Raising Compliance with Road Safety Law

1st Road Safety PIN Report

ETSC
European Transport Safety Council

Road Safety PIN

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This report forms 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 they provide. All analysis carried out by the PIN team in ETSC is based upon the data as supplied by the Panellists. This provides 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.

The Road Safety PIN also co-operates closely with the European SafetyNet project. It considers the project's relevant findings when establishing the indicators and evaluating the data. We are particularly grateful to the researchers of the EU FP6 project SafetyNet WP3 for their fruitful co-operation.

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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. Cutting across national and sectoral interests, ETSC provides an impartial source of advice on transport safety matters to the European Commission, the European Parliament and, where appropriate, to national governments and organisations concerned with safety throughout Europe.

ETSC brings together experts of international reputation and representatives of a wide range of national and international organisations with transport safety interests to exchange experience and knowledge and to identify and promote research-based contributions to transport safety.

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Executive Summary

This report provides an overview of European countries' performance in five areas of road safety. It shows how countries have progressed in reducing annual numbers of road deaths between 2001 and 2005, and how they perform in the three key areas of road user behaviour: seat belt use, drink driving and speed. It also gives an overview of the penetration of state-of-the-art seat belt reminders into new passenger cars sold in European countries.

The relevant rankings have been carried out under the Road Safety Performance Index (PIN), which was set up in April 2006 by the European Transport Safety Council (ETSC). They cover 27 countries, including all states that were members of the European Union up to 2007, as well as Norway and Switzerland.

Progress toward the target

The European Union has set itself the target of reducing the number of yearly road deaths by 50% between 2001 and 2010. Comparison of developments up to 2005 shows that some countries have reached reductions of more than 25% during these first four years. This includes **France** (35%), **Luxembourg** (34%) and **Belgium** (27%). **Portugal** reached a 25% drop in deaths, and **Switzerland**, **Sweden** and the **Netherlands** also scored reductions between 24% and 25%. While the first four countries have a medium level of safety, **Switzerland**, **Sweden** and the **Netherlands** have been frontrunners in Europe for some time. This confirms that fast progress in road safety is possible for all countries, whatever their starting point.

Other countries have progressed to a lesser extent. Some countries, including **Lithuania**, **Cyprus** and **Hungary**, have actually recorded an increase in the number of road deaths between 2001 and 2005.

Seat belt use

Using the seat belt reduces the risk of fatal injury by about 50%. This is why the European Union has passed legislation making seat belt wearing obligatory in all seats where belts are available. Yet seat belt usage varies considerably among European countries. Highest levels of seat belt wearing are found in **France**, **Germany** and **Malta**, where over 95% of front seat occupants wear their seat belt. In the **Netherlands**, **Norway**, **Sweden** and the **U.K.** this is between 90% and 95%.

The biggest group of countries, including **Austria**, **Cyprus**, **Denmark**, **Finland**, **Ireland**, **Luxembourg**, **Portugal**, **Slovenia** and **Switzerland,** shows wearing rates between 80% and 90%. Rates between 70% and 80% are reported from **Belgium**, **Czech Republic**, **Estonia**, **Italy**, **Latvia**, **Poland** and **Spain**. **Hungary** has with 67% the lowest rate but it can be expected that countries that do not carry out measurements have even poorer rates. These countries include **Greece**, **Lithuania** and **Slovakia**.

No country has so far achieved a rate of 99% seat belt use across all road types. But studies suggest that seat belt reminders can help to reach this high a use. Also, some countries come close to this rate on their motorways (e.g. **France**). It is estimated that another 2,400 lives could be saved yearly if 99% of drivers used their seat belt in all EU countries.

Drink driving

While the dangers linked to drink driving are fairly well understood, this phenomenon is still widespread in Europe. However, the recording of drink driving crashes and casualties as such tends to be patchy, which makes monitoring of drink driving levels a difficult task.

Levels of deaths related drink driving cannot be compared between countries, as there are large differences in the way in which countries define and record a 'crash related to drink driving'. Countries are therefore compared on the basis of developments in deaths from drink driving crashes, relative to developments in other road deaths, using each country's own method of identifying 'drink driving related crashes'.

The ranking covers 20 European countries. In half of these countries, progress on drink driving has contributed more than its share to overall reductions in deaths over the last decade. This is especially true for the **Czech Republic**, **Belgium**, **Germany** and **Poland**. In the **Czech Republic**, road deaths from drink driving crashes dropped 11.3% faster than deaths from other crashes. For **Belgium**, this figure is 9.4%, for **Germany** 6.2% and for **Poland** 5.6%.

In the other half of countries, changes in drink driving deaths have not contributed their share to overall reductions in traffic deaths. This group includes **Sweden**, **Spain**, **Hungary**, **Slovenia**, **Finland**, **Great Britain** and **Estonia**. In these countries, developments in drink driving deaths have rather slowed down overall progress in reducing road deaths.

Speed

The impact of speed on road traffic crashes has been studied extensively, and measures to reduce speed are known. Yet there is little progress on reducing speeds in Europe. Average speeds and numbers of speed limit violations remain high with only few encouraging signs, notably from **France**, but also from **Belgium** and **Switzerland**, where speeds have decreased recently across all types of road.

In **France**, mean speeds have dropped by 6% to 11%, depending on the road type. In **Belgium**, reductions range from 4% to 6%, and in Switzerland from 3% to 8%. In **Norway**, speeds decreased in built-up areas and on motorways. In the **Netherlands**, there has been a decrease on motorways with a 100 km/h limit.

In **Great Britain**, **Ireland** and **Portugal**, the picture is rather mixed. While there has been a reduction on one type of road, there has been an increase on another. Driving speeds also increased on motorways in **Austria**, and on rural roads in **Estonia**, **Latvia** and **Poland**.

Seat belt reminders

Some countries in Europe reach a high penetration rate of seat belt reminders in new cars. In **Sweden**, nearly 70% of new passenger cars were equipped with seat belt reminders for the driver seat in 2005. In **Luxembourg**, this was 64% and in **Germany** 63%. The proportion of new passenger cars in Europe that are equipped with seat belt reminders for the driver seat is estimated to be 56% (2005). In the **Czech Republic**, **Slovakia**, **Hungary**, **Poland**, **Lithuania**, **Italy** and **Greece**, this is however less than 50%.

The Swedish example shows that governmental bodies, local authorities and companies can help increasing the market penetration of seat belt reminders by including them in their vehicle purchase and leasing policies.

The 1st Road Safety PIN Report concludes that fast progress in road safety is possible in every country in Europe, whatever its starting point. Progress toward the EU target has been fastest in countries with a medium level of safety that have prioritised compliance with key traffic safety rules. Better behaviour in the areas of seat belt use, drink driving and speed – alongside improvement in other areas such as infrastructure and vehicle safety – has a great potential for saving more lives on European roads in the future.

Introduction

Every year, about 40,000 people die in Europe as a consequence of road crashes. Many more are injured. While the number of deaths is falling, studies have shown that faster progress is possible if all effective means are applied (Elvik, Erke 2006).

The European Union has set itself a target of halving the yearly number of road deaths between 2001 and 2010. The European Commission's Mid-term Review of progress toward this target has however shown that Europe is off target and greater efforts are needed (EC 2006), at both the European and national levels.

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. In a series of rankings, the Road Safety PIN ranks countries' performance in all areas of road safety work. The findings are presented in a series of newsletters (PIN Flashes) and discussed in national debates (PIN Talks).

During the first year, the Road Safety PIN has measured countries' performance in five areas. It has shown how countries performed in reducing numbers of road deaths during the first half of the European Road Safety Action Programme (EC 2003). It has also revealed how countries perform in the three key areas of road user behaviour: seat belt use, drink driving and speed. The contributions that progress in these areas has made to overall safety have been shown to vary significantly. To complement the evidence in the area of seat belt use, countries were also compared in relation to the availability of seat belt reminders in new cars.

The five indicators chosen are from different layers of the road safety pyramid (see Fig. 1).

- To measure progress towards the target, accident data – final outcomes – were compared.
- Two so-called safety performance indicators (SPI) – intermediate outcomes – were identified to measure road user behaviour. These are seat belt wearing rates and average speeds. A third indicator for road user behaviour was derived from accident data, i.e.numbers of deaths related to drink driving crashes and other crashes.
- The last indicator was based on a concrete measure – or policy output – to improve compliance with seat belt law, the implementation of seat belt reminders in new cars.

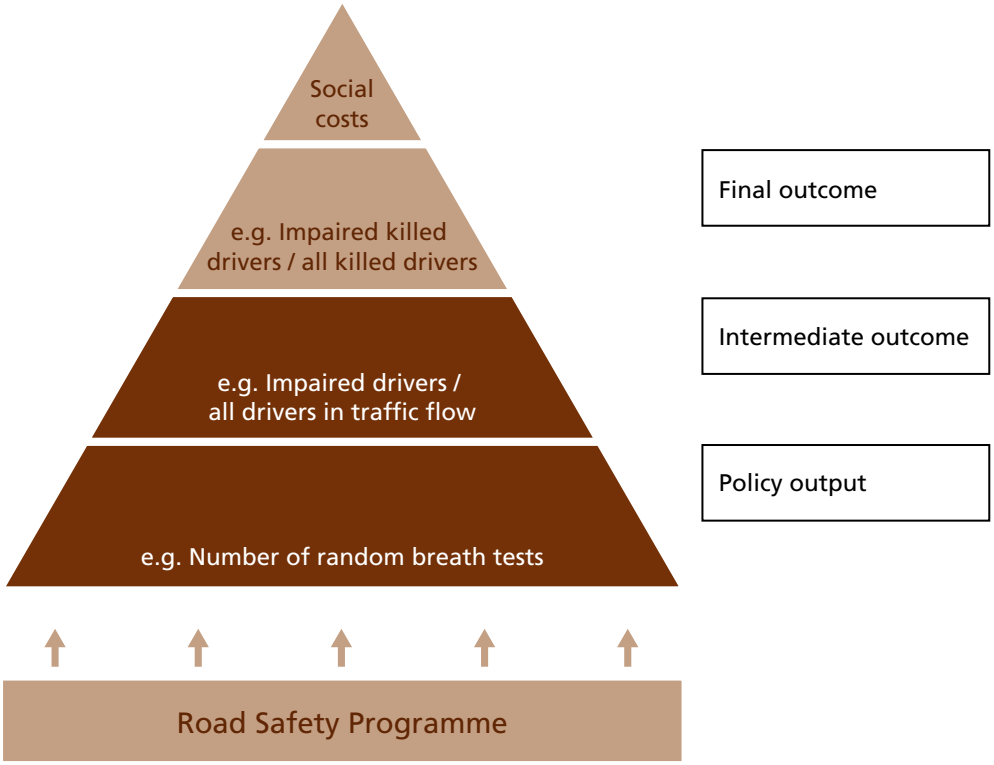


Fig. 1 Road safety target hierarchy for the area of drink driving, based on Koornstra et al 2002

In this first PIN Annual Report, the findings of country rankings based on these indicators are presented in five chapters. In a last chapter, the reader will find conclusions and recommendations from these findings.

1| Progress toward the EU target

EU transport ministers have committed to try to cut annual road deaths by 50% between 2001 and 2010. Accession countries, one by one, adopted similar objectives at a national level, and the EU target was revised to include these countries. How far have we come since then?

A first review carried out by the European Commission has found that overall, traffic deaths in the EU dropped between 2001 and 2005 by only 17-18% (EC 2006). Are Member States dragging their feet? This chapter shows that some countries are contributing fully to the European target, even though the majority are not.

1.1 The EU target is achievable for all countries

This first ranking published under the Road Safety Performance Index (PIN) shows that a number of countries have reached reductions of more than 25% over only four years. **France** has achieved an outstanding 35% drop. In **Luxembourg**, the reduction has been of the order of 34% and in **Belgium** 27%.

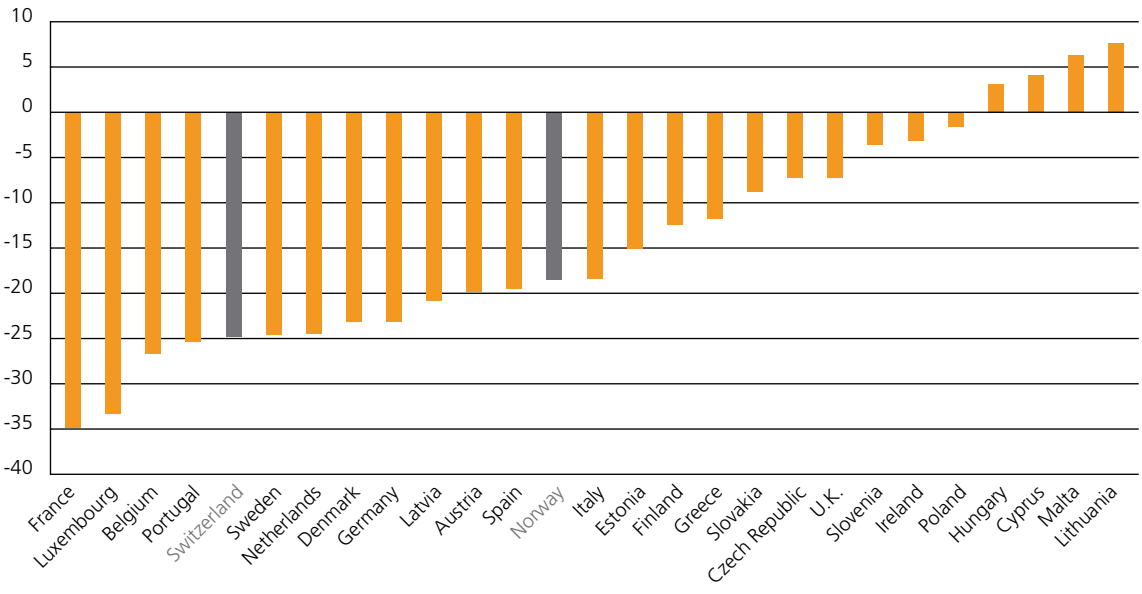


Fig. 2 Percentage changes in road deaths 2001-2005. Source: CARE and national data (see Table 1 in the Annex)[1]

France, **Luxembourg** and **Belgium** all used to be above the average of EU death rates. By 2005, they moved up from the last to the second third of the league, confirming that progress can be achieved quickly by underperformers. This is also true for **Portugal**.

[1] Please note that the data for **Malta** must be treated with caution. In 2005, there has been an accident involving five fatalities, which brought the number of road deaths up to 17 for that year (see Table 1 in the Annex).

But also **Sweden** and the **Netherlands**, as well as **Switzerland**, have been able to improve quickly. These countries have been frontrunners in Europe for a long time. Still, they scored reductions between 24% and 25% over the last four years, showing that it is possible to make great progress even for countries that are top performers already (Fig. 1 and 3).

Denmark and **Germany** each reached a 23% decrease. If the trend of the last years continues, these countries will also be able to cut road deaths by 50% by 2010.

1.2 Some have not progressed

Some countries have not recorded any progress over the last years. In **Lithuania**, which holds the worst safety record overall, the situation has not picked up sustainably since the mid-nineties. **Hungary**, a country that used to be a fast improver in the 1990s, has not recovered from a sharp increase in 2002, when an increase in general speed limits outside urban areas took its toll. In **Ireland**, traffic deaths are on the rise following a positive development in 2002/03.

Poland has not made any noteworthy progress in the last years though there has been improvement in 2005. Against the background of the positive developments in most other countries, Poland's share in the EU's road toll increased from 11% (2001) to 13% (2005). Poland's population represents only 8% of the EU population.

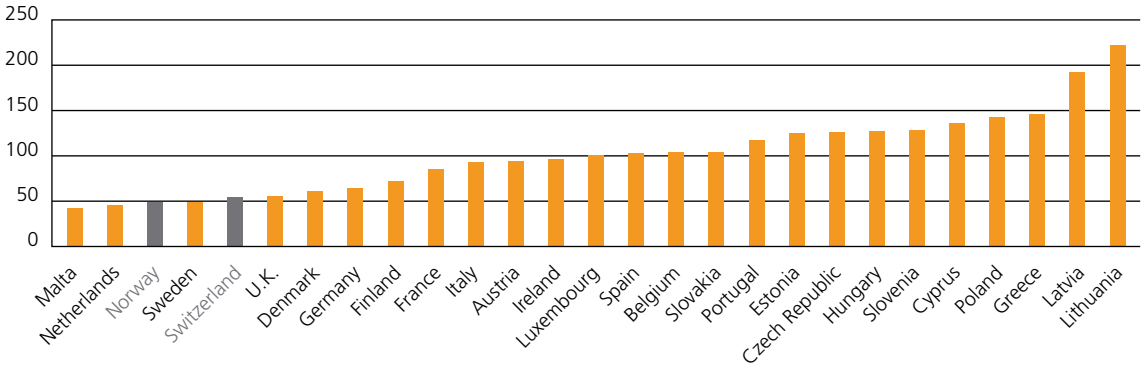


Fig. 3 Road deaths per million population 2005. Source: National data

The indicator

This ranking is based on the best-trusted road safety figure: a count of deaths. In most countries, a person killed in traffic is someone who died within 30 days from injuries sustained in a crash. Some countries, such as Spain and Portugal, use however other definitions, and comparable data are calculated using transformation rules (EC 2006a). France recently changed the rule from 6 days to 30 days. Another problem limiting comparability is that not all fatal accidents are reported (ETSC 2006).

Yet traffic deaths are only part of the problem. Many more people sustain injuries, but these are even harder to compare internationally. Only eight European countries use the same definition regarding severe injuries, and underreporting of hospitalised casualties varies between 30% and 60% (ETSC 2006).

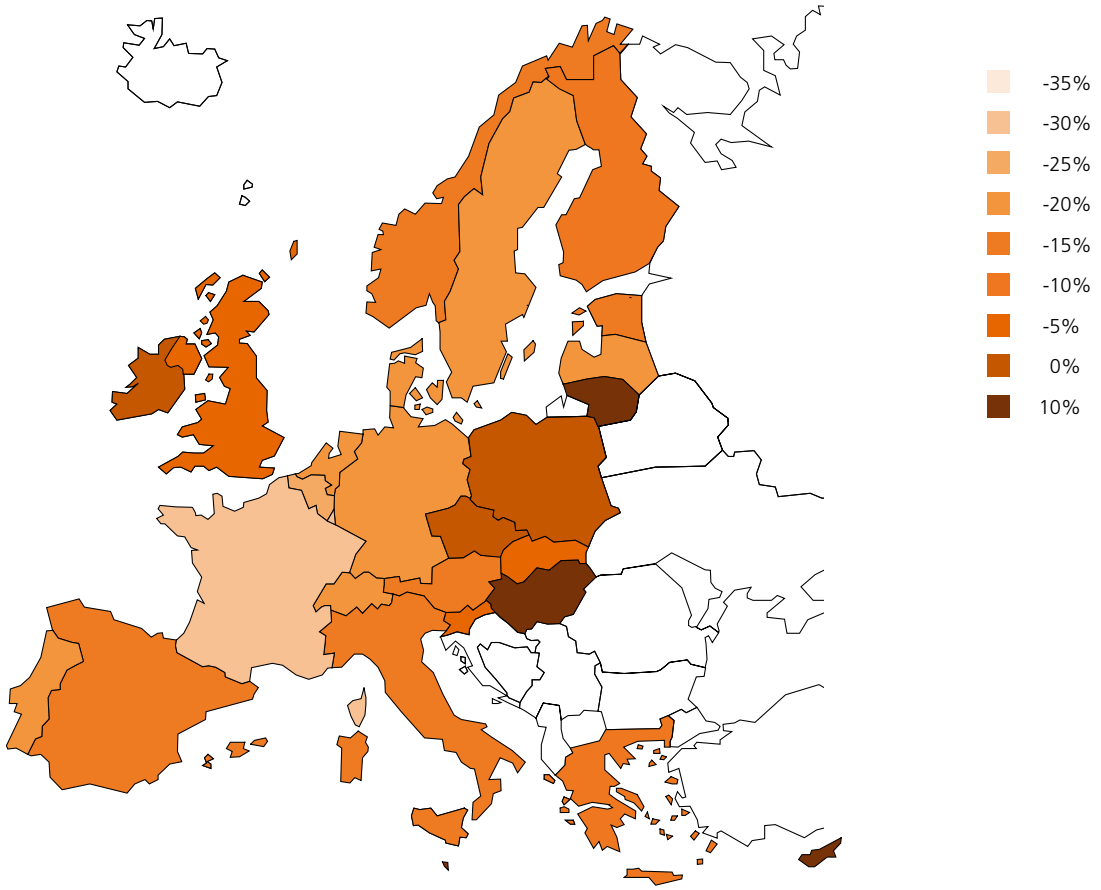


Fig. 4 Countries' percentage changes in road deaths 2001-2005. Source: CARE and national data (see Fig. 2, Table 1 in the Annex)

1.3 Why are some countries doing better than others?

Few studies have been carried out to pin down the causes of the latest developments in road safety in Europe. Moreover, these studies have not revealed the full range of causes for improvement. A recent study by the SWOV Institute for Road Safety Research, for example, has found an explanation for one third of the more-than-average reduction in road deaths in the Netherlands over the last two years. The causes of the other two-thirds could not be identified positively (SWOV 2006). Generally, it is difficult for methodological reasons to measure the effect of road safety measures shortly after their introduction.

Given this scarce scientific evidence, ETSC has turned to renowned experts from the seven fastest-improving countries in Europe. We found that, according to the experts, rapid improvement in their countries has not been a matter of chance. The outstanding success was in large part due to stepped up efforts by national policymakers supported by other stakeholders. Of course, external factors such as changes in mobility patterns have played a role too.

"Road safety success in the Netherlands is the result of a joint effort by all parties concerned."

Peter M. Mak, Advisor, Transport Research Centre (AVV), the Netherlands

1.3.1 Political commitment

In **France**, the number one in reducing road deaths over the last four years, it was those at the highest political level who took up the challenge. On 14 July 2002, President Jacques Chirac declared the "fight against road violence" one of the top three priorities of his second term in office. In September 2002, a high-level meeting (États-Généraux) was convened and three months later, a first series of measures aimed at "ending drivers feeling of impunity" was adopted.

"It is possible to make progress wherever you stand. The key element is a strong political will that brings about the means to achieve results."

Rémy Heitz, former Interministerial Delegate for Road Safety, France

The developments very much parallel earlier steps made in **Belgium**. Here, the new focus on road safety dates back to 2000 when traffic crashes first featured as one of 9 priorities in a National Safety Plan. In May 2001, an États-Généraux meeting took place and a new strategy was worked out subsequently.

In **Luxembourg**, road safety has been declared one of the first political priorities, and in **Portugal**, all relevant actors agreed for the first time in 2003 on an integrated National Road Safety Plan.

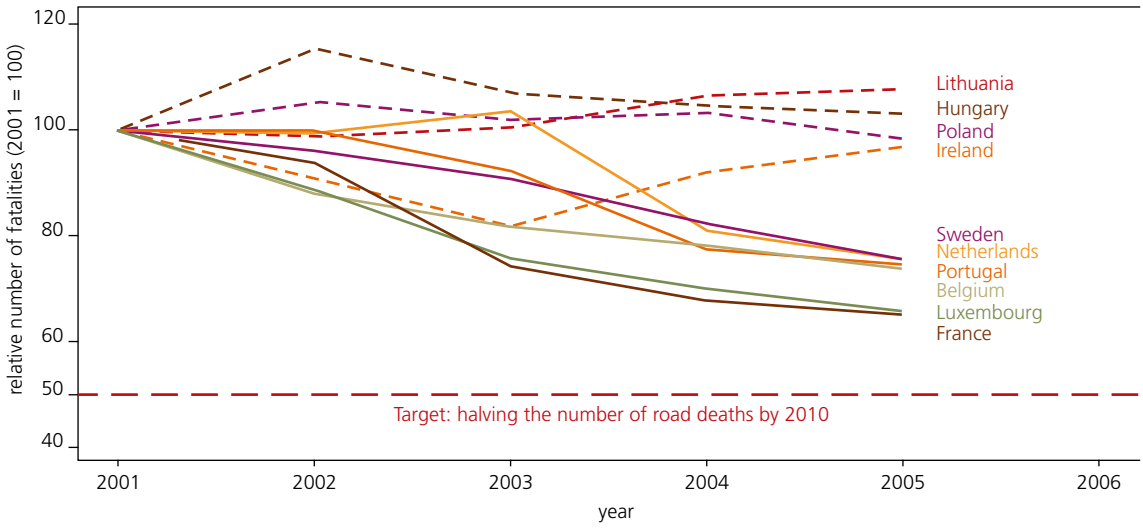


Fig. 5 Developments in road deaths 2001-2005. Source: CARE and national data

1.3.2 Enforcing and explaining the law

Raising compliance with traffic safety law has been a key contributor to success in countries showing lower levels of road safety, such as **France**, **Luxembourg**, **Belgium** and **Portugal**.

France's flagship measure has been the introduction of a fully automated speed management system. Between end 2003 and end 2005, 870 fixed and mobile cameras were put in operation, and their number is still increasing. Checks and sanctions for all major traffic offences were tightened, and care was taken to make follow-up procedures more complete and efficient.

Also in **Luxembourg**, **Belgium** and **Portugal**, police checks on speeding, drink driving and seat belts have been tightened in conjunction with an overhaul of the sanction regime.

In **Luxembourg**, a penalty point system was introduced in late 2002. Other measures such as a revision of sanctions for major traffic offences and the introduction of 'zero tolerance' for drug driving are still pending in Parliament. It has also been envisaged to lower the legal BAC from 0.8 to 0.5‰ and to recommend all road users to turn on their headlights during daytime between October and March.

In **Belgium**, the system of fixed penalties has been revised for most traffic offences, relating penalties to the level of risk associated with the offence. A new Traffic Penalty Fund was created to enable local police forces to enhance their efforts in the areas of speeding, drink driving, safety restraints and heavy good vehicles. In 2006, they received a total of over 60 million euros.

"The commitment of stakeholders and policymakers has led us to record a substantial improvement of road safety. Communication and sensibilisation together with stronger enforcement were key to a successful policy."
Patric Derweduwen, Managing Director, Belgian Road Safety Institute (IBSR/BIVV)

Similarly in **Portugal**, penalties for speeding, drink driving and the non-use of seat belts have been increased, and the efficiency of penalty collection greatly improved. The enforcement of existing rules was tightened, especially when it comes to speeding and the use of restraint systems.

In all these countries, road safety awareness increased significantly for all key players resulting in changes in attitudes, behaviour and professional practices. Beside legislation and enforcement, campaigns and education have also contributed to this. In **Belgium**, people have been able to sign up to a coalition bringing together all people and all initiatives to improve road safety (ikbenvoor.be; jesuispour.be). In **Luxembourg**, road safety programmes were introduced in primary schools as well as in the curricula of upper secondary school classes.

"Improving road safety is a permanent and never ending process which, in order to achieve sustainable results, presupposes a change of mentality amongst the population. Therefore, efforts to enhance education and to raise awareness of future road users, starting at an early age, must be strengthened."
Guy Heintz, Inspecteur Principal, Road Traffic Safety Directorate, Ministry of Transport, Luxembourg

But these recent changes in behaviour cannot be taken for granted. *"The achievements made in France can only be made to last if road safety education and awareness raising activities receive the same priority as compliance with safety law."* Pierre Gustin, Managing Director of Prévention Routière Française said.

Improvements in road user behaviour have also played an important part in the success stories of countries such as **Switzerland** and the **Netherlands**, both top performers in road safety in Europe.

Switzerland achieved in 2005 a spectacular 20% drop in fatalities, and preliminary figures show that this trend is continuing. The main reason for this has been a better control of two of the main causes of accidents, speed and alcohol. On 1 January 2005, the legal blood alcohol limit was lowered from 0.8 to 0.5‰ and police empowered to run random breath tests.

In the **Netherlands**, an impressive reduction in road deaths was achieved especially during 2004 (-19%) and 2005 (-7%). In this period, the number of road deaths was almost 20% lower than it would have been had the trend of the preceding years continued. Better compliance with key road safety rules contributed at least **25**% to the spectacular progress of 2004/2005. Non-compliant behaviours such as speeding (by 16 km/h and more), drink driving (up to 1.3‰) and the non-use of seat belts went down significantly over these two years, accounting for the survival of an estimated extra 40 people (Stipdonk et al. 2006).

"We assume that the extra decrease as a result of improved behaviour in seat belt use, alcohol and speed is not temporary, but will be of a permanent nature, provided that the enforcement and information remain at least at the same level."

Fred Wegman, Managing Director, SWOV Institute for Road Safety Research, the Netherlands

In **Sweden**, speed surveillance has been enhanced with the use of cameras. But overall, road user behaviour has not been addressed extensively. The issue has however received fresh emphasis lately and changes in driver training and road safety education in schools are under development. Moreover, speed enforcement has become a priority with the introduction of a new digital speed camera system and an increase in fines. Sweden is working toward an intermediate target of no more than 270 road deaths in 2007. *"We may fail to reach this goal by 2007,"* says Fridtjof Thomas from the Swedish National Road and Transport Research Institute (VTI), *"but this failure comes with the golden opportunity to discuss broadly what it takes to seriously reduce the suffering on our roads."*

1.3.3 Upgrading the infrastructure

In **Portugal**, infrastructure developments may have been equally important as improving traffic behaviour. New motorways continued to be constructed, and low-cost traffic calming measures were applied widely in high risk sites and on interurban roads passing through small villages. The National Road Administration improved its grant schemes to finance these works.

Road infrastructure improvements have also been a major focus in **Sweden** and the **Netherlands** over the last years. In **Sweden**, a large share of rural roads has been changed into 2+1 lane roads with wire fences separating the two directions of traffic. In urban areas, 30 km/h zones were widely introduced. There are also plans to introduce a new speed limit system, with limits adapted to the safety classification of each road.

In the **Netherlands**, new guidelines, based on the 'Sustainable Safety' philosophy, have been introduced. In many urban areas, the speed limit has been lowered from 50 to 30 km/h, and in rural areas from 80 to 60 km/h. There has also been a large increase in the number of roundabouts. The effect of infrastructure works on road safety is however hard to quantify as measures are taken scattered, have small-sized effects and are often not well documented. The Dutch Road Safety Institute (SWOV) estimates that infrastructure measures contributed 6% to the reduction in deaths and serious injuries in 2002.

1.3.4 Changes in mobility

Some of the developments have also been explained through external factors. In the **Netherlands**, for example, a major decrease in moped use has been shown to be responsible for 8% of the extra drop in fatalities witnessed in 2004/2005. In **Portugal**, a parallel development has taken place. There has been a drop of about 40% in moped rider deaths over the last four years (85% since 1990). Moreover, the steep rise in traffic volumes has slowed down recently so road safety efforts are not offset by an increase in driving.

Clearly, there is still a need to deepen our understanding of road safety developments in Europe. However, the example of the fastest-improving countries shows that national governments can achieve a lot in a short time by focusing on improving road user's compliance with traffic law and making the infrastructure safer.

2| Increasing the level of seat belt use

While it is important to prevent traffic crashes from happening, it is also important to take measures to mitigate the impact of crashes on the people involved. Human beings are fallible and everyone can be involved in an accident so the importance of the – so-called "passive" – protection in crashes cannot be overestimated.

The seat belt is the single most effective feature in the car to fulfill this role. Using the seat belt reduces the risk of dying in a serious crash, which would normally lead to fatal injury, by about 50%. This is why the European Union has passed legislation making seat belt wearing obligatory in all seats where belts are available.

Yet seat belt usage varies considerably among European countries, and generally falls short of providing the protection it could afford to car users.

2.1 The same law – varying levels of compliance

The ranking shows that in 2005, the highest proportion of users of safety belts in the front seats was recorded in **France**, **Germany** and **Malta**[2] which show rates of over 95% seat belt use.

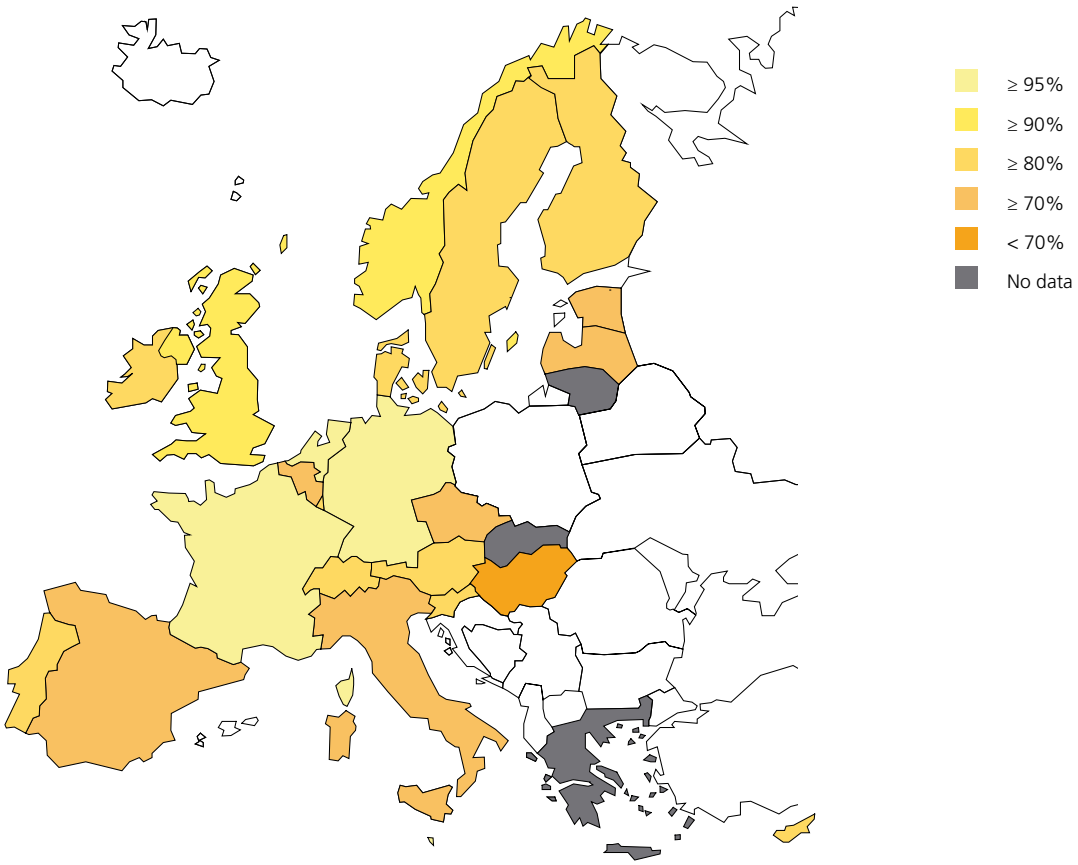


Fig. 6 Use of seat belts in front seats of cars and vans in 2005. Source: SafetyNet anc

[2] For Malta, only 2004 (96%) and 2006 (97%) data are available.

Another group of countries, including the **Netherlands**, **Norway**, **Sweden** and the **U.K.** shows wearing rates of 90% and more. The biggest group of countries, including **Austria**, **Cyprus**, **Denmark**, **Finland**, **Ireland**, **Luxembourg**, **Portugal**, **Slovenia** and **Switzerland** has front seat wearing rates between 80% and 90%. Another seven countries, including **Belgium**, **Czech Republic**, **Estonia**, **Italy**, **Latvia**, **Poland** and **Spain** record rates between 70% and 80%. Finally, **Hungary** has a rate below 70%.

2.2 Comparison between countries

Most European countries collect data on seat belt wearing rates on a regular basis. Several countries, such as **Germany**, **Great Britain** and **Switzerland**, started regular seat belt counts more than 30 years ago, whereas others started this type of survey more recently. Survey design and aggregation procedures vary however across Europe so minor differences between countries should be interpreted with some caution (see **Table 2** in the Annex). In 2007, the EU-funded research project SafetyNet will present a manual on how to best collect and process seat belt data to help countries refine and harmonise their methodologies.

Not all countries can provide comparable data. **Greece**, **Lithuania** and **Slovakia** do not measure compliance with seat belt law at all. **Cyprus** has not collected seat belt data since 2002, and **Luxembourg** since 2003. Observed rates from **France**, **Italy**, **Latvia**, **Malta**, **Poland**, **Portugal** and **Slovenia** are not fully comparable with other countries' rates as their data collection methods differ from those used in other countries. Still, figures for these countries are given as rough indicators of seat belt usage.

In fact, countries that do not carry out measurements are expected to show poorest rates. In **Lithuania**, a one-off survey by police has found the wearing rate to be no higher than 62%. **Greece** and **Slovakia**, together with Croatia, are those countries in which the lowest percentage of drivers reported wearing their seat belt "always" in a survey carried out in 2002 across 23 European countries (SARTRE 3b, 2004).

This ranking is based on data on seat belt wearing in the front of the vehicle. This type of data is collected in all countries that measure seat belt use, whereas rates for the rear seat are unavailable (e.g. in **Belgium**, **Italy**) or considered of a lower quality in some countries (e.g. in **Latvia**, **Czech Republic**). A large majority of fatally injured car occupants sit in the front seats. This should however not mask the fact that in all countries, seat belt usage is higher in the front seat than it is in the rear, and many rear seat occupants are killed and seriously injured not wearing their seat belt.

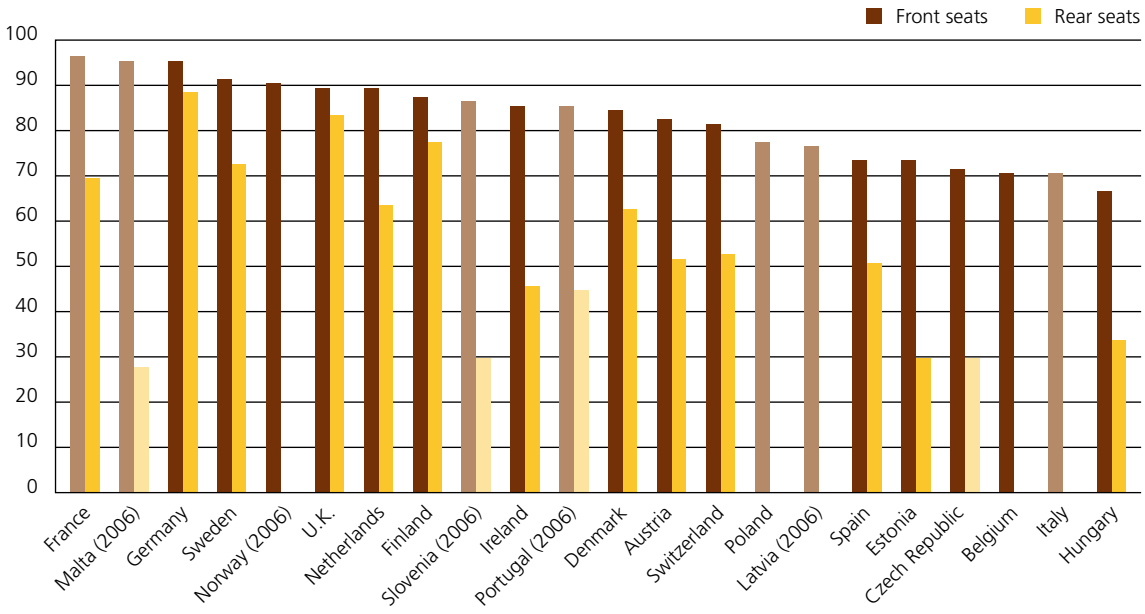


Fig. 7 Use of seat belts in front and rear seats of vehicles under 3.5 tons in 2005. Data for the Czech Republic (rear seat), France (front seat), Italy, Latvia, Malta, Poland, Portugal and Slovenia are marked in a lighter colour as they are of limited comparability. Source: SafetyNet and national data (see Table 2 in the Annex)

The rates presented here are those for all passenger cars and vans together (ie. vehicles under 3.5 tons), as the majority of countries do not distinguish between these two categories when performing their observations. Data from **Denmark**, **Great Britain** and the **Netherlands** suggest that on the whole, seat belt use by van drivers and passengers is lower than that by passenger car users (see Fig. 8).

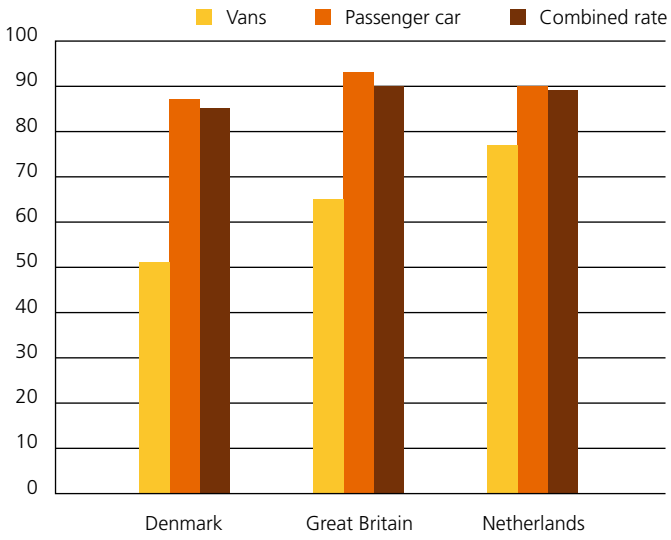


Fig. 8 Use of seat belts by drivers of passenger cars, vans and combined in Denmark, Great Britain and the Netherlands in 2005 (Netherlands 2006). Source: SafetyNet

The indicator

The usage rates used in this ranking present in fact a simplified picture of a much more complex phenomenon. In reality, there is no clear-cut division between users and non-users of seat belts. Many people use the seat belt sometimes but not at all times, depending on what speed they are travelling at, what sort of road they are using, whether they are undertaking a longer journey, whether there are other occupants wearing belts etc.

The proportion of car occupants using seat belts (ie. the wearing rate) is estimated through roadside counts. Observers are placed at selected locations on all road types (in urban areas, on rural roads and on motorways), where traffic characteristics allow this type of observation. Data for different road types are then aggregated based on traffic shares 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. SafetyNet researchers favour separate counts of front and rear seat occupants to establish two different rates for these groups, which often differ considerably. While many countries also report separate rates for drivers and front seat passengers, researchers in the SafetyNet team prefer one common rate because differences between these two groups tend to be small.

This country ranking is based on combined wearing rates for the front seats. For countries where combined rates were unavailable we applied rules established by the SafetyNet project to establish these rates:

- Where only separate rates for drivers and front seat passengers were presented, we aggregated both rates using a weighting coefficient of 0.65 for the driver and 0.35 for the front passenger, which corresponds to typically observed occupancy of these seats.
- Where only the driver rate was available, the front seat rate was considered to be identical to this rate (Hakkert et al 2007)

2.3 More than 11,000 drivers' lives saved by seat belts

The use or non-use of the seat belt, together with the impact speed, is one of the most important factors deciding between life and death in a serious crash. Accident research suggests that the risk of dying in a serious traffic crash can be reduced by about 50% by using the seat belt.

Across the EU, it is estimated that about 11,700 drivers survived serious crashes in 2005 because they were using their seat belt, on the assumption that the accident risk of wearers is not affected by the wearing of seat belts. In **Germany** alone, about 2,000 drivers survived. This means that nearly twice the number of drivers would have died in crashes had seat belts not been worn by drivers in that country. Across Europe, seat belt use at current levels reduces the number of driver deaths by about 40% (see **Table 3** in the Annex).

2.4 … and another 2,400 drivers could be spared with 99% use

No country has achieved a rate of 99% seat belt use in the front seat so far. But studies suggest that seat belt reminders can help to reach this high a use. Also, some countries come close to this rate on their motorways (e.g. **France**). If 99% of drivers used their seat belt in all EU countries, another 2,400 lives could be saved, on the assumption that the accident risk is no higher among non-wearers of seat belts that it is among those wearing seat belts. This means that in **Belgium**, for example, the 2005 number of driver deaths could have been 20% lower if a maximum number of drivers had worn their seat belt.

There are however reasons to believe that non-compliance with seat belt law goes along with other risky behaviour. On the assumption that the risk of non-wearers is 1.5 times higher than among those wearing belts, more than 3,000 drivers' lives could still be saved in the EU by using seat belts (see **Table 4** in the Annex).

2.5 How can high rates be achieved?

Not all of today's 'seat belt champions' have played in this league for a very long time. While countries such as **Germany** and the **U.K.** achieved over 90% use of seat belts right after turning non-use of seat belts into a fine-carrying traffic offence, others have developed more progressively over time. The **Netherlands**, for example, show an increase in the driver rate from just over 70% to over 90% within the last ten years. In **France**, the front seat rate crossed the 95% threshold only recently, going from 91% in 2001/2002 to 97% in 2005.

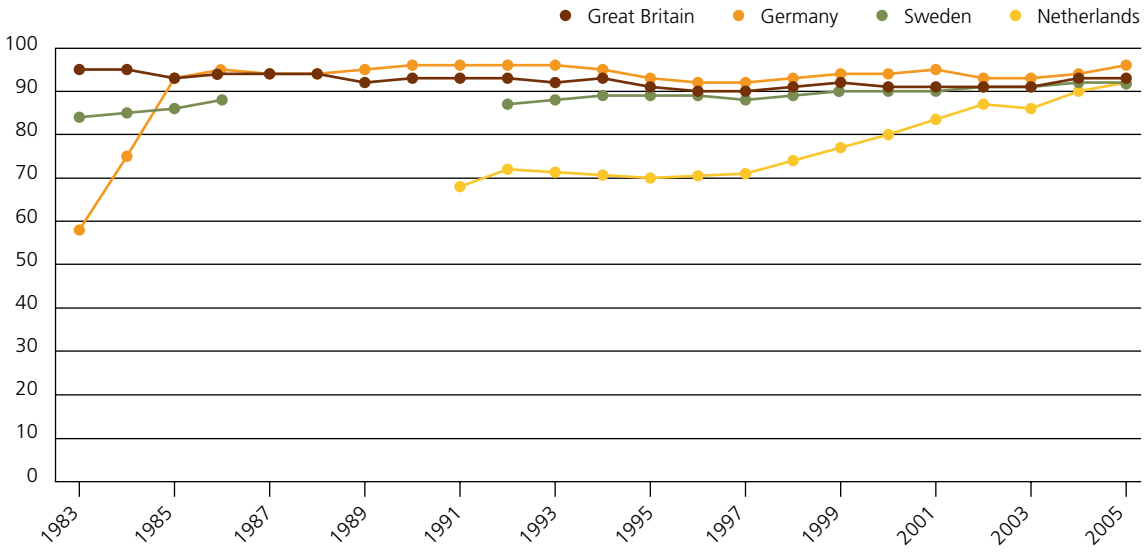


Fig. 9 Use of seat belts by drivers of vehicles under 3.5 tons in Germany, Great Britain (passenger cars), the Netherlands and Sweden. Figures for the Netherlands include vans only from 2002; figures for Germany are only for West-Germany until 1990. Source: National data

2.5.1 Seat belt law and enforcement

In **Great Britain**, rates jumped from 40% to over 90% when legislation was introduced for front seats in 1983. In 1991 when it became compulsory for adults to wear seat belts in the back of a car, there was an immediate increase from 10% to 40% in observed rear seat belt wearing.

In **Germany**, people buckled up massively after non-compliance with seat belt law started being enforced with a fine in August 1984, eight years after the introduction of mandatory use in front seats. Between March and September 1984, seat belt wearing among car drivers increased from 58% to 92%. Enforcement efforts have continued since, and seat belt wearing has been promoted through numerous awareness campaigns run by the German Transport Safety Council (DVR) and German Verkehrswacht e.V. (DVW).

"The German success story is based on 25 years of consistent enforcement and awareness raising. Today, most Germans don't even think about using their belt – it is simply a habit."

Sabine Degener, German Insurance Institute for Traffic Engineering (GDV)

Evidence from the **Netherlands** shows clearly that more and more car users buckle up if seat belt laws are properly explained and enforced.

Seat belt wearing in the Netherlands

Dutch researchers have calculated that an extra ten peoples' lives were saved over 2004 and 2005 through increased seat belt use. In those two years, the observed seat belt use was 3-4% higher than expected from the previous years' trend. The study also shows that police enforcement continued to increase and that various awareness campaigns were run at the same time, including the famous *armadillo* campaign that has meanwhile been extended to other countries (Stipdonk et al 2006).

A number of countries witnessed an increase in seat belt wearing when sanctions for non-compliance were tightened. In **France**, for example, a new law was enacted in 2003 increasing the fine for unbelted occupants to 135 EUR and introducing three penalty points off the 12-point licence for unbelted drivers. In recent years, hard hitting awareness campaigns have been run by different governmental and non-governmental bodies, the last ones targeting seat belt use on rear seats and in urban areas.

"Levels of fines should be high but the level of enforcement is more important. What is also important is awareness raising and good communication."

Wolfgang Blindenbacher, Traffic Police Director of the German federal state of North Rhine-Westphalia

EU seat belt law

Following rules on technical requirements relating to safety belts, the EU introduced in a 1991 Directive the mandatory use of safety belts, where belts are available, in all vehicles under 3.5 tons, allowing for exemptions in the rear seat for some vehicle types. In a new Directive passed in 2003 the obligation to wear seat belts was then extended to occupants of all motor vehicles, including trucks and coaches. The reinforced legislation was to be implemented in the Member States by 9 May 2006. In **France**, for example, the new rules entered into force already in May 2003. However, not all countries have implemented the new Directive so far, and some countries' requests for exemptions are currently being assessed by the European Commission.

2.5.2 Good progress that needs to be sustained

Many countries that used to have low or medium-range rates have progressed significantly over the last couple of years. In **Belgium**, 51% of drivers who did not buckle up in 2003 started wearing the belt by 2006. The **Czech Republic** even 'converted' 64% of front seat occupants from 'non-users' to 'users' of seat belts between 2003 and 2006, while in **Spain**, this was 48%. Both countries introduced in 2006 new penalty point systems covering also non-compliance with seat belt law.

In the **Czech Republic**, awareness has recently been heightened through media campaigns and the tragic death of national ice-hockey team trainer Ivan Hlinka who died in a traffic crash while unbelted. Wearing rates showed another steep increase when the country introduced higher fines and points off the licence for seat belt offenders as part of a new penalty point system on 1 July 2006.

The Czech Transport Research Centre (CDV) has observed compliance just before and after entry into force of the new law. It has found an increase already before 1 July 2006, reaching its peak about one month after that date. The following months showed a slight decrease in wearing rates. *"This decrease is most likely due to a lack of sufficient police presence in the last months of the year. The annual national observation study planned for 2007 should allow more reliable comparison of rates before and after the new measures' introduction,"* said Vojtech Eksler, CDV.

"In the Czech Republic, people started to think differently about seat belts when national ice-hockey team trainer Ivan Hlinka died unbelted in a 2004 traffic crash. Investigation results showing that Hlinka died even though front and side airbags deployed were widely discussed."

Jaroslav Heinrich, Transport Research Centre (CDV), Czech Republic

While seat belt use is on the rise in most European countries, experience also shows that gains cannot be taken for granted and that rates can drop if efforts are not sustained. Great Britain, for example, saw seat belt use by drivers going back from 95% to 90% during just over a decade to 1997 but rates have increased again since that year.

3| Reducing deaths from drink driving

Driving under the influence of alcohol is a major factor increasing the risk of a road accident. While the dangers linked to drink driving are fairly well understood, the phenomenon is still widespread in Europe. Recording of drink driving crashes and casualties as such tends to be patchy, which makes monitoring of drink driving levels a difficult task.

Evidence from 15 European countries suggests however that in Europe as a whole, deaths from drink driving crashes are decreasing faster than other deaths. The Road Safety PIN ranking on drink driving shows that there are a number of countries that are leading the way, while other countries are not as successful in reducing drink driving related deaths[3].

3.1 Uneven progress

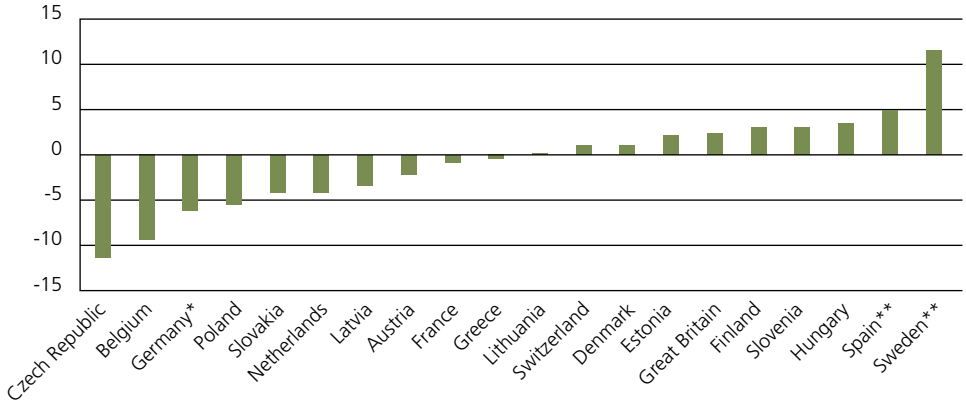
This chapter looks at European countries' progress in reducing deaths from drink driving crashes, compared with progress in reducing other deaths, using each country's own method of identifying drink driving deaths (see Explanatory note in the Annex).

It shows that in about one third of countries, progress on drink driving has contributed more than its share to overall reductions in deaths between 1997 and 2005[4]. At the top of the ranking are the **Czech Republic**, **Belgium** and **Germany** where progress on drink driving has contributed most to overall reductions in deaths over the last decade. In the **Czech Republic**, road deaths from drink driving crashes dropped 11.3% faster than deaths from other crashes. For **Belgium**, this figure is 9.4% and for **Germany** 6.2%.

Poland, **Slovakia**, the **Netherlands**, **Latvia**, **Austria**, **France** and **Greece** also follow this positive trend. These countries have succeeded in reducing deaths from drink driving crashes at the same pace or faster than other deaths, and progress on drink driving has contributed more than its share to overall progress in reducing road deaths (see Fig.9).

In another group of countries, changes in drink driving deaths have not contributed their share to overall reductions in traffic deaths. This group includes **Sweden**, **Spain**, **Hungary**, **Slovenia**, **Finland**, **Great Britain**, **Estonia**, **Denmark**, **Switzerland** and **Lithuania**. In these countries, developments in drink driving deaths have slowed down overall progress in reducing road deaths.

[3] This chapter includes new data that were not available at the time this ranking was first published.
[4] For five countries, estimates are based on data for a shorter period of 4 to 8 years, rather than 9 years, see Explanatory note in the Annex.



* Yearly percentage change in drivers involved in fatal drink driving crashes relative to drivers involved in other fatal crashes (Germany)

** Yearly percentage change in driver deaths from drink driving crashes relative to driver deaths from other crashes (Spain, Sweden)

Fig. 10 Yearly percentage change in drink driving deaths relative to other road deaths between 1996-1998 and 2005. Source: National data (see **Table 7** in the Annex)

For third group of countries no trends can be established, as numbers of drink driving deaths are not available. This group includes **Ireland**, **Italy**, **Luxembourg**, **Malta**, **Norway** and **Portugal**. For **Cyprus**, the numbers of drink driving deaths are available for the relevant years but cannot be used in this ranking because the numbers are too small, and therefore too variable, for the percentage changes to be estimated reliably.

Available data indicate however, that in Europe as a whole, reductions in drink driving deaths have been more substantial over the last decade than reductions in other deaths. Progress on drink driving has therefore contributed more than its share to overall progress in reducing road deaths (see Fig. 11).

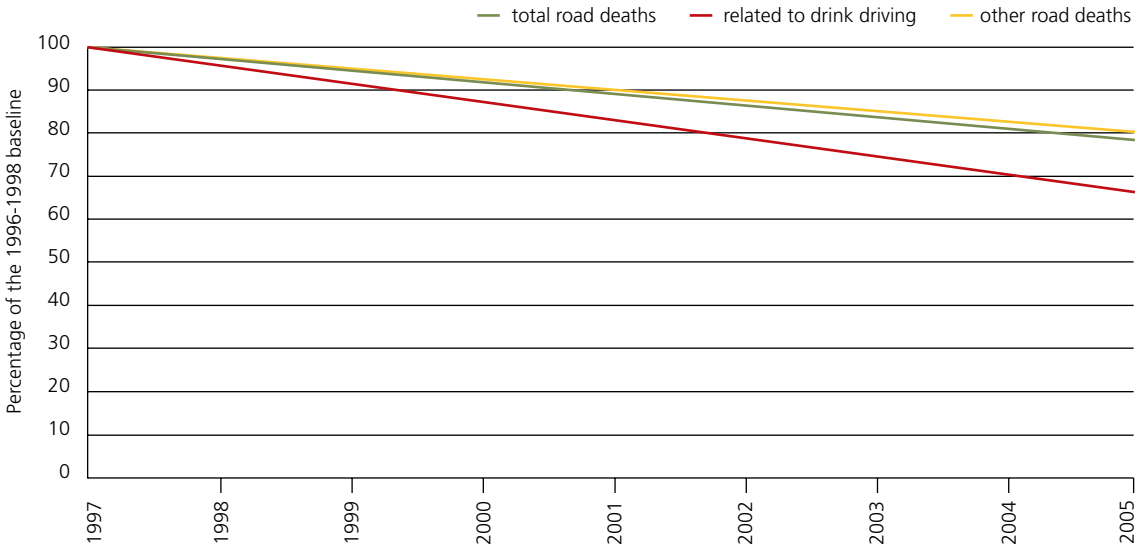
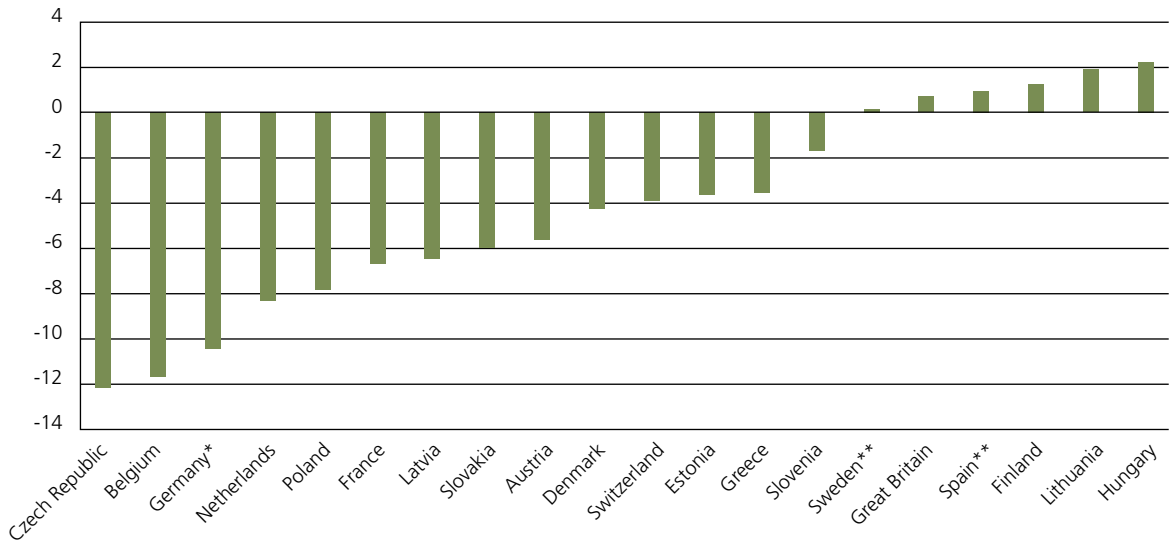


Fig. 11 Trends in road deaths in Europe, based on data from 15 countries (see Table 7 in the Annex)

3.2 Partial achievement

The foregoing ranking estimates for each country the impact that changes in drink driving deaths have made on overall changes in road traffic deaths. It does not measure the decrease in deaths related to drink driving as such.

The reductions in deaths related to drink driving have been most impressive in the **Czech Republic**, **Belgium**, **Germany** and the **Netherlands** where the number of drink driving related deaths has decreased since 1996-98 by more than 50%. Yearly reductions in drink driving deaths between 1996-98 and 2005 were of the order of 12.1% for the **Czech Republic**, 11.7% for **Belgium**, 10.4% for **Germany** and 8.3% for the **Netherlands** on average. In **Hungary**, **Lithuania**, **Finland**, **Spain**, **Great Britain** and **Sweden**, on the other hand, the drink driving problem actually worsened (see Fig. 12).



* Average yearly percentage change in drivers involved in fatal drink driving crashes (Germany)
** Average yearly percentage change in driver deaths from drink driving crashes (Spain, Sweden)

Fig. 12 Average yearly percentage change in road deaths resulting from crashes related to drink driving between 1996-1998 and 2005. Source: National data (see Table 7 in the Annex)

Fig. 12 shows that the **Netherlands** perform better than **Poland** in terms of absolute reduction in drink driving deaths, whereas Poland performs better in terms of relative reduction in drink driving deaths, compared to other deaths (Fig. 10). In the Netherlands, drink driving deaths dropped by 8.3% every year, on average. In Poland, this was 7.8%. However, as deaths from crashes not related to drink driving dropped by 4.3% every year in the Netherlands, and by 2.4% in Poland, the difference between these two developments was greater in Poland than in the Netherlands. The difference between the two trends is reflected in Fig. 10 in which Poland ranks fourth.

The indicator

Researchers in the European research project SafetyNet have proposed to compare the drink driving situations in European countries using the *percentage of fatalities resulting from crashes involving at least one driver impaired by alcohol*. The researchers recognise however the limitations of this indicator at this point in time when data collection methods vary widely across Europe. "Strict harmonisation of definitions, data collection and data analysis methods is required" to ensure comparability of data, according to the latest report.

In the absence of such harmonisation, the ranking in Section 3.1 takes as a starting point developments over time in numbers of fatalities attributed by each country to crashes involving at least one driver impaired by alcohol. Rates of change are comparable across countries in so far as procedures for recording deaths have remained consistent in all countries during the reporting period.

Like the definition proposed by SafetyNet, this ranking considers only crashes related to drink driving, ie. crashes involving an impaired *driver*. However, other road users such as pedestrians and cyclists also cause traffic accidents when they are drunk. The SafetyNet project proposes to extend the indicator in time to *fatalities resulting from crashes involving at least one impaired active road user* (Hakkert et al 2007). A manual on data collection will be published later this year.

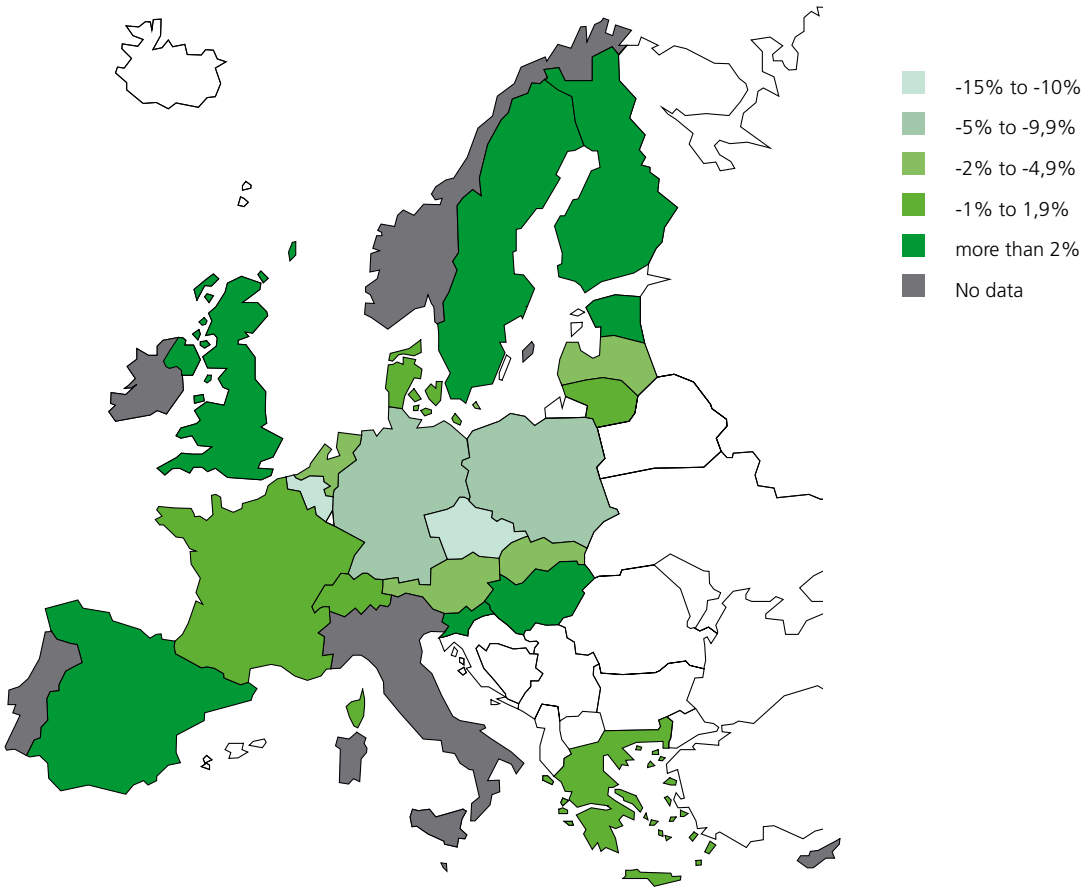


Fig. 13 Countries' yearly percentage changes in drink driving deaths relative to other road deaths between 1996-1998 and 2005. Source: National data (see Fig. 10, Table 7 in the Annex) update with Sweden and Belgium

3.3 Comparison between countries

This ranking uses as a starting point developments over time in deaths resulting from drink driving crashes. There are however large differences in the way in which countries define and record a 'crash related to drink driving'. In **Great Britain**, these are crashes in which at least one driver or rider *involved* tested positive in a breath or blood test *or* refused to give a breath test specimen when requested to do so by the police. In **Switzerland**, drink driving crashes are those for which police reports show that drink driving was involved, based on breath test results. In **Hungary**, the driver *responsible* for the crash must have tested positive. In **France**, **Great Britain** and the **Netherlands** numbers of drink driving crashes and victims are estimated using different methods of calculation.

Moreover, the definition of 'impaired' is different for each country. It ranges from 0.1g/l in our data from **Sweden** over 0.2g/l in **Hungary** and **Denmark** and 0.3g/l in **Germany** (in accidents) to 0.8g/l in **Great Britain**. A comparison of countries based on numbers of deaths from drink driving crashes is therefore impossible at this moment (see **Table 8** in the Annex).

3.4 An incomplete picture

From 6 out of 27 countries, no data at all are available at this point to measure reliably from year to year the changes in drink driving deaths. These countries include **Ireland**, **Italy**, **Luxembourg**, **Malta**, **Norway** and **Portugal**. Also the data from **Cyprus** cannot be used in this ranking because the numbers are too small.

In **Germany**, **Spain** and **Sweden**, numbers of drink driving deaths are not available in official statistics. For these countries we used in place of the number of deaths the number of drivers involved in fatal drink driving accidents (Germany) and the number of killed drivers who tested positive in post-mortem blood alcohol tests (Spain, Sweden).

But also in many of the countries included in the ranking, there are serious gaps in the reporting of crashes related to drink driving.

The extent to which testing is done and results are known varies considerably among countries. While authorities in Latvia and Poland say they have test results for all drivers involved in fatal crashes, results are available for all drivers involved in fatal crashes in about ¾ of cases in **France**[5], **Hungary**, **Denmark** and **Slovenia**, and in about ¼ of fatal crashes in the **Netherlands** and **Belgium**. Authorities in **Austria**, **Germany** and **Switzerland** do not actually know how many drivers involved in fatal accidents have been tested as only positive test results are retained.

The reasons for this lack of knowledge are manifold, including legal conditions. In **Spain**, only results of autopsies are used in the statistics. In the **Netherlands** and **Germany**, drivers killed on the spot in single vehicle accidents are not generally tested as they are beyond legal reach. In **Austria**, **Estonia**, **Germany** and **Switzerland**, testing will only occur when police suspect the presence of alcohol.

This means that accident reports in many countries fail to give a realistic picture of the drink driving situation, and numbers of deaths from drink driving related crashes cannot be taken at face value (see Table 1 below).

[5] In France, the BAC level of all drivers involved in fatal accidents has been known since 2005 in more than 90% of cases.

In-depth studies carried out in several countries have shown that actual numbers of drink driving deaths are considerably higher than reflected in reports from police and medical staff. A study carried out in the federal state of **Lower Austria**, in which most of the fatal road traffic accidents were investigated for alcohol, showed that alcohol rates were found to be at least one third higher than in official accident statistics. Thirty-one percent of drivers involved in single vehicle crashes were found to be over the limit (Bartl and Kaba 1998). In **Ireland** where no official data on numbers of drink driving crashes are available, an in-depth study of 2003 accident reports found that drink driving was a factor in 28% of all fatal crashes (Health Service Executive 2006)

France, **Great Britain** and the **Netherlands** publish yearly estimates of crashes and casualties linked to drink driving. These estimated numbers of deaths from drink driving accidents are in the order of 14% (Netherlands), 17.5% (Great Britain) or 29% (France) of all road traffic deaths in 2005.

Another indicator

To monitor progress in drink driving, some countries such as the **Netherlands**, **Belgium**, **Finland** and **Estonia** measure the distribution of alcohol levels among the driver population (see Fig. 14). To establish this performance indicator, random breath testing actions are repeated regularly at selected times and locations. The **Netherlands** use the data from these surveys also to estimate the yearly number of deaths from drink driving (AVV 2006).

In **Belgium**, bi-annual measurements were started in 2003. The proportion of drivers found over the 0.5 BAC limit was 3.3% in 2003 and 2.1% in 2005 on average. During weekend nights this was 7.6% in 2005. Belgium has a stated objective to have no more than 3% of drivers over the legal BAC limit at any moment of the day by 2008 (IBSR 2007).

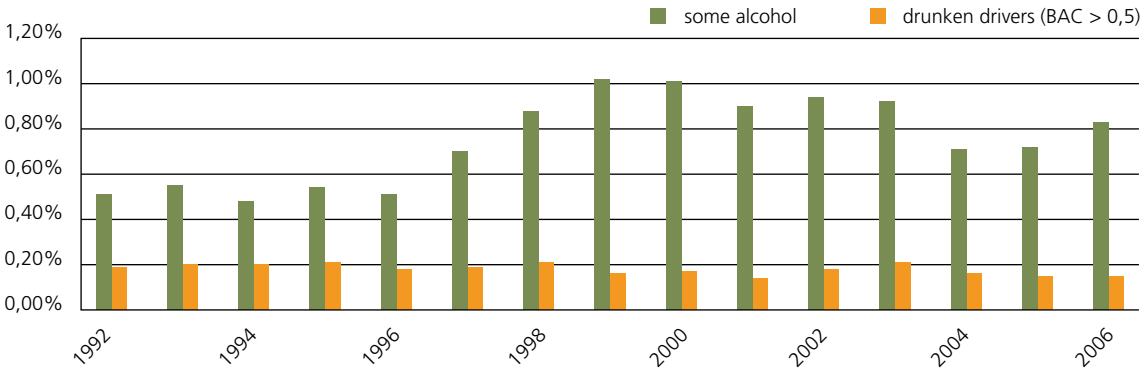


Fig. 14 Proportion of drivers impaired by alcohol in all drivers in Finland between 1992 and 2006.
Source: Liikkenneturva 2007

3.5 Measures that work

At the core of the measures there is the legal blood alcohol limit for drivers. The European Commission has recommended a European-wide maximum alcohol limit of 0.5 g/l for all drivers and 0.2 g/l for novice and truck drivers. More and more countries are following this advice. **Cyprus** lowered its 0.9g/l BAC limit to 0.5g/l last year, and similar discussions are underway as regards the 0.8g/l in **Luxembourg**. **France** recently lowered its BAC limit for drivers of buses and coaches, and the **Netherlands** introduced in 2006 a BAC limit of 0.2 g/l for novice drivers. In **Germany**, the government decided in February 2007 to lower the limit for novice drivers. The 0.5g/l general limit was introduced in 1998. The **Czech Republic** has reaffirmed its zero limit.

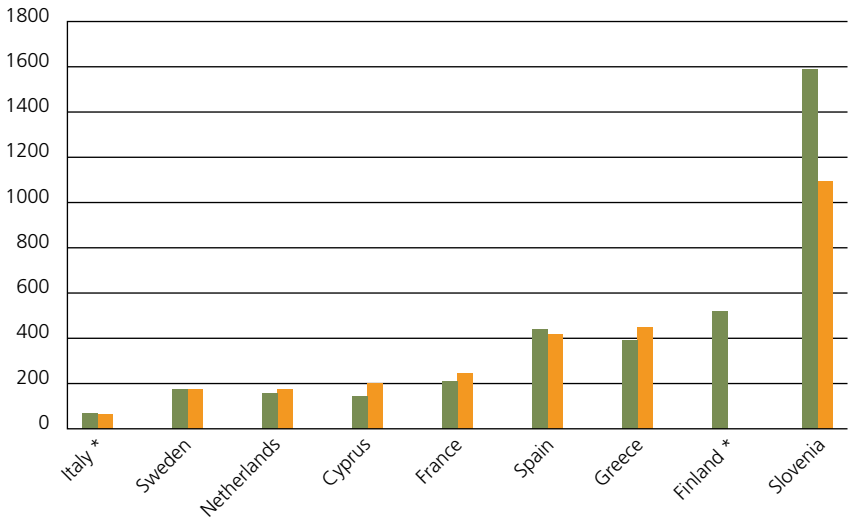
"Today, drinking and driving is socially unacceptable in the Czech Republic, and the 0.0g/l has been decisive in this. The message sent by this limit is very clear: never drive after drinking."

Josef Mikulik, Director of the Czech Transport Research Centre (CDV)

Knowing the law

A recent Eurobarometer survey has shown that in most countries a majority of respondents know what the legal BAC limit for drivers is in their country. In some countries, such as Ireland and the U.K., the majority of respondents replied "don't know" to this question (EC 2007a).

The enforcement of these limits is another issue. In Europe, being checked for alcohol is the exception rather than the rule. Seventy-one percent of drivers declared in a driver survey carried out in 2002-2003 in 23 countries that they had not been checked for drink driving over the past three years, and the likelihood of being tested was estimated to be very low (SARTRE 3, 2004).



* data only collected by the Carabinieri and Traffic Police
** no data for 2005

Fig. 15 Drink driving checks per 100,000 inhabitants in selected countries (ETSC 2007)

In a number of those countries where absolute numbers of drink driving deaths have dropped most rapidly (Fig. 12), there has also been an increase in drink driving enforcement.

In the **Czech Republic**, over 400,000 screening tests are carried out each year. The Czech "Domluvený" campaign is a variation of the Belgian BOB campaign.

In **Belgium**, the number of screening tests carried out around Christmas increased from 83,500 in 2002/2003 to 157,000 in 2005/2006. The BOB compaign has been continued.

For **Germany**, the numbers of screening tests are not known. Number of offences goes down steadily. Police tests have been simplified by the introduction of evidential breath testing devices for BAC levels up to 1.1g/l. Campaigns are run at all levels of government.

In the **Netherlands**, the number of screening tests nearly doubled between 2000 and 2005. This increase was coupled with the BOB campaign. Drink driving sanctions were also increased to new levels that range between EUR 220 for BAC levels up to 0.8g/l and to EUR 480 for levels up to 1.3 g/l. There has been a marked drop in the number of drivers over the limit during weekend nights from 4.2% in 1999 to 2.8% in 2005 (AVV 2006).

In **France**, the number of preventative breath tests has risen over the last years to reach just over 9 million in 2005. France also conducted the Belgian-modelled BOB ("Capitaine de soirée") campaign (ETSC 2007).

"For years, alcohol has been portrayed in the media as the main cause of accidents, and there has been strong public support for serious measures to tackle drink driving. In 2006, drink driving related deaths dropped by 44%. I hope we will manage to maintain this trend for the coming years."

Ilona Buttler, Motor Transport Institute (ITS), Poland

In **Poland**, the number of detected alcohol offences continued to increase over the last years. In 2001, sanctions for drink driving offences were increased dramatically. More recently, shortened court procedures were introduced to enable quick penalisation of offenders.

4| Moderating driving speeds

Excess and inappropriate speed is a very important factor in road accidents. The higher the speed, the higher is the chance of an accident happening and the more severe is its outcome. This is why cutting motorists' speed is essential to improving road safety.

Yet there is little progress in reducing speeds. While a number of countries report speed reductions, others show increases. In some countries, there is also a reduction on one type of road and an increase on another. Average speeds and numbers of speed limit violations remain high across Europe with only few encouraging signs, notably from **France**, but also from **Belgium** and **Switzerland**, where speeds have recently decreased across all types of road.

4.1 Speed kills

The relationship between speed and road accidents has been studied extensively. The impact of the average speed and speed difference on crashes is well-known, both for individual vehicles and for road sections (Nilsson 1982, Taylor et al 2000, Elvik et al 2004, Aarts and van Schagen 2006).

While the risk linked to speed varies from road type to road type, a sound rule of thumb is that, on average, a 1% reduction in the mean speed of traffic leads to a 2% reduction in injury accidents, a 3% reduction in severe injury accidents and a 4% reduction in fatal accidents (Aarts and van Schagen 2006, based on Nilsson 1982).

"The mean speed of traffic is the most important risk factor for road accident fatalities. It has a more powerful effect on road accident fatalities than any other known risk factor, including the overall amount of travel."

Rune Elvik, Institute of Transport Economics (TOI), Norway

It follows from the high risk associated with speed that a reduction in driving speeds will make an important contribution to reducing the numbers of road traffic deaths and injuries. Reducing speed is a "guaranteed way" to make real progress towards road safety targets (OECD 2006, p.21). It is "the first thing to do to reduce both the number of accidents and the number of injured and dead people" (Hakkert et al 2007, p. 40).

Experience from European countries confirms this. In **France**, where road safety efforts focussed on moderating driving speeds, road traffic deaths were reduced by 31% between 2002 and 2005. The French Road Safety Observatory has calculated that three quarters of this drop could be attributed to improved speed management based on a new automated camera system. The proportion of vehicles traveling at 10 km/h and more above the legal limit decreased from 35% in 2003 to 19% in 2005 across the network. The number of vehicles exceeding the limit by more than 30 km/h went down by 80%. Average speeds decreased by 5 km/h (ONSR 2006). France recorded the greatest reduction in road deaths over 2001-2005 among all European countries (see Chapter 1).

4.2 Comparison between countries

Three quarters of the 27 countries covered so far under the Road Safety Performance Index (PIN) are able to provide data on driving speeds. Countries that do not currently monitor driving speeds include **Germany**, **Greece**, **Italy**, **Malta**, **Slovenia** and **Slovakia**. In **Sweden** and **Portugal**, measurements have not been made since 2004 but are being resumed in 2007.

However, data collection procedures vary substantially. Different countries observe speeds for different vehicle types (e.g. all traffic, passenger cars, cars and motorcycles), during different periods of the year (e.g all year round, one week in November) and using different technologies (e.g. measurement loops, radar). Moreover, different criteria are used to identify measurement locations and appropriate (uncongested) traffic conditions (Vis and van Gent 2007). This is why levels of speed and speed limit violations cannot be compared across countries.

The indicator

The mean speed and level of compliance (ie. the proportion of vehicles exceeding the posted limit) are the two basic indicators that are most commonly reported in European countries. The two indicators have different potential interpretations. While the link between mean speed and accidents is well-documented, the relationship between levels of compliance and accidents is less well-known. Levels of compliance are, on the other hand, more closely linked to road safety interventions, e.g. enforcement. They are a useful tool for policymakers to monitor the effect of their actions.

Researchers in the SafetyNet project have identified these and two other speed indicators as the basis for a set of road safety performance indicators that should be collected in a uniform manner across the EU. However, the researchers recognise that at this point, those countries that apply one or more of these indicators have different ways of collecting and processing the relevant speed data. It is therefore not possible to compare indicator data between different countries (Hakkert et al. 2007). The SafetyNet project will present later this year a manual on how to establish a set of comparable speed indicators in European countries.

Countries are therefore compared based on changes during the last decade (1996-2006) in mean speeds on different road types, taking into account only the most recent period of sustained decrease or increase up to 2004-2006, whichever is the latest year for which data are available. In view of possible variability in the data, only changes of more than 2km/h over the relevant period are acknowledged.

Comparison shows that the best progress has been achieved in **France** where mean speeds decreased across all road types by 6% to 11%. In **Belgium**, reductions range from 4% to 6%, and in **Switzerland** from 3% to 8%.

In **Norway**, speeds decreased in built-up areas and on motorways, but there has been no meaningful change in speeds on rural roads. In the **Netherlands**, there has been a slight drop in speeds on motorways with a 100 km/h limit, but not on motorways with a 120 km/h limit. National data are only available for this type of road.

In **Great Britain** the picture is rather mixed. On the one hand there has been a 9% drop on urban 30miles/h roads, and a 3% drop on 70 miles/h rural roads. But speeds increased 9% on 60 miles/h rural roads. Similarly in **Portugal**, there has been a decrease on urban roads, but an increase outside built-up areas, especially on rural roads. These changes took place between 2002 and 2004. No measurements have been carried out since.

In **Austria**, there has been no sustained change on urban or rural roads, and speeds on motorways have increased slightly since 2003. Also in **Poland**, the reduction on urban roads related to a speed limit change in 2004 could not be sustained, and speeds have increased on rural roads.

In **Estonia** and **Latvia**, speed data are only available for rural roads. **Estonia** has witnessed an increase in mean speed since 2002, and also in **Latvia**, speeds on rural roads went up from 2005 to 2006.

4.3 Changes on urban roads

Changes in mean speeds in built-up areas are available over the last years from **Austria** and **Great Britain** (since 1996), **France** (since 1998) and **Portugal** (2000-2004). For **Belgium** there are data for three years (2003-2005). For **Poland** and **Switzerland**, data are available since 2003, for **Norway** since 2004.

Mean speeds on 50km/h urban roads have decreased in most of these countries. The largest decrease has been recorded in **France** and **Great Britain** where mean speeds dropped by more than 9%. In France, this has been achieved since 2002 and mainly on national roads passing through small villages. In Great Britain, there has been a steady decrease over the last decade on 30miles/h roads. In 1996, cars traveled at 33 miles/h on average, in 2006 this was 30miles/h. In 1996, 72% of all car drivers on 30 miles/h roads exceeded the speed limit compared with 49% ten years later in 2006.

In **Belgium** and **Portugal**, mean speeds dropped over two years by more than 6%. In **Norway** and **Switzerland**, there have been reductions between 4% and 5%.

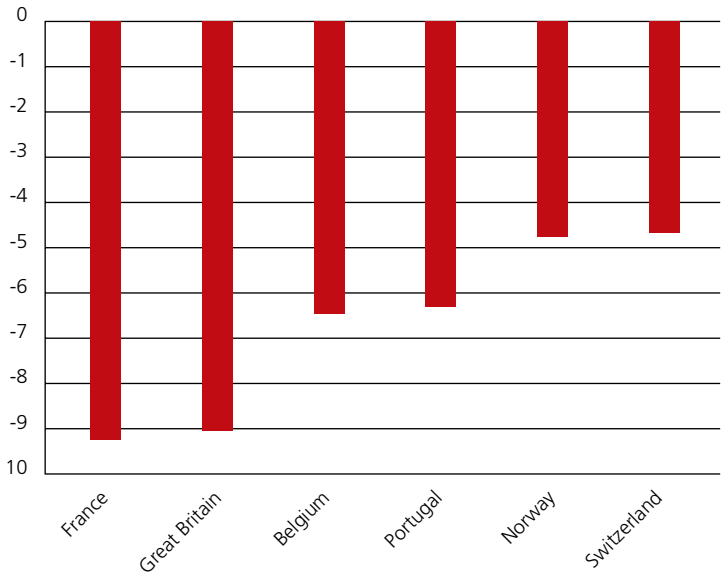


Fig. 16 Percentage changes in the mean speeds on urban roads with a limit of 50km/h (Great Britain 30miles/h which is 48,3km/h). Source: National data (see Table 9, Table 12 in the Annex)

4.4 Changes on rural roads

For rural roads, timeline data are available for 15 countries including **Austria** and **Great Britain** (since 1996), **Sweden** (1996-2004), **France** (since 1998), **Finland** and **Ireland** (1999-2005), **Lithuania** (since 2000), **Portugal** (2000-2004), **Estonia** and **Switzerland** (since 2001), **Belgium** (since 2003-2005), **Poland** (since 2003), **Norway** (since 2004), the **Czech Republic** and **Latvia** (since 2005).

In **France**, there have been reductions of more than 10% on each type of rural road. Mean speeds decreased by 12% on 110 km/h roads and by 11% on 90 km/h rural roads. In **Switzerland**, the mean speed on rural roads decreased by 8% from 78 km/h in 2001 to 72 km/h in 2006. In **Belgium**, speeds dropped by 4% on 70 km/h roads and by 6% on 90 km/h roads.[6]

In a number of other countries, mean speeds have increased recently. In Ireland, speeds have decreased between 2003 and 2005 on one type of rural road, but increased on other types by 4% to 6%. Also in **Great Britain**, the mean speed on 70 miles/h roads dropped slightly, while there has been a 9% increase on 60miles/h roads between 2001 and 2006, but the average speed on these roads remains well within the limit.

In **Portugal**, there has been a substantial increase by 9% and more, depending on the road type, between 2002 and 2004. Later data are not yet available. And in **Estonia**, **Latvia** and **Poland**, speeds have risen until 2006 by 3% to 4% (see **Table 10**, **Table 13** in the Annex).

4.5 Changes on motorways

For motorways, changes can be compared between **Austria**, **Switzerland** and **Great Britain** (since 1996), **France** (since 1998), **Finland** and **Ireland** (1999-2005), the **Netherlands** (since 1999), **Lithuania** (since 2000), **Portugal** (2000-2004) and **Sweden** (2001-2004). For **Norway** and the **Czech Republic**, data are available since in 2004.

The most important change in motorway speeds has been witnessed in France, where cars have slowed down by 6% since 2002, however during rainy weather (when the limit is 110 km/h instead of 130 km/h) this was only 3%.

[6] Speeds on 90km/h roads dropped by 11% on national roads between 2001 and 2006, and on departmental roads between 2000 and 2006. There has also been a 12% drop in mean speed on 110km/h rural roads between 2001 and 2005, but this has been followed by a slight increase in 2006.

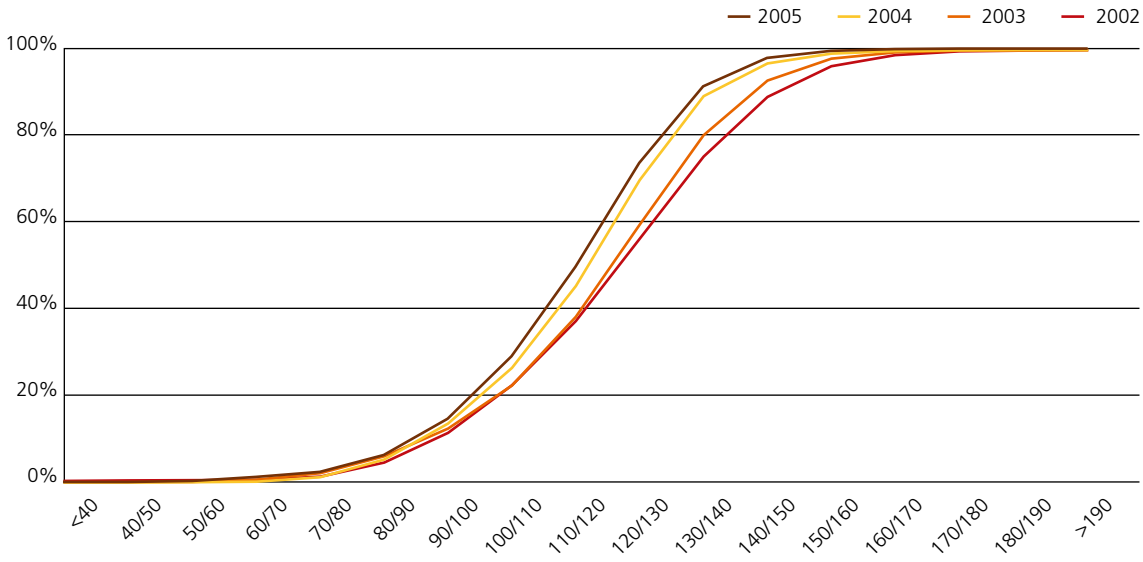


Fig. 17 Distribution of passenger car speeds on interurban motorways from 2002 to 2005 (cumulative). Source: ONSR 2006

Mean speeds also dropped slightly in **Norway**, **Switzerland**, the **Czech Republic** and the **Netherlands** (100 km/h motorways). In **Austria**, **Portugal** and **Ireland**, speeds have however increased.

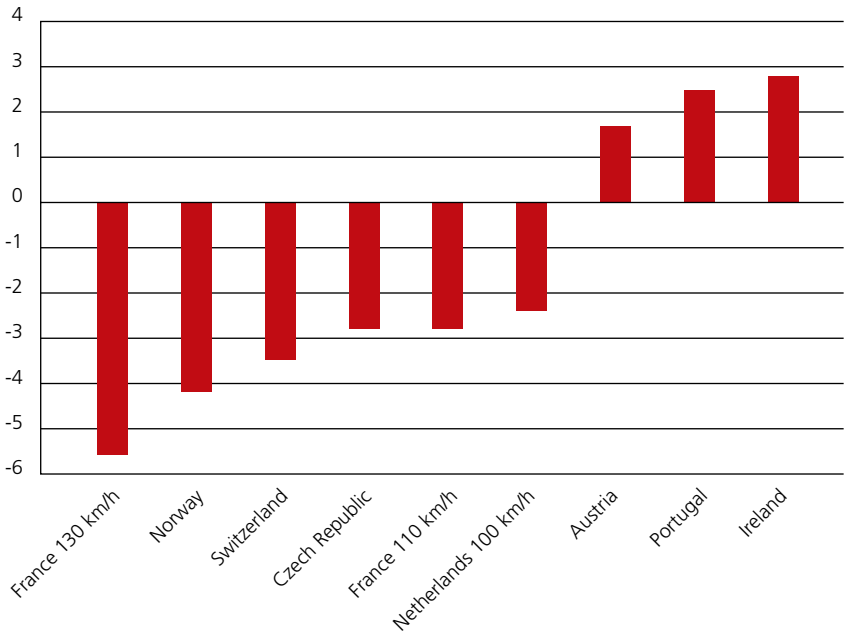


Fig. 18 Percentage changes in the mean speeds on motorways. Source: National data (see Table 11, Table 14 in the Annex)

Speeding on different road types

In addition to data on mean speeds, we asked countries to provide for each road category the proportions of vehicles travelling above the limit. Data from **Belgium**, **Austria**, **Hungary**, **Poland** and **Sweden** suggest that in these countries, the proportion of cars traveling above the limit[7] is highest on urban roads, i.e. on roads where limits have been set at the lowest level to protect

the most vulnerable road users such as pedestrians and cyclists. In Austria, Belgium and Sweden, the level of violations is moreover higher on 30 km/h roads than on 50km/h roads. However, in Switzerland and Great Britain, speed limit violations are most common on motorways, and in Portugal on interurban roads (see Table 9,Table 11 and Table 13 in the Annex).

These findings are in stark contrast with the drivers' self-reported behaviour. In a survey carried out in 2002-2003 in 23 countries, drivers in all countries reported most violations on motorways and least violations in built-up areas. The percentage of car drivers that reported violating the speed limit 'often', 'very often' or 'always' in European countries[8] on different road types was 28% on motorways, 19% on main roads between towns, 13% on country roads and 7% in built-up areas (SARTRE 3, 2004).

4.6 Effective speed management

Experience shows that there is not one single measure to reduce speeds. It rather takes a combination of measures including credible speed limits, enforcement and education, combined with 'self-explaining' roads and vehicles (OECD 2006; Wegman and Aarts 2006).

One important element is the enforcement of speed limits using a mix of traditional and automated methods (EC 2004, ETSC 2006). In **France**, where speed reductions have been achieved on all types of road, a fully automated speed camera system was introduced in late 2003 as part of a new strategy to "end drivers' impunity". Sanctions were stepped up for the most important traffic offences, including speeding. The topic was covered extensively in the media and road safety improvements reported back to the public regularly. In 2004, a driver survey showed that a large majority declared that they drove more slowly, and that the main reason for that was fear of enforcement (Arrouet 2004).

In **Great Britain**, where the use of automated enforcement began sooner and has been much more extensive than in France, this has hardly been used on motorways. The use of cameras has been concentrated more heavily on urban than on rural roads, because compliance with the limit on the latter is quite high. The effect is seen in the reduction of mean speeds and speeding on urban roads.

In **Belgium**, where speeds decreased mainly on 50 km/h and 90 km/h roads, enforcement has been stepped up using a combination of fixed and mobile, traditional and automated methods. In the northern part of the country (Flanders) and in the capital region (Brussels), numbers of speed cameras have been increased substantially. Speeds are about 5km/h lower than in the southern part (Wallonia).

[7] In Sweden, this is vehicle mileage over the limit.

[8] Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, Sweden, United Kingdom

Also in **Switzerland**, the use of speed cameras has increased substantially. Numbers of vehicles checked by automated methods have doubled between 2002 and 2005, whereas numbers of vehicles checked by traditional means have remained stable.

Speed-related indicators in Switzerland

Switzerland has introduced a detailed indicator system to monitor developments in the fields of speed and drink driving. Indicators include the levels of speed-related injury crashes, police checks, violation rates and sanctions as well as the opinions of drivers about relevant safety regulations and their enforcement. The data are available on the Internet through the website of the Swiss statistical office, see
http://www.bfs.admin.ch/bfs/portal/de/index/themen/19/04/01/ind11.html

Other elements of a functioning speed management system include safe and credible limits that are in line with the road infrastructure and the application of modern vehicle technologies that alert the driver to the prevailing limit. In **France**, Europe's frontrunner in reducing driving speeds, a review of local speed limits is currently underway and the use of Intelligent Speed Assistance (ISA) technology has been explored in a demonstration project (LAVIA)[9].

The benefits of such in-car technologies have also been studied in other countries. In the **Netherlands**, researchers found that ISA technology could help to achieve 90% compliance with speed limits and thereby reduce the number of road deaths by 25% (Oei 2001). The European PROSPER project predicts fatality reductions of up to 50% for individual countries (Carsten et al 2006).

Moderating driving speeds is crucial to improving safety. This is why all countries should draw their lessons from the successful experiences, as well as the abundant research on this subject.

[9] LAVIA stands for Limiteur s'Adaptant à la VItesse Autorisée, see www.heberge.lcpc.fr/lavia

5| Getting car users to belt up

Latest studies have shown that advanced seat belt reminders, which fulfil Euro NCAP test criteria, can get up to **99% of drivers** to use their seat belt (Kullgren et al. 2006). This is because the majority of those who do not use their belt are not in principle against seat belts. A great many deaths and serious injuries could be prevented if 99% of drivers in Europe wore their seat belt (see Table 4 in the Annex).

5.1 Those countries with good rates have reminders

The graph below shows that some countries reach a high penetration rate of seat belt reminders in new cars. In **Sweden**, nearly 70% of new passenger cars were equipped with seat belt reminders for the driver seat in 2005. In **Luxembourg**, this was 64% and in **Germany** 63%.

The proportion of new cars sold in the whole of Europe that are equipped with seat belt reminders for the driver seat is estimated to be 56% (2005). In the **Czech Republic**, **Slovakia**, **Hungary**, **Poland**, **Lithuania**, **Italy** and **Greece**, this is less than half of the new passenger cars.

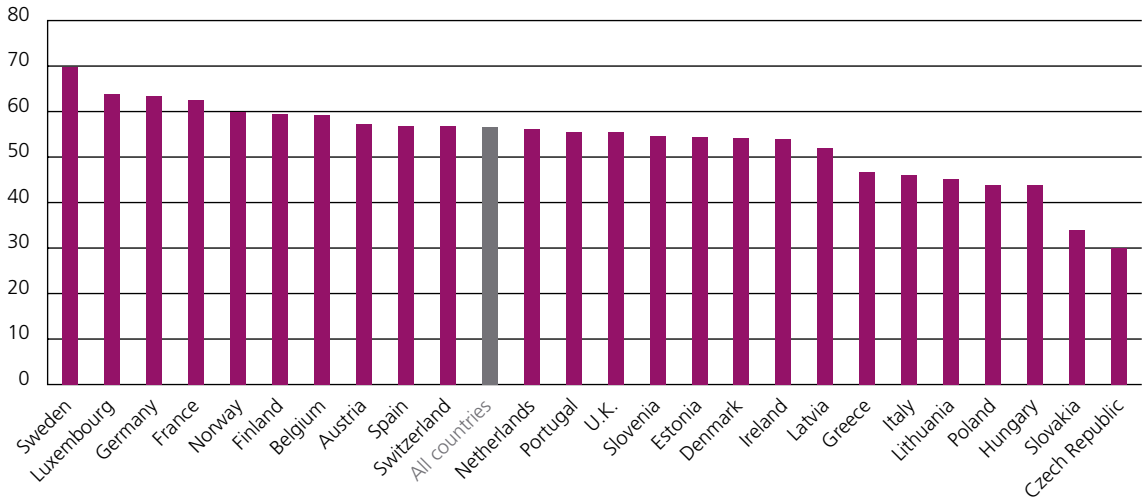


Fig. 19 Proportion of seat belt reminders for the driver seat in cars sold in 2005 (see Table 15 in the Annex)

5.2 Seat belt reminders help 'part-time users' to stay alive

Recent research suggests that the risk of dying in a crash can be reduced by up to 60% by using the seat belt (Koornstra et al 2002). Moreover, important safety features such as airbags work best if occupants are restrained by their seat belts. Still, seat belt wearing rates vary greatly among countries (see Section 2). They are especially low on the rear seats and in urban areas. Among car occupants involved in fatal and serious injury crashes, seat belt use is even lower.

Most non-users are not against seat belt use but either forget to buckle up or do not wear it in what they consider to be low-risk situations. These 'part-time users' (but not the 'hard-core non users') can be convinced by seat belt reminder systems to use their belt (ETSC 2005, 2006c).

5.3 But many people drive cars without reminders

Today, more than half of the new car models sold in Europe, are equipped with seat belt reminders for the driver seat. While new models are increasingly equipped with reminder systems, it must be borne in mind that among the total fleet far fewer cars have this type of equipment. In **Spain**, only 4.4% of the car fleet was equipped with seat belt reminders in 2004 (FITSA 2005). Also, many new cars have seat belt reminders for the driver seat, but not for the front passenger or rear seats. In Sweden, where nine out of ten best-selling models have a reminder for the driver seat, only about 59% of new cars have reminders for the front passenger seat, and 10% for the rear seat.

The indicator

The seat belt reminder penetration rates have been calculated on the basis of 2005 car sales in 25 European countries (except Malta and Cyprus, plus Norway and Switzerland) as published by CSM Worldwide's Global Light Vehicle Sales Forecast. The information as to which models have advanced seat belt reminders comes from Euro NCAP, the Swedish Road Administration and IEE, a Luxembourg-based supplier of sensor-based automotive safety products.

The penetration rates include cars that are equipped with advanced seat belt reminders that meet Euro NCAP criteria. In addition, four models were counted in that are fitted with advanced seat belt reminders that use a combination of visual and sound signals but do not fulful Euro NCAP criteria. This includes Audi Q7 and Suzuki SX4, which were both tested by Euro NCAP and did not receive any points for their reminder system. It also includes Volvo S60 and Volvo V70, which are equipped with "mild reminders" according to the latest Folksam study[1]. American cars with seat belt reminders that meet U.S. legal standards have been excluded. Many of these reminder systems are not as effective as those that fulfil the higher European standards set by Euro NCAP.

It should be noted that the proportion of seat belt reminder cars has increased since 2005. Some models that did not have any reminders throughout (most of) 2005 have been upgraded since. This includes top-selling models such as Peugeot 206, Opel Corsa, Fiat Punto and Renault Clio, which are now fitted with seat belt reminders for the driver seat. The new Honda Civic even has seat belt reminders for all seats.

5.4 Seat belt reminders for a five-star Euro NCAP rating

Euro NCAP introduced in 2002 an additional point bonus under its occupant protection score. These points can make the crucial difference between four and five stars. Carmakers have responded to this challenge. Since the introduction of the new protocol, only one model ever achieved the best Euro NCAP star rating for occupant protection without being fitted with a state-of-the-art seat belt reminder system at least in the driver seat.

"Normal safety equipment, such as head restraints or seat belt reminder systems, should be offered on all models as standard equipment, not as an option."

Claes Tingvall, Chairman of Euro NCAP

Unfortunately however, it seems that some manufacturers fit seat belt reminders solely to achieve this goal. When it turned out that Seat's Leon did not reach a sufficient number of points to achieve a five star rating the seat belt reminder was withdrawn. It was reinserted after protest from Euro NCAP. Models that are not tested by Euro NCAP, or that do not stand a chance of achieving the coveted five star rating, are usually not equipped with such a device. An example is the Opel Astra that has a seat belt reminder in its tested variant, but not in the estate version, which was not tested by Euro NCAP.

Euro NCAP requirements

To fulfil Euro NCAP criteria, seat belt reminders must use a combination of visual and sound signals. Front seat reminders must give a "loud and clear signal" for at least 90 seconds if the driver or passenger is unbelted. (Euro NCAP has not found an objective measurement method concerning the sound level.) The signal must start at the latest when the engine has been running for 60 seconds or the car has been in forward motion for 500 metres or has reached a speed of 25 km/h. Long-term deactivation of the system must require a sequence of operations, which should not be guessed at or carried out accidentally.

Other manufacturers however fit seat belt reminders also to models independently of their Euro NCAP testing. The implementation of advanced seat belt reminders started ahead of Euro NCAP's introducton of the seat belt reminder protocol. Also, car makers introduced seat belt reminders to car models after they were tested by Euro NCAP. Examples are the Citroën C3 and Toyota Corolla, which were tested by Euro NCAP in 2003 and received a four star rating for occupant protection. Both models were at that point not equipped with a seat belt reminder but are today.

5.5 What national governments can do

From the data it appears that especially the new EU countries have very low rates of seat belt reminder penetration, ranging from about 55% in Estonia and Slovenia to about 30% in the Czech Republic. It is however in those countries that reminder systems could make the greatest difference as seat belt wearing rates are low. What is it that governments can do to improve this situation?

Even though vehicle standards are set at an international level, national governments can influence the consumer's choice of vehicle. They can provide incentives, for example in the form of tax breaks, to purchase cars with seat belt reminders. They can also encourage and support initiatives by the insurance sector for consumers to choose cars with seat belt reminders.

Governments can also play a role in promoting safety as a criterion for consumers to consider by running consumer awareness campaigns on purchasing safe cars which have seat belt reminders. An example comes from Spain where the Road Traffic Directorate has used radio spots to encourage people to look out for seat belt reminders when buying a new car. This has been part of a larger media campaign to promote seat belt use.

In many countries, a large proportion of new cars are purchased by non-private customers. In **Sweden**, this figure is approximately 40%. Therefore, all non-private customers, such as governmental bodies, local authorities and companies can play an important role by including seat belt reminders in their vehicle purchase and leasing policies. In **Sweden**, for example, the public road administration has

decided to buy or rent only cars with seat belt reminders. Its recommendations are also used by other bodies.

In countries where few new cars are sold, the issue of retrofit seat belt reminders should receive more attention.

"We should also make an effort to promote retrofitting cars with seat belt reminders. Public authorities could co-finance their installation and insurance companies offer reduced premiums for cars equipped with such systems."

Ilona Buttler, Motor Transport Institute (ITS), Poland

5.6 The need for European legislation

The European car industry has committed under the European Road Safety Charter to "progressively continue" to equip cars and heavy trucks with seat belt reminders for the driver seat. An "overwhelming majority" of new models should be equipped with this life-saving device by 1 January 2009, and an "overwhelming majority" of new vehicles by 1 January 2010, according to ACEA (ACEA 2006).

However, to bring penetration rates up to 100%, the EU should pass legislation making seat belt reminders an obligatory component of all new cars sold in Europe. "*Seat belt reminders are now installed on most new car models, except in the highest and lowest priced segments of the market. These models will only be equipped with seat belt reminders if this becomes compulsory for all new cars*," says Anders Lie from the Swedish Road Administration.

The CARS21 High Level Group, initiated by Industry Commissioner Verheugen to boost the competitiveness of the European car industry, has recommended in its final report that a proposal on this matter be tabled by the European Commission in 2007 (CARS 21, 2006). The Commission responded that it would between 2007 and 2009 "assess the opportunity" of coming forward with such a proposal (EC 2007).

In Japan, legislation came into force in September 2005 requiring the all new car models to be equipped with advanced seat belt reminders for the driver seat. The requirements are similar to those set by Euro NCAP.

"To promote seat belt reminders, governments should first provide incentives to consumers to purchase cars with seat belt reminders, and in a second phase pass an EU law to make them mandatory in all cars."

Adrian Hobbs, Secretary General of Euro NCAP

Today, advanced technology is available to remind both front and rear seat occupants of their obligation to use the seat belt. For the driver seat, this technology has reached a market share of more than 50%. European governments and the European Union, together with the car manufacturers, should shoulder their responsibility and increase this share to 100%.

6| Conclusion and recommendations

Recent reductions in road deaths show that fast progress is possible in all countries, whatever their starting point.

Progress toward the EU target has been fastest in countries with a medium level of safety that have prioritised compliance with key traffic safety rules. In **France**, **Luxembourg** and **Belgium**, large drops in traffic deaths were registered when policymakers focused on better enforcement of key traffic law. The biggest of these countries, France, has contributed the greatest share to the European target (EC 2007b). This has mainly been achieved by improving road user behaviour (see Fig. 20, ONSR 2006).

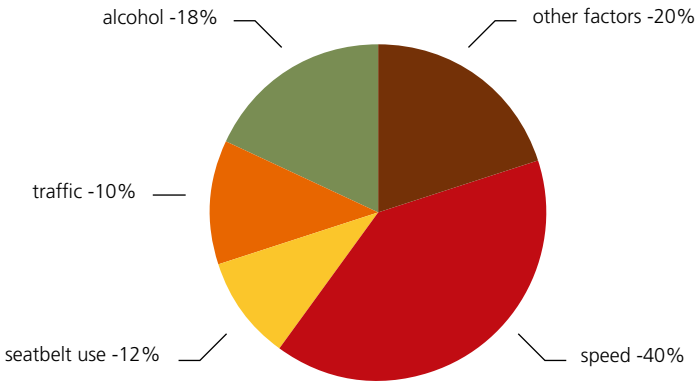


Fig. 20 Quantitative assessment of the main factors of the 21% decrease in road deaths in 2003. Source: ONSR

However, compliance with traffic safety law varies considerably among countries. A comparison between the three key areas in road user behaviour shows that the safety potential is greatest in areas where little data are available and progress is slow.

6.1 Seat belt use

In the area of seat belt use, most countries in Europe can provide front seat wearing rates from independent surveys. Some 24 out of 27 countries could be covered in the ranking, even though latest data from Cyprus and Luxembourg are from 2002 and 2003. Also, data collection procedures allow – to a limited extent – comparison of current compliance levels.

Developments are positive in many countries, and seat belt wearing rates do not go down in any of the countries producing regular surveys. Enforcement and education have been crucial in countries where seat belt use is high, but seat belt reminders also play an increasing role in raising compliance (ETSC 2006c). More than half of all new cars are now equipped with these devices.

Still, there is a certain potential in increasing seat belt use, especially in those countries with lower rates. Overall, another 15% of driver deaths could be prevented across Europe.

6.2 Drink driving

When it comes to drink driving, the evidence is poor in many countries, and in some countries it is nonexistent. Few countries measure the prevalence of drink driving in traffic, and data from tests performed in accidents is far from complete in many countries. Only 20 of the 27 countries covered in the Road Safety Performance Index (PIN) are able to provide accident data that allow the evaluation of trends in drink driving related deaths. Differences in definitions and data collection procedures are the reason why a comparison of compliance levels is not possible at this point.

Developments in drink driving are positive in some countries but not everywhere. In 10 countries, deaths related to drink driving crashes have decreased more slowly than deaths related to other crashes. In six countries, drink driving deaths even increased over the last decade.

As the true level of drink driving in Europe can only be guessed at, the safety potential of increasing the level of compliance with drink driving legislation is hard to establish. It is estimated that around 30-40% of driver deaths could be prevented by full compliance (ESCAPE 2003). But to approach this level of prevention will probably require both severe enforcement and the extensive use of alcohol interlocks. The use of these devices is still very limited in Europe (ETSC 2005).

6.3 Speed

Speed data is collected in many countries in Europe. However, countries have different ways of collecting and processing the relevant data and a comparison of compliance levels is currently not possible.

The available data suggests that only few countries have been successful in reducing speeds on their roads. Greatest reductions are reported from **France**, but also in **Belgium** and **Switzerland**, speeds have recently decreased across all types of road.

Road safety research shows that even minor reductions in driving speeds will lead to considerable improvements in road safety. In fact, there is no other area in road user behaviour in which comparable gains can be made.

The table below summarises the extent to which compliance with seat belt and drink driving laws and speed limits is being monitored in European countries. It also gives indications of the scope for saving lives in each of these three areas of driver behaviour. It shows also that in those areas where the greatest benefits can be reaped, data is poorest and developments wanting.

	Seat belt use	Drink driving	Speed
Data availability	All countries except three conduct independent surveys to measure compliance with seat belt law.	Two thirds of countries provide timeline data on drink driving deaths.	Three quarters of countries measure speed levels on (parts of) their network.
Data quality	Data from 15 countries is in line with the quality criteria set out by SafetyNet.	There are indications that there is a substantial level of underreporting in many countries. Only three countries provide estimates adjusted for underreporting.	Little is known about the accuracy and representativeness of the data.
Development	There is an upward trend in many countries.	In only half the countries included in the ranking, reductions in drink driving deaths contribute their share to overall reductions in deaths.	There are few countries where speed reductions have been sustained over recent years.
Potential	At least 15% of driver deaths, and perhaps about 8% of all road deaths, could be prevented if 99% respected the legal obligation to wear seat belts (see Section 2.3).	About 30-40% of driver deaths, and perhaps 15-20% of all road deaths, could be prevented if all respected legal BAC limits (ESCAPE 2003).	In one of the already safest countries, the Netherlands, at least 25% of road deaths could be prevented if 90% of drivers respected the legal speed limits (Oei 2001).

Note: Percentage reductions in deaths from these three kind of change in behaviour are not additive – the combined effect of reductions of 8%, 15% and 25% is not 46%, but 41%.

Table 1 Road user behaviour in the areas of seat belt use, drink driving and speed – monitoring, developments, life-saving potential.

6.4 Recommendations

Monitoring performance is essential to improving road safety. Every government that wishes to protect effectively life and health of its citizens needs to have a system in place that allows to judge whether efforts undertaken have been successful and money has been wisely spent.

The PIN Panel and Steering Group therefore recommends that all countries

- regularly monitor road user behaviour according to latest standards
- improve data quality based on SafetyNet protocols[10]
- communicate compliance data to relevant stakeholders
- use the data to monitor achievements and identify shortcomings to be addressed
- set themselves quantitative targets based on compliance indicators
- seek to reach these targets by applying proven enforcement strategies according to the EC Recommendation on enforcement
- support the implementation of in-car enforcement technologies such as seat belt reminders, but also alcolocks and Intelligent Speed Assistence technogies

The PIN Panel and Steering Group recommends that the European Union

- support the development of ready-to-use manuals on data collection
- support countries in setting up data collection procedures
- use the evidence gathered under the Road Safety PIN to devise relevant policies - including European standards on traffic law enforcement and a binding timeframe for the implementation of seat belt reminders

[10] These protocols will shortly be made available on the website of the European Road Safety Observatory www.erso.eu.

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Annex

Country	Number of road deaths					Change 2001 to 2005 (in %)
	2001	2002	2003	2004	2005	
Austria	958	956	931	878	768	-19,9
Belgium	1486	1306	1214	1162	1089	-26,7
Cyprus	98	94	97	117	102	4,1
Czech Republic	1334	1431	1447	1382	1286	-3,6
Denmark	431	463	432	369	331	-23,2
Estonia	199	223	164	170	169	-15,1
Finland	433	415	379	375	379	-12,5
France	8162	7655	6058	5530	5318	-34,8
Germany	6977	6842	6613	5842	5361	-23,2
Greece	1880	1634	1605	1670	1658	-11,8
Hungary	1239	1429	1326	1296	1278	3,2
Ireland	412	376	337	379	399	-3,2
Italy	6691	6739	6065	5625	5462	-18,4
Latvia	558	559	532	516	442	-20,8
Lithuania	706	697	709	752	760	7,7
Luxembourg	69	62	53	49	46	-33,3
Malta	16	16	16	13	17	6,3
Netherlands	993	987	1028	804	750	-24,5
Norway	275	310	280	257	224	-18,6
Poland	5534	5827	5640	5712	5444	-1,6
Portugal	1670	1668	1542	1294	1247	-25,3
Slovakia	614	610	645	603	560	-8,8
Slovenia	278	269	242	274	258	-7,2
Spain	5517	5347	5400	4749	4442	-19,5
Sweden	583	560	529	480	440	-24,5
Switzerland	544	513	546	510	409	-24,8
U.K.	3598	3581	3658	3368	3337	-7,3
Total EU 25	51255	50569	47488	44176	41976	-18,1

Table 1 Road deaths in Europe 2001-2005. Source: CARE and national data

Country	Year	Front aggre-gated	Front driver	Front passen-ger	Rear seats	Explanatory note
Austria	2005	83	83	82	52	
Belgium	2005	71	73	68	n/a	
Cyprus	2002	80	81	77	n/a	Most recent data available. Combined rate calculated using SafetyNet transformation rules (0.65 driver, 0.35 front passenger).
Czech Republic	2005	72	74	71	30	Data for the rear seat are not represenative as motorways are not included in the sample.
Denmark	2005	85	85	n/a	63	Calculated by SafetyNet (driver=front seat, 0.9 pass. cars, 0.1 vans).
Estonia	2005	74	n/a	n/a	30	Data aggregated by SafetyNet.
Finland	2005	88	n/a	n/a	78	Calculated using SafetyNet transformation rules (0.66 outside built-up areas, 0.34 in built-up areas; 0.9 cars, 0.1 vans).
France	2005	97	97	98	70	The rate does not include vans, only passenger cars.
Germany	2005	96	96	96	89	
Greece	2005	n/a	n/a	n/a	n/a	
Hungary	2005	67	67	67	34	Calculated by SafetyNet (0.35 urban roads, 0.55 rural roads, 0.10 motorway).
Ireland	2005	86	86	n/a	46	
Italy	2005	71	n/a	n/a	n/a	The rate does not include motorways, only urban and rural roads.
Latvia	2006	77	77	77	n/a	Calculated by SafetyNet (0.6 outside built-up areas and 0.4 in built-up areas). For built-up areas, measurements were done only in one city (Riga).
Lithuania	2005	n/a	n/a	n/a	n/a	
Luxembourg	2003	80	81	78	60	Most recent data available.
Malta	2006	96	97	95	28	Calculated using SafetyNet transformation rules (0.65 driver, 0.35 front passenger). Measurements are made at only one point.

Country	Year	Front aggre-gated	Front driver	Front passen-ger	Rear seats	Explanatory note
Netherlands	2005	90	92	90	64	Calculated by SafetyNet (0.65 driver, 0.35 passenger; 0.91 pass. cars, 0.09 vans).
Norway	2006	91	91	90	n/a	Calculated using SafetyNet transformation rules 0.3 urban, 0.6 rural, 0.1 motorways).
Poland	2005	78	77	79	n/a	Calculated by SafetyNet (0.65 driver, 0.35 passenger; 0.65 rural roads, 0.35 urban roads). Motorways not included.
Portugal	2006	86	n/a	n/a	45	Data not weighted by traffic volumes per road type.
Slovakia	2005	n/a	n/a	n/a	n/a	
Slovenia	2006	87	90	81	30	Calculated using by SafetyNet transformation rules (0.65 driver, 0.35 passenger). Rural roads not included.
Spain	2005	74	74	75	51	
Sweden	2005	92	92	93	73	Combined rate calculated by SafetyNet.
Switzerland	2005	82	82	n/a	53	Combined rate calculated using SafetyNet rules (driver= front seat).
UK	2005	90	90	90	84	Calculated by Safeytnet (0.65 driver, 0.35 passenger; 0.9 pass. cars, 0.1 vans in GB; 0,925 passenger cars, 0,075 vans in NI; 0.965 GB, 0.035 NI)

Table 2 Seat belt wearing rates in European countries. Source: SafetyNet and national data

Country	Car occupant deaths in 2005	Car driver deaths in 2005	Proportion driver deaths in occupant deaths (in %)	Current driver seat belt rate (in %)(1)	Lives saved	Total of driver deaths had none used seat belts	Reduction in driver deaths due to seat belt use (in %)
Austria	432	331	76,6	83	235	566	41,5
Belgium	624	471	75,5	73	271	742	36,5
Cyprus	54	35	64,8	80	23	58	40,0
Czech Republic	657	396	60,3	74	233	629	37,0
Denmark	169	121	71,6	85	89	210	42,5
Estonia	99	61	61,6	74	36	97	37,0
Finland	231	162	70,1	88	127	289	44,0
France	3065	2216	72,3	97	2087	4303	48,5
Germany	2833	2095	73,9	96	1934	4029	48,0
Greece	1658	1053	63,5	60	451	1504	30,0
Hungary	620	372	60,0	67	187	559	33,5
Ireland*	262	171	65,3	86	129	300	43,0
Italy*	4723	3637	77,0	71	2002	5639	35,5
Latvia	199	106	53,3	77	66	172	38,5
Lithuania	418	227	54,3	60	97	324	30,0
Luxembourg	36	26	72,2	80	17	43	40,0
Malta	11	5	45,5	97	5	10	48,5
Netherlands	337	254	75,4	92	216	470	46,0
Norway	135	91	67,4	91	76	167	45,5
Poland	2526	1467	58,1	77	918	2385	38,5
Portugal	620	394	63,5	86	297	691	43,0
Slovakia	280	157	56,1	65	76	233	32,5
Slovenia	148	93	62,8	90	76	169	45,0
Spain	2393	1564	65,4	74	919	2483	37,0
Sweden	271	192	70,8	92	164	356	46,0
Switzerland	178	132	74,2	82	92	224	41,0
U.K.**	1675	1109	66,2	90	907	2016	45,0
Total EU25	24341	16715	69,0		11563	28278	40,9
Total	24654	16938	69,0		11731	28669	40,9

* Data on occupant and driver deaths relates to all motor vehicles.

** Data on occupant and driver deaths relates only to Great Britain.

(1) 2005 rates except for Malta, Norway, Latvia, Portugal and Slovenia (2006); front seat aggregated rates for Estonia, Finland, Italy and Portugal.

Seat belt rate estimated. For Cyprus, the rate is based on a 2002 estimate of 81% and for Luxembourg on an estimate of 81% in 2003. For Lithuania, 60% are estimated by national PIN Panel member Vidmantas Pumputis. For Greece and Slovakia we have taken over the estimates made by SafetyNet project for the front aggregated rate.

Seat belt rate not considered fully comparable with other countries' data.

Table 3 Drivers' lives that are saved through seat belt use

Country	Car occupant deaths in 2005	Car driver deaths in 2005	Current driver seat belt rate (in %)[1]	Lives saved with a 99% rate	Proportion in driver deaths (in %)	Lives saved including higher risk[2]	Proportion in driver deaths (in %)
Austria	432	331	83	45	13,7	59	17,9
Belgium	624	471	73	96	20,5	119	25,3
Cyprus	54	35	80	6	15,8	7	20,4
Czech Rep.	657	396	74	79	19,8	98	24,7
Denmark	169	121	85	15	12,2	20	16,2
Estonia	99	61	74	12	19,8	15	24,7
Finland	231	162	88	16	9,8	22	13,3
France	3065	2216	97	43	1,9	63	2,8
Germany	2833	2095	96	60	2,9	87	4,2
Greece	1658	1053	60	293	27,9	342	32,5
Hungary	620	372	67	90	24,1	108	28,9
Ireland*	262	171	86	20	11,4	26	15,2
Italy*	4723	3637	71	789	21,7	967	26,6
Latvia	199	106	77	19	17,9	24	22,6
Lithuania	418	227	60	63	27,9	74	32,5
Luxembourg	36	26	80	4	15,8	5	20,4
Malta	11	5	97	0	1,9	0	2,8
Netherlands	337	254	92	16	6,5	23	9,1
Norway	135	91	91	7	7,3	9	10,2
Poland	2526	1467	77	262	17,9	332	22,6
Portugal	620	394	86	45	11,4	60	15,2
Slovakia	280	157	65	40	25,2	47	30,0
Slovenia	148	93	90	8	8,2	10	11,3
Spain	2393	1564	74	310	19,8	386	24,7
Sweden	271	192	92	12	6,5	17	9,1
Switzerland	178	132	82	19	14,4	25	18,8
U.K.**	1675	1109	90	91	8,2	125	11,3
Total EU25	24341	16715		2435	14,6	3036	18,2
Total	24654	16938		2460	14,5	3070	18,1

* Data on occupant and driver deaths relates to all motor vehicles

** Data on occupant and driver deaths relates only to Great Britain.

(1) 2005 rates except for Malta, Norway, Latvia, Portugal and Slovenia (2006); front seat aggregated rates for Estonia, Finland, Italy and Portugal.

(2) Accident risk of currently unbelted drivers assumed to be 1.5 times that of currently belted drivers.

Seat belt rate estimated. For Cyprus, the rate is based on a 2002 estimate of 81% and for Luxembourg on an estimate of 81% in 2003. For Lithuania, 60% are estimated by national PIN Panel member Vidmantas Pumputis. For Greece and Slovakia we have taken over the estimates made by SafetyNet project for the front aggregated rate.

Seat belt rate not considered fully comparable with other countries' data.

Table 4 Drivers' lives that could be saved with a 99% seat belt wearing rate

Estimation of drivers' lives saved through (increased) seat belt use Explanatory note

Based on the driver seat belt wearing rate and effectiveness, as well as the number of drivers killed in road crashes in an existing situation, the estimated number of drivers' lives that would be saved if the situation changed is calculated using a method developed by Schoon 1994 and Richard Allsop (University College London).

Lives saved if the accident rate is independent of seat belt wearing

Assuming that wearing a seat belt cuts by half the number of drivers who would die in potentially fatal accidents, and a proportion D1 of drivers is wearing belts in an existing situation, then the number S1 of drivers who are actually killed in crashes can be calculated as

$S1 = N*(1-D1*0.5)$

where N is the number of drivers who would be killed in that situation if none wore belts. Then

$N = S1/(1-D1*0.5)$ (1)

The same holds for another situation, in which a proportion D2 of the same drivers is wearing belts.

$S2 = N*(1-D2*0.5)$ (2)

To calculate the lives saved in the new situation based on data for the old situation, we substitute (1) in (2).

$S2 = S1*\{(1-D2*0.5)/(1-D1*0.5)]$ (3)

The number of lives saved through the difference in seat belt wearing between the two situations is

$B = S1 - S2$ (4)

Substituting (3) in (4), this number is

$B = S1*(D2 – D1)*0.5/(1 – D1*0.5)$

To estimate the number of lives saved through existing seat belt use, D2 is taken to be zero and B is the required estimate. To estimate the number of lives saved through a maximum use of 99%, D2 is taken to be 0.99.

Lives saved if non-wearers have a higher accident rate than wearers

If the accident rate for unbelted drivers is X times that of belted drivers in both situations, and N is now the number of drivers that would be killed in the existing situation
if all drivers had the accident rate of the belted drivers but none wore belts, then the number if drivers killed in the existing situation is

$$S1 = N*[(1 – D1)*X + 0.5*D1] \quad (5)$$

and the number of drivers killed in the new situation would be

$$S2 = N*[(1 – D2)*X + 0.5*(D2 – D1)*X + 0.5*D1] \quad (6)$$

It then follows that

$$B = S1*0.5*(D2 – D1)*X/[(1 – D1)*X + 0.5*D1]$$

As before, to estimate the number of lives saved through seat belt use, D2 is taken to be zero, and to estimate the number of lives saved through a maximum use of 99%, D2 is taken to be 0.99.

Country	Total reported road traffic deaths									
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	1027	1105	963	1079	976	958	956	931	878	768
Belgium	1356	1364	1500	1397	1470	1486	1306	1214	1162	1089
Cyprus	128	115	111	113	111	98	94	97	117	102
Czech Republic	1568	1597	1360	1455	1486	1334	1431	1447	1382	1286
Denmark	514	489	499	514	498	431	463	432	369	331
Estonia	213	279	284	232	204	199	223	164	170	169
Finland	404	438	400	431	396	433	415	379	375	379
France	8540	8445	8920	8486	8079	8162	7655	6058	5530	5318
Germany*	12290	12040	11042	11425	11079	10292	10020	9583	8575	7863
Greece	2157	2105	2182	2116	2037	1880	1634	1605	1670	1658
Hungary	1370	1391	1371	1306	1200	1239	1429	1326	1296	1278
Ireland	453	473	458	414	418	412	376	337	379	399
Italy	6676	6714	6313	6688	6649	6691	6739	6065	5625	5426
Latvia	594	567	677	652	635	558	559	532	516	442
Lithuania	667	725	829	748	641	706	697	709	752	760
Luxembourg	72	56	56	58	77	69	62	53	49	46
Malta	19	18	17	4	15	16	16	16	13	17
Netherlands	1180	1163	1066	1090	1082	993	987	1028	804	750
Norway	255	303	352	304	341	275	310	280	257	224
Poland	6359	7310	7080	6730	6294	5534	5827	5640	5712	5444
Portugal	2730	2521	2126	2028	1877	1670	1668	1542	1294	1247
Slovakia	616	788	819	647	628	614	610	645	603	560
Slovenia	389	357	309	334	313	278	269	242	274	258
Spain**	3017	3156	3400	3336	3349	3220	3140	3196	2861	2738
Sweden**	218	241	236	238	276	251	266	268	210	209
Switzerland	616	587	597	583	592	544	513	546	510	409
Great Britain	3598	3599	3421	3423	3409	3450	3431	3508	3221	3201

* Number of drivers involved in fatal crashes (Germany)
** Number of killed car drivers (Spain, Sweden)

Table 5 Road deaths in Europe 1996-2005. Source: CARE and national data

Country	Estimated number of deaths in drink driving accidents									
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	70	77	72	75	56	52	75	74	57	46
Belgium	115	113	161	122	97	136	108	95	44	48
Cyprus	14	12	13	7	9	10	10	8	24	23
Czech Republic	207	205	188	160	126	112	157	127	68	71
Denmark	117	93	113	127	103	97	110	98	94	76
Estonia	57	68	69	55	40	54	68	45	44	48
Finland	78	89	75	83	71	82	91	67	84	89
France	2750	2770	2935	2741	2472	2644	2319	1920	1736	1532
Germany*	1087	1033	769	752	672	645	627	578	489	399
Greece	210	221	279	229	252	202	149	131	157	177
Hungary	77	110	95	84	83	112	136	115	133	112
Ireland										
Italy										
Latvia	139	170	183	183	125	111	160	119	113	96
Lithuania				76	69	101	78	68	84	90
Luxembourg										
Malta										
Netherlands	240	225	225	210	200	180	170	170	135	115
Norway										
Poland	827	896	911	732	644	425	529	463	423	458
Portugal										
Slovakia					80	85	92	87	73	67
Slovenia	133	78	75	90	89	101	86	78	85	83
Spain**			331	359	450	484	466	516	398	
Sweden**						60	75	78	63	71
Switzerland	117	114	95	128	114	107	93	106	103	79
Great Britain	580	550	460	460	530	530	550	580	590	560

* Number of drivers involved in fatal drink driving crashes (Germany)

** Number of killed car drivers with positive blood alcohol (Spain, Sweden); in Sweden this number is computed

Table 6 Deaths resulting from drink driving accidents in Europe 1996-2005. Source: National data

Progress in reducing drink driving deaths
Explanatory note

Each of the 18 countries included in the ranking provided the annual total number of road deaths and the annual number of deaths in accidents related to drink driving, based on its own procedures which remained consistent for the available years of data.

T(Y) = Total number of reported road accident deaths in year Y

A(Y) = Estimated number of deaths in drink driving related accidents in year Y

On the basis of these two timelines, a third series of data was established, being

N(Y) = T(Y) – A(Y) = Estimated number of other deaths in road accidents, ie deaths in accidents not related to drink driving by the country's procedure

The developments in these numbers were reflected as average yearly percentage reductions P(A) and P(N) between a baseline year, year 1, and year L (2005).
The middle one of the first 3 available years, usually 1996-1998, was taken as the baseline year and the average of the numbers of deaths in these 3 years was taken as the number in the baseline year.

$$P(A) = 100\left[1 - \left(\frac{A(L)}{A(1)}\right)^{\frac{1}{L-1}}\right]$$

$$P(N) = 100\left[1 - \left(\frac{N(L)}{N(1)}\right)^{\frac{1}{L-1}}\right]$$

The average yearly percentage change P(DD) in drink driving deaths relative to the change in other deaths was then estimated as

$$P(DD) = 100\left[1 - \left(\frac{100 - P(A)}{100 - P(N)}\right)\right]$$

The number of years in the series was L=9 for all countries except **France** (L=8), **Lithuania** (L=6), **Slovakia** (L=5), **Spain** (L=6) and **Sweden** (L=4). The resulting figures for each country are given in Table 7.

Country	Average yearly percentage change in road deaths	Average yearly percentage change in deaths related to drink driving	Average yearly percentage change in other road deaths	Yearly percentage change in deaths related to drink driving relative to change in other road deaths
Czech Republic	-2,0	-12,1	-1,0	-11,3
Belgium	-3,2	-11,7	-2,5	-9,4
Germany*	-5,0	-10,4	-4,5	-6,2
Poland	-3,0	-7,8	-2,4	-5,6
Slovakia	-2,4	-6,0	-1,9	-4,2
Netherlands	-5,1	-8,3	-4,4	-4,1
Latvia	-4,0	-6,5	-3,2	-3,4
Austria	-3,6	-5,6	-3,5	-2,2
France	-6,2	-6,7	-5,9	-0,1
Greece	-3,2	-3,6	-3,1	-0,4
Lithuania	1,7	1,9	1,7	-0,2
Switzerland	-4,7	-3,9	-4,9	1,0
Denmark	-5,0	-4,3	-5,3	1,1
Estonia	-5,2	-3,7	-5,7	2,2
Great Britain	-1,3	0,7	-1,6	2,4
Finland	-1,1	1,2	-1,7	3,0
Slovenia	-3,8	-1,7	-4,7	3,1
Hungary	-1,0	2,2	-1,2	3,5
Spain**	-3,2	1,0	-3,8	4,9
Sweden**	-7,2	0,1	-10,3	11,6
Europe 15***	-2,8	-4,5	-2,5	-2,1

* Average yearly percentage change in drivers involved in fatal drink driving crashes (Germany)

** Average yearly percentage change in driver deaths from drink driving crashes (Spain)

*** This includes all countries for which timeline data over 1996-98 to 2005 is available: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, Great Britain, Greece, Hungary, Latvia, Netherlands, Poland, Slovenia and Switzerland

Table 7 Average yearly changes in deaths from crashes related to drink driving and in other road crashes between 1996-1998 (baseline) and 2005, except France (last year 2004), Lithuania (baseline 1999-2001), Slovakia (baseline 2000-2002), Spain (baseline 1998-2000; last year 2004) and Sweden (baseline 2001-2003).

Country	Total road traffic deaths	Deaths in crashes related to drink driving	Proportion of drink driving deaths in total deaths (%)
Austria	768	46	6,0
Belgium	1089	48	4,4
Cyprus	102	23	22,5
Czech Republic	1286	71	5,5
Denmark	331	76	23,0
Estonia	169	48	28,4
Finland	379	89	23,5
France	5318	1532	28,8
Germany*	7863	399	5,1
Greece	1658	177	10,7
Hungary	1278	112	8,8
Ireland (2003)**	301	85	28,2
Italy (2004)**	5082	93	1,8
Latvia	442	96	21,7
Lithuania	760	90	11,8
Luxembourg	46	n/a	n/a
Malta	17	n/a	n/a
Netherlands	817	115	14,0
Norway**	202	50	22,3
Poland	5444	458	8,4
Portugal	1247	n/a	n/a
Slovakia	560	67	12,0
Slovenia	258	83	32,2
Spain (2004)***	2861	398	13,9
Sweden***	209	71	34,0
Switzerland	409	79	19,3
Great Britain	3201	560	17,5

* Number of drivers of motor vehicles involved in fatal accidents.
** Number of fatal crashes. The figure for Norway refers to the suspected use of both alcohol or drugs.
*** Number of killed drivers with positive blood alcohol.

Countries included in the ranking

Table 8 Proportion of drink driving deaths in the total of traffic deaths (2005). Source: National data

	Highest/ lowest level (km/h)	Lowest/ highest level (km/h)	Period	Change (%)	Yearly average change (%)
France	51,8	47,0	2002-2006	-9,3	-2,2
Great Britain	53,1	48,3	1997-2005	-9,1	-1,1
Belgium	53,9	50,4	2003-2005	-6,5	-3,2
Portugal	48,0	45,0	2002-2004	-6,3	-3,1
Norway	50,3	47,9	2004-2006	-4,8	-2,4
Switzerland	43,0	41,0	2005-2006	-4,7	-4,7

Table 9 **Changes of more than 2 km/h in the mean speeds on urban roads with a limit of 50km/h (Great Britain 30miles/h which is 48,3km/h). Source: National data**

	Speed limit (km/h)	Highest/ lowest level (km/h)	Lowest/ highest level (km/h)	Period	Change (%)	Yearly average change (%)
France national	90	90,1	80,3	2001-2006	-10,9	-2,1
France departemental	90	94,6	84,5	2000-2006	-10,7	-1,7
Switzerland	80	78,0	72,0	2001-2006	-7,7	-1,5
Belgium	90	94,3	88,3	2003-2004	-6,4	-6,4
Belgium	70	78,1	74,6	2004-2005	-4,5	-4,5
Great Britain	112,7*	112,7	109,5	2001-2006	-2,9	-0,6
Ireland country	80	77,0	75,0	2003-2005	-2,6	-1,3
Poland	90	84,4	86,7	2004-2006	2,7	1,4
Latvia main roads	90	88,2	90,9	2005-2006	3,1	3,1
Estonia	110	98,7	101,9	2002-2006	3,2	0,8
Latvia 1st class roads	90	84,3	87,1	2005-2006	3,3	3,3
Estonia	90	91,1	94,9	2002-2006	4,2	1,1
Ireland national principal	100	92,0	96,0	2003-2005	4,3	2,2
Ireland regional	80	79,0	84,0	2003-2005	6,3	3,2
Great Britain	96,6**	72,5	78,9	2001-2005	8,9	2,3
Portugal access controlled	90	97,0	106,0	2002-2004	9,3	4,8
Portugal not access controlled	90	92,0	102,0	2002-2004	10,9	5,6

* 70 miles/h
** 60 miles/h

Table 10 Changes of more than 2 km/h in the mean speeds on rural roads. Source: National data

	Speed limit (km/h)	Highest/ lowest level (km/h)	Lowest/ highest level (km/h)	Period	Change (%)	Yearly average change (%)
France	130	126,0	119,0	2002-2005	-5,6	-1,8
Norway	90	86,6	83,0	2004-2006	-4,2	-2,1
Switzerland	120	114,0	110,0	2003-2006	-3,5	-1,2
Czech Republic	130	108,0	105,0	2005-2006	-2,8	-2,8
France	110	112,1	109,0	2003-2005	-2,8	-1,4
Netherlands	100	97,8	95,5	2003-2006	-2,4	-0,8
Portugal	120	118,0	121,0	2002-2004	2,5	1,3
Austria	130	118,0	120,0	2003-2006	1,7	0,6
Ireland	120	106,0	109,0	2003-2005	2,8	1,4

Table 11 Changes of more than 2 km/h in the mean speeds on motorways. Source: National data

Country	Vehicle type	Speed limit (km/h)	Road type	1996		1997		1998		1999	
Austria	cars	30		36,1	79,4	35,7	78,3	37,2	86,5	36,5	77,0
	cars	50		53,3	61,9	53,3	64,2	52,1	56,5	52,2	54,6
Belgium	cars	30									
	cars	50									
Cyprus	all traffic	50									
	all traffic	50	Distributor road								
Czech Republic	all traffic	50									
	all traffic	70									
France	cars	50						50,4	52,7	50,8	51,2
Hungary	all traffic	50	1st class main road								
	all traffic	50	2nd class main road								
	all traffic	50	Minor road								
Lithuania	all traffic	50									
Norway	all traffic	50									
	all traffic	60									
Poland*	all traffic	50									
	all traffic	50-60									
	all traffic	60									
Portugal	cars	50									
Switzerland	all traffic	50									
Great Britain	cars	30 mph		33,0	72,0	33,0	70,0	32,0	69,0	32,0	67,0
	cars	40 mph		36,0	25,0	36,0	27,0	36,0	26,0	36,0	26,0

*Change of limit in 2004 from 60 km/h to 50 km/h during daytime

Mean speed

Vehicles exceeding the speed limit (%)

Table 12 Mean speeds and speed limit violations on urban roads in Europe. Source: National data

2000		2001		2002		2003		2004		2005		2006	
37,4	83,3	33,4	66,4	35,3	78,7	36,7	81,7	35,4	77,6	35,7	79,2	34,4	71,2
51,3	53,4	51,6	54,7	52	55,4	52,6	60,3	50,8	50,9	51,1	53,7	51,6	54,6
						38,3	74,6	35,8	72,7	35,4	72,1		
						53,9	59,7	51,3	50	50,4	46,7		
												48,0	
												55,0 - 65,0	
								43,0	36,0	50,0	43,0	45,0	23,0
												71,0	49,0
51,7	56,7	51,4	54,4	51,8	54,0	49,9	48,3	49,3	45,1	48,2	42,6	47,0	34,9
								55,7	67,0				
								56,2	66,0				
								56,9	71,0				
												57,9	42,9
								50,3	54,3	49,4	56,4	47,9	46,4
								61,1	61,1	60,4	55,7	60,6	57,3
										61,7	80,0	63,1	83,0
								62,7	77,9				
						64,3	65,6						
47,0	41,0			48,0	47,0			45,0	38,0				
						43,0	21,0	43,0	19,0	43,0	18,0	41,0	13,0
32,0	66,0	32,0	65,0	31,0	59,0	31,0	58,0	31,0	53,0	30,0	50,0	30,0	
37,0	25,0	36,0	25,0	37,0	27,0	36,0	27,0	36,0	27,0	36,0	25,0	36,0	

Country	Vehicle type	Speed limit (km/h)	Road type	1996		1997		1998		1999	
Austria	cars	70		69,1	42,5	69,5	43,5	68,5	36,9	70,6	45,6
	cars	100		90,5	21,5	91,2	23,1	89,4	18,9	90,9	21,0
Belgium	cars	70									
	cars	90									
Cyprus	all traffic	80									
Czech Republic	all traffic	90									
Estonia		90									
		110									
Finland	all traffic	80								82,0	66,3
	all traffic	100								95,7	43,3
France	cars	90	National road					89,4	50,9	88,2	49,8
	cars	90	Departmental road					91,6	56,1	92,0	59,1
	cars	110						110,8	52,6	112,0	59,5
Hungary	all traffic	90	1st class main road								
		90	2nd class main road								
		90	Minor road								
Ireland	cars	100	Dual carriageway National primary road							98,0	
	cars	100	2-Lane National primary road							98,0	
	cars	100	2-Lane National secondary road							84,0	
	cars	80	2-Lane Regional road							n/a	
	cars	80	2-Lane Country road							n/a	
Latvia	all traffic	90	Main road								
	all traffic	90	1st class road								
Lithuania	all traffic	90									
Norway	all traffic	70									
	all traffic	80									
Poland	all traffic	90									
Portugal	cars	90	Single carriageway - access controlled								
	cars	90	Single carriageway - non controlled access								
Sweden	cars	70		67,5		67,8		67,6		67,0	
	cars	90		88,6		88,8		88,7		88,3	
	cars	110		107,5		106,7		108,3		108,4	
Switzerland	all traffic	80		75,0	24,0						
Great Britain	cars	60 mp/h		47,0	10,0	46,0	9,0	46,0	10,0	47,0	10,0
	cars	70 mp/h		69,0	49,0	70,0	53,0	70,0	54,0	70,0	53,0

Mean speed
Vehicles exceeding the speed limit (%)

Table 13 Mean speeds and speed limit violations on rural roads in Europe. Source: National data

2000		2001		2002		2003		2004		2005		2006	
67,7	34,9	68,0	37,7	69,7	43,8	67,9	48,8	67,8	36,9	69,7	43,7	67,1	36,3
90,3	19,1	89,0	19,4	88,7	18,8	91,4	24,4	88,8	17,9	88,3	16,6	90,8	21,3
						77,1	68,4	78,1	69,7	74,6	58,9		
						94,3	56,4	88,3	40,6	88,6	42,3		
												88,0	55,0
										71,0	27,0	67,0	15,0
		93,3	22,6	91,1	16,1	93,3	20,1	94,3	24,6	94,3	23,4	94,9	24,9
		99,1	3,4	98,7	3,4	101,3	3,6	100,1	2,8	101,2	2,9	101,9	3,7
81,9	63,0	81,8	63,7	81,3	61,9	81,1	61,1	81,4	61,8	81,6	60,7		
95,4	39,9	96,7	46,5	96,3	45,4	96,2	47,0	95,7	45,9	95,3	43,9		
89,4	53,2	90,1	53,3	88,1	46,7	85,3	38,1	83,8	36,9	81,4	26,9	80,3	26,8
94,6	60,6	93,1	59,3	92,9	60,1	90,0	80,3	87,8	48,6	86,1	42,5	84,5	37,3
112,2	55,5	112,4	57,1	112,3	58,4	109,1	49,8	103,5	42,3	99,1	32,3	100,4	27,1
								76,6	21,0				
								74,4	16,0				
								68,0	7,0				
				95,0		92,0				96,0			
				97,0		93,0				94,0			
				82,0		85,0				85,0			
				80,0		79,0				84,0			
				69,0		77,0				75,0			
										88,2	41,9	90,9	48,7
										84,3	29,4	87,1	41,8
84,0	35,7	87,8	44,5	89,0	44,3	86,3	44,2	88,0	43,0	87,6	41,3	88,0	43,7
								70,3	62,2	69,8	55,4	69,8	57,2
								79,3	46,0	77,8	46,0	78,1	44,8
						85	50,1	84,4	50,1	85,5	52,4	86,7	55,5
104,0	72,0			97,0	65,0			106,0	82,0				
98,0	59,0			92,0	55,0			102,0	74,0				
67,9		68,1		67,7		67,8		68,4					
89,1		89,6		89,6		90,8		88,9					
108,7		110,1		111,5		111,3		111,4					
		78,0	35,0	76,0	27,0	75,0	24,0	73,0	19,0	75,0	26,0	72,0	16,0
45,0	9,0	45,0	9,0	47,0	8,0	48,0	9,0	48,0	10,0	49,0	11,0	48,0	
70,0	52,0	70,0	51,0	69,0	46,0	69,0	50,0	69,0	48,0	69,0	48,0	68,0	

Country	Vehicle type	Speed limit (km/h)	1996		1997		1998		1999	
Austria	cars	130	116,0	20,4	119,1	23,4	119,0	23,1	120,2	24,5
Cyprus	all traffic	100, left lane								
	all traffic	100, fast lane								
Czech Republic	all traffic	130								
Finland	all traffic	120							106,1	29,0
France	cars	110					109,2	53,0	109,4	52,0
	cars	130					122,4	40,5	122,6	39,2
Ireland	cars	120							108,0	29,0
Lithuania	all traffic	100								
	all traffic	110								
	all traffic	130								
Luxembourg	all traffic	110								
	all traffic	130								
Netherlands	cars	100							96,8	44,0
	cars	120							114,9	41,0
Norway	all traffic	90								
	all traffic	100								
Portugal	cars	120								
Sweden	cars	110								
Switzerland	all traffic	120	112,0	29,0	113,0	27,0	112,0	35,0	114,0	35,0
Great Britain	cars	70mph	70,0	57,0	70,0	54,0	69,0	55,0	70,0	56,0

Mean speed
Vehicles exceeding the speed limit (%)

Table 14 Mean speeds and speed limit violations on motorways in Europe. Source: National data

2000		2001		2002		2003		2004		2005		2006	
119,7	22,2	122,1	27,9	120,5	27,9	118,0	24,0	118,5	23,2	119,7	25,0	120,0	23,0
												98,0	30,0
												112,0	75,0
								107,0	31,0	108,0	39,0	105,0	35,0
107,0	29,8	107	31,2	107,5	32,5	106,9	33,5	106,3	33,5	106,7	34,5		
109,5	54,6	110,1	53,9	111,9	59,1	112,1	58,9	110,7	53,7	109,0	49,5	109,4	51,2
126,5	50,1	125,6	47,0	126,0	47,0	124,2	41,7	120,7	31,3	119,0	32,6	119,4	34,4
				106,0	24,0	106,0	23,0			109,0	15,0		
96,0	42,8	100,4	53,6	98,4	35,0	94,7	35,6	95,1	38,6	95,8	37,6	92,2	30,6
98,4	33,8	97,2	31,6	99,5	27,5	99,2	27,6	99,5	30,0	103,9	35,9	104,0	41,3
		105,7	12,1	109,0	11,9	103,9	12,2	106,3	13,5	108,7	18,2	110,9	20,3
												105,0	5,0
												115,0	5,0
97,9	46,0	95,1	40,0	97,8	45,0	97,8	45,0	97,6	47,0	96,6	45,0	95,5	41,0
115,7	42,0	115,0	38,0	115,3	39,0	116,1	42,0	114,8	36,0	114,2	36,0	114,4	36,0
								86,6	45,1	85,6	33,9	83,0	34,8
								99,9	54,7	99,7	49,0	99,7	51,5
142,0	54,0			118,0	46,0			121,0	54,0				
		108,6		110,1		110,9		109,8					
112,0	35,0	112,0	34,0	114,0	38,0	114,0	38,0	111,0	30,0	111,0	29,0	110,0	26,0
70,0	55,0	70,0	54,0	70,0	54,0	71,0	57,0	71,0	56,0	71,0	56,0	70,0	

Country	Total cars sold in 2005	Basis for SBR share	Proportion in total cars sold in 2005 (in %)	Cars sold in 2005 with SBR driver seat	Proportion in the basis for SBR share (in %)
Austria	334 916	334 073	99,7	189 868	57,0
Belgium	540 006	537 609	99,6	317 202	59,0
Cyprus					
Czech Republic	163 343	162 162	99,3	48 289	30,0
Denmark	201 930	195 412	96,8	105 494	54,0
Estonia	19 618	19 528	99,5	10 543	54,0
Finland	163 125	162 551	99,6	95 960	59,0
France	2 486 756	2 425 263	97,5	1 505 702	62,0
Germany	3 532 383	3 523 753	99,8	2 221 610	63,0
Greece	292 679	290 174	99,1	134 523	46,0
Hungary	219 660	213 036	97,0	92 852	44,0
Ireland	207 387	205 990	99,3	110 611	54,0
Italy	2 452 198	2 441 326	99,6	1 117 007	46,0
Latvia	18 502	18 415	99,5	9 517	52,0
Lithuania	13 215	13 072	98,9	5 876	45,0
Luxembourg	51 466	51 327	99,7	32 624	64,0
Malta					
Netherlands	531 192	509 413	95,9	283 968	56,0
Norway	144 868	142 129	98,1	84 707	60,0
Poland	271 963	265 001	97,4	115 613	44,0
Portugal	273 123	271 625	99,5	149 990	55,0
Slovakia	71 065	70 854	99,7	23 892	34,0
Slovenia	63 166	62 966	99,7	34 258	54,0
Spain	1 911 034	1 905 890	99,7	1 077 025	57,0
Sweden	308 914	301 169	97,5	208 978	69,0
Switzerland	286 787	283 564	98,9	159 977	56,0
U.K.	2 765 084	2 736 830	99,0	1 507 981	55,0
All countries	17 324 380	17 143 132	99,0	9 644 067	56,0

Note. Car models are taken to be equipped with seat belt reminders only if those reminders meet Euro NCAP criteria. In addition, four models are counted in that are fitted with advanced seat belt reminders that use a combination of visual and sound signals but do not fulful Euro NCAP criteria. This includes Audi Q7 and Suzuki SX4, which were both tested by Euro NCAP and did not receive any points for their reminder system. It also includes Volvo S60 and Volvo V70, which are equipped with "mild reminders" according to the Kullgren et al 2006.

Table 15 Seat belt reminders in passenger cars sold in 2005. Source: CSM Worldwide's Global Light Vehicle Sales Forecast; Euro NCAP, SRA, IEE

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