

Traffic Law Enforcement across the EU

Tackling the Three Main Killers on Europe's Roads

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ETSC is grateful to DIAGEO for the financial support provided for this publication
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Introduction

ETSC's programme "Drink Driving Policy Network" aims to reduce alcohol-related road deaths and injuries through the identification and promotion of best practice in both policy and advocacy. This focus is aligned with one of the priorities of the EU Alcohol Strategy which is to reduce injuries and deaths from alcohol-related road traffic accidents. As part of the programme, a Compendium on Traffic Law enforcement aims to promote best practice in police enforcement across Europe.

The core of this publication is the benchmarking of countries' performance in the area of enforcement, but good practice examples from Member States are highlighted as well. In the area of driver behaviour, the following 3 "main killers" are covered:

- Speed
- Non-use of seat belts
- Drink driving.

Police forces also enforce offences that are not mentioned in this document such as use of mobile phones, drug, fatigue, non-use of helmets, working time, child seats etc, due mainly to missing data and analysis.

Road collisions are a major cause of premature death in European countries: 35,000 people lost their lives in 2009 in the EU and many more were seriously injured in a road collision. Deaths and injuries caused by road accidents result in significant social and economic costs and it has been estimated that, in EU countries, approximately 2 per cent of GDP is lost every year due to road traffic accidents.

Speeding, drink driving and failure to wear a seat belt are the three main risk factors on the road. There still is a huge safety potential in

addressing these three longstanding areas of road safety. If average driving speeds were to drop by only 1 km/h on all roads across the EU, more than 2,200 road deaths could be prevented each year, 1,100 of them on urban roads, 1,000 on rural roads and 100 on motorways. Across the EU, an estimated 12,400 occupants of light vehicles survived serious crashes in 2009 because they wore a seat belt. Another 2,500 deaths could have been prevented if 99% of occupants had been wearing a seat belt, a rate that could be reached with seat belt reminders. If, as estimated by the European Commission (EC), 25% of road deaths occur in collisions in which a driver is over the alcohol limit, at least 7,500 deaths could have been prevented in 2009 if drivers concerned had not drunk before taking the wheel[1].

1 The role of traffic law enforcement

1.1 Traffic rules and compliance

Traffic regulations address the mutual relationship between road users and the relationship between road users and their surroundings. They are aimed at promoting the safe and smooth flow of traffic on roads. Unconscious violation of rules should be addressed by road and vehicle design, but conscious breaking of rules must be addressed through police enforcement.

Two broad philosophical perspectives apply when it comes to law enforcement. The instrumental perspective builds on the deterrence, where the fear of being sanctioned is regarded as the central mechanism for avoiding certain behaviour. In other words, people are motivated by gains, losses, rewards and sanctions related to obeying or disobeying the law. Increasing the likelihood and severity of sanction is then viewed as an effective way of increasing compliance. The normative perspective emphasises the role of social norms, embedded in society. It assumes that people tend to behave in a way that is compatible with common social understanding. Thus they are more likely to obey the rules they consider being important. Sanction as a mechanism for getting people to obey the rules has a much greater effect when that sanction is compatible with the norms, values and the sense of justice held by the citizens themselves[2].

With regard to conditions for traffic rule compliance, Noordzij[3] identified five conditions that traffic laws must fulfil. The law should: be easy to understand for all road users; be easy to follow; not be in contradiction or conflict with other laws; not be in conflict with situational prerogatives; make it easy to identify any violation of the law. Moreover, traffic laws have to be known and accepted by road users. However, knowledge about traffic rules is a necessary but not sufficient condition for compliance.

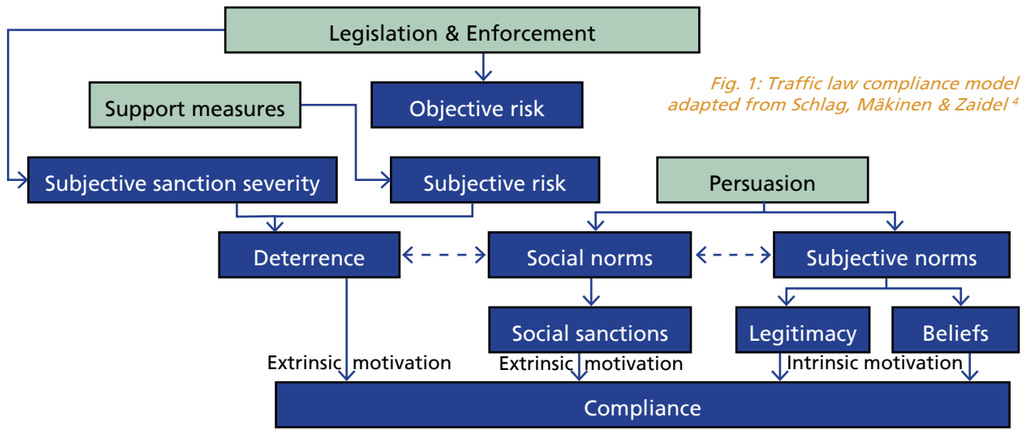


Fig. 1: Traffic law compliance model adapted from Schlag, Mäkinen & Zaidel [4]

1 ETSC (2010), 4th Road Safety PIN Report: Road Safety Target in Sight.
2 SWOV Fact sheet (2009), Penalties in traffic, SWOV.
3 Noordzij, P. (1976): Influencing road users' behaviour. SWOV-Report 76-4e, Voorburg.
4 Mäkinen, T. & Zaidel, D. (2003): Traffic enforcement in Europe: effects, measures, needs and future. Final report of the ESCAPE (Enhanced Safety Coming from Appropriate Police Enforcement) consortium. Available at virtual.vtt.fi/escape (retrieved 22 February 2010).

The compliance with traffic rules can be systematically described as in Fig.1 which distinguishes between an extrinsic motivational approach that relies on negative, external factors (e.g. sanction, losses etc.) and an intrinsic motivational approach due to beliefs.

According to this model, legislation and enforcement first create an objective risk of detection of traffic offenders. The objective risk is the actual risk of detection, i.e. it reflects the real likelihood of detection caused by the actual level of traffic surveillance activities by e.g. the police. The objective risk has an impact on drivers' perception of the possibility of getting caught for traffic violations (i.e. the subjective risk). The subjective risk of detection is the drivers' own more or less conscious and less explicit judgement of the possibility of getting caught for infringements. It results from the road user's perception of the intensity of enforcement-related activities. This subjective risk can be influenced by supportive measures such as media or communication campaigns. The subjective risk of detection is of greater importance for compliance than the subjective sanction severity. As regards the subjective severity of sanctions, Schlag[5] states that the subjective sanction severity follows a certain hierarchy: monetary fines – penalty points – temporarily driving ban – permanent licence revocation. Most commonly, monetary fines are accepted by drivers. Schlag refers to findings from Germany that show that many drivers commit speeding offences up to a certain speed threshold (i.e. ≤ 20 km/h over the limit). In case of detection, offences below this threshold are only sanctioned with monetary fines and not by penalty points.

Moreover, the link between detection of the offence and sanction has to be sufficiently clear in order to have any deterrent effect. This argument of immediacy of sanction has been described in studies regarding the psychology of learning. When too much time passes between violation and sanction, the link between both is extremely vague and no immediate effect can be expected because of a diminution in the subjective, perceived risk[6].

By contrast, in the intrinsic motivational approach, compliance comes rather naturally, due to the road users' belief in the law. Voluntary compliance usually results from social norms, but it can also be a result of the belief that authorities have a legitimate right to influence behaviour. Over the past decades, under the combined influences of new laws, police enforcement and public persuasion (media campaigns, etc.), many drivers have come to accept the rule of "no drinking and driving" as a strict personal norm (ERSO, 2008). This shows how at first compliance may be extrinsically motivated by the aim to avoid sanction but road users may actually change their personal belief about what is the right behaviour and internalise traffic rules.

Traffic laws were first enforced rather passively, often after the occurrence of crashes, but the increase in motorised road traffic in the first half of the 20th century paved the way to a change in the approach, with the occurrence of specialised Police corps proactively assuring the enforcement of traffic rules. The second half of the 20th century has seen a professionalisation of the enforcement activity, while the beginning of the 21st century witnessed the increase in effectiveness of policing through the use of modern technologies.

1.2 EU level Governance on Enforcement

Enforcement is an inseparable part of road safety policy at all levels of governance. EU road safety policy generates Traffic Law Enforcement (TLE) policy (the Recommendation on enforcement) and other related actions. On a strategic level, Member states are expected to adopt a National Road Safety Policy or plan (NRSP), which includes an ambitious accident reduction target.

5 Schlag, B. (2009): Regelbefolgung. In: BGUG-Kampagne „Risiko raus"- Hintergrundpapiere, pp. 98-119.
6 Akkermans, L. & Orozova-Bekkevold, I. (2007): Review of main conclusions of completed relevant projects. Working Paper 1 of the PEPPER (Police Enforcement Policy and Programmes on European Roads) project. Available at www.pepper-eu.org (retrieved 8 March 2010).

1.2.1 Actions at the EU level

The EU clearly recognises the role of traffic law enforcement in improving road safety. Several enforcement-related measures have been proposed in the 3rd Road Safety Action Programme 2001-2010[7] and taken onboard also in the Road Safety Policy Orientations 2011-2020[8].

The European Commission adopted a Recommendation in 2004 on how Member States should improve their traffic law enforcement policies[9]. In this Recommendation EU countries have been asked to apply in a national enforcement plan what is known to be best practice in the enforcement of speed, alcohol and seat belt legislation. The "Commission Recommendation on Enforcement in the field of Road Safety" of 2004 urges Member States to adopt and implement thirteen TLE action points. They concern, primarily, enforcement of the three non-compliance behaviours: speeding, drink-driving, and non-use of safety-belts, and the issue of cross-border enforcement. The action points that can be perceived as new demands to some or most Member States are: setting up a National Enforcement Plan based on good practice suggested by the Recommendation, as part of a National Road Safety Plan ensuring detection and sanctions against non-resident drivers; using large scale automated speed enforcement; using random breath testing with screening devices followed by Evidential Breathalyser; using intensive seat belt enforcement campaigns in addition to chance detection and apply sanctions for non-compliance; reporting to the EC, every two years, all the detailed information about the National Enforcement Plan and its implementation.

Enforcement is an integral part of the EU road safety Policy Orientations 2011-2020. It is one of seven major objectives presented by the EC in mid 2010. The EC acknowledges that the full potential of a European enforcement strategy was indeed not reached during the previous programme, in particular with the lack of progress on the EC's proposal concerning cross-border enforcement. Therefore the new EU Policy Orientations should build on these four axes: Cross-border enforcement in the field of road safety, Enforcement campaigns, Vehicle technologies to assist enforcement and National enforcement objectives[10].

The enforcement objective is one with the most concrete and detailed actions in the "Policy Orientations". Other Member States can benefit from the experience of fast progressing countries that have proved that effective enforcement leads to a rapid reduction in deaths and injuries. Although the Commission states that it "will work towards developing a common road safety enforcement strategy", then it only details speed limiters in light vans, alcohol interlocks and the establishment of national implementation plans under this broader plan for concrete action. There seems to be scope for reanalysis of what the objectives of the concrete strategy will be on enforcement and which measures the Commission can take to reach them.

The EC states the need to continue with the work of the Cross Border Enforcement Directive and reach an agreement with the Council and the European Parliament. It is important to persevere in finding an agreement in favour of this piece of unfinished business from the last Action Programme. In accordance with the proposal being discussed, ETSC supports the incorporation of best enforcement practices into the legislative proposal as provided for by a European Parliament amendment for a new Article. This would significantly strengthen the current proposal and lead to a more substantial contribution to reducing the 35,000 annual deaths on Europe's roads.

ETSC also welcomed the proposals of the Commission for increased co-ordination and sharing of best practices, although the EC does not elaborate how this will be achieved. Following the publication of the EC Recommendation of 2004 on enforcement of traffic law an expert group was set up with a number of subgroups. The aim of the expert group was to do exactly this: to provide a forum and network of experts working to elaborate enforcement strategies at a national level. It also provided important input to the elaboration of the EC proposed Directive on Cross Border Enforcement. However, the Expert Group has not met since 2007. Clearly the EC must think through how it will achieve the objectives under this section, consult with key stakeholders and put new sustainable structures in place to ensure that enforcement in the EU reaches its full potential as one of the most important tools in road safety.

The EC Communication stresses the need for linking enforcement with information campaigns. However, in this section, the EC misses the link to the existing 2004 Recommendation on Enforcement which also included the need to accompany police checks with information campaigns. Researchers also underline this and stress that enforcement must be highly visible and publicised and indicate that it is the drivers' subjective risk of being caught that must be increased if enforcement is to be successful (ESCAPE 2003). Communication campaigns are very important in doing this. The EC Communication emphasises that they will continue to support information actions and awareness-raising in particular for young people. However, the EC should clarify concretely how they will do this: for example through projects or EU wide campaigns. Moreover, they should wherever possible make a link to enforcement as a condition for financing such campaigns as, without enforcement to back it up, even the best information campaign can fall on deaf ears[11].

Finally, ETSC welcomed the proposal to set national implementation plans for enforcement. The link is made in a footnote to the existing EC Recommendation on enforcement in the field of road safety. Under the EC Recommendation adopted in 2003, EU countries were already asked to apply in a national enforcement plan what is known to be best practice in the enforcement of speed, alcohol and seat belt legislation.

The progress made since the publication of the 2003 EC Recommendation is acknowledged by ETSC. The EC Recommendation on enforcement has undoubtedly helped to raise the profile of traffic law enforcement in the EU countries. It has stimulated discussion and best practice exchange. Member States should therefore continue the implementation of the Recommendation. However, as the Recommendation was not legally binding, it failed to lead to an EU-wide introduction of best enforcement methods. In order to oblige all Member States to achieve high standards in enforcement, the EU should also include minimal requirements in all areas covered by the Recommendation in its discussion on the CBE Directive.

The setting of national enforcement objectives would be a new addition very much supported by ETSC. Two terms, 'enforcement objectives' and 'control objectives' are used in the EC Communication. ETSC strongly commends the use of the former, because while the law-abiding majority of citizens are supportive of enforcement, many are strongly resistant to the suggestion of police control over their way of life. National enforcement objectives would be a way of targeting enforcement to focus on the main areas of speeding, drink driving and non use of seat belts. This could include focussing on areas and times where and when compliance is particularly low and the numbers of accidents are particularly high.

1.3 Enforcement tools

Traffic Police have a great number of tools available for enforcing road traffic rules. They concern gathering evidence against offenders and the tools for their sanctioning.

1.3.1 Forms of sanctioning

Traffic offenders can be penalised in various ways: fines, penalty points, (temporary) driving license suspensions, confiscation of their vehicles, mandatory participation in rehabilitation programmes, prison sentences or community service. Penalties are meant to sanction offenders, protect society and influence the behaviour of offenders and all citizens.

7 Communication from the Commission on the European Road Safety Action Programme. Halving the number of road accident victims in the European Union by 2010: a shared responsibility COM(2003) 311 final.
8 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the regions, Towards a European road safety area: policy orientations on road safety 2011-2020, SEC(2010) 903.
9 Commission Recommendation of 6 April 2004 on enforcement in the field of road safety (Text with EEA relevance), OJ 111 of 17/04/2004 p.75 and OJ L 120 of 24.4.2004, p. 65.
10 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the regions, Towards a European road safety area: policy orientations on road safety 2011-2020, SEC(2010) 903
11 www.cast-eu.org/

Fines

Financial fines are the most common sanction imposed by traffic police officers, or administrative officers (prosecutors). The amount of the fines is usually normative. It is prescribed by law, either as part of a Road Traffic Act, or subject of a special legislative provision. In some countries, limits are provided to allow Police officers to decide the actual amount of the fine according to the specificity of the traffic situation. In Finland, Sweden, Norway and Switzerland the amount of the fine is a function of the net income of the offender.

Penalty Point Systems

The penalty point system takes recidivism into account when sanctioning offenders by introducing the risk of losing one's license. In addition to financial penalties, demerit points are issued to offenders. Demerit points are personal and can therefore be imposed when halted by the police.

An overwhelming majority of Member States have introduced a penalty point system in their efforts to prevent repeat offenders from driving. Penalty point systems contribute to deter offenders, as for many of them the driving ban is indeed perceived as a more serious sanction than fines. In some countries, it is also an efficient tool for banning repeat drink-driving offenders from the road traffic, as the number of points attributed for drink-driving is relatively high. However, enforcement must be kept at sufficiently high levels to deter anyone banned from driving to drive.

A common feature of penalty point systems across Europe is that if a certain points limit is exceeded, a licence suspension automatically follows and in most countries the offender has to pass the practical and theory tests again. Practically all countries that have a penalty point system also have what are known as driver improvement courses. Participation might mean that a number of points are written off (for demerit point system) or returned. These courses aim at informing offenders about risky behaviour and at improving their attitudes rather than at teaching road skills.

Code	Country	Since	Number of points	Gain / Demerit
AT	Austria	2005	3	*12
BE	Belgium	No		
BG	Bulgaria	2000	39	Demerit
CY	Cyprus	2001	12	Gain
CZ	Czech Republic	2006	12	Gain
DE	Germany	1974	18	Gain
DK	Denmark	2005	3	Gain
EE	Estonia	No		
ES	Spain	2006	12	Demerit
FI	Finland	*12		
FR	France	1992	12	Demerit
GR	Greece	1993	25	Gain
HU	Hungary	2004	18	Gain

Table 1: Penalty point systems in Europe as of 01.01.2011 (ETSC data)

12 No penalty point system as such but systems that takes into account recidivism

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Code	Country	Since	Number of points	Gain / Demerit
IE	Ireland	2001	12	Gain
IT	Italy	2003	20	Demerit
LT	Lithuania	2004	16	Demerit
LU	Luxembourg	2002	12	Novice drivers only / Demerit
LV	Latvia	2004	16	Demerit
MT	Malta	2004	12	Gain
NL	Netherlands	2003	3	Novice drivers only / Gain
PL	Poland	1993	21	Demerit
PT	Portugal	No		
RO	Romania	2009	15	
SE	Sweden	No		
SI	Slovenia	1998	18	Gain
SK	Slovakia	No		
UK	Great Britain	1995	12	Gain
HR	Croatia	1996	7	Demerit
NO	Norway	2004	12	Gain
IS	Iceland	No		
CH	Switzerland	*12		

Table 1 (continued): Penalty point systems in Europe as of 01.01.2011 (ETSC data).

Driving license suspension and vehicle confiscation

Authorities can withdraw the driving licence of any driver, but the actual withdrawal procedure varies significantly among countries. In most countries, it is only the prosecutor who is entitled to suspend the driving licence, sometimes only under the instruction from a judge. But in some other countries police officers can in certain situations withdraw the driving licence. The suspension of a driving licence can also mean imposing an obligation on the driver to re-pass the driving licence examination. This works both as an educational and financial sanction.

Similarly, in some EU countries, the vehicle can be confiscated in case of a very serious offence. While a temporary confiscation can be ordered by a police officer in some countries, a definitive confiscation usually has to be prescribed by a court decision.

Rehabilitation programmes for repeat offenders

Repeat offenders can sometimes be proposed to participate in a specially designed programme for offenders leading to a driving permission under certain conditions, as an alternative sanction to a driving ban. Programmes for offenders usually target drivers caught speeding or driving under the influence of alcohol or drugs. As part of the programme, a driver can be required to install in vehicle enforcement technologies that assure compliance with traffic laws and

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programme prescriptions. Emerging modern applications include the use of alcohol interlocks, which prevent vehicles from starting if alcohol is detected in the breath of the driver trying to start the vehicle.

Community service and imprisonment

Community service can be another form of sanctioning aimed at improving offenders' attitudes. For example Spanish legislation now provides for a possibility to impose 31-90 days community service for driving under the influence of illegal drugs. Driving under the influence of drugs is the offence sanctioned most severely in many Member States. In a majority of EU Member States, it could lead to imprisonment, typically lasting less than a year.

Imprisonment is by far the most severe form of sanction, which must usually be linked to a criminal offence posing a particularly high risk to society. It is reserved for the most severe cases only, where there is sufficient evidence in the hands of a judge. This is typically the case for road crashes with severe consequences.

1.3.2 Forms of enforcement

Police patrolling

Police patrolling is when Police officers record traffic offences in road traffic from the roadside and stop the offenders immediately for sanction. Depending on the seriousness of the offence, different forms of sanction follow, as described earlier. Road traffic offences can also be recorded from Police vehicle, helicopter, or dedicated planes. In such cases, various modern technologies, that enable to record the offence, are used.

The physical presence of police officers on the roads has a positive deterrence effect on road users. A direct confrontation between an offender and a police officer has a value in enhancing the educational effect and allowing for the fair treatment of an offender, given the particularity of the traffic situation.

Police checks can be done randomly, systematically, or with a focus on particular groups of drivers, depending on the police capacity and the traffic situation. One particular approach is to allow Police to check drivers at police random checkpoints. Mobile or flying checkpoints is a tactic involving the set up of a hasty roadblock by police cars or traffic cones. This is an operation involving a large number of police officers (typically 10-20) at a fixed location.

Automatic enforcement systems

Although this has been used for almost three decades, automated traffic enforcement has mainly been applied to speed and red light violations. In recent years, however, there has been an extension to other violations, e.g. tailgating, lane keeping, seat belt use or toll payment violations. The increased use of digital video and image processing technology, as well as the electronic identification of vehicles, has paved the way for extending the applications to a still wider spectrum of violations, as well as making enforcement considerably more efficient in the future.

As regards the registration of offences, the concept of an on-site registration or information system includes one or more of the following functions:

(a) on-site detection of a traffic offence
(b) on-site registration of a traffic offence
(c) providing information to the driver about the fact that they are committing an offence and that this offence has been registered
(d) feeding the recorded information into an automated offence processing system

Various technologies have been used in automatic

enforcement of various traffic rules. They include radar, video, laser, loops, piezoelectric cables and many others. All these have been used to detect various types of offences.

There is a clear trend towards the use of advanced automatic devices able to record multiple traffic offenders and offences at one time. As an example we can mention the latest generation of speeding camera manufactured and operated in Switzerland since 2010, which can simultaneously monitor the speed of 22 cars in four lanes, not just the usual two. It can also spot nine other driving misdemeanours. This includes drivers who tailgate or trespass into bus or cycle lanes, who fail to give way to pedestrians or to traffic to the right, who overtake in a dangerous manner, fail to halt at a stop sign or who make an unauthorised turn. The device is equipped with the latest 3D tracking radar technology, which allows to pinpoint the precise position of each vehicle and follow its movement.

Registered offences are processed electronically and the notice of an offence is sent to the owner of the vehicle. If ownership liability is not established in the national legislation, the payment of the fine is seriously compromised. To allow for more intensive enforcement based on processing a high number of fines in a short time, some countries have developed automated schemes to process the fines with minimum human intervention. But no system is watertight and there is a need for continuous improvement at all stages of the automatic enforcement process.

In-car enforcement technologies

In-car enforcement technologies are assistance systems aiming at increasing or assuring drivers' compliance with traffic laws. Some of them can be described as Intelligent Transport Systems (ITS) - vehicle-based technologies designed to increase the driver's attention or awareness concerning the environment surrounding the vehicle, thereby reducing motor vehicle accidents. ITS encompass among others Intelligent Speed Assistance (ISA), Following Distance Warning Systems, Seat-belt Reminders, Reverse Collision Warning and Adaptive Cruise Control (ACC) systems. Each of these systems addresses one or more risky behaviours, or the non-compliance with a traffic law.

Most of in-car enforcement technologies fit well under the normative approach towards enforcement. They steer drivers towards non-risky behaviour in road traffic by providing advice and assistance. Therefore, the term assistance systems can be more appropriate for them. Some of them, however, may have prescriptive character and fall well under the enforcement technologies. As an example we can mention alcohol interlock systems, which can prevent drunk drivers from starting their vehicle. The development in technologies reflects the shift in a philosophical approach towards offenders from prescription to assistance. The most recent innovations in the field address the problems related to distraction, fatigue and drowsiness.

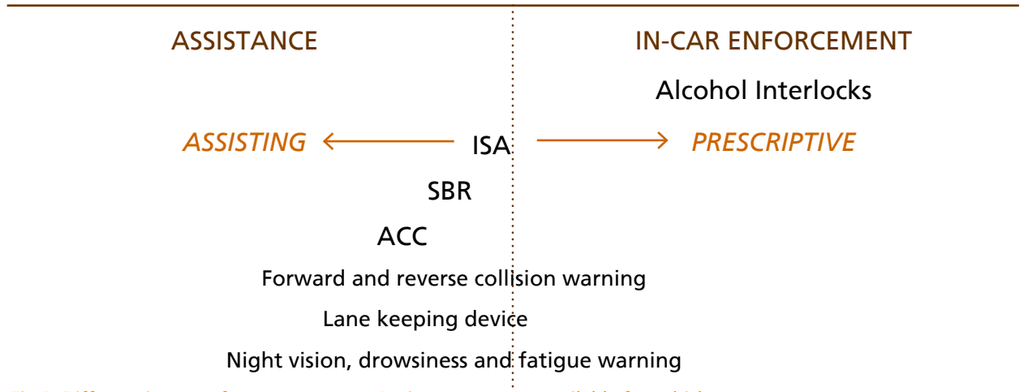


Fig.2: Different in-car enforcement systems/assistance systems available for vehicles

The European Commission has for a long time been influencing the introduction of various technologies into vehicles by vehicle manufacturers. A gradual approach has been the trend: mandating these systems in professional transport vehicles first and then to the remaining vehicle stock. The extent of the use of particular systems and their future prospects will be discussed in more details under each specific topic.

1.4 Public perception and support for enforcement

European citizens have a great concern for road safety and, in general, also support policy actions that aim to address road safety. The survey made among EU citizens by Gallup in 2010[13] has shown that 94% of the EU's population considers driving under the influence of alcohol a major safety problem, followed by speeding (78%), driving while talking on a hands-held mobile phone (76%) and not using a seat belt (74%).

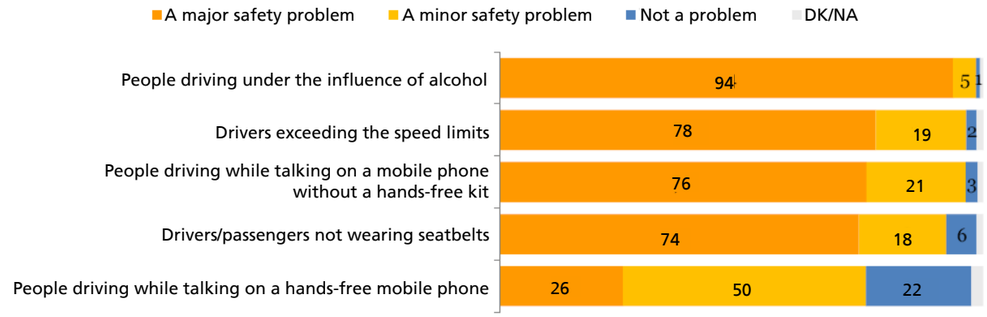


Fig.3: EU citizens' perception of road safety problems (Question: In terms of road safety, do you feel the following constitutes a major safety problem, a minor safety problem, or is not a problem) Road Safety Eurobarometer

EU citizens largely support policy actions that aim to address major road safety problems. The support is highest for actions in the areas perceived as biggest road safety problems: 71% of EU citizens would like their governments to do more to reduce the drink driving problem in their country, with national variations ranging from 82% in Romania to 52% in Portugal. A slight majority of EU citizens support policy actions in the area of speeding (52%) and hands-held mobile phone use (59%).

Improving the enforcement of traffic laws was the second most frequently selected measure that governments should concentrate on in order to enhance road safety: roughly four out of ten respondents (42%) chose this measure as either a first or second priority for their government.

Dealing equally forcefully with resident and foreign traffic offenders was selected by 36% of EU citizens as a measure that should be prioritised by government authorities. The support is slightly higher among frequent drivers (38%) than among the non-driving population (31%), which could be explained by an enhanced desire for fairness.

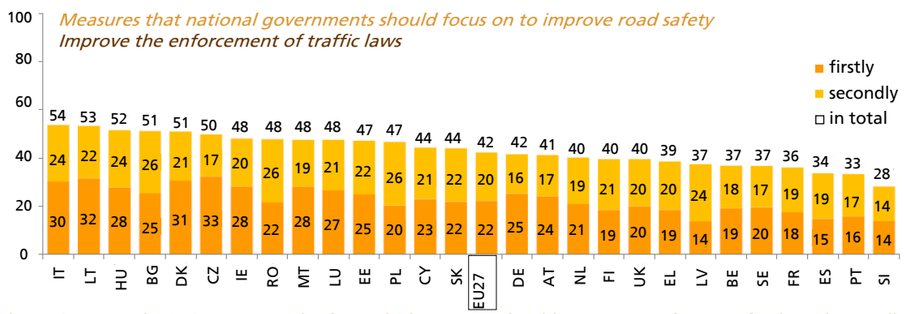


Fig.4: (Question: In order to improve road safety, which measure should government focus on firstly and secondly?) Road Safety Eurobarometer

13 Flash Eurobarometer Nr.301: Road Safety, Analytical report, Gallup, EC, 2010.

To conclude, the EU population is concerned about road safety and expects governments to address the most acute problems through all available measures, including police enforcement. There should therefore be a mixture of automatic enforcement technique and manual enforcement carried by police officers.

2 Drink driving

The actual numbers of people killed due to drink driving are not known but in-depth studies have shown them to be considerably higher than those reported in national statistics. Numbers of deaths involving drink driving are estimated to be as high as 29% in France[14] and 25% in the Netherlands[15]. In Ireland, where numbers of drink driving crashes are not available, an in-depth study of 2003 accident reports found that drink driving was a factor in 28% of all fatal crashes[16].

The European Commission estimates that across the EU at least 25% of all road deaths are alcohol related, against 11.5% according to official statistics. At least 3,500 deaths could have been prevented if accident-involved drivers reported to be driving over the limit had been sober. On the same basis, however, the number of deaths that could have been prevented would be at least 7,500 if 25% of all deaths occur in collisions with a driver over the alcohol limit.

2.1 Extent of drink driving

Less than 2% of journeys are made under the influence of alcohol in the EU. According to national police data, the percentage of journeys associated with alcohol level above the legal limit ranges between 0.2% in Norway to 8% in Cyprus (Fig. 5).

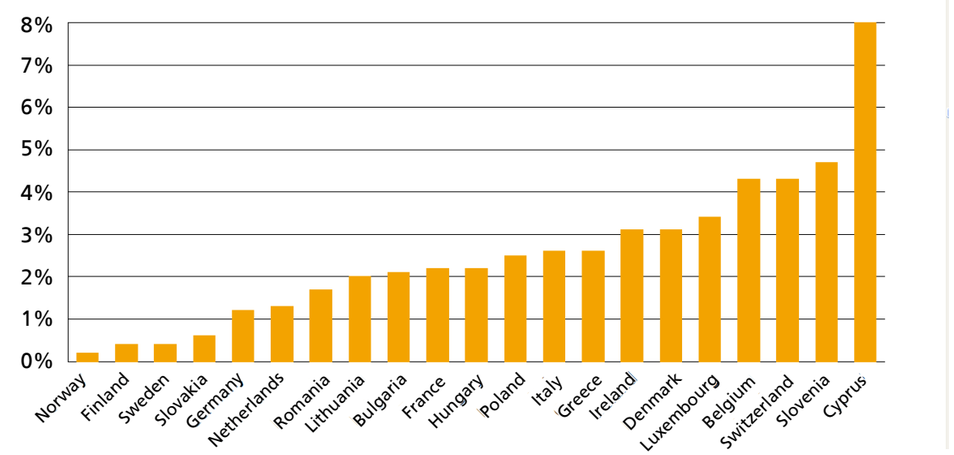


Fig. 5: Prevalence of drink-driving in road traffic as registered during the TISPOL operation in June 2009

14 ONISR (2009). La sécurité routière en France. Bilan de l'année 2008, p.99-107.
15 Mathijssen & Houwing (2005), SWOV.
16 Health Service Executive, 2006.

2.2 Legislation

Legislative provisions in the area of drink-driving include regulatory provisions provided by the Highway Code and other provisions for treating the offenders. These include penalties for drink-driving, court process specifications, penalty point system provisions, random breath-alcohol test legislation, but also provisions with respect to personal liability.

All these provisions are usually severe to provide deterrence to drivers. Since the second half of the 20th century, all European countries have introduced a legal BAC limit for drivers of motorised vehicles. While in some countries (e.g. Czech Republic, Hungary), the limit was set at zero from the very beginning, in some others the limit originally set was later lowered to the current level. The standard limit applied for the general public is often lowered for novice and professional drivers. While in the case of novice drivers this provision is justified by a greater risk and propensity to drive under the influence of alcohol, in the case of commercial vehicle drivers, higher severity, severe outcome (transport of children, consequences in a collision with a HGV, higher expectations to comply with the law) provide the ground (Table 2).

The European Commission adopted in 2001 a Recommendation on the maximum permitted blood alcohol content (BAC) for drivers of motorised vehicles (2001/116/EC). Maximum permitted BAC limit should be 0.5 g/l for general drivers and 0.2 g/l for inexperienced drivers and drivers of heavy good vehicles[17].

In the Commission Communication on an EU alcohol strategy the Commission invites the Member States to consider a zero BAC limit for young and novice drivers and drivers of public transports and dangerous goods. There is widespread support for reducing the permitted BAC for young and novice drivers to 0.2 g/l in all EU member states. Seventy-three per cent of all Europeans favour this change. The attitude towards the limit for professional drivers is, however, not known (TNS, 2007).

Despite the EC's 2001 BAC Recommendation and the fact that alcohol is briefly mentioned in the EU Directive on the initial qualification and periodic training of drivers of certain commercial vehicles, there is rather little in terms of legislation on drink-driving for commercial drivers. This means that fleet operators should be strongly encouraged to set up their own initiatives and internal policies to tackle the risk of drink-driving. In Germany, Austria, Greece, Spain and Slovenia, the legal BAC limit for the drivers of HGV is lower than the legal limit for drivers of light vehicles.

Legal BAC limit (g/l)	Standard	Novice	Professional
Belgium	0.5	0.5	0.5
Bulgaria	0.5	0.5	0.5
Czech Republic	0.0	0.0	0.0
Denmark	0.5	0.5	0.5
Germany	0.5	0.0	0.0
Estonia	0.2	0.2	0.2
Greece	0.5	0.2	0.2
Spain	0.5	0.3	0.3
France	0.5	0.5	0.5 (0.2 for bus drivers)
Ireland	0.5	0.2	0.2
Italy	0.5	0.2	0.2
Cyprus	0.5	0.5	0.5

Table 2: Legal BAC limits in the 27 EU countries

17 EC Recommendation BAC Limit 2001

Legal BAC limit (g/l)	Standard	Novice	Professional
Latvia	0.5	0.5	0.2
Lithuania	0.4	0.4	0.4
Luxembourg	0.5	0.2	0.2
Hungary	0.0	0.0	0.0
Malta	0.8	0.8	0.8
Netherlands	0.5	0.5	0.2
Austria	0.5	0.1	0.1
Poland	0.2	0.2	0.2
Portugal	0.5	0.5	0.5
Romania	0.0	0.0	0.0
Slovenia	0.2	0.0	0.0
Slovakia	0.0	0.0	0.0
Finland	0.5	0.5	0.5
Sweden	0.2	0.2	0.2
United Kingdom	0.8	0.8	0.8

Table 2 (continued): Legal BAC limits in the 27 EU countries

In the Czech Republic, Hungary, Slovakia and Romania, a zero BAC limit is applied to the entire driving population. Germany and Slovenia apply the zero BAC limit to novice and professional drivers. In the majority of countries the Police apply a certain tolerance for the breath air alcohol testing, which is stated either as an absolute value, or a percentage of the measured value. In countries enforcing zero BAC limit, the tolerance is set at 0.2g/l on average. This is in order to account for all possible inaccuracies occurring during the measurement.

Only two countries now have the general BAC limit higher than the EC recommendation, namely the United Kingdom and Malta, both having the BAC limit as high as 0.8g/l. The study commissioned by the UK government in 2010, however, recommends lowering the limit to 0.5g/l. At the same time, the Scottish government has already announced the intention to make such a step independently.

UK North's report on drink and drug driving law

Following the public discussion on lowering the current BAC limit in the UK, Sir Peter North was asked by the then Secretary of State for Transport, Lord Adonis, in December 2009 to review the law on drink and drug driving. He published his report on the legal framework around drink- and drug- driving and presented this to the new Transport Minister Phillip Hammond in June 2010.

In the first major review of drink and drug driving law since 1976, Sir Peter North recommended that the drink drive limit be reduced from 0.8g/l to 0.5g/l[18].

Sir Peter North also proposed that the current punishment regime be kept in place at the new lower level of 0.5 g/l, namely a minimum of 12 month disqualifcation and fine. He also recommended that best practice on drink and drug driving interventions, including interlocks, and employer guidelines should be rolled out throughout the transport industry. He recommended progress on breath testing too, namely that type approval and deployment of portable evidential breath

18 North, P. (2010). Report of the Review of Drink and Drug Driving Law, report for the DfT.

testing equipment should be completed no later than the end of 2011 and that the police should have power to test anyone who is driving.

The Parliamentary Advisory Council for Transport Safety (PACTS) supported the Report and North's key recommendation to lower the current alcohol limit for driving which is in line with the scientific evidence and will save lives on the roads. In evidence to the House of Commons Select Committee on Transport, PACTS stressed that even on the most conservative of the estimates quoted by North, a lower BAC level would result in about 43 fewer deaths and 280 fewer serious injuries on British roads each year. In 2008 figures, the total value of prevention of 43 road deaths and 280 serious injuries is estimated to be around £125 million. PACTS also cited regular surveys of public opinion by organisations such as RAC and the AA showing that public opinion supports a lower limit. PACTS also commented on the new provisional numbers of road deaths involving illegal alcohol levels in 2009 in comparison with 2008. They stressed that, although they are 5 per cent lower than in 2008, the corresponding fall in all road deaths was 14 per cent. Deaths related to illegal drink driving once again represented a rising proportion of all road deaths.

2.2.1 Awareness

Across the European Union, awareness of the legal limit beyond which drink driving is sanctionable by law is fairly low. Only 27% were able to give a correct answer when asked what the legal blood alcohol limit for driving is in their country. More than 36% gave an incorrect answer, while 37% said they didn't know. The situation is worst in Italy, Cyprus, Malta, Netherlands, Belgium and the UK, with less than 5% of the population knowing the current legal BAC limit. On the other side of the spectrum are countries which have adopted the zero BAC limit a long time ago, with more than 50% of population providing the correct answer to the same question. Even more striking is the fact that the awareness of the legal BAC limit is not related to the driving frequency[19].

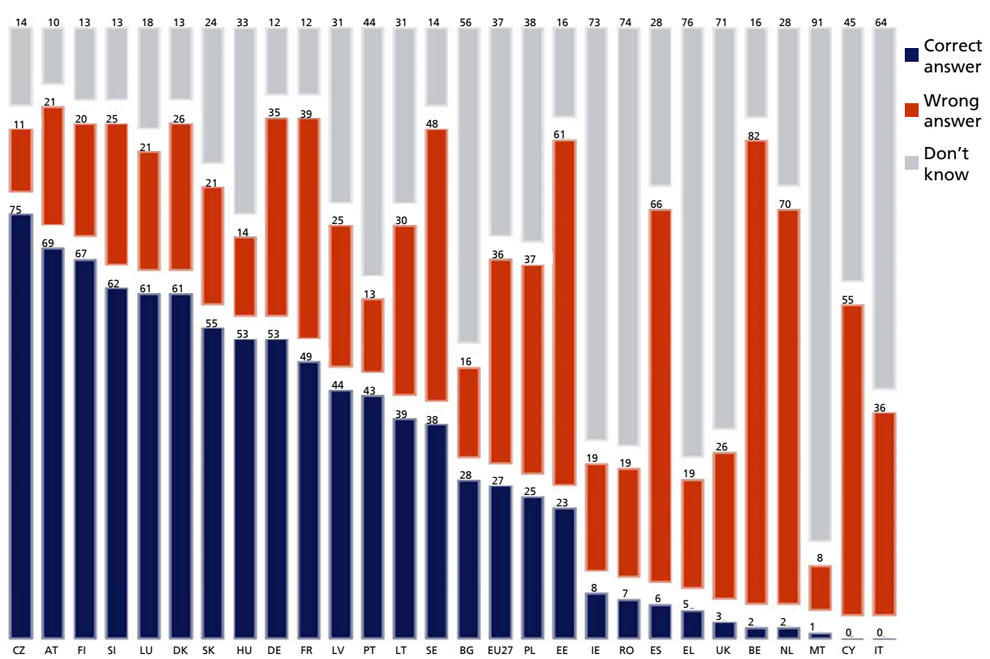


Fig. 6: Knowledge of BAC in EU countries (Question: What is the national legal alcohol level allowed for drivers?) Source: Gallup, EC

19 Special Eurobarometer Nr.331: EU citizens' attitudes towards alcohol, Gallup, EC.

2.2.2 Sanctions for drink driving

Possible sanctions for drink driving include:

- Monetary fines
- Penalty points
- Participation in a high risk/repeat offenders scheme
- Administrative licence suspensions
- Fitment of alcohol ignition interlocks
- Confiscation of vehicles
- Imprisonment

In addition to sanctions and rehabilitation programmes, recidivists should also benefit from a psychological and health support to detect possible alcohol addiction. Different countermeasures available to dissuade persistent drink drivers have their limitations. Imprisonment poses questions, while driving ban sanctions not only the driver but all the family.

As regards the imposed fines for driving with a BAC over the legal limit, this usually depends on the measured BAC level. Aggravating levels of alcohol (in excess of permitted BAC) are divided into bands corresponding to a range of gradually increasing penalties. The same graduated approach often applies also to other forms of sanctions, including number of penalty points, duration of licence withdrawal, and imprisonment sentences. In addition, aggravating factors which may affect court decisions include driving a larger goods vehicle, heavy goods vehicle or public service vehicle; being hired for driving; poor road or weather conditions; carrying passengers; evidence of an unacceptable driving style; involvement in an accident; location (e.g. near to a school); high level of traffic or pedestrians in the vicinity.

Improvements in alcohol-sensing technology, microprocessors and the development of relevant legislation have led to the development of alcohol ignition interlocks, which are now another tool in the drink driving countermeasures. To operate an ignition-interlocked vehicle, the driver must first provide a breath sample. The driver must present an alcohol concentration in the breath that is lower than a preset threshold level, for it to be possible to start the vehicle. Drivers are randomly retested while the vehicle is running, to reduce circumvention of the device. Breath test attempts are logged into a data recorder. As the device does not allow the operation of the vehicle if the driver has consumed sufficient amounts of alcohol, the decision-making process of whether to drive is removed from the person under the influence of alcohol[20].

The compliant offender retains driving privileges and may, therefore, continue to go to work if sober. The ignition interlock system is designed to affect the driver's behaviour by requiring a change in their habits related to drinking and driving, as it provides immediate feedback on inappropriate alcohol consumption[21]. The complete programme often includes training the drivers on how to use the interlocks and returning the vehicle for inspection to an authorised service centre regularly, calibration checks, and downloading of the interlock data recorder. Usually the cost of installing and maintaining interlocks (including calibration of the machine) is borne by the driver.

Alcohol Interlocks can form part of a rehabilitation strategy targeting recidivist offenders. Internationally alcolocks are considered a promising measure for reducing recidivism especially. Several studies have shown that alcolock programs are more effective than full licence suspensions in preventing recidivism. Various studies show 65-90% less repeat offences for users of alcolocks compared to drivers with a withdrawn licence[22].

20 Baker EA, Beck KH (1991). Ignition interlocks for DUI offenders – a useful tool?. Alcohol, Drugs and Driving: Abstracts and Reviews 1991:107–15.
21 Weinrath M. (1997) The ignition interlock program for drunk drivers: a multivariate test. Crime and Delinquency 1997;43(1): 42-59.
22 SWOV (2007): Fact Sheet "Alcolock". Leidenscham, The Netherlands.

Alcolock Offender Programme in the Netherlands

The Dutch Ministry of Transport will introduce an alcohol interlock program (AIP) for serious drink-driving offenders and repeat offenders. The standard period for the AIP is two years. If during that period the participant has still not been able to demonstrate that they can separate driving a vehicle and alcohol consumption, the AIP will be extended repeatedly six months at a time.

The Alcohol Interlock Programme bill was passed by the Senate on 1st of June 2010 and became a law on 4th of June 2010. The Ministry is aiming to introduce the alcohol interlock programme as a measure for serious alcohol offenders from mid-2011.

Participants of the Dutch AIP may only use an alcohol interlock that has been type-approved by the Dutch government, supplied by a vendor designated by the Dutch government and installed by an installer designated by the Dutch government. On behalf of the Dutch government, the RDW[23] is responsible for issuing type approvals of interlocks and authorising vendors and installers.

The legal procedure starts when the BAC is more than 1.3g/l (first offender) or 0.8g/l (repeat offender). The programme is mandatory, but if the offender does not participate or if the programme is not completed then the driving licence is invalidated for 5 years. It will last for 2 years with the possibility of a 6-months extension for drivers who continue to have failed BAC-tests.

The BAC-level interlock breath test will be set at 0.2g/l. Participants bear the costs of installation. Participants with 'good' data are placed in a less intensive data download regime (each 3 months) and participants with 'bad' data, indicating they have alcohol problems, will be motivated to seek professional treatment. One of the most distinctive elements of the programme is that participants who continue to show bad data get an extension until they show they can separate drinking and driving.

Scandinavian countries are showing the lead in using the alcohol interlock devices as a part of their drink driving strategy. Alcohol interlock programmes for repeat and serious offenders are in place or under preparation in all of them. But other countries are catching up. Belgium already took legislation on 9th December 2010 and the Netherlands and France have laws under preparation. Moreover alcohol ignition interlocks are also used by commercial transport companies as a part of the quality assurance and social responsibility policy in a good number of countries.

2.3 Enforcement

Drink driving legislation is enforced by blood and breath alcohol testing. Consistent and visible enforcement is a powerful deterrent to drink driving. Targeted breath testing coupled with publicity about enforcement increases drivers' subjective perception of the possibility of being caught. To date in a majority of EU countries being checked for alcohol is rather exceptional. With the development in breath-testing devices, the BAC level of any individual can now be checked with a very high accuracy even with simple hand-size portable devices. Police breath testing can have different forms. In its elementary form, only road crash participants are breath-tested for court evidence. If the test is positive, the preliminary test is usually complemented with blood test in the nearest hospital. Testing drivers in road traffic is a proactive, preventive approach. It can be either targeted, i.e. only drivers for whom there is a suspicion of being over the limit are checked, or random. With random breath testing drivers are stopped and tested for alcohol by the police, whether they are suspected of drink driving or not. The most efficient form of breath testing is a 'systematic' testing of all drivers stopped by the police, regardless of the reason why they are stopped.

23 RDW is the type approval authority of the Netherlands http://tgk.rdw.nl/en/engelse_tgk_site/ .

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Sobriety checkpoints (random and selective breath testing) can help reduce road traffic injuries and deaths, according to two reviews[24, 25].

Breath testing in road crashes

Breath testing in road crashes aims at providing legal evidence for investigators, insurance companies and for the courts. If the crash participant is found to be under the influence of alcohol, or above the legal limit, a secondary evidential test is usually performed in either the police station or the hospital. Breath testing in road crashes serves at providing evidence of the establishment of the causes of the collision.
If the person to be tested is unconscious, dead, or unable to provide a breath sample, the procedure is skipped and the evidential testing is only made in the hospital, including post-mortem investigation. In these cases, the information is often missing in police statistics, which can lead to undermining their accuracy.

Targeted breath testing

Targeted breath testing can have two different forms: testing drivers who behave in a way that leads to suspicion from a police officer that they could be under the influence of alcohol and systematically checking drivers leaving restaurants, bars and discotheques where alcohol is served. More broadly, specific groups of drivers at specific times and days can be the target for systematic or random breath testing. The rate of positive tests in targeted breath testing is usually relatively high compared to random and systematic testing. It also plays an important preventive function, if done with high frequency and if accompanied with an awareness campaign.

Random breath testing

Many countries around the world have introduced random testing to improve apprehension rates and thereby strengthen the deterrent impact of their impaired driving laws[26]. The Scandinavian countries introduced random testing (RBT) in the mid-1970s, followed by most Australian states by the mid-1980s, and then New Zealand and approximately half of European Union countries.

Since 2003, in Denmark, all drivers submitted to an ordinary police control (e.g. speed control or seat belt control) are also tested for alcohol. The number of alcohol related crashes was reduced by over one quarter in the two years following the introduction of this measure.

Estonia introduced RBT in 2005 when 180,000 drivers were tested. The share of drink drivers among total drivers decreased from 1.86% to 1.19% between 2004 and 2005.

RBT involves enforcement and administration costs. Benefits consist of reductions in crash costs. According to a Norwegian estimate, the tripling of the number of RBT would lead to a 3% reduction in fatal crashes.

The World Health Organisation reported in a study carried out in 2004 that each Euro spent on random testing results in a cost saving of EUR 19[27]. Benefit-cost ratio reported in a New Zealand study was between 14 and 26, with the highest ratio for random testing with both a media campaign and "booze buses"[28].

24 Peek-Asa C (1999) The effect of random alcohol screening in reducing motor vehicle crash injuries (structured abstract). American Journal of Preventive Medicine 16 (1 supplement): 57–67.
25 Shults RA, Elder RW, Sleet DA et al. (2001) Reviews of evidence regarding interventions to reduce alcohol-impaired driving (Brief record). American Journal of Preventive Medicine 21 (4 supplement): 66–88.
26 Tay R, "General and Specific Deterrent Effects of Traffic Enforcement" (2005) 39 Journal of Transport Economics and Policy 209.
27 Peden M, World Report on Road Traffic Injury Prevention. Geneva: World Health Organisation, 2004.
28 T. Miller, M. Blewden & J. Zhang, "Cost savings from a sustained compulsory breath testing and media campaign in New Zealand". 2004. 36 Accid. Anal.

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Systematic breath testing

All drivers stopped by traffic police in Finland, Sweden, Norway, Lithuania, Austria, Cyprus, Hungary and Ireland are systematically breath-tested. The Czech Republic has joined this group in 2010[29] enlarging the club of countries to nine. The introduction followed a rise in alcohol related deaths in 2008 and 2009.

Quick Court Procedure in Poland

In Poland, the number of detected alcohol offences dropped by 20% between 2006 and 2007. In Poland, the maximum BAC is 0.2g/l. If found between 0.2g/l and 0.5g/l an offender faces a fine and a license withdrawal. If found driving over 0.5 they are considered committing a criminal offence and will receive a criminal record, have their licence withdrawn and can face a prison sentence. The seizure of the car by the Police is now also possible. In 2007 the 'Quick Court Procedure' was introduced to enable quick penalisation of offenders within 24 hours. The Police can also request the judge following the judgment to "name and shame" the offender by publishing their details in local newspapers, a notice board in the City Hall and local police websites. The tightening up of sanctions and the introduction of the quick court procedures has been key in deterring drink driving in Poland.

2.3.1 Extent of breath testing

Seventeen EU countries provided the number of roadside checks performed during one year by the police (Table 4)[30]. The number of roadside police checks for alcohol per 1,000 inhabitants is the highest in Finland, Norway and Sweden, where no less than 385, 338 and 287 drivers respectively per 1,000 population were checked in 2008. It is relatively high also in Slovenia, France and Cyprus. But, even in these countries, the chance of a driver being breath tested during one year is only about 1 in 5 on average.

The percentage of drivers found above the legal limit in these tests should be interpreted carefully because it is not clear how drivers are selected for testing, but it is lowest in Sweden and Estonia. In Austria, Portugal, and Slovenia, the percentage of checked drivers above the limit decreased as enforcement increased. Although enforcement increased also in Cyprus, the percentage of offenders there remains high.

Levels of drink driving checks in Sweden are among the highest (with Finland and Norway) and have been increasing since a dip a few years ago. A total of 2.5 million tests were undertaken in 2007. In its Road Safety Policy adopted by the Swedish Police in 2006 drink driving was identified as one of the four priority areas for the Police's accident prevention measures with a target of at least 2 million breath tests a year (= 216 tests per 1,000 inhabitants), achieved in 2006 and 2007. Next steps should include a more targeted breath testing approach focusing on times and places where drink driving takes place. Every driver who is stopped for whatever reason is automatically breath tested. Currently every police office has a breath analyser and approximately 50 mobile evidential breath analysers exist which are deployed for special drink driving enforcement efforts.

29 Overview of good practices in strategic planning and tactical deployment of traffic law enforcement, Deliverable 5 of EU funded project PEPPER, www.pepper-eu.org
30 ETSC (2010), 4th Road Safety PIN Report.

Country	Code	2006		2007		2008	
		Roadside police tests per 1,000 population	% above legal limit	Roadside police tests per 1,000 population	% above legal limit	Roadside police tests per 1,000 population	% above legal limit
Finland	FI	n/a	n/a	318	1.6%	385	1.3%
Norway	NO	n/a	n/a	n/a	n/a	338	n/a
Sweden	SE	264	0.9%	292	0.8%	287	0.8%
Slovenia	SI	162	8.0%	191	7.3%	200	5.8%
France	FR	186	3.2%	182	3.3%	190	3.3%
Cyprus	CY	90	6.2%	149	6.8%	182	5.9%
Greece	EL	118	3.4%	143	2.9%	135	3.1%
Hungary	HU	144	2.9%	143	3.2%	130	3.1%
Ireland	IE	n/a	n/a	113	4.1%	128	3.2%
Spain	ES	88	2.5%	96	2.2%	112	1.8%
Estonia	EE	76	0.9%	68	1.0%	95	1.1%
Austria	AT	56	9.4%	77	7.0%	87	5.8%
Israel	IL	4	16.5%	24	5.1%	69	2.2%
Portugal	PT	48	7.3%	56	5.6%	63	5.9%
Poland	PL	n/a	n/a	n/a	n/a	47	9.5%
Lithuania	LT	31	1.4%	34	1.6%	40	1.7%
Denmark	DK	n/a	n/a	n/a	n/a	36	n/a
Italy	IT	4	n/a	12	n/a	23	n/a
Great Britain	GB	10	17.4%	10	16.3%	n/a	n/a

Table 3 Numbers of roadside alcohol breath tests (per 1,000 inhabitants) and percentage of those tested found to be above the legal limit. Source: PIN Panellists based on Police data, ETSC 2010, 4th PIN Report

3 Speeding

Excessive and inappropriate speed is the number one road safety problem[31]. Speeding is a primary factor in about one third of fatal accidents and an aggravating factor in all accidents[32]. Exceeding the speed limits is widespread. In countries where data are available, in free-flowing traffic up to 30% of drivers exceed speed limits on motorways, up to 70% on roads outside built-up areas and as many as 80% in urban areas[33]. Addressing illegal speeding therefore requires a large number of non-compliers to change their behaviour.

Despite a common understanding of a risk linked with high speed, the prevalence of speeding remains high, and the behaviour remains pervasive, and arguably socially acceptable[34]. This presents an apparent paradox in relation to the mismatch between beliefs and behaviours, in that drivers may subscribe to one belief (that speeding is wrong or dangerous) yet regularly

31 Aarts, L. & van Schagen, I. (2006). Driving speed and the risk of road crashes: a review, Accident Analysis & Prevention, 2006 Mar, vol. 38, issue 2, pp. 215-24.
32 OECD/ECMT (2006), Speed management, OECD, Paris.
33 ETSC (2010), 4th PIN Report.
34 Pennay, D. (2005). Community attitudes to road safety: Community Attitudes Wave Survey 17, 2004. Canberra: Australian Transport Safety Bureau.

exceed the posted speed limit. Many speeding drivers do not exceed posted speed limit by more than 10% under the presumption of a certain enforcement tolerance, which is in place in the majority of countries.

Experience shows long lasting and greater reductions in driving speed in countries with highest levels of speed enforcement, evidencing a relationship between objective chance of apprehension and speed choices. Research conducted so far consistently shows that safety cameras are an effective intervention in reducing road crashes and related injuries[35].

3.1 Extent of speeding

3.1.1 Speeding on Motorways

In many countries compliance with speed limits is higher on motorways than on rural or urban roads. Still, in free-flowing traffic, up to 30% of the drivers exceed the speed limit on motorways (Figure 7). The percentages of vehicles exceeding the speed limit on motorways are the lowest in Ireland (15%), Lithuania (17%), Austria (19%) and Switzerland (24%). It is the highest in Hungary, Spain and Great Britain.

In the Czech Republic, the percentage of vehicles exceeding the 130km/h speed limit tripled between 2004 and 2006. Plans from some Czech MPs and discussion in the media to raise the speed limit to 160km/h on some stretches of motorway might have encouraged more drivers to break the law.

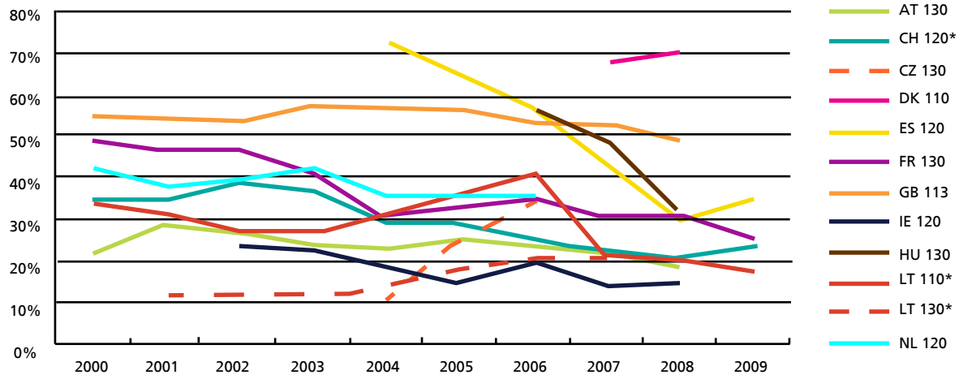


Fig. 7: Percentage of cars and vans exceeding the speed limits on motorways.
** All traffic. (Source: PIN Panellists. ETSC, 2010, 4th PIN Report)*

3.1.2 Speeding on Rural Roads

In the Czech Republic, Austria, France and Switzerland, the percentage of drivers of cars and vans[36] exceeding the speed limit on rural roads is the lowest, lower than 30% (Fig. 8). The percentage of drivers driving faster than the speed limit on rural roads is the highest in Denmark and Poland and it has increased since 2007 reaching more than 70% of drivers breaking the posted limit.

35 Pilkington, P. and Kinra, S. (2005). Effectiveness of speed cameras in preventing road traffic collisions and related casualties: systematic review, BMJ, pp. 330 : 331.
36 All traffic for Switzerland.

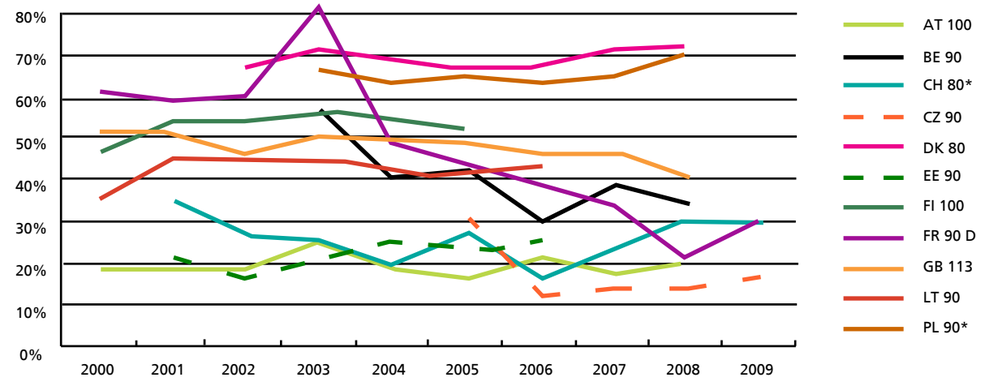


Fig. 8: Percentages of cars and vans exceeding speed limits on rural roads.
** All traffic. (Source: PIN Panellists. ETSC 2010, 4th PIN Report)*

3.1.3 Speeding on Urban Roads

The proportion of cars travelling above the limit in urban roads is highest in Poland with 80% of drivers not complying with the limit (Fig. 9). In, Austria, 70% of vehicles exceed 30km/h in residential zones and 51% exceed the limit on roads limited to 50km/h. By 2009 the Czech Republic and Switzerland recorded the lowest level of drivers travelling faster than 50km/h.

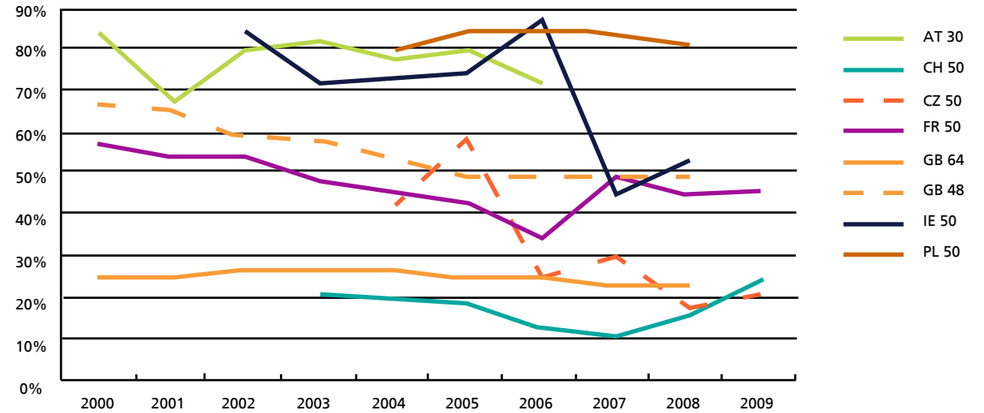


Fig. 9: Percentage of cars and vans exceeding the speed limits on urban roads.
(Source: PIN Panellists. ETSC 2010, 4th PIN Report)

While the risk linked to speed varies across road types, a sound rule of thumb is that, on average, a 1% reduction in the mean speed of traffic leads to a 2% reduction in collisions resulting in injuries, a 3% reduction in collisions resulting in severe injuries and a 4% reduction in fatal collisions. This is explained by the well recognised "Power Model" showing the exponential relationship between increases in speed and the probability of collisions and their severity (Aarts and van Schagen[37], based on Nilsson[38]).

Even minor reductions in mean speeds will therefore make an important contribution

37 Aarts, L. & van Schagen, I. (2006). Driving speed and the risk of road crashes: a review, Accident Analysis and Prevention, 2006 Mar, vol. 38, issue 2, p: 215-24.
38 Nilsson, G. (1982). The effects of speed limits on traffic accidents in Sweden. In: Proceedings of the international symposium on the effects of speed limits on traffic accidents and transport energy use. OECD, p. 1-8.

to reducing traffic deaths and injuries. 'Low level' speeding is often overlooked but has an important role in safety outcomes as it is far more common than driving at extremely high speeds.

> Applying the power model to the number of deaths in 2009 indicates that if every driver slowed down by only 1 km/h, more than 2,200 road deaths per year could be prevented, among them 1,100 on urban roads, 1,000 on rural roads and 100 on motorways. (ETSC, 2010)

Other elements of a good speed management system include safe and credible speed limits that are in line with the road infrastructure[39] and technology. The use of Intelligent Speed Assistance (ISA) technology will help to achieve a high level of compliance with speed limits and thereby reduce road deaths substantially. ISA is a technology that assists the driver through ensuring that vehicles are aware of the prevailing speed limit and give the driver feedback, and in some cases restrict additional acceleration, to keep the vehicle at or under the speed limit. The European PROSPER project estimated reductions in deaths of up to 50% for individual countries (Carsten et al. 2006)[40].

The recent EC Communication on road safety[41] missed out the opportunity to explain what would be done under Objective 2 to take up "in-vehicle systems providing real-time information on prevailing speed limits". Unfortunately this area of work is not identified as an area to be taken for action in the list of priorities. This is despite the progress under the ITS Directive and Action Plan which include definition of procedures for accurate public data for digital maps. The provision of such a digital database of all speed limits on the network is an important prerequisite for the implementation of ISA.

3.2 Legislation

National legislation prescribes the general speed limit for each road type, while the traffic signs on the roadside or above road lanes set the speed limit for particular stretches of road. Speed limits can be stationary or dynamic, the latter allowing for the optimatisation of traffic flow and preventing crashes caused by harmful external conditions.

In all EU countries, the maximum speed limit is 50km/h in urban areas (with the exception of Slovakia and Poland with 60km/h at night). More and more countries are adopting lower speed limits in residential areas and around schools, typically 30km/h zones.

On motorways and rural roads, maximum speed limits lower than those for cars generally apply to cars with trailers, coaches and buses, and limits for the last two are being harmonised. Some countries also have specific speed limits depending on weather conditions (France) or seasons (Finland)[42].

3.2.1 Awareness

More than three quarters of the EU population find speeding to be a major road safety problem and only two percent of Europeans consider it not being a problem at all (Fig. 10).

39 See experience from the Netherlands (Safe System Approach), Sweden, the UK and many others. ETSC (2008) ShLOW Show me How Slow.
40 Carsten PROSPER D4 3 Assessment of Road Speed Management Methods v1 0 (2006).
41 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the regions, Towards a European road safety area: policy orientations on road safety 2011-2020, SEC(2010) 903.
42 DG MOVE, Traffic rules at a glance http://ec.europa.eu/transport/road_safety/observatory/doc/speed_rules.pdf

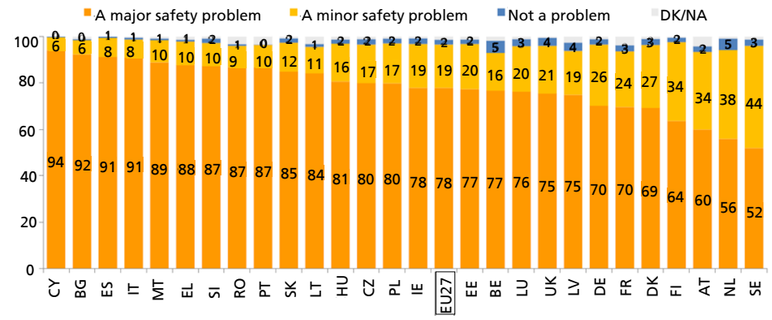


Fig.10: Perception of the seriousness of speeding (Question: do you feel the following constitutes a major safety problem, a minor safety problem, or is not a problem in your country?) Source: Road Safety Eurobarometer

3.2.2 Sanctions

The level of sanctions for speeding offences should escalate as the level of speeding above a speed limit increases. It starts with rather small monetary fines for minor speeding offences, but it can also include vehicle seizure, licence withdrawal or imprisonment.

3.3 Enforcement

3.3.1 Extent of enforcement

The level of enforcement can be assessed by looking at the number of issued speed tickets per 1,000 population. This reflects rather the probability of being checked than the likelihood of driver stopped for speeding in road traffic.

Yearly numbers of speed tickets per 1,000 population are the highest in the Netherlands, Austria and Switzerland, where safety cameras and section controls have been used extensively. In contrast, being fined for speeding is rather the exception in Portugal, Lithuania, the Czech Republic, Bulgaria, Italy, Slovakia, Sweden, Hungary, Israel and Poland.

In Spain, the number of speed tickets has increased substantially, following the installation of safety cameras on the national road network (up from 197 in 2006 to 295 in 2009). In Cyprus, a small scale safety camera pilot scheme was implemented from October 2006 to September 2007. Tickets from violations in 2007 continued to be issued in 2008.

Country	Code	Yearly speed tickets per 1,000 population		
		2006	2007	2008
The Netherlands	NL	543	595	558
Austria	AT	327	458	456
Switzerland	CH	350	335	n/a
France	FR	114	127	138
Cyprus	CY	87	165	137
Slovenia	SI	n/a	n/a	72
Norway	NO	52	52	51

Table 4: Number of speed tickets per 1,000 inhabitants (both Police roadside checks and from speed cameras). Source: PIN Panellists based on Police data (ETSC 2010, 4th PIN Report).

Country	Code	Yearly speed tickets per 1,000 population		
		2006	2007	2008
Romania	RO	n/a	n/a	51
Finland	FI	38	42	50
Latvia	LV	41	45	49
Denmark	DK	47	48	45
Spain	ES	17	27	44
Luxembourg	LU	48	49	42
Ireland	IE	n/a	45	40
Poland	PL	28	32	34
Israel	IL	22	22	30
Hungary	HU	17	16	29
Sweden	SE	21	24	25
Slovakia	SK	25	21	24
Italy	IT	23	25	24
Bulgaria	BG	13	18	20
Czech Republic	CZ	30	21	17
Lithuania	LT	18	20	10
Portugal	PT	9	n/a	n/a

Table 4 (continued): Number of speed tickets per 1,000 inhabitants (both Police roadside checks and from speed cameras). Source: PIN Panellists based on Police data (ETSC 2010, 4th PIN Report).

Smart Technology Spanish police deal with speeding non-residents

Fixed cameras have been fitted with high-tech devices which alert the nearest police car immediately when foreign drivers are speeding to give them the chance to pursue them. The satellite-controlled devices distinguish Spanish-plated cars from vehicles with foreign number plates. Pictures and details of Spanish cars caught speeding on the cameras are sent instantaneously to a traffic control centre near Madrid which sends out fines by post. But photos of foreign-plated vehicles are sent by coded Wi-Fi to the laptop of the nearest police patrol car as well as the traffic headquarters. The scheme gives officers the opportunity to chase down offenders who live outside of Spain - and immobilise their vehicle unless they pay on-the-spot fines. The devices have been fitted on existing speed cameras in four locations where holidaymakers account for up to half of the speeding drivers.

4 Seat belts

The year 2009 marked the fiftieth anniversary of the three-point seat belt. It is estimated that seat belts have saved more than one million people that would have died in a road collision if not belted, thus being the biggest life saver on the roads over time. The seat belt remains the single most effective safety feature in vehicles. ETSC estimates that 12,400 occupants of light vehicles in the EU survived serious collisions in 2009 alone because they wore a seat belt. Another 2,500 deaths could have been prevented if 99% of occupants had been wearing a seat belt, a rate that could be reached with seat belt reminders on all car seats[43].

4.1 Extent of the problem

The rates of seat belt use by vehicle occupants have increased in recent years. However, the levels remain unsatisfactory low. Despite the legal obligation to wear a seat belt throughout the EU27[44], seat belt use in light vehicles in the EU is estimated to be only 88% for front seats and as low as 72% for rear seats (Fig. 11). Although some progress has been made, Eastern and Southern European countries still underperform.

Among the countries monitoring seat belt wearing regularly over recent years, France, Germany, Sweden, the UK and the Netherlands have the highest seat belt wearing rates with 95% or more drivers and front passengers buckling up. In Israel, Finland, Denmark, Norway and Ireland, 90% or more drivers and front seat passengers wear their seat belt. The Czech Republic, Slovenia, Estonia, Austria, Switzerland, Portugal, Spain, Latvia record rates between 80% and 90%. In Poland, Cyprus, Belgium, Slovakia, Hungary, Greece and Italy rates are 80% or lower.

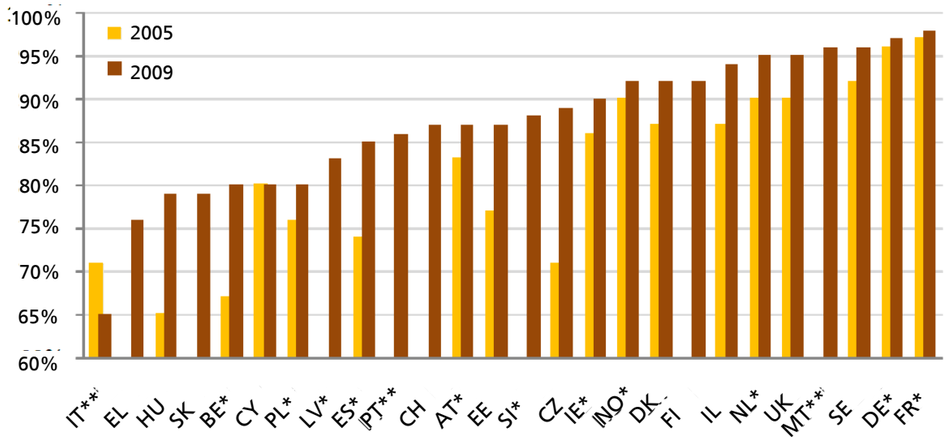


Fig. 11: Seat belt wearing rates in front seats of light vehicles (latest available year), with 2005 data for comparison. Source: PIN Panellists, ETSC 2010, 4th PIN Report
**2008 **SafetyNet*

43 See PIN Flash 16 Methodological Note, http://www.etsc.eu/PIN-publications.php
44 EU Directive 2003/20/EC on the approximation of the laws of the Member States relating to the compulsory use of safety belts in vehicles of less than 3.5t.

For rear seat passengers the disparities between countries are much bigger: from over 80% in Germany, UK, Finland, Norway, France, Spain and the Netherlands, all the way down to under 30% in Malta, Greece, Latvia and Cyprus (Fig. 12).

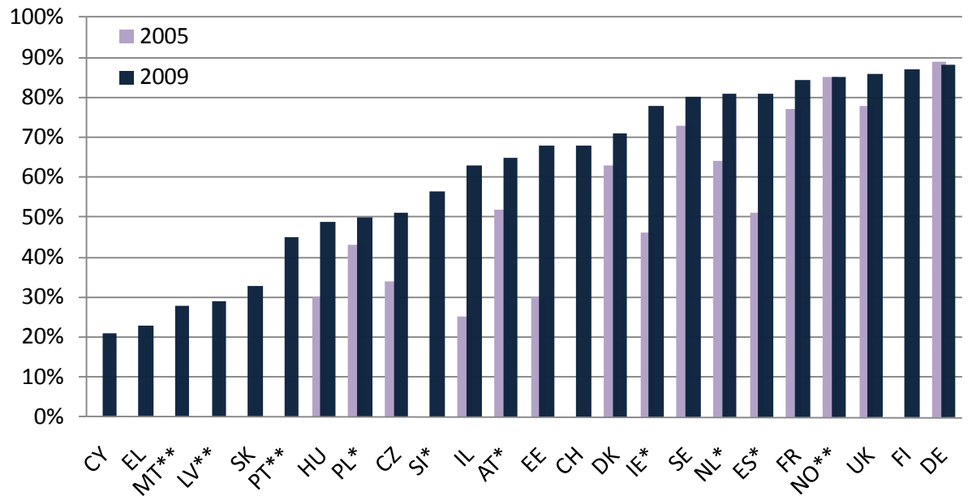


Fig. 12: Seat belt wearing rates in rear seats of light vehicles in 2009, with 2005 for comparison. Source: PIN Panellists or SafetyNet.
** 2008. **SafetyNet.*

Seat belt use by truck drivers

While one can expect professional drivers of larger vehicles to be more prone to respect traffic laws than the drivers of passenger cars, the use of seat belts has been an exception. This may be due to a feeling of comfort and safety behind the wheel of a large truck, but also to low sanctions for not wearing a seat belt on unbelted drivers, compared to other offences. A truck driver with a BAC above the legal limit not only faces high sanctions as a driver, but can also risk to be banned as an employee, which is not the case for not wearing a seat belt.

Research has revealed that up to 50 percent of European truck drivers don't buckle up and that seatbelt use among truck drivers varies widely from country to country – from as little as 10 percent to more than 70 percent.

4.2 Legislation

Since 1991, an EU Directive[45] requires that all occupants of passenger cars and light vans use seat belts on both front and rear seats. In 2003, a new Directive extended the obligatory use of seat belts to occupants of all motor vehicles, including trucks and coaches[46]. It also mandated the use of appropriate child restraint systems for all children travelling in passenger cars and light vans.

In some Member States, drivers are responsible if their passengers do not wear their seat belt. The situation in particular countries is summarised in Table 5.

45 EU Directive 91/671/EEC.
46 EU Directive 2003/20/EC on the approximation of the laws of the Member States relating to the compulsory use of safety belts in vehicles of less than 3.5 tonnes.

Driver liability	Countries
Not liable	BG, CZ, ES, NL, RO, SK
Liable for passengers under 18 years old	AT, BE, CY, DE, DK, FI, FR, HU, IT, LU, PT, SE, SI, UK
Liable for all passengers	EE, GR, IE, LT, LV, PL

Table 5: Driver's liability for the usage of seat belts by other car occupants.

In France, drivers lose three points on their driving licence if their passengers are not belted.

4.2.1 Sanctions

The level of sanctions for not wearing a seat belt covers monetary fines that range from some 12€ in Estonia to 150€ in Sweden.

Some of the countries which have a penalty point system in place also apply penalty points for the offence of not using a seat belt, yet the sanction is relatively low compared to other offences.

4.3 Enforcement

Seat belt wearing rates can be improved through a mixture of measures including police enforcement linked to education and information campaigns. According to the European Commission Recommendation, enforcement actions concerning seat belt use should be intensive, highly visible and well publicised. High levels of publicity are crucial for optimising the effects of enforcement.

Enforcement actions should be carried out at least three times a year, with each action lasting at least two weeks. They should be carried out predominantly in those places where there is an increased accident risk. Actions can be combined with other enforcement actions, e.g. concerning drink driving or speeding. It is important that every detected offence is properly followed up and that sanctions are appropriate and dissuasive.

5 Recommendations to Member States

General

- Prepare enforcement plans with yearly targets for compliance in the areas of speeding, drink driving and seat belt use.
- Seek to reach these targets by all available means, including applying proven enforcement strategies according to the EC Recommendation on enforcement.
- Ensure that enforcement through new technologies still maintains the important role of the police officer as a deterrent presence on the roads.
- Apply a 'Zero-Tolerance' approach to enforcing the three priority areas of road safety legislation.
- Sanctions should be proportioned to the offenses and standardised.
- Continue the implementation of the Recommendation and set up Enforcement Co-ordination Points to ensure that serious or repeated offences committed by non-resident drivers are reported and followed up accordingly.

Speeding

- Conduct mobile checks to deter speeding across the network.
- Use stationary camera equipment in places where speeding causes a high level of accidents.
- Channel revenues from camera enforcement back into road safety work.
- Monitor development of speed patterns and publish regular overviews of change for different road users, based on the example of France.
- Promote the introduction of owner or keeper liability as opposed to driver liability to facilitate enforcement of speed limits.
- Install safety cameras able to detect speeding riders and enforce their compliance with speed limits.
- As well as fixed safety cameras, introduce 'section control' or 'time over distance' cameras in places where speeding over appreciable distances is a problem.
- Incorporate speeding offences in penalty point systems, and make sure that levels of penalty escalate as the level of speeding above a speed limit increases.
- Adopt 30 km/h as the maximum speed in residential areas and promote traffic calming measures.
- Monitor development of speed patterns (mean speed and 85 percentile) and publish regular overviews of change for different road users.

Drink driving

- Introduce targeted breath testing to complement enforcement based on suspicion. This would allow roadside breath testing of anyone driving within a defined location for a defined period of time. This would give the Police extra scope to target drink-driving hotspots, and would increase the perceived likelihood of getting caught, which is a major deterrent to drink driving. This should also be supported by the introduction of evidential roadside breath testing.
- Systematically allow for the testing of drink driving in all Police checks relating to driver behaviour.
- Introduce obligatory testing for alcohol in all collisions dealt with by the Police.
- Intensify enforcement of laws against driving after drinking by setting targets for minimum level of alcohol checks of the motorist population, e.g. 1 in 5 motorists should be checked each year.
- Introduce systematic breath-testing in all Police checks relating to driver behaviour.
- Introduce obligatory testing for alcohol for all road users involved in fatal accidents, if not in all injury collisions dealt with by the Police.
- Consider adopting a lower limit for commercial and novice drivers thus stressing the seriousness of drink driving among these two target groups.
- Organise regular nationwide campaigns to raise the public's understanding that drinking and driving is never a good mix.
- Consider the launch of a nationwide initiative for commercial organisations to consider drink driving by their workforces within the context of their business model.
- Develop the use of alcolocks in rehabilitation programmes.
- Consider extending the use of alcolocks for certain categories of drivers (e.g. bus drivers transporting children) and fleet drivers.

Seat belt use

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

Follow-up of offences

- Introduce a set of fixed penalties for low level speeding and seat belt offences.
- Work towards a low level of appeals for fixed penalties for speeding violations.
- Include speeding, drink driving and seat belt wearing offences in penalty point systems, where they exist.
- Introduce rehabilitation programmes to address recidivism in case of drink driving and speeding.

6 Recommendations to the EU

Speeding

- In the short term, introduce a driver set speed limiter as a standard equipment in all new vehicles.
- Contribute to the development of harmonised standards for Intelligent Speed Assistance (ISA) systems towards eventual universal fitment.
- Adopt European legislation for mandatory fitting of all European cars with Intelligent Speed Assistance systems in the type approval procedure.
- Develop a European standard for a "speed limit service", i.e. over the air[47] provision to in-vehicle systems of current geodata on road speed limits.
- Require member states to provide a standardised "speed limit service" over the air.
- Adapt the EU Directive on the promotion of clean and energy-efficient road transport vehicles[48] to include in vehicle technologies (ISA) for safety in public procurement.

Drink driving

- Introduce uniform standards for alcolocks in Europe, and provide assistance to reduce the workload for those countries that wish to introduce the technology without having the appropriate legal framework.
- Legislate for a consistently high level of reliability of alcohol interlock devices.
- Further research into the development of non-intrusive alcohol interlocks.
- In the medium term introduce legislation making non-intrusive alcolocks mandatory for all drivers.
- Adapt the EU Directive on the promotion of clean and energy-efficient road transport vehicles[49] to include in vehicle technologies for safety (alcolocks) in public procurement.
- Consider proposing a Directive for 0.2 BAC limit for commercial and novice drivers thus stressing the seriousness of drink driving amongst these two target groups.

Seat belt use

- Adopt legislation to ensure that every new car has as standard equipment an enhanced seat belt reminder system for front and rear seat occupants.

Cross Border Enforcement

- Adopt a Directive on Cross-Border Enforcement as soon as possible

47 "Over the air": the idea is that a car would receive updates on speed limits by wireless broadcast, e.g. over a mobile phone network. This would be able to handle permanent changes in speed limits and also temporary changes such as for construction zones. It deals with the problem of speed limit information going out of date.
48 Directive 2009/33/EC of the European Parliament and of the Council of 23rd of April 2009 on the promotion of clean and energy-efficient road transport vehicles.
49 Directive 2009/33/EC of the European Parliament and of the Council of 23rd of April 2009 on the promotion of clean and energy-efficient road transport vehicles.

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Bibliography

Aarts, L. & van Schagen, I. (2006). Driving speed and the risk of road crashes: a review, Accident Analysis & Prevention, 2006 Mar, vol. 38, issue 2, pp. 215-24.

Akkermans, L. & Orozova-Bekkevold, I. (2007): Review of main conclusions of completed relevant projects. Working Paper 1 of the PEPPER (Police Enforcement Policy and Programmes on European Roads) project. Available at www.pepper-eu.org (retrieved 8 March 2010).

Baker EA, Beck KH (1991). Ignition interlocks for DUI offenders – a useful tool?. Alcohol, Drugs and Driving: Abstracts and Reviews 1991:107–15.

Carsten PROSPER D4 3 Assessment of Road Speed Management Methods v1 0 (2006).

European Commission Recommendation of 6 April 2004 on enforcement in the field of road safety (Text with EEA relevance), OJ L 111 of 17/04/2004 p.75 and OJ L 120 of 24.4.2004, p. 65.

European Commission, Communication from the Commission on the European Road Safety Action Programme. Halving the number of road accident victims in the European Union by 2010: a shared responsibility COM(2003) 311 final.

European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the regions, Towards a European road safety area: policy orientations on road safety 2011-2020, SEC(2010) 903.

ESCAPE (2000). New concepts in automatic enforcement, ESCAPE project.

European Commission, Flash Eurobarometer Nr.301: Road Safety, Analytical report, Gallup, EC, 2010.

European Commission DG MOVE, Traffic rules at a glance
http://ec.europa.eu/transport/road_safety/observatory/doc/speed_rules.pdf

ETSC (2003) Assessing risk and setting targets in transport safety programmes.

ETSC (2010), 4th Road Safety PIN Report: Road Safety Target in Sight.

ETSC (2010) EU road safety at stake? ETSC Response to the European Commission's Road Safety Policy Orientations 2011-2020.

Machata, K and Wannenmacher, E (1998), Wie hoch liegt de Alkoholquote wirklich? Detailanalyse von Verkehrsunfällen mit Todesfolge im Land Niederösterreich. In Bartl, G. & Kaba, A. Alkohol im Strassenverkehr, Kuratorium für Verkehrssicherheit, Health Service Executive, 2006.

Mäkinen, T. & Zaidel, D. (2003), Traffic enforcement in Europe: effects, measures, needs and future. Final report of the ESCAPE (Enhanced Safety Coming from Appropriate Police Enforcement) consortium. Available at virtual.vtt.fi/escape (retrieved 22 February 2010).

Miller, T. et al, "Cost savings from a sustained compulsory breath testing and media campaign in New Zealand". 2004. 36 Accid. Anal.

Nilsson, G. (1982). The effects of speed limits on traffic accidents in Sweden. In: Proceedings of the international symposium on the effects of speed limits on traffic accidents and transport energy use. OECD, p. 1-8.

©ETSC 2011

North, P. (2010). Report of the Review of Drink and Drug Driving Law, report for the DfT.

OECD/ECMT (2006), Speed management, OECD, Paris.

Noordzij, P. (1976): Influencing road users' behaviour. SWOV-Report 76-4e, Voorburg.

ONISR (2009). La sécurité routière en France. Bilan de l'année 2008, p.99-107.

Peden M, World Report on Road Traffic Injury Prevention. Geneva: World Health Organisation, 2004.

Peek-Asa C (1999) The effect of random alcohol screening in reducing motor vehicle crash injuries (structured abstract). American Journal of Preventive Medicine 16 (1 supplement): 57–67.

Pennay, D. (2005). Community attitudes to road safety: Community Attitudes Wave Survey 17, 2004. Canberra: Australian Transport Safety Bureau.

Pilkington, P. and Kinra, S. (2005). Effectiveness of speed cameras in preventing road traffic collisions and related casualties: systematic review, BMJ, pp. 330 : 331.

PEPPER Overview of good practices in strategic planning and tactical deployment of traffic law enforcement, Deliverable 5 of EU funded project PEPPER, www.pepper-eu.org

Schlag, B. (2009): Regelbefolgung. In: BGUG-Kampagne „Risiko raus"- Hintergrundpapiere, pp. 98-119.

Shults RA, Elder RW, Sleet DA et al. (2001) Reviews of evidence regarding interventions to reduce alcohol-impaired driving (Brief record). American Journal of Preventive Medicine 21 (4 supplement): 66–88.

SWOV (2007): Fact Sheet "Alcolock". Leidenscham, The Netherlands.

SWOV Fact sheet (2009), Penalties in traffic, SWOV.

Tay R, "General and Specific Deterrent Effects of Traffic Enforcement" (2005) 39 Journal of Transport Economics and Policy 209.

Weinrath M. (1997) The ignition interlock program for drunk drivers: a multivariate test. Crime and Delinquency 1997;43(1): 42-59.

Traffic Law Enforcement Across the EU

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