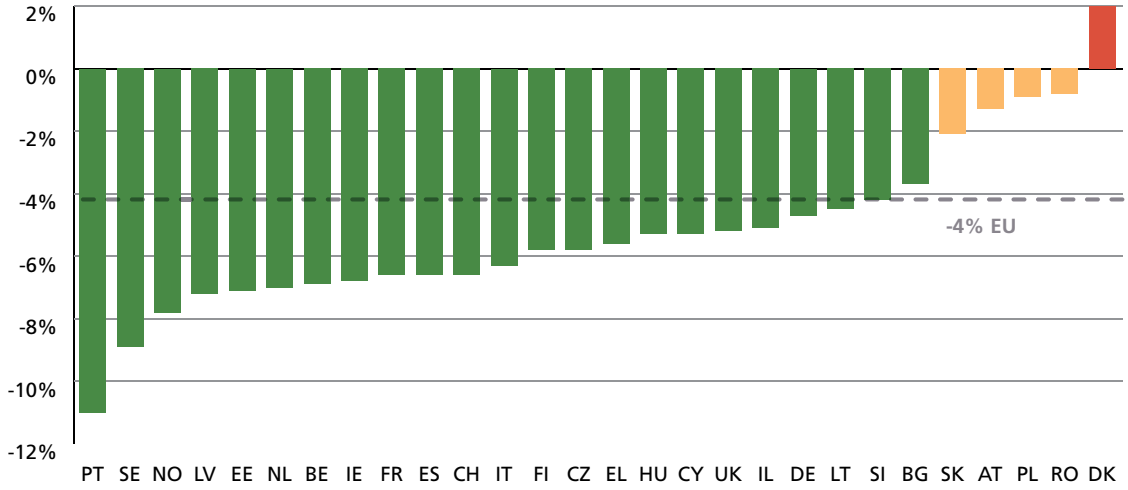

Fig. 10: Average annual percentage change in **pedestrian deaths** over the period 2001-2009.

The indicator

The **percentage change in the numbers of deaths** among pedestrians, cyclists and PTW riders between 2001 and 2009 (Fig. 10, 11 and 12) is used as main indicator in this chapter.

Deaths among unprotected road users represent 44% of all road deaths across the EU. Pedestrian killed represent 20%, cyclists 6% and PTW users 17% of all road deaths but big disparities exist between countries (Fig. 10d).

Countries are also compared according to the **numbers of PTW rider deaths per billion PTW kilometres ridden** to take into account exposure to risk, i.e. the number of motorcycles on the road and the distances ridden (Fig. 13). This indicator of risk for PTW riders could not be calculated for **Bulgaria, Cyprus, Greece, Italy, Lithuania, Luxemburg, Malta, the Netherlands, Portugal** and **Slovakia** due to the lack of data on the number of kilometres ridden by motorcyclists. Fewer countries could provide updated estimates of kilometres travelled by PTW compared with the first publication of this ranking in 2008. Measurements stopped in 2005 in Poland and in 2006 in the Czech Republic, Denmark, Hungary and Spain. Countries use various methodologies to estimate km travelled by PTW[15].

The great majority of killed motorcycle and moped users are riders: in 14 countries supplying data to SafetyNet, there are 11 rider deaths for every passenger death[16]. This chapter therefore concentrates on risk to the riders themselves and does not compare numbers of passenger deaths.

The data was retrieved from CARE when available and completed or updated by the PIN Panellists. The full dataset is available in the Annexes.

The improvements in pedestrian safety are to a large extent a function of the overall improvements in road safety. Countries that have made the biggest improvements in road safety since 2001, namely **Portugal**, **Belgium**, **Latvia**, **Estonia**, **Ireland**, **France** and **Spain** are among the best performers also in improving the safety of pedestrians. Countries that are already performing well like **Sweden**, the **Netherlands** and **Switzerland** were also able to cut pedestrian deaths substantially further.

The reduction in pedestrian deaths formed part of the good reduction in the total number of road deaths observed in **Portugal** since 2001. A lot of efforts were put into improving pedestrian safety.

"Our Road Safety National Plan (2003-2010) includes a 60% reduction target for pedestrian deaths. We achieved a 56% reduction up to 2009; we have most likely achieved our target in 2010. Around 40% of the pedestrians killed are aged 65 and older. The government runs campaigns raising awareness about pedestrian vulnerability. Infrastructure improvement schemes were implemented in several urban and suburban areas, with greater care over the location and signing of pedestrian crossings. Furthermore, recent developments in the management of emergency calls and in the emergency services have resulted in increased efficiency of post-crash care and higher survival rates. Still, there is a huge potential for improvement as many cities have not yet adopted a Road Safety Plan and automatic speed cameras are only being installed slowly."
Joao Cardoso, LNEC, Portugal.

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[15] SafetyNet, WP2, First classification of EU member states on Risk and Exposure Data http://www.erso.eu/safetynet/fixed/WP2/D2.2.2%20First%20Classifi cation%20of%20RED_v2.pdf

[16] EU15 excl. DE. SafetyNet, WP1, Traffic Safety Basic Facts 2006 Motorcyclists and mopeds http://www.erso.eu/safetynet/fixed/WP1/2006/BFS2006_SN-SWOV-1-3-MotorcyclesMopeds.pdf

"We are very pleased by this progress. This is the result of a combination of measures, in particular improvement in the infrastructure (separating pedestrian and cycling from motorised traffic) and an increase of 30 km/h zones in areas where there are many vulnerable road users".

Anna Vadeby, VTI, Sweden.

In **Sweden**, deaths among pedestrians have been cut by 50% between 2001 and 2010, as well as deaths among cyclists (Fig. 11), while deaths among car drivers have been reduced by 30%.

"We are pleased by the reduction in the number of pedestrians killed. Pedestrians used to be particularly at risk in Latvia - and still are in many areas. We have partly implemented the actions planned in the Road Safety Programme 2007-2013: pavements and cycle paths have been built to protect pedestrians and cyclists from motorised traffic, street lighting and signing around pedestrian crossings improved, enforcement of violations by drivers and pedestrians near pedestrian crossings tightened up. The good results motivate us to do more".

Aldis Lama, Ministry of Transport, Latvia.

In Austria, reductions among vulnerable road users were slower than for car occupants.

"Against this background, our new Road Safety Programme is giving a special attention to the safety of pedestrians and cyclists. One of the challenges is that more than half of all killed pedestrians are older than 65 and many fatal collisions occur at night or in twilight. Wide scale infrastructure improvement schemes of crossing facilities are planned. A modified right-of-way regulation might be considered in order to make pedestrian's priority on zebra crossings more explicit".

Klaus Machata, Austrian Road Safety Board.

Overall road deaths have decreased faster in **Germany** than pedestrian deaths. Pedestrian deaths represent 14% of all road deaths (Fig. 10d) around the same proportion as in 2001.

"A large share of serious collisions involving pedestrians involve elderly people and occur during winter, at night or in twilight. Pedestrians, elderly people and children in particular, should be made aware of the crucial importance of wearing brighter clothes and retro-reflective materials in order to be seen by car drivers. Vehicles are now increasingly equipped with better light systems such as xenon lamps, cornering lights, adaptive headlights and automatic dipped-beam headlamps, which help to reduce the risk of night-time accidents. Better road infrastructure is also key to further reducing accidents involving pedestrians. Enforcement is a must, in particular enforcement of speed limits, but also in respect of pedestrians and cyclists breaking the law"

Jacqueline Lacroix, DVR, Germany.

After good progress earlier in the decade, deaths among pedestrians in **Italy** have increased each year since 2006.

"Following this worrying trend, the national parliament adopted a new amendment (L.120/2010) providing that drivers must give way to pedestrians crossing the roads and – which is new – to those waiting at a pedestrian crossing. With this new provision, the Italian legislation is falling into line with the example of many European countries".

Lucia Pennisi, ACI, Italy

2.1.1 Progress in reducing speed: key to success in reducing pedestrian deaths

Progress in reducing pedestrian deaths in **Ireland** and the **Czech Republic**, and to a lesser extent **France** and **GB**, has been helped by a reduction in mean speed on urban roads.

In **Ireland**, drivers have slowed down markedly in cities (Fig. 10a)[17]. But the mean speed is still 54km/h with 53% of vehicles exceeding the limit (Fig. 10b). In residential areas, the mean speed is now 35km/h with only 4% of vehicles exceeding 50km/h, suggesting that there is scope to follow many other European cities by reducing the speed limit to 30km/h.

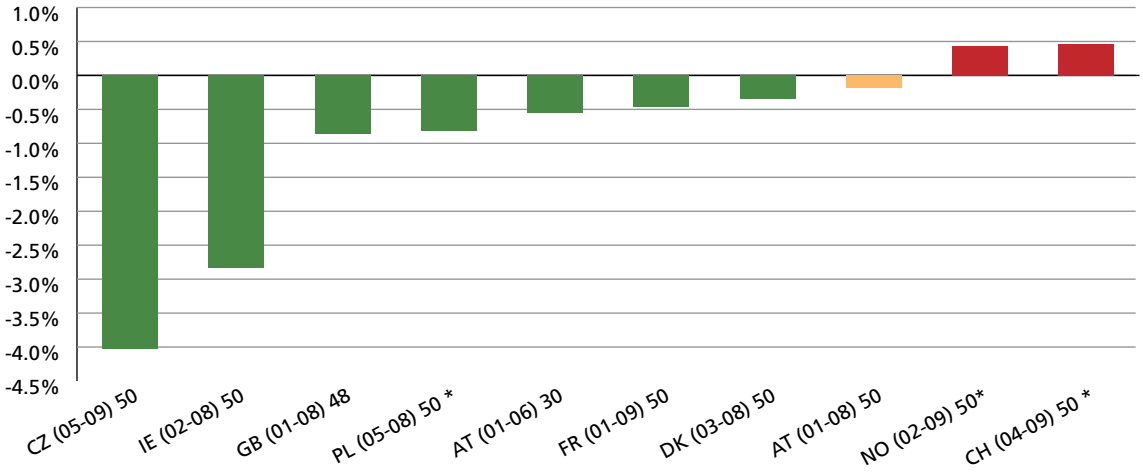

Fig. 10a: Yearly average percentage change in mean speed of cars and vans on urban roads (from earliest available baseline to latest available year)
*In Poland, in 2004, the speed limit in urban areas was lowered from 60km/h to 50km/h between 6am and 11pm (it remains 60km/h from 11pm to 5am). * All traffic.*

Best progress in reducing mean speed of cars and vans has been made in the **Czech Republic** (Fig. 10a): 80% of drivers now obey the speed limit (Fig. 10b). The percentage of cars and vans exceeding speed limit there fell sharply in 2006, following the introduction of a penalty point system and increased enforcement. Despite the percentage rising again somewhat in 2007, as the level of enforcement was not sustained, the reduction achieved in 2006 has largely persisted. The number of pedestrians killed fell sharply in 2006, was somewhat higher in 2007 and 2008, and fell again encouragingly in 2009.

[17] First published in ETSC (2010), Chapter 3.

Pedestrians are exposed to high speed in cities in **Poland** with 80% of the drivers breaking the speed limit (Fig. 10b). In **Austria**, 70% of vehicles exceed the 30km/h limit in residential zones and 51% exceed the limit where this is 50km/h.

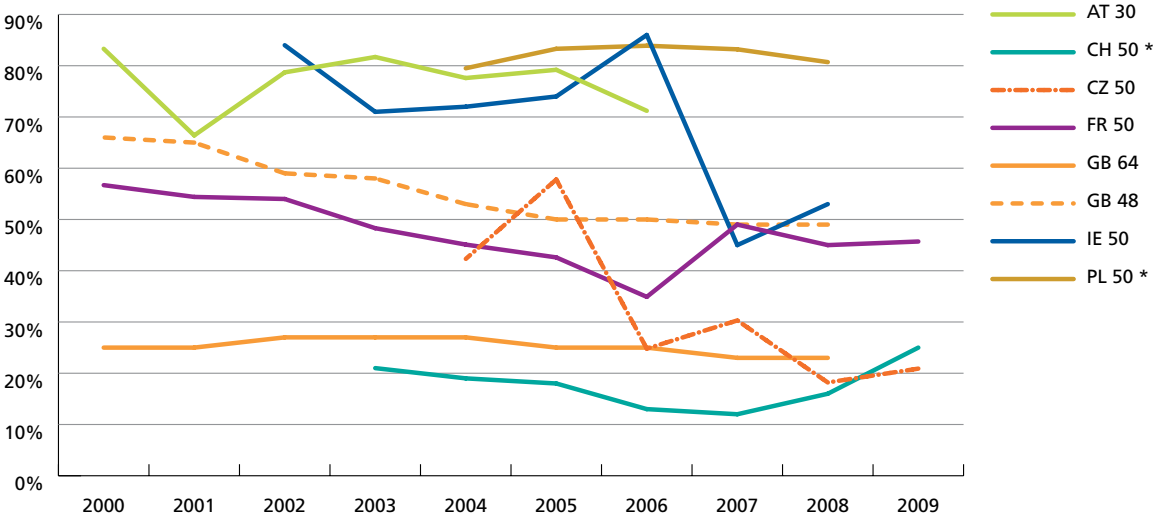

Fig. 10b: Percentage of cars and vans exceeding the speed limits on urban roads. * *All traffic.*

2.1.2 Pedestrian crossings: room for improvement

Improving pedestrian safety requires a combination of measures. In particular, there is still plenty of room for improvement when it comes to pedestrian crossings in Europe. This is the main finding of the EuroTest 2010 "pedestrian crossing assessment programme"[18]. For the third year, the Automobile Club d'Italia (ACI) and its partner automobile clubs tested pedestrian crossings within EuroTest, the European consumer testing programme. The results revealed that almost one in five crossings failed the test, achieving a "poor" rating, underlining again just how much pedestrian crossings differ across Europe.

The test was conducted in 18 major cities, in 15 different countries across Europe. In each city, 15 crossings were inspected, with efforts made to examine the whole range of crossings found in defined zones. The safety of each pedestrian crossing was assessed and evaluated, taking into account its peculiarities in terms of crossing system, daylight visibility, night-time visibility, accessibility for all the road users.

The most glaring failings include the absence of refuge islands on particularly long crossings, poor traffic light management (very short green times for pedestrians) and high numbers of potential hazard points for pedestrians and vehicles. The visibility aspect particularly at night still needs much improvement (one in five crossings was negatively rated in this respect). Accessibility at pedestrian crossings was also found to be generally poor, particularly for wheel chair users and people who are sight- or hearing-impaired). Better accessibility, greater harmonisation of rules governing the types of infrastructure (traffic light schemes, road markings etc) and behaviour at pedestrian crossings as well as more effective use of technologies are a must if safety is to be assured.

[18] http://eurotestmobility.com/eurotest.php?itemno=385&PHPSESSID=1a4cc7390f6d951996a50d6a23cfded6

Most of pedestrians are hit by passenger cars or light duty vehicles. This is because cars form the majority of traffic. However, when allowing for distance travelled, motorcycles and buses pose greater risk to pedestrians in urban areas (see Fig. below from GB)[19].

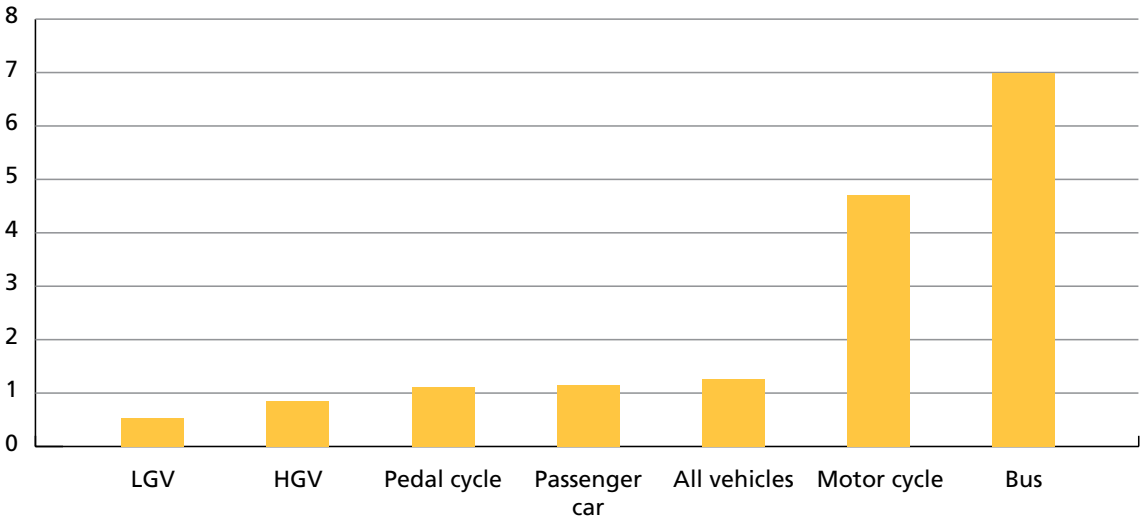

Fig. 10c: Reported killed and serious injured pedestrian casualty rate per billion vehicle-km by vehicle types, GB, 2008.

Source: UK Department for Transport.

The UN Decade of Action for Road Safety

The United Nations General Assembly proclaimed in its resolution A/64/255 of March 2010 a Decade of Action for Road Safety 2011-2020. The goal is to "stabilise and then reduce the forecast level of road traffic deaths around the world by 2020." The World Health Organisation (WHO) has prepared a Global Plan for the Decade to facilitate coordinated actions at national, local and global levels[20].

The Plan calls for special attention to the safety of vulnerable road users (VRUs) for the benefit of all road users and urges all countries to:

- Raise the inherent safety and protective quality of road networks;
- Implement pedestrian protection regulations;
- Set and seek compliance with laws and evidence-based standards and rules for motorcycle helmets to reduce head-injuries;
- Accelerate research into safety technologies designed to reduce risks to VRUs;
- Encourage universal deployment of crash avoidance technologies with proven effectiveness such as Electronic Stability Control and Anti-Lock Braking Systems for motorcycles;

> *"I call on Member States, international agencies, civil society organizations, businesses and community leaders to ensure that the Decade leads to real improvements. As a step in this direction, governments should release their national plans for the Decade when it is launched globally on 11 May 2011."*
>
> Mr Ban Ki-moon, UN Secretary-General

[19] http://www.walkeurope.org/uploads/File/publications/PQN%20Final%20Report%20part%20B1.pdf
[20] WHO Global Plan for the Decade of Action http://www.who.int/roadsafety/decade_of_action/plan/en/index.html

2.1.3 Unprotected road user shares of road deaths in different countries

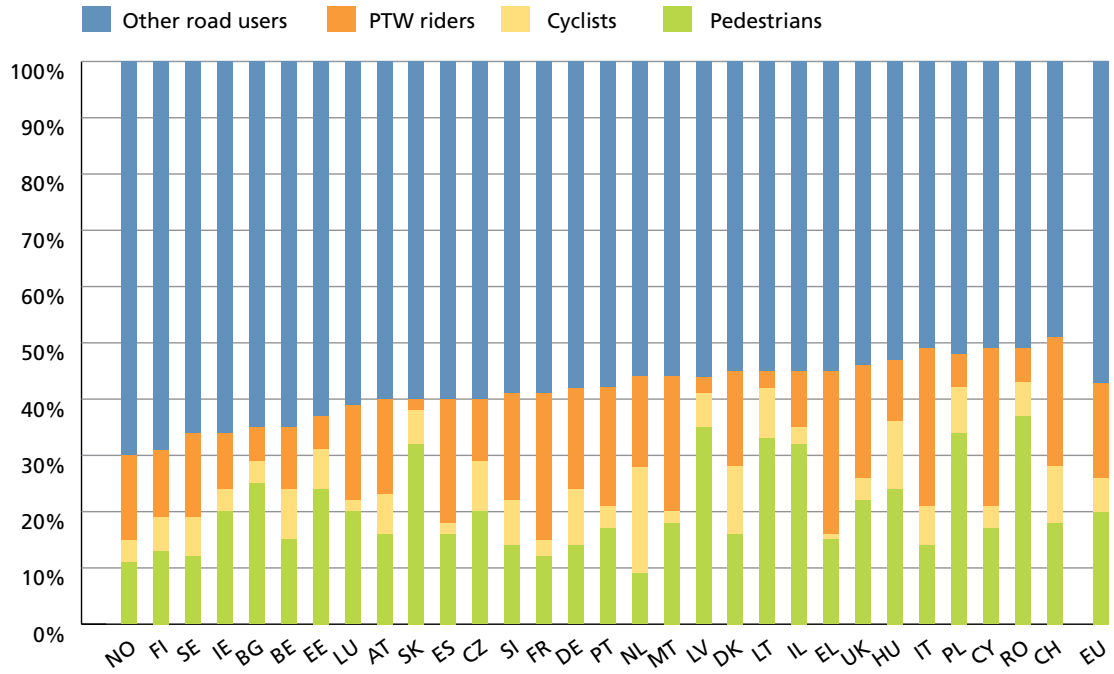

Fig. 10d: Pedestrians, cycle users and PTW users' deaths as a percentage of all road deaths ranked by the share of deaths that were unprotected road users of all kinds taken together (2007-2009 average)

Deaths among unprotected road users represent 44% of all road deaths across the EU. Pedestrians killed represent 20%, cyclists 6% and PTWs 17% of all road deaths but big disparities exist between countries.

"The share of pedestrian deaths among all deaths is higher in the Eastern European countries (with the exception of Slovenia) and in Israel, which can be partly explained by a lower level of motorisation in those countries than in Western Europe"

Péter Hollo, KTI, Hungary.

"Of course, the cycling and motorcycling season is much shorter in Norway, Finland and Sweden than in other EU countries. There are generally few cyclists and motorcyclists on the roads between November and March in Finland. At the same time, we have put a lot of effort into improving the safety of pedestrians and cyclists in urban areas. Cycling and walking paths are generally separated from motorised traffic, safe crossings are provided and speed limits lowered below 50km/h in most city centres. There is room for improvement in the countryside however"

Esa Räty, Finnish Motor Insurers' Centre (VALT).

European Parliament Report on road safety

On 28th February 2011, MEP Dieter-Lebrecht Koch presented his draft report on the new challenges and measures to improve EU road safety over the next decade to the Committee on Transport and Tourism (TRAN) of the European Parliament. Endorsing the objective of halving the total number of road deaths in the EU between 2011 and 2020, the report also calls for a 40% reduction in the number of people suffering serious injuries, on the basis of a harmonised EU definition. MEP Koch reiterated the need for a greater account to be taken of the protection of vulnerable road users, such as pedestrians, cyclists, children and elderly people, as an integral aspect of road safety. Innovative recommendations include the compulsory fitting of alcolocks to all commercial passenger and goods transport vehicles, a wider introduction of 'eCall', and the introduction of Intelligent Speed Assistance (ISA) systems. The report will be voted in May in the Committee on Transport and Tourism and adopted in plenary in June.

The draft report can be found here http://www.europarl.europa.eu/oeil/file.jsp?id=5879452.

2.2 Good progress in reducing cyclist deaths...

The numbers of cyclists killed in road collisions decreased in all PIN countries except Romania between 2001 and 2009 (Fig. 11). **Finland**, **Israel**, **Slovakia** and **Latvia** achieved the best average annual reductions, of between 9.6% and 14%, over the last eight years. Reductions in **Italy, Austria, Ireland,** the **UK, Switzerland** and **Slovenia** were clearly smaller than the EU average of 4% per year.

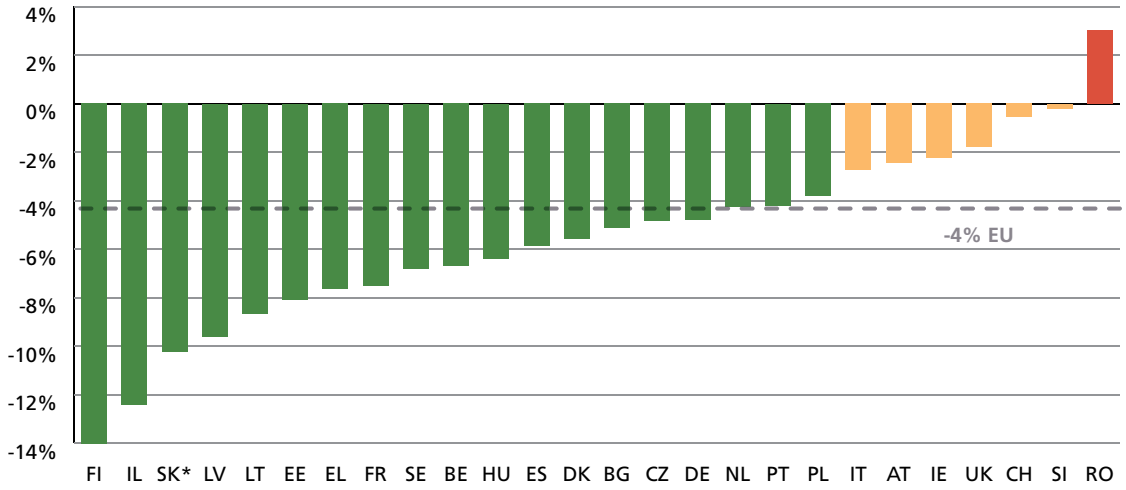

Fig. 11: Average annual percentage change in **cyclist deaths** over the period 2001-2009.
** SK 2002-2009.*
CY, LU and MT are excluded from this ranking because the numbers of cyclist deaths in those countries are so small as to be subject to substantial random fluctuation.

"Cycling is not yet as popular in Latvia as in other EU countries but we expect an increase in cycling in the coming years. We hope to be able to sustain the good results achieved so far. Although limited, the network of cycling paths is being extended. All children are now being taught at school how to behave on the roads as part of the primary and secondary school's programmes up to the 9th grade. To enter the 6th pupils have to know how to behave as a cyclist. We have just started in May a new campaign "Do you see bicycle?" inviting car drivers to pay attention to cyclists".

Aldis Lama, Ministry of Transport, Latvia

"A National Cycling Plan 2002-2012 was developed by the German Ministry of Transport with a broad range of measures to promote cycling and safety measures for cyclists (vehicle safety, infrastructure and behaviour of the cyclists). Nevertheless, due to the increased use of bicycles, the number of cyclists killed decreased by only 27% from 2001 to 2009. Elderly cyclists are especially at risk: every fourth killed cyclist was over 75".

Jacqueline Lacroix, DVR, Germany.

"Deaths among cyclists have not decreased in Slovenia since 2001, but the share of cyclist deaths among all deaths increased from 5% in 2006 to 12% in 2010. The Slovenian Traffic Safety Agency encourages the use of bicycle as a mean of transport but we are aware that this might lead to an increase in the number of cyclists killed as a consequence of increased traffic. This is why we have developed a specific action plan for cyclists. The main objective of the plan - and the accompanying national prevention campaign - is to reduce the number of cyclists killed and seriously injured by 10% and increase the use of helmets for cyclists by 10%".

Vesna Marinko, Traffic Safety Agency, Slovenia.

... is only the tip of the iceberg

Too many cyclists are killed in road collisions, but many more are injured - sometimes seriously. The level of reporting of road injuries also tends to be lower for pedestrians, cyclists and motorcyclists than for car occupants. This is partly because, in particular with collisions with no motor vehicle involved, or between one motor vehicle and a pedestrian or cyclist and no victims killed on the spot, victims, the involved driver or eyewitnesses call the emergency services but not necessarily the police. In Sweden, only one in ten cyclists treated in hospital following a collision is recorded by the police.

"In the Netherlands, 45% of those seriously injured on the roads are injured while cycling with no motor vehicle involved. Traditionally, many road safety measures targeted car occupants and interactions between motor vehicles and pedestrians or cyclists. The new Dutch Road Safety Plan sets a series of priority actions for 2020, in particular extra protection for vulnerable road users, such as cyclists".

Peter Mak, Ministry of Transport, the Netherlands.

2.2.1 A combination of measures: legislation, enforcement, awareness campaigns...

In some European countries, it is mandatory to wear cycle helmets. This is the case in **Finland** and **Israel** for all cyclists regardless of age, in **Slovenia** for those aged up to 14, in **Sweden** and **Slovakia** up to 15, in Estonia up to 16 and in the **Czech Republic, Lithuania** and **Latvia** up to 18. Cyclists have to wear helmets outside built up areas in **Spain** and **Slovakia**[21]. Advocates of helmet legislation may wish to address, as part of their promotional activities, concerns regarding decreased cycling numbers following introduction of legislation, by citing the benefits and low overall risk of cycling, because those not in favour of legislation have used discouragement from cycling as an argument against legislation[22].

Turning HGVs: beware of danger!

Copenhagen, with a population of 500,000, is an example of a city where 60% of citizens use their bikes every day and for all of their local trips. Efforts by Copenhagen authorities have led to a 50% reduction of killed and seriously injured cyclists since 2000. To maintain these high levels of cycling and improving safety records, a number of policy interventions have been applied. These include for example restrictions for HGVs over 18 tonnes and recommended routes for HGVs through the city. To further minimise HGV and cyclists collisions, LED technology informs HGV drivers if a cyclist is approaching at junctions. Large stickers have been placed on the ground in the cycle track at junctions as a very visible reminder to alert cyclists to the conflict potential. So-called "Green Cycle routes" have been developed for cyclists to identify safe routes. Green waves for cyclists, where traffic lights are set at the speed of cyclists, have been created. A "cycle bus" system whereby cyclists meet at set places and times on a route map to commute in and out of town together have also been set up[23].

The Police in Cologne, Germany, regularly run enforcement activities aiming at improving cycling safety, targeting car drivers who pay too little attention to cyclists as well as cyclists themselves. The last "Action for safer biking"[24] was conducted in March and April 2011. Measures were only preventative during the first week, with policemen giving warnings to cyclists breaking the law, and after that policemen imposed fines. The most frequent offences were using cycle paths in the wrong direction or crossing red lights.

Urban street user hierarchy or Street code

As exemplified recently in Belgium, a number of EU countries have established an urban street user hierarchy that gives the highest priority to walking, cycling, and public transport. This concept introduces a "principle of prudence", governing the relationship between drivers and the most vulnerable, as well as new urban road planning rules and the generalisation of 30km/h zones. The US Federal Highway Administration sponsored scoping study of five European countries is recommending adopting such approach also in the US.[25]

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[21] See Annexes, Table 17.
[22] European Child Safety Alliance (2006). Child Safety Good Practice Guide.
[23] ETSC (2010), 4th Report, Safer commuting to work, http://www.etsc.eu/PRAISE-publications.php
[24] http://www.polizei.nrw.de/presse/portal/koeln/110411-141944-84-1127/110411-4-klev-aktion-sicher-fahrrad-fahren?print, http://www.velo2010.de/
[25] Fischer, E. et all. (2010). Pedestrians and Bicyclist Safety and Mobility in Europe, US Federal Highway Administration. http://www.international.fhwa.dot.gov/pubs/pl10010/pl10010.pdf

The safety impact of more cycling

"Safety in numbers" evidence shows a non-linear relationship between the amount of cycling and walking and the risks to cyclists and pedestrians. This means that the more pedestrians or cyclists there are, the lower the risk to each individual as car drivers and other motorised road users are more used to sharing the road with them[26].

However, an increase in cycling might, at least at first, lead to an increase in the number of cyclists killed and seriously injured[27]. Yet the advantages of walking and cycling (a healthy life through regular exercise, benefit to the environment and higher quality of life) outweigh their disadvantages (the risk of death or injury). Moreover cyclists and pedestrians do not endanger other road users as much as car drivers do because of their lower speed and mass. So shifting a substantial proportion of short-distance car trips to walking, cycling and public transport can, if accompanied by measures to reduce the risks of walking and cycling, increase overall road safety.

2.2.2 … and safer environment for unprotected road users

Since the risk to unprotected road users stems very largely from the use of motor vehicles, the most fundamental challenge is to enable cities to enjoy at least as high a level of prosperity, and their people to enjoy at least as high a quality of life, with fewer vehicle-km driven per year, for example by:

- Promoting localisation of some activities so that they can be reached on foot or by bicycle, or at least by shorter car journeys than before;
- Centralising other activities so that they can be served better by public transport;
- Improving the quality of public transport to extend the range of circumstances in which it is chosen in preference to the car; and
- Discouraging access by car where there are reasonable alternatives.

A second and related challenge is that if people are going to walk, cycle and use public transport more as a result of using cars more selectively (and there are environmental and public health reasons for encouraging this) then cities have to reduce the risks of death and injury while walking or cycling, for example by:

- Creating attractive and convenient routes for the journeys on foot or by bicycle that people would actually like to make – routes with less proximity to motor traffic and safer provision for crossing roads; and
- Moderating the speeds of motor vehicles where they still travel in proximity to people walking and cycling.
- Promote 30km/h speed limit zones in residential areas and areas with high levels of pedestrians and cyclists.

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[26] Jacobsen P., Safety in numbers: more walkers and bicyclists, safer walking and bicycling. Injury Prevention, vol. 9 pp 205-209, 2003
ECF "Halving injury and fatality rates for cyclists by 2020" http://www.ecf.com/3956_1

[27] Stipdonk H., Reurings, M. (2010), The safety effect of exchanging car mobility for bicycle mobility

However successfully alternatives to car use are encouraged, the amount of motor vehicle use in European cities is still likely to increase a good deal. A third challenge to cities is therefore to reduce the risks of death and injury posed by motor vehicles, for example by:

- Matching the use of each road to the functions that the road serves in terms of living space, access and through movement (Sustainable Safety Approach[28]);
- Separating faster vehicles from slower ones and lighter vehicles from heavier ones, and separating vehicles that are making conflicting movements;
- Making the road system self-explaining to its users; and
- Achieving high levels of use of protective devices and understanding of how to drive to reduce risk[29].

2.2.3 Improve passive and active vehicle safety

European Parliament Supports the Reduction of 'Blind Spots' on Heavy Goods Vehicles

Members of the European Parliament have adopted a written declaration urging the European Commission and Council of Ministers to reduce blind spots around heavy goods vehicles (HGVs) on European roads. HGVs make up 3% of the vehicle fleet but are involved in 14% of fatal collisions, being particularly dangerous to vulnerable road users such as motorcyclists, cyclists and pedestrians. Currently regulated by Directive 2007/38/EC, the fitting of heavy goods vehicles with systems of indirect vision to reduce collisions is under evaluation by the European Commission. MEPs are putting pressure on the Commission to speed up its evaluation of the current Directive, revise its text to take account of the latest technological developments, and ensure that emergency braking and lane departure warning systems are installed on all HGVs registered in the EU. The written declaration was submitted by MEPs Fiona Hall, Ines Ayala Sender, Isabelle Durant, Dieter-Lebrecht Koch and Sabine Wils and was signed by a total of 415 MEPs.

[28] Chapter 3, Reducing deaths on rural roads
[29] ETSC (2009), 3rd PIN Report, Chapter 4

2.3 Insufficient progress in reducing deaths among Powered Two-Wheeler users

2.3.1 Over 6,000 riders killed in the EU in 2009 – only 18% fewer than in 2001 ...

Portugal and **Latvia** achieved the highest average annual reductions of 10% and 8% respectively in PTW rider deaths since 2001 (Fig. 12). In Portugal, PTW rider deaths were cut from more than 400 in 2001 to 173 in 2009, reaching an outstanding **58**% reduction in 8 years. In eleven other countries, motorcycle rider deaths decreased on average. In 13 countries, the numbers of PTW rider deaths rose on average over the past nine years. The number of PTW riders killed increased by 6% yearly on average in **Sweden**, by 10% in **Finland** and by **43**% in **Romania**. The Romanian government needs to adopt strict measures as a matter of urgency to reverse this worrying trend.

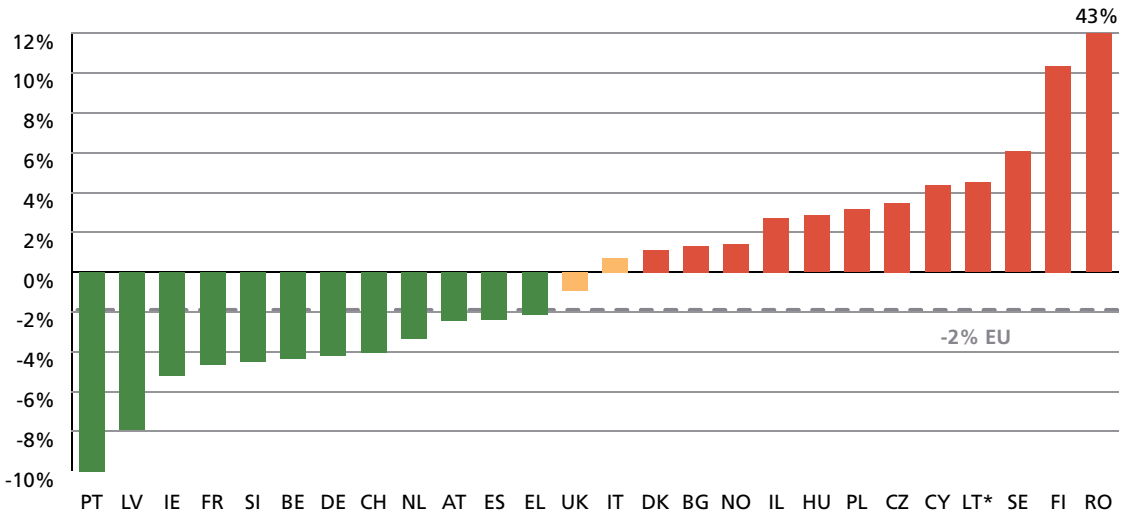

Fig. 12: Average annual percentage change in **PTW rider deaths** over the period 2001-2009.
**LT: 2006-2009. Notes: LU, MT, EE, SK excluded (countries having <10 deaths in more than 2 years)*

With the entry into force of the EU Directive on Driving Licencing and its transposition into Romanian law, **Romania** will soon fall into line with the rest of the EU and introduce a compulsory driving licence for riding a motorcycle.

"Unfortunately, in 2010 we were unable to sustain the 2009 low record of seven motorcyclists and one moped rider killed. Last year, 15 motorcyclists and four moped riders lost their lives on Latvian roads, putting us back to the 2001 level".
Aldis Lama, Ministry of Transport, Latvia.

Powered Two-Wheelers (PTW)

As the diversity of two-wheeled motor vehicles in Europe has increased, the general term Powered Two-Wheeler has recently been used to encompass all relevant vehicles, the main types being mopeds, scooters and full-sized motorcycles. In this report, the terms 'motorcycle' and 'PTW' are used synonymously and, except where specified, refer to all types of such vehicles. Differences in machines and their use between mopeds and other PTW are important and are discussed here as far as the data allow.

In recent years there has been much discussion about whether a PTW user falls into the category of vulnerable road user since they can pose risks to other users such as pedestrians and cyclists. This is why we are also using the term 'unprotected'. Although motorcyclists are to some extent protected by helmets and clothes, they are not protected by a vehicle body, seat belts or the other protection systems that car occupants enjoy, while the speed at which they move exposes them to risks of motorised traffic.

To reach the EU target of cutting road deaths by 50% between 2001 and 2010, a year-to-year reduction on deaths of at least 7.4% is needed from 2001 onwards[30]. The reduction in PTW rider deaths is contributing fully to the overall reduction only in **Portugal** and **Latvia**. The average annual reduction in PTW rider deaths between 2001 and 2009 was only **2**% for the EU as a whole. Yet rider deaths decreased in 2008 and 2009 by 8% and 5% respectively, after having changed relatively little between 2002 and 2007, giving some hope that the general road safety improvements recorded in the EU are starting to benefit motorcyclists and moped users as well.

"The general road safety improvements recorded in Portugal over the past few years are benefiting motorcycle and moped users as well. It seems also that some people might have switched from mopeds to cars and motorcycles, explaining part of the reduction in deaths among moped riders. Yet more than 116 motorcyclists and 57 moped riders were killed on Portuguese roads in 2009."
Joao Cardoso, LNEC, Portugal.

"We hope to be able to sustain the reduction in the coming years. The objective for 2021 set in our new national road safety programme is to halve the number of deaths among motorcyclists".
Vesna Marinko, Traffic Safety Agency, Slovenia.

"Motorcycling has gained popularity in Romania recently. We need to adopt a coherent package of measures as part of our upcoming road safety programme. Already, helmet wearing rates have been increased from 90 to 93% for riders and from 56% to 71% for passengers following awareness campaigns. We need to increase our enforcement activities targeting motorcyclists"
Mihai Calinoiu, Romanian Traffic Police.

[30] ETSC (2007), Road Safety PIN Flash 6.

"Deaths among PTW riders increased by 26% over the last 10 years. Part of the increase can be explained by an increase in PTW use and PTW-km ridden. However, we need to attend to this trend. In-depth accident studies show that more than half of the moped riders killed in road collisions in Sweden were not wearing a helmet or lost the helmet in the accident. A good share of those people would have been saved had they worn one properly. More efforts are needed to achieve a 100% helmet wearing rate and proper fastening among moped riders and passengers".

Anna Vadeby, VTI, Sweden.

2.3.2 ...and many more seriously injured

At least **42,500** riders were seriously injured in road collisions in the year 2009 alone. "*For every motorcyclist who dies there are some four motorcyclists who survive with severe brain damage, spinal cord injury or serious joint dysfunction in the upper or lower limbs. Such injuries require substantial periods of rehabilitation and often leave permanent disabilities. Such cases are very predominantly young males. The social and economic costs of such casualties are enormous".* Murray Mackay, Professor Emeritus of Transport Safety, University of Birmingham, UK.

In Fig. 13 the annual average percentage change in PTW rider deaths since 2001 in 23 of the PIN countries is plotted vertically against the annual average percentage change in serious injuries (estimated in each case from data for all of the nine years) plotted horizontally. The EU averages of the two indicators are used to divide the diagram into four quadrants. The number of seriously injured riders across Europe as a whole has stagnated between 2001 and 2009.

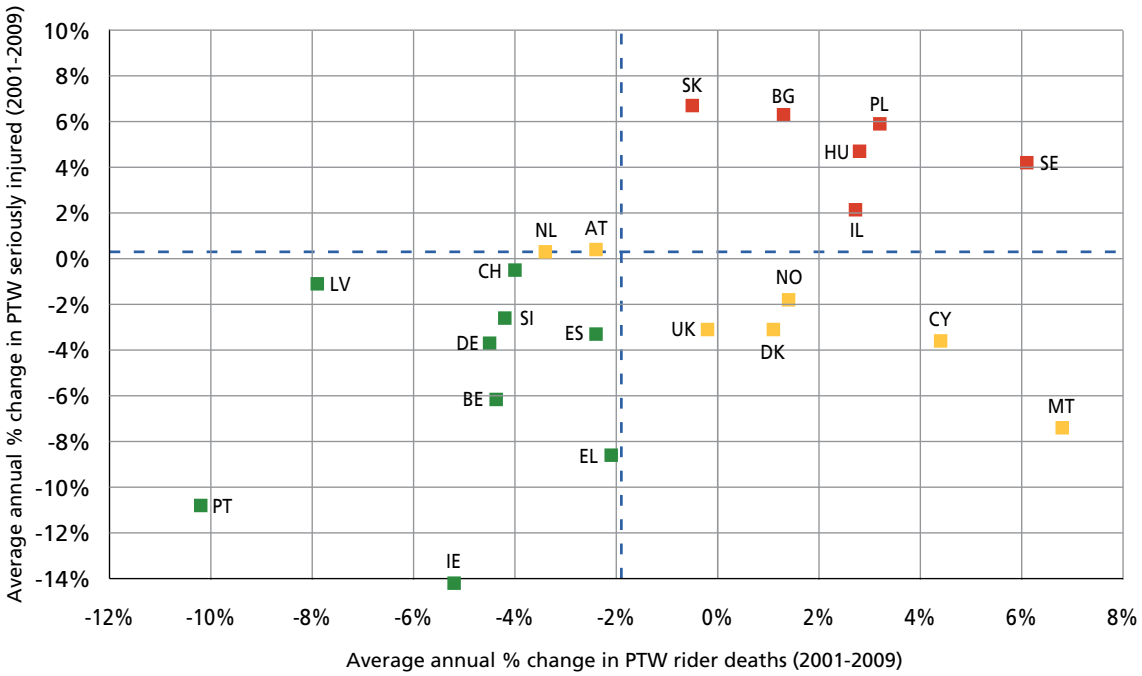

Fig. 13: Average annual percentage change in PTW rider deaths plotted against the average annual percentage change in PTW seriously injured (2001-2009).
Trends in seriously injured: GB figure used for UK, LV (2004-2009), SK (2002-2009); CZ, EE, FI, IT, LT, UK: data on PTW riders seriously injured is not available. France is excluded from Fig. 13 because of the change in the definition of seriously injured in 2005.

Portugal, **Latvia**, **Ireland**, **Belgium**, **Germany**, **Slovenia**, **Switzerland** and **Spain** achieved better than average reductions in both the number of killed and seriously injured PTW riders since 2001 (Fig. 13). **Greece**, **GB**, **Denmark**, **Norway**, **Cyprus** and **Malta** have also made above average progress in reducing serious injuries among PTWs but the reductions in riders' deaths were not sufficient to bring them into the favourable lower left quadrant.

2.3.3 Still a great disparity of risks

PTW riders in **Norway**, **Switzerland, Israel** and **Finland** benefit from a lower level of risk than riders in the rest of Europe (Fig. 14). In these countries with a good overall level of road safety, average rider deaths are between 24 and 40 per billion kilometres ridden. In **Germany**, **Sweden**, **Denmark**, **Latvia**, **Ireland** and **Austria** rates are better than the EU average of 87 rider deaths per billion km ridden. Regrettably, no progress has been made across the EU since the first publication of this ranking[31] as the EU average of PTW rider deaths per billion km is 87 in 2009 compared to 86 in 2006.

In the **UK, Estonia**, **Spain**, **France** and **Belgium**, rider deaths are above the average of 84 but below 150; while in **Slovenia,** riders are exposed to death rates above 200 and in **Czech Republic** and **Romania**, to death rates well above 250 per billion km ridden.

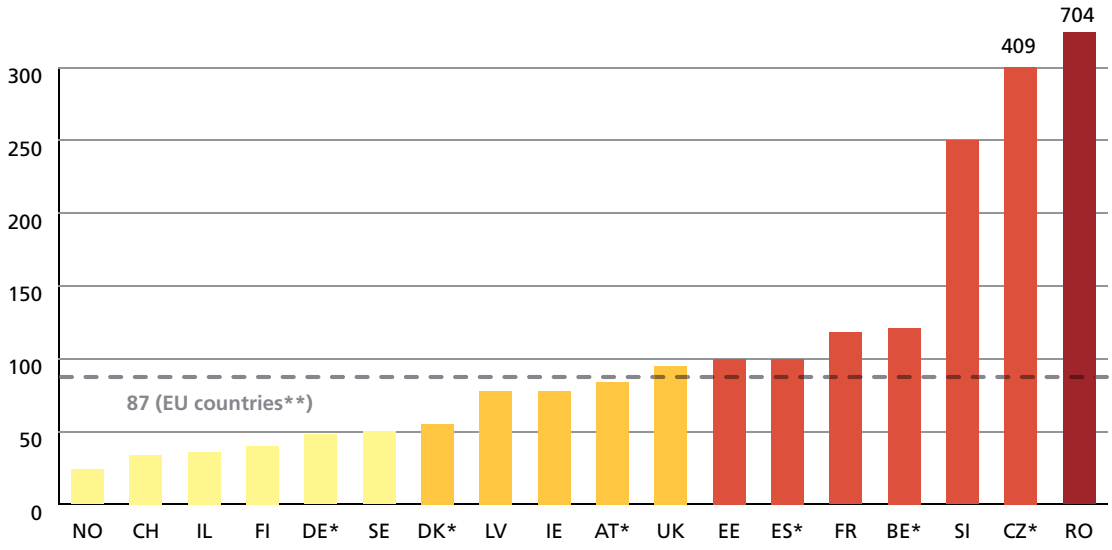

Fig. 14: Power two-wheeler rider deaths per billion km ridden in 2009
** AT, DE (2008); CZ, DK, ES (2006). BE, UK: Mopeds not included.*
***Average for the EU Member States for which rates are shown in the Figure.*

Norway, Switzerland, Finland and **Germany,** already ranking among the top five for PTWs deaths per billion km ridden in 2006, have been joined by **Israel** and **Sweden**[32] in having rates not exceeding 50 deaths per billion km, whereas the rate for **Denmark** has risen above 50 since 2006.

Significant disparities in terms of riders' safety exist in Europe. While the difference in overall road safety performance between the worst and the best performing European country is a factor of 4 (Chapter 1), the difference for PTW riders is a factor of 5 between **Norway** and **France**. Furthermore, in **Poland**, **Slovenia, Hungary**, **Czech Republic** and **Romania** riders have recently been exposed to risks of being killed in road traffic per km ridden of 7, 10, 15, 15 and 30 times higher respectively than their Norwegian counterparts have.

[31] ETSC (2008), 2nd PIN Report, Chapter 2, Fig. 1.
[32] See ETSC (2008), 2nd PIN Report for background information on those well performing countries.

Another way to measure the relative safety of motorcyclists is to compare it with that of other kinds of road user. Here again, no progress has been made since the first publication of this country ranking[33]. For the same distance travelled, the risk of a rider being killed in a road accident is still on average **18** times the corresponding risk for a car driver. The variation in this ratio between countries is also striking: between 8 times in Norway and 70 times in **Slovenia**!

2.3.4 Some sources of disparities in risk

Like the risk to users of other types of vehicle, the aggregate risk for PTW riders differs between countries for many reasons other than road safety policy and measures. These other reasons include climate, topography, seasonal variation, the age-distribution of the users, and the mix of commuting, work and leisure journeys for which the vehicles are used.

In the case of PTW riders there is another particular and substantial source of difference between countries. This is the proportion of PTW use that is formed by riding of mopeds (PTW with engine volume less than 50ccm), which differ in characteristics and pattern of use from larger and more powerful PTW. Comparison of the proportion of moped rider deaths in the total number of PTW rider deaths can help countries to identify and prioritise safety measures for PTW.

Fig. 15 shows how the proportion of PTW riders killed who were moped riders differed among 22 countries over a recent 3-year period. This proportion is the lowest in the **Czech Republic**, **GB** and **Luxembourg** and the highest in **Romania**, **Denmark**, **Estonia** and the **Netherlands**. In other countries, moped rider deaths are between about 8% and 35% of all PTW deaths.

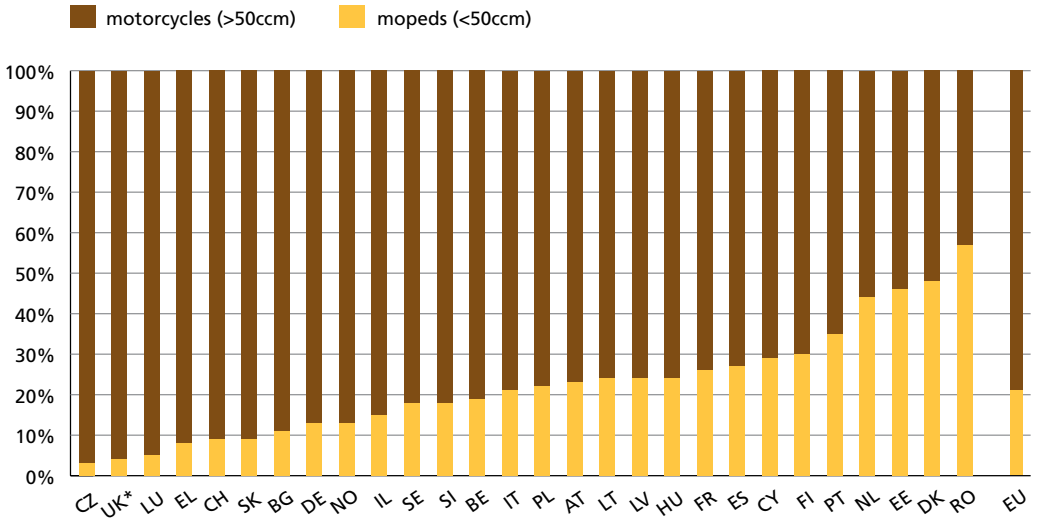

Fig. 15: Moped rider deaths as a percentage of total PTW rider deaths (2007-2009 average). **2006-2008.*

2.3.5 More mid-life riders on the roads

The age at which riders gain their motorcycling licence and purchase their first bike has increased steadily over the years. These recent changes suggest that a significant proportion of motorcyclists either use newly learned skills or rely on skills that were developed some years ago and which may have subsequently degraded through lack of use. This phenomenon has also been noted elsewhere in Australia and the US. The way in which motorcyclists build up their experience has also changed. Mid-life recruits to motorcycling tend to move up to powerful machines much more quickly - helped

[33] ETSC (2008), 2nd PIN Report, Chapter 2, Fig. 2.

in particular by higher incomes - than their younger counterparts. As a consequence, there are more mid-life riders being killed today than in 1991 (Fig. 16).

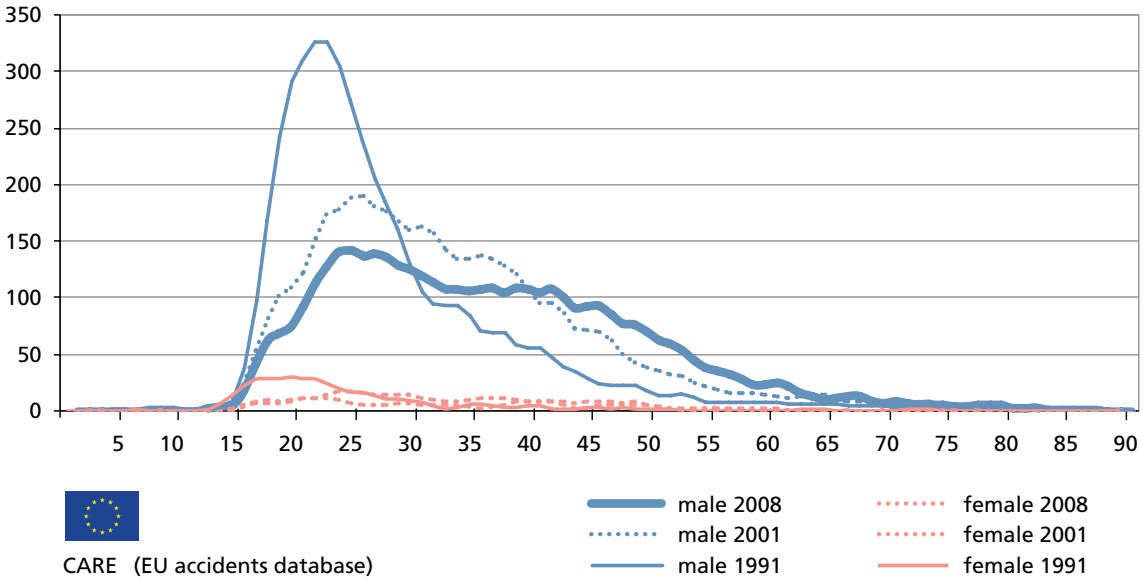

Fig. 16: Male and female motorcycle deaths by age in 2008, with 2001 and 1991 for comparison.

While riding a motorcycle will for the foreseeable future carry more risk than driving a car, evidence shows that the implementation of dedicated safety measures can substantially improve PTW safety. The measures should aim at improving the behaviour of motorcyclists, but also the behaviour of other road users and providing a safer environment for PTW riders[34].

2.3.6 Measures that work

Improving riders' and drivers' skills

The rider's skills, training, experience and attitudes are fundamental to safe motorcycling. Governments should ensure that riders receive appropriate training when they start to use a motorcycle (or re-start after a period of non-use) and that they receive further training as they progress from smaller to larger motorcycles. Motorcyclists should be made aware of the difficulties other road users have in detecting powered two-wheelers and evaluating their speed. Motorcycle riders, because of their inherent vulnerability, need to attain a level of skill that will enable them to ride defensively and to avoid putting themselves at unnecessary risk. The European Commission recently published a new **Initial Rider Training manual**, addressing one of the main problems affecting the quality of initial rider training, namely the focus on machine control skills to the neglect of hazard awareness and rider attitude and behaviour[35].

Campaigns would benefit from targeting younger riders who are more likely to engage in speed-related aggressive riding and mid-life leisure riders who tend to own larger capacity machines. Schemes such as free courses offered at the point of sale or regular refresher courses should be encouraged as well. Car drivers also need to be educated to actively search for motorcyclists in their visual field, particularly at junctions.

[34] ETSC (2008), vulnerable riders, Safety implications of motorcycling in the European Union.
[35] The Initial Rider Training manual is available in 11 languages from http://www.initialridertraining.eu/.

Governments should develop enforcement strategies targeted at motorcyclists. Although the use of helmets is mandatory for motorcycle and moped riders and passengers in the EU, wearing rates are still clearly less than 100% in most of the countries that are collecting data on helmet use. The rates are significantly lower for moped riders than for motorcyclists. Governments should also set a target for proper fastening as set in the Spanish plan for motorcycle safety[36]. Motorcycles escape safety cameras in many countries, as they are not required to have a licence plate in front and therefore in most cases remain unidentified when photographed from the front. Governments need to install cameras able to detect speeding motorcyclists.

Provide a safer environment for PTW riders

A substantial number of collisions involving PTWs are a result of shortcomings in infrastructure. Several handbooks and manuals (such as eSUM) have identified good practices addressing the specific needs of PTW users in road design and maintenance such as using anti-skid surfaces and making roadsides more forgiving[37].

The intention of the European Road Assessment Programme (EuroRAP) to include PTW characteristics in risk-assessment and performance-tracking should be welcomed and provide a sound basis for upgrading road networks to be forgiving for all users, including riders[38].

"Addressing road design from the perspective of motorcyclists is essential if we are to mirror the drop in fatalities amongst other road users."

John Dawson, Chairman of EuroRAP.

Improving the safety of the machines

A number of new safety technologies have been progressively adopted in cars over the past decade and the European Commission supported this by, for example, making Antilock Braking Systems (ABS) mandatory in cars. This has not been the case with changes to the design of motorcycles. ABS brakes for high capacity motorbikes have been commercially available for 25 years and are now being fitted to a wider range of machines. Even so, only 49% of PTW street models available in Europe were equipped with an advanced braking system in 2010 whether as standard or as an option, resulting in only 35% of new PTW registrations being fitted with an advanced braking system. Furthermore, most of these models were equipped with Combined Braking Systems only. EU legislation is therefore needed to push ahead with the introduction of Antilock Braking Systems (ABS) given the range of studies showing clear safety benefits for this technology[39].

"ABS is common on cars, but although it is even more important for PTWs, they are not yet routinely equipped. In 2010 already 60% of new motorcycles in Sweden were equipped with ABS, compared to only 15% in 2008, and the insurance company Folksam has decided to cut the insurance costs for ABS-equipped motorcycles by 15%."

Åsa Ersson, Swedish Transport Administration.

[36] http://www.dgt.es/was6/portal/contenidos/documentos/seguridad_vial/union_europea/plan_sectorial009.pdf
[37] http://www.esum.eu/index.html (safer urban infrastructure guidelines) or ACEM (2006). Guidelines for PTW-safer road design in Europe.
[38] http://www.eurorap.org/library/pdfs/20081202_Bikers.PDF
[39] http://www.etsc.eu/documents/ETSC_Position_on_L-category_vehicles.pdf

Draft EU Regulation on type approval of powered two-wheelers

The proposal for a Regulation on type approval and market surveillance of powered two-wheelers tabled by the European Commission in October 2010 is currently being discussed in the European Parliament. Discussions in the Committee for Internal Market and Consumer Protection and the Committee on Transport and Tourism showed that MEPs largely support the proposal to make Automatic Headlights On (AHO) mandatory on all powered two-wheelers and Antilock Braking Systems (ABS) on all machines over 125cc. The European Commission proposes that for smaller machines manufacturers can choose to equip vehicles with either ABS or CBS systems. For this sub-category, ETSC stresses that whenever possible, preference should be given to ABS. The Committee on Transport and Tourism (TRAN) is also suggesting extending the mandatory introduction of antilock braking systems to the fastest powered two wheelers below 125 cc. ETSC calls on the European institutions to anticipate the dates set in the EC Proposal. ABS is not a new technology. Furthermore, by maintaining 2017 as the initial starting date for the mandatory fitting of ABS, only 3 years will be left for its safety potential to be fully exploited on all new vehicles and translated into concrete safety gains in terms of lives saved before 2020, the date by which the renewed 50% EU casualty reduction target should be reached. The opportunity to increase the safety of PTW users, the user group at greatest risk on European roads, should not be subject to further delays. ETSC proposes 2014 as implementation date for ABS on new vehicle types and 2017 for all new vehicles.
http://www.europarl.europa.eu/oeil/file.jsp?id=5877852
http://www.etsc.eu/documents/ETSC_Position_on_L-category_vehicles.pdf

2.4 ETSC Recommendations

With increasing congestion in urban areas and the drive for sustainability, more people are opting to travel on foot or by bike, public transport, motorcycle or scooter or combinations of these. Walking and cycling have the potential to improve fitness, diminish obesity, and reduce noise, air pollution and greenhouse gases associated with travel. However, pedestrians and cyclists, together with motorcyclists, have a higher risk of death and injury requiring hospitalisation than motor vehicle occupants. Therefore, strategies to improve safety of these modes of transport are particularly needed.

2.4.1 For the benefit of all road users

The EU should:

- Tackle Heavy Goods Vehicles collisions including those caused by blind spots e.g. by improving the design and equipment of HGVs including retrofitting with front-view mirrors (2007 Directive), improved cabin design, installation of cameras and active warning systems and underrun protection.
- Support the development of car windshield airbags by 2015 and to introduce their mandatory fitment soon after as a viable safety measure to improve the protection of pedestrians and other vulnerable road users including cyclists.
- Require manufacturers to mention EuroNCAP ratings in all advertisement of vehicles to encourage consumers to purchase safe vehicles (similar to the 'Monroney label' in the US[40]).
- Support the standardisation of collision investigation and databases and encourage Member States to include variables specific to PTW safety issues.

[40] The Monroney label is an automobile price sticker required by the US Automobile Information Disclosure Act. Manufacturers have to place NCAP star ratings when available on the Monroney label.

Member States should

- In addition to the overall target of reducing deaths by 50% between 2010 and 2020, adopt a specific target of reducing by 50% between 2010 and 2020 the number of pedestrians and cyclists killed in road collisions.
- Match the use of each road to the functions that the road serves in terms of living space, access and through movement (applying the principles of the Sustainable Safety Approach[41]).
- Separate faster vehicles from slower ones and lighter vehicles from heavier ones, and separate vehicles that are making conflicting movements.
- Make the road system self-explaining to its users.

2.4.2 To improve the safety of pedestrians and cyclists

The EU should:

- Draft guidelines for promoting best practice in traffic calming measures, based upon physical measures such as roundabouts, road narrowing, chicanes, road humps and techniques of space-sharing. These measures should be introduced as an integral part of setting up speed limit zones of 30km/h in urban areas.
- Regularly monitor developments in passive and active safety technologies for the protection of unprotected road users and adopt legislation when necessary.
- Support the introduction of Intelligent Speed Assistance (ISA) which in restricting speed has the potential to reduce risks to pedestrians and cyclists.
- Support the development of car windshield airbags as a viable safety measure to improve the protection of pedestrians and other vulnerable users struck by cars.
- Introduce minimum requirements for cycle lighting and reflective elements.
- Support the assessment of the safety impact of new traffic codes, e.g. allowing contra-flow cycling on one-way streets.

Member States should:

- Support walking and cycling as modes of transport in their own right and an integral part of all transport systems.
- By providing safe and attractive infrastructure and in other ways encourage more walking and cycling as "safety in numbers" will increase individual safety.
- Develop a policy of modal priority for road users, particularly in urban environments: the hierarchy being based on safety/vulnerability, and sustainability. Pedestrians should be at the top of the hierarchy, followed by cycling and public transport.
- Provide shorter and safer routes for pedestrians and cyclists by ensuring that routes are direct and that the quickest routes are also the safest. Travel time should be increased on unsafe routes and decreased on safe routes.
- Promote "Safe routes to school" schemes to increase the safety of children.
- Support the application of effective traffic calmed zones (with a maximum of 30km/h or less) in residential areas and areas with significant pedestrian and cyclist activity.
- Tackle the high level of underreporting of pedestrian and cyclist collisions.
- Consider the issue of, and absence of data surrounding, other risks to which pedestrians are exposed, such as falls resulting from lack of adequate infrastructure or from poor infrastructure design or maintenance.

[41] Chapter 3, Reducing deaths on rural roads

2.4.3 To improve the safety of PTWs

The EU should:

- Adopt the draft EU Regulation on type approval of PTWs mandating Automatic Headlights On (AHO) on all PTWs.
- Anticipate the dates set in the EC Proposal for a Regulation on type approval of PTWs. ETSC proposes 2014 as implementation date for Antilock Braking Systems (ABS) on new vehicle types and 2017 for all new vehicles.
- Evaluate the opportunity of introducing eCall and Intelligent Speed Assistance (ISA) as a standard for new machines.
- Develop minimum standards regarding protective clothing.
- Investigate the extent to which airbags and leg protectors are viable PTW safety measures.

Member States should:

- Enforce motorcyclists' compliance with speed limits by installing safety cameras that are able to detect speeding riders.
- Enforce the compulsory wearing of helmets and numberplate visibility.
- Provide consumer information regarding helmet safety and educate riders regarding the importance of proper fastening.
- Road Safety Audits and Road Safety Inspection procedures should address the needs of PTW riders.
- Excessive roadside objects should be minimised and where necessary be PTW-friendly. Road surfaces should be well maintained and provide maximum and consistent skid resistance.
- Road design, particularly curves and intersections should be optimised for PTW safety, paying attention to forward visibility and signage.
- Improve rider and driver training. Rider training should focus on hazard recognition and risk assessment as well as vehicle control skills. Driver training should ensure that candidates understand the vulnerability of unprotected road users and "look for them" when driving.

White Paper

The new White Paper 'Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system' comes at a crucial time for European Transport, and in particular road safety. The White Paper recognises progress made in the past decade to reduce road deaths. For the future, *"initiatives in the area of technology, enforcement, education and particular attention to vulnerable road users will be key to drastically reduce these losses of lives even further."* Including a 'Vision Zero' for road safety is a new and potentially ground-breaking goal for 2050 and complements the renewed target of halving road deaths by 2020. Moreover the European Commission proposes to: *"make sure that the EU is a world leader in safety and security of transport in all modes of transport."*

One of the other highly relevant areas for VRUs picked up for action by the European Commission was speed. The White Paper recognises that *"reducing speed is an extremely effective way to reduce not only the risk of collisions but also fuel consumption".* Concretely the Commission proposes to promote eco-driving and in-vehicle systems that *'provide real-time information on prevailing speed limits'*.

Other measures of relevance to reducing deaths amongst the VRU target group include the harmonisation and deployment of road safety technologies: eCall, cooperative systems and vehicle-infrastructure interfaces. Within the context of training and education for PTWs *the Commission will promote riders' education on the need and advantages of using personal protective equipment, airbags, eCall and advanced braking systems, and will foresee appropriate anti-tampering measures*. The White Paper also looks to examine the possibility of extending pedestrian recognition systems to existing fleet.

Finally a very important point within the wider mobility debate the White Paper recognises that public transport is more widely available, and that the option of walking and cycling has also increased. Also that 69% of road collisions occur in cities so that urban transport safety must be a priority in the coming years.
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0144:FIN:EN:PDF

3| Reducing deaths on rural roads – A priority for the UN Decade of Action

At least **21,500** people lost their lives on rural roads other than motorways in the EU last year. Rural roads are the most dangerous roads because of the risks posed by high speeds, the mix of different road users, multi-functionality, lower infrastructure safety and low enforcement levels. Rural roads contribute 55% of all road deaths across the EU, 70% for some Member States.

Yet road users are safer on rural roads today than in 2001. **Luxembourg, Portugal** and **France** achieved the highest annual reductions of more than 9% on average since 2001. **Latvia, Belgium, Israel, Germany, Spain, the Netherlands** and **Ireland** follow closely behind with better-than-EU average reductions. **France, Portugal, Latvia** and **Belgium** are countries that have achieved rapid overall reduction in road deaths over the same period. The reduction in speed has been the single most important factor in the recent French road safety success, and this has been especially marked on rural roads.

Comparison of the safety levels between countries is difficult because of the variety of rural roads and lack of detailed data on vehicle-km travelled, but measures to improve the safety on that part of the network are known. They include safe road design, safe infrastructure management, and better enforcement of traffic rules, in particular of speed limits.

The **European Commission's Road Safety Policy Orientations 2011-2020** published in July 2010 promote the application of the four relevant principles of infrastructure safety management as set out in the Infrastructure Safety Directive not only to the Trans-European Road Network but also to other rural roads where many more die.

In its Response to the EC Communication, ETSC welcomed that approach but also identifies additional actions at the EU and Member State levels and promoted them during the 2010 **European Road Safety Days**.

3.1 Country comparison

3.1.1 Progress in reducing road deaths outside urban areas

Road deaths on rural roads have decreased in all EU countries since 2001, with the exception of **Romania** and **Bulgaria** (Fig. 17). Best reductions have been achieved by **Luxembourg, Portugal** and **France**, with annual reductions of more than 9% on average. **Latvia, Belgium, Israel, Germany, Spain, the Netherlands** and **Ireland** follow with annual reductions of at least 6% on average.

Among the countries that achieved the highest reductions in road deaths on the rural road network are **France, Portugal, Latvia** and **Belgium**, which have achieved rapid overall reduction in road deaths over the same period.

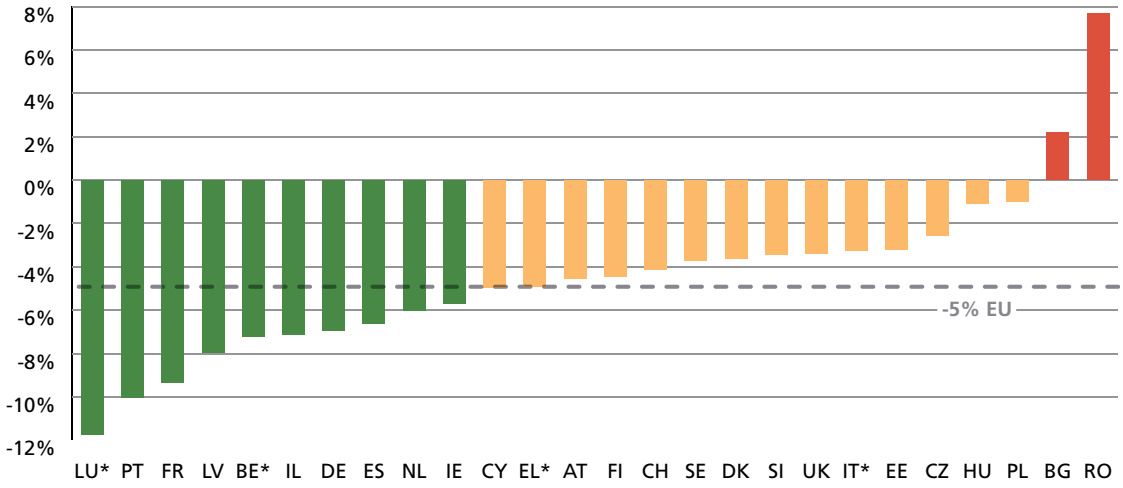

Fig. 17: Average annual percentage change in deaths outside urban areas on roads other than motorways over the period 2001-2009.
**BE, EL, IT, LU (2001-2008). LI and SK have recently begun to achieve rapid reductions, but are excluded from Fig. 17 because in Slovakia deaths on rural roads are available only from 2005 and only deaths occurring within 24h after the collisions are collected, and in Lithuania, deaths on rural roads are available only from 2006.*

"The 1998 National Road Plan transferred the management of rural roads from the national level to local authorities. In return, funds were transferred to local authorities for the rehabilitation of the network to its present use and current standards. The next step is now to install safety cameras. SINCRO, our automatic speed enforcement system, similar to the French one, will hopefully be operational by the end of 2011 and help us curb speeding our Portuguese roads".

Luís Miguel Farinha, road safety expert, Portugal.

In **Portugal**, 365 people died on rural roads in 2009, compared to 863 in 2002. Part of this impressive reduction is due to the transfer of high speed traffic from single carriageways to newly built motorways. In parallel, an extensive high risk site removal scheme was implemented by the Portuguese authorities, in particular on rural roads. Safety at junctions was improved with the construction of roundabouts or raised junctions.

In **Germany**, road deaths on rural roads have been cut by 45% between 2001 and 2009, corresponding to a 7% annual average reduction. This steady decrease is the result of a combination of factors including active and passive vehicle safety improvements, as well as changes in infrastructure and behaviour. Major infrastructure schemes have been implemented, including the installation of roadside barriers to protect from dangerous running off (e.g. hitting trees), separate cycle lanes along cyclists' favourite routes and optimised guard rails on typical motorcycle routes. Part of the network has been upgraded to 2+1 sections offering safe overtaking (see section 3.2.2). Speed limits have been reduced at dangerous intersections and the entrance of villages and towns, coupled with traffic calming measures such as protective islands and roundabouts. Speed enforcement has increased but because Germany does not currently monitor mean speeds, decision-makers are deprived of important feedback on the effectiveness of their actions.

The good performance of **the Netherlands** is the consequence of the work carried out in developing an integrated approach of safe road design and traffic management, combined with speed enforcement. As a result, road deaths on rural roads have continued to decrease – by 6% per year on average since 2001.

Lithuania (-19%) and **Slovakia** (-9%) also achieved good reductions over the last few years but they have not been able to provide data to enable their average rate of reduction since 2001 to be estimated. Moreover, **Slovakia** needs to collect deaths at 30 days to allow for direct international comparison.

For **Spain** and **Estonia**, and to a lesser extent also **Sweden**, however, reductions in deaths on rural roads have not contributed their share to the good overall reductions they have achieved[42]. Overall reductions in **Estonia** and **Sweden** have stemmed rather from relatively faster progress on urban roads (Fig. 18 and 19) and in **Spain** from faster progress on motorways. Partly as a result of this, **Spain**, **Estonia**, and **Sweden** have a higher proportion of their road deaths occurring on rural roads than in most other EU countries (Fig. 20). Yet, rural road users in **Sweden** enjoy the lowest level of risk among the EU countries collecting data on vehicle-kms (Fig. 21).

Reductions in **Sweden** were slower earlier in the decade but have gained pace in the last two years. Investments in large infrastructure schemes, in particular the upgrade to 2+1, coupled with better setting of speed limits, have started to bear fruit (see section 3.2.2).

In all other countries reductions have been lower-than-average. In **Romania**, road deaths on rural roads increased from 600 in 2001 to 1,015 in 2009. This increase can only be partly explained by an increase in traffic and better reporting (Fig. 21). Enforcement to counter the main risks needs to be strengthened and high risk sites removed. Even some of the newly built roads, many funded by the EU, fall well below usual rural roads standards.

3.1.2 Progress in reducing speed: key to success in reducing deaths on rural roads

In **France**, road deaths on rural roads were cut from 5,400 in 2001 to 2,800 in 2009. The reduction in speed has been the single most important factor in the recent French road safety success, and this has been especially marked on rural roads. Best reductions in mean speed on rural roads in Europe have been witnessed in France (Fig. 17b), where cars and vans have slowed down by more than 10km/h from 93 to 82km/h on 90km/h roads. Most of the reduction took place between 2003 and 2007, helped greatly by the introduction of a fully automated safety camera system as part of a new strategy to "end drivers' impunity". Yet deaths on rural roads still represent 65% of all road deaths in France.

Mean speeds of cars and vans on rural roads have also decreased by more than 0.5% annually in **Belgium**, **Ireland**, the **Czech Republic**, and **Latvia**, and on dual carriageways in **Great Britain** (Fig. 17b).

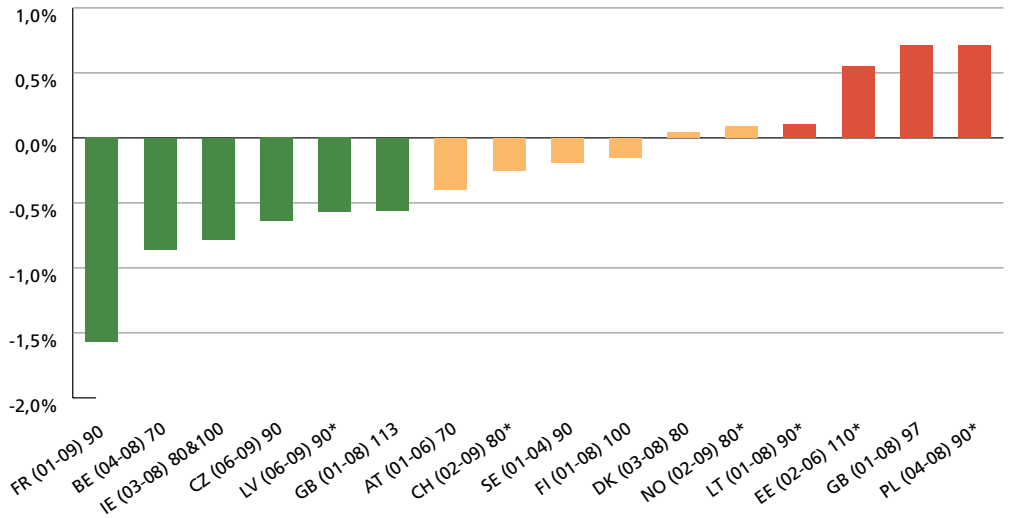

Fig. 17b: Yearly average percentage change in mean speed of cars and vans on rural roads (from earliest available baseline to latest available year)[43]. * All traffic.
GB 113km/h = 70miles/h (dual carriageways). GB 97km/h =60miles/h (single carriageways)

[42] ETSC (2010) 4th PIN Report, Chapter 1, Fig. 1.
[43] First published in ETSC (2010), 4th Road Safety PIN Report.

In **Poland, Estonia, Hungary** and **Slovenia**, road deaths on rural roads stagnated between 2001 and 2007, and even increased to reach a peak in 2007. In **Poland** and **Estonia**, countries that did monitor speed, mean speeds had increased over this period by 2km/h on 90km/h rural roads (Fig. 17b). In these two countries, mean speeds were above the legal limit when measurement stopped. Yet road deaths in these four countries have started to decrease in 2008 and 2009 (in 2009 only in **Poland**).

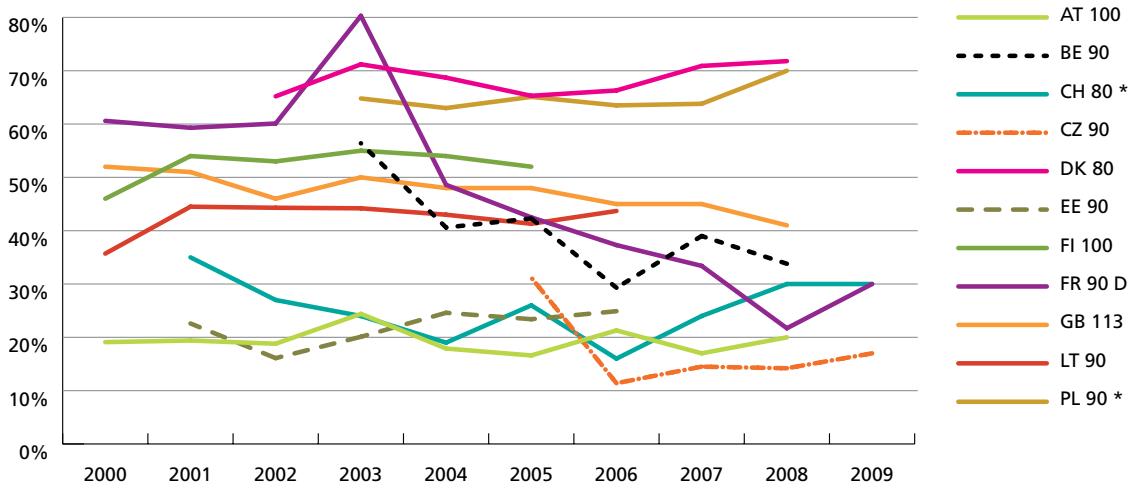

Fig. 17c: Percentages of cars and vans exceeding speed limits on rural roads. * All traffic.
GB 113Km/h = 70miles/h (Dual carriageways)

In 2006, road deaths reached their lowest recorded level in the **Czech Republic**, where the percentage of cars and vans exceeding speed limits dropped following the introduction of a penalty point system and increased enforcement. Unfortunately this percentage has begun to go up again as the level of enforcement was not sustained (Fig. 17c).

Indicator

Rural roads other than motorways are the most dangerous roads but they are difficult to compare internationally because of different definitions, the great variety of rural roads and lack of detailed data on vehicle-km travelled. Rural roads can be single or dual carriageways with one or two lanes each way, with or without median barrier, with or without side barrier, an isolated narrow mountain road limited to 70km/h or a busy four lanes bypass road limited to 110. Speed limits on rural roads vary between Member States and within Member States.[44] In most cases, the use of rural roads is not limited and the great diversity of road users travelling, riding, cycling or walking at different speeds pose serious threats to the safety of the most vulnerable ones.

To encompass the diversity of so-called 'rural roads', the terms 'outside urban areas, excluding motorways' or 'outside built-up areas excluding motorways' are being used by the scientific community. To keep it simple for our readers, we are using the most common terminology of 'rural roads'. According to CARE, deaths on rural roads are those that occurred on a road other than a motorway outside urban area boundary signs. This definition works for the majority of countries, but some, like the UK, do not have boundary signs to distinguish between urban

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[44] EC, Traffic rules at a glance, Standard legal speed limits, http://ec.europa.eu/transport/road_safety/observatory/doc/speed_rules.pdf

<<<

and rural lengths of road. In the UK, the distinction is based on the boundaries of urban areas defined for planning purposes and their numbers of inhabitants, but in road safety work, roads are designated as built-up or non-built-up according to the prevailing speed limit. A road is defined as non-built-up if the speed limit is above 40miles/h, or as built-up if the speed limit is 40miles/h or lower.

This report uses as the main indicator of the safety on rural roads the annual percentage change in road deaths on rural roads since 2001 (Fig. 17). In addition, countries are compared on the difference between this change in deaths on rural roads and the corresponding change in deaths on urban roads since 2001 (Fig. 19). Austria, Estonia, Finland, Hungary, Israel, Romania, Spain, Sweden and Switzerland have estimates of vehicle-km travelled on rural roads (Fig. 21) and they use various methodologies to make the estimates. Fig. 17, 18 and 19 look at deaths among all kinds of road user taken together. The majority of killed road users on rural roads are car occupants. Powered two wheelers account for around 17% of deaths on rural roads, pedestrians for 10% and cyclists for 5% (Fig. 23). The share of vulnerable road users varies between countries (Fig. 22).

The data was retrieved from CARE when available and completed or corrected by the PIN Panellists. The full dataset is available in the Annexes, together with national definitions as provided by Panellists. Slovakia and Lithuania are excluded from Fig. 17, 18 and 19 because in Slovakia deaths on rural roads are available only from 2005 and only deaths occurring within 24h after the collisions are collected, and in Lithuania, deaths on rural roads are available only from 2006.

3.1.3 Progress on rural roads compared to urban roads

Road deaths on urban roads have decreased in all EU countries since 2001 (Fig. 18). Best reductions have been achieved by **Belgium, Estonia, Luxembourg, France** and **Portugal**, with annual reductions of more than 8% on average. **Sweden, Italy** and **Switzerland** follow with annual reductions over 6% on average.

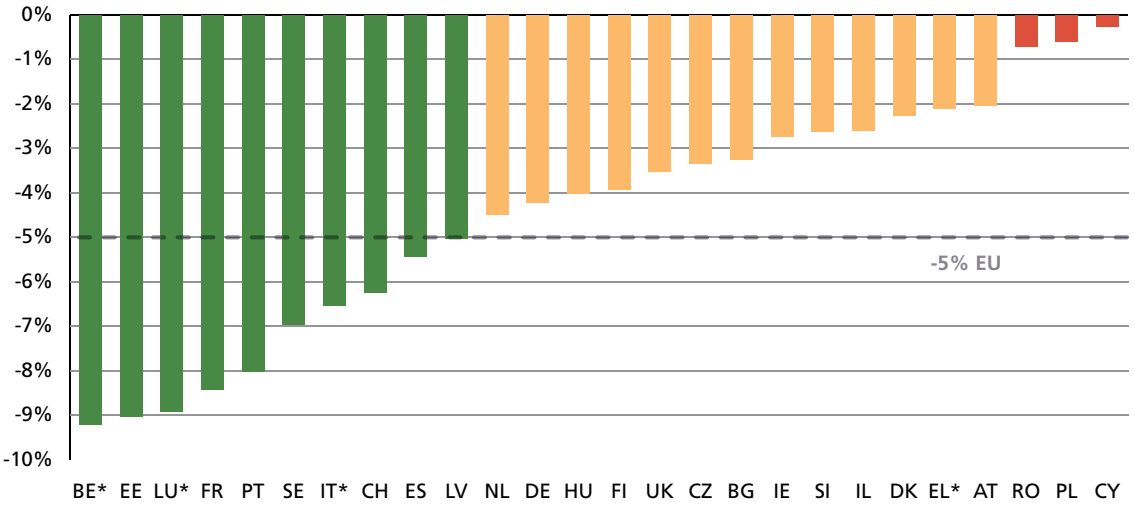

Fig. 18: Average annual percentage change in road deaths inside urban areas over the period 2001-2009.

**BE, EL, IT, LU (2001-2008). LI and SK are excluded from Fig. 18 because in Slovakia deaths on urban roads are available only from 2005 and only deaths occurring within 24h after the collisions are collected, and in Lithuania, deaths on urban roads are available only from 2006.*

Lithuania (-21%) and **Slovakia** (-10%) also achieved impressive reductions over the last few years. In Lithuania, road deaths on urban roads have been cut from 209 in 2006 to 89 in 2009 and in Slovakia, from 277 in 2005 to 136 in 2009 (24h definition).

In **Cyprus, Israel, Latvia, Luxembourg, Greece, Germany, Austria, Ireland** and **Portugal**, progress in reducing deaths outside urban areas exceeded by 2%/year or more progress in reducing deaths on urban areas (Fig. 19). In these countries, this extra progress on rural roads has been similar for reductions in deaths among car occupants and users of powered two-wheeled vehicles at about 3%per year on average. For pedestrians and cyclists it has been about 2%per year, and for users of goods vehicles, the extra reduction has been only about 0.6%per year.

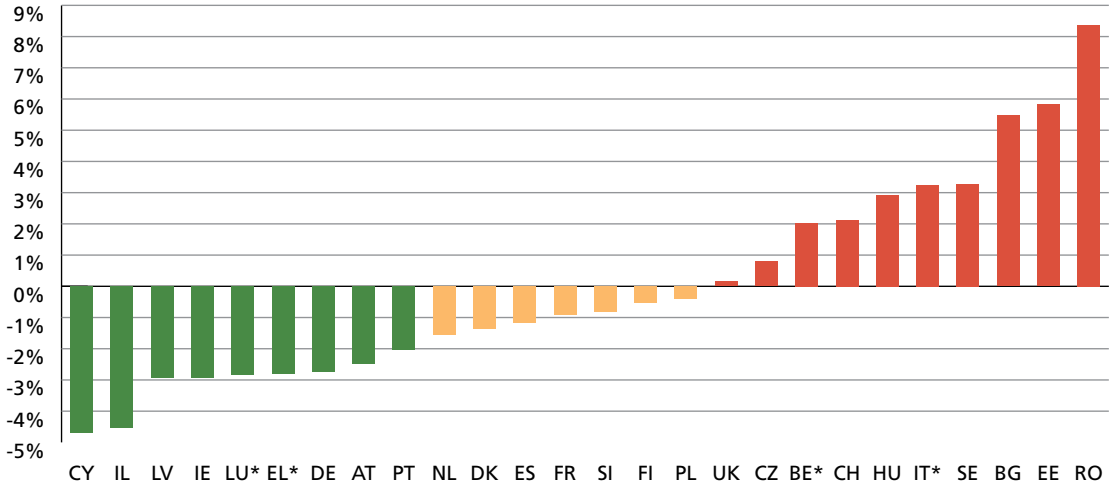

Fig. 19: Difference between the average annual percentage reduction in the number of deaths on rural roads and the corresponding reduction in number of deaths on urban roads over the period 2001-2009. **BE, CZ, EL, IE, IT, LU, UK (2001-2008)*

Note: Fig. 19 presents for each country the difference between progress on rural roads and on urban roads, regardless of the absolute levels of progress. Fig. 19 should therefore be read in conjunction with Fig. 17 and Fig. 18, and not in isolation.

In **Romania, Estonia, Sweden, Italy, Switzerland, Belgium, the UK** and the **Czech Republic**, on the contrary, progress in reducing deaths outside urban areas was slower than inside urban areas. In those countries, the reductions in car occupant deaths have been slower outside urban areas by about 3%/year on average. For pedestrians and cyclists, progress has been about 0.8%/year slower, and for users of goods vehicles about 5%/year. For users of powered two-wheeled vehicles, there has been little progress in urban areas, about 0.2%/year, whilst on rural roads the number of deaths has increased in these countries by about 1.5%/year on average.

3.1.4 More than 55% of all road deaths occur on rural roads

Across the EU, around 56% of all road deaths occur on rural roads (Fig. 20). More than 70% of all deaths occur on the network outside urban areas including motorways in **Spain, Sweden, Finland, Austria, Ireland, Estonia, Belgium, Germany, Lithuania** and **France** and in **Finland, Ireland** and **Estonia** more than 70% occur on rural roads other than motorways. This can be partly explained by a higher share of rural roads among the different road types[45]. Only in **Romania** (and Cyprus) are more people being killed in urban areas than on rural roads, in particular pedestrians.

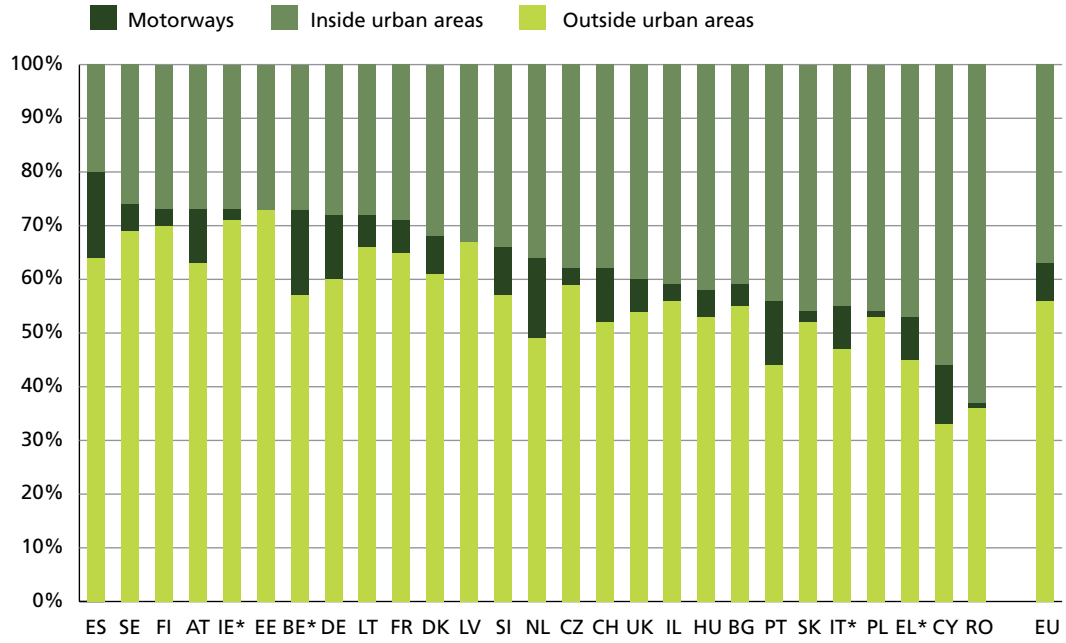

Fig. 20: Percentage share of road deaths per road type (2007-2009 average) ranked by the percentage share of road deaths on rural roads and motorways taken together.
**BE, EL, IE, IT (2001-2008). ** ES: motorways include motorways and Autovia*

A higher share of road deaths occurs on motorways in **Spain**, **Belgium** and **the Netherlands** compared to the other EU countries, and to a lesser extent also in **Germany**, **Portugal**, **Austria**, **Switzerland**, **Slovenia**, **Cyprus**, **Italy** and **Greece**. For some of those countries, this can be partly explained as they have higher traffic volumes on motorways (eg in transit countries and countries with a longer motorway network). But for others, although there are sections where the safety quality is good, other sections fall below usual motorway standard (**Belgium**, **Italy** or **Greece**).

[45] ERF (2010), European Road Statistics 2010, p. 15. The reader should bear in mind that the definition of road types varies from country to country, thus the data are not comparable.

3.1.5 Deaths per vehicle-km travelled

Only few countries collect separate data on vehicle-km driven on rural roads (Fig. 21). Rural road users in **Israel, Sweden, Finland** and **Switzerland** enjoy a lower level of risk than users in other countries collecting data on vehicle-km travelled. In **Estonia** and **Israel**, deaths per billion vehicle-km were more than halved between 2001 and 2009. Yet comparison is difficult because of the differences in methods of collecting data on vehicle-km travelled on rural roads.

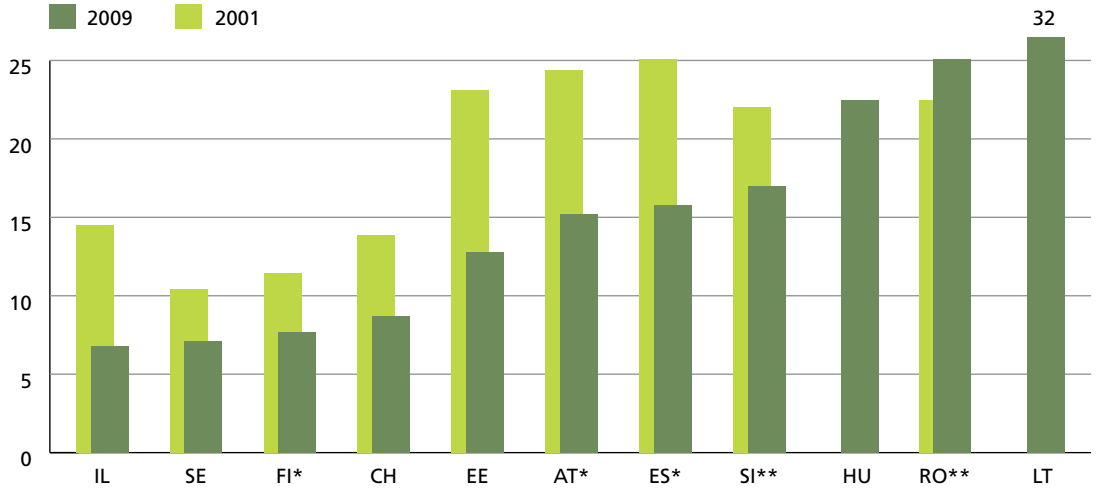

Fig. 21: Road deaths outside urban areas excluding motorways per billion km driven in 2009 (and in 2001 for comparison) for countries for which data on vehicle-km is available. **2001-2008. **2005-2009.*

3.1.6 There are also vulnerable road users on rural roads!

In the EU, around 32% of people killed on rural roads are vulnerable road users: 10% pedestrians, 5% cyclists and 17% riders of mopeds or motorcycles. Their share varies between countries (Fig. 22). In **Switzerland, Luxembourg, Italy, Slovenia, France, Austria, the UK, Greece, Cyprus, Germany** and **Spain**, the share of PTW deaths is higher than in other countries and can only be partly explained by a higher share of motorcyclist riders. In the Netherlands, and to a lesser extent also in **Belgium**, the share of cyclists is higher than in other EU countries.

Since 2001, deaths have been falling in all categories of road users, except for motorcyclists (Fig. 24).

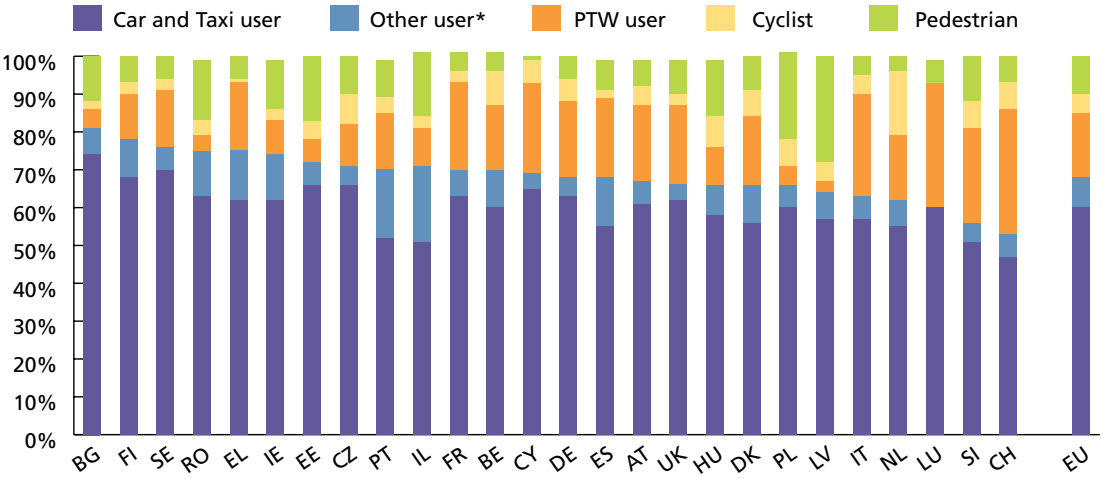

Fig. 22: Percentage share of road deaths by road user group on rural roads ranked by the percentage share of road deaths on rural roads and motorways taken together.
(2007-2009 average).

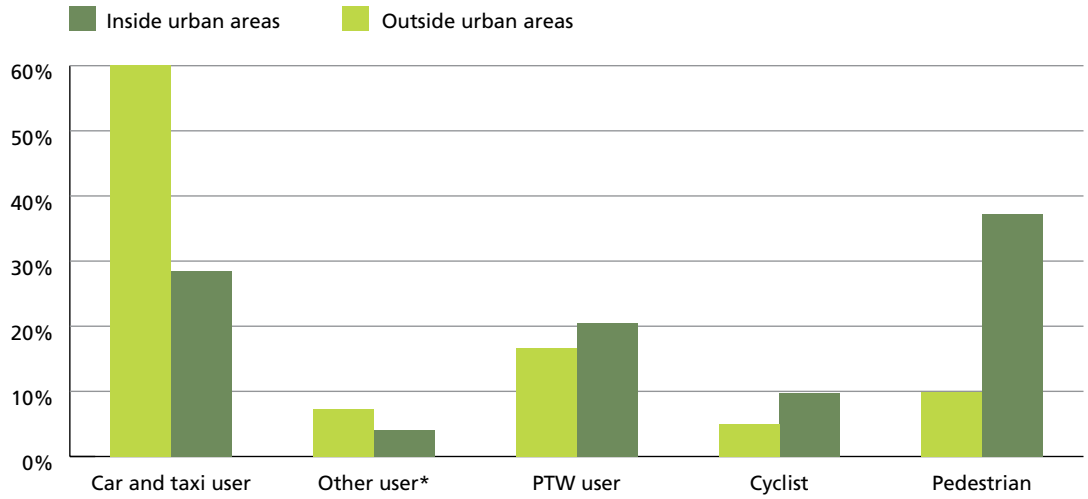

Fig. 23: Percentage share of road deaths by road user group on rural roads (with urban roads for comparison) in the EU

**Others include HGVs, lorries under 3.5t, agricultural tractors, bus and coaches, other vehicles and unknown.*

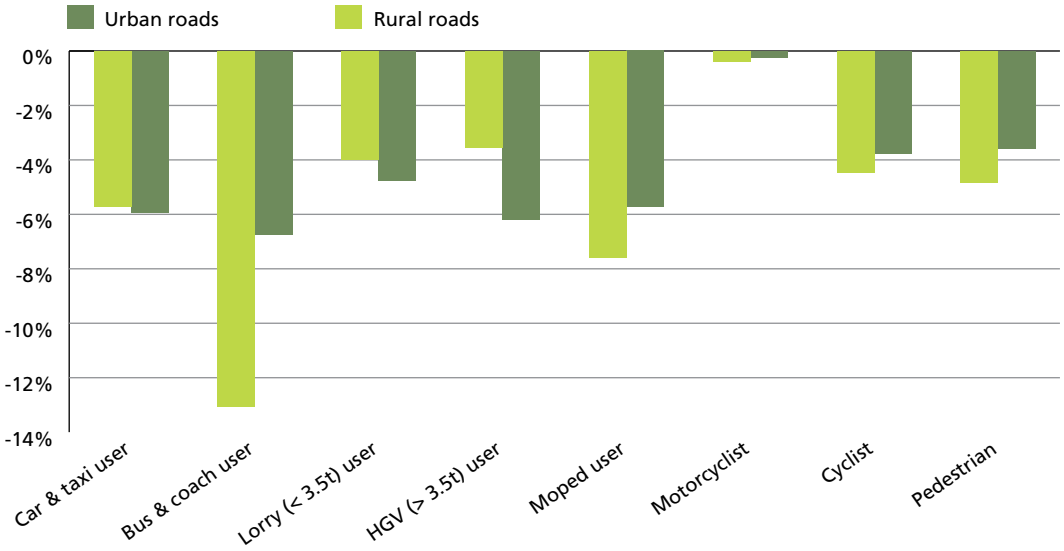

Fig. 24: Reductions in road deaths on rural roads by road user group (with urban roads for comparison) between 2001 and 2009

3.2 Room for improvement

Experience from the fast progressing and best performing countries show that deaths can be prevented through a combination of well-known and cost effective measures including safe road design, safe infrastructure management and increased enforcement - particularly speed enforcement. Of course, other factors such as vehicle fleet and mobility patterns play a role too, but these are harder to quantify.

3.2.1 Reduce illegal and inappropriate speeds

Exceeding the speed limit is widespread on rural roads. Addressing illegal speeding therefore requires a large number of non-compliers to change their behaviour. Experience shows that there is not one single measure to reduce speed. It rather takes a combination of measures including credible speed limits, enforcement and education, combined with 'self-explaining' roads and 'self-complying' vehicles.

On most rural roads in a majority of EU countries the speed limit is 90km/h or lower. In Austria, Germany, Ireland and the UK, however, the general speed limit is set 100km/h or lower. Only in Denmark is the speed limit 80km/h or lower. According to Vision Zero and the Sustainable Safety approach, the speed limits should be determined by the road characteristics so that the forces in collisions do not exceed the level that the human body can tolerate. The speed limit should not exceed 70km/h on roads without median barrier and 100km/h on roads with median and side barriers[46].

In approving Swedish Transport Administration's recommendations in 2007 for a new speed limit classification, the Government of **Sweden** has stated recently that road safety needs to be at the core of decisions on the setting of speed limits. The new speed limits (limits in 10 incremental bands in the range 30km/h – 120km/h) are set to match the road design.

"We are currently running a campaign addressing speeding on rural roads in Denmark. The campaign has been informed by new results from a survey in which 6 out of 10 people living along rural roads said that they feel insecure because of speeding and 9 out of 10 said they are bothered by speeding".

Jesper Sølund, Danish Road Safety Council

Unfortunately, enforcement levels in most EU countries are low on rural roads partly because of the extent of the network and low traffic density. The perception by the drivers of the subjective risk of being caught – in particular speeding – needs to be increased on rural roads by increased police enforcement and a combination of fixed and mobile safety cameras as recommended by the 2004 EC Recommendation on enforcement of traffic laws.

> Applying the "Power Model" to current numbers of deaths indicates that if **every driver slowed down by only 1km/h, more than 1,000 road deaths per year could be prevented on rural roads** (1,100 on urban roads and 100 on motorways).
> ETSC (2010), 4th Road Safety PIN Report, Chapter 3, p. 50.

[46] Wegman, F.; Aarts, L. (2006), Advancing sustainable safety, National Road Safety Outlook for 2005-2020. Based on Tingvall, C., Haworth, N (1999) Vision Zero, An ethical approach to safety and mobility.

3.2.2 Better infrastructure safety management

Present road designs result from many decades of construction and maintenance in times when safety issues were not considered to the same extent. Today, road features on many roads no longer meet the latest safety requirements. Moreover, traffic conditions may have changed since the road was designed and built. Knowledge about safe design and effective risk management are not fully applied even in the best performing countries.

Against this background, the EU adopted a **Directive on road infrastructure safety management**. The Directive requires Member States to apply the following four instruments on the Trans-European Road Network (TERN) by December 2010:

- **Road safety impact assessments:** demonstrate the road safety implications of different planning alternatives for a road project, whether construction of new infrastructure or rehabilitation of existing infrastructure, as in the case of environmental impact assessment
- **Road safety audits:** an independent technical check aiming at identifying unsafe features of a road project, including proposals for remedy
- **Network safety management** targeting remedial measures to parts of the network with high concentrations of accidents (high-risk road sections) and/or a high potential to avoid accidents in the future.
- **Safety inspections:** as part of regular road maintenance, enable the detection and hence reduction of accident risk in a preventive way through low cost measures.

These procedures already exist and are applied to varying degrees in some Member States. The aim of this Directive is therefore to extend the above-mentioned measures to the whole of the EU, leaving the Member States free to keep already existing procedures if they have them in place or to introduce procedures in their own way if not[47].

The EU project ROSEBUD estimated that the application of the four procedures to the Trans-European roads would reduce the number of deaths by more than 600 and injuries by 7,000 every year. ROSEBUD also estimated that 700 additional lives per year could be saved if the safety management was also applied to what the project called 'main' roads.

A new step has recently been that the European Commission has committed to make sure that European funds will only be granted to infrastructure compliant with the road safety and tunnel safety Directives[48]. Every year between 1.5 and 2 billion EUR of EU funds are spent on building roads in the EU, it is the EU's duty to ensure that these roads are built safely. The Commission also promised to explore the extension of this principle to external aid.

The **UK** has a long experience with road safety audits. They have been compulsory since 1991 for all new national roads and improvements on existing ones. The British Road Safety Foundation is running annual surveys of the GB road network on behalf of EuroRAP, the largest analysis of its type anywhere in the world, covering 28,000 miles. Topping the list of the UK's 10 most improved roads is the A40 Llandovery-Carmarthen, where junctions have been upgraded, new road markings introduced and extensive resurfacing carried out, including anti-skid treatments, saving 20 fatal and serious collisions between 2006 and 2008[49].

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[47] Directive 2008/96/EC of 19 November 2008 on road infrastructure safety management http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32008L0096:EN:NOT

[48] European Commission, Policy Orientations on road safety 2011-2020, Objective 3, p. 7.

[49] http://www.eurorap.org/gb2010

Cost-effective approach to infrastructure safety management

A methodology known as Network Safety Management (NSM) has been developed jointly by the Federal Highway Research Institute (BAST) in Germany and the Technical Department for Transport, Road and Bridge Engineering and Road Safety of the French Ministry for Ecology (SETRA). NSM is a tool for road administrators to help them in identifying road sections to be treated with high priority. In NSM, the key parameter to assess the safety performance of road sections is the so-called safety potential. The safety potential describes the potential savings in accident costs that could be reached by remedial measures. It is defined as the amount by which accident costs per km length of road would be reduced if a road section had a best practice design.

The advantage of the safety potential compared to the classic accident parameters is that it allows different road types and roads with different traffic volumes to be assessed at the same time. Furthermore, as the safety potential is given in terms of accident cost, it can be related to the cost of the improvement measures. Since resources are limited, those sections where improvements can be expected to have the highest benefit-cost ratio have to be treated first[50].

Safe design of roads in the Dutch Sustainable Safety Vision

A fine example of the principles governing safe infrastructure design can be found in the Dutch 'Sustainable Safety' approach, according to which a road network should integrate these core principles:

- **Functionality**

A sustainably safe road network has a functional layout, based on three main road types. 'Through' roads for dispersion of traffic, 'access' roads for access to final destinations, and 'distributor' roads for a good link between these types.

- **Homogeneity**

Wherever possible, roads should ensure the homogeneity in mass, speed, and direction of vehicles. Vehicles with large differences in mass, speed, and direction must be physically separated from each other. Opposing traffic should be separated by middle barrier and vulnerable road users should have separate paths. When physical separation is not possible, for example at junctions at grade level, the speed must be reduced and infrastructure adapted (e.g. by use of roundabouts or raised junctions).

- **Recognisability or 'self explaining' roads**

Road users should know which driving behaviour is expected from them and what they can expect from others. People need to recognise the road type and drive accordingly, in particular at the appropriate speed. This must apply to the whole road network which should also be predictable, as should others' driving behaviour.

® Wegman, F.; Aarts, L. (2006).
Example of a gate construction entrance to a rural access road.

[50] Ganneau F. and Lemke K., Network Safety Management – From case study to application, http://www.setra.equipement.gouv.fr/IMG/pdf/ip304-e.pdf

■ **Forgivingness**

Road design should be such that any collision will end with as little injury as possible. A vehicle that goes off the road should not hit any rigid obstacles or other fixed objects. Forgivingness in Sustainable Safety also has a social meaning. The more experienced drivers should offer room to the less experienced drivers by displaying anticipatory behaviour. This prevents mistakes by the inexperienced being 'punished' by a collision.[51]

In **Germany**, from 2011 onwards, new guidelines will apply for rural road design promoting the concept of "self-explaining roads". Roads will be designed or re-designed in such a way that the user knows how to behave and which speed limit is appropriate[52].

The experience of '2+1 roads' in Sweden

Sweden has pioneered new safe designs for roads which are not motorways and has committed to upgrade safety equipment on all significant single carriageways by 2025. Since 1998, there has been a large programme of installation of median cable barriers to address the problem of fatal head-on collisions. When possible, the traditional 13 meter wide roads were converted into so called '2+1 roads'. A 2+1 road consists of two lanes in one direction of travel and one lane in the opposite direction. The two-lane section, which provides a safe overtaking zone, alternates with a one-lane section at intervals of 2km approximately. Vehicles travelling in opposite directions are separated by a safety barrier system, which prevents overtaking manoeuvres on the one-lane section[53]. This provides the model for all countries where traffic is too light to upgrade major routes to motorway. 4200km of road have now separated traffic flow (covering around 40% of traffic flow on national roads (mainly rural), 2140km of which are on 2+1 roads). 2+1 roads have been implemented in other countries, such as Germany, with great success. In addition, speed limits have been reduced on almost 18,000km of rural road.

Carlsson's evaluation study (2009) showed impressive reductions in deaths of up to 76 % following the upgrade to 2+1 roads.[54] The risk of being killed per vehicle-km travelled on '2+1 roads' is about the same that on motorways limited to 110km/h. Carlsson's study also showed that, in contrast to what motorcyclists feared, there was no increase in collisions involving motorcyclists. On the contrary, the risk of death per vehicle-km travelled for motorcyclists decreased, in part because median barriers prevented motorcyclists from colliding with opposing traffic. The Swedish Transport Administration strategic plan for 2008-2017 indicates that this work is set to continue.

In 2004, **Sweden** was the first country to begin the classification of roads according to the EuroRAP rating score. To date, more than 10,000km of the existing rural road network has been assessed by EuroRAP. Of the assessed roads, 31% meet the four-star rating, which corresponds to a safe road. Updating and monitoring of the status of the evaluated roads is underway. Centrelines rumble strips to provide a warning to drivers when they are inadvertently crossing the road centreline is to be implemented as a standard for the non-divided part of the rural network.

Left, driving on a single carriageway road with oncoming traffic. Right, a similarly dangerous activity. ® *Lie, 2003.*

[51] Wegman, F.; Aarts, L. (2006).

[52] These guidelines have been developed by the German Research Association for Road Transport and Traffic issues, www.fgsv.de/landstrassen.html

[53] Breen, J.et al. (2008), An independent review of road safety in Sweden.

[54] Carlsson, A. (2009) Evaluation of 2+1 roads with cable barrier. VTI Report 636 A.
English summary available www.vti.se/templates/Report____2797.aspx?reportid=10916

SUPREME best practices on infrastructure safety

Rumble strips milled into the asphalt surface of a road shoulder or between lanes in opposite directions was promoted as one of the best practice measures in infrastructure safety by the EU funded project SUPREME. Research from different countries has shown that the number of injury crashes can be reduced by over 30% by shoulder rumble strips and by over 10% by centreline rumble strips.

Other practices relevant for rural roads were identified by the SUPREME project as:
- "Best practices": winter speed limits and winter maintenance, road safety audits, road safety inspections and roundabouts,
- "Good practices": High risk site management, Variable message signs and the hierarchical mono-functional road network in the Netherlands
- "Promising practices" measures: measures against tree collisions in France[55].

http://ec.europa.eu/transport/road_safety/pdf/projects/supreme.pdf

EuroRAP

EuroRAP was created following the success of EuroNCAP in raising the safety standard of the typical new car from two to five stars. EuroRAP has been able to bring together all the stakeholders– motoring and touring clubs, road authorities and manufacturers - and create a common international system to measure the safety of roads independent of national or proprietary standards. EuroRAP provides three protocols that can be applied to any country:

- Risk Rate Mapping: the numbers of killed and seriously injured road users per billion vehicle-km are shown on a colour-coded road map.
- Performance Tracking: Identifies whether fewer people are being killed or seriously injured on a road over time and identifies the countermeasures that are most effective.
- Road Protection Scores (RPS): assesses how much or how little protection a road environment will provide for the occupants of a car in the event of a crash. On the basis of this score, each road is given a star rating varying from 1 to 4, with 4-star representing a road which is engineered to minimise the likelihood of a crash resulting in a fatal injury to car occupants. RPS provides information that is not readily available through accidents histories. Accidents are always random and accident rates subject to statistical fluctuation. Over time as accident numbers decrease, identification of higher risk sites through variations in observed accident numbers will become more difficult. The RPS aims to provide a consistent assessment of the potential long term risk of a given road design.

EuroRAP latest report maps safety on Trans-European Roads and provides a first comprehensive safety analysis of EU Trans-European road network[56]. It shows that, among the network surveyed, 15% of TEN-T road network has unacceptably high safety risk and that just 31% of the network are 4-star roads. Of the 15 countries analysed in depth, Sweden, Netherlands, Great Britain and Switzerland top the league when it comes to achieving 'best possible' safety levels on the TEN-T

[55] Many other reports could be quoted as references, among them: Oxley J. et al (2003) Cost-effective infrastructure measures on rural roads, Monash University Accident Research Centre and Elvik et al. (2009), The handbook of road safety measures, 2nd edition.

[56] EuroRAP's report (2010), How Safe are you on Europe's Trade Routes? Measuring and mapping the safety of the TEN-T road network. The report is based on a sample which covers around half of the entire TEN-T road network spread across 15 countries in the EU and immediate neighbours. http://www.eurorap.org/news_item?search=y&ID=360.

network. Even in those countries, some sections are overdue for treatment.

The most remarkable country in the survey is **Slovenia** with its newly engineered network which is now outperforming most others. Nearly half is awarded the best possible rating, but away from the new TEN-T motorway network, road risk rates are commonly ten times higher. The **Czech Republic** is making some progress and getting close to Belgium in performance with 15% at best possible levels. **Poland** and **Slovakia** have major challenges: only 5% or less of the networks achieved best possible rating and their networks contained the most sections with high risk ratings.

"Some road engineers, like some vehicle engineers before EuroNCAP hit its stride, are not getting enough support to apply what they know from research should be done. Crashes and their severity can be cut drastically by applying known road engineering measures at relatively little cost. And we need them on a grand scale where their benefits multiply - a 'big fix' to make our roads safe. This 'mass action' approach would initially aim to fix the safety performance of high-risk, single carriageway roads on which large numbers are dying".

John Dawson, Chairman of EuroRAP

3.3 ETSC recommendations

3.3.1 To Member States and local authorities

- Implement the Infrastructure Safety Directive on all roads.
- Investigate all fatal and serious injury collisions and implement best practices in high-risk site management.
- Improve infrastructure safety on the whole network, applying the concepts of "self-explaining roads" and "forgiving roadsides".
- Undertake systematic and periodic road safety inspections for the detection of high risk sites. Complete EuroRAP or Network Safety Management assessment of rural network and review findings regularly for action.
- When possible, separate traffic in opposite directions by a median barrier and install side barriers. If there is a need for cycle and pedestrian facilities, separate paths along the roadway are recommended.
- When possible, build safe overtaking areas for two lane roads (following the concept of 2+1 roads as in Sweden and other countries).
- Replace dangerous intersections by roundabouts. Other intersections with or without traffic signals should provide protection for vehicles turning across the path of opposing traffic.
- Match road and vehicle design standards to safe speed limits.
- Increase enforcement of traffic law, in particular enforcement of speed limit, with fixed and mobile safety cameras, drink driving and seat belt use.
- Develop digital mapping for Intelligent Speed Assistance systems and promote their market penetration.
- Improve accident data collection by the implementation of GPS based reports and ID numbers.

3.3.2 ETSC recommendations to the EC

- Support the implementation by all Member States of the Infrastructure Safety Directive principles to all roads.
- Make sure that the principle of conditionality of EU funds for road safety is guaranteed by all DGs and EU Agencies (TEN-T Agency, DG REGIO). Extend this principle to EU external aid.
- Draw up technical guidelines concerning the harmonised management of high risk sites by means of low cost measures.

- Draft guidelines and promote their implementation by Member States on best practice in traffic calming measures.
- Publish Member States' reports foreseen in the Infrastructure Safety Directive.
- Invest in high quality infrastructure features such as road markings and road signs to enable Advanced Driver Assistance Systems such as Lane Departure Warning to work in proper synergy.

3.3.3 Recommendations to navigation systems providers

- Offer the possibility to use safe routes as a selection criterion (using for example EuroRAP star rating information).

4| Recommendations

4.1 General recommendations

To Member States

- Adopt and revise road safety action programmes aiming at reaching the target of a 50% reduction in road deaths by 2020.
- Improve reliability and comparability of road safety indicators using SafetyNet recommendations.
- Set quantitative targets based on compliance indicators.
- Regularly monitor road user behaviour according to latest standards and communicate compliance data to relevant stakeholders.
- Use the evidence gathered to devise and update relevant policies.
- Seek to reach targets by all available means, including applying proven enforcement strategies according to the EC Recommendation on enforcement.
- Improve the recording of serious injuries by making use of both police and hospital records.
- Adopt national reduction targets for seriously injured (using current definition of what is a serious injury) alongside the reduction of deaths. ETSC proposes that each Member States aims for at least a 40% reduction of seriously injured by 2020.
- Create a road safety system that recognises the vulnerability of the human body.

To EU Institutions

- Show leadership and actively work towards the fulfilment of the EU ambition stated in the 2011 Transport White Paper to become a world leader in road safety.
- Integrate road safety into other transport areas, such as urban mobility and logistics or public procurement rules.
- Adopt the Directive on cross border enforcement of traffic law as soon as possible and Encourage Member States to prepare national enforcement plans with yearly targets for compliance in the areas of speeding, drink and drug driving and seat belt use.
- Work together with Member States in making progress towards the target of having no more than 15,500 road deaths in 2020, as set in the EC Road Safety Policy Orientations.
- Use the evidence gathered under the Road Safety PIN to devise relevant policies including European standards on traffic law enforcement (in particular in tackling speeding, drink and drug driving, non-use of seat belt and helmets) and road safety management.
- Promote the monetary value of investing in road safety measures and encourage Member States to include the Willingness to Pay approach in designing national policies.
- Work towards the adoption of an EU common definition of serious injuries to foster comparability.
- Set quantitative targets for reducing serious injuries of at least 40% by 2020.
- Support the implementation of in-car enforcement technologies such as seat belt reminders, alcolocks and Intelligent Speed Assistance.
- Build on the CARE database, improve the accessibility of the various data collected and make them publicly available as soon as possible.
- Support countries in setting up data collection and evaluation procedures and stimulate the use of harmonised protocols for accident, exposure and performance indicators using SafetyNet and DaCoTA recommendations.

4.2 Unprotected road users

For the benefit of all road users

To Member States:

- In addition to the overall target of reducing deaths by 50% between 2010 and 2020, adopt a specific target of reducing by 50% between 2010 and 2020 the number of pedestrians and cyclists killed in road collisions.
- Match the use of each road to the functions that the road serves in terms of living space, access and through movement (applying the principles of the Sustainable Safety Approach).
- Separate faster vehicles from slower ones and lighter vehicles from heavier ones, and separate vehicles that are making conflicting movements.
- Make the road system self-explaining to its users.

To EU institutions:

- Tackle Heavy Goods Vehicles collisions including those caused by blind spots e.g. by improving the design and equipment of HGVs including retrofitting with front-view mirrors (2007 Directive), improved cabin design, installation of cameras and active warning systems and underrun protection.
- Require manufacturers to mention EuroNCAP ratings in all advertisement of vehicles to encourage consumers to purchase safe vehicles.
- Support the standardisation of collision investigation and databases and encourage Member States to include variables specific to PTW safety issues.

To improve the safety of pedestrians and cyclists

To Member States

- Support walking and cycling as modes of transport in their own right and an integral part of all transport systems.
- By providing safe and attractive infrastructure and in other ways encourage more walking and cycling as "safety in numbers" will increase individual safety.
- Develop a policy of modal priority for road users, particularly in urban environments: the hierarchy being based on safety/vulnerability and sustainability. Pedestrians should be at the top of the hierarchy, followed by cycling and public transport.
- Provide shorter and safer routes for pedestrians and cyclists by ensuring that routes are direct and that the quickest routes are also the safest. Travel time should be increased on unsafe routes and decreased on safe routes.
- Promote "Safe routes to school" schemes to increase the safety of children.
- Support the application of effective traffic calmed zones (with a maximum of 30km/h or less) in residential areas and areas with significant pedestrian and cyclist activity.
- Tackle the high level of underreporting of pedestrian and cyclist collisions.
- Consider the issue of, and absence of data surrounding, other risks to which pedestrians are exposed, such as falls resulting from lack of adequate infrastructure or from poor infrastructure design or maintenance.

To EU Institutions

- Draft guidelines for promoting best practice in traffic calming measures, based upon physical measures such as roundabouts, road narrowing, chicanes, road humps and techniques of space-sharing. These measures should be introduced as an integral part of setting up speed limit zones of 30km/h in residential areas.
- Regularly monitor developments in passive and active safety technologies for the protection of unprotected road users and adopt legislation when necessary.

- Support the introduction of Intelligent Speed Assistance (ISA) which by restricting speed has the potential to reduce risks to pedestrians and cyclists.
- Support the development of car windshield airbags as a viable safety measure to improve the protection of pedestrians and other vulnerable users struck by cars.
- Introduce minimum requirements for cycle lighting and reflective elements.
- Support the assessment of the safety impact of new traffic codes, e.g. allowing contra-flow cycling on one-way streets.

To improve the safety of PTWs

To Member States

- Enforce motorcyclists' compliance with speed limits by installing safety cameras that are able to detect speeding riders.
- Enforce the compulsory wearing of helmets and license plate visibility.
- Provide consumer information regarding helmet safety and educate riders regarding the importance of proper fastening.
- Make sure that Road Safety Audits and Road Safety Inspection procedures also address the needs of PTW riders.
- Minimise excessive roadside objects be minimised or, where necessary, make them PTW-friendly. Road surfaces should be well maintained and provide maximum and consistent skid resistance.
- Optimise road design, particularly curves and intersections, for PTW safety, paying attention to forward visibility and signage.
- Improve rider and driver training. Rider training should focus on hazard recognition and risk assessment as well as vehicle control skills. Driver training should ensure that candidates understand the vulnerability of unprotected road users and "look for them" when driving.

To EU institutions

- Adopt the draft EU Regulation on type approval of PTWs mandating Automatic Headlights On (AHO) on all PTWs, Anti-lock Braking Systems (ABS) for PTWs above 125 cm^3 (categories L3e-A2 and L3e-A3) and a form of advanced braking system (ABS or Combined Braking Systems – CBS) on PTWs with lower engine power (category L3e-A1).
- Anticipate the dates set in the EC Proposal for a Regulation on type approval of PTWs. ETSC proposes 2014 as implementation date for Advanced Braking Systems on new vehicle types and 2017 for all new vehicles.
- Undertake further research in order to develop a safe and effective ISA system also for PTWs.
- Develop minimum standards regarding protective clothing.
- Investigate the extent to which airbags and leg protectors are viable PTW safety measures.

4.3 Rural roads

To Member States and local authorities

- Implement the Infrastructure Safety Directive on all roads.
- Investigate all fatal and serious injury collisions and implement best practices in high-risk site management.
- Improve infrastructure safety on the whole network, applying the concepts of "self-explaining roads" and "forgiving roadsides".
- Undertake systematic and periodic road safety inspections for the detection of high risk sites. Complete EuroRAP or Network Safety Management assessment of rural network and review findings regularly for action.

- When possible, separate traffic in opposite directions by a median barrier and install side barriers. If there is a need for cycle and pedestrian facilities, separate paths along the roadway are recommended.
- When possible, build safe overtaking areas for two lane roads (following the concept of 2+1 roads as in Sweden and other countries).
- Invest in high quality infrastructure features such as road markings and road signs to enable Advanced Driver Assistance Systems such as Lane Departure Warning to work in proper synergy.
- Replace dangerous intersections by roundabouts. Other intersections with or without traffic signals should provide protection for vehicles turning across the path of opposing traffic.
- Match road and vehicle design standards to safe speed limits.
- Increase enforcement of traffic law, in particular enforcement of speed limits, with fixed and mobile safety cameras, drink driving and seat belt use.
- Develop digital mapping for Intelligent Speed Assistance systems and promote their market penetration.

To EU institutions

- Support Member States to extend the implementation of the principles of the Infrastructure Safety Directive to all roads.
- Make sure that the principle of conditionality of EU funds for road safety is guaranteed by all DGs and EU Agencies (TEN-T Agency, DG REGIO). Extend this principle to EU external aid.
- Draw up technical guidelines concerning the harmonised management of high risk sites by means of low cost measures.
- Draft guidelines and promote their implementation by Member States on best practice in traffic calming measures.

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Annex - Chapter 1

Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2010-2001
Latvia	558	559	532	516	442	407	419	316	254	218	-61%
Estonia	199	223	164	170	169	204	196	132	100	78	-61%
Lithuania	706	697	709	752	773	760	740	499	370	300	-58%
Spain	5,517	5,347	5,399	4,741	4,442	4,104	3,823	3,100	2,714	*2470**	-55%
Luxembourg	70	62	53	50	47	43	45	35	48	32	-54%
France	8,162	7,655	6,058	5,530	5,318	4,703	4,620	4,275	4,273	*3992**	-51%
Slovenia	278	269	242	274	257	262	293	214	171	138	-50%
Sweden[1]	531	515	512	463	423	428	454	380	341	266	-50%
Portugal	1,670	1,668	1,542	1,294	1,247	969	974	885	840	845	-49%
Ireland	411	376	335	374	396	365	338	279	238	*212**	-48%
Germany	6,977	6,842	6,613	5,842	5,361	5,091	4,949	4,477	4,152	*3651**	-48%
UK	3,598	3,581	3,658	3,368	3,337	3,300	3,056	2,718	2,337	*1943***	-46%
Italy	7,096	6,980	6,563	6,122	5,818	5,669	5,131	4,725	4,237	*3998**	-44%
Slovakia	625	626	653	608	600	608	661	606	385	353	-44%
Belgium	1,486	1,306	1,214	1,162	1,089	1,069	1,067	944	944	*840**	-43%
Austria	958	956	931	878	768	730	691	679	633	552	-42%
The Netherlands[2]	1,083	1,069	1,088	881	817	811	791	750	720	640	-41%
Hungary	1,239	1,429	1,326	1,296	1,278	1,303	1,232	996	822	739	-40%
Switzerland	544	513	546	510	409	370	384	357	349	*327**	-40%
Czech Republic	1,334	1,431	1,447	1,382	1,286	1,063	1,222	1,076	901	*802**	-40%
Cyprus	98	94	97	117	102	86	89	82	71	60	-39%
Denmark	431	463	432	369	331	306	406	406	303	*265**	-39%
Finland	433	415	379	375	379	336	380	344	279	*270**	-38%
Israel	542	525	445	467	437	405	382	412	314	*352**	-35%
Greece	1,880	1,634	1,605	1,670	1,658	1,657	1,612	1,553	1,456	1,281	-32%
Poland	5,534	5,827	5,640	5,712	5,444	5,243	5,583	5,437	4,572	3,907	-29%
Norway	275	310	280	258	224	242	233	255	212	*210**	-24%
Bulgaria	1,011	959	960	943	957	1,043	1,006	1,061	901	775	-23%
Malta	16	16	16	13	16	10	14	15	21	15	-6%
Romania	2,454	2,414	2,232	2,446	2,623	2,573	2,794	3,063	2,796	2,377	-3%
PIN	55,716	54,761	51,671	48,583	46,448	44,160	43,585	40,071	35,754	31,815	-43%
EU27	54,355	53,413	50,400	47,348	45,378	43,143	42,586	39,047	34,879	30,926	-43%
EU25	50,890	50,040	47,208	43,959	41,798	39,527	38,786	34,923	31,182	27,774	-45%
EU15	40,303	38,869	36,382	33,119	31,431	29,581	28,337	25,550	23,515	21,164	-47%
EU10	10,587	11,171	10,826	10,840	10,367	9,946	10,449	9,373	7,667	6,610	-38%
EU2	3,465	3,373	3,192	3,389	3,580	3,616	3,800	4,124	3,697	3,152	-9%

Table 1 (Fig. 1). Road deaths and percentage change in road deaths between 2001 and 2010

** Provisional figures or national estimates for 2010 as final figures for 2010 were not available at the time of going to print.*

***UK 2010: ETSC estimate based on EC Care Quick indicator . The final count for GB will be available on the 24 June 2011 on www.dft.gov.uk/pgr/statistics.*

(1) 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.

(2) 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.

Year	Value of a Prevented Fatality (EUR at 2009 prices)	Reduction in deaths since 2001	Monetary valuation of reduction in road deaths	Projected number of road deaths that could have been prevented (equal annual % reductions to reach EU target)	Projected valuation of road deaths that could have been prevented (equal annual % reductions to reach EU target)
2001					
2002	1,615,722	**945**	1,526,856,939	4,024	6,501,259,902
2003	1,630,263	**3,958**	6,452,581,441	7,750	12,634,119,411
2004	1,664,499	**7,010**	11,668,135,527	11,200	18,642,404,098
2005	1,689,466	**8,980**	15,171,405,833	14,395	24,319,798,521
2006	1,736,771	**11,215**	19,477,888,783	17,353	30,139,030,202
2007	1,780,190	**11,772**	20,956,402,088	20,093	35,769,501,878
2008	1,781,971	**15,311**	27,283,752,621	22,630	40,325,885,700
2009	1,700,000	**19,479**	33,113,994,000	24,979	42,464,423,731
2010	1,727,200	**23,454**	**40,509,748,800**	27,154	**46,901,030,277**
2002-2010		**102,124**	**176,160,766,031**	**149,578**	**257,697,453,719**

Table 2 (Fig. 3). Reduction in road deaths in EU-27 2001-2010 and valuation at 2009 prices

Year	Value of a Prevented Fatality (EUR at 2009 prices)	Further reduction in road deaths (equal annual % reductions to reach EU target)	Projected valuation of further reduction in road deaths (equal annual % reductions to reach EU target)
2011	1,754,835	**2,072**	3,635,504,368
2012	1,784,667	**4,005**	7,146,896,252
2013	1,815,007	**5,808**	10,541,573,301
2014	1,845,862	**7,491**	13,826,572,718
2015	1,877,242	**9,060**	17,008,589,994
2016	1,909,155	**10,525**	20,093,996,692
2017	1,941,610	**11,892**	23,088,857,330
2018	1,974,618	**13,167**	25,998,945,398
2019	2,008,186	**14,356**	28,829,758,568
2020	2,042,325	**15,466**	31,586,533,128
2011-2020		**93,841**	**181,757,227,751**

Table 3 (Fig. 4). Further reduction in road deaths in EU-27 2011-2020 if target for 2020 is achieved, and valuation at 2009 prices

Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2010-2009
Luxembourg[1]	70	62	53	50	47	43	45	35	48	32	**-33%**
Malta[1]	16	16	16	13	16	10	14	15	21	15	**-29%**
Estonia	199	223	164	170	169	204	196	132	100	78	**-22%**
Sweden[2]	531	515	512	463	423	428	454	380	341	266	**-22%**
Slovenia	278	269	242	274	257	262	293	214	171	138	**-19%**
Lithuania	706	697	709	752	773	760	740	499	370	300	**-19%**
UK	3,598	3,581	3,658	3,368	3,337	3,300	3,056	2,718	2,337	*1,943***	**-17%**
Cyprus	98	94	97	117	102	86	89	82	71	60	**-15%**
Romania	2,454	2,414	2,232	2,446	2,623	2,573	2,794	3,063	2,796	2,377	**-15%**
Poland	5,534	5,827	5,640	5,712	5,444	5,243	5,583	5,437	4,572	3,907	**-15%**
Latvia	558	559	532	516	442	407	419	316	254	218	**-14%**
Bulgaria	1,011	959	960	943	957	1,043	1,006	1,061	901	775	**-14%**
Austria	958	956	931	878	768	730	691	679	633	552	**-13%**
Denmark	431	463	432	369	331	306	406	406	303	*265**	**-13%**
Germany	6,977	6,842	6,613	5,842	5,361	5,091	4,949	4,477	4,152	*3,651**	**-12%**
Greece	1,880	1,634	1,605	1,670	1,658	1,657	1,612	1,553	1,456	1,281	**-12%**
The Netherlands[3]	*1,083*	*1,069*	*1,088*	*881*	*817*	*811*	*791*	*750*	*720*	640	**-11%**
Belgium	1,486	1,306	1,214	1,162	1,089	1,069	1,067	944	944	*840**	**-11%**
Czech Republic	1,334	1,431	1,447	1,382	1,286	1,063	1,222	1,076	901	*802**	**-11%**
Ireland	411	376	335	374	396	365	338	279	238	*212**	**-11%**
Hungary	1,239	1,429	1,326	1,296	1,278	1,303	1,232	996	822	739	**-10%**
Spain	5,517	5,347	5,399	4,741	4,442	4,104	3,823	3,100	2,714	*2,470**	**-9%**
Slovakia	625	626	653	608	600	608	661	606	385	353	**-8%**
France	8,162	7,655	6,058	5,530	5,318	4,703	4,620	4,275	4,273	*3,992**	**-7%**
Switzerland	544	513	546	510	409	370	384	357	349	*327**	**-6%**
Italy	7,096	6,980	6,563	6,122	5,818	5,669	5,131	4,725	4,237	*3,998**	**-6%**
Finland	433	415	379	375	379	336	380	344	279	*270**	**-3%**
Norway	275	310	280	258	224	242	233	255	212	*210**	**-1%**
Portugal	1,670	1,668	1,542	1,294	1,247	969	974	885	840	845	**1%**
Israel	542	525	445	467	437	405	382	412	314	*352**	**12%**
PIN	**55,736**	**54,778**	**51,688**	**48,600**	**46,465**	**44,177**	**43,602**	**40,088**	**35,771**	**31,810**	**-11%**
EU27	**54,375**	**53,430**	**50,417**	**47,365**	**45,395**	**43,160**	**42,603**	**39,064**	**34,896**	**30,921**	**-11%**
EU25	**50,910**	**50,057**	**47,225**	**43,976**	**41,815**	**39,544**	**38,803**	**34,940**	**31,199**	**27,769**	**-11%**
EU15	**40,323**	**38,886**	**36,399**	**33,136**	**31,448**	**29,598**	**28,354**	**25,567**	**23,532**	**21,159**	**-10%**
EU10	**10,587**	**11,171**	**10,826**	**10,840**	**10,367**	**9,946**	**10,449**	**9,373**	**7,667**	**6,610**	**-14%**
EU2	**3,465**	**3,373**	**3,192**	**3,389**	**3,580**	**3,616**	**3,800**	**4,124**	**3,697**	**3,152**	**-15%**

Table 4 (Fig. 5). Road deaths and percentage change in road deaths between 2009 and 2010

** Provisional figures or national estimates for 2010 as final figures for 2010 were not available at the time of going to print.*

***UK 2010: ETSC estimate for the whole UK based on EC Care Quick indicator. The final count for GB will be available on the 24 June 2011 on www.dft.gov.uk/pgr/statistics.*

[1] In Luxembourg and Malta, the numbers of road deaths are small and thus subject to substantial annual fluctuation.

[2] The definition of road deaths changed in 2010 to exclude suicides. The time series was adjusted so figures for previous year exclude suicides as well.

[3] 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.

Country	2010 Road Deaths	2010 Population	2010 Road Deaths per Million Population	2001 Road Deaths	2001 Population	2001 Road Deaths per Million Population
Sweden	266	9,340,682	**28**	531	8,882,792	**60**
UK	*1,943***	62,008,048[1]	**31**	3,598	58,999,781	**61**
Malta	15	412,970	**36**	16	391,415	**41**
The Netherlands	640	16,574,989	**39**	1,083	15,987,075	**68**
Switzerland	*327**	7,785,806	**42**	544	7,204,055	**76**
Norway	*210**	4,858,199	**43**	275	4,503,436	**61**
Germany	*3,657**	81,802,257[2]	**45**	6,977	82,259,540	**85**
Israel	*352**	7,695,000[3]	**46**	542	6,508,800	**83**
Ireland	*212**	4,467,854	**47**	411	3,832,973	**107**
Denmark	*265**	5,534,738	**48**	431	5,349,212	**81**
Finland	*270**	5,351,427	**50**	433	5,181,115	**84**
Spain	*2,470**	45,989,016	**54**	5,517	40,476,723	**136**
Estonia	78	1,340,127	**58**	199	1,366,959	**146**
France	*3,992**	64,350,759[2]	**62**	8,162	60,979,315	**134**
Luxembourg	32	502,066	**64**	70	439,000	**159**
Slovakia	353	5,424,925	**65**	625	5,378,783	**116**
Austria	552	8,375,290	**66**	958	8,020,946	**119**
Italy	*3,998**	60,340,328	**66**	7,096	56,960,692	**125**
Slovenia	138	2,046,976	**67**	278	1,990,094	**140**
Hungary	739	10,014,324	**74**	1,239	10,200,298	**121**
Cyprus	60	803,147	**75**	98	697,549	**140**
Czech Republic	*802**	10,506,813	**76**	1,334	10,266,546	**130**
Belgium	*840**	10,839,905	**77**	1,486	10,263,414	**145**
Portugal	845	10,637,713[1]	**79**	1,670	10,256,658	**163**
Lithuania	300	3,329,039	**90**	706	3,486,998	**202**
Latvia	218	2,248,374	**97**	558	2,364,254	**236**
Poland	3,907	38,167,329	**102**	5,534	38,253,955	**145**
Bulgaria	775	7,563,710	**102**	1,011	8,149,468	**124**
Romania	2,377	21,462,186	**111**	2,454	22,430,457	**109**
Greece	1,281	11,305,118	**113**	1,880	10,931,206	**172**
PIN	**31,809**	**521,079,115**	**61**	**55,716**	**502,013,509**	**111**
EU 27	**30,921**	**500,740,110**	**62**	**54,375**	**417,906,188**	**112**
EU 15	**21,158**	**397,420,190**	**53**	**40,303**	**378,820,442**	**106**
EU10	**6,610**	**74,294,024**	**89**	**10,587**	**74,396,851**	**142**
EU2	**3152**	**29,025,896**	**109**	**3465**	**30,579,925**	**113**

Table 5 (Fig. 6). Road deaths per million inhabitants in 2001 (with road deaths per million inhabitants in 2001 for comparison)

** Provisional figures or national estimates for 2010 as final figures for 2010 were not available at the time of going to print*

*** UK 2010: ETSC estimate for the whole UK based on EC Care Quick indicator. The final count for GB will be available on the 24 June 2011 on www.dft.gov.uk/pgr/statistics.*

[1] 2009 figure

[2] Provisional 2010 data

[3] National population data

Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average annual % change
Austria	8,207	8,043	7,984	7,591	6,922	6,774	7,147	6,783	6652	6370	-2.8%
Belgium[1]	8,949	8,230	7,978	6,850	7,272	6,999	6,997	6,782	6640	n/a	-4.0%
Bulgaria	7,990	8,099	8,488	9,308	10,112	10,215	9,827	9,827	8,674	8,080	2.2%
Cyprus	1,015	945	900	960	741	730	717	661	647	588	-5.8%
Czech Republic[1]	5,378	5,375	5,125	4,711	4,237	3,883	3,861	3,725	3,725	n/a	-4.8%
Denmark[1]	3,946	4,088	3,868	3,561	3,072	2,911	3,138	2,831	2,831	n/a	-4.2%
Estonia[2]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Finland[2]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
France[3]	*26,192*	*24,091*	*19,207*	*17,435*	39,811	40,662	38,615	34,965	33,323	29,563	-4.7%
Germany[1]	95,040	88,382	85,577	80,801	76,952	74,502	75,443	70,644	68,567	n/a	-4.1%
Greece[1]	3,238	2,608	2,348	2,395	2,270	2,021	1,821	1,872	1,676	*1,754**	*-8.0%*
Hungary	7,920	8,360	8,299	8,523	8,320	8,431	8,155	7,227	6,442	5,671	-1.5%
Ireland	1,417	1,150	1,009	877	1,021	907	860	*835**	*640**	*592**	*-9.0%*
Israel	2,644	2,419	2,416	2,455	2,363	2,305	2,095	2,063	1,741	1,683	-4.2%
Italy[4]	*134,383*	*136,257*	*128,331*	*123,544*	*120,549*	*119,864*	*117,306*	*111,250*	*107,540*	n/a	-2.5%
Latvia	n/a	n/a	n/a	1,222	810	630	638	791	681	569	-13.3%
Lithuania	7,103	7,427	7,263	7,877	8,466	8,334	8,042	5,818	4,426	4,328	-2.4%
Luxembourg	352	351	331	297	307	319	286	290	288	249	-3.1%
Malta	262	314	247	264	257	277	246	248	199	211	-1.6%
The Netherlands[1] [5]	16,000	16,100	16,500	16,200	16,000	15,400	16,600	17,600	18,600	n/a	1.2%
Norway	1,043	1,151	994	980	977	940	879	867	751	*673**	-3.4%
Poland	19,311	18,831	17,251	17,403	15,790	14,659	16,053	16,042	13689	11491	-4.3%
Portugal	5,797	4,770	4,659	4,190	3,762	3,483	3,116	2,606	2,624	*2,637**	-9.6%
Romania	6,053	5,955	5,581	5,750	5,868	5,766	7,071	9,380	9,091	8,476	3.4%
Slovakia	2,367	2,213	2,163	2,157	1,974	2,032	2,036	1,806	1408	1207	-5.1%
Slovenia	2,481	1,561	1,399	1,398	1,292	1,259	1,295	1,100	1061	880	-11.6%
Spain[1]	26,566	26,156	26,305	21,805	21,859	21,382	19,295	16,488	13,923	*11,962**	*-6.8%*
Sweden[1]	10,636	11,022	11,166	10,614	10,768	9,892	9,908	9,744	8,878	n/a	-1.5%
Switzerland[1]	6,194	5,931	5,862	5,528	5,059	5,066	5,235	4,780	4,780	n/a	-3.3%
UK[1][6]	38,792	37,502	34,995	32,313	30,027	28,673	28,871	*26,034*	26,034	n/a	-5.0%
EU 27	**434,423**	**422,748**	**401,070**	**380,111**	**391,050**	**383,026**	**379,807**	**356,232**	**341,013**	**332,192**	**-2.7%**
EU same def.[7]	**214,521**	**203,810**	**197,020**	**181,018**	**173,663**	**166,785**	**166,050**	**153,592**	**149,916**	**149,582**	**-4.5%**

Table 6. Serious injuries and annual average percentage change in serious injuries over 2001-2010 period

** Provisional data*

[1] 2009 figures used for 2010 to calculate annual average change and the EU average

[2] Separate statistics on serious and slight injuries are n/a.

[3] Change of definition for serious injuries from in-patient 6 days to in-patient 24h. In Fig. 7 FR serious injuries (2005-2010)

[4] Separate statistics on serious and slight injuries are n/a. It was estimated from sample studies made a regional level that serious injuries represent around 35% of the total recorded injuries

[5] Data for the Netherlands rounded off to nearest hundred

[6] UK figure refers to GB only

[7] Countries using a comparable definition of serious injuries BE, CY, CZ, DK, DE, EL, IE, LU, FR, PT, SK, ES, SE, UK

Country	Definition of a seriously injured person in a road collision
Austria	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". An injury or health problem that "causes personal difficulty" is one that affects an "important organ", if it results in a "health handicap", if the "healing process is uncertain", or if it leads to the fear of "additional effects". Police records
Belgium*	Hospitalised more than 24 hours. But in practice no communication between police and hospitals so in most cases allocation . Police records
Bulgaria	n/a. Police records
Cyprus*	Hospitalised for at least 24 hours. Police records
Czech Republic*	No official definition, but common approach is hospitalised for at least 24 hours. Police records
Denmark*	All injuries except "slight". Police records
Estonia	Separate statistics of serious and slight injuries are n/a
Finland	Separate statistics of serious and slight injuries are n/a
France	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.
Germany*	Hospitalised for at least 24 hours
Greece*	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
Hungary	Injuries which necessitated hospital care or causing health problems for at least 8 days. Police records
Ireland*	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
Israel*	Hospitalised more than 24 hours as in-patient. Police records
Italy	Separate statistics on seriously and slightly injuries are n/a. It was estimated from sample studies made at the regional level that serious injuries represent around 35% of the total recorded injuries.
Latvia	From 2004: hospitalised more than 24 hours as in-patient. Police records
Lithuania	Separate statistics on seriously and slightly injuries are n/a. Statistical data is general, including serious and slight injuries.
Luxembourg*	Hospitalised for at least 24 hours as in-patient. Police records
Malta	Categorisation as "serious" is made by the police. Police records
The Netherlands	MAIS=2 or higher. The Abbreviated Injury Scale (AIS) is a specialised trauma classification of injuries, ranging from 1 (minor injuries) to 6 (fatal injuries). 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.
Norway	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
Poland	Serious injury: Serious disability, serious disease, a life threatening incurable or chronic disease, permanent mental disease, complete or substantial incapacity to work or a permanent or substantial scarring or disfiguration of the body and injuries such as fractures, damage to internal organs, serious cuts or lacerations. Police records
Portugal*	Hospitalised for at least 24 hours. Police records.
Romania	Injuries requiring hospitalisation or any of the following injuries whether or not they are detained in hospital: Organ injuries, permanent physical or psychological disability, body disfiguration, abortion, fractures, concussions, internal wounds, serious cuts or broken parts, or severe general shock which requires medical care and injuries causing death 30 days after accident. Police records.
Slovakia*	Hospitalised for at least 24 hours. Police records.
Slovenia	Allocation made by the police. Police records
Spain*	Hospitalised for at least 24 hours. Police records
Sweden*	Hospitalised more than 24 hours. Hospital records
Switzerland*	Hospitalised for at least 24 hours or if the injury prevented the person from doing its daily activity for 24 hours. Police records.
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 requiring medical treatment and injuries causing death 30 or more days after the accident. An injured casualty is recorded as seriously or slightly injured by the police on the basis of the information available within a short time of the accident. This generally will not reflect the results of medical examination.

Table 7. Definition of a seriously injured person in a road collision

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 an 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.*

Annex - Chapter 2

Code	Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	Average annual % change	Reduction 2009-2001
PT	**Portugal**	337	339	280	233	214	156	156	155	148	**-11.0%**	-56%
SE	**Sweden**	87	58	55	67	50	55	58	45	44	**-8.9%**	-49%
NO	**Norway**	45	35	34	22	32	36	23	31	26	**-7.8%**	-42%
LV	**Latvia**	201	195	195	197	173	153	158	105	82	**-7.2%**	-59%
EE	**Estonia**	61	59	43	60	47	61	37	41	24	**-7.1%**	-61%
NL	**The Netherlands**	106	97	97	68	83	66	86	56	63	**-7.0%**	-41%
BE	**Belgium**	160	127	114	102	108	123	104	99	103	**-6.9%**	-36%
IE	**Ireland**	89	86	64	70	74	73	81	49	40	**-6.8%**	-55%
FR	**France**	822	866	626	581	635	535	561	548	496	**-6.6%**	-40%
ES	**Spain**	846	776	786	683	680	614	591	502	470	**-6.6%**	-44%
CH	**Switzerland**	104	96	91	95	69	76	79	59	60	**-6.6%**	-42%
IT	**Italy**	1,032	1,226	871	810	786	758	627	648	667	**-6.3%**	-35%
FI	**Finland**	62	40	59	49	45	49	48	53	30	**-5.8%**	-52%
CZ	**Czech Republic**	322	309	290	281	298	202	235	238	176	**-5.8%**	-45%
EL	**Greece**	338	279	257	293	234	267	255	248	202	**-5.6%**	-40%
HU	**Hungary**	355	378	299	326	289	296	288	251	186	**-5.3%**	-48%
CY	**Cyprus**	21	17	18	18	23	19	17	16	9	**-5.3%**	-57%
UK	**United Kingdom**	858	808	802	694	699	697	663	591	524	**-5.2%**	-39%
IL	**Israel**	172	176	159	166	130	136	114	134	105	**-5.1%**	-39%
DE	**Germany**	900	873	812	838	686	711	695	653	591	**-4.7%**	-34%
LT	**Lithuania**	253	239	218	262	256	241	235	175	121	**-4.5%**	-52%
SI	**Slovenia**	42	41	38	35	37	36	32	39	24	**-4.2%**	-43%
BG	**Bulgaria**	311	271	263	243	265	273	269	278	198	**-3.7%**	-36%
SK	**Slovakia**	197	198	198	199	166	205	216	202	111	**-2.1%**	-44%
AT	**Austria**	117	160	132	132	97	110	108	102	101	**-1.3%**	-14%
PL	**Poland**	1,866	1,987	1,878	1,986	1,756	1,802	1,951	1,882	1,467	**-0.9%**	-21%
RO	**Romania**	1,088	1,101	944	1,059	978	1,034	1,113	1,067	1,016	**-0.8%**	-7%
DK	**Denmark**	49	63	49	43	44	60	68	58	52	**2.0%**	6%
MT	***Malta***	*9*	*6*	*5*	*3*	*6*	*1*	*4*	*3*	*2*		
LU	***Luxembourg***	*11*	*6*	*7*	*12*	*2*	*10*	*7*	*6*	*12*		
	EU27*	**10,518**	**10,593**	**9,387**	**9,328**	**8,723**	**8,595**	**8,652**	**8,101**	**6,941**	**-4.2%**	**-34%**

Table 8 (Fig. 10). Pedestrians' deaths and annual average percentage change in pedestrian deaths over the period 2001-2009

**LU and MT are excluded from Fig. 10 because the numbers of pedestrian deaths in those countries are so small as to be subject to substantial random fluctuation.*

	Pedestrians' deaths as a % of all road deaths	Cyclists' deaths as a % of all road deaths	PTWs' deaths as a % of all road deaths	Share of deaths that were VRUs of all kinds taken together	Other deaths as a % of all road deaths
NO	11%	4%	15%	30%	70%
FI	13%	6%	12%	31%	69%
SE	12%	7%	15%	34%	66%
IE	20%	4%	10%	34%	66%
BG	25%	4%	6%	34%	66%
BE	15%	9%	11%	35%	65%
EE	24%	7%	6%	37%	63%
LU	20%	2%	17%	39%	61%
AT	16%	7%	17%	39%	61%
SK	32%	6%	2%	40%	60%
ES	16%	2%	22%	40%	60%
CZ	20%	9%	11%	41%	59%
SI	14%	8%	19%	41%	59%
FR	12%	3%	26%	42%	58%
DE	14%	10%	18%	42%	58%
PT	17%	4%	21%	42%	58%
NL	9%	19%	16%	44%	56%
MT	18%	2%	24%	44%	56%
LV	35%	6%	3%	44%	56%
DK	16%	12%	17%	45%	55%
LT	33%	9%	3%	45%	55%
IL	32%	3%	10%	45%	55%
EL	15%	1%	29%	45%	55%
UK	22%	4%	20%	46%	54%
HU	24%	12%	11%	47%	53%
IT	14%	7%	28%	48%	52%
PL	34%	8%	6%	49%	51%
CY	17%	4%	28%	49%	51%
RO	37%	6%	6%	49%	51%
CH	18%	10%	23%	51%	49%
EU	**20%**	**6%**	**17%**	**44%**	**56%**

Table 9 (Fig. 10d). Pedestrians, cycle users and PTW users' deaths as a percentage of all road deaths ranked by the share of deaths that were unprotected road users of all kinds taken together (2007-2009 average)

Code	2001	2002	2003	2004	2005	2006	2007	2008	2009	Average annual % change
FI	59	53	39	26	43	29	22	18	20	**-14.1%**
IL	28	32	23	12	21	14	6	13	15	**-12.4%**
SK*		61	71	65	54	48	56	23	20	**-10.2%**
LV	43	33	43	30	31	33	18	15	26	**-9.6%**
LT	94	94	85	87	85	68	73	38	34	**-8.6%**
EE	18	19	15	9	12	18	14	10	7	**-8.1%**
EL	29	14	21	24	18	21	16	22	15	**-7.7%**
FR	256	223	201	177	180	181	142	148	162	**-7.5%**
SE	42	37	35	27	38	26	33	30	20	**-6.8%**
BE	128	105	109	78	71	91	90	86	86	**-6.7%**
HU	196	178	178	182	151	151	157	109	103	**-6.4%**
ES	100	96	78	88	82	72	90	59	56	**-5.9%**
DK	56	52	47	53	41	31	54	54	25	**-5.6%**
BG	55	49	45	56	57	42	48	35	29	**-5.1%**
CZ	141	160	159	131	115	110	116	93	84	**-4.8%**
DE	635	583	616	475	575	486	425	456	462	**-4.8%**
NL	195	169	188	157	151	179	147	145	138	**-4.2%**
PT	50	58	63	47	48	40	34	42	29	**-4.2%**
PL	610	681	647	691	603	509	498	433	371	**-3.8%**
IT	366	317	350	319	331	307	349	288	294	**-2.7%**
AT	55	80	56	58	47	48	37	62	39	**-2.4%**
IE	12	18	11	11	10	9	15	13	7	**-2.2%**
UK	140	133	116	136	152	147	138	117	104	**-1.8%**
CH	38	26	48	42	37	35	30	27	54	**-0.6%**
SI	17	18	14	21	18	14	17	16	18	**-0.2%**
RO	145	132	156	130	206	198	179	179	157	**3.0%**
EU	**3,411**	**3,269**	**3,259**	**2,992**	**3,034**	**2,791**	**2,695**	**2,453**	**2,272**	**-4.3%**

Table 10 (Fig. 11). Cyclists' deaths and annual average percentage change in cyclists' deaths over the period 2001-2009

Code	2001	2002	2003	2004	2005	2006	2007	2008	2009	AAR	Reduction 2001/2009
PT	413	370	370	302	294	234	216	187	173	**-10.2%**	-58%
LV	21	30	17	22	13	17	13	13	8	**-7.9%**	-62%
IE	44	40	52	49	53	28	33	26	25	**-5.2%**	-43%
FR	1,542	1,450	1,276	1,205	1,248	1,106	1,177	1,108	1,187	**-4.7%**	-23%
SI	52	23	32	29	39	54	53	46	31	**-4.5%**	-40%
BE	194	209	159	146	148	156	159	126	160	**-4.4%**	-18%
DE	1,102	1,044	1,080	980	982	900	907	766	749	**-4.2%**	-32%
CH	110	94	114	119	91	75	81	86	82	**-4.0%**	-25%
NL	154	191	189	141	133	120	124	118	115	**-3.4%**	-25%
AT	137	130	146	135	130	126	110	110	113	**-2.4%**	-18%
ES	831	784	758	760	784	791	873	665	594	**-2.4%**	-29%
EL	505	398	364	437	464	501	469	435	433	**-2.1%**	-14%
UK	594	628	715	607	584	612	614	509	488	**-0.9%**	-18%
IT	1,266	1,216	1,407	1,446	1,375	1,344	1,419	1,296	1,173	**0.7%**	-7%
DK	52	59	65	67	44	42	80	69	41	**1.1%**	-21%
BG	50	60	50	49	65	47	47	70	49	**1.3%**	-2%
NO	33	43	37	41	35	37	40	37	29	**1.4%**	-12%
IL	32	41	40	31	39	36	36	46	33	**2.7%**	3%
HU	93	88	90	90	128	125	133	109	92	**2.8%**	-1%
PL	232	226	199	232	210	221	274	349	358	**3.2%**	54%
CZ	95	134	112	102	124	116	139	123	94	**3.5%**	-1%
CY	18	19	16	33	23	24	24	23	21	**4.4%**	17%
LT*	n/a	n/a	n/a	n/a	n/a	16	14	18	19	***4.5%***	19%
SE	42	43	53	66	47	67	67	62	53	**6.1%**	26%
FI	21	29	34	32	33	36	39	43	36	**10.4%**	71%
RO	12	20	21	17	38	70	138	221	186	**43.1%**	1450%
SK		*9*	*14*	*5*	*7*	*9*	*3*	*14*	*15*		
LU	*6*	*0*	*13*	*11*	*6*	*8*	*6*	*9*	*7*		
EE	*6*	*3*	*5*	*3*	*7*	*7*	*14*	*8*	*4*		
MT	*2*	*4*	*7*	*4*	*1*	*1*	*4*	*3*	*5*		
EU27**	**7,470**	**7,189**	**7,205**	**6,947**	**6,959**	**6,736**	**7,108**	**6,474**	**6,145**	**-1.9%**	**-18%**

Table 11 (Fig. 12). PTW deaths and annual average percentage change in PTW deaths over the period 2001-2009

**LT: 2006-2009. *EE, LU, MT and SK are excluded from Fig. 4 because the numbers of PTWs' deaths in those countries are so small as to be subject to substantial random fluctuation. LT excluded from Fig. 12 because of shorter timeline. 2002 figure used for SK 2001.*

Code	Country	PTWs' deaths	PTWs' serious injuries
AT	Austria	-2.4%	0.4%
BE	Belgium	-4.37%	-6.16%
BG	Bulgaria	1.3%	6.3%
CY	Cyprus	4.4%	-3.6%
DK	Denmark	1.1%	-3.1%
DE	Germany	-4.2%	-2.6%
EL	Greece	-2.1%	-8.6%
HU	Hungary	2.8%	4.7%
IE	Ireland	-5.2%	-14.2%
IL	Israel	2.72%	2.14%
LV	Latvia	-7.9%	-1.1%
MT	Malta	6.8%	-7.4%
NL	The Netherlands	-3.4%	0.3%
NO	Norway	1.4%	-1.8%
PL	Poland	3.2%	5.9%
PT	Portugal	-10.2%	-10.8%
SK	Slovakia	-0.5%	6.7%
SI	Slovenia	-4.5%	-3.7%
ES	Spain	-2.4%	-3.3%
SE	Sweden	6.1%	4.2%
CH	Switzerland	-4.0%	-0.5%
UK	United Kingdom	-0.2%	-3.1%
	EU	**-1.9%**	**0.3%**

Table 12 (Fig. 13). Average annual percentage change in PTW rider deaths (2001-2009) plotted against the average annual percentage change in PTW riders seriously injured (2001-2009).

Serious injuries: GB figures used for UK, LV (2004-2009), SK (2002-2009).
CZ, EE, FI, IT, LT, UK: Data on PTW riders seriously injured is not available.
France is excluded from Fig. 13 because of the change in the definition of seriously injured in 2005.

Code	PTW rider deaths (2009)	PTW vehicle km ridden (in billions)	PTW rider deaths per billion km-ridden	notes
NO	29	1.22	24	
CH	82	2.40	34	
IL	33	0.93	36	
FI	36	0.90	40	
DE*	766	15.80	48	2008
SE	53	1.06	50	
DK*	42	0.76	55	2006
LV	8	0.10	78	
IE	25	0.32	78	
AT*	110	1.31	84	2008
UK	488	5.14	95	
EE	4	0.04	100	
ES*	791	7.90	100	2006
FR	1,187	10.10	118	
BE*	160	1.32	121	
SI	31	0.12	250	
CZ*	116	0.28	409	2006
RO	186	0.26	704	
EU	**3,943**	**45.42**	**87**	

Table 13 (Fig. 14). Powered two-wheeler rider deaths per billion km ridden in 2009 (or last year available)

** AT, BE (2008). PTW km ridden data is available up to 2008; CZ, DK, ES, (2006).*
[1] BE, UK: Mopeds not included as km ridden available only for motorcycles

Ranked	mopeds (<50ccm)	motorcycles (>50ccm)
CZ	3%	97%
UK*	4%	96%
LU	5%	95%
EL	8%	92%
CH	9%	91%
SK	9%	91%
BG	11%	89%
DE	13%	87%
NO	13%	87%
IL	15%	85%
SE	18%	82%
SI	18%	82%
BE	19%	81%
IT	21%	79%
PL	22%	78%
AT	23%	77%
LT	24%	76%
LV	24%	76%
HU	24%	76%
FR	26%	74%
ES	27%	73%
CY	29%	71%
FI	30%	70%
PT	35%	65%
NL	44%	56%
EE	46%	54%
DK	48%	52%
RO	57%	43%
EU	**21%**	**79%**

Table 14 (Fig. 15). Moped rider deaths as a percentage of total PTW rider deaths (2007-2009 average).

**2006-2008.*

Country	Helmet wearing rate	Notes
Slovakia	100%	*Estimation from PIN Panelist*
Switzerland	100%	*Estimation from PIN Panelist*
Ireland	100%	*Estimation from PIN Panelist*
Finland	99%	*Estimation from PIN Panelist*
Portugal	99%	*2004*
Spain	99%	
Germany	98%	
Latvia	97%	
France	96%	
Denmark	95%	*2008*
Italy	95%	
Romania - Riders	93%	
Greece	75%	
Romania -Passengers	71%	
Cyprus	68%	
Italy	*~68%*	*Istituto Superiore di Sanità. 68% as an average for Italy: 90% in the North and Centre and 20% in the South.*

Table 15. PTW helmet wearing rate estimates for countries where data is available

Source: PIN Panelists

Country	2009	notes
Ireland	40%	*2009*
Switzerland	38%	*2009*
Austria	35%	*2009*
United Kingdom	34%	*2008*
Finland	31%	*2008*
Sweden	27%	*2009*
Israel	17%-28%	*2009*
Slovakia	17%	*2009*
Denmark	15%	*2008*
Germany	11%	*2009*

Table 16. Cycle helmet wearing rate estimates for countries where data is available

Source: PIN Panelists

	Are bicycle helmets mandatory?	Are reflective jackets mandatory?	
	No	No	
BE	Recommended	Recommended	
BG	No	No	
CY	No	No	
CZ	Yes*	Recommended	*Mandatory for <18. Recommended for others
DK	No	No	
EE	Yes*	n/a	*Mandatory for <16. Recommended for others
FI	Yes*	No	*However, no enforcement
FR	No	Yes*	*Outside urban areas at night or when visibility is poor (for driver and passengers)
DE	No	No	
GR	No	No	
HU	No	Yes*	*For both driving a bicycle or pushing it, on roads outside built up areas at night-time and at restricted visual conditions
IE	No	No	
IL	Yes	No	
IT	No	Yes*	*Extra-urban areas and in case of poor visibility
LV	Recommended	Recommended	
LT	Yes*	Yes**	*For cyclists < 18 years; recommended for older people. **At night-time and when visibility is poor or must use reflectors.
LU	No	No	
MT	Recommended	YES*	*In the darkness
NL	Recommended	No	
NO	No	No	
PL	No	No	
PT	No	No	
RO	Recommended	No	
SK	Yes*	No**	*For cyclists <15 years. Only outside urban areas for cyclists >15 years; **Mandatory when visibility is reduced
SI	Yes	No	*For cyclists under 14 years
ES	Yes*	No	*Only outside build up areas. Not compulsory in case of high temperature or long upward slopes
SE	Yes*	No**	*For cyclists < 15 years, ** Reflective vests are not mandatory but reflectors and bicycle lights are when cycling in the dark.
CH	No	No	
UK	No	No	

Table 17. Safety equipment requirements for cyclists

Source: EC, DG MOVE, Going abroad http://ec.europa.eu/transport/road_safety/going_abroad/index_en.htm and national data from PIN panelists

Annex - Chapter 3

Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	Average annual % change
LU*	46	30	31	26	30	26	23	20	n/a	**-11.7%**
PT	839	863	760	621	612	437	457	372	365	**-10%**
FR	5,397	5,078	3,952	3,685	3,331	3,071	2,988	2,807	2,796	**-9.3%**
LV	405	408	372	375	318	259	254	219	187	**-7.9%**
BE*	841	782	650	640	617	600	591	474	n/a	**-7.2%**
IL	334	297	249	270	248	214	227	232	169	**-7.1%**
DE	4,481	4,301	4,156	3,664	3,228	3,062	3,012	2,721	2,452	**-7.0%**
ES	3,395	3,327	3,418	2,920	2,802	2,599	2,471	1,979	1,670	**-6.6%**
NL	501	496	510	408	370	336	341	328	318	**-6%**
IE	303	268	237	261	289	256	237	200	158	**-5.6%**
CY	38	34	46	33	33	24	25	25	30	**-4.9%**
EL*	964	847	831	788	789	736	748	689	n/a	**-4.9%**
AT	586	565	602	528	477	456	444	419	399	**-4.5%**
FI	309	294	271	276	268	226	285	227	191	**-4.4%**
CH	269	273	317	268	247	215	196	195	178	**-4.1%**
SE	362	374	359	306	304	303	313	271	258	**-3.7%**
DK	270	289	286	220	200	188	252	245	187	**-3.6%**
SI	162	166	148	170	150	142	169	132	87	**-3.4%**
UK	1,952	1,934	2,004	1,855	1,831	1,787	1,697	1,401	1,336	**-3.4%**
IT*	2,972	3,096	3,106	2,878	2,653	2,585	2,336	2,203	n/a	**-3.3%**
EE	137	159	124	128	132	162	140	93	78	**-3.2%**
CZ	765	807	843	799	738	599	731	602	572	**-2.5%**
HU	663	851	790	760	729	740	666	523	483	**-1.10%**
PL	2,949	3,025	2,953	2,922	2,917	2,839	2,981	2,903	2,358	**-1%**
BG	481	483	498	512	512	647	495	580	544	**2.2%**
RO	603	634	711	729	714	903	979	1,121	1,015	**7.7%**
SK*	*n/a*	*n/a*	*n/a*	*n/a*	*308*	*308*	*307*	*266*	*167*	
LT	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*507*	*481*	*322*	*260*	
MT	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	
NO	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	
EU27[(1)]	29,421	29,111	27,658	25,504	24,044	22,983	22,635	20,554	18,870	**-4.9%**

Table 18 (Fig. 17). Deaths on rural roads other than motorways and average annual percentage change over the period 2001-2009.

Source: CARE and national data provided by PIN Panellists

**BE, EL, IT, LU (2001-2008). **SK: only deaths occurring within 24h after the collisions are collected*
LI and SK are excluded from Fig. 17 because in Slovakia deaths on rural roads are available only from 2005 and only deaths occurring within 24h after the collisions are collected, and in Lithuania, deaths on rural roads are available only from 2006.
[(1)] Excluding Slovakia, Malta and Lithuania.

Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	Average annual % change
BE*	453	353	350	295	255	265	275	274	n/a	**-9.2%**
EE	64	64	40	43	38	42	56	38	22	**-9.0%**
LU*	17	20	16	17	13	8	9	9	n/a	**-8.9%**
FR	2,277	2,056	1,667	1,534	1,664	1,346	1,359	1,235	1,252	**-8.4%**
PT	720	699	659	556	537	448	389	417	386	**-8.0%**
SE	162	132	134	125	110	106	127	99	89	**-7.0%**
IT*	3,351	3,083	2,746	2,596	2,588	2,494	2,269	2,076	n/a	**-6.5%**
CH	204	164	171	191	137	124	141	135	137	**-6.2%**
ES	974	912	919	900	790	737	741	634	584	**-5.4%**
LV	153	151	160	141	124	148	165	97	67	**-5.0%**
NL	335	348	346	252	254	283	270	243	227	**-4.5%**
DE	1,726	1,684	1,646	1,484	1,471	1,384	1,335	1,261	1,225	**-4.2%**
HU	544	524	478	476	502	508	505	419	301	**-4.0%**
FI	113	105	101	82	101	93	81	108	76	**-3.9%**
UK	1,448	1,421	1,439	1,349	1,302	1,326	1,178	1,087	1,000	**-3.5%**
CZ	525	570	556	525	503	427	442	444	329	**-3.4%**
BG	482	438	435	386	417	373	475	443	321	**-3.3%**
IE*	104	103	89	107	104	98	91	77	79	**-2.7%**
SI	91	81	73	83	81	92	94	73	64	**-2.6%**
IL	192	207	191	190	180	188	164	163	133	**-2.6%**
DK	125	126	114	120	95	100	129	129	91	**-2.2%**
EL*	830	718	716	766	758	774	724	744	n/a	**-2.1%**
AT	216	265	223	232	202	200	173	189	173	**-2.0%**
NO	37	41	39	33	37	31	25	43	30	**-1.9%**
RO	1,841	1,767	1,506	1,697	1,895	1,638	1,780	1,919	1,756	**-0.7%**
PL	2,528	2,761	2,653	2,755	2,495	2,349	2,549	2,499	2,171	**-0.6%**
CY	48	39	40	74	54	52	52	49	34	**-0.3%**
SK*					*277*	*291*	*261*	*243*	*136*	
MT					*17*	*11*	*12*	*9*		
LT						*209*	*208*	*152*	*89*	
PIN	19,560	18,832	17,507	17,009	16,707	15,634	15,598	14,904	13,650	**-4.1%**
EU27[(1)]	19,127	18,420	17,106	16,595	16,353	15,291	15,268	14,563	13,350	**-4.1%**

Table 19 (Fig. 18). Deaths inside urban areas and average annual percentage change over the period 2001-2009.

Source: CARE and national data provided by PIN Panellists

**BE, EL, IT, LU (2001-2008). **SK: only deaths occurring within 24h after the collisions are collected.*
LI, MT and SK are excluded from Fig. 18
(1) Excluding Slovakia, Malta and Lithuania.

Country	2001	2002	2003	2004	2005	2006	2007	2008	2009
AT	156	126	106	118	89	74	74	71	61
BE	192	171	140	125	161	164	153	139	n/a
BG	48	38	27	45	28	23	36	38	36
CY	12	21	11	10	15	10	12	8	7
CZ	43	53	48	58	45	37	48	30	n/a
DK	36	48	32	29	36	19	25	32	24
EE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
FI	11	16	7	17	10	17	14	9	12
FR	486	521	439	312	323	292	273	233	225
DE	770	857	811	694	662	645	602	495	475
EL	86	69	58	116	111	147	140	120	n/a
HU	32	55	58	62	48	55	61	54	38
IE	4	5	9	6	3	11	10	2	n/a
IL	16	21	11	20	20	12	7	17	12
IT	598	625	553	468	451	452	417	358	258
LV	No motorway in Latvia								
LT	39	57	36	41	59	44	50	24	21
LU	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MT	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
NL	*157*	*143*	*172*	*144*	*126*	*111*	*98*	*106*	*99*
NO	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
PL	57	40	36	35	32	55	53	35	43
PT	112	115	127	116	98	84	128	96	90
RO	6	10	12	16	20	46	41	21	25
SK	n/a	n/a	n/a	n/a	21	15	15	11	8
SI	20	22	21	21	28	29	30	9	20
ES	1148	1108	1062	921	850	768	611	487	460
SE	28	26	34	42	24	28	25	18	21
CH	71	76	58	51	25	31	47	27	34
UK	198	226	215	164	203	185	184	157	n/a

Table 20. Road deaths on motorways

Source: CARE and national data provided by PIN Panellists

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 deaths.

Code	% share on rural roads	% share on motorways	% share on urban roads
ES**	64%	16%	20%
SE	69%	5%	26%
FI	70%	3%	26%
AT	63%	10%	27%
IE*	71%	2%	27%
EE	73%	n/a	27%
BE*	57%	16%	28%
LT	66%	6%	28%
DE	60%	12%	28%
FR	65%	6%	29%
DK	61%	7%	32%
LV	67%	n/a	33%
SI	57%	9%	34%
NL	49%	15%	36%
CZ	59%	3%	38%
CH	52%	10%	38%
UK	54%	6%	40%
IL	56%	3%	41%
HU	53%	5%	41%
BG	55%	4%	42%
PT	44%	12%	44%
SK	52%	2%	45%
IT*	47%	8%	45%
PL	53%	1%	46%
EL*	45%	8%	46%
CY	33%	11%	56%
RO	36%	1%	63%
EU27[(1)]	**56%**	**7%**	**37%**

Table 21 (Fig.20). Percentage share of road deaths per road type ranked by the percentage share of road deaths on rural roads and motorways taken together.

(2007-2009 average)
[(1)] Excluding Malta, Luxembourg and Norway.
**BE, EL, IE, IT (2001-2008). ** ES: motorways include motorways and Autovia*

	2009			2001		
	Deaths	Veh-km (in billion)	Deaths per veh-km	Deaths	Veh-km (in billion)	Deaths per veh-km
IL	169	24.731	6.8	297	20,447	14.5
SE	258	36.5	7.1	362	34,8	10.4
FI*	227	29.503	7.7	309	27,01	11.4
CH	178	20.433	8.7	269	19,36	13.9
EE	78	6.107	12.8	137	4,268	23.1
AT*	419	27.539	15.2	586	24,03	24.4
ES*	1,979	125.413	15.8	3,395	126,964	26.7
SI*	132	7.768	17	162	7,363	22
HU	483	21.44	22.5	663	n/a	n/a
RO**	1,015	40.475	25.1	603	31,823	22.4
LT	260	8.166	31.8	n/a	n/a	n/a

Table 22 (Fig. 21). Road deaths on rural roads excluding motorways per billion km driven in 2009 (and in 2001 for comparison) for countries for which data on vehicle-km is available.

**2001-2008. **2005-2009.*

		Car&taxi user	Other user*	PTW user	Cyclist	Pedestrian
Bulgaria	BG	74%	7%	5%	2%	12%
Finland	FI	68%	10%	12%	3%	7%
Sweden	SE	70%	6%	15%	3%	6%
Romania	RO	63%	12%	4%	4%	16%
Greece	EL	62%	13%	18%	1%	6%
Ireland	IE	62%	12%	9%	3%	13%
Estonia	EE	66%	6%	6%	5%	17%
Czech Republic	CZ	66%	5%	11%	8%	10%
Portugal	PT	52%	18%	15%	4%	10%
Israel	IL	51%	20%	10%	3%	17%
France	FR	63%	7%	23%	3%	5%
Belgium	BE	60%	10%	17%	9%	5%
Cyprus	CY	65%	4%	24%	6%	1%
Germany	DE	63%	5%	20%	6%	6%
Spain	ES	55%	13%	21%	2%	8%
Austria	AT	61%	6%	20%	5%	7%
UK	UK	62%	4%	21%	3%	9%
Hungary	HU	58%	8%	10%	8%	15%
Denmark	DK	56%	10%	18%	7%	9%
Poland	PL	60%	6%	5%	7%	23%
Latvia	LV	57%	7%	3%	5%	28%
Italy	IT	57%	6%	27%	5%	5%
The Netherlands	NL	55%	7%	17%	17%	4%
Luxembourg	LU	60%	0%	33%	0%	6%
Slovenia	SI	51%	5%	25%	7%	12%
Switzerland	CH	47%	6%	33%	7%	7%
	EU[1]	**60%**	**8%**	**17%**	**5%**	**10%**

Table 23 (Fig. 22). Percentage share of road deaths by road user group on rural roads ranked by the percentage share of road deaths on rural roads and motorways taken together.

(2007-2009 average).
[1] EU27 excluding LT, MT, NO, SK.

How the urban/rural distinction is made in the statistics that your country provides to CARE

CARE	Deaths on rural roads are deaths that occur on roads other than motorways outside urban area boundary signs. Deaths on urban roads are deaths that occur on roads inside urban area boundary signs.
Austria	Data includes deaths on Expressways ("Schnellstraßen" with for most of them layout similar to motorways) and motorway ramps. Police officers have to tick a box in the Austrian accident form specifying if the collision was in a rural or built-up area.
Belgium	CARE definition
Bulgaria	CARE definition
Cyprus	CARE definition
Czech Republic	CARE definition
Denmark	Roads are designated as built-up or non-built-up according to the prevailing speed limit. A road is defined as non-built-up if the speed limit is above 50km/h and as built-up if the speed limit is 50km/h or lower.
Estonia	CARE definition
Finland	CARE definition
France	CARE definition
Germany	CARE definition
Greece	CARE definition. The reader should bear in mind that there is no relation between the "urban area" field and the "type of road": it is possible that a 'national road' or a 'main road' crosses an urban area.
Hungary	CARE definition
Ireland	Roads are designated as built-up or non-built-up according to the prevailing speed limit. A road is defined as non-built-up if the speed limit is 50km/h or lower (or 40miles/h or lower (2001 to 2004) and 60km/h or lower (2005 to 2008).
Israel	CARE definition
Italy	CARE definition
Latvia	Transformation rules are applied to distinguish between a death on urban roads and death on rural roads
Lithuania	Not communicated
Luxembourg	CARE definition
Malta	Did not respond to the questionnaire
Netherlands	CARE definition
Norway	Did not respond to the questionnaire
Poland	National definition: Area outside urban area boundary signs including motorways. But data sent to ETSC exclude motorways.
Portugal	National definition: Area outside urban area boundary signs including motorways. But data sent to ETSC exclude motorways.
Romania	Not communicated
Slovakia	Not communicated
Slovenia	Not communicated
Spain	CARE definition
Sweden	Slightly different numbers than CARE. Statistics from STRADA: inside and outside urban area boundary signs (excluding motorways) according to the classification by the Police.
Switzerland	CARE definition
UK	In the UK, the distinction is based on the boundaries of urban areas defined for planning purposes and their numbers of inhabitants, but in road safety work, roads are designated as built-up or non-built-up according to the prevailing speed limit. A road is defined as non-built-up if the speed limit is above 40 miles/h, or as built-up if the speed limit is 40 miles/h or lower.

Table 24. Definition of deaths on urban/rural roads

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