RANKING EU PROGRESS ON CAR OCCUPANT SAFETY

PIN Flash Report 27

April 2014

ETSC
European Transport Safety Council

Road Safety PIN

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EXECUTIVE SUMMARY

Car occupant deaths represented almost half of all road deaths in 2010-2012

Around 240,000 car occupants were killed in road collisions in the EU27 in the years 2001-2012. There were 12,345 deaths in cars in 2012 in the EU27 compared with 27,700 in 2001[1], a cut of 55%. Deaths of car occupants were cut by more than the overall death rate (49%) and substantially more than the rate for other road users (41%). Car occupants have therefore benefitted more than other road users from road safety measures adopted over the past decade. This is not surprising, as many of those measures were targeted at car occupants including increased enforcement of the main traffic offences, improved vehicle occupant protection, and, to a lesser extent, improved infrastructure.

Spain and Latvia achieved the best annual average reductions in car occupant deaths between 2001 and 2012.

But car occupant deaths still represented almost half (48%) of all road deaths in 2010-2012 (Fig. 4). So achieving the EU road safety target, to reduce road deaths by half by 2020, will therefore continue to depend strongly on the EU and its Member States sustaining reductions in car occupant deaths.

The number of car occupant deaths has decreased in all PIN countries since 2001. Spain and Latvia achieved the best annual average reductions between 2001 and 2012 (Fig. 1). Good progress was also made in Switzerland, the Netherlands, the UK and Sweden which are now the safest countries in terms of car occupant deaths per billion vehicle-km travelled (Fig. 3).

Car occupant deaths as a percentage of recorded road deaths in the PIN countries in 2012 ranged from 33% to 70%, and in most countries were between 40% and 60% (Fig. 4). As many as 43% of car occupant deaths occurred in single-vehicle collisions, and this percentage varied across the PIN countries from about 30% to 60% (Fig. 5).

Male drivers represented 56% of people killed in cars in 2010-2012, male passengers 17%, female passengers 14% and female drivers 13% (Fig. 6). Out of the 7560 males killed in cars, 77% were driving and 23% were passengers, while out of the 2900 females killed in cars, 49% were driving and 51% were passengers. About half of the males killed were aged between 15 and 35 (Fig. 7).

900 deaths would have been prevented in 2012 if 99% of those in cars in collisions had been wearing seat belts.

In most countries, the percentages of car occupants wearing seat belts were markedly higher in 2012 than in 2005 (Figs. 8 and 9). ETSC estimates that 8600 deaths in cars were prevented in 2012 across the EU by the wearing of belts. Another 900 would have been prevented if 99% of those in cars in collisions had been wearing them.

An average reduction in traffic speeds of 1km/h could have prevented another 1300 deaths in 2012, and the elimination of drink driving another 5600, many of them car occupants. Car occupant deaths are also being reduced by increases in the proportion of cars that have 5-star Euro NCAP ratings and Electronic Stability Control.

Children aged 0 to 14 killed in cars across the EU numbered 4 per million child population each year in 2010-2012 (Fig. 12). This rate ranged across most of the PIN countries from less than 1 to more than 8. Correct fitting and use of child restraints is important in preventing such deaths.

[1] EU28 except BU, HR, LT, SK. See indicator box.

A range of recommendations concerning the further improvement of car occupant safety are made to Member States and the EU Institutions throughout this report, and are summarised below:

Key recommendations to Member States

- Adopt strong legislation and apply best practices in enforcement in particular against speeding, drink driving and the non-use of seat belts and child restraints.
- Promote the introduction of owner liability as opposed to driver liability to facilitate enforcement of speed limits.
- Develop the use of alcohol interlocks in rehabilitation programmes for first-time high level offenders and for recidivists.
- Improve learning and qualification systems for novice drivers.
- Implement the Infrastructure Safety Directive on all major roads.

Key recommendations to EU institutions

- Align type approval crash tests with high performing Euro NCAP crash tests.
- Extend mandating fitment as standard equipment of an enhanced seat belt reminder system for all vehicle seats with audible and visual warnings.
- As a first step towards wider use of alcohol interlocks, require their use by professional drivers.
- Support the swift introduction of Intelligent Speed Assistance (ISA).
- Extend the instruments of the Infrastructure Safety Directive to cover all motorways, rural and urban roads within the ongoing revision of the Directive.
- Update 2004 EC Recommendation on enforcement in the field of road safety within the revision of the 2011/82/EU Directive foreseen in 2016 "in order to ensure greater convergence of the enforcement of road traffic rules by Member States through comparable methods and practices."[2]

NOTE

This report covers road deaths among car occupants in the 28 countries of the EU, as well as Israel, Norway, the Republic of Serbia and Switzerland. 'Cars' refer to both private passenger cars and car-like vehicles used for commercial purposes (e.g. taxis). 'Car occupant' refers to both the driver and any passengers.

This analysis builds on previous country rankings on speeding, drink driving and the use of seat belts in ETSC's 4th Road Safety PIN Report (2010) and 1st Road Safety PIN Report (2007).

Country comparisons of progress in reducing deaths among unprotected road users, such as pedestrians and cyclists, are available in ETSC's 5th Road Safety PIN Report (2011). For reductions in deaths in collisions involving goods vehicles and buses, see the 7th Road Safety PIN Report (2013). These publications can all be downloaded from the ETSC website: www.etsc.eu/pin

[2] Article 11 Directive 2011/82/EU of the European Parliament and of the Council facilitating the cross-border exchange of information on road safety related traffic offences.

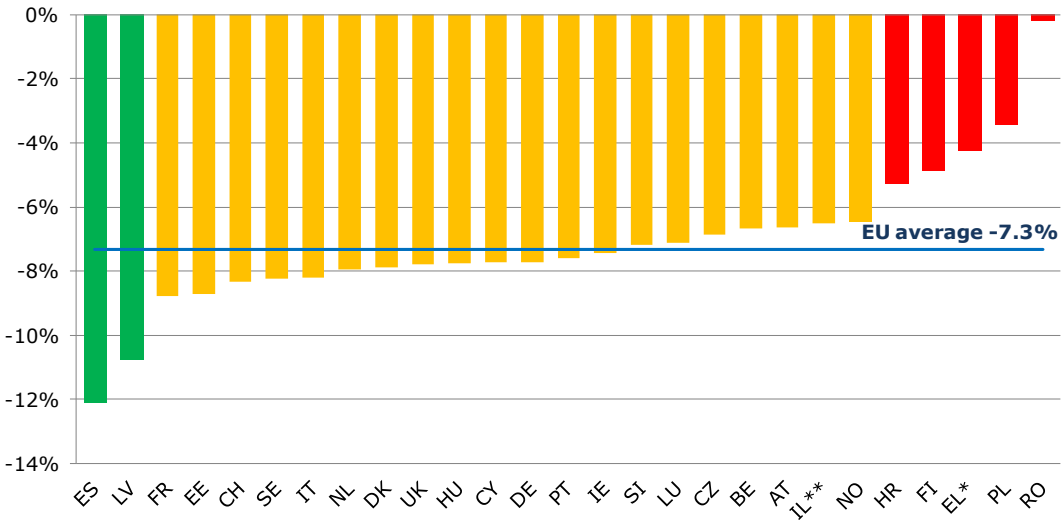
PART I
COUNTRY COMPARISON

1.1 Deaths of car occupants have fallen in all PIN countries since 2001

Spain achieved the fastest pace of reduction in the number of car occupant deaths with an average reduction of 12% per year between 2001 and 2012, followed by Latvia with a reduction of 11%. France, Estonia, Switzerland, Sweden, the Netherlands, Denmark, the UK, Hungary, Cyprus, Germany and Portugal all had average annual reductions above the EU average of 7.3%.

The number of car occupant deaths has decreased since 2001 in all PIN countries but in Romania, Poland, Greece and Finland it decreased at an average annual rate of less than 5%.

Fig. 1: Average annual percentage change in car occupant deaths 2001-2012
EL* (2001-2011), IL** (2003-2012). Limitations of data have prevented the inclusion of BU, LT, SK, MT, RS. See indicator box.



The possibility of losing one's licence through the penalty point system worked as a powerful tool to change behaviour among Spanish drivers.

Explaining Spain's progress

In Spain, between 2001 and 2012 road deaths were cut by 66% and road deaths among car occupants fell by 72%. The large reduction in deaths of car occupants is linked to a large overall reduction in road deaths and the measures put in place to contribute to this reduction, including substantial investment in modern high-speed roads and other road infrastructure.

The introduction of the penalty point system in 2006 was widely communicated to Spanish drivers who became more aware of the negative consequences of drink driving, speeding, not wearing seat belts or using mobile phones on the roads. The possibility of losing one's licence through the penalty point system worked as a powerful tool to change behaviour among Spanish drivers. The reform of the Criminal Code in 2007 established as criminal offences drink driving (BAC above 1.2g/l or 0.6g/l for novice drivers), gross speeding and driving without a licence.

In parallel, enforcement against major traffic offences was intensified in combination with communication campaigns and press coverage. As a result, seat belt wearing rates increased from 74% in 2005 to 91% in 2012 on front seats and from 51% to 81% on rear seats (see Figs. 8 and 9). In 2012, 5.7 million random breath tests were carried out (compared to 2 million in 2003). Drivers tested positively for alcohol

decreased from 4% in 2003 to 1.7% in 2012. Safety cameras were progressively installed along the national road network. 615 cameras were installed at the end of 2012 (failing to reach the objective set in the Road Safety Plan 2008-2012 to install 2000 cameras by the end of 2012). Mean speed decreased sharply on motorways between 2004 and 2008 but rose between 2010 and 2012 from 110km/h to 113km/h on motorways while it decreased from 109km/h to 104km/h on autovías (high speed roads also limited to 120km/h).

Impressive reductions in Latvia

The developments in Spain parallel steps taken earlier in Latvia. Between 2001 and 2012 road deaths were cut by 68% and road deaths among car occupants by 66%. These substantial reductions are likely to have been helped by the implementation of a comprehensive set of measures including the introduction of a penalty point system in 2004.

Points as well as fines for major traffic offences such as speeding, drink driving and failure to use a seat belt, child restraint or motorcycle helmet, were increased in 2005 and 2006. Police checks on major traffic offences have slowly increased, in particular to tackle drink driving.

But the perceived risk of being caught is still too low. The 2007-2013 plan aimed to increase the number of speed checks and random breath tests but failed to give any specific targets. The introduction of speed cameras has also been delayed. Seat belt wearing rates have increased since 2005 but are still as low as 83% on front seats and 39% on rear seats (Figs. 8 and 9).

"Our government has been funding three to four big road safety campaigns a year. As a result, attitudes towards road safety are slowly starting to change amongst the population. Still, we urgently need more enforcement, in particular to combat speeding, to reduce the high risk of dying when driving a car on Latvian roads. The new Road Safety Plan 2014-16 foresees the setting-up of 20 safety cameras a year to reach 100 at the end of 2017". Aldis Lama, Ministry of Transport, Latvia.

INDICATOR

Countries are compared according to the progress in reducing deaths among car occupants, using as the indicator the average annual percentage change over the years 2001 to 2012 (Fig. 1). The numbers of deaths were retrieved from the EU's CARE database when available and completed or updated by the PIN Panellists. No data were received from Bulgaria. Data on car occupants killed have only been available in Lithuania and Serbia since 2010 and in Slovakia between 2005 and 2010, which has prevented the inclusion of those countries in relevant figures or EU averages and trends.

Countries are also compared according to the numbers of car occupant deaths per billion vehicle-km travelled by cars (Fig. 3). This indicator of risk for car occupants could not be calculated for Greece, Italy, Cyprus, Luxembourg, Hungary, Romania, Slovakia, Lithuania or Serbia due to the lack of data on the number of km travelled by cars. Estimations of vehicle-km travelled were supplied by the PIN Panellists. Countries use various methodologies to estimate them.

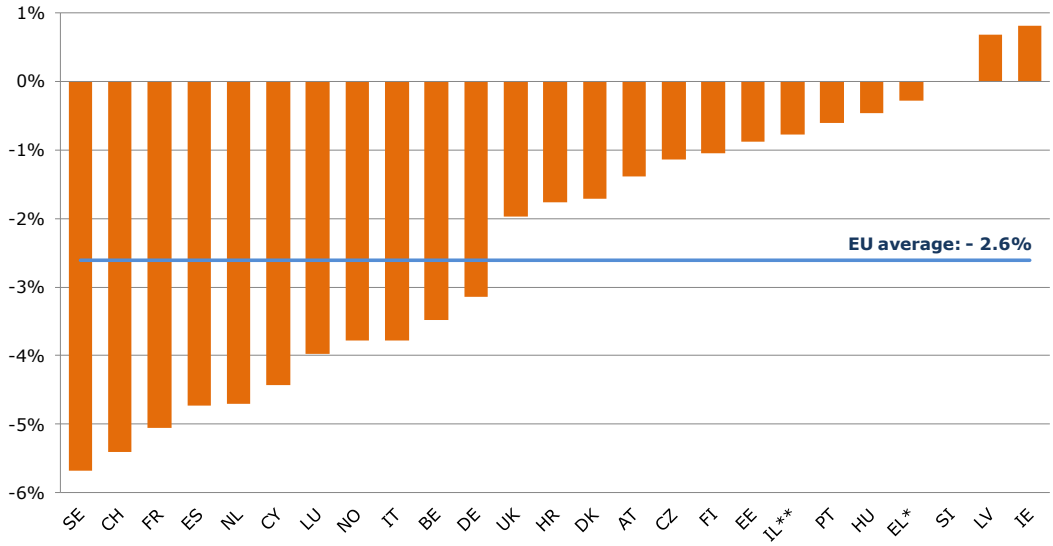
Figs. 5, 6, 7, 11 and 13 show the percentage breakdowns in deaths by gender, age, type of collision and type of road.

Data are available for all PIN countries in the Annexes and in the background tables which can be downloaded from the ETSC website in Excel format: www.etsc.eu/PIN

1.2 Road deaths among car occupants have fallen faster than deaths among other road users in most PIN countries since 2001

On average in the EU27, the numbers of deaths among car occupants have fallen faster than deaths among other road users (Fig. 2). In Sweden, Switzerland and France, the annual average reduction in car occupant deaths is more than 5 percentage points greater than the corresponding reduction in other road deaths. In Poland, Romania, Ireland and Latvia, deaths among other road occupants have fallen slightly faster than deaths among car occupants.

Fig. 2: Amount by which the average annual percentage reduction in car occupant deaths differs from the average annual percentage reduction in all road deaths over the period 2001-2012.
EL* (2001-2011), IL** (2003-2012). Limitations of data have prevented the inclusion of BU, LT, SK, LT, RS. See indicator box.



Sweden: safer cars, better infrastructure, lower speeds

In Sweden, road deaths among car occupants were cut by 59% between 2001 and 2012. Thanks to the monitoring of a series of targeted indicators, Swedish experts attribute these impressive results primarily to improved vehicle safety and safer infrastructure, whose effects have been augmented by reductions in traffic speeds:

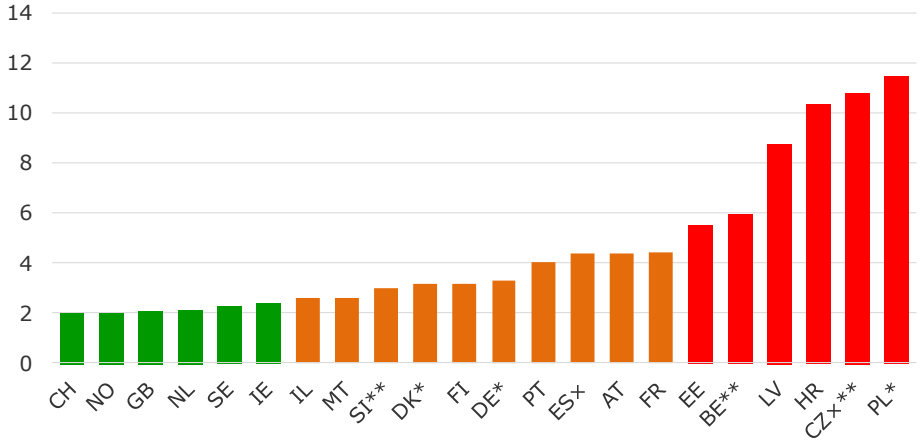
- Between 2007 and 2012 the percentage of new cars sold in Sweden that were models awarded 5 stars by Euro NCAP increased from 66% to 87%. This is estimated to translate into an increase in vehicle-km travelled by 5 star cars of approximately 5% per year. In this way the percentage of 5 star cars in the traffic increased from 20% in 2007 to 51% in 2013.
- The percentage of traffic made up of vehicles with seat belt reminders grew from 10% in 2005 to about 67% today. In parallel seat belt wearing rates in front seats have gone up from 92% in 2005 to 98% in 2012 (Fig. 8). Yet in the rear seats Sweden underperforms with only 87% of passengers buckling up (Fig. 9).
- On roads limited to 90km/h or more the percentage of traffic volume on sections with median barriers (that separate vehicles travelling in opposite directions) has increased from about 50% in 2007 to 72% in 2013.
- The mean speeds on national roads decreased from 82km/h in 2004 to 78km/h in 2012.

"Sweden initiated a Management by Objective policy. Progress in relation to 10 indicators is monitored and presented to stakeholders annually. To reach each objective, contributions from different actors are needed. The success in reducing deaths among car occupants is showing that combined efforts from the Swedish Transport Administration, car makers, the Police and all other actors, are bearing fruits". Anna Vadeby, National Road and Transport Research Institute (VTI), Sweden.

1.3 Car occupant deaths in relation to vehicle-distance travelled

Fig. 3 shows car occupant deaths per billion vehicle-km travelled for the 22 countries where up-to-date data on vehicle-km travelled are available.

Fig. 3: Car occupant deaths per billion vehicle-km in 2012 (or latest year available) *2011; **2010. Data on vh-km available only outside urban areas in Spain and only for national roads outside urban areas in the Czech Republic.



Car occupants in Switzerland, Great Britain, the Netherlands, Sweden, Norway and Ireland enjoy a lower level of risk than car occupants in other countries collecting data on vehicle-km travelled[3].

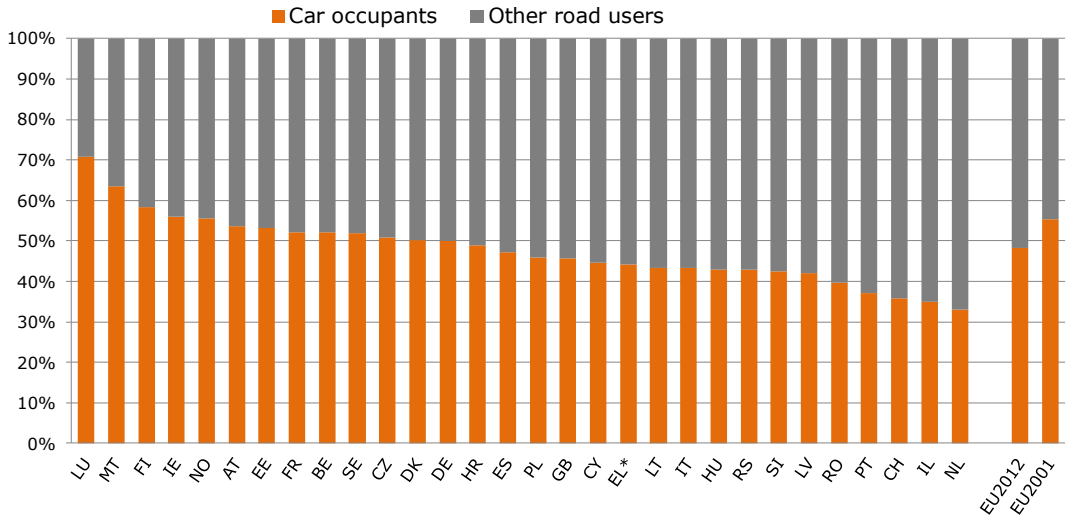
"We should not feel complacent. Continuous efforts and dedicated new measures are needed if we want to continue reducing deaths and serious injuries among car occupants. No magic solution is readily available to tackle distraction due to increased use of mobile phones and other devices, fatigue or driving under the influence of prescribed or illegal drugs". Stefan Siegrist, Swiss Council for Accident Prevention.

"In the Netherlands we have successfully implemented the Sustainable Safety approach to infrastructure design. Many high risk sites have been removed and the road system re-designed to mitigate human errors as much as possible. Together with improved car safety, this has contributed to create a safer environment for car occupants." Henk Stipdonk, SWOV.

1.4 The share of car occupants killed among total road deaths varies greatly between countries

In the EU as a whole, car occupants killed represented 48% of all road deaths in 2012, compared with 55% in 2001 (Fig. 4). The share of car occupant deaths is decreasing, following faster reductions in car occupants killed than other road users.

Fig. 4: Car occupant deaths as a percentage of all road deaths by country. Average of the years 2010-2012. *EL (2009-2011)



[3] The reader should bear in mind that comparison is hampered because of the differences in methods of collecting data on vehicle-km travelled.

Road deaths among car occupants represent and between 70% and 60% in Luxembourg and Malta. In the Netherlands, Israel, Switzerland, Portugal and Romania road deaths among car occupants account for less than 40% of all road deaths. This can be partly explained by differences in the mix of road users.

"A relatively large share of road deaths are cyclists, which relates to the large share of cycling in distance travelled in the Netherlands. Hence the share of car deaths is relatively small in the Netherlands". Henk Stipdonk, SWOV

"The share of car occupant deaths is relatively small in Israel due to the relatively low level of motorisation." Shalom Hakkert, Ran Naor Foundation for Road Safety Research

1.5 Characteristics of car collisions

On average in the EU 43% of car occupant deaths happen in single vehicle collisions, 26% in head-on collisions, 19% in side-impact collisions and 6% in rear-end collisions (Fig. 5). The share of car occupant deaths in single vehicle collisions is highest in Belgium, Switzerland, Cyprus and the Netherlands. Yet comparison is difficult because of the differences in methods of collecting data on characteristics of collisions.

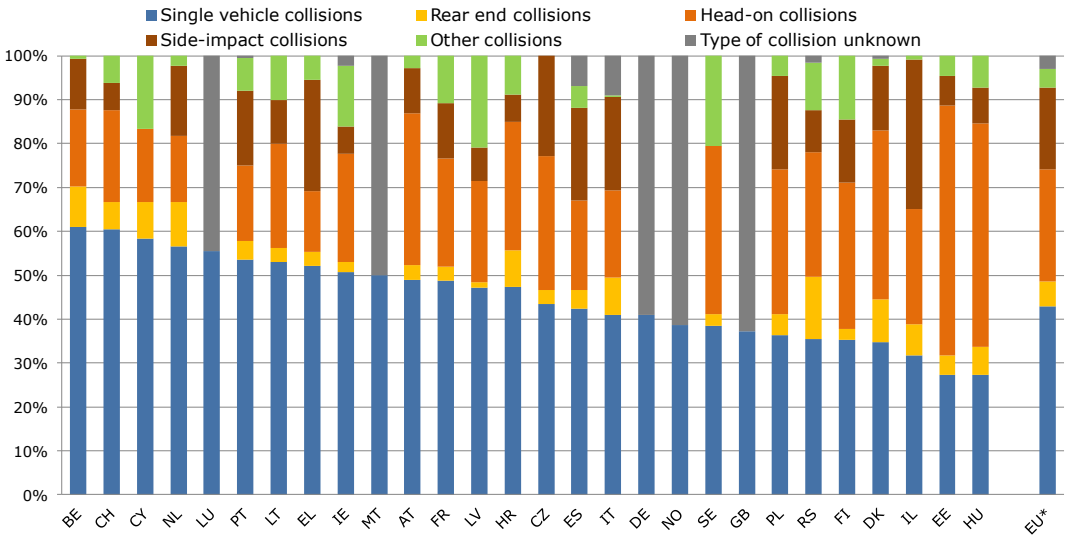


Fig. 5 Car occupant deaths in single vehicle collisions, rear-end, head-on, side-impact and other collisions in 2010, ranked by deaths in single vehicle collisions among all car occupants deaths.

The implementation of the Dutch "Sustainable Safety" approach to the traffic system has reduced the probability of a collision between two vehicles.

"Roundabouts, intersections with traffic lights, a high density motorway and provincial road network equipped with median barriers and other infrastructural improvements were effective in reducing the probability of a two vehicle collision. However safe your infrastructure, it is always possible to drive too fast and miscalculate the curvature of the next curve and end up colliding with, say, a tree. Many of those collisions are fatal, and they are now the majority of fatal car collisions." Peter Mak, Ministry of Transport, the Netherlands.

1.6 What kinds of road users are being killed?

Male drivers represented 56% of people killed in cars in 2010-2012, male passengers 17%, female passengers 14% and female drivers 13% (Fig. 6). Out of the 7560 males killed in cars, 77% were driving and 23% were passengers, while out of the 2900 females killed in cars, 49% were driving and 51% were passengers.

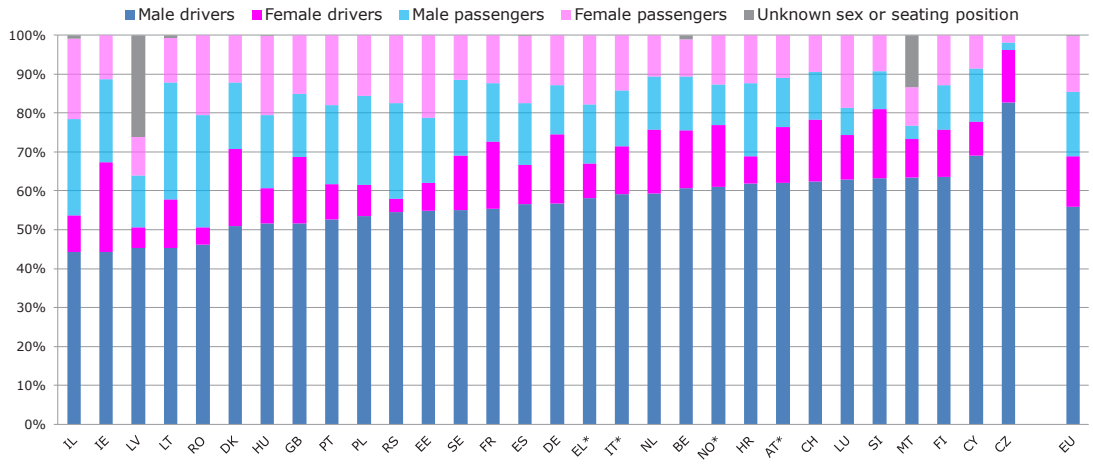


Fig. 6. Killed car drivers and passengers by gender, ranked by the share of male drivers among the total car occupant deaths. Average of the years 2010-2012. *2010-2011. EU: EU28 except UK, BG and SK.

There is extensive evidence to show that men have a higher rate of collisions than women, in particular young men (Fig. 7). The difference in terms of the number of deaths resulting from road collisions is similarly marked. In terms of the three main risky behaviours on the roads (speeding, drink driving and failure to wear a seat belt), a higher incidence of these behaviours was observed among males than among females in a number of research papers[4].

MALE DRIVERS

REPRESENTED 56% OF PEOPLE KILLED IN CARS IN 2010-2012

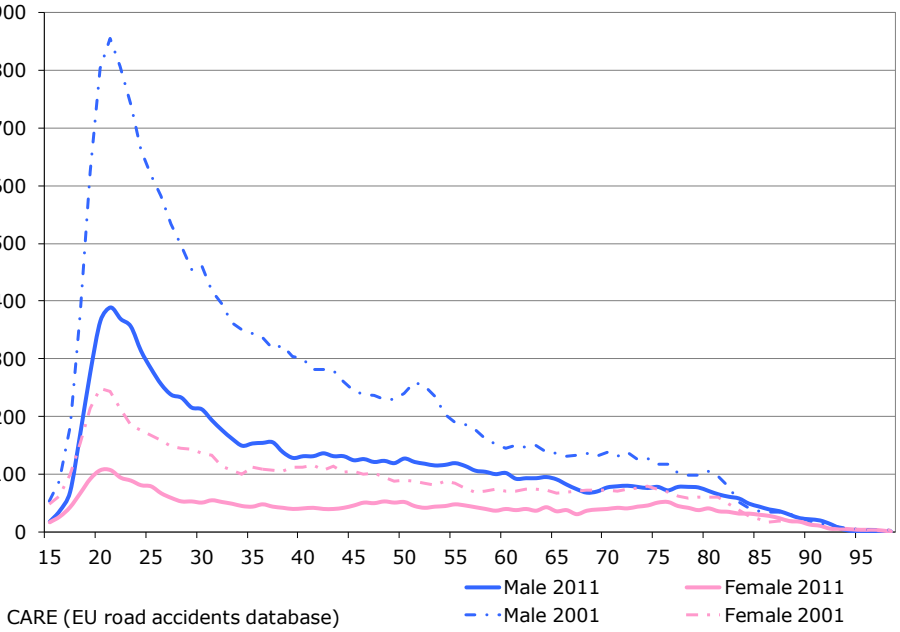
There is extensive evidence to show that men have a higher rate of collisions than women, in particular young men.

ETSC Recommendations to Member States

- Adopt strong legislation and achieve strict enforcement in particular against speeding, drink driving and the non-use of seat belts where male drivers are over-represented[5].
- Conduct awareness campaigns encouraging passengers, in particular female passengers, to refuse to get into a car with a driver who is likely to drive dangerously.
- Improve training systems to take account of the different trajectories of learning and gaining experience among young male and female drivers.

[4] ETSC (2013), 7th PIN report, Chapter 3, Risk on the roads : a male problem? The role of gender in road safety.
[5] Further ETSC Recommendations to tackle gender differences in road safety are available in ETSC (2013).

Fig. 7: Male and Female car occupants' deaths by age (>15 years) in 2011, with 2001 for comparison (dotted lines).



ETSC Recommendations to Member States and EU institutions

- Support research on the adaptability of occupant protection devices to the biomechanical characteristics linked to age and gender of the occupant.
- Support research in gender-specific needs in rehabilitation following a road collision.

PART II.
SAFER BEHAVIOUR, SAFER VEHICLES AND SAFER INFRASTRUCTURE

Experience from the best performing countries and those that are progressing fastest suggests that higher reductions in deaths among car occupants are associated with a combination of countermeasures, including enforcement coupled with stricter sanctions, improved passive and active vehicle safety and infrastructure safety.

2.1 Progress in tackling the three main killers: speeding, drink driving and failure to wear a seatbelt

Progress in fighting speeding and drink driving and in increasing seat belt use can be rapid and save thousands of lives.

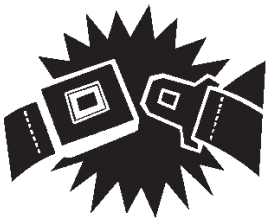
Speeding, drink driving and failure to wear a seat belt are three of the main risky behaviours on the roads. The new PIN country rankings on these dangerous behaviours are an update of the rankings published in the 2007 and 2010 PIN Reports. This new analysis comes at a crucial time when Member States are implementing the Cross Border Enforcement Directive. This legal milestone will help provide an important link in the enforcement chain by enabling automated information exchange by competent authorities to follow up traffic offences committed by vehicles registered anywhere in the EU[6].

Measures to tackle these three main risky behaviours on the roads have been at the core of road safety policy for decades and significant progress has been made since 2001. Experience from countries improving the fastest shows that progress in fighting speeding and drink driving and in increasing seat belt use can be rapid and save thousands of lives. But there is still high potential in addressing these three longstanding areas of road safety.

ETSC estimates that:

- If average driving speed dropped by only 1km/h on all roads across the EU, about 1300 road deaths could be prevented each year, about 800 of these on rural roads, some 400 on urban roads and around 80 on motorways.
- If, as estimated by the EC, 25% of road deaths, i.e. about 7000 in 2012, occur in drink driving collisions, and at least 80% of these could have been prevented if all drivers had been sober[7], then at least 5600 deaths per year could be prevented by eliminating drink driving.
- Across the EU, an estimated 8600 occupants of cars survived serious collisions in 2012 because they wore a seat belt. Another 900 deaths could have been prevented if 99% of all occupants had been wearing a seat belt, a rate that could be reached with seat belt reminders.

[6] http://etsc.eu/faq-eu-cross-border-enforcement-directive/ and http://etsc.eu/road-safety-
[7] As indicated by the estimate that the risk of a fatal collision when driving with a blood alcohol concentration of 0.5g/l is 5 times that when sober.



The seat belt remains the single most effective safety feature in vehicles.

2.1.1 Good progress in seat belt use in front seats

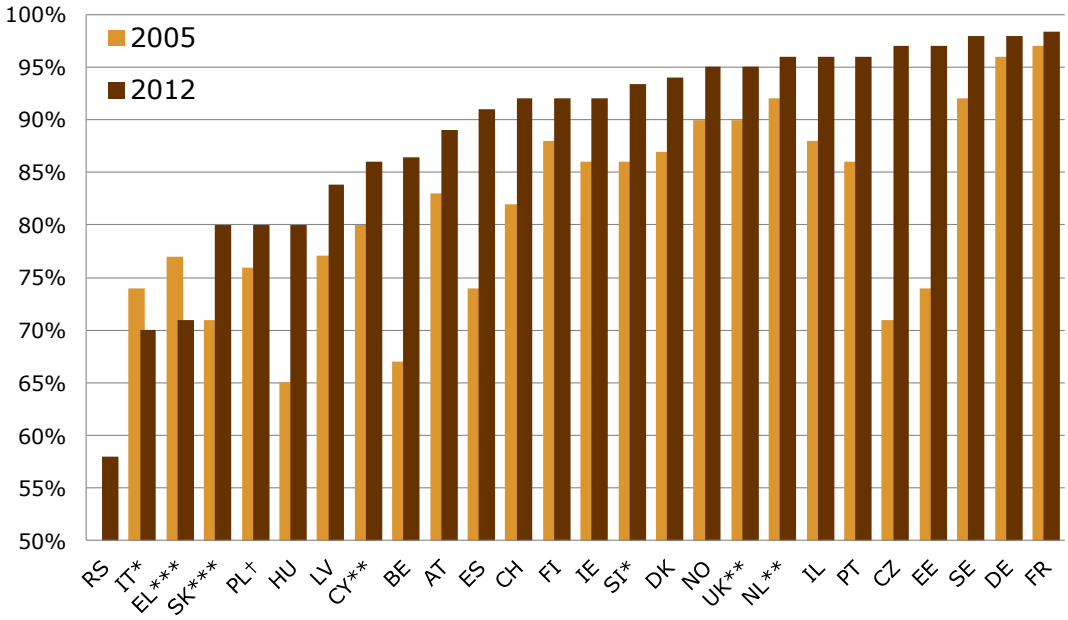
The seat belt remains the single most effective safety feature in vehicles. Moreover, other important safety features such as airbags work as designed only if occupants are restrained by their seat belts. ETSC estimates that 8650 occupants of light vehicles in the EU survived serious collisions in 2012 alone because they wore a seat belt. Progress has been made in both front-seat wearing and rear-seat wearing in all countries monitoring seat belt use. Yet, although some progress has been made, Eastern and Southern European countries still underperform.

Despite the legal obligation to wear a seat belt across the EU28[8], seat belt use in cars in the EU is estimated to be only 88% for front seats (Fig. 8) and as low as 74% for rear seats in the countries who are monitoring wearing (Fig. 9). ETSC estimates that another 900 deaths could have been prevented if 99% of occupants had been wearing a seat belt, a rate that could be reached with seat belt reminders on all car seats[9].

a) Seat belt wearing in front seats

Among the countries monitoring seat belt wearing over recent years, France, Germany and Sweden have the highest seat belt wearing rates with 98% drivers and front passengers buckling up (Fig. 8), followed by Estonia and Czech Republic with 97%. Seat belt use in front seats increased most between 2005 and 2012 in the Czech Republic, Estonia, Belgium, Spain, Hungary, Switzerland and Portugal.

Fig. 8: Seat belt wearing rates in front seats of cars and vans in 2012, with 2005 for comparison
(or the closest year available) *2011, **2010, ***2009, †ETSC estimates based on 2008 survey on urban and rural roads in Poland. PT: 2013 survey by Prevenção Rodoviária Portuguesa.



According to ETSC estimates, at least 27% of car occupant deaths in Italy (448 out of the 1633 people killed in cars) could have been prevented had they all been wearing their seat belts.

"It is shocking to see that, in Italy, less people are wearing their seat belts today than in 2005 when our penalty point system entered into force. This legislative change was combined with a high level of police enforcement and awareness campaigns. Unfortunately the level of enforcement could not be sustained and seat belt checks are not a priority for the Police, especially in the south of Italy. It seems that people don't understand that even at low speeds not wearing your seat belt might cost you your life". Lucia Pennisi, Automobile Club Italy (ACI)

[8] EU Directive 2003/20/EC extends the obligatory use of seat belts to occupants of all motor vehicles, including trucks and coaches when a seat belt is available for the seat.
[9] See ETSC PIN Flash 27 Methodological Note on www.etsc.eu/projects/pin

INDICATOR

The usage rates used in this ranking present a simplified picture of a much more complex phenomenon. In reality, there is no clear-cut division between wearers and non- wearers of seat belts. Many people use the seat belt sometimes but not at all times, depending for example on what speed they are travelling at, what sort of road they are using, whether they are undertaking a longer journey, and whether there are other occupants wearing belts. The proportion of car occupants using seat belts (i.e. the wearing rate) is estimated through roadside counts. Observers are placed at selected locations on motorways, urban and rural roads, where traffic characteristics allow for this type of observation. Data for different road types are then aggregated based on shares of traffic per road type.

The EU-funded research project SafetyNet has developed stringent criteria for comparability of seat belt wearing rates across countries, as well as requirements for their accuracy and reliability[10]. For front seats this country ranking used combined driver and passenger wearing rates. Where only the driver rate was available, the front seat rate was considered to be identical to this rate (as recommended by Hakkert).

Seat belt wearing rates are not regularly collected in Cyprus, Greece, Lithuania, Luxembourg, Malta, Romania and Slovakia. Measurements stopped in the UK and the Netherlands in 2010. Seat belt rates in rear seats are not collected in Belgium and Italy. Seat belt wearing rates were provided by PIN Panellists and are available in the Annexes.

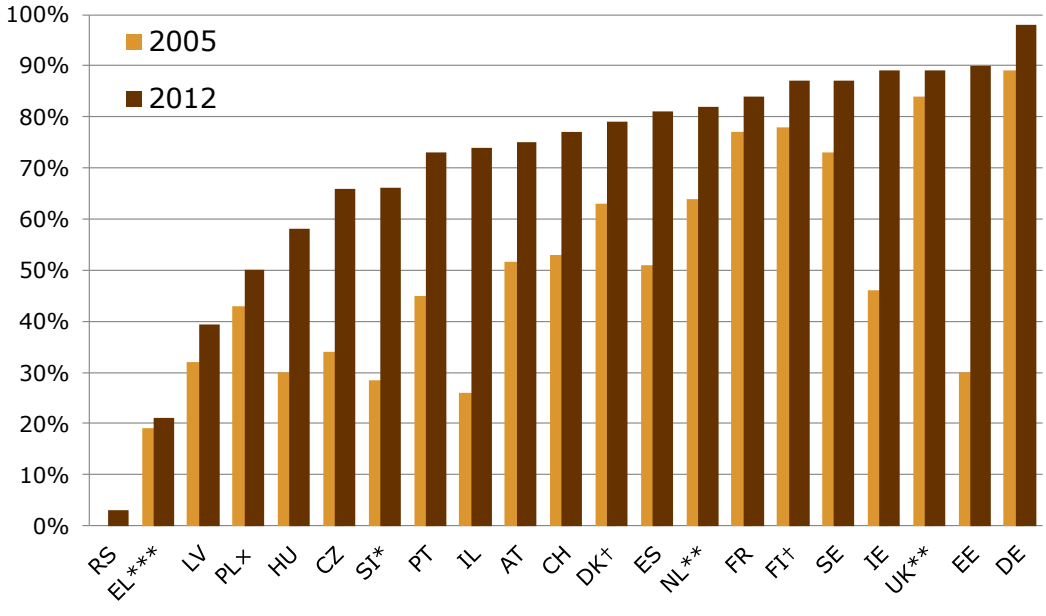
b) Still room for progress in rear seats in most countries

Unbelted rear-seat passengers also significantly increase the risk of death for belted front-seat occupants.

For rear seat passengers, the disparities between countries are even bigger: from 98% in Germany all the way down to 21% in Greece. Seat belt use in rear seats increased most between 2005 and 2012 in Estonia, Israel, Ireland, Slovenia, Czech Republic, Spain and Hungary.

Car occupants underestimate the consequences of not wearing belts in the back. Unbelted rear-seat passengers - who are thrown forward into the back of the front seats – also significantly increase the risk of death for belted front-seat occupants.

Fig. 9: Seat belt wearing rates in rear seats of cars in 2012, with 2005 for comparison. *2011, ** 2010, *** 2009, † 2008. PL urban roads only.



[10] Hakkert et al (2007) Road Safety Performance Indicators Manual, SafetyNet D.3.8

A high proportion of killed car occupants were not wearing their seat belt.

The EU average of 12% of front seat passengers and 26% of rear seat passengers not wearing seat belts in the countries who are monitoring wearing is a cause of concern especially because research has shown that non- wearers are, on average, more likely than wearers to be involved in potentially fatal collisions in which wearing the seat belt would save their life. This is why safety benefits obtained from a given number of percentage points increase in seat belt usage are greatest where the percentage already wearing belts are highest.[11] Increased usage can be achieved with seat belt reminders[12]. Police reports and in-depth accident investigations show that a high proportion of killed car occupants were not wearing their seat belt (from 16% in Ireland to 72% in Greece)[13].

UNECE regulations mandate the fitment of seat belt reminder to front seats only. The voluntary Euro NCAP assessment program scores seatbelt reminder (SBR) systems separately for front and rear seat occupants[14].

ETSC recommendations to EU institutions

- Within the context of the revision of the General Safety Regulation15 extend the mandatory fitment of seat belt reminders as standard equipment to all seats.
- Support the development of restraint systems that adapt to the individual biomechanics of the user and the severity of the specific collision.

ETSC recommendations to Member States

- Apply best practices in increasing the use of seat belts, in particular as set out in the 2004 EC Recommendation on traffic law enforcement, e.g. conduct intensive enforcement actions at least twice a year.
- Increase enforcement of seat belt use in both front and rear seats. Every driver stopped for any reason should be checked for seat belt wearing, as should any passengers.
- Incorporate non-wearing of seat belt as an offence in penalty point systems.
- Collect seat belt wearing rates and data on use of child restraints yearly based on SafetyNet standards and monitor progress.

TISPOL, the European Traffic Police Network, organises Europe-wide seat belt checks twice a year in March and September. The last operation in September 2013 saw policemen across Europe issuing no less than 104,533 tickets for not wearing a seat belt in just one week.

"Unfortunately the number of car occupants we caught breaking the law is not going down. Wearing a seat belt is not just a matter of personal choice. People are dying unnecessarily because they were not wearing a seat belt." Koen Ricour, TISPOL President.

[11] Turbell T et al. (1997) Optimizing seat belt usage by interlock systems (VTI särtryck 270). Swedish National Road and Transport Research Institute, Linköping.
[12] Turbell T, Andersson T, Kullgren A, Larsson P, Lundell B, Lövsund P, Nilsson C, Tingvall C (1997) Optimizing seat belt usage by interlock systems. Swedish National Road and Transport Research Institute.
[13] See data provided by PIN Panellists as regards to the estimation of the percentages of car occupants killed not wearing their seat belt use by country http://etsc.eu/projects/pin/ > PIN Flash 27.
[14] Euro NCAP (2012) Assessment protocol safety assist, version 5.6. http://www.euroncap.com/files/Euro-NCAP-Assessment-Protocol---SA---v5--6---0--198765b7--b3ee-4dde-9401--9b10d585dcce.pdf
[15] http://ec.europa.eu/enterprise/sectors/automotive/safety/index_en.htm

2.1.2 Progress in curbing driving speeds

Speeding is a primary factor in about one third of fatal accidents and an aggravating factor in all accidents where it occurs[16]. Cases of drivers exceeding speed limits are widespread. In countries where data are available, and in free-flowing traffic, between 10 and 50% of drivers exceed speed limits on motorways, between 10 and 60% on rural roads and between 30 and 60% on urban roads. Addressing illegal speeding therefore requires that a large number of non-compliers change their behaviour. Experience shows that there is no silver bullet for managing speeds. It rather takes a combination of measures including credible speed limits, enforcement and education, combined with 'self-explaining' roads and 'self-enforcing' vehicles.

One km/h slower would prevent about 1300 deaths a year

While the risk linked to speed varies across road types, analysis of a wide range of observations using the well-established Power Model[17] indicates that, on average, a 1% reduction in the mean speed of traffic leads to the following percentage reductions in casualties:

Even minor reductions in mean speeds will make an important contribution to reducing traffic deaths and injuries.

- On motorways and rural roads a 2.2% reduction in casualties of all severities, a 3.5% reduction in seriously injured casualties and a 4.6% reduction in deaths.
- On urban roads a 1.4% reduction in casualties of all severities, a 2.0% reduction in seriously injured casualties and a 3.0% reduction in deaths.

Even minor reductions in mean speeds will therefore make an important contribution to reducing traffic deaths and injuries. 'Low level' speeding is often overlooked but has an important role in safety outcomes as it is far more common than driving at very high speeds. Applying the Power Model in this way to current numbers of deaths indicates that if drivers slowed down on average by only 1km/h, about 1300 road deaths per year could be prevented, among them about 800 on rural roads, some 400 on urban roads and around 80 on motorways[18]. In practice, such a reduction would best be achieved mainly by those driving a bit above the mean speed slowing down slightly and those driving fastest slowing down a lot.

a) Some progress on motorways but recent increases cause concern

Among the countries monitoring speed, best progress has been made on motorways, where between 10% and 50% of drivers now exceed the speed limit. In some countries, however most of this progress was made in the early years of the past decade following the deployment of safety cameras in France, Switzerland and Spain, coupled with stricter sanctions like penalty point systems including speed offences and higher fines. More recently Lithuania has taken similar measures. In Great Britain there has been steady progress since 2006, possibly aided by road safety policies in the workplace. Whilst nearly half of drivers in free-flowing traffic exceed the limit of 113km/h (70miles/h) relatively few exceed 130km/h (80miles/h).

b) Mixed progress on rural roads

Progress has been mixed on rural roads. Average speeds have decreased in some countries and increased in others. By 2012 the proportion of cars travelling above the limit was highest in Denmark at 60% and Belgium at 50%. In Austria, 39% of vehicles exceed the limit on roads limited to 70km/h and 31% on roads limited to 100km/h, the default speed limit, and one of the highest in Europe. GB and Lithuania recorded the lowest level of drivers travelling faster than the speed limit on rural roads, with 10% and 17% respectively.

[16] OECD/ECMT (2006), Speed Management.
[17] Elvik R. (2009) The Power Model of the relationship between speed and road safety – update and new analysis TØI Report 1034. This updates the Aarts and Nilsson references.
[18] ETSC PIN Flash 27 Methodological Notes, www.etsc.eu/projects/pin

A combination of mobile and fixed cameras, as well as time-over-distance controls, has proved to be a very useful tool to enforce speed limits.

c) Lack of progress in urban areas

Between 30% and 60% of drivers are travelling above 50km/h on urban roads, where limits have been set to protect vulnerable road users. Only in GB and Austria is the mean speed of cars within the speed limit.

"Speed has always been and will continue to be Poland's number one road safety issue. The past few years the police have been more present on the roads enforcing speed limits. Moreover a speed camera network is being developed. As a result, the public attitude towards speeding is slowly starting to change, especially in urban areas. Yet road deaths are not going down as much as we expected. The National Chamber of Audit in its 2014 report points out that, as Poland has failed to implement automated follow-up procedures, many of the speeding violations go unpunished." Ilona Buttler, Motor Transport Institute.

d) Enforcement of speed limits

Effective speed enforcement leads to a rapid reduction in deaths and injuries. Sustained intensive enforcement that is well explained and publicised also has a long-lasting effect on driver behaviour[19]. A combination of mobile and fixed cameras, as well as time-over-distance controls, has proved to be a very useful tool to enforce speed limits.[20] Improved speed enforcement has been shown to be the single most important factor in the recent French road safety success. The French road safety observatory estimated that 75% of the 31% drop in road deaths between 2002 and 2005 can be attributed to improved speed management following the deployment of safety cameras and the introduction of a fully automated speed enforcement scheme. In a 2004 survey, drivers declared that they drove more slowly, and that the main reason for that was fear of enforcement and of losing points on their driving licence[21].

Yearly numbers of speed tickets per thousand population are the highest in the Netherlands, Austria and Switzerland, where safety cameras have been used extensively. In contrast, being fined for speeding is rather the exception in Portugal, Lithuania, the Czech Republic, Bulgaria, Italy, Slovakia, Sweden, Hungary and Israel[22].

With moderate levels of enforcement but a high perceived risk of being caught thanks to good communication, a Demerit Point System is likely to have an effect on driver behaviour that is stronger than the effect of enforcement alone.[23]

Other elements of a good speed management system include safe and credible speed limits that are in line with the characteristics of the road infrastructure[24].

Table 1: Safe travelling speeds according to possible conflicts between road users. SWOV, Advancing Sustainable Safety.

Road types and mix of road users	Safe speed
Roads with possible conflicts between cars and unprotected road users	30km/h
Intersections with possible transverse conflicts between cars	50km/h
Roads with possible frontal conflicts between cars	70km/h

[19] ETSC (2006), Traffic Law Enforcement across the EU, Time for a Directive.
[20] PACTS (2003), Speed cameras. 10 criticisms and why they are flawed. http://www.slower-speeds.org.uk/files/10myths031220.pdf and SWOV (2009), Speed cameras: how they work and what effect they have. SWOV Fact sheet, http://www.swov.nl/rapport/Factsheets/UK/FS_Speed_cameras.pdf.
[21] Arrouet, J.-P. (2004), Conducteurs Français, vous avez changé. In Circuler autrement 121, May-June 2004.
[22] ETSC (2010), 4th Road Safety PIN report. Chapter 3, Tackling the three main killers on the roads.
[23] Van Schagen I, Machata, K. (2012), The BestPoint Handbook, Getting the best out of a Demerit Point System. EU funded project.
[24] See experience from the Netherlands, Sweden, the UK and many others in ETSC (2008), ShLOW Show me How Slow.

The use of **Intelligent Speed Assistance (ISA)** technology will help to achieve a high level of compliance with speed limits and thereby reduce road deaths substantially[25]. Since 2013 Intelligent Speed Assistance (ISA) has been included in the new Euro NCAP safety rating with both advisory and voluntary active systems being awarded points.

ETSC recommendations to Member States

- Apply best practices in the enforcement of speed limits, including experience in using safety cameras and time-over-distance cameras.
- Promote the introduction of owner or keeper liability as opposed to driver liability to facilitate enforcement of speed limits.
- Incorporate speeding offences in penalty point systems, and make sure that levels of penalty escalate as the level of speeding above a speed limit increases.
- Monitor development of speed patterns (mean speed and 85th percentile) and publish regular overviews of change as experienced by different road users on different types of road.
- Support the introduction of Intelligent Speed Assistance and set up digital map-based information on speed limits.

ETSC recommendations to EU institutions

- Encourage Member States to prepare national enforcement plans with yearly enforcement targets, including on speeding, in line with the EC 2004 Recommendation on traffic law enforcement.
- Propose a maximum speed limit of 120 km/h or less on the TEN-T high-speed networks.
- Encourage Member States to adopt speed limits of maximum 30km/h in residential areas and areas with high levels of pedestrians and cyclists and maximum 50km/h in urban areas.
- Include under the ITS Directive specifications for the collection and maintenance of speed limit data to enable the rollout of ISA.
- Prepare guidelines to support Member States in undertaking this map collection work.

DID YOU KNOW?

Drivers are usually aware of the increased risk of being involved in a fatal collision after drinking but largely underestimate the increased risk of being involved in a fatal collision when speeding. Driving with 0.5g/l BAC increases the risk of a fatal crash by a factor of 5; the same as driving about 50% faster. The increased risk of driving at 75km/h on a 50km/h road, 135km/h on a 90km/h road or 180km/h on a 120km/h motorway is therefore similar to the increased risk of driving with a 0.5g/l BAC.

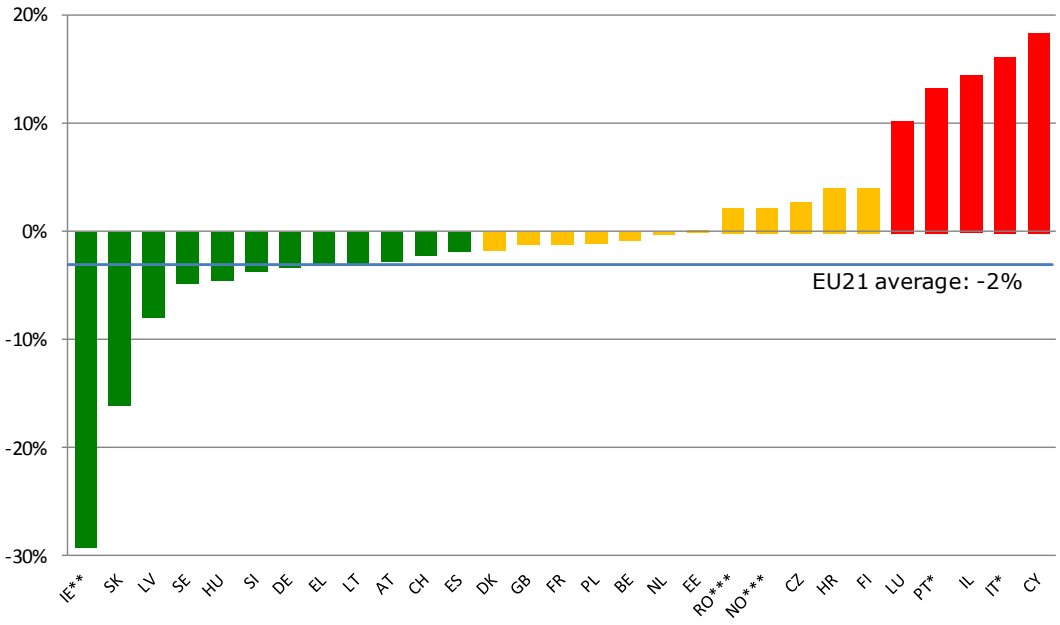
[25] Carsten, O. and Tate, F. (2005) Intelligent Speed Adaptation: Accident savings and cost benefit analysis.

2.1.3 Drink driving

a) Comparison between countries

Fig. 10 shows individual country performance in reducing road deaths attributed to drink driving compared with progress in reducing other road deaths, using each country's own method of identifying alcohol-related deaths. In two thirds of the countries, progress in reducing drink driving has contributed more than its share to overall reduction in road deaths.

Fig. 10: Difference between the average annual percentage change in the number of road deaths attributed to alcohol and the corresponding reduction for other road deaths over the 2001-2010 period. *2001-2008, **2003-2007, ***2005-2010. LU excluded as annual numbers of alcohol related road deaths are around 10 or fewer. EU21 average: EU28 excluding BG, IE, IT, LU, MT, PT and RO.



Cutting drink driving key to Ireland's road safety strategy

Reduction in drink driving deaths is at the core of Ireland's success in road safety. The Irish government has shown strong commitment in tackling alcohol at the wheel, introducing a set of measures including, in 2006, mandatory alcohol testing each time a driver is stopped and, in 2007, tougher penalties for drink driving. Further reductions in alcohol-related fatal collisions are expected following two changes in legislation adopted in 2011: lower BAC limits of 0.2g/l for novice and professional drivers including taxi-drivers and 0.5g/l for all other drivers, and mandatory alcohol testing for drivers involved in road traffic collisions[26].

"The change of the BAC limits was coupled with intensive Police enforcement and information campaigns. We have seen a strong support for a lower BAC limit among Irish drivers." Minister Leo Varadkar, Minister for Transport, Ireland.

[26] Data on alcohol related deaths in Ireland are unfortunately not yet available from 2008 onwards.

INDICATOR

Level of deaths attributed to drink driving cannot be compared between countries, as there are large differences in the way in which countries define and record a 'road death attributed to drink driving'. Researchers in the European research project SafetyNet recommend using the definition of "any death occurring as a result of road accident in which any active participant was found with blood alcohol level above the legal limit". National definitions as provided by PIN Panellists are available in the Annexes. While some EU countries adopted the SafetyNet recommended definition, in practice, it seems to be mostly drivers involved in collisions who are tested for alcohol. The extent to which other road users involved in fatal collisions are tested varies considerably among countries[27].

Countries are therefore compared on the basis of developments in deaths attributed to drink driving relative to developments in other road deaths, using each country's own method of identifying alcohol-related deaths (Fig. 10). This ranking has been published previously in ETSC (2012), Drink Driving: Towards Zero Tolerance, updating the rankings published in ETSC (2010) 4th Road Safety PIN Report, Chapter 3 which also mentions the issue of underreporting of drink-driving deaths.

The numbers of deaths attributed to drink driving were supplied by the PIN Panellists in each country and are available in the Annexes. Estimates of the number of deaths attributed to drink driving are not available in Malta, Spain and Sweden. For Spain and Sweden the numbers of killed drivers who tested positive in post-mortem blood alcohol tests were used in their place. Deaths attributed to drink driving are available only from 2004 in Norway and from 2003 to 2007 in Ireland. Italy decided to stop reporting deaths attributed to drink driving in 2009 instead of improving data reporting, leaving the country with no indicator for the effectiveness of its fight against drink driving. The indicator can be updated when data since 2010 for sufficient countries have been assembled.

b) Drink driving enforcement

More and more countries in Europe are adopting legislation for the use of alcohol interlocks in rehabilitation programmes for first-time high-level offenders and for recidivists, as a substitute for driving licence withdrawal.

Consistent and visible enforcement is a powerful deterrent to drink driving. Targeted breath testing coupled with publicity around enforcement increases drivers' subjective perception of being caught. Unfortunately, drivers believe that they are unlikely to be stopped for drink driving: 59% of the respondents to the SARTRE survey declared that they have not been checked for drink driving in the past three years[28].

Police in Finland, Norway and Sweden are most active in the fight against drink driving, with respectively 429, 367 and 287 drivers checked per 1,000 inhabitants in 2010. But, even in these countries, the chance of a driver being breath tested during one year is less than 1 in 5 on average[29].

Alcohol Interlocks are an effective countermeasure in the fight against drink driving[30]. In many EU countries the technology has found its way on a voluntary basis into vehicles which are used for the transport of goods or passengers: the alcohol interlock is used as a quality assurance tool to comply with a company's alcohol and drugs policy. More and more countries in Europe are adopting legislation for the use of alcohol interlocks in rehabilitation programmes for first-time high-level offenders and for recidivists, as a substitute for driving licence withdrawal in punishment for drink driving.[31]

[27] Killed road users are not tested for alcohol in Austria unless the prosecutor requires it. In Belgium, Germany and The Netherlands drivers killed on the spot might not be tested. In Romania, testing might only occur when the Police suspect the presence of alcohol.
[28] SARTRE 4 Social Attitudes to Road Traffic Risk in Europe (2012), European road occupants' risk perception and mobility. http://www.attitudes-roadsafety.eu/
[29] ETSC (2010), 4th Road Safety PIN report. Chapter 3, Tackling the three main killers on the roads.
[30] Alcohol Interlocks are connected to the vehicle ignition system and require the driver to take a breath test in order to drive the car. If the driver is found with alcohol above the legal BAC limit the engine will not start.
[31] See ETSC latest Alcohol Interlock barometer http://etsc.eu/alcohol-interlock-barometer/

ETSC recommendations to Member States

- Consider adopting a zero tolerance approach for drink driving for all drivers[32].
- Intensify enforcement of laws against drink driving by setting targets for minimum levels of alcohol checks of the motorist population, e.g. 1 in 5 motorists should be checked each year.
- Introduce systematic breath testing in all police checks relating to driver behaviour.
- Implement a roadside evidential breath-testing procedure, which will allow the police to test more suspected drink drivers with the same level of human resources.
- Introduce obligatory testing for alcohol for all potentially responsible road users involved in fatal collisions.
- Develop the use of alcohol interlocks in rehabilitation programmes for first-time high level offenders and for recidivists.
- Consider extending the use of alcohol interlocks for certain categories of drivers (e.g. professional and fleet drivers).

ETSC recommendations to EU institutions

- Encourage Member States to prepare national enforcement plans with yearly enforcement targets, including against drink driving, in line with the EC 2004 Recommendation on traffic law enforcement.
- Consider adopting a Directive setting a zero tolerance approach for drink driving for commercial and novice drivers.
- Introduce uniform standards for alcohol interlocks in Europe, and provide assistance to reduce the workload for those countries that wish to introduce the technology.
- As a first step towards wider use of alcohol interlocks, require their use by professional drivers.

2.2 Improved vehicle safety

2.2.1 Improved occupant protection

Occupant protection has improved considerably over the past decade mostly because of car manufacturers' efforts, spurred on by the European New Car Assessment Programme (Euro NCAP), to meet consumer demands for safer cars. When Euro NCAP started to test the crash performance of cars fifteen years ago, the average car was awarded 2 stars for occupant protection. Now almost all cars tested are awarded 5 stars for combined occupant and pedestrian protection. Improved vehicle safety has been demonstrated to make a large contribution to casualty reduction.

Lie and Tingvall estimated in 2002 that an increase in occupant protection from 4 to 5 stars reduces the risk of fatal injury by 12%[33]. Based on the percentage of the total car fleet that cars in their first year of use represent, and the assumption that they are involved in collisions resulting in the same proportion of car occupant deaths[34], ETSC was able to estimate in 2009 under certain other assumptions the number of car occupant deaths prevented thanks to improvements in vehicle passive safety.

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[32] A technical enforcement tolerance level could be set at either 0.1 or 0.2g/l BAC but the message to drivers should be clear: no driving after drinking.
[33] Lie A. and Tingvall C. (2002), How Do Euro NCAP Results Correlate with Real-Life Injury Risks? A Paired Comparison Study of Car-to-Car Crashes in Traffic Injury Prevention, 3:288–293.
[34] Given their relatively higher usage rate but compensated by the lower accident risk of their occupants.

EU legislation on passive safety has not changed to a great extent over the last decade and as a result type approval crash tests have become largely out-dated.

Improvement in occupant protection was estimated in this way to have helped to prevent about 5500 adult car occupant deaths between 2001 and 2008 in the EU-27. Similarly, ETSC estimated that Electronic Stability Control (ESC) helped to prevent some 2500 adult car occupant deaths between 2001 and 2008[35]. Updating these estimates requires further research[36].

Further gains from vehicle safety can be expected to come from most new vehicles being purchased having Euro NCAP 5 star rating and ESC, until most of the fleet is renewed, and thereafter from further vehicle safety technologies yet to come.

The EU has exclusive competence on vehicle safety and vehicle type approval under Article 114 of the EU treaty. Yet EU legislation on passive safety has not changed to a great extent over the last decade and as a result type approval crash tests have become largely out-dated. Considerable room for further improvement has been identified. The European Commission has stated that if all cars were designed to provide crash protection equivalent to that of the best cars in the same class, half of all fatal and disabling injuries could be avoided[37].

ETSC recommendations to EU institutions

- Align type approval crash tests with high performing Euro NCAP crash tests. Euro NCAP provides a great incentive for manufacturers. But strong EU legislation is needed in order also to reach the lower priced segments of the market and address aspects of protection that are less attractive to car buyers.
- Within the context of the revision of the General Safety Regulation prioritise the introduction and further extension of in-vehicle safety technologies linked to the key risk factors which include Intelligent Speed Assistance, alcohol interlocks and seat belt reminders.
- Improve anti-whiplash systems, as identified by the European Commission in its First milestone towards an injury strategy[38]. The implementation of autonomous emergency braking should also be targeted, as an active safety technology that would reduce collisions resulting in whiplash injuries, particularly low speed collisions[39].

ETSC recommendations to Member States

- Provide, in co-operation with the EU, tax incentives for purchase and use of 5 star Euro NCAP cars and cars equipped with Intelligent Speed Assistance, alcohol interlocks and seat-belt reminders. Motor insurers should also be encouraged to take account of these initiatives in the setting of insurance premiums. This should also include information campaigns targeting drivers on the benefits of these technologies.

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[35] ETSC (2009) 2010 on the Horizon, 3rd Road Safety PIN report, Chapter 2, Boosting the market for safer cars across the EU, and ETSC PIN Flash 13 Methodological Note.

[36] ETSC estimations in 2009 PIN report were based on Lie, A. and Tingvall, C. (2002). Since then, Anders Kullgren and Anders Lie made new estimates of the reduced risk of fatal injury of 5 star cars, according to which an increase in occupant protection from 4 to 5 stars reduces the risk of fatal injury by 23%. Based on Kullgren A., Lie A., Tingvall C. (2010) Comparison Between Euro NCAP Test Results and Real-World Crash Data. Five-star rated cars were found to have 69% lower risk of fatal injury than 2-star rated cars. Estimates from the 2010 study relate to the "pre-2009 protocol" and to the occupant protection scores only. Under the new testing regime, vehicles are awarded a single overall score that covers Adult occupant protection, Child occupant protection, Pedestrian protection and a new area of assessment: Safety Assist. Therefore reduced risk of data injury of 5 star cars is potentially even higher than 23%.

[37] European Commission (2003), 3rd Road Safety Action Programme quoted in SafetyNet (2009) Vehicle Safety, retrieved 1 April 2014.

[38] European Commission Staff Working Document, First milestone towards an injury strategy.

[39] Studies have shown that such emergency braking technology reduces collisions by 20-25% and injuries by more than 60% at speed limits below 50 km/h.

- Governmental bodies, local authorities and companies can play an important role by including specific requirements on minimum safety levels in their vehicle purchase and leasing policies. In doing so, public authorities and companies contribute to the market penetration of safer cars by supporting the demand for such cars and for safety technologies, which hopefully in turn will help lowering the price of safety technologies.

2.2.2 Better protection needed in case of side and rear impact

Side impact collisions are common and often result in fatal or serious injury. A study by the European Enhanced Vehicle Safety Committee (EEVC) has shown that victims of side impacts are a frequently injured group who are inadequately covered by existing test procedures[40].

Similarly current European regulations do not assess adult rear-seat occupant protection[41]. A study analysing data of car occupants killed or injured in France between 1996 and 2006 shows that, among belted occupants, rear-seat passengers are twice as likely to be fatally injured as drivers in rear impact collisions[42]. Advanced restraint systems combining seat belt load limiters, airbags and pretensioners have been provided for front-seat occupants, less commonly for rear-seat passengers. Efforts should be made, in particular, to decrease the risk of sustaining potentially fatal abdominal injuries for rear-seat passengers[43] and better protect elderly and young occupants of all sizes.

ETSC recommendations to EU institutions

- Update the existing side impact regulation R95 by revising the current mobile deformable test condition and adopt a new standard for side pole testing.

ETSC recommendations to car manufacturers

- Fit advanced restraint systems combining seat belt load limiters, airbags and pretensioners to all seats not only front seats and offering better protection to elderly and young occupants of all sizes.
- Update existing crash test dummies to allow a proper assessment of the risk of sustaining potentially fatal abdominal injuries for rear-seat passengers.

2.3 Infrastructure safety

In the EU, 69% of all car occupant deaths happen on rural roads (Fig. 11). A higher share of car occupants' deaths occur on rural roads in Latvia, Estonia, Finland, Ireland, France, Sweden, Czech Republic, and Denmark, and to a lesser extent also in Slovakia, Germany, Hungary, the UK, Austria, Slovenia, Luxembourg and Spain. For some of these countries, this can be partly explained by higher traffic volumes on rural roads (e.g. Latvia and Estonia where motorway networks are limited). But for others, although there are sections where the safety quality is good, other sections fall below usual rural road standards.

[40] A EEVC (2005) European Enhanced Vehicle-Safety Status report for the 19th ESV Conference.
[41] Rear occupant assessment will be introduced in 2015 in Euro NCAP tests.
[42] Martin J-L., Lardy A. (2009) Rear occupant protection in passenger cars estimated from police reports, INRETS-Toyota Motor Europe.
[43] Martin J-L. et al. (2010) Specificities of rear occupant protection: analysis of French accident data, International Research Council of the Biomechanics of Injury.

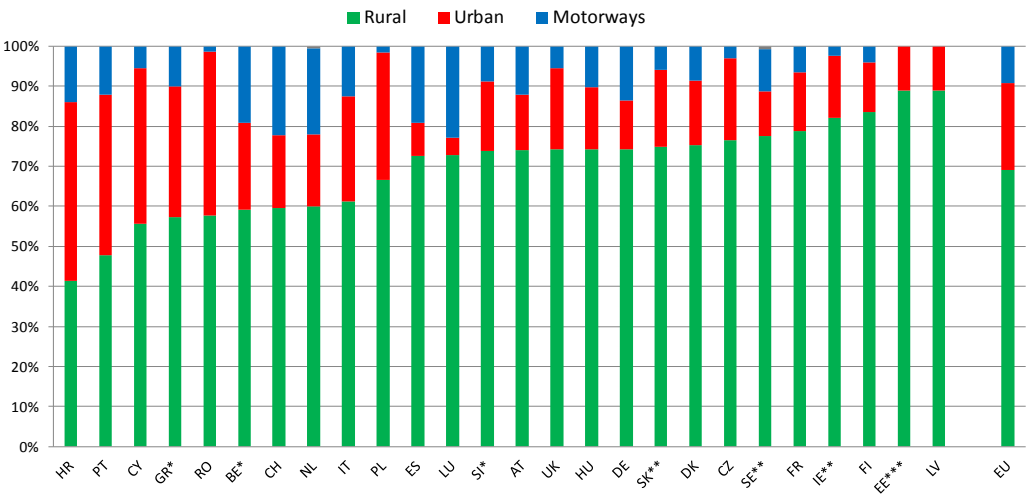


Fig. 11 Percentage share of car occupants deaths by road type in 2012 or latest available year. Source: CARE. *2011, **2010, ***2009. EU EU28 except BG and LI. LV, EE, MT: no motorway. In MT, information whether collisions happened on an urban or rural road is not available in accident statistics.

The European Commission has launched a review of the Directive 2008/96/EC on road infrastructure safety management. ETSC acknowledges that the implementation of the Directive will save lives but also supports the European Commission's recognition that much more benefit could be achieved by extending the principles of this Directive to other parts of the road network. In the Policy Orientations 2011-2020, the European Commission recommended to EU Member States to extend these requirements to the secondary road network.

In a joint 2013 report "Roads that cars can read" EuroRAP and Euro NCAP deplored the fact that inadequate maintenance and differences in road markings and traffic signs are a major obstacle to the effective use of technology in vehicles such as lane departure warning and traffic sign recognition[44]. *"We set demanding standards for 5-star cars. We must now move towards 5-star roads where the quality of road markings and signs are assured to work with modern vehicles"*. Michiel van Ratingen, Euro NCAP Chairman

ETSC recommendations to Member States and road authorities

- Implement the Infrastructure Safety Directive on all major roads; in particular, undertake systematic and periodic road safety inspections for the detection of high risk sites.
- Where possible, separate traffic in opposite directions by a median barrier and install side barriers. Replace dangerous intersections with roundabouts. Where possible, build safe overtaking sections on two lane roads (following the concept of 2+1 roads as in Sweden and other countries).
- Prioritise road markings and road signs in maintenance budgets to achieve optimal performance of Advanced Driver Assistance Systems such as Lane Departure Warning and Traffic Sign Recognition.
- Match road design standards to safe speed limits.

ETSC recommendations to the EU

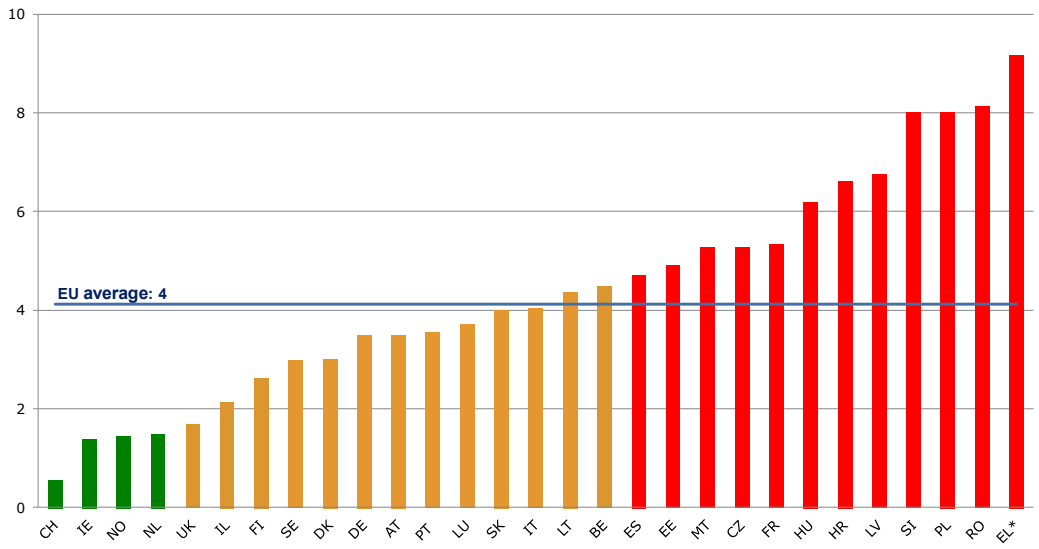
- Extend the instruments of the Infrastructure Safety Directive to cover all motorways, rural and urban roads within the ongoing revision of the Directive.
- Make sure that the principle of conditionality of EU funds for road safety is guaranteed by all DGs and EU Agencies (e.g. TEN-T Agency, DG REGIO). 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.

[44] EuroRAP and Euro NCAP (2013), Roads that Cars can Read - A Quality Standard for Road Markings and Traffic Signs on Major Rural Roads. http://www.eurorap.org/media/186774/roads_that_cars_can_read_2_spread.pdf

PART III
CHILDREN KILLED IN CARS

In 2012 at least 319 children aged 0 to 14 were killed in cars in the EU28. In the EU, there are 4 children killed in cars per million child population (Fig. 12), compared to 32 deaths per million inhabitants aged 15 and above. But children do not benefit from the same level of safety everywhere in Europe. Children in Greece have a 15 times higher probability of being killed as a car passenger than their Swiss counterparts.

Fig. 12: Children killed in cars per million child inhabitants. Average years 2010-2012. *2010-2011.
No child was killed in cars in Cyprus in 2010-2012. No child was killed in cars in Luxembourg in 2010-2011 but two were killed in 2012. No child was killed in cars in Malta in 2011-2012 but one was killed in 2010.



Slovenia has implemented a policy mix of different legislative, educational and infrastructural measures over the past ten years to address the higher risk of children being killed in cars in Slovenia compared to other EU countries. Along with strict legislation, the Armadillo campaign and other projects targeted parents and children in schools and kindergartens[45].

"As a result, the use of child restraint systems has increased from 58% in 2005 to 94% in 2011. Still, there is more to be done if Slovenia wants to reach the level of best-performing countries." Vesna Marinko, Road Safety Authority, Slovenia.

Directive 2003/20/EC requires that all children up to 150cm in height must use a child restraint conforming to UNECE standard Regulation 44.03 appropriate to their size. Yet usage of appropriate child restraints differs greatly across Europe and the failure to use them properly is high, failing to reap all the safety benefits provided by child restraints[46].

To address the problem of incorrectly fitted child car seats, the Road Safety Authority in Ireland has, as part of its 'Child safety in cars campaign', developed the 'Check it Fits' Roadshow which visited locations around the country twice yearly over the past five years.

[45] ETSC (2009) 3rd Road Safety PIN Report, Chapter 3, Reducing Child Deaths on EU Roads.
[46] See additional information provided by PIN Panellists as regards to the use of child seats in their country http://etsc.eu/projects/pin/ > PIN Flash 27.

"Parents and guardians are invited to visit the road show and get their car seat checked by an expert. In five years, over 5000 child car seats have been checked by the experts and the results have shown cause for concern - as many as 3 out of 4 seats may be fitted incorrectly. This year, the RSA is launching a permanent 'Check It Fits' service which will visit locations throughout the country 3 days per week, 50 weeks per year." Michael Rowland, Road Safety Authority, Ireland.

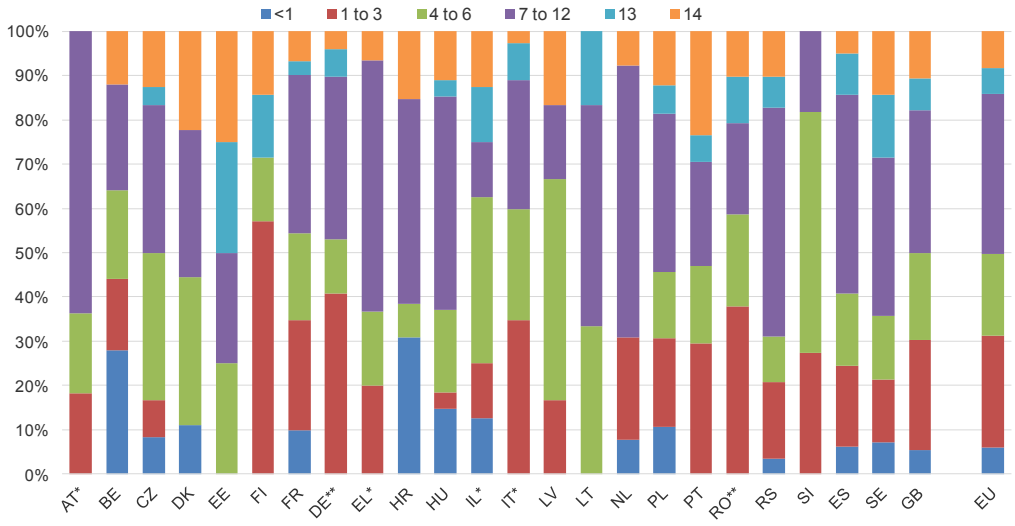


Fig. 13 Percentage share of car occupant deaths by age group among all car occupant deaths at ages under 15 presented in alphabetical order. Average values for 2010, 2011 and 2012. AT, EL, IL, IT (2010-2011); DE, RO (2010). IE, MT, NO, CH excluded because of too low numbers in age groups.

In Spain, out of the 37 children killed in cars in 2012, 9 were not restrained – one baby and 8 aged between 6 and 14 years.

From birth to approximately 12 years of age, a child will grow through 4 stages of car seats. Depending on the type of model selected this will likely mean the purchase of at least 2 or 3 different types of child restraints. The age groups in Fig. 13 reflect the age range of the child seats currently on the market (complying with UNECE regulation R44).

- "Group 0+": From birth to approx. 12-15 months (13kg), Rear-facing seat with 3- or 5-point harness
- "Group 0+/1": From birth to approx. 4 years (18kg), Rear- and forward-facing seat with 5-point harness
- "Group 1": From 9 months to approx. 4 years (9kg-18kg), Can be rear-facing but mostly forward-facing seat with 5-point harness
- "Group 1/2/3": From 9 months to approx. 12 years (9kg-36kg), Forward-facing seat with 5-point harness, which then converts to a booster using the adult seat belt restraint
- "Group 2/3": From 4 years to approx. 12 years (15kg- 36kg), Forward-facing high-backed or backless booster seat using the adult seat belt restraint.

New UNECE regulation 129 to improve further the proper fitment of the child seats as new "i-Size" seats enter the market.

The new UNECE regulation on child seats that entered into force in 2013 strengthens safety standards and adds four new provisions[47]:

- Children must be restrained in rear-facing seats from birth until at least 15 months (instead of 9 months).
- The introduction of 'i-Size', a new simplified classification for child seats based on the height of the child rather than their weight or age, as those categories were found to be confusing for consumers. To achieve the maximum Euro NCAP rating, cars will need to be 'i-Size' compliant. But 'i-Size' seats can already be used in cars with Isofix anchorage points, fitted as standard on the majority of cars since 2007[48].
- Child seats must now be tested for side (lateral) impacts. Previous standards only required frontal impact tests.

Rear-facing restraints offer a higher level of safety over forward-facing seats. Currently, rear-facing restraints are used in Nordic countries up to the age of 3 or 4 years old, whereas in the rest of Europe children travel facing forward already at one year of age or less[49]. Scandinavian-style rearward-facing seats for children up to 4 years (18 kilos) are slowly starting to become available in the rest of Europe.

"The price of child restraints is often a barrier unfortunately, considering among other things that families often have two children and need seats in more than one car. ASAPS, the Italian association of Police officers therefore recently called on the Italian authorities to support a second hand market for child seats providing their safety has been checked. ASAPS also asks that policies designed to support families should also provide for a reduction in the VAT element in the price of seats". Lucia Pennisi, Automobile Club Italy.

The EU Directive 77/388/EEC enhances the affordability of safety restraints by including them in the category of "essential" products on which VAT can be charged at only 5%. Only three EU Member States – Ireland, Portugal and the UK – have passed on the benefit of reduced VAT to consumers[50].

ETSC recommendations to Member States

- Increase enforcement of legislation on use of seat belts and child restraints.
- Conduct nation-wide awareness campaigns educating parents about the importance of child restraints and proper fitment.
- Bear in mind that although new UNECE regulation only requires children to remain rear facing until the age of at least 15 months, experts urge continued use of rear facing seats up to four years old.
- Increase availability and affordability of child restraints, by including them in the category of essential products as EU Directive 77/388/EEC allows.

ETSC recommendations to EU institutions

- Encourage high levels of enforcement of use of seat belt and child safety restraints by Member States.
- Provide consumer information about the new 'i-Size' child seats.

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[47] http://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/2013/R129e.pdf
[48] http://www.i-size.org.uk/
[49] Despite the recommendation to place children up to 4 years (or as long as possible) in a rear-facing seat in Sweden, a 2010 observational study of 5000 children aged 0–10 years by the National Society for Road Safety (NTF) revealed that 6% of the 1-year-old infant were travelling forward-facing, 20% of the 2-year olds, 60% of the 3-year olds and 93% of the 4-year olds.
[50] European Child Safety Alliance (2012), Child Safety Report Cards. Israel charges 0% customs tax for child safety seats.

ANNEXES

Table 1 (Fig. 1). Car occupant deaths and average annual percentage change between 2001 and 2012

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Annual average % change between 2001 and 2012
ES	3,143	3,104	3,211	2,691	2,390	2,095	1,824	1,494	1,260	1,194	976	872	**-12.1%**
LV	214	246	223	228	201	182	203	167	116	91	78	72	**-10.7%**
FR	5,283	4,865	3,689	3,369	3,065	2,627	2,460	2,213	2,171	2,117	2,062	1,882	**-8.8%**
EE	104	134	96	88	99	116	126	70	61	44	56	42	**-8.7%**
CH	245	274	260	232	178	156	162	156	136	129	119	104	**-8.3%**
SE	346	357	345	284	271	260	276	233	219	151	159	142	**-8.2%**
IT	3,847	3,653	3,377	3,032	2,830	2,781	2,320	2,115	1,793	1,827	1,661	1,633	**-8.2%**
NL	477	479	482	398	337	323	299	299	288	219	209	218	**-7.9%**
DK	241	246	236	186	169	138	168	196	164	135	106	81	**-7.9%**
UK	1,806	1,832	1,841	1,755	1,742	1,682	1,489	1,312	1,123	871	917	830	**-7.8%**
HU	502	618	640	606	620	630	555	448	386	330	268	253	**-7.7%**
CY	52	53	56	62	53	37	41	35	36	24	35	22	**-7.7%**
DE	4,023	4,005	3,774	3,238	2,833	2,683	2,625	2,368	2,110	1,840	1,986	1,791	**-7.7%**
PT	635	710	631	537	495	373	557	488	335	368	332	256	**-7.6%**
IE	230	200	172	208	222	226	171	160	146	130	95	89	**-7.4%**
SI	107	124	102	124	107	96	126	82	59	44	61	69	**-7.2%**
LU	51	55	33	27	37	24	30	20	26	27	21	22	**-7.1%**
CZ	715	759	798	779	679	567	661	573	497	403	404	368	**-6.9%**
BE	906	787	690	626	624	595	553	479	466	444	458	384	**-6.7%**
AT	570	524	524	480	432	384	378	367	328	292	289	279	**-6.7%**
IL**	n/a	n/a	n/a	198	185	161	178	132	120	126	113	96	**-6.5%**
NO	189	215	192	180	149	160	158	169	143	127	102	86	**-6.4%**
HR	342	307	389	338	322	316	314	304	287	205	215	186	**-5.2%**
FI	262	267	217	221	231	203	241	202	165	159	172	147	**-4.8%**
EL*	803	793	761	775	816	722	771	708	680	545	474	n/a	**-4.2%**
PL	2,438	2,548	2,541	2,459	2,526	2,392	2,582	2,540	2,179	1,853	1,897	1,615	**-3.4%**
RO	933	874	856	1,014	1,068	992	1,096	1,324	1,168	973	779	798	**-0.1%**
BG	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
LT	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	130	134	125	
MT	0	0	0	0	10	7	9	12	18	12	8	6	
SK	n/a	n/a	n/a	n/a	294	282	293	292	182	171	n/a	n/a	
RS	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	278	311	299	
EU[1]	**27,688**	**27,233**	**25,295**	**23,187**	**21,857**	**20,135**	**19,561**	**17,905**	**15,794**	**14,093**	**13,503**	**12,345**	**-7.3%**
PIN[2]	**28,273**	**27,873**	**25,898**	**23,797**	**22,369**	**20,612**	**20,059**	**18,362**	**16,193**	**14,475**	**13,837**	**12,647**	

[1] EU27 except BG, LI and SK. [2] PIN: PIN countries except BU, LT, NO, RS, SK, HR.
EL* (2001-2011), IL** (2003-2012). Limitations of data have prevented the inclusion of BU, LI, MT, SK and RS.

Source: The number of deaths were retrieved from the EU's CARE road safety database when available and completed or updated by the PIN Panellists.

Table 2 (Fig. 3). Car occupant deaths per billion vehicle-km

	Car occupant deaths	Vehicle km travelled by cars	Car occupant deaths per billion vh-km in 2012 or latest available year	
CH	104	52,016	**2.0**	
NO	86	42,896	**2.0**	
GB	801	386,678	**2.1**	
NL	218	102,697	**2.1**	
SE	142	62,806	**2.3**	
IE	89	37,395	**2.4**	
IL	96	36,865	**2.6**	
MT	6	2,300	**2.6**	
SI	44	14,785	**3.0**	2010
DK	106	33,867	**3.1**	2011
FI	147	46,620	**3.2**	
DE	1,986	608,800	**3.3**	2011
PT	256	63,828	**4.0**	
ES[x]	801	200,287	**4.0**	
AT	279	63,787	**4.4**	
FR	1,882	426,300	**4.4**	
EE	42	7,647	**5.5**	
BE	444	75,045	**5.9**	2010
LV	72	8,234	**8.7**	
HR	186	17,995	**10.3**	
CZ[x]	403	37,389	**10.8**	2010
PL	1,897	165,641	**11.5**	2011
EL	474	n/a	**n/a**	
IT	1,661	n/a	**n/a**	
CY	22	n/a	**n/a**	
LT	125	n/a	**n/a**	
HU	253	n/a	**n/a**	
RO	798	n/a	**n/a**	
SK	171	n/a	**n/a**	
UK	831	n/a	**n/a**	
RS	299	n/a	**n/a**	
LT	125	n/a	**n/a**	

[x] Car occupants deaths outside urban areas per billion vh-km outside urban areas.
Estimations of vehicle-km travelled by cars were supplied by the PIN Panellists.
Countries use various methodologies to estimate them. The reader should bear in mind that comparison is hampered because of the differences in methods of collecting data on vehicle-km travelled.

Table 3 (Fig. 5) Car occupant deaths in single vehicle collisions, rear-end, head-on, side-impact and other collisions in 2010.

Ranked by deaths in single vehicle collisions among all car occupants deaths.

	Single vehicle collisions	Car occupant deaths in multiple vehicle collisions			Other collisions	Type of collision unknown
		Rear end collisions	Head-on collisions	Side-impact collisions		
BE	**61%**	9%	18%	11%	1%	0%
CH	**60%**	6%	21%	6%	6%	0%
CY	**58%**	8%	17%	0%	17%	0%
NL	**57%**	10%	15%	16%	2%	0%
LU	**56%**	0%	0%	0%	0%	44%
PT	**54%**	4%	17%	17%	7%	1%
LT	**53%**	3%	24%	10%	10%	0%
EL	**52%**	3%	14%	25%	6%	0%
IE	**51%**	2%	25%	6%	14%	2%
MT	**50%**	0%	0%	0%	0%	50%
AT	**49%**	3%	35%	10%	3%	0%
FR	**49%**	3%	25%	13%	11%	0%
LV	**47%**	1%	23%	8%	21%	0%
HR	**47%**	8%	29%	6%	9%	0%
CZ	**43%**	3%	31%	23%	0%	0%
ES	**42%**	4%	20%	21%	5%	7%
IT	**41%**	8%	20%	21%	0%	9%
DE	**41%**	0%	0%	0%	0%	59%
NO	**39%**	0%	0%	0%	0%	61%
SE	**38%**	3%	38%	0%	21%	0%
GB	**37%**	0%	0%	0%	0%	63%
PL	**36%**	5%	33%	21%	5%	0%
RS	**35%**	14%	28%	10%	11%	2%
FI	**35%**	3%	33%	14%	14%	0%
DK	**35%**	10%	39%	15%	1%	1%
IL	**32%**	7%	26%	34%	1%	0%
EE	**27%**	5%	57%	7%	5%	0%
HU	**27%**	6%	51%	8%	7%	0%
SK	**n/a**	n/a	n/a	n/a	n/a	n/a
SI	**n/a**	n/a	n/a	n/a	n/a	n/a
BG	**n/a**	n/a	n/a	n/a	n/a	n/a
EU*	**43%**	**6%**	**26%**	**19%**	**4%**	**3%**

*EU without BG, DE, LU,MT, SI, SK
Source: EU's CARE database when available and completed or updated by the PIN Panellists.

Tab 4 (Fig 8): Daytime wearing rates of seat belts on front seats of cars and vans from road side independent survey in 2012, with 2005 for comparison.

	2005	2012	or latest available year
RS	n/a	58%	
IT*	74%	70%	2011
EL***	77%	71%	2009
SK***	71%	80%	2009
PL†	76%	80%	ETSC estimates based on 2008 survey on urban and rural roads.
HU**	65%	80%	2010
LV	77%	84%	
CY**	80%	86%	2010
BE	67%	86%	
AT	83%	89%	
ES	74%	91%	
CH	82%	92%	
FI	88%	92%	
IE	86%	92%	
SI*	86%	93%	
DK	87%	94%	
NO	90%	95%	
UK**	90%	95%	2010
NL**	92%	96%	2010
IL	88%	96%	
PT	86%	96%	2013
CZ	71%	97%	
EE	74%	97%	
SE	92%	98%	
DE	96%	98%	
FR	97%	98%	

LU	n/a		
LT	n/a		
HR	n/a		
MT	n/a		
RO	n/a		
SK	n/a		

Source: PIN Panellists

Table 5 (Fig 9): Daytime wearing rates of seat belts on rear seats of cars from road side independent survey in 2012, with 2005 for comparison.

	2005	2012	
RS	n/a	3%	
EL***	19%	21%	2009
LV	32%	39%	
PLx	43%	50%	Urban areas only.
HU	30%	58%	
CZ	34%	66%	
SI*	28%	66%	2011
PT	45%	73%	2013
IL	26%	74%	
AT	52%	75%	
CH	53%	77%	
DK†	63%	79%	2008
ES	51%	81%	
NL**	64%	82%	2010
FR**	77%	84%	2010
FIx	78%	87%	Urban areas only.
SE	73%	87%	Adults only. For children below 15 the wearing rate is 97% in rear seats
IE	46%	89%	
UK**	84%	89%	2010
EE	30%	90%	
DE	89%	98%	

BE	n/a	n/a	
CY	n/a	n/a	
IT	n/a	n/a	
LI	n/a	n/a	
LU	n/a	n/a	
MT	n/a	n/a	
NO	n/a	n/a	
SK	n/a	n/a	
HR	n/a	n/a	

Source: PIN Panellists

Table 6 (Fig. 10): Road deaths attributed to drink driving and the difference between the average annual percentage change in the number of road deaths attributed to alcohol and the corresponding reduction for other road deaths over the 2001-2010 period

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
AT	68	91	82	67	56	55	54	52	46	32	n/a	n/a
BE	109	88	73	35	38	54	60	54	55	49	46	46
HR	193	165	193	204	216	223	219	224	187	152	151	147
CY	10	10	8	24	23	15	16	19	19	26	25	19
CZ	112	157	127	68	71	48	41	85	127	108	n/a	n/a
DK	115	132	105	106	85	73	112	93	75	64	n/a	n/a
EE	56	68	45	44	49	61	81	42	33	16	22	17
FI	82	91	67	84	89	88	91	96	68	64	74	43
FR	2.644	2.319	1.920	1.736	1.532	1.357	1.358	1.206	1.282	1.230	1.220	1.130
DE	909	932	817	704	603	599	565	523	440	342	n/a	n/a
EL	202	149	131	157	177	132	149	116	132	88	101	n/a
HU	167	191	154	188	164	175	161	111	81	61	48	36
IE	n/a	n/a	124	110	102	67	48	n/a	n/a	n/a	n/a	n/a
IL	10	11	10	23	20	28	33	31	19	14	7	8
IT	88	120	144	163	119	156	189	204	n/a	n/a	n/a	n/a
LV	111	160	119	113	96	84	91	58	36	22	26	25
LT	118	91	80	97	106	78	88	63	45	32	n/a	n/a
LU	4	8	7	7	3	9	5	4	5	11	n/a	n/a
MT	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
NL	29	46	32	29	36	22	28	25	27	18	n/a	n/a
NO	n/a	n/a	n/a	n/a	48	35	44	65	42	40	n/a	n/a
PL	425	529	463	423	458	390	461	470	357	271	325	305
PT	46	50	49	32	58	51	65	49	n/a	n/a	n/a	n/a
RO	33	13	24	24	182	205	200	246	218	187	158	210
SK	50	56	54	41	37	49	30	24	19	3	n/a	n/a
SI	128	110	96	116	95	125	n/a	76	59	49	35	43
ES[4]	484	466	516	398	395	364	336	273	277	265	230	216
SE[4]	57	63	66	50	47	46	48	37	41	17	18	24
CH	107	93	106	103	79	58	55	58	56	63	53	57
GB[5]	530	550	580	590	550	560	410	400	380	250	n/a	n/a

Difference between the average annual % change in the number of road deaths attributed to alcohol and the corresponding reduction for other road deaths (2001-2010)		
IE**	-29%	2003-2007
SK	-16%	
LV	-8%	
SE	-5%	
HU	-4%	
SI	-4%	
DE	-3%	
EL	-3%	
LT	-3%	
AT	-3%	
CH	-2%	
ES	-2%	
DK	-2%	
GB	-1%	
FR	-1%	
PL	-1%	
BE	-1%	
NL	0%	
EE	0%	
RO***	2%	2005-2010
NO***	2%	2005-2010
CZ	3%	
HR	4%	
FI	4%	
LU	10%	
PT*	13%	2001-2008
IL	14%	
IT*	16%	2001-2008
CY	18%	

EU*	-2%

* EU28 except BG, IE, IT, LU, MT, PT and RO.

[2] LU excluded as annual numbers of alcohol related deaths are < or around 10.
[3] RO: we considered data only since 2005 when reporting of deaths attributed to drink driving improved considerably.
[4] Killed car drivers who tested positive in post-mortem blood alcohol tests.
[5] Data for the UK is n/a.

Source: National statistics provided by the PIN Panelists in each country, using each country's own method of identifying alcohol related-deaths.
See Table 7 Country definition of road deaths attributed to alcohol
The indicator will be updated when data for 2011 and 2012 for sufficient countries have been assembled.

Table 7: National definition of deaths attributed to drink driving

SafetyNet recommended definition: Any death occurring as a result of road accident in which any active participant was found with blood alcohol level above the legal limit.

	National definition of deaths attributed to drink driving if different to the SafetyNet recommended definition
Austria	SafetyNet recommended definition. However killed road users are not tested for alcohol unless the prosecutor requires it.
Belgium	Driver under the influence of alcohol and drivers who refuse to be tested. Drivers killed on the spot might not be tested.
Cyprus	SafetyNet recommended definition
Croatia	SafetyNet recommended definition. However, drivers or other killed persons on the spot might not be tested.
Czech Republic	SafetyNet recommended definition
Denmark	SafetyNet recommended definition
Estonia	Deaths occurring as a result of a road collision in which at least one driver was found with blood alcohol level above 0.5g/l (legal limit is however 0.2 g/l)
Finland	SafetyNet recommended definition
France	SafetyNet recommended definition
Germany	SafetyNet recommended definition. However, drivers killed on the spot might not be tested.
Greece	Deaths in collisions where a driver was found with blood alcohol level above the legal limit. In practice, however, the Police is not systematically testing drivers for alcohol.
Hungary	Killed car drivers who tested positive in post-mortem blood alcohol tests. Drivers are only tested if they are assumed to be responsible for the collision.
Ireland	SafetyNet recommended definition.
Israel	SafetyNet recommended definition.
Italy	SafetyNet recommended definition. In practice, it seems however that deaths are often attributed to drink driving only when alcohol is considered by the Police officer to be the unique contributory factor of the fatal accident.
Latvia	Deaths occurring as a result of road accident in which at least one driver (excluding moped riders and cyclists) was found with blood alcohol level above the legal limit (0.2 g/l for novice drivers, 0.5g/l for all other drivers)
Lithuania	Deaths occurring as a result of a road collision in which at least one driver was found with blood alcohol level above the legal limit (0.2 g/l for novice and professional drivers, 0.4 g/l for all other drivers)
Luxembourg	From 2001 to 2009: killed persons of accidents where the police suspected the presence of alcohol. As from 2010 on we use SafetyNet recommended definition.
Malta	n/a
The Netherlands	Drivers killed on the spot might not be tested.
Norway	n/a
Poland	SafetyNet recommended definition
Portugal	SafetyNet recommended definition
Romania	Killed people tested for alcohol. Testing might only occur when the Police suspects the presence of alcohol.
Slovakia	Killed people in fatal collision where alcohol was considered by the Police officer to be one of the main contributing factor
Slovenia	SafetyNet recommended definition
Spain	Killed car drivers who tested more than 0.3 g/l in post-mortem blood alcohol tests.
Sweden	Killed car drivers who tested positive (BAC > 0.2) in post-mortem blood alcohol tests.
Switzerland	SafetyNet recommended definition
Great Britain	People killed in a collision where one or more of the motor vehicle drivers or riders involved either refused to give a breath test specimen when requested to do so by the police (other than when incapable of doing so for medical reasons), or one of the following: a) failed a roadside breath test by registering over 0.35g/l of alcohol in their breath. b) died and was subsequently found to have more than 0.8g/l of alcohol in their blood.

Source: definition provided by the PIN Panellists in each country

Table 8 (Fig 11): Percentage share of car occupants deaths by road type in 2012 or latest available year.

	Rural	Urban	Motorways	
HR	40%	45%	16%	
PT	48%	40%	12%	
CY	56%	39%	6%	
EL*	57%	33%	10%	2011
RO	58%	41%	1%	
BE*	59%	22%	19%	2011
CH	60%	18%	22%	
NL	60%	18%	22%	
IT	61%	26%	12%	
PL	67%	32%	2%	
IL	70%	26%	4%	
ES [1]	73%	8%	19%	
LU	73%	5%	23%	
SI*	74%	17%	9%	2011
AT	74%	14%	12%	
UK	74%	20%	5%	
HU	74%	15%	10%	
DE	74%	12%	14%	
SK**	75%	19%	6%	2010
DK	75%	16%	9%	
CZ	77%	20%	3%	
SE**	77%	11%	11%	2010
FR	79%	15%	7%	
IE**	82%	16%	2%	2010
FI	84%	12%	4%	
EE***	89%	11%	0%	2009
LV	89%	11%	0%	
EU	**69%**	**22%**	**9%**	

EU: EU28 except BG and LT.

[1] Autovias are included in motorway's category
Source: EU's CARE road safety database.

Table 9 (Fig. 12) : Children (0-14) killed in cars per million child inhabitants

	Children killed in cars				Average 2010-2012	
	2010	2011	2012	Average 2010-2012	Child inhabitants	Children killed in cars per million child inhabitants
CH	1	1	0	1	1,188,895	0.6
IE	2	2	0	1	971,911	1.4
NO	1	1	2	1	921,003	1.4
NL	4	3	6	4	2,905,548	1.5
UK	16	16	24	19	11,089,170	1.7
IL	6	2	6	5	2,180,667	2.1
FI	3	3	1	2	888,327	2.6
SE	7	3	4	5	1,566,224	3.0
DK	4	3	2	3	994,288	3.0
DE	49	32	34	38	10,931,974	3.5
AT	4	7	2	4	1,234,588	3.5
PT	7	4	6	6	1,595,355	3.5
LU	0	0	1	0	89,710	3.7
SK	6	1	3	3	833,113	4.0
IT	38	34	29	34	8,340,049	4.0
LT	2	3	1	2	456,172	4.4
BE	5	15	5	8	1,861,824	4.5
ES	44	18	37	33	7,008,144	4.7
MT	1	0	0	0	62,394	5.3
CZ	10	6	8	8	1,518,979	5.3
FR	73	69	51	64	12,064,649	5.3
HU	8	6	13	9	1,458,119	6.1
EE	0	3	1	1	203,776	6.2
HR	4	6	3	4	653,592	6.5
LV	2	3	1	2	295,666	6.6
SI	1	4	2	2	290,759	6.8
PL	53	44	43	47	5,819,173	8.0
RO	29	12	34	25	3,077,191	8.1
EL*	22	8	n/a	30	1,632,875	9.2
EU	**394**	**305**	**319**	**339**	**77,983,982**	**4.3**

No child was killed in cars in Cyprus in 2010-2012.
No child was killed in cars in Luxembourg in 2010-2011 but one was killed in 2012.
No child was killed in cars in Malta in 2011-2012 but one was killed in 2010.

Source: EUROSTAT for children population under 15 years old.

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