ETSC
European Transport Safety Council

PRAISE
Work-Related Road Safety

DECEMBER 2011 REPORT 8

"PRAISE": Preventing Road Accidents and Injuries for the Safety of Employees

Thematic Report 8

Driving for Work: Managing Speed

ETSC's PRAISE project, "Preventing Road Accidents and Injuries for the Safety of Employees", aims at mobilising knowledge needed to create work-related road safety leadership. This report offers employers an insight into tackling speeding amongst employees driving for work. Speeding can be defined as driving in excess of legally set speed limits and/or driving at speeds which are inappropriate to the prevailing conditions. Speeding is the main cause of road traffic collisions, deaths and serious injury. Loss of control of the driving task, and thus potentially of the vehicle, arises when the demands of the driving task exceed the available capability of the driver. As speed increases the task demand rises and the driver's capability is reduced[1]. Employers have a clear responsibility to reduce incentives to speeding and to raise understanding of the serious consequences it can have. Part one looks at the impact that speeding can have and presents levels of compliance with speed limits for different road user types. The second part focuses on management issues covering topics from journey planning to payment schemes with advice on how such practices can help to manage speeding in the work context. The third part of the Thematic Report looks at what employers can do from risk assessment of potential speeders and identification of training - including also eco driving synergies - to the promotion of safer and more economic driving. It also looks at what can be done to rehabilitate speeding offenders. The final part looks specifically at different speed management technologies which can also be a useful additional tool in managing speed. A policy mix is needed to effectively tackle speeding and this report aims to present recommendations to reduce speeding across the board amongst those who are driving for work.

1 Fuller, R. (2005) Towards a general theory of driver behaviour. Accident Analysis and Prevention, 37, 461-472.
Fuller, R. (2011) Driver Control Theory: From Task Difficulty Homeostasis to Risk Allostasis, Ch 2 in B.E.Porter (Ed.) Handbook of Traffic Psychology. Amsterdam: Elsevier. pp 13-26.

Part 1 Speeding: State of Play

1.1 Scope of the Speeding Problem

Excessive and inappropriate speed is the number one road safety problem[2]. Speeding is a primary factor in about one third of road traffic deaths and an aggravating factor in all collisions[3]. Exceeding speed limits is widespread, thus a large number of non-compliers are required to change their behaviour to redress the problem. Employers also have a strong role to play in making sure that their employees are driving safely and respecting the speed limits. From an economic perspective, collisions and insurance claims involving vehicles travelling at higher speeds also tend to cause the most asset and human harm. Experience shows that there is not one single measure to reduce speed. Rather it takes a combination of measures including credible speed limits, enforcement, education and individual behaviour change, combined with 'self-explaining' roads and vehicles[4]. In organisations these must be addressed with policies, processes and procedures around speed and other key collision causation factors.

Speed affects the dynamics of a collision in four ways[5]:

1. Speed reduces the time drivers have to identify and react to a problem. They have less time to identify a risk and react to what is happening around them. Drivers need time to process information: first, they need to identify a problem; after, they need time to decide whether or not to react to the problem and what reaction is appropriate; and, finally, they need time to take the appropriate action.

2. Speed increases the distance needed to stop a vehicle. It takes more for a vehicle to stop from higher speeds[6]. The distance between starting to brake and the complete standstill of the vehicle is longer.

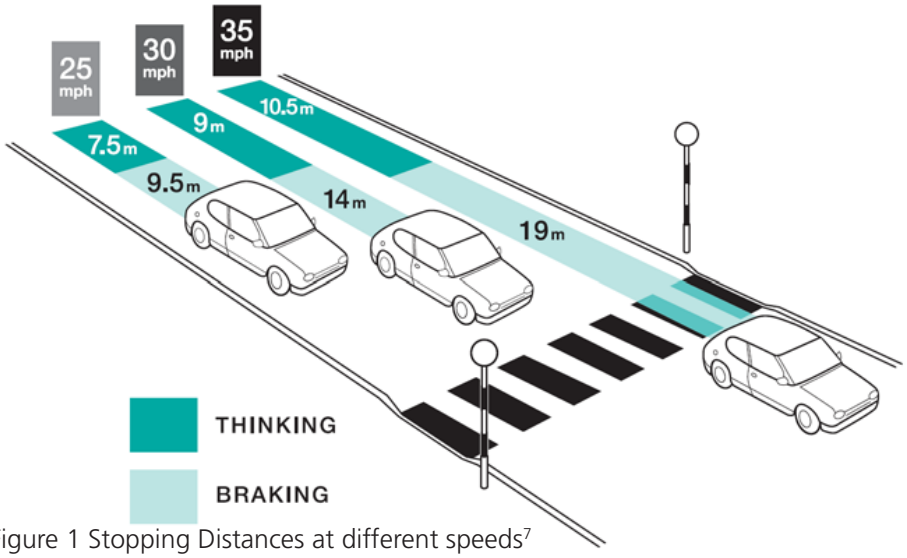


Figure 1 Stopping Distances at different speeds[7]

3. Speed increases the risk of injuries and death. As a vehicle gains speed, the kinetic energy or energy of motion exponentially increases. This energy, accumulated by the vehicle, will eventually be released in an impact to be absorbed by hard metal, soft flesh and brittle bone. More kinetic energy means a more violent impact and more serious or fatal injuries.

4. Speed reduces the ability of a vehicle and its safety devices to protect the occupants. New safety devices in vehicles are not sufficient to protect the passengers in a high speed collision. The kinetic energy gathered by a fast moving vehicle increases the force of the impact. The exterior body of a vehicle and its technical devices are not always sufficient to absorb the forces and protect the passengers inside. Safety measures do not do much to protect vulnerable users outside the vehicles. Therefore, active and passive safety devices are no substitutes for speed reduction.

The relation between speed and crash rates is not linear but can best be described as having a power function or

2 Aarts, L. & van Schagen, I. (2006). Driving speed and the risk of road crashes: a review, Accident Analysis and Prevention, vol. 38, issue 2, p: 215-24.
3 OECD/ECMT (2006) Speed Management.
4 Wegman, F. and Aarts, L (2006), Advancing Sustainable Safety. National Road Safety Outlook for 2005-2020.
5 ETSC (2008) Managing Speed, Towards Safe and Sustainable Road Transport.
6 http://www.dacota-project.eu/Links/erso/knowledge/Fixed/20_speed/Speeding.pdf
7 http://www.rospa.com/roadsafety/info/workspeed.pdf

an exponential function: the crash rate increases much faster than the increase in speed[8]. 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 injury accidents, a 3% reduction in severe injury accidents and a 4% in fatal accidents[9]. It follows from the high risk associated with speed that reductions in driving speeds (even minor ones) will make an important contribution to reducing the numbers of road traffic deaths and injuries. 'Low level' speeding is often overlooked but has an important role on safety outcomes as it is far more common than driving at extremely high speeds. Applying the "Power Model" to current numbers of deaths 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[10]. Research also suggests that cutting speed has a positive impact on the environment, a relation dealt with in part 3 of this report.

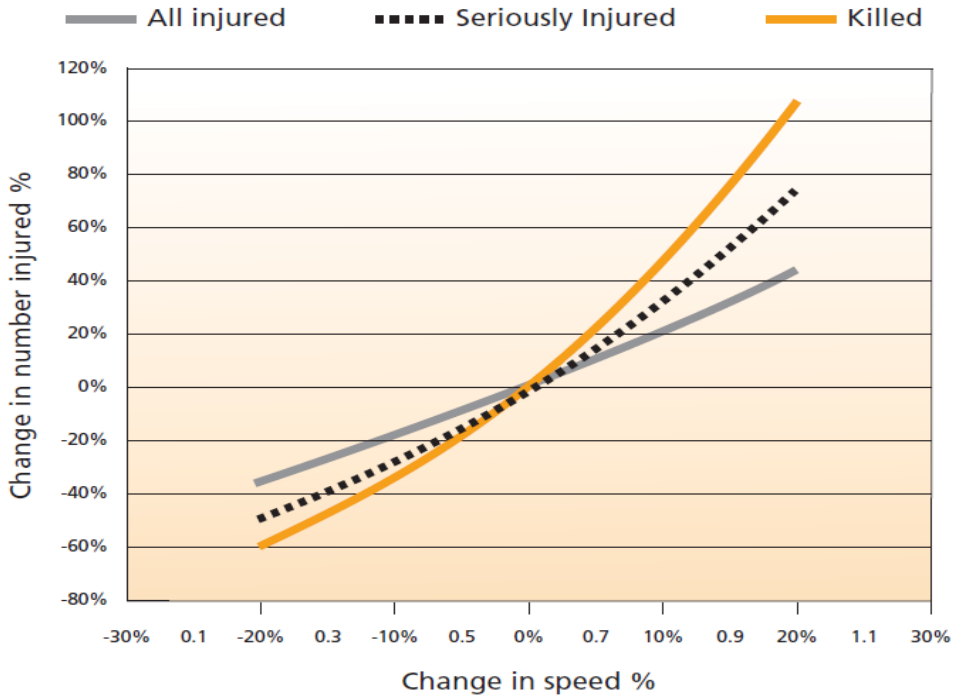


Figure 2: relationship between change in speed and change in the number killed and seriously injured[11]

1.2 Current general speed limits in the EU Member States[12]

The general speed limit for motorways in EU Member States is mostly 120 or 130 km/h. The general speed limit for rural roads in EU Member States is mostly 80 or 90 km/h and for urban roads 50 km/h, with a widespread use of 30 km/h zones in residential areas. EU countries apply a lower speed limit for heavy good vehicles[13] (HGVs) and buses/ coaches. The majority of countries only apply an overall maximum speed limit for HGVs (generally 80 km/h) and buses (varying between 80 and 100 km/h). Some countries apply lower HGV and bus speed limits for different road types (e.g. Denmark, Ireland and the United Kingdom).

1.3 Levels of Compliance with Speed Limits in the EU

Exceeding the legally set speed limit is widespread. The ETSC PIN report regularly evaluates progress and found that, in countries where data on speed measurements in free-flowing traffic are available, 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[14]. There have been improvements in recent years. Among the countries monitoring speed, drivers, in particular car drivers, have slowed down. Best progress has been made on motorways, where 'only' about 30% of drivers now exceed the speed limit, the highest average level of compliance among the three types of roads. Most of this progress followed the introduction of extensive automated speed enforcement schemes based on safety

8 SWOV (2007). Fact Sheet: The relation between speed and crashes. http://www.swov.nl/rapport/Factsheets/FS_Speed.pdf
9 Aarts and van Schagen 2006, based on Nilsson 1982.
10 ETSC (2010) 4th Road safety PIN Report Chapter 3.
11 Nilsson, 2004 in ETSC (2008) Managing Speed - Towards safe and sustainable Road transport.
12 http://ec.europa.eu/transport/road_safety/specialist/knowledge/speed/speed_limits/current_speed_limit_policies.htm
13 Heavy Goods Vehicle – EU term for any truck with a gross combination mass (GCM) of over 3,500 kilograms.
14 http://www.etsc.eu/documents/ETSC_2011_PIN_Report.PDF and http://www.etsc.eu/documents/05.05%20-%20PIN%20Flash%2016.pdf

cameras coupled with stricter sanctions like penalty point systems including speed offences and higher fines. Also, within some countries, average speeds have decreased on some rural roads but increased on others. Compliance with speed limits on these roads is low in many countries. In 8 out of 11 countries monitoring speeds on rural roads, the percentage of drivers exceeding the speed limit varies from 30% to 72%. Average speeds have decreased also on urban roads in several countries. But, in comparison with motorways and rural roads, the proportion of cars travelling above the limit is highest on urban roads, roads where limits have been set at the lowest level to protect the most vulnerable road users - pedestrians and cyclists.

ETSC's PIN analysis also points out that 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 committing 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' and 'always' in European countries on different road types was 28% on motorways, 19% on main roads between towns, 13% on country roads and 7% in built-up areas[15].

The PIN Report uses as an indicator mean speed and levels of compliance of vehicles in free-flowing traffic (i.e. the proportion of vehicles exceeding the posted limit). These are the two most commonly used speed indicators in European countries. An example of the data gathered and analysed is seen in figure 3 showing that in free-flowing traffic, up to 30% of the drivers exceeded the speed limit on motorways in 2009[16].

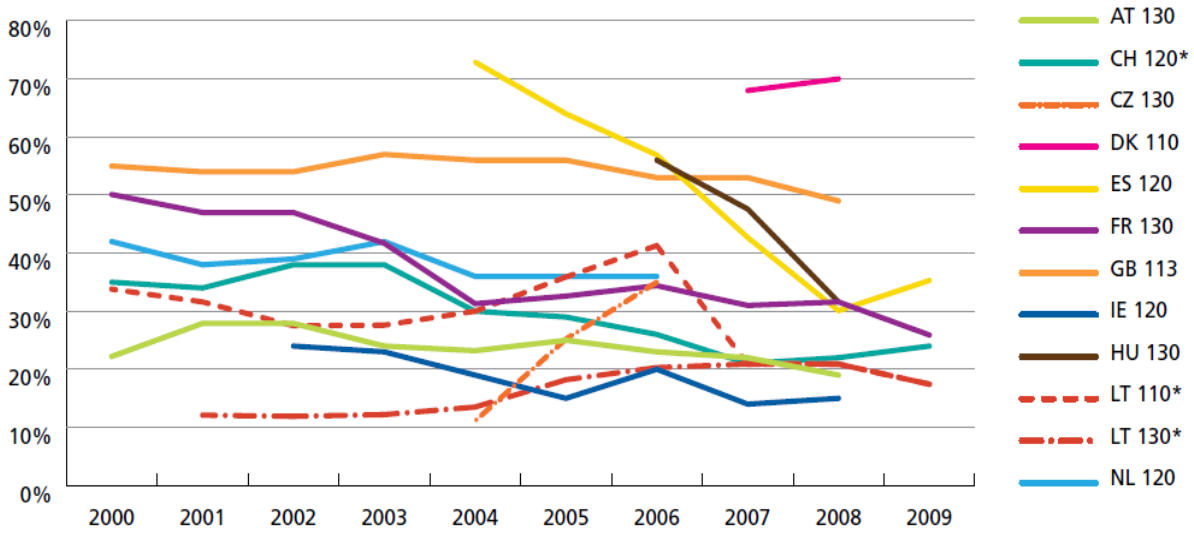


Figure 3: Percentage of cars and Light Commercial Vehicles[17] (LCV's) exceeding the speed limits on motorways. *All traffic

1.4 Speed of Different Vehicle Types and Driving for Work

This section gives a short overview of available studies looking at speeding in relation to different vehicle types used for work. Research shows that the data available on work-related journeys are not fully reliable. In order to inform those (government, employers) engaged in taking preventative measures, improvements need to be made in collision reporting in terms of recording if the trip was one completed for work.

Company Cars

A British study found that speeding amongst company car drivers was common for over half the sample, and excessive speeding was common for 13% of the sample. The most important reason was the desire to arrive at meetings on time, even if this meant breaking the speed limit, combined with a reduced perception of excess speeding as an important accident risk factor and lower driving experience[18]. Other research, also from the UK, demonstrated that, 'in terms of the speed of an individual driver relative to the speed of all drivers, faster drivers tend to be younger rather than older and to drive high annual mileages in company cars; they were also likely to be in the

15 http://sartre.inrets.fr/documents-pdf/repS3V1E.pdf
16 In some jurisdictions a distinction is made between the posted limit and an enforcement threshold (e.g., currently, in Great Britain, limit + 10% + 2 mph) such that a driver detected travelling at 30.1 – 34.9 mph will be counted as non-compliant with the speed limit in an urban 30mph zone but is not considered to warrant prosecution. Indeed UK figures show that typically below half of those exceeding the speed limit are exceeding the enforcement threshold.
17 LCV: goods vehicles with a gross vehicle mass of up to 3.5 tons use in Europe.
18 Adams-Guppy, J. and Guppy, A. (1995) Speeding in relation to perceptions of risk, utility and driving style by British company car drivers. Ergonomics, 38, 12, 2525-2535.

managerial, administrative or professional occupational groups and to be travelling without passengers for business purposes.'[19] Industry data also suggest that speed is the most common drivers licence violation type received by most company car drivers in the UK[20].

HGVs and Buses

Speeding of commercial vehicles in member countries has increased in recent years according to a report of the OECD[21]. This is partly due to the fact that trucks are equipped with more powerful engines to handle heavier loads and to maintain trip times. Furthermore, the demands of industry for "just in time" delivery place additional pressure on transporters to operate trucks at higher speeds to make up for potential delays[22]. Great Britain – among others (France, Finland) - regularly monitors speed of HGVs[23]. Speed measurements in Great Britain in 2008 show that over 85% of HGVs exceeded the speed limit on dual carriageways other than motorways and 75% on single carriageways outside built up areas.[24]

During the EC SafetyNet project, in-depth data were collected using a common methodology for samples of collisions that occurred in Germany, Italy, The Netherlands, Finland, Sweden and the UK. This SafetyNet Collision Causation Database was formed between 2005 and 2008 and contains details of 1,006 collisions covering all injury severities. Figure 4 below compares the distributions of specific critical events for HGV or bus drivers and other drivers or riders in HGV/bus collisions[25]. "Surplus speed" describes speed that is too high for the conditions or manoeuvre being carried out, travelling above the speed limit and also if the driver is travelling at a speed unexpected by other road users. "Surplus speed" is noted as the cause for approximately 10% of the HGV and bus drivers and 15% of the other drivers and riders involved in HGV and Bus collisions. Further analysis by SafetyNet gives the most frequent links between causes for HGV or bus drivers/riders.

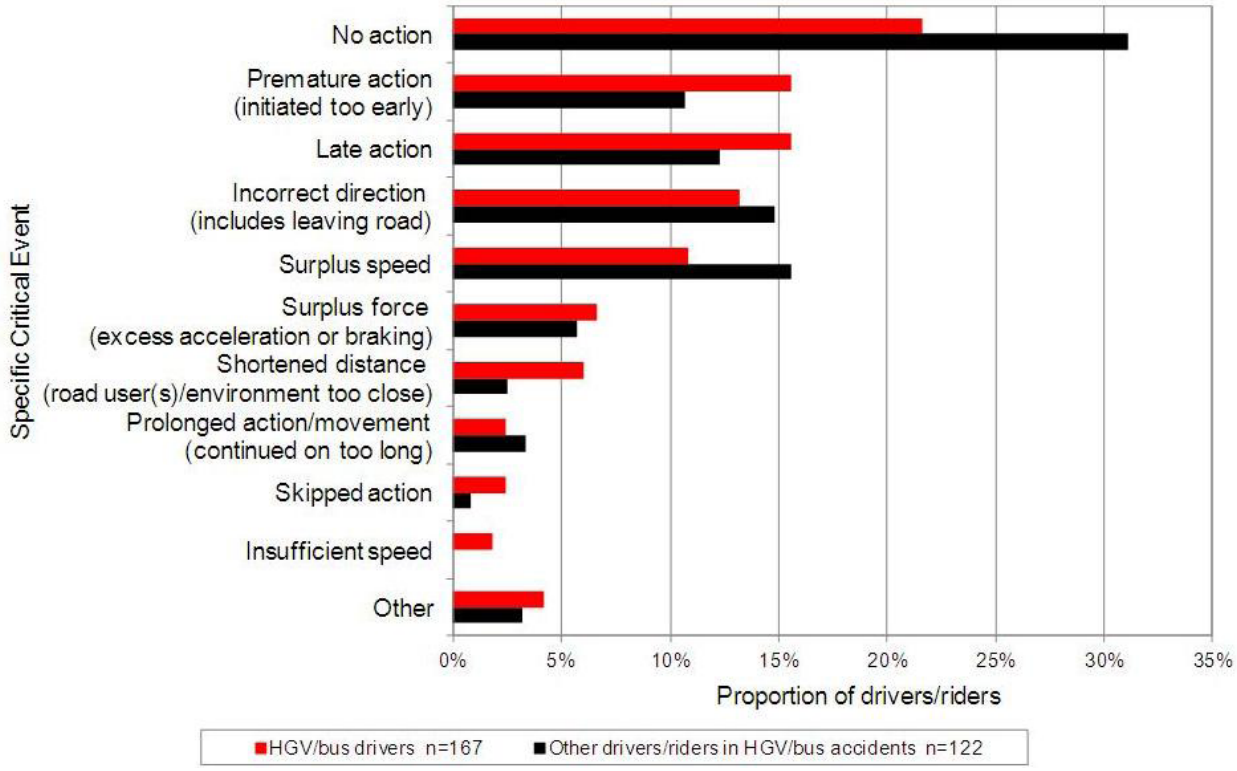


Figure 4: Distributions of specific critical events for HGV or bus drivers and other drivers or riders in HGV/bus collisions

19 Maycock, G., Brocklebank, P. J. and Hall, R.D. (1998). Road layout design standards and driver behavior. TRL Report 332. Transport Research Laboratory, Crowthorne, UK.
20 Typical industry data from one EDECS supplier shown in figure 9 suggest that speed is the most common driver licence violation type received by most company car drivers in the UK.
21 ITF/OECD (2006) Speed http://www.internationaltransportforum.org/Pub/pdf/06Speed.pdf
22 Ibid
23 Department for Transport, Road Statistics 2009: Traffic, Speeds and Congestion, http://www2.dft.gov.uk/pgr/statistics/datatablespublications/roadstraffic/speedscongestion/roadstatstsc/roadstats09tsc.html
24 Ibid
25 http://ec.europa.eu/transport/road_safety/pdf/statistics/dacota/bfs2010_dacota_intras_hgvs.pdf

Light Commercial Vehicles (LCVs)

There has been an increase in Light Commercial Vehicles. The LCVs sold in Europe have been gradually equipped with more powerful engines, allowing them not only to travel at higher speed, but also with higher loads.

In the UK an examination of the severity of collisions showed that LCVs are more likely than other vehicle groups to be involved in serious collisions resulting in deaths. About a quarter of deaths caused by LGV drivers involve breaking the speed limit; these include cases where the driver is breaking the applicable limit for a vehicle of that class, as well as those ignoring posted speed limits.[26]

In Germany, the Federal Highway Institute has undertaken a study of real-world collisions which involved LCVs. One of the results of the study is that LCVs drive and collide at similar speeds as cars but only 20% of the van drivers wear seat belts.[27]

In Ireland, a recently completed MSc research[28] study explored the provision of training and prevalence of work related road incidents amongst commercial van drivers. The results showed that 35% of drivers had never received training from employer while 30% had reported receiving training in the previous 2 years. Speeding was amongst the top three most committed behaviours on both motorways and residential roads. These vehicles are a particular risk, as they are un-regulated in comparison to large goods vehicles – with no specific driver licence, driver hours, tachograph or speed restriction requirements. They also tend to operate more in highly populated urban areas, where the risks of collisions with people are greatest.

Powered Two Wheelers (PTWs)

Motorcycle riders and passengers have at least 18 times the corresponding risk for a car driver of being killed in a road collision for the same distance travelled[29]. The SafetyNet Collision Causation Database also evaluated collisions involving riders of powered two wheelers (PTW – motorcycle or moped). These represented 17% (175) of the total collisions investigated[30]. "Surplus speed[31]" is noted as the most frequently recorded specific critical event for PTW riders[32]. In France, motorcyclists have reduced their speed since 2002, but not to the same extent as other road users (Fig. 5). In 2008, more than 30% of motorcyclists were still riding at least 10km/h over the legal speed limit, against 12% for cars and heavy good vehicles.

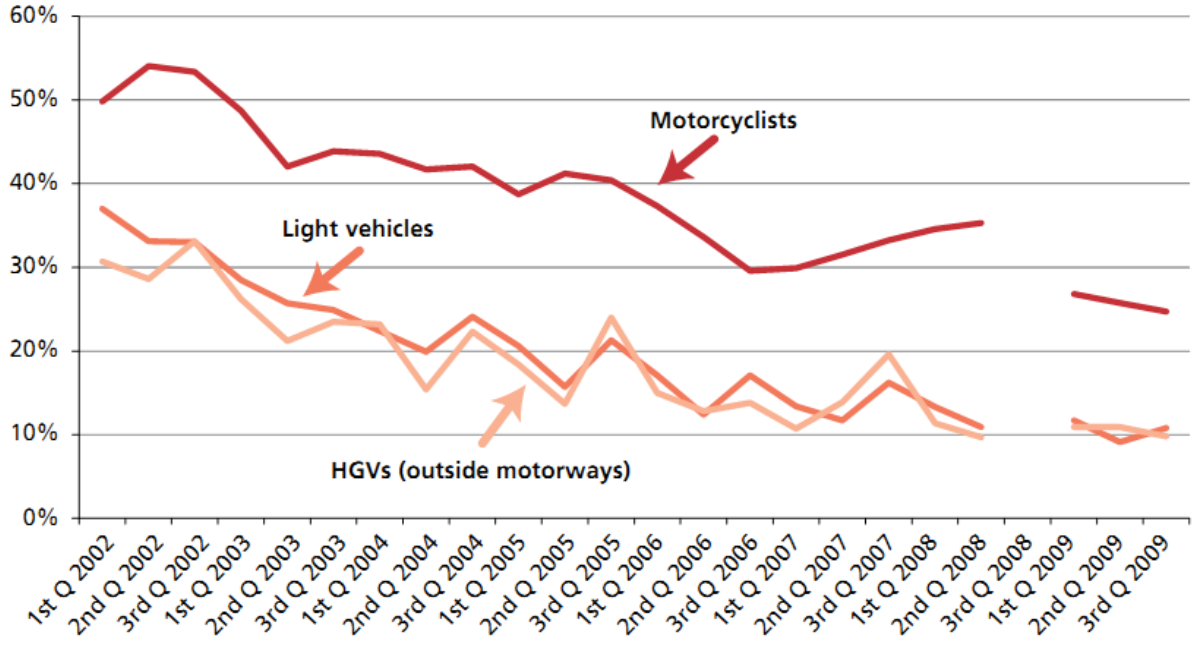


Figure 5: Percentage of Vehicles travelling at least 10 km/h above the speed limit in France[33]

26 PACTS (2003), Speed Cameras: 10 criticisms and why they are flawed, PACTS & SSI, London, p4
27 http://www.dekra.de/de/pressemitteilung?p_p_lifecycle=0&p_p_id=ArticleDisplay_WAR_ArticleDisplay&_ArticleDisplay_WAR_ArticleDisplay_articleID=4384967
28 Driving for Work: A study of incidents, training and behaviour in four Irish transport companies. Fiona Dunne. M.Sc.
29 http://www.etsc.eu/documents/05.05%20-%20PIN%20Flash%2016.pdf
30 http://ec.europa.eu/transport/road_safety/pdf/statistics/dacota/bfs2010-dacota-ntua-motomoped.pdf
31 Surplus speed describes speed that is too high for the conditions or manoeuvre being carried out, travelling above the speed limit and also if the driver is travelling at a speed unexpected by other road users.
32 http://ec.europa.eu/transport/road_safety/pdf/statistics/dacota/bfs2010-dacota-ntua-motomoped.pdf
33 ONISR, Observatoire des vitesses, 2010. There is a break in the series as speed measurements stopped during the last four months of 2008.

1.5 Why Do Drivers Speed?

This next section looks at the different reasons why drivers speed. Motives for exceeding the speed limit are both rational and emotional and may depend on the temporary state of the driver or the actual situation[34]. The Sartre survey is a large survey of European Drivers based on self-reporting including a whole battery of questions around speeding[35]. As background it cites surveys of drivers caught speeding. They reveal a variety of reasons around why they speed: these can be temporary (e.g. "I'm in a hurry"; "I didn't know the speed limit") or more permanent (e.g. "I'm more skilled that other drivers so can drive faster and still be safe"; "This car is designed to be safe when driven fast"). Moreover, three other common reasons may influence speeding behaviour identified as: type of vehicle driven, the posted speed limit and the perceived likelihood of enforcement. Who else is in the car can also influence the choice of speed. Reasons as to why people speed vary also depending on age and gender. Demographic and psychological factors can also influence speed choice. For example, there are differences in the speed characteristics of different ages and gender (with younger male drivers typically driving faster) and psychological traits (e.g. 'sensation seeking') have also been found to influence the choice of driving speed. Enjoyment of speed, though, was cited by one in ten in the Sartre project[36]. One of the main findings of this report, which should be key information to employers trying to manage speed, is that in general drivers do not appreciate that speed is associated with risk where their own driving is concerned. For example, whereas 18% of drivers report driving faster than average, only 4% report being more dangerous[37].

In the work-context, there is also a feeling that there is a work-driver effect, caused by the extra pressures of work including time pressures, time sensitive deliveries, payment by results, as well as other work distractions, which can all cause drivers to speed or lose concentration. This is covered in more detail in Part 2. As drivers at work are travelling in areas which may not always be familar to them, it is important that proper and adequate signing of speed limits is in place[38].

Evaluating the Risk — Comparison with Drink Driving

Drivers are usually aware of the increased risk of being involved in a fatal collision after drinking but largely underestimate the increased risk of being involved in a fatal collision when speeding. Driving with 0.5g/l Blood Alcohol Concentration (BAC) increases the risk of a fatal crash by a factor of 5, the same as driving about 50% faster. The increased risk of driving at 75km/h on a 50km/h road, 135km/h on a 90km/h road or 180km/h on a 120km/h motorway is therefore similar to the risk of driving with a 0.5g/l BAC[39]. Speeding should be socially unacceptable, as is the case now for drink-driving in most EU countries.

A recent European 'Eurobarometer'[40] opinion poll survey demonstrates that while 94% of people considered "driving under the influence of alcohol" a major road safety problem, this number was 78% for exceeding the speed limit (see below). In reality speed remains the biggest killer on Europe's roads. This underlines the need for a change in attitudes in order to tackle speeding.

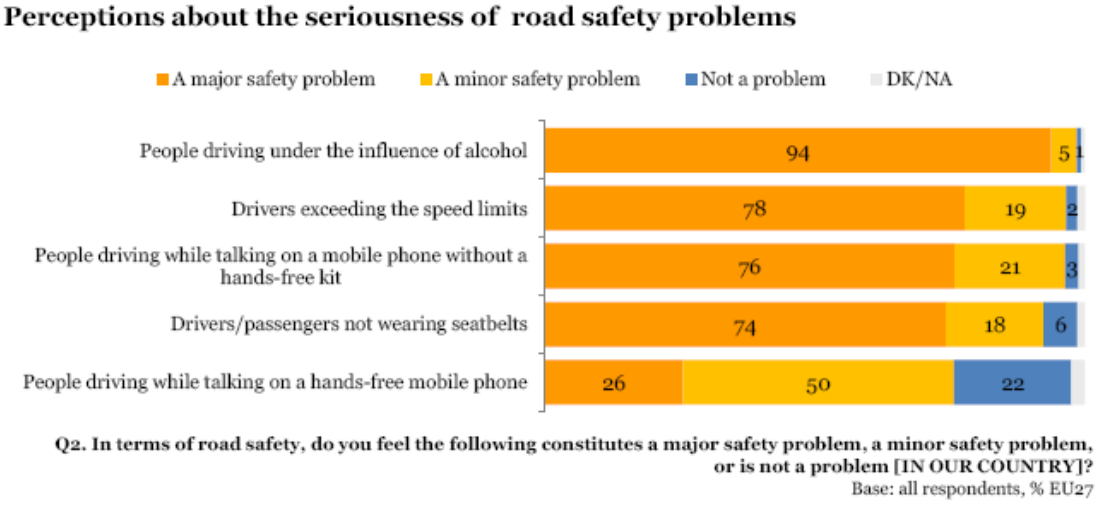


Figure 6: Perceptions about seriousness of road safety problems Eurobarometer 2010

34 ERSO (2007) Speeding.
35 http://sartre.inrets.fr/documents-pdf/repS3V1E.pdf
36 http://sartre.inrets.fr/documents-pdf/repS3V1E.pdf
37 ibid
38 https://www.tispol.org/policy-papers/speeding/tispol-excess-speed-policy-document
39 http://www.etsc.eu/documents/05.05%20-%20PIN%20Flash%2016.pdf
40 http://ec.europa.eu/public_opinion/flash/fl_301_en.pdf

A recent interview survey of a representative sample of 1,005 drivers from across the United Kingdom was undertaken to explore driver knowledge, attitudes and behaviour regarding speed choice. As further background as to why drivers' speed of those surveyed, one-third said that they do not always know the speed limit of the road they are driving on[41]. Drivers reported that they were quite likely, or very likely, to break the speed limit when overtaking (54%), keeping up with the traffic (37%), when running late (33%), on an empty road in daytime (32%) and on an empty road at night (30%). Nineteen per cent said they were likely to exceed the speed limit when they thought the posted limit was too low for the road. Thirteen percent said they were likely to break the speed limit when feeling angry or when 'someone is driving close behind me', and 12% when feeling stressed. Two percent said they were likely to speed in order to stay awake. Only 20% of this sample agreed or strongly agreed with the statement 'I really enjoy driving fast' (see Figure 7[42]).

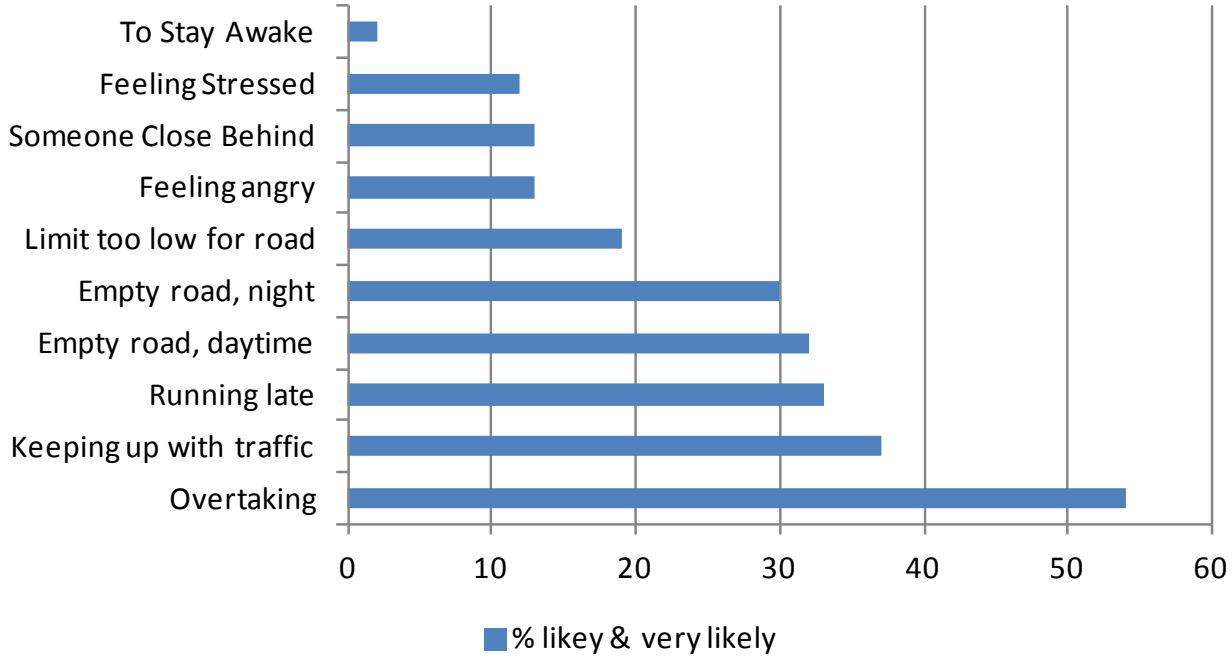


Figure 7 Reasons given for breaking the speed limit (% likely + very likely)

Another topic that came up in this survey[43] is the amount of time that one might save by speeding. This is now referred to as the 'speed fallacy' where drivers believe that by excessive speeding they will instantly make up lost time. When asked to guess how much journey time they would gain or lose by driving 10 mph faster or more slowly than initial speeds of 30 mph and 60 mph, drivers significantly overestimated both the time gained by driving faster and the time lost by driving slower than 60 mph[44]. Clearly there is a need to clear up the misinformation about time that can be saved by speeding. In particular on short journeys, the perceived gain of time is much larger than the real time gain which is just marginal.

Original speed (km/h)	50	70	90	110	130
Extra time taken (minutes)	1.33	0.66	0.39	0.26	0.18

Figure 8: Extra time taken for a journey of 10 km when speed is reduced by 5 km/h[45]

41 Department for Transport (2008) Road Safety Research Report 93 http://www2.dft.gov.uk/pgr/roadsafety/research/rsrr/theme2/safety93.pdf
42 Ibid
43 Ibid
44 Ibid
45 ETSC (1995) Reducing Traffic Injuries Resulting from Excess and Inappropriate Speed.

Research has identified three types of drivers. The majority (52%) are generally compliant and usually observe speed limits, admitting to only occasional, minor, inadvertent breaches. A second group of moderate speeders sometimes exceed speed limits, but only when it seems to them to be safe to do so, and typically by up to, but not more than, 10mph over the posted limit (33% of drivers) and finally excessive speeders who routinely exceed speed limits, often by substantial amounts (14% of drivers)[46]. When employers, governments and the EU are coming up with countermeasures they should tailor specific actions to target all of these groups.

Recommendations to Member States

- Monitor development of speed patterns and publish regular overviews of change for different road users
- Use effective signage and road marking to inform road users of speed limits and continue to research to attain the best design, placing and maintenance of signs and markings that are explicit to ensure acceptance and compliance by road users
- Improve data collection of speed as a factor in collisions
- Improve investigation of collision causation involving at work drivers to identify key causal factors including speed. In the context of driving for work, this will enable a better understanding of work related collision causes and enable employers to adopt preventative measures
- Work with Police to develop a course on identifying and investigating speed collisions
- Work with private companies to monitor the speed of their drivers
- Collect purpose of journey data as part of police collision recording process, to better understand the importance of any journey related factors. Several coding systems are available for this purpose.

1.6 Business Case to Manage Speed

For businesses there is a clear link between safety, quality, customer service, efficiency and the environment. Road safety has a massive impact on society and, for this reason, can play a major role in improving – or damaging an organisation's corporate social responsibility (CSR). This can be reflected in different ways[47]:

- Reduced running costs through better driving standards (fuel consumption/vehicle maintenance costs/insurance costs/collision costs)[48];
- Fewer working days lost due to injury;
- Reduced risk of work-related ill health;
- Reduced stress and improved morale / job satisfaction;
- Less need for investigation and paperwork;
- Less lost time due to work rescheduling;
- Fewer vehicles off the road for repair;
- Fewer missed orders and business opportunities, reduced risk of losing the goodwill of customers;
- Less chance of key employees being banned from driving.

Employers have to identify which safety feature gives what benefit. Each safety feature needs a detailed investment-based business case, linked to the risks they have identified. Finally, a proactive road risk program can also keep organisations ahead of and protected from regulations and legal requirements and help them gain a competitive advantage compared to more 'reactive' competitors.[49]

Driving at speeds which are appropriate to the prevailing conditions can offer cost saving across the board not only through a reduction in collision costs but also in terms of reduced vehicle wear and tear, reduced fuel consumption and reduced air and noise pollution. This is presented in more detail in Part 3.

46 http://www2.dft.gov.uk/pgr/roadsafety/research/rsrr/theme2/safety93.pdf
47 http://www.etsc.eu/documents/PRAISE%20Report%201.pdf
48 Eco driving can results in savings of up to 30% on fuel costs, see Part 3.
49 Ibid

Part 2 How Employers Can Prevent Speeding

2.1 Work Practices and Management

A mix of measures is necessary to effectively tackle the problem of speeding. In this regard, speed management can be achieved by taking action in a number of areas including vehicles, drivers and work practices, allowing for an effective approach to be developed by employers. Speed management can be defined as a set of measures to limit the negative effects of illegal or inappropriate speed.

In the work context the issue of speed management is a shared responsibility that must be taken on by all levels of employees from CEO through management and junior staff. People who drive for work have a responsibility as individuals to ensure that they drive at appropriate speeds at all times to ensure their own safety and the safety of other road users. However, junior and senior managers and CEO's also have a critical role in speed management, in creating a safety culture and in taking decisions which prevent and discourage unsafe driving. By the time an individual employee gets behind the wheel to carry out their job many decisions that impact on their propensity to speed have already been taken such as the type of vehicle and supporting safety equipment available, person specification and job selection, driver selection, access to driver training and assessment, route planning and scheduling and pay structures.

There are a number of things which employers should do in order to ensure that employees driving for work do not speed. This section takes a specific look at how general work practices and employer-led initiatives can assist in this regard.

2.2 Speed Policy

Duty of care as well as health and safety compliance are legal necessities in most EU Member States, and an essential consideration for employers. Employers should make sure that their employees are able to comply with the law for example on using work equipment in a safe manner. Before an employee is allocated with a vehicle for driving for work purpose the employer should assess their abilities, needs and vehicle options. 'Company cars tend to be larger and more powerful than privately owned ones.[50] Drivers of higher performance cars are more likely to speed and to have speeding convictions. Employers should ensure that the performance characteristics of vehicles are matched to the competence level of their drivers...try to offer a choice including smaller-engine vehicles.'[51] Employers should also be aware of the various types of vehicle technologies on the market that can assist with speed management (see Part 4 of this report) and should include the most appropriate of these as standard requirement when purchasing or leasing vehicles.

But, equally important, it makes sound business sense to draw up and implement a safe driving for work policy.[52]This should include measures to discourage and prevent speeding. A good practice approach involves incorporating such issues into a wider health and safety policy by way of establishing a 'safety culture' in the organisation.

A policy in relation to speed is effectively an agreement between the employer and employee whereby both make commitments to ensure that speeding need not occur. The focus of the policy should be a commitment to drive at safe speeds appropriate to the prevailing road environment and the conditions of the time (weather, presence of other road users, road surface quality, etc) as well as to comply with the legal speed limits. The adaptation of driving speed to the prevailing conditions and speed limits is a primary way of controlling the crash risk of the driver. A company car can usually also be used for private purposes. Any policy should also include this private use. Employers should ensure that the policy is clearly articulated and broadly communicated[53] so that employees are aware of their responsibilities. Good practice is to ask employees to undertake comprehension checks – this forces them to read the material at least once, and increases the chance that they will follow the advice given. It also provides a very robust audit trail for employers as not only can they prove that they have given these documents to employees, but that employees have also read and understood them. Employees should be requested to sign that they have read and understood the policies and policies should also be uniformly enforced.[54]

One important consideration is to what extent driving for work policy should cover employees driving employer-owned vehicles or their own vehicles whilst on business (grey fleet). Employee responsibility for their vehicle needs to be clearly outlined in the policy. Employers can have a huge influence in fostering improved road safety compliance for employees using their own vehicles for work purposes. Large employers can also influence policies in Small and Medium Enterprises (SMEs) when they subcontract out work further along the supply chain

50 Work-related road accidents, TRL, 2003 prepared for DfT UK http://www.orsa.org.uk/guidance/pdfs/trl582.pdf
51 http://www.rospa.com/roadsafety/info/workspeed.pdf
52 http://www.hsa.ie/eng/Vehicles_at_Work/Driving_for_Work/
53 ROSPA publication:Safe Driving for Work Handbook.
54 http://www.etsc.eu/documents/praise/PRAISE%20Thematic%20Reports%201-6.pdf

by insisting that subcontractors adopt the same conditions and standards in relation to driving for work.[55] Large employers should be encouraged to also share their good practice with smaller companies who may not have the facility of human resource management found in many larger companies.

Further, senior managers should be expected to lead by example and should drive at speed appropriate to the prevailing conditions while driving for work. It is also the role of the top management to make sure that systems of work do not pressurise staff into speeding while driving for work. This may include an analysis of how the working day is structured and a consideration of payment structures. Job and Finish: ('as soon as all your jobs/deliveries/visits are done you're free to go') rewards speedy transit between job locations. Managers should also be held accountable for policy enforcement. Commitments to these ends should form part of the 'speed policy'.

The employer should also ensure that there are clear incident and collision reporting mechanisms and that staff are aware that they must always report such events. This should be backed up by an investigation process which will facilitate identification of the cause of any incidents and help employers to identify when speed is a contributory factor. Preventative measures or remedial action can then be implemented by the employer. Similarly, the policy should include a commitment on behalf of employees to report all incidents and to cooperate fully with monitoring and reporting procedures. This again is why employees should sign to say they have read and understood the company policies.

The primary goal of company policies should be to prevent speeding and their undesired consequences for the organisation. Reducing the risk does not only mean developing a policy, but also managing the risk proactively and uniformly through collective and individual measures across the company by setting up a monitoring process as part of the company safety management system, for example through journey planning practices and/or the use of technology. Promotion of a safety policy can start from very simple measures: for example some companies have chosen to place warning stickers on the dashboard of company vehicles reminding individual employees about the dangers of speeding. Other much more advanced solutions such as the use of telematics for real time monitoring of speed are being applied, which is looked at in more detail in Part 4.[56]

A policy on speed should:

- Include a clear statement setting a standard for what is expected of those driving for work (i.e. commitment to drive at safe speeds appropriate to the prevailing road environment and the conditions and never exceed the legal speed limit)
- Define the responsibilities of both employees and managers in terms of managing speed
- Ensure management level buy in to the process
- Include a commitment to regularly asses work practices including journey planning to ensure that they do not contribute to speeding
- Assess and train drivers in eco-driving techniques which encourage consistent and lower speed driving.
- Include a commitment to monitoring driving practices; develop incident reporting and investigation mechanisms following which, specific individual as well as generic remedial action may be required.
- Avoid incentives to speed, track speeding offences and provide for remedial action as required including training and disciplinary action
- Liaise with police, monitor and review
- Include a documented process and audit trail in which everyone travelling to or on behalf of the organisation makes a Pledge, Undertaking or Commitment to comply with the rules of the road, and company policy at all times.

ROSPA Driving for Work — Safer Speeds[57]

This ROSPA guide gives simple advice on how employers and line managers can help to ensure that their staff are not tempted or pressurised into driving at inappropriate speed and advocates a number of actions that employers can take to influence driver behaviour and prevent speeding. The document also includes a sample 'Safer Speed Policy'. The Policy can be used or adapted by organisations and is a simple one page document that sets out what is expected from all employees including various levels of managers as well as those driving for work. The focus of the policy is an agreement that 'Staff driving for work must never drive faster than conditions safely allow and must obey posted speed limits at all times. Persistent failure to comply with the law will be regarded as a serious matter and gross speeding while driving for work will be regarded as a serious disciplinary matter'.

55 Ibid
56 Ibid
57 http://www.rospa.com/roadsafety/info/workspeed.pdf

Just-In-Time Management

'Speeding has been associated with work-related traffic due to time pressures with individuals trying to save time whilst driving and meet scheduled deadlines. Many people feel it is necessary to exceed speed limits whilst driving for work. Time pressures may influence drivers to participate in unsafe behaviour whilst driving, such as speeding, overtaking and following vehicles closely.'[58]

The pressures of just-in-time management in the professional transport industry, and the risks this poses to road safety in terms of issues such as fatigue and speeding, are already well documented.[59] However, the industry is also highly regulated when compared with other modes, with laws limiting the maximum speed of HGV's and buses on certain types of roads and requirements for the use of tachographs which store details of the movement of vehicles and of certain work periods of their drivers. Such initiatives provide a stronger framework in which to tackle speeding.

Workloads are increasing and employees can face escalating pressures, for example pressures from clients to deliver faster and more cheaply, with issues such as 'just-in-time management', increased traffic, remote monitoring and working irregular and long hours.[60] Drivers can be over-stressed by the demands placed on them to complete work or to deliver goods to meet the schedules of modern transport systems. If they fail to meet such schedules, employers may have to compensate the client for delays incurred. Two other common practices of this business perspective are the "job and finish" and the payment by customer contact. These are incentives to speed and encourage the staff to travel at unsafe speeds or to exceed speed limits.[61] These situations have the potential to encourage drivers to take risk in terms of appropriate driving speeds.

Recommendations to employers

- Assess employee requirements in terms of vehicle type and most appropriate speed adaption and limiting technologies.
- Adopt a clear policy against speeding: this should focus on driving at speeds that are appropriate to the prevailing conditions rather than complying (as a minimum) with the legal speed limits.
- Communicate to staff the reasons why policies are in place: the risks posed to employees and others from driving at inappropriate speeds.
- If vehicles are given to staff, staff should be clear that this is subject to employees respecting company policies.
- Ensure sanctions are in place to deal with unsafe behaviour and rule contraventions commensurate with the nature and impact of the act. Also ensure reward and recognition are given to drivers who comply with speed limits and rules and display safe behaviours.
- Ensure there is a mechanism in place to verify driving for work policies such as a training session to ensure that employees, including management level, are aware and understand existing policies.
- Maker sure senior managers to take the lead by respecting the speed policy.
- Provide an opportunity for specific as well as generic driver education as remedial action for employees where speed related problems are identified.
- Set up clear, standardised incident and collision reporting and investigation mechanisms to identify speed infringements.
- Apart from collisions, monitor and review other important data such as tachograph records, telemetry data and licence violations.

2.3 Travel and Journey Planning

Travel behaviour can be influenced by Intelligent Transport Systems (ITS) applications that mainly provide the traveller with a better basis for decisions in terms of traffic and travel information. In the field of ITS, on-line travel planners have been developed. The typical solution is based on the internet giving the answer of how to get from A to B taking various requirements into account. This can also be complemented by the help of in vehicle satellite navigation systems (satnavs). This may give information on time of arrival, time of departure, travel time, travel cost and be of relevance to route planning at work. Technologies to help with journey planning can also direct drivers along the most efficient routes. Some satnavs and journey planners already take into account school times to direct drivers away from schools during peak times. Such technologies giving more precise and realistic information relating to routes, speed limits and travel times can ensure that those driving for work are better informed, more realistic, less

58 http://www.devon.gov.uk/workrelateddriversfinal.pdf
59 See PRAISE Report No. 7 and http://www.rospa.com/roadsafety/info/workspeed.pdf
60 http://osha.europa.eu/en/front-page
61 ROSPA Driving for Work: safer speeds.

stressed and therefore less likely to speed.[62] All employees who drive for work whether they be 'grey fleet', company car drivers responsible for their own work schedule or professional drivers of HGVs with logistics managers, can utilise journey planning and ITS to help ensure that their speeds are appropriate.

Ensuring 'that journey schedules, distances and plans allow sufficient time for drivers to complete their journeys (including delivery stops, rest breaks and foreseeable weather and traffic conditions) at safe speeds and without needing to exceed speed limits'[63] is critical. Those responsible for journey planning or scheduling including the transport operators have a responsibility to take all such factors into account. With better logistics planning employers should consider introducing "de-speeding of transport" and introduce more buffer times in the supply chain: the drivers are thus relieved from time pressure and can concentrate more on safety and energy-saving issues.[64]

Other vehicles driven for work purposes are currently less well regulated. 'Motorbikes, mopeds and scooters are becoming an increasingly popular and attractive mode of transport, particularly for fast food and other delivery riders.'[65] Just-in-time pressures can be equally strong in this sector; such workers are often paid per delivery and the types of goods they deliver (i.e. hot food) put them under pressure to deliver in a short time which creates an environment that can encourage speeding. The example below provides recommendations on how journey planning can assist in more efficient delivery times without increased risk of speeding.

'Preventing harm to messengers: Ergonomic study on the prevention of professional risks', France

A study was carried out by a trade union and an accident insurance company in France entitled 'Preventing harm to messengers: Ergonomic study on the prevention of professional risks'. The main message of this study is that routes should be planned carefully to minimise the need for couriers to rush. This provides benefits for the customer, who will receive a better quality service with minimal delay, and for the courier who will have a less stressful journey because everything has been done to avoid unnecessary obstacles that might force them to speed to make up for lost time.

Recommendations for drivers and their employers

- Riders should take full advantage of being on a two-wheeled vehicle; not having to stick to a pre-planned route and being able to exit a traffic jam to take an alternative route – route planning should be intelligent and focus on manoeuvrability rather than speed, i.e. routes should not be fixed, but should be specified to include a range of possible adjustments and flexibility according to the circumstances; speed as the solution should be discouraged.
- Riders should be encouraged to ride intelligently to cut down on fuel use; the message is that speeding is costly in terms of petrol and does not necessarily save time.[66]

2.4 Good Practice

Suckling Transport UK[67]

Suckling Transport specialises in fuel distribution in the UK. It operates 60 articulated tanker vehicles and employs 170 people.

The company has a 'no speeding' policy and recognises that journey planning can assist with this. At Suckling they make a point to regulate the speed according to the weather conditions as part of journey planning. The company also recognises the need to go beyond the basic route selection and consider other issues including production of a site and route risk assessment and safe havens parking areas. In an effort to continue this improvement in safety performance, the Company decided to focus on Journey Management and it launched the 'Have a safe day' project. This project focuses on the following areas:

- Policies/Compliance
- Journey Plan and Route Selection
- Site & Route Risk assessment
- Route hazard management
- Journey scheduling and checks
- Drivers' working hours
- On board computers
- Benchmarking
- Emergency Plan

62 PRAISE Thematic Report 1 http://www.etsc.eu/documents/praise/PRAISE%20Thematic%20Reports%201-6.pdf
63 http://www.rospa.com/roadsafety/info/workspeed.pdf
64 Schade, W and Rothengatter, W. Economic Aspects of Sustainable Mobility, European Parliament Policy Department.
65 European Agency for Safety and Health at Work Delivery and despatch riders' safety and health: A European review of good practice guidelines.
66 ibid
67 http://www.etsc.eu/documents/PRAISE%20Fact%20Sheet%202.pdf (available in EN and DE)

A team of managers conduct behavioural safety observations to ensure drivers are compliant with policies and procedures. Over 100 such observations are completed each year. On-board computers, fitted to the company's trucks, are used to identify speeding, harsh braking, excessive engine revving, and near miss rollovers. A programme of corrective action has been put in place using intervention training, through the company's new Skills Builder Programme. In addition, 300 journey management checks are conducted each month to ensure speed compliance with local limits. As a result of the Journey Management initiatives introduced through the 'Have a safe day' project, the company saw further improvements in its crash frequency and severity Key Performance Indicators, and has now reduced its motor insurance premiums by 30% in the last two years.

Recommendations to Employers

- Create a safety culture: management should ensure work practices that do not pressurise staff to speed.
- Provide journey planning capabilities to facilitate realistic scheduling of trips and contribute to appropriate time management.
- In dealing with clients, avoid making any concessions that might adversely affect road safety, such as commitments to deliveries or completion of work packages that set unrealistic time constraints.
- Establish schedules, including those for sub-contracting chains, which allow drivers enough time to obey speed limits and avoid peak hours driving. These should be flexible and adaptable to changes such as the weather.
- Review scheduling, rostering and load route planning arrangements and proactively address driver stress in the context of a health and safety plan.
- Ensure that the current shift patterns, journey planning, employment contracts and work schedules prevent speed and do not contribute to driver stress and speeding.

2.5 Enforcement[68]

This section will focus on enforcement. Enforcement of speeds can be undertaken by governments, employers and in-vehicle technology. Enforcement is a means to prevent collisions from happening by way of persuading drivers to comply with the safety rules. It is based on giving drivers the feeling that they run too high a risk of being caught when breaking the rules. Sustained intensive enforcement that is well explained and publicised also has a long-lasting effect on driver behaviour.[69] Campaigns to support enforcement can be undertaken internally by employers or at national level (covered in Part 3). The OECD estimates that at any one moment 50% of drivers are exceeding legal speed limits.[70] Unlike other safety violations, such as drink driving or non-use of seat belt, enforcing speed compliance requires the majority proportion of drivers to change their behaviour. Despite a common understanding of risks linked with high speed, the prevalence of speeding remains high, the behaviour remains pervasive, and arguably socially acceptable. 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 exceed the posted speed limit. 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.[71] A combination of fixed and mobile safety cameras to enforce speed are essential in order to bring about the highest level of compliance.

2.5.1 National

Traditional enforcement methods rely on radar and laser measurements made by mobile police patrols. These offer the advantage that offenders are directly apprehended by police officers. On the other hand, new automated methods use recording devices (camera, video) that are triggered automatically by speed violations. These automatic devices can check many more vehicles. These also include section control methods[72] which can guarantee almost 100% compliance and results in more homogenous speeds and may be better accepted by drivers[73]. These offer high levels of continuous and widespread enforcement (whereas traditional methods tend to focus on the most severe offenders).[74] Safety cameras have been shown to be the single most important factor in the recent French road safety success.[75]

68 ETSC 'Traffic Law Enforcement across the EU' http://www.etsc.eu/documents/Final_Traffic_Law_Enforcement_in_the_EU.pdf
69 Ibid
70 OECD/ECMT (2006). Speed management. Organisation for Economic Co-operation and Development OECD/European Conference of Ministers of Transport ECMT, Paris.
71 Ibid
72 http://etsc.eu/documents/copy_of_copy_of_Speed%20Fact%20Sheet%205.pdf
73 https://www.tispol.org/policy-papers/speeding/tispol-excess-speed-policy-document
74 Ibid
75 ETSC (2010), 4th PIN report, Chapter 3, Tackling the three main killers on the road

2.5.2 Sanctions

The level of sanctions for speeding offences should escalate as the level of speeding above a speed limit increases.[76] It starts with rather small monetary fines for 'low level' speeding offences, but it can also include penalty points, vehicle seizure, temporary or permanent licence withdrawal, participation in rehabilitation programmes, community service or imprisonment. Sanctions are meant to protect society and influence the behaviour of offenders and all citizens. In cases where judges are responsible for sentencing offenders on road traffic offences the fact that a person's employment depends on their ability to drive should not be accepted as reasoning for passing a lighter sentence.

Research has found that long-term behavioural effects from enforcement are only achieved if the detection of a violation is followed by immediate feedback or sanction. It is however important that the level of sanctions is according to the risk related to non-compliance. This is also important to motivate police officers in their work, although research has found that higher sanctions have less of an impact on safety than the level of enforcement.[77]

Financial fines are the most common sanction imposed by traffic police officers, or administrative officers (prosecutors).[78] 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.

The penalty point system takes recidivism into account when sanctioning offenders by introducing the risk of losing one's license.[79] In addition to financial penalties, demerit points are issued to offenders. At the national level many countries have introduced a penalty or 'demerit' point system.

A point system is one in which a driver's licensing authority issues demerit or penalty points to drivers on conviction for road traffic offences including speeding. A major offence may lead to more than the maximum allowed points being issued (or withdrawn), or the accumulation or loss of too many points over a given period of time can lead to additional penalties including fines and, more importantly, the suspension or revocation of the driver's license. A good system should also provide rehabilitation of drivers. Penalty point systems are therefore part of a greater 'chain' of road safety work that contains high levels of police enforcement of traffic rules, good public information and the chance for recidivists to be rehabilitated.

2.6 Enforcement and Driving for Work

The effectiveness of enforcement is even more complex when considered in the context of work-related driving. Employees driving for work can be driving commercial vehicles owned by their employer, company cars provided and paid for by employers but registered and run by the employee or their own vehicle used for work purposes. There are many different types of work-related driver. At the 'heavy or large' end of the scale, trucks and buses tend to be heavily regulated and, with the exception of a number of rogue operators, tend to be relatively well managed. Light or small commercial vehicles are less regulated, and as a result tend to be less well managed by organisations. Similarly, many organisations have excellent policies, processes and programmes in place for their company car drivers, but much less to manage what is known as their Grey Fleet – people driving their own vehicle on work business. In reality, organisations should fully understand their exposures to the risks posed by all vehicle and driving types – and manage the risks accordingly.

In the case of the grey fleet in countries where the national law supports driver liability, any fines or sanctions for speeding violations go directly to the employee and the employer is not automatically informed. It is critical that employers are fully aware of any speeding sanctions received by their employees whilst driving for work in order to understand the extent of the problem. Having a policy on speed that includes an agreement with employees to report incidents can assist with this. Employees could be asked to sign in their work contract that they must inform their employers in case they commit a traffic offence. A more reliable way to ensure organisations are fully informed would be for the national enforcement authorities to automatically notify organisations at the time of issuing the speeding sanction. However, this would require enforcers to be able to identify not only the registered driver but also the fact that they were driving a 'company vehicle' and details relating to the company.

76 http://www.etsc.eu/documents/Final_Traffic_Law_Enforcement_in_the_EU.pdf
77 SUNflower (2002): A comparative study of the development of road safety in Sweden, the United Kingdom and the Netherlands. Final report. Leidschendam. And PRAISE Thematic Report 5.
78 http://www.etsc.eu/documents/Final_Traffic_Law_Enforcement_in_the_EU.pdf
79 Ibid

This issue is interlinked with that of liability which has implications in terms of enforcing speed limits especially as more and more countries are moving towards automated speed checks (i.e. safety cameras) as opposed to those carried out in person by the police. This situation differs across Europe: in some countries the person driving the vehicle is liable to any fines or sanctions whereas in others the owner of the vehicle is liable regardless of whether or not they were driving the car.

2.6.1 Rehabilitation of Speeding Offenders

Training can also take the form of a rehabilitation course following a speeding offence from the government authority side. Employers should encourage their employees to go on the course if they are given the option especially, but not only if the offence was committed by their employees during work time. In the UK, speed awareness courses are being offered to drivers detected speeding at a limit set by individual Police forces, as an alternative to prosecution resulting in a likely £60 (approx. 70 EUR) fine and three penalty points on their driving licence.

"It is hoped that drivers who undertake a speed awareness course will appreciate the reasons why speed limits are important and why it is unacceptable to exceed them or to drive too fast for the conditions. This change in knowledge and attitudes should then lead to a change in their driving behavior, which should apply whenever and wherever they drive"[81].

There is clearly a need to increase awareness around speed limits due to the levels of non compliance and the low levels of risk perception as discussed in Part 1. Any driver detected driving at the speed identified as suitable for an alternative to prosecution is offered a course. To be eligible they must not have already attended a course in the previous three years. The criteria an offender must fulfill to be considered is that the driver must be at the lower end of the offending scale and there are no other aggravating circumstances i.e. poor weather or additional offences at the time. The offender agrees to attend and pay for the course within a set time and complete the course by participation and staying on the course for its full duration of 4 hours. The course covers offences at the low-level speeding: speed limit + 10% plus 2-9 mph.

Effective interventions in a speed awareness course should address the following issues[82]:

- Attitudes (beliefs and values) towards speeding;
- Beliefs about the acceptability and ubiquity of speeding;

'Enforcement is based on the principle that people try to avoid a penalty, which is a disadvantage of not complying with the rules.'[80] A person's decision to refrain from breaking rules can be heavily influenced by the actual and perceived risk of them being apprehended. In this regard employers have a role to play in influencing the behaviour of their employees towards road safety compliance by increasing the risk of them being caught if breaking the rules.

- The driver's responsibility for their own speed choice;
- Perceptions of the likelihood of being detected;
- Perceptions of the benefits of speeding and the negative consequences of being caught or of crashing;
- Perceived barriers to driving at an appropriate speed,
- The way in which speeding makes drivers feel;
- Drivers' perceptions of their ability to drive at an appropriate speed; and
- When and where drivers will reduce their speed.

The DfT also stresses that the method of delivery is important: elaboration, discussion and problem solving are vital, and methods that make attendees engage and interact with the material should be used.

The courses are run through the National Driver Offender Retraining Scheme (NDORS) by Local Authority Road Safety Departments and by private companies, who are contracted or appointed as service providers for their respective Police Authorities. In 2007 content and recommended themes for the National Speed Awareness Course were developed. There are two versions of the course in the National Model: one is based solely in a training room and lasts four hours, and the other combines training room work with an in-car element and lasts five hours. A new evaluation has been undertaken and found that the results provide evidence that the National Speed Awareness Course produces changes in key psychological predictors of speeding, namely instrumental and affective attitudes, moral norms, self efficacy and intentions[83]. These results indicate that the course makes clients more likely to drive within the speed limits. At a follow-up, 99% of clients reported that they had applied what they had learnt on the course: driving more slowly; being more aware of the road environment, of their speed and of their responsibilities toward others with whom they are sharing the public highway; and feeling less stressed while driving. In addition, many become advocates for the course and share their new knowledge and skills with friends and family. They promote slower, more relaxed, driving styles and actively encourage others to slow down.

80 http://www.internationaltransportforum.org/Pub/pdf/06Speed.pdf
81 RoSPA (2005) "Helping Drivers Not To Speed".
82 Fylan, F. Et al (2006) Effective Interventions for Speeding Motorists DfT.
83 Fylan, F. (2011) Evaluation of the National Speed Awareness Course Draft.

Recommendations to EU

- Rigorously evaluate the benefits of speed awareness courses and, if found to be successful, draft common EU guidelines on diversion-from-prosecution speed awareness courses for low level speeding offenders both for the general public and for those driving for work and encourage implementation by Member States.

Recommendations to Member States

- Introduce speed awareness courses with an optional 'bolt-on' for professional drivers.

Recommendations to Employers

- Following a speeding offence encourage employees to participate in a speed awareness course.

2.6.2 Licence Checks for Speeding Offences

Employers should monitor the driving of their employees including looking at appropriate speed. Studies have identified a link between speeding violations and safety performance.[84] Employers need to be aware if their employees are involved in speeding; working closely with enforcement authorities or those holding data on offences can help with this. Visually checking licences on at least an annual basis is a good starting point, but may not be enough on its own as it relies solely on the information provided, which may not be up to-date.[85] Organisations should be fully aware if their employees who are driving for work are penalised by the authorities for committing traffic offences including speeding. National governments can assist with this by setting up mechanisms which facilitate the sharing of information between national traffic enforcement authorities and employers with the employees' permission. Such a system already exists in some Member States such as the UK via a service provided through several suppliers who are contracted to the DVLA to provide an Electronic Driver Entitlement Checking Service (EDECS). Figure 9 shows a screen grab of some typical summary data from such a service. The last table gives a breakdown of offences committed clearly showing speeding as the most common offence.

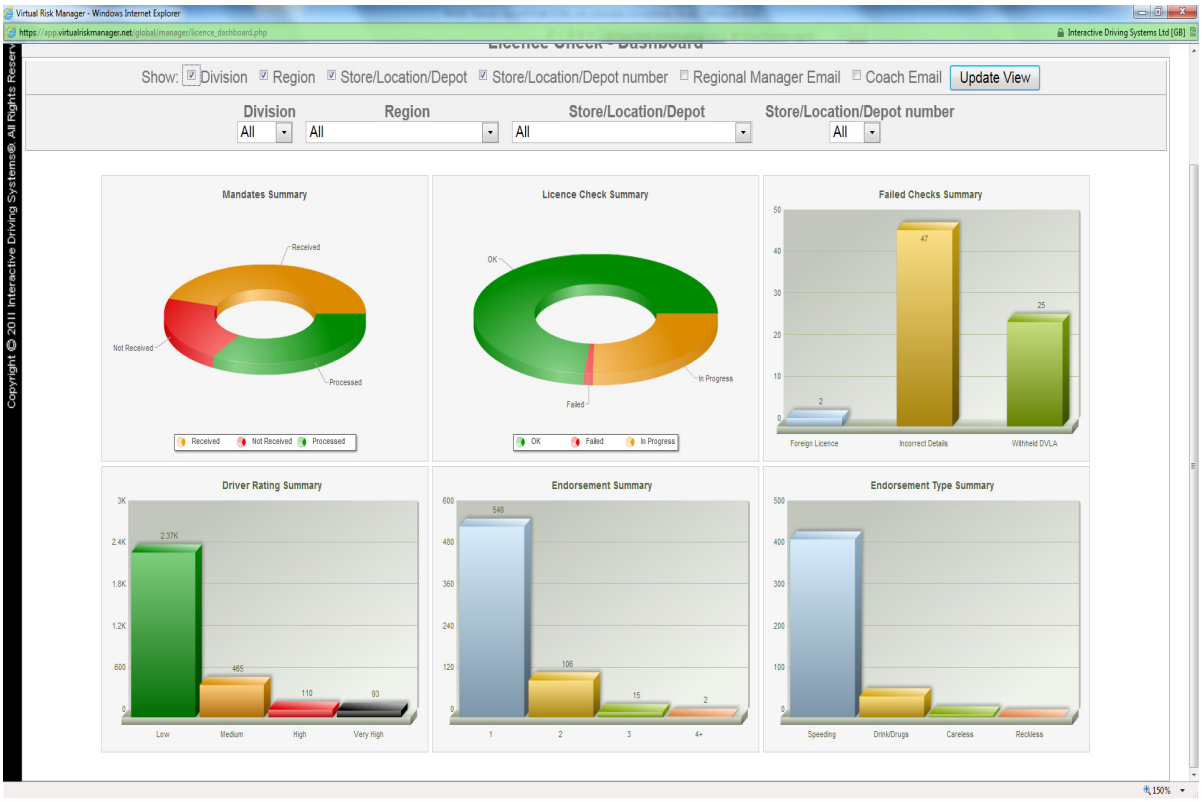


Figure 9 – Example of Electronic Driver Entitlement Checking Service (EDECS) outcomes data

84 The present analysis indicates that vehicles that were involved in more than one offence per year had a higher crash involvement than vehicles that committed just one offence per year. http://www.swov.nl/rapport/R-2011-19.pdf
85 EDECS (2010) A guide to the Electronic Driver Entitlement Checking Service process and scenarios. Interactive Driving Systems.

On joining an organisation (and then periodically afterwards) employers now require their employees to sign a declaration allowing them to request information from the relevant driving licence authority on the status of their driving licence on a regular basis. Organisations can work directly with the authorities responsible for licence endorsements or employ specialist companies to manage this process for them as part of broader risk management processes. 'Trends in speeding and other penalties should be reviewed to identify driving activities where further action to improve safety may be needed.'[86]

Similarly, organisations as well as individual drivers which work for them, should be held accountable in instances where they create a work environment which puts pressure on or encourages their employees to speed. National Authorities should develop means of identifying if numerous employees of specific organisations are persistently or repeatedly speeding whilst on work related driving. Such an approach would allow national authorities to then work proactively with 'problem' organisations reduce speeding and engender a safety culture.

Experts also suggests that some organisations simply provide for the cost of speeding fines received by their employees within their budgets and are prepared to 'overlook' speeding and pay fines in order to make gains in terms of time savings. The result can be an increase in the number of speeding drivers on the roads. This is one of the advantages of introducing penalty point systems as employers will no longer be able to continue this sort of practice. The type of sanction, the level at which sanctions are set the methods of enforcement utilised in relation to speeding both nationally and within organisations, can all contribute to counteracting this. 'A basic principle of enforcement is that the risk of punitive consequences for violation of regulations should weigh more heavily than the gain accrued through the violation. Both the risk of detection and the size of the penalty are important.'[87]

In terms of setting sanctions there is a further opportunity for national governments to not only focus more strongly on certain behaviours but also to target higher risk drivers such as those driving for work. National governments should consider applying stricter penalties on those driving for work. It would be possible to put in place a structure of higher penalties (in terms of points or fines where applicable) to be imposed on those driving for work as opposed to private drivers. However, this may prove difficult to enforce amongst some professional drivers.

It is also important that there are clearly defined enforcement and sanctioning measures within individual organisations in relation to speeding. 'In the first instance, the approach should be positive and helpful, rather than punitive, although it should be made clear that repeat off ending may lead to disciplinary procedures'[88] which could include the loss of authority to drive. The circumstances of individual speeding offences should form part of an individual employee's performance appraisal, leading, where appropriate, to new personal performance targets.'[89]

2.6.3 Rewarding Compliance

'From psychological theories on learning and motivation it is known that rewarding good behaviour is at least as powerful as a behaviour modification tool as punishing bad behaviour. In road safety theories, rewarding has not received that much attention. However, research has indicated that it can indeed have a positive effect on traffic behaviour.'[90] While this may be difficult at the national level, at the organisational level such an approach is less problematic as new technologies such as telematics allow for driving to be continuously monitored (see also Part 4). This gives employers the potential to incentivise, employees in relation to their speed behaviour. Incentives could be in the form of vouchers or bonuses. It should however be highlighted that these programmes are difficult to implement in practice and there is not yet much evidence on their cost-effectiveness.'[91]

2.6.4 "Smart Enforcement"

In an attempt to increase the efficiency of enforcement some Member States and employers are developing complementary approaches that maximise and target resources. 'Smart enforcement' methods include initiatives in the area of improving information and data sharing between enforcing authorities and employers, identifying employers whose drivers are receiving many or repeated speeding sanctions, working cross-sectorally with health and environmental enforcement agencies (as those with poor road safety records such as speeding may also be poorly performing in other areas). This is explained in more detail in PRAISE Thematic Report 7.[92]

86 http://www.rospa.com/roadsafety/info/workspeed.pdf
87 http://www.etsc.eu/oldsite/drivfatigue.pdf
88 http://www.rospa.com/roadsafety/info/workspeed.pdf
89 Ibid
90 Hagenzieker (1999) in http://www.internationaltransportforum.org/Pub/pdf/06Speed.pdf
91 Ibid
92 http://etsc.eu/documents/Report7_final.pdf

2.6.5 Good Practices

Sweden

In Sweden, the National Society for Road Safety (NTF) can externally monitor the road safety performance of companies including speed. They work with companies to help identify the causes of collisions in which the company's vehicles are involved and can carry out checks or monitor company vehicles including taking speed measurements and providing information reports for monitoring. For more information, see ETSC PRAISE Fact Sheet on DB Schenker.[93] This is part of NTF's broader work with companies. They carry out ongoing benchmarking studies of different aspects leading to better road safety and act as consultants to management in developing road safety performance.

Also in Sweden, in 2008, five major buyers of transport and the Swedish Road Administration, developed a tender tool called 'Systole' that provides a meeting place for goods owners and transportation companies that value sustainability and safety. This provides for ongoing dialogue during contracts and allows hauliers to support the company with solutions. The tool also allows for the 'live' evaluation of hauliers and for communication of long term requirements. The goal orientation safety requirements include Speed as specific criteria and give it the highest priority. The goal is that 'speed should be adapted to prevailing circumstances and never exceed the relevant regulations.' To achieve this goal 7 requirements are set out which include developing procedures for planning and scheduling that take into account speed limits and traffic conditions, developing procedures for monitoring and reporting on this, having technical support for keeping to the speed limit on all vehicles and technical support for follow-ups of exceeding the speed limit on vehicles.[94]

The Netherlands

The Dutch Ministry of Transport, Public Works and Water Management in cooperation with LeasePlan Nederland N.V. ran a project called BELONITOR (2005) which focused on influencing driver behaviour with respect to headway and speed. The fundamental principle of the project was encouraging drivers not to speed or tailgate while monitoring and rewarding those who drive responsibly. LeasePlan installed in-car assistance technology in 65 vehicles which offered drivers support in keeping safe speeds and distances. This equipment consists of a display on which drivers on the road receive continuous feedback regarding their following distance and speed. The trial drivers received rewards if the Belonitor unit calculated that the vehicle was driven with a safe distance and under the speed limits. The number of points earned was displayed on the unit when the vehicle stopped. A reward point was provided for every 15 seconds of 'correct driving'. Points could be converted into prizes including holidays. Every month, the driver with the most points received €500. To prevent the participants driving more kilometres to win extra rewards, the number of points was adjusted according to the distance travelled. From the start, the Belonitor trial tried to create a win-win situation, where Ministry of Transport traffic safety objectives were combined with the profit goals of lease companies. The project investigated and demonstrated the behavioural effects as well as the technical feasibility of rewarding desirable driving behaviour. The trial was meant to encourage fleet owners, lease car companies and insurance companies to use similar methods, and is an example of how private companies and public authorities can work together on improving road safety.

The data obtained from surveys, interviews and the in-car system show feedback and rewarding to have a very strong positive effect on safe driving behaviour. The trial also showed differences in how drivers handle speed and following distance.

Prévost Transport, France

The Prevost transport company initiated a speed limit of 80 km/h for its HGV drivers achieved by means of a number of measures. The vehicle engines are limited to a maximum speed of 80 km/h ex factory. In addition, all vehicles have an onboard computer that gives information about fuel consumption and average speed. This resulted in a reduction in fuel consumption and CO_2 emissions, and improved the health and safety of the drivers. Stickers on vehicles were used to promote the initiative and to inform other drivers about the project and the company's philosophy. Collaboration with the regional health insurance organisation was obtained. There was active sharing of the initiative and other companies have since adopted the approach. Workers have shared in the cost savings. As an incentive the company allocates a proportion of the money saved by the reduced fuel consumption to its workers. The company has received much positive publicity as well as saving on fuel consumption and drivers reported less stress while driving and fewer dangerous manoeuvres since the 80 km/h speed limit was introduced. Because of the speed limit trips take a little more time. This amounts to the company losing five minutes per hour, but this problem is being addressed.[95]

93 http://etsc.eu/documents/PRAISE%20Fact%20Sheet1.pdf
94 PREEM presentation to ETSC-Future Directions in Speed Management 2010.
95 http://osha.europa.eu/en/publications/reports/managing-risks-drivers_TEWE11002ENN

Recommendations to the EU

- Encourage Member States to implement best practice for speed enforcement as indicated in the EC Recommendation on enforcement[96].
- Encourage Member States to include speeding offences in their penalty point systems.

Recommendations to Member States

- Incorporate speeding offences in penalty point systems, and make sure that levels of penalty or demerit points incurred towards licence suspension or driver improvement measures escalate as the level of speeding above a speed limit increases.
- Introduce penalties for "low level" speeding offences.
- Work towards a low level of appeals for penalties for speeding violations.
- Provide adequate resources to facilitate enforcement.
- Consider the relative merits and practicalities of introducing of tougher sanctioning for professional drivers and those driving for work.
- Develop processes and laws that can facilitate employers' ability to directly access information on traffic offences from enforcement authorities in a similar way to the UK DVLA Electronic Driver Entitlement Checking Service (EDECS).
- Improve data collection and storage so that work-related speeding offences can be identified.
- Work with insurance companies to see positive outcomes for companies, individuals and the government.
- Support the development and application of 'smart' enforcement methods including working in partnership with other enforcement bodies, targeted enforcement of organisations and external monitoring.
- Develop reward programmes for compliance.

Recommendations to Employers

- Monitor the driving of their employees including looking at appropriate speed.
- Co-operate with national enforcement authorities to identify and address problems relating to speeding.
- When possible, access information on speeding offences of employees directly from enforcement authorities.
- Strongly enforce the organisation's speeding policy by developing a system of sanctions/rewards and clearly communicating this to employees.
- Consider the use of incentives to support driving at appropriate speeds.
- Raise understanding of risk of speeding of employees.
- Utilise in-vehicle telemetry to monitor and coach driver behaviours.

96 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:111:0075:0082:EN:PDF

Part 3 Risk Assessment and Training

3.1 Organisational Management and Driver Risk Assessment and Training

Risk Assessment should provide the basis for driver training on speed related risk. This part of the report will draw on ETSC's Thematic Report entitled "Fit for Road Safety: From Risk Assessment to Training" focussing in on training to prevent drivers from speeding.

In accordance with Framework Directive 89/391/EEC[97], employers shall evaluate the risks to the safety and health of workers. Risk assessment is an important starting point also including identifying drivers who may be at risk due to speeding. Subsequent to this evaluation the employer must implement the resulting preventive and protection measures, in particular the training needs required to the situation. Overall, it is important for organisations considering driver training to have an effective risk assessment-led process. Proactive organisations consult their employees from the outset to know whether they feel they ought to receive training, and what their training requirements are.

A screening process should be undertaken to determine which employees need to undergo specific and targeted training to cover issues such as speed. This can be done for example by monitoring general attitudes to driving but also specifically excessive fuel consumption, excessive tyre usage, collisions or infringements. Murray & Dubens[98] and Murray[99] suggest a 6 step approach to implement a driver assessment, monitoring and improvement programme which has been adapted to reflect the legal requirements under the Directive 89/391/EEC, as documented in ETSC's 2nd Thematic Report.

Undoubtedly driver training can be an important tool to reduce work-related road risk. Research shows that 'driver training has been shown to reduce insurance claim rates post training'. Much care should be given by employers in identifying whether driver training is a tool that suits their needs, and when it is the case which type of training they should opt for. A more extensive overview of different approaches to driver training can be found in Thematic Report 2.

Research in the field of driver training underlines five hierarchical levels permeating driving behaviour, and the need to design training to address each level. These five levels can best be visualised in the GDE matrix (Goals for Driver Education)[100]. Alongside basic vehicle manoeuvring these also include the context of driving and goals for life and skills for living. The two last and highest levels generally tend to be neglected, but should be an integral part of good training as they are very important for risk awareness[101]. A fifth level includes not only individual characteristics of the driver but rather the organisational setting within which the driving takes place[102].

Speed risk must be included in driver training. Thie GDE Matrix shows that speed should be covered already in the second level: "Driving in Traffic". The fourth level "Goals for Life; Skills for Living" should cover the dangers of sensation seeking through speeding. While at the fifth level organisations should also set their own employer expectations on respecting the speed limits.

97 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31989L0391:EN:HTML
98 Murray W & Dubens E Driver assessment including the use of interactive CD-ROMs Paper presented at the 9th World Conference on Transportation Research, Seoul, 24-27 July 2001.
99 Murray, W. 2004, The driver training debate The driver training debate. Roadwise: Journal of the Australasian College of Road Safety, Vol 14 (4), May 2004, pp. 3-5.
100 Gadget http://ec.europa.eu/transport/road_safety/pdf/projects/gadget.pdf
101 Advanced Project http://www.cieca.be/template_subsubpage.asp?pag_id=49&spa_id=74&ssp_id=76&lng_iso=EN
102 Keskinen, E., Peräaho, M. and Laapotti, S. (2010). GDE-5PRO and GDE-5SOC: goals for driver education in a wider context - professional and private drivers in their environment (unpublished manuscript). Unversity of Turku, Finland

	Knowledge and skills	Risk increasing factors	Self-evaluation
Level V Company awareness, characteristics, safety situation (organisational level)	In logistics, safety systems, management, economy	Production/protection, feedback system	Company's / organisation's company's motivational system, awareness of safety situation
Level IV Goals for life and skills for living	Lifestyle, age, group, culture, social position etc. vs. driving behaviour	Sensation seeking, group norms, peer pressure	Introspective competence, own preconditions, impulse control
Level III	Modal choice, choice of time, role of motives, route planning	Alcohol, fatigue, low friction, rush hours, young passengers	Own motives, influencing choices; self-critical thinking
Level II	Traffic rules, co-operation, hazard perception, automation	Disobeying rules, tailgating, low friction, vulnerable road users	Calibration of driving skills, own driving skills
Level I Vehicle Control	Car functioning, protection systems, vehicle control, physical laws	No seat belts, bread down of vehicle system, worn-out tyres	Calibration of car control skills.

Figure 10: GDE-5 PRO[103]

3.2 Driver Training and Speed Management

The second PRAISE Thematic Report covers driver and rider training for different road user types. Trucks and bus drivers now have to follow professional training as set out in Directive 2003/59[104]. Whereas the legislation on driver licensing concentrates on basic driving skills, this Directive has a much broader perspective and the syllabus covers elements to improve road safety in general, as well as reducing CO_2 emissions through a special focus on reduction of fuel consumption. The Driving License Directive (2006/126), as well as the 1989 Directive 89/391, provides a basic level of driver training for all road users. Greater emphasis should also be placed on speed and its effects during novice driver training, during the theoretical and practical test[105]. In the theory test, for example, more questions could be set on speed and its effects to highlight the number of deaths and injury that it causes. The questions would help new drivers develop their risk perception of the dangers of speed[106]. Specific training should be developed for two other groups associated with driving for work: van drivers and powered two wheeler drivers-both should include a focus on speed[107].

Member States are currently involved in implementing their requirements of the Certificate of Professional Competence (CPC, Directive 2003/59). They can also take additional efforts to raise levels of safety amongst those driving for work. For example, in Ireland the three main government agencies dealing with driving for work, the Garda Síochána, the Health and Safety Authority (HSA) and the Road Safety Authority (RSA), run seminars to promote awareness of the importance of having Safe Driving for Work practices[108]. The seminars include the need to tackle speed as one of the most important risks. The seminars are free of charge and resources on managing driving for work are provided. Practical tips on how to address the most common driving for work hazards include speed as well as distraction, impairment, load security and vehicle maintenance.

103 Keskinen, Peräaho & Laapotti, 2010
104 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:226:0004:0017:EN:PDF
105 RoSPA "Helping Drivers Not To Speed" (May 2005)
106 Ibid
107 http://etsc.eu/documents/PRAISE%20Report%202.pdf
108 http://www.drivingforwork.ie/

Recommendations to the EU

- Monitor implementation of the professional driver training Directive and provide support to Member States to train drivers on speed management.

Recommendations to Member States

- Guarantee the quality of both the initial and periodic training of professional drivers of trucks and buses and include also speed awareness.
- Develop multi agency training for other professional drivers including speed related risk.
- Place greater emphasis on speed in the training and examination of all road users.

Recommendations to Employers

- Ensure that training on speed is rooted in the employer's health and safety at work culture.
- Comply with the requirements of the Directive on Health and Safety at Work in ensuring that proper training on speed management is given linked to the needs of the difficult employees.
- Target training on the basis of need utilising risk assessment, collision, telemetry and licence violations data to identify key areas of risk.

3.3 Awareness Campaigns

According to the EC Recommendation on traffic law enforcement[109] police checks of speed must be accompanied by information campaigns. Research stresses that enforcement must be highly visible and publicised and indicates that it is the drivers' subjective risk of being caught that must be increased if enforcement is to be successful[110]. Much can be done at the national level to raise awareness of the dangerous consequences of speeding also, whilst driving for work. Governments should as a minimum and, as set out in the EC Recommendation, run regular awareness campaigns linked to enforcement by the police. A manual on running awareness campaigns and setting up communications strategies in the EU has also been published[112].

Belgium

The Belgian Road Safety Institute has run a campaign on the theme of speed, which aims to convey to drivers that driving fast involves taking too many risks with no gain. The campaign slogan, "Better late than never," is explicit: it is better to be a few minutes late for an appointment or go home a little later than to take unnecessary risks and never reach home. A radio spot broadcast supports the posters along the roads to educate motorists of the serious consequences that may have little speeding. Furthermore, information was sent to the 3,000 largest companies in Belgium, as well as to companies in the construction sector. This will provide materials and activities to help fleet managers make their employees aware of the dangers of speed, including a disk containing the stopping distances depending on driving speeds.

Estonia

In Estonia in 2009-2011 the Estonian government ran a campaign challenging the conception that speeding saved time[112]. On a special website road users could calculate distance and time saved based on distances travelled according to different speeds. The concluding message was widely communicated, that by travelling at a slightly higher and illegal speed of + 10/Km/h one may only actually save ten minutes of their time, while the associated risk of speeding was not worth the time saved. Drivers were encouraged to leave for their appointments earlier. The campaign was actively communicated during summer (July – August) and was accompanied by extensive speed enforcement by the Police. The campaign included radio and TV advertisements, a website[113] and billboards placed so they were visible when leaving cities, as well as outside urban areas.

109 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:111:0075:0082:EN:PDF
110 ESCAPE (2003) Enhanced Safety Coming from Appropriate Police Enforcement. Final report.
111 http://www.cast-eu.org/docs/CAST_WP3_Deliverable%203.2a.pdf
112 http://www.mnt.ee/kiirus/
113 Ibid

Germany

The German road safety campaign, "Slow down!", was launched in 2008 to raise awareness about the serious consequences of unadjusted speed[114]. The initiators of the campaign, the Federal Ministry of Transport, the German Social Accident Insurance and the German Road Safety Council (DVR) wanted to contribute to reducing the number of road traffic deaths in Germany. The three-year information campaign has the basic goals of educating road users about the high accident risk of inappropriate speed, encouraging responsible behavior while contributing to the further decline in the numbers of victims. The campaign encourages a variety of measures to a set off a broad discussion on road safety. The measures are aimed at all road users: the general public, media, political actors and multipliers in the field of traffic safety including police, firefighters and rescue workers.

Ireland

In Ireland the three main regulatory authorities involved are working collaboratively[115] to raise awareness of importance of managing Work Related Road risks[116]. The Health and Safety Authority (occupational safety), the Road Safety Authority (road safety) and An Garda Síochána (police) have been jointly involved in Driving for Work seminars aimed at employers since 2010. A number of joint resources for employers have been developed such as instructional videos, fact sheets, posters and checklists on daily vehicle pre-checks. Joint research has also been undertaken to assess compliance with expected Driving for Work risk management indicators.

The United Kingdom

UK Think! Campaign has different strands focussing on speed in urban and in rural areas[117]. The rural speed component of the THINK! speed campaign focused on the dangers of driving at inappropriate speeds on rural roads. It was particularly targeted at young men and habitual speeders who often drive for work. The rural speed campaign used a mixture of national radio advertising, national ambient advertising (including petrol pumps), posters and national and regional PR.

Switzerland

The Swiss Council for Accident Prevention (bfu), the Swiss Insurance Association (ASA/SVV), and the Road Safety Fund (FVS/FSR/FSS) launched together in 2009 an awareness raising campaign called "Slow down – take it easy"[118], targeting in particular young drivers and riders, but also road users at large. Unlike many campaigns this one was not based on fear, but on positive emotions. Franky is an angel and a pop singer who sings of the benefits of taking it easy, driving the message that slowing down is both fun and cool. The campaign also stressed that speeding does not only encompass excessive speeding (driving above the speed limit) but also inappropriate speed as drivers are often driving too fast for the prevalent road/traffic/ weather/ visibility conditions, and overestimate their abilities.

Employer-led Information Initiatives

Employers are also encouraged to ensure that drivers are made aware of the risks of speeding. Some employers use government campaign material to inform their own employees of the risks of driving, others develop their own information.

114 http://www.dvr.de/aktionen/runter-vom-gas.htm
115 http://www.hsa.ie/vehiclesatwork
116 http://www.drivingforwork.ie
117 http://think.direct.gov.uk/speed.html
118 www.slow-n-easy.ch/

Recommendations to EU

- Launch a campaign on the need to respect speed limits, especially when driving for work.

Recommendations to Member States

- Undertake regular speeding campaigns linked to police enforcement targeting professional drivers.

Recommendations to Employers

- Raise awareness of the risks of speeding amongst employees either by developing organisation specific material or using existing materials.

3.4. Eco-driving and Speed

This section presents eco-driving and speed and shows that there are clear synergies between training drivers on eco-driving and fuel-efficiency and safe driving in terms of speed management. The driving techniques and style that make drivers safer are exactly the same as those that make drivers more fuel efficient, giving both individual drivers and the organisation the double benefit[119]. The environmental, safety and fuel efficiency benefits can convince different people within organisations relative to their role be they CEO, budget or fleet manager or driver. It is vitally important also to train the decision-making units managing and controlling the transport activities in logistics as well as the drivers[120]. Defensive, energy-efficient driving (reinforcement of the key elements of eco-driving within the curricula of the theoretical and practical tests) is included in the European Commission's Policy Orientations on Road Safety[121]. The Transport White Paper also states that eco driving would be included in future revisions of the driver licence Directive and its intention to accelerate it in combination with ITS applications[122]. The European Commission recognised in its White Paper that 'reducing speed is an extremely effective way to reduce not only the risk of collisions but also fuel consumption,' particularly as this approach enjoys the support of the European public.

The European Commission's Logistics Action Plan also points to the improvement of training and education for drivers and managers in freight transport and logistics as a relevant instrument for reducing energy consumption and green house gases in the transport sector. Promoting eco-driving and in-vehicle systems that 'provide real-time information on prevailing speed limits' will also contribute to improving compliance with speed limits. Moreover, if drivers behave in a more energy-efficient way, this also helps to improve the traffic flow, reduces fluctuations and the risk of congestion and traffic collisions[123]. The main arguments in favour of eco-driving are: a reduction of fuel costs, lower vehicle maintenances costs and vehicle wear and tear, reduction of CO_2 emissions by around 8%, improved company image, reduced insurance costs (lower accident rates) and a reduction of stress and fatigue[124].

Another aspect is that, as more transport operators and logistics firms place emphasis on their quality reputation, it is possible to include the firms' activities towards energy saving through more efficient driver and operation into the ISO Standard 14000. Such green labels can be successfully marketed as big logistic players have proved (e.g. DB Schenker)[125].

119 RoSPA Driving for Work: Safer Speed
120 Schade, W and Rothengatter, W. Economic Aspects of Sustainable Mobility, European Parliament Policy Department
121 http://ec.europa.eu/transport/road_safety/pdf/com_20072010_en.pdf
122 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0144:FIN:EN:PDF
123 Schade, W and Rothengatter, W. Economic Aspects of Sustainable Mobility, European Parliament Policy Department
124 Ibid
125 Ibid

The European project Ecodriven has defined 5 golden rules for eco-driving. These are shown in Figure 11.

1. Anticipate Traffic Flow	Read the road as far ahead as possible and anticipate the flow of traffic. Act instead of react – increase your scope of action with an appropriate distance between vehicles to use momentum (an increased safety distance equivalent of about 3 seconds to the car in front optimises the options to balance speed fluctuations in traffic flow – enabling steady driving with constant speed).
2. Maintain a steady speed at low RPM[126]	Drive smoothly, using the highest possible gear at low RPM.
3. Shift up early	Shift to higher gear as soon as possible. Consider the traffic situation, safety needs and vehicle specifics.
4. Check tyre pressures frequently at least once a month and before driving at high speed	Keep tyres properly inflated as low tyre pressure is a safety risk and wastes fuel. For correct tyre pressure (acc. to loading, highest pressure and speed driven), check with car's manual.
5. Consider any extra energy required costs fuel and money	Use air conditioning and electrical equipment wisely and switch it off if not needed. Electrical energy is converted from extra fuel burnt in a combustion engine, so electrical equipment doesn't work "for free" – it always costs extra energy and money. Avoid dead weight (e.g. not used tools) and aerodynamic drag (e.g. empty roof racks).

Figure11: Ecodriven Rules

There are also a number of further "silver rules" such as for example considering alternative forms of transport. These are also explained in the ECOWILL website[128].

"Safety First"

Eco driving experts stress that the main guiding factor of all of these rules is to follow the overarching principle of "safety first". Some of the above five main rules of eco driving will also have a potentially positive impact on driver speed[128]. The first rule on anticipatory driving would be the main one of relevance, encouraging drivers to look ahead and keep an increased safety distance and maintain a steady speed. The second rule on maintaining a steady speed at a low RPM would also be highly relevant to speed management. The background is that unnecessary speed peaks and abrupt braking not only waste fuel, but also raise the stress level while driving and cause additional safety risks. Eco driving aims to achieve a smooth driving style. Under the third rule on shifting up early, it is stressed that this is only used on the flat and that the optimum gear shifting for each vehicle has to be identified individually.

126 Revolutions per minute
127 http://www.ecodrive.org/en/what_is_ecodriving-/the_golden_rules_of_ecodriving/
128 Ibid

3.4.1 ECOWILL

The project ECOWILL was launched in 2009 and runs for 5 years involving 14 partners and an advisory board, both private and public bodies. It aims to utilise the existing infrastructures of driving schools and advanced driver training for the large scale rollout of short duration eco driving training courses and online (e-learning) education for licensed drivers. It aims to standardise the contents of training courses and to certify trainers for providing such courses. It will also train licensed drivers of passenger cars and LCVs in eco driving and involve additional drivers through publicity and media attention. Moreover, it will engage government and driving school administrations to incorporate eco driving in the driving school curriculum. ECOWILL also stresses that, although drivers are encouraged to try the tips listed, best results are achieved by attending an Eco driving training given by a qualified driving instructor. Finally, ECOWILL will harmonise and optimise the contents and application of eco driving in the driver test for learner drivers[129], all in accordance to the Ecodriven rules.

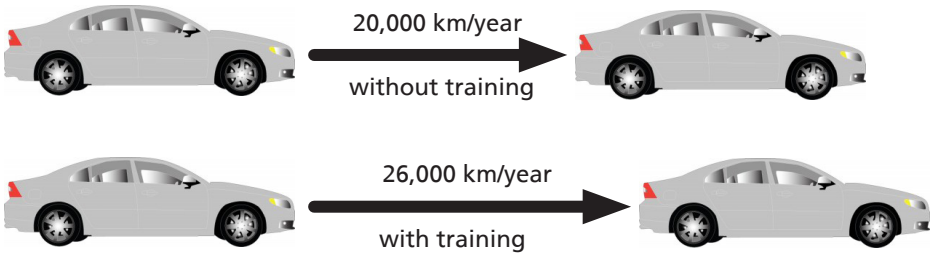
3.4.2 Examples of Eco Driver Training

There are a number of training programmes on offer that address both eco-driving and safe driving. Examples for this kind of training schemes include courses reviewed in the study "To the Point 3 _- studies on drive like a pro – safe driving, both in a professional and a private context" published by the German Road Safety Council (DVR), and the German Statutory Accident Insurance[130]. A summary of some of the case studies is reproduced below.

Eco Driver Training in Germany in Real Traffic

The German Road Safety Council and the German Social Accident Insurance have since 1995 been developing a programme on "driving safely and saving gas along the way- safe, economical and environmentally friendly driving". This is primarily aimed at companies that have their own fleet. The programme demonstrates savings of up to 30% on fuel costs and highlights the benefits of this in terms of distance travelled per tank filled over a year[131]. It includes "training on the job" with driving in real traffic. This is illustrated below by two examples: the first is a driver who has not had eco-driver training and the second has, showing that the trained driver can travel much further with the same amount of fuel.

Companies can benefit from the training programmes through: more safety, a better environmental performance, considerable improvements in fuel economy, reduced wear and tear as well as lower repair and maintenance costs. In order to promote participation in the training among staff members and decision-makers within a company, training modules with the contents of the "Drive safely and save gas along the way" programme are integrated into already existing seminars run by the German Statutory Accident Insurers and Prevention for Trade and Industry. Since then the DVR has continued to develop its eco driving training programmes. In 2007 it launched "Van Coaching" and "Passenger Car Coaching" two new programmes combining elements of safety and the fuel economy training for implementation in companies.



129 http://www.ecodrive.org/en/home/ECOWILL_the_project/objectives/
130 http://www.dvr.de/download/broschuere_auf-den-punkt-3.pdf
131 http://www.fahrspartraining.de/

Combined Safety and Eco Driving Evaluated

A recent study of the combined safety and fuel-saving driving in Germany looked at the effects on driver's attitudes and behaviour[132]. Repeated measurements were carried out in a group of twenty drivers who took part in the course and on a group of twenty drivers not participating in the course. The course was run by the ADAC and Eco Consult and consisted of 8 hours; in the morning safety training took place and in the afternoon the eco training was added including driving in real world traffic. Subjects filled out questionnaires (e.g. Driver Stress Inventory, Driver Coping Questionnaire). Their behaviour when driving a fixed route (distance = 35 km) in real-life traffic was recorded by a psychologist using standardised data collection sheets. Different aspects were measured including "orientation efforts". This can be defined as the ability to realise the meaning of a particular traffic situation or traffic sign as well as their spatial and time relation and evolution.

One part of "orientation efforts" was to recognise the correct distance and speed. Another part was "risk related self control" which also included conflict avoidance and keeping an appropriate speed. Results show that the participants who completed the course exhibted a more relaxed and considerate driving style three months after the course. There was a significant decline in risky behaviour. Furthermore, the driving course improved drivers' attitude: training resulted in calmer driving and more efforts to look ahead when in traffic. Additionally, trained subjects reported a higher ability to cope with stressful traffic situations and to avoid aggressive and reckless behaviour behind the wheel. The study confirmed that the combined safety and fuel-saving driving course had safety-increasing effects on drivers' behaviour and attitudes on the road.

Fuel Saving Training at "Schäfer's Brot und Kuchen Spezialitaten"

The DVR ran their "Driving safely and saving gas along the way - safe, economical and environmentally friendly driving" at the Schäfer's Bakery for the first time with trucks of up to 7.5 tons of gross vehicle weight[133]. The workshops lasted for 120 minutes, with a maximum of 15 participants, and introduced practical tips on how to behave in everyday traffic. The workshops were followed by real-world driver training. Every driver was accompanied on their daily delivery route (with an average duration of 160 minutes) by an instructor who gave comments and tips for a fuel-saving driving style. Afterwards the driver was provided with feedback on their driving. The training was evaluated with a pre-post study with a treatment group and a control group. Before and after the training, the drivers were questioned and their driver behavior was examined. Observers who accompanied the delivery tour noted down certain driving behavior patterns, e.g. driving errors and fuel-saving behaviour (releasing the accelerator when approaching a red light) in an observation form. Whereas in the preliminary survey the error frequency of both driver groups was similar, afterwards the driver group who had received training committed considerably fewer errors than the group without training. Their driving style was more relaxed and more defensive. The drop in risk errors was particularly evident. The members of the treatment group reacted to stressful situations – such as nose-to-tail traffic, time pressure because of tight deadlines, shoulder-runners on the highway – with less aggression and less willingness to take risks, e.g. by tailgating. In the driver group who had received the training the fuel economy in the second and third month after the training amounted to 6.8%, six months afterwards it was still at 3.7%.

HNR-Netherlands

The Dutch Programme "Het Nieuwe Rijden" (HNR) aims to assist professional drivers to learn a modern driving style which takes account of state of the art engine technology[134]. The eco-driving style was designed to improve driving comfort, increase road safety, reduce fuel consumption and increase driving pleasure. The intention of the survey was to identify the possible benefits of the HNR programme. The study looked at comparative economic and operational data from shipping companies. Companies which enable their drivers to participate in the HNR training and which monitor the driving behaviour of their staff were distinguished from companies which do not support their staff in this way. The latter were used as the control group. Parameters included fuel consumption, maintenance costs, repair costs incurred due to accidents as an indicator of road safety and absence from work due to diseases or accidents. Fuel consumption among the HNR companies decreased by 2.1%, at an average fuel price of 68 EUR per 100 litres, this corresponded to savings of 0.40 EUR per km. Maintenance costs could be reduced by 3.5%. This corresponded to savings of 0.19 EUR per km. The impact on road safety can be determined by looking at the repair costs for minor accidental damages. During the period of examination, they declined by more than 14%, corresponding to savings of 0.39% per km. With the help of HNR in freight traffic alone, costs for fuel consumption, maintenance and repairs could be reduced by 0.98% per km. For a lorry with a mileage of 80,000 km per year, this amounts to an annual saving of 800 EUR.

132 Strohbeck-Kuehner, P. and Geiler, M. In Combined Safety and Eco Training Zeitung fuer Verkehrssicherheit 4/2010.
133 http://www.dvr.de/download/broschuere_auf-den-punkt-3.pdf
134 http://www.dvr.de/download/broschuere_auf-den-punkt-3.pdf

Eco Driver in Germany

LeasePlan Germany offers their corporate clients an incentive programme that periodically rewards drivers with the best fuel consumption score. Leaseplan found that a one-time seminar participation did not necessarily bring out the full potential of results. Follow-up can be taken with monitoring of fuel use via an in-vehicle monitoring system or participation in a competition linked to fuel use. "Eco driver" was set up for those who have participated in eco driver training. Drivers with the lowest fuel consumption are eligible to win prizes quarterly. This programme is supported by an eco driving training course and online e-learning tools. The company not only improves its environmental performance but also generates cost benefits to its fleet. Through applying eco driving techniques maintenance costs, tires, and damage can be saved in addition to fuel costs, which account for up to 30% of vehicle costs[135]. Aspects of efficiency control have also been integrated into the company's fleet reporting systems. The computer system records CO_2 compared over time for entire vehicle groups, individual drivers and fleets.

Recommendations to the EU

- Prioritise eco driving and highlight the safety benefit through further funding of training and awareness campaigns.
- Include eco driving and safety aspects in EU driver training and testing.

Recommendations to the Member States

- Introduce initiatives for uptake of Eco driver training including the safety benefit amongst employers.

Recommendations to Employers

- Following a risk assessment target employees for eco driver training including the safety aspects.

Part 4 Focus on Technology

4.1 Speed Management Technologies

The adaptation of driving speed to the prevailing conditions and speed limits is a primary way of controlling the crash risk of the driver. Different in-vehicle technology systems exist, ranging from informative to intervening systems that can help manage and prevent speed and that should be deployed by the employer. These are presented in greater detail in our first PRAISE Thematic Report, together with issues related to data management and protection[136]. Setting up clear management systems to follow up and analyse speeding data collected is crucial to the success of a system in managing risk of speeding. This section will present a summary of these different technologies focussing on their speed applications in particular.

In its White Paper, the European Commission recognised that promoting in-vehicle systems that 'provide real-time information on prevailing speed limits' will also contribute to improving compliance with speed limits[137]. The White Paper refers to the need to harmonise and deploy road safety technologies. ETSC considers that the Commission should assume a stronger leadership role in promoting technologies, especially Intelligent Speed Assistance Systems and that managing speed should be introduced to commercial vehicle fleets as a priority.

4.2 Intelligent Speed Adaptation

Intelligent Speed Adaptation (ISA) is an Intelligent Transport System (ITS) which warns the driver about speeding, discourages the driver from speeding or prevents the driver from exceeding the speed limit[138]. Information regarding the speed limit for a given location is usually identified from an onboard digital map in the vehicle. Other systems use speed sign reading and recognition either using already built into the vehicle or aftermarket navigators.

There are two major types of systems – informative and supportive. An informative system gives the driver feedback in the form of a visual or an audio signal. A supportive system works in the form of increasing the upward pressure on the pedal or cancelling a driver's throttle demand if it demands more throttle than is required to drive at the speed limit.

135 http://www.leaseplan.de/579.html?&tx_ttnews[pS]=1322216040&tx_ttnews[tt_news]=542&tx_ttnews[backPid]=847&cHash=2c4f7d6a6c
136 http://etsc.eu/documents/PRAISE%20Report%201.pdf
137 http://ec.europa.eu/transport/strategies/2011_white_paper_en.htm
138 Regan M., Young K. (2002) Intelligent Speed Adaptation: A Review.

A Swedish large-scale study of the effect of informative and supportive ISA, involving nearly 4,500 vehicles, shows that if everyone had informative ISA fitted, injury accidents could be reduced by 20% in urban areas[139]. Supportive systems have even greater potential to reduce fatal and serious accidents. Estimates by Carsten[140] show that a mandatory supportive ISA scheme could lead to a reduction of 36% in road traffic (injury) accidents and 59% collisions resulting in death. There would also be benefits in terms of lower fuel consumption (up to 8%) and more effective road traffic enforcement.

4.3 Speed Limiters

Another technical possibility is to impose the appropriate speed by limiting the speed of the vehicle, as is already being done in respect of international upper speed limits for heavy goods vehicles and busses. Corresponding action is needed for light vehicles[141]. But speed limiters do not have the technically more advanced function to adapt the maximum speed to the prevailing conditions, as does ISA.

In HGVs and Buses

An EC Directive (92/24/ECE) requires speed limiters on trucks over 12 tons and buses manufactured after 1st January 1988; the specified limits are 90 and 100 km/h, respectively. The Directive has since been extended to light commercial vehicles over 3.5 tons, and passenger vehicles with more than nine seats (ECE 2004/11). Research showed positive effects on emissions and fuel consumption through prevention of over-speeding[142].

The EC Directive requires speed limiters to be generally resistant to tampering and not to be adjustable while the vehicle is in motion. However, the illegal modification of speed limiters to allow higher speeds continues to be a problem[143]. This is a further reason why information to the driver about why they should stick to certain speeds is so essential. Two further problems are identified by the OECD. Speed limiters do nothing to reduce speeding on roads with speed limits below the Speed Limiter setting, nor on downgrades steep enough to cause free-rolling. Secondly, in some cases, truck drivers may be tempted to always reach the maximum speed set by the limiters. In addition, the overtaking between two heavy vehicles may take a long time. However, the OECD evaluates them as having contributed significantly to reducing accidents involving trucks[144].

Digital tachographs are installed on commercial vehicles, as original equipment or retro-fitted, to allow real time monitoring of speed as well as logging drivers' hours of service. Electronic tachographs have rapidly supplanted mechanical tachographs due to their ability to record data in addition to speed and time, that can be downloaded either at the end of a trip or after a certain length of time for computerised analysis. The legislation governing tachographs is covered in more detail in the PRAISE Thematic Report 7[145].

In Light Commercial Vehicles

In 2009 the European Commission prepared a legislative proposal to reduce CO_2 emissions from LCVs. Following this proposal, the European Parliament's Transport and Industry committees both supported the introduction of a binding speed limiter set at 120 km/h for such vehicles. However, the lead committee (Environment) voted against the introduction of speed limiters. In a more recent development the European Commission announced the intention to introduce speed limiters for light vehicles in its "Road Safety Policy Orientations". The Commission's White Paper on Transport, also makes a commitment to 'examine approaches to limit the maximum speed of light commercial road vehicles, in order to decrease energy consumption, to enhance road safety and to ensure a level playing field[146].'

139 Biding, T. and Lind, G. (2002), Intelligent Speed Adaptation (ISA), Results of large-scale trials in Borlänge, Lidköping, Lund and Umeå during the period 1999-2000, Swedish National Road Administration, Publication 2002:89 E URL: http://www.isa.vv.se/novo/fi lelib/pdf/isarapportengfi nal.pdf (2004-11-04).
140 Carsten O., Fowkes M., Lai F., Chorlton K., Jamson S., Tate F., & Simpkin B. (2008), ISA-UK intelligent speed adaptation Final Report.
141 ETSC (1995).
142 http://www.internationaltransportforum.org/Pub/pdf/06Speed.pdf
143 Ibid
144 Ibid
145 http://etsc.eu/PRAISE-publications.php
146 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0144:FIN:EN:PDF

4.4 Telematics

The use of telematics and new technologies which can monitor and record speed provides employers with an opportunity to continuously monitor their employees driving and speed behaviour. This is particularity relevant to professional drivers and provides a means by which employers can identify speeding offences that may go undetected by national enforcers. Insurers can incentivise the use of such technologies by linking their use to insurance premiums. Employers can monitor driving in real-time and provide immediate feedback to drivers if their speed becomes inappropriate or the data can be fed into broader risk-rating systems which combine on the road incidents with other information such as driving licence points to ascertain an overall risk-rating for individual driver. Such an approach has already been implemented by some companies including Tesco Dotcom. Below is a depiction of their risk-rating system.

Figure 12: Tesco Risk Rating

Another company uses telemetry with a similar approach to Tesco. Here fleet managers can see not only that a speed offence took place but also more precisely the speed of the driver in the different speeding zone. Many other companies use telemetry with a similar approach, by linking a range of data sets including telemetry, collision, risk assessment, fuel and licence check data.

While respecting speed limits, drivers can drive at inappropriate speeds or have an inappropriate driving style: harsh braking, taking curves and corners at the limit of the vehicle's stability, harsh acceleration, overloading. Advanced telematics systems can provide insight into driving behaviour. For example, when linked to the braking system on commercial trailers, the brake system automatically intervenes when the trailer tends to rollover (a functionality called RSS, "Rollover Stability Support"), or the Electronic Stability Control (ESC) activates. Such a telematics system can send an alert to the dispatcher of the fleet each time such intervention happens, which allows the fleet owner to review the event with the driver, re-train if necessary, or take other actions.

In the example in Figure 13 below, fleet managers can see not only that a speed offence took place but also more precisely the speed of the driver in the different speeding zone. Using such data, via a data-warehouse, managers at all levels in an organisation can identify the prevalent risks, then target, record and monitor relevant interventions such as training, communications and focused one-to-one discussions. Such devices can be put in all fleet vehicles, although increasingly more detailed analysis is being used to target attention to the 5-15% of drivers that are responsible for a disproportionate number of collisions and violations in most organisations. Cost effective portable or transferable telemetry devices are increasingly available for this purpose. Several proactive, risk led insurers are also becoming involved in this process. One good example is Zurich, through its Zurich Fleet Intelligence solution[147].

147 http://www.zurichfleetintelligence.com

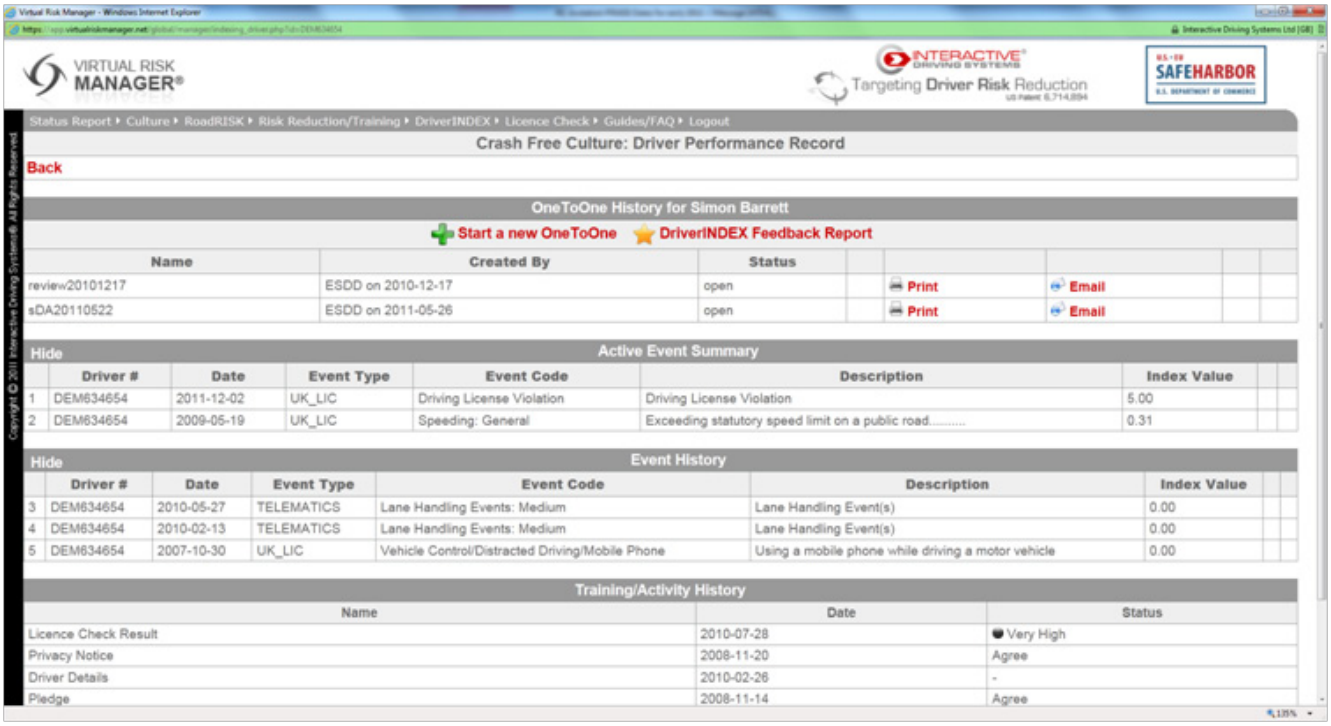


Figure 13: Risk Rating System

4.5 Event Data Recorders

Event or Accident Data Recording systems (EDRs/ADRs) are commonly known for their 'black box' type of use and were designed for aircraft or trains. They provide information regarding the circumstances surrounding a crash including speed. A typical example for the use of EDRs is for the authentication of an incident for insurance claims or for the rejection of insurance claims (e.g.: drivers involved in a crash because of allegedly inappropriate speed). EDRs can be used for accident investigation as well as for driver monitoring. But EDRs are typically not designed for recording driving data as a tachograph because the recording is linked to a defined event trigger threshold. This could typically be a collision impact or a harsh driving manoeuvre. This depends on the functionalities required by the customer.

Some stakeholders in Europe propose a solution to determine whether drivers display aggressive driving styles. This works through the use of in-car devices such as sensors and GPS systems that monitor the acceleration, speed, and movement of vehicles. Through these, the system analyses different types of manoeuvres and identifies for each manoeuvre performed during a trip whether it has been performed correctly or too aggressively (changing lanes abruptly, accelerating suddenly and so on). On the basis of this, the system can identify risky manoeuvres and empower drivers to manage their own safety by giving instantaneous in-vehicle feedback. When using EDRs data protection concerns must be considered at an early stage and proper explanation of the appropriate use of data given to staff. It needs to be borne in mind that recorded incidents may go up at the start because collisions that were not reported previously start to get reported.

4.6 EuroNCAP Speed Technologies in "Speed Assist"

In 2009 the European New Car Assessment Programme (EuroNCAP) introduced a new element in its star ranking. Called "Safety Assist" Euro NCAP rewards manufacturers for the fitment of a speed limitation device, as well as electronic stability control, and intelligent seat belt reminders. Currently, Euro NCAP rewards only systems which are voluntarily set by the driver. They state that, in the future, systems may become available which automatically detect the speed limit at any point in the road network and limit a car's maximum speed appropriately[148]. EuroNCAP currently rewards two types of system: those which can be set by the driver and which actively prevent the car from exceeding that maximum; and those which simply warn the driver when the car's speed is above the set maximum. The functionality of the system is considered to make sure that the system can be set and unset easily and without undue distraction to the driver; the clarity of the signals given to the driver are assessed to make sure that there

148 http://www.euroncap.com/Content-Web-Page/b103e5e1-b536-4298-b563-3aed74e4be62/speed-limitation-devices.aspx

is no confusion about the current set maximum and to ensure that a suitable warning is given if the system is unable to limit the speed to that maximum. For active systems, a check is made to ensure the system is able to limit the speed of a car to the maximum set by the driver. At each of three speeds, the accuracy with which the set maximum can be maintained is determined. In the EuroNCAP ranking a maximum of one point is available to active systems which meet Euro NCAP's requirements. Warning-only systems can receive a maximum of 0.5 points. The points go towards the vehicles 'Safety Assist' score which is part of the overall EuroNCAP star ranking. Effectively, no car can receive the coveted five star rating without including a speed limitation device.

4.7 Good Practice Examples of Speed Management Technology Use

ISA

Examples of the implementation of ISA come mostly from Sweden. ISA systems have been installed in about 4,000 of the Swedish Transport Administration (STA) cars. A number of city municipalities have equipped their vehicles with informative ISA. The local buses in Lund, for example, are today equipped with an ISA system with auditory warning for the driver if they exceed the speed limit. In Sweden ISA is also already used by several companies and between 50 and 60 local authorities, such as Stockholm and Västerås, on the basis of an informative system.

Some examples of companies are:

- Transport companies: SITA, Panaxia, Alltransport
- Taxi companies: Gävle taxi, TaxiBil Syd
- Rental car companies: Hertz
- Elevator supplier and service: Kone

Speed Limiters

Speed limiters for LCVs have also been used by some companies and have been reviewed in PRAISE Thematic Report 1[149]. These limit the speed and are not as flexible as ISA. In the UK, Royal Mail and Centrica have fitted speed limiters (limited to 70mph) on all vehicles including LCVs and put stickers on the back of all their vehicles to inform other road users of their self imposed speed limit.

Tesco Dotcom

Tesco Dotcom is an on line grocery home delivery company. Its UK operation delivers home shopping to over 1 million active customers, at a yearly delivery rate of approximately 361,000 per week (2009/2010). Dotcom operates from 305 operational sites utilising 2,750 vans and over 9,000 drivers, supported by a personal shopping and management team consisting of some 9,500 additional personnel. The company introduced telematics in the form of black box technology fitted to vans to improve road safety and fuel efficiency. This resulted in a positive effect on reducing occupational road risk and a sustainable change in driver's behaviours. The data produced allow the management team to monitor the performance of the driver and give a live de-brief to the driver on their return to the store. In relation to speeding the use of telemetric has facilitated a contextual speeding programme to support the company's 'no speed' policy. The object of the programme is to confront the drivers with data facts from the telemetrics regarding their own behaviour. If they are shown to be travelling over the speed limit a Google map reference is generated on a report. This is then converted into Google Street view that is printed and is shown to the driver, who is asked if his/her behaviour is reasonable. It is hard for any driver to justify speeding past a school. As a result of this project, the number of speeding events has dropped dramatically. The result of the introduction of this programme has been a reduction in recorded speeding events of over 66% and a reduction in prosecutions of over 90%. The reduction in the number of Notices of Intention to Prosecute has meant that fewer Tesco drivers have incurred 3 points and a £60.00 fine. To support the continued effort to reduce the risk, all LCVs are restricted to 58 miles per hour.

Balfour Beatty Utility Solutions[150]

A UK company, Balfour Beatty Utility Solutions, introduced a GreenRoad's service across its commercial fleet of 1,400 vehicles as part of its ZERO HARM programme. The technology based system takes a holistic approach to improving driving behaviour, combining immediate objective, in-vehicle feedback with detailed reporting, coaching, risk analysis and alerts. 'GreenRoad customers typically reduce crash costs by up to 50% and reduce fuel usage and emissions by up to 10 percent.' In the first 3 months of its operation at Balfour Beatty Utility Solutions there was a 63% reduction in driver risk, reduced insurance premiums and reduced fuel consumption by 10%.

149 http://etsc.eu/documents/PRAISE%20Report%201.pdf
150 Information from GreenRoad http://www.greenroad.com/balfour-beatty-utility-solutions-targets-zero-harm/

Shell Bulgaria

Shell Bulgaria EAD is part of Royal Dutch Shell plc. The company employs 80 people in Bulgaria and currently has a network of 111 retail stations. Shell has defined 4 key performance indicators for its professional drivers in terms of road safety namely speeding, working hours, harsh breaking, and harsh acceleration. Drivers' are observed in real time through GPS and are immediately informed in case of a breach in any of these areas. If repeated breaches occur additional training is organised with the respective driver to improve performance. The company also obliges its contractors to comply with Shell rules about speed limit on motorways which is limited to 80 km/h and is lower than the legal limit.

Recommendations to the EU

- Encourage further roll out of speed management technologies including ISA amongst particular user groups such as government vehicle fleets, public buses and company vehicle fleets including those of rental car companies.
- In the medium term adopt legislation for the mandatory fitting of all fleet cars with speed management technologies including Intelligent Speed Assistance systems.
- Contribute to the development of harmonised standards for Intelligent Speed Assistance (ISA) systems towards eventual universal fitment.
- Develop a European standard for a "speed limit service", i.e. over the air 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.
- Extend the mandatory use of speed limiters and tachographs, which already exists for HGVs, to LCVs, as a first step to introducing ISA to these vehicle types.
- Contribute to the research-led development, standardisation and deployment of in-vehicle telematics including "Event data recorders" to record collisions and other driver behaviours such as speeding and harsh acceleration.
- Support and encourage the implementation of well researched and evaluated pilot studies of new in vehicle technologies in organisations.
- Within the context of a strategic plan, regularly monitor developments of vehicle and in vehicle technology to update standard setting followed by market penetration or eventual legislation for their deployment.
- Encourage employers managing fleets (also those of EU institutions) to purchase vehicles with in vehicle technologies with high life saving potential.

Recommendations to Member States

- Include safety criteria (including in-vehicle technology tackling speed) for purchase of vehicles in public procurement requirements and for government authorised contractors and sub-contractors.
- Support employers to fulfil their legal requirements to undertake a risk assessment. As part of this, provide information and training to fleet managers to inform them about the need to consider in-vehicle safety technologies in the new vehicle purchase and lease process and in how to conduct a fleet risk assessment, with supporting examples and case studies.
- Highlight the need for a wider use of in-vehicle technologies tackling speed with a high life saving potential especially in fleets.
- Promote vehicle safety information, such as EuroNCAP results (especially the safety equipment rating), more widely and effectively so that they play a more prominent role in new vehicle choices and fleet purchasing policies.
- Give incentives (such as tax breaks) to employers investing in effective and proven vehicle safety technologies.
- Encourage insurers to support the successful deployment of in vehicle technologies and review their cost/benefit against future insurance premiums.
- Encourage insurers to identify customers with above-average risk profiles, and recommend risk and cost mitigation solutions.
- Encourage insurers to work closely with system suppliers to develop solutions to increase safety.
- When implementing procedures to manage fleets include effective monitoring processes that take account of the whole supply chain.

Recommendations to Employers

- Include safety criteria when purchasing vehicles, including 5 star EuroNCAP cars and vehicles using in-vehicle safety technologies.
- Communicate vehicle safety technologies purpose (i.e.: "This is for your own good and we value you and are concerned for your wellbeing!") to employees and train them to use equipment properly.
- Develop a contractual and binding system of close working, risk engineering, incentives and sanctions to generate and maintain the necessary level of cooperation between the insurance company and the fleet operator.
- Set speed limiters in the HGV fleets at a level which is lower than the legally required compliance limit, which can benefit fuel utilisation as well as safety.
- Use the available technology and systems to analyse the driving behavior of employees, contractors and subcontractors.
- Implement a data warehouse based on the data from licence checks, collisions, risk assessment and vehicle systems, to identify good drivers, and those requiring further coaching and development.
- Work closely with suppliers, equipment manufacturers, insurers and customers to develop appropriate safety solutions.

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Bibliography

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

Aarts and van Schagen 2006, based on Nilsson 1982.

Adams-Guppy, J. and Guppy, A. (1995) Speeding in relation to perceptions of risk, utility and driving style by British company car drivers. Ergonomics, 38, 12, 2525-2535.

Alphabet (2008) Road Traffic Law and Driving for Work.

Anders, M. (2010) Preem – How we Work with Traffic Safety and Speed Management. Presentation to ETSC.

Association of Chief Police Officers of England, Wales and Nothern Ireland. Brainbox Research (2011) Evaluation of the National Speed Awareness Course.

Aspinal, I. (2010) The National Driver Offender Retraining Scheme. Association of Chief Police Officers of England, Wales and Northern Ireland.

Biding, T. and Lind, G. (2002), Intelligent Speed Adaptation (ISA), Results of large-scale trials in Borlänge, Lidköping, Lund and Umeå during the period 1999-2000, Swedish National Road Administration.

Carsten O., Fowkes M., Lai F., Chorlton K., Jamson S., Tate F., & Simpkin B. (2008), ISA-UK intelligent speed adaptation Final Report.

Carsten, O., Lai, F., Chorlton, K., Goodman, P., Carslaw, D., Hess, S., (2008) Speed Limit Adherence and its Effect on Road Safety and Climate Change. Final report.

Carsten, O.M.J., Tight, M.R. and Southwell, M.T. (1990). Urban accidents: Why do they happen? AA Foundation for Road Safety Research, Basingstoke, UK. http://www.roadsafetyfoundation.org/media/14073/foundation%20for%20road%20safety%20research%20urban%20accidents%20why.pdf

Cheeseman, C., A Roadmap to Safer Driving. TESCO.

CIECA (2002), The EU Advanced project: Description and Analysis of post-license Driver and Rider Training
http://www.cieca.be/template_subsubpage.asp?pag_id=49&spa_id=74&ssp_id=76&lng_iso=EN

Department for Transport, Road Statistics 2008: Traffic, Speeds and Congestion, http://www.dft.gov.uk/adobepdf/162469/221412/221546/226956/261695/roadstats08tsc.pdf

Department for Transport (2008) Road safety Research Report 93. Understanding Inappropriate High Speed: A Quantitative Analysis
http://www2.dft.gov.uk/pgr/roadsafety/research/rsrr/theme2/safety93.pdf

Department for Transport (2006) Road Safety Research Report No.66.

Department for Transport (2008) Road Safety Research Report 94. Understanding Inappropriate High Speed: A Qualitative Analysis.

Deutscher Verkehrssicherheitsrat e. V., DVR – German Road Safety Council (2009) To the Point 3
http://www.dvr.de/download/broschuere_auf-den-punkt-3.pdf

European Agency for Safety and Health at Work (2011), Managing Risks to drivers in Road Transport
http://osha.europa.eu/en/publications/reports/managing-risks-drivers_TEWE11002ENN

European Agency for Safety and Health at Work (2011) Managing Risks to Drivers in road Transport: Good practice cases.

European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions
http://ec.europa.eu/transport/road_safety/pdf/com_20072010_en.pdf

European commission White Paper (28.03.2011)
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0144:FIN:EN:PDF

ETSC (1993) Reducing Traffic Injuries through Vehicle Safety Improvements – The Role of Car Design.

ETSC (1995) Reducing Traffic Injuries Resulting from Excess and Inappropriate Speed.

ETSC (2001), The Role of Driver Fatigue in Commercial Road Transport Crashes, http://www.etsc.eu/oldsite/drivfatigue.pdf

ETSC (2005) The safety of Heavy Duty Vehicles. Fact Sheet 7.

ETSC (2006), Traffic Law Enforcement across the EU
http://etsc.eu/documents/ETS%2012%20March%202007.pdf

ETSC (2006) Intelligent Speed Assistance – Myths and Reality.

ETSC (2008) Managing Speed, Towards Safe and Sustainable Road Transport.

ETSC (2008) Combatting Speed through Penalty Point Systems. Speed Fact Sheet 2.

ETSC (2008) ShLOW! Show me How Slow.

ETSC (2008) Road Safety as a Right and Responsibility for All.

ETSC (2009) PRAISE, Preventing Road Accidents and Injuries for the Safety of Employees, Report 1
http://www.etsc.eu/documents/PRAISE%20Report%201.pdf

ETSC (2009), PRAISE, Preventing Road Accidents and Injuries for the safety of Employees, FactSheet 1
http://etsc.eu/documents/PRAISE%20Fact%20Sheet1.pdf

ETSC (2010) Road Safety Target in Sight: Making up for lost time 4th Road Safety PIN Report
http://www.etsc.eu/documents/05.05%20-%20PIN%20Flash%2016.pdf

ETSC, Preventing Road Accidents for the Safety of Employees, Thematic Reports 1-6
http://www.etsc.eu/documents/praise/PRAISE%20Thematic%20Reports%201-6.pdf

ETSC, PRAISE, 2010, Preventing Road Accidents and Injuries for the Safety of employees, FactSheet 2

ETSC (2011), Traffic Law Enforcement across the EU
http://www.etsc.eu/documents/Final_Traffic_Law_Enforcement_in_the_EU.pdf

ETSC (2010), PRAISE, Preventing Road Accidents and Injuries for the Safety of Employees, Report 2,
http://etsc.eu/documents/PRAISE%20Report%202.pdf

ETSC (2010), Reducing Road Safety Risk Driving for Work and to Work in the EU, An Overview.

ETSC (2010) Setting Appropriate, Safe, and Credible Speed Limits. Speed Fact Sheet 7.

European Road Safety Observatory (2006), Speeding, retrieved January 20, 2007 from www.erso.eu

European Agency for Safety and Health at Work (2010), Delivery and despatch riders' safety and health: A European review of good practice guidelines.

European Road Safety Observatory, Traffic Safety Basic Facts 2010, Heavy Goods Vehicles and Buses
http://ec.europa.eu/transport/road_safety/pdf/statistics/dacota/bfs2010_dacota_intras_hgvs.pdf

European Road Safety Observatory, Traffic Safety Basic Facts 2010, Motorcycles & Mopeds
http://ec.europa.eu/transport/road_safety/pdf/statistics/dacota/bfs2010-dacota-ntua-motomoped.pdf

European Union, Official Journal of the European Union, (17/07/2004)
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:111:0075:0082:EN:PDF

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

Fylan, F. Et al (2006) Effective Interventions for Speeding Motorists DfT.

Fylan, F. (2011) Evaluation of the National Speed Awareness Course.

Gallup Organisation (2010) Road safety Analytical Report. Flash Eurobarometer 301
http://ec.europa.eu/public_opinion/flash/fl_301_en.pdf

GADGET Guarding Automobile Drivers through Guidance Education and Technology
http://ec.europa.eu/transport/road_safety/pdf/projects/gadget.pdf

Geiler, M., (2010) Eco-driving Training.

Goldenbeld, C. Reurings, M, van Norden, Y., Stipdonk. H (2011) The Relation Between Traffic offences and Road Crashes: Preliminary Study making use of Central Fine Collection Agency (CJIB) Data.

Hedman, K., Johansson, M., Naef, P. (2010) Posten – ShLOW Project. Final report. Malmo University.

Husband, P. (2011), Work-related Drivers
http://www.devon.gov.uk/workrelateddriversfinal.pdf

Institute for Transport Studies (2010) Improving Vehicles: Intelligent Speed Adaptation

Keskinen, E., Peräaho, M. and Laapotti, S. (2010). GDE-5PRO and GDE-5SOC: goals for driver education in a wider context - professional and private drivers in their environment (unpublished manuscript). Unversity of Turku, Finland.

EDECS (2010) A guide to the Electronic Driver Entitlement Checking Service process and scenarios. Interactive Driving Systems.

Kampmann, B., Essen, H., Rooijen, T., Wilmink, I., Tavasszy, L. (2009) EU Transport GHG: Routes to 2050?.

Liang, C-Y., Peng, H. (1999), Optimal Adaptive cruise control with Guaranteed String Stability, Vehicle System Dynamics, 31, (1999) pp.313–330.

Matts-Ake Belin, Vagverget (2010) Speed Management at the National Level.

Maycock, G., Brocklebank, P. J. and Hall, R.D. (1998). Road layout design standards and driver behaviour. TRL Report 332. Transport Research Laboratory, Crowthorne, UK.

Murray, Dr. W. Interactive Driving Systems (2006),Purpose of Journey: Comment on 2005 and 2006 Department for Transport Statistics.

Nasca, C. (2003) Investigations on the use of Accident Data Recorders in Fleets. University of applied Sciences. Konstanz for Winterthur Versicherungen.

OECD (2006) Speed Management http://www.internationaltransportforum.org/Pub/pdf/06Speed.pdf

ONISR, Observatoire des vitesses, February 2010.

PACTS (2003), Speed Cameras: 10 criticisms and why they are flawed, PACTS & SSI, London.

Regan M., Young K. (2002) Intelligent Speed Adaptation: A Review.

ROSPA (2001) Driving for Work: Safer Speeds
http://www.rospa.com/roadsafety/info/workspeed.pdf

RoSPA (May 2005) Helping Drivers Not To Speed. Policy Paper.

RoSPA (2010) Response to the Department for Transport's Call for Comments on Revision of Dft's Speed Limit Circular.

RoSPA (2010) Response to the Department for Transport Consultation Paper. Increasing the Uptake of Eco-driving Training for Drivers of Large Good Vehicles and Passenger Carrying Vehicles.

RoSPA (2011) Driving for Work: Safer Journey Planner
www.rospa.com/roadsafety/info/safer_journey.pdf

ROSPA (2011) Road Safety Information.

RoSPA (2011) Top Ten Tips to stay within the Limit.

Saad, F., Dionisio, C., Arslanian, E., Collaciuri, V., Legay, F., Vézier, B. and Timianguel, J. (2006). Learning phase and short term behavioural effect of Speed Limiter and Cruise Control systems. In: R.F.T. Brouwer and D.M. Hoedemaeker (eds.), Driver support and information systems: experiments on learning, appropriation and effects of adaptiveness. Deliverable D1.2.3 of AIDE, Adaptive Integrated Driver Vehicle Interface. TNO Human Factors, Soesterberg, The Netherlands.

SARTRE consortium (2004) European Drivers and Road Risk http://sartre.inrets.fr/documents-pdf/repS3V1E.pdf

Stradling, S. Et al (2008), Understanding Inappropriate High Speed: A Quantative Analysis http://www2.dft.gov.uk/pgr/roadsafety/research/rsrr/theme2/safety93.pdf

Strohbeck-Kuehner, P. and Geiler, M. In Combined Safety and Eco Training Zeitung fuer Verkehrssicherheit 4/2010.

SWOV (2007). Fact Sheet: The relation between speed and crashes. http://www.swov.nl/rapport/Factsheets/FS_Speed.pdf

TISPOL (2010) Speed Policy Paper.

Virtual Risk Manager, Interactive Driving Systems (2010) License check Process and Scenarios.

Webster D.C. and Wells P.A. (2000) The characteristics of speeders, TRL 440.

Wegman, F. and Aarts, L. (2006), Advancing Sustainable Safety. National Road Safety Outlook for 2005-2020.

WABCO Trailer News Magazine, (2011) Intelligent Trailer Progamme Gains Ground.

Web sites

http://ec.europa.eu/transport/road_safety/specialist/knowledge/speed/speed_limits/current_speed_limit_policies.htm

DEKRA
http://www.dekra.de/de/pressemitteilung?p_p_lifecycle=0&p_p_id=ArticleDisplay_WAR_ArticleDisplay&_ArticleDisplay_WAR_ArticleDisplay_articleID=4384967

European Agency for Safety and Health at Work
http://osha.europa.eu/en/front-page

EUR Lex
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31989L0391:EN:HTML

http://www.drivingforwork.ie/

http://www.drivingforbetterbusiness.com/

http://www.mnt.ee/kiirus/

http://www.dvr.de/aktionen/runter-vom-gas.htm

http://think.direct.gov.uk/speed.html

www.slow-n-easy.ch/

http://www.ecodrive.org/

http://www.fahrspartraining.de/

http://ec.europa.eu/information_society/activities/intelligentcar/technologies/tech_18/index_en.htm

http://etsc.eu/PRAISE-publications.php

http://www.euroncap.com/Content-Web-Page/b103e5e1-b536-4298-b563-3aed74e4be62/speed-limitation-devices.aspx

http://www.leaseplan.com

http://www.zurichfleetintelligence.com/

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