THE BUSINESS CASE FOR MANAGING ROAD RISK AT WORK

May 2014

ETSC
European Transport Safety Council

PRAISE
Work-Related Road Safety

About PRAISE

Using the roads is a necessary part of our working lives. But it's an ordinary activity that leads to an incredibly high level of injury and death. ETSC's PRAISE (Preventing Road Accidents and Injuries for the Safety of Employees) project addresses the safety aspects of driving at work and driving to work. Its aim is to promote best practice in order to help employers secure high road safety standards for their employees.

The project is co-ordinated by the ETSC secretariat with the support of Fundación MAPFRE, the German Road Safety Council (DVR), the Belgian Road Safety Institute (IBSR-BIVV) and the Dräger Foundation.

BIVV-IBSR

Dräger Foundation

DVR
Deutscher
Verkehrssicherheitsrat

FUNDACIÓNMAPFRE

Contributing Experts

ETSC gratefully acknowledges the invaluable contributions of the following experts in the preparation of this report:

Nicola Christie – University College London

Jean-Francois Gaillet – Belgian Road Safety Institute (IBSR-BIVV)

Jacqueline Lacroix – German Road Safety Council (DVR)

Jesus Monclus – Mapfre Foundation

Will Murray – Interactive Driving Systems

Andrew Price – Zurich Insurance Group

Ken Shaw – Shaw Safety Associates

Deirdre Sinnott – Health and Safety Authority Ireland

For more information

European Transport Safety Council
20 Avenue des Celtes
B-1040 Brussels
Tel: +32 2 230 4106
information@etsc.eu
www.etsc.eu/praise

THE BUSINESS CASE FOR MANAGING ROAD RISK AT WORK

Authors
Luana Bidasca
Ellen Townsend

May 2014

ETSC
European Transport Safety Council

PRAISE
Work-Related Road Safety

CONTENTS

EXECUTIVE SUMMARY

This report gives an overview of the business case for employers to invest in a Work-Related Road Risk Management (WRRRM) programme. It finds that the financial and other benefits of such a programme could outweigh the costs of implementation. The other benefits such as increasing efficiency in organisational management and administration are also detailed.

Being involved in a fatal or serious collision can have a significant impact on your organisation.

The report shows that, by investing in work-related road safety (WRRS), employers can also gain a competitive advantage as well as fulfilling their legal compliance obligations. The report covers a list of possible costs and the importance of introducing measures to reduce them.

It looks at sources of funding including risk financing in co-operation with insurers. It also cites some examples where financial advantages can be gained by implementing measures such as journey management and vehicle maintenance.

Monitoring and evaluation are important both for providing feedback internally and externally and for the continual update and evolution of the WRRRM programme and business case. Links between work-related road safety and Corporate Social Responsibility (CSR) are also explored.

The benefits of exchanging good practice within the context of European and national WRRS forums are outlined with ideas of where to gain information and support.

Finally a checklist reflecting the recommendations in the different sections of the report is included, to aid step-by-step implementation by employers.

PART I
INTRODUCTION

This report is designed firstly to help organisations understand their exposure to work-related road risk and then make a business case for managing it as part of a Work-Related Road Risk Management (WRRRM) programme. It aims to provide a step-by-step approach for large and small companies[1], public authorities and not-for-profit organisations.

The report starts by outlining why organisations should address road safety and offers ideas on where to start. It goes on to offer guidelines for assessing the level of exposure and looks at how WRRRM programmes can help. It also examines the business benefits in terms of financial, legal compliance, organisational, administrative, non-financial and individual advantages.

The report is relevant to a wide range of business functions including CEOs, health and safety managers, fleet operators and HR and transport managers. In short, anyone who manages employees that use the road for work, or a vehicle fleet, irrespective of the number of people in the organisation that use the road, and irrespective of who owns the vehicles they use.

For fleet managers, human resource managers and occupational health and safety managers, the report provides a framework for investing in work-related road safety (WRRS). Finance managers and senior management will gain a greater understanding of the financial savings that can be made as well as the legal issues involved.

Policy makers at both EU and national level will also find policy recommendations and advice on how to improve public procurement.

1.1 Scope of the problem

Using the road for business is the leading cause of work-related deaths and injuries.

Using the road for business is the leading cause of work-related deaths and injuries[2], so it is clearly a major societal problem. But work-related road safety (WRRS) should also be a priority for organisations for legal, societal, reputational, financial and efficiency reasons.

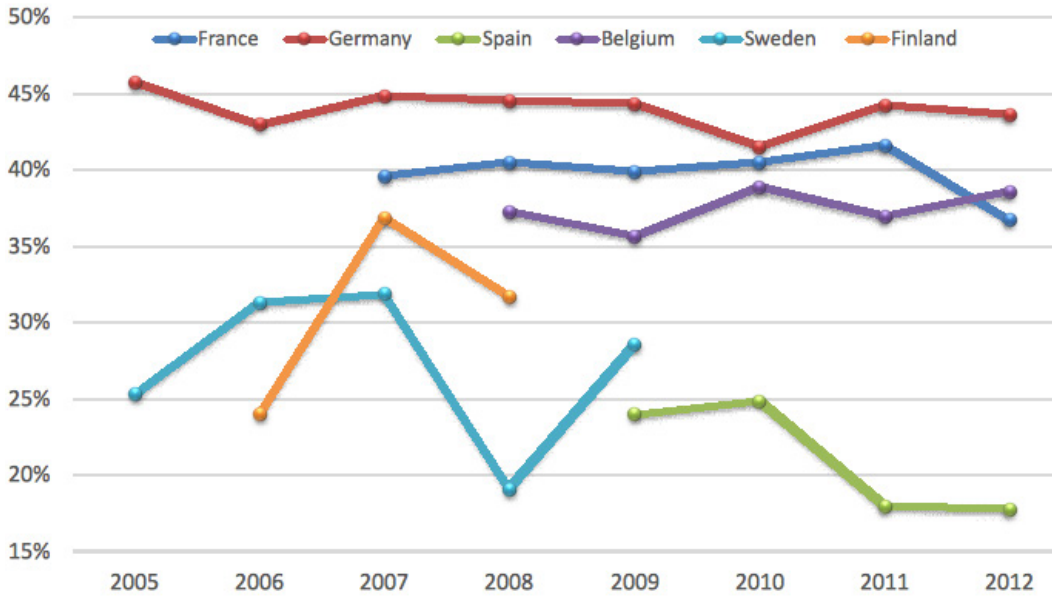
From a reputational and business perspective, being involved in a fatal or serious collision can have a significant impact on organisations and their leaders. It should go without saying that the impact on the person driving the vehicle at the time, and their family, can be catastrophic.

Improvements in WRRS will impact road safety as a whole in Europe. 28,000 lives were lost on European Roads in 2012[3], of those a large percentage were related to driving for work or commuting.

[1] Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises.
[2] SafetyNet 2009, Work-related road safety.
[3] ETSC, 2013, 7th Annual Road Safety Performance Index Report, ''Back on track to reach the EU 2020 Road Safety Target?".

Data from the UK show that business travel makes up about 30% of all travel, rising to over 50% if commuting is included[4]. UK Department for Transport travel survey data show that people who drive for work are up to 40% more likely than other drivers to be involved in a collision, accounting for up to one in three road collisions in the UK[5]. These type of collisions also account for 39% of work-related deaths in the European Union[6], and they are the world's leading non-medical cause of death and serious injury.[7]

Fig. 1: Deaths due to commuting as a percentage of all work-related deaths.



As the chart above shows[8], commuting accounts for a little over 20% of work related deaths in Spain, and reaches 45% in Germany. A limitation that hinders useful comparisons is that data for commuting (collection and definition) varies between countries. However, the evolution of trends within countries is more robust and commuting deaths (while decreasing overall) still account for a large share of total deaths at the workplace[9]. In France data from Eurogip[10] reveals that 47% of work related deaths occurred on the road, which highlights the increased risk employees face while using the road for work. Also, the table below shows that between 2008 and 2012, despite a trend of reduced incidents resulting in days off, there was no clear trend of deaths reduction. Furthermore, in France the total number of compensated days off due to road related injuries over the 2008-2012 amounted to an average of 5,309,000 days off (or 14,550 years) per year.

[4] Murray, W., 2011, "The Work-Related road safety business case: Societal, business, legal and cost factors".
[5] Department for Transport, 2013, Reported Road Casualties Great Britain 2012.
[6] European Commission, 2005, "Causes and circumstances of accidents at work in the EU".
[7] Murray, W., et al, 2009, "Promoting Global Initiatives for Occupational Road Safety: Review of occupational road safety worldwide".
[8] Annex 3 shows in more detail the data aggregated and the sources.
[9] These are deaths while commuting by all means of transport (usually using the road but not in all cases).
[10] Eurogip, 2013, Statistical review of occupational injuries France.

Fig. 2: Share of incidents resulting in days off and deaths, which occurred on the road in France.

	Total Incidents which resulted in days off	% of which on the Road	Total Incidents which resulted in fatalities	Total Incidents which resulted in fatalities
2008	703,976	11.2%	956	48.6%
2009	651,453	11.9%	894	44.5%
2010	658,847	11.8%	888	45.5%
2011	669,914	11.5%	945	49.3%
2012	640,891	11.6%	881	43.8%

What this means is that, for employers in organisations of all types, using the road for work, or to get to work, is probably the most risky activity to which they are exposing their employees. These are risks that should be understood and managed accordingly. WRRS can also have significant legal, business and financial implications for organisations. Assuming that the organisation does have people who travel to or for work, reaching minimum legal compliance standards is a key reason for focusing on WRRS. This means that WRRS is an important issue for OHS professionals, despite the fact that it is often perceived to be outside their area of influence[11].

1.2 Does my organisation need to manage road safety?

The first question an employer needs to ask is: does my organisation need to manage road safety? The figure below sets out the key questions to answer and are relevant to all organisations, large and small.

- Do we operate vehicles for work?
- Do our employees drive for work purposes?
- Do employees or others drive on our premises?
- Do we provide employees with personal vehicles?
- Do we operate mopeds, motorcycles or bicycles?
- Do we employ/contract transport services?

If the answer is yes to any of the above, executive management are responsible for insuring that appropriate systems and controls are in place and that they are operating effectively.

RECOMMENDATIONS TO EMPLOYERS

- Undertake a preliminary assessment to see why and how the organisation should manage WRRS
- Evaluate the types and amount of exposure the organisation has, including:
  - How many truck drivers or transport contractors carrying products?
  - How many van drivers?
  - How many company car drivers, for work and/or commuting?
  - How many people driving their own vehicle to work?
  - How many motorcyclists and cyclists?

[11] The framework Directive EC89/391 does apply to organisations requiring their employees to use the road.

1.3 Saving money and protecting your organisation - outlining the business case

The business case for road safety is centred on the prevention of harm to persons and the protection of property and the environment. It involves managing road safety in a proactive way for financial, moral and legal reasons with the aim of overseeing drivers, journeys and vehicles.

Any WRRRM scheme should start by looking at the business case to influence a sustainable reduction in the numbers of people injured, traffic offences committed and assets damaged. It can also give business owners and employers confidence that unexpected events are less likely to happen.

There are convincing economic arguments for preparing and implementing a WRRRM programme. Historically, it has been common for organisations to only focus attention on fleet safety as a reactive response to being involved in a high cost collision or death. This report strongly advocates taking a more proactive approach to work-related road safety as this will bring benefits in other areas such as quality, customer service, efficiency and environmental programmes and 'getting things right first time'[12].

For example there are links between road safety and asset and fuel use, through better journey planning and scheduling supported by defensive driving techniques. This approach may lead to better fuel efficiency[13] as well as less downtime due to improved work allocation and scheduling[14]. Other related positive effects are likely to be: reduced wear and tear of vehicles[15] and, consequently, higher residual values. Furthermore, an element often overlooked is that, in case of a collision that results in lost orders, the reputation of an employer may be affected negatively beyond that one day or week of lost business. Such benefits linked to efficiency are relevant to organisations of all types and sizes.

RECOMMENDATIONS TO EMPLOYERS

- Consider the benefits of a proactive approach to road risk and fleet management compared to a reactive one;
- Look at road safety as a conduit for other improvements in the business;
- Evaluate the potential of addressing road safety as a means to improve overall wellbeing of the staff;
- Assess the potential return on investment for your business (e.g. reduced downtime, administrative costs, maintenance, repairs and fuel use etc.).

1.4 Legal compliance

Duty of care, occupational health and safety (OSH) and road safety compliance are legal necessities in all EU Member States.

The European Framework Directive 89/391/EEC on the health and safety of workers[16] requires every employer in Europe to undertake a risk assessment according to the principles of prevention. This should include employees travelling for work. Some Member States have supplementary legislation detailing employers' obligations to eliminate risks related to driving for work. Some have also developed specific guidance on applying the Framework Directive to WRRS.

[12] Murray, W. CARRS-Q, 2002, Evaluating and improving Fleet safety in Australia.
[13] See PRAISE Thematic Report 8 on Speed including the section on Eco driving.
[14] See PRAISE Thematic Report 8 on Speed and also PRAISE Thematic Report 7 on Fatigue, Section on Journey Planning. See section 4.7
[15] See section of this report on vehicle procurement and maintenance.
[16] Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work.

In the UK, Health and Safety at Work legislation includes the requirement of ensuring health and safety of all employees while at work and not putting others at risk through work-related driving activities[17]. In 2014 the UK Department for Transport and Health and Safety Executive issued a guidance document on 'Driving at work: Managing work-related road safety'[18]. This document is an updated version of the 2003 guidance which was a recognised minimum benchmark standard in the field. The guidance clarifies that the vehicle is classed as part of the workplace under health and safety regulations, and that organisations need to have risk assessments in place for drivers, vehicles and the journeys they undertake.

The Swedish Work Environment Authority has provided a guidance document[19] for employers on occupational road safety including the relevance of the EC Directive 89/391 on health and safety. It also includes advice on how to develop a road safety policy covering risk assessment. These national guidelines are framed by Directive 89/391, and acknowledge that the vehicle is part of the workplace. Steps for risk assessment as well as definitions of driving for work and commuting are clearly set out – along with guidance for how to reduce collisions at work. On 1 February 2009 Sweden introduced compulsory rules for governmental authorities concerning environmental and traffic safety requirements when purchasing a vehicle[20].

As well as OSH requirements, transport regulations are also important. For example, in all Member States, heavy vehicles are extensively regulated through drivers' working hour limits, certificates of professional competence (CPC) and tachographs. As a minimum standard, organisations have a duty of care to ensure that their employees understand these regulations and aim to comply[21].

Being some of the biggest purchasers and operators of vehicles, government agencies and organisations should follow this guidance to ensure leadership by example and best use of public money.

RECOMMENDATIONS TO EMPLOYERS

- Understand that the vehicle is part of the workplace under OSH law – which means that OSH professionals in the organisation should be engaged in road safety;
- Use Directive 89/391 as an overarching minimum legal framework to review the road safety risks faced by the organisation;
- Review country specific guidance documents to understand and review compliance against local requirements.

[17] The Corporate Manslaughter and Corporate Homicide Act Newer legislation adopted in 2007 in the UK introduces an important new option for certain very serious senior management failures which result in death.
[18] Health and Safety Executive, 2014, Driving at work: Managing work-related road safety.
[19] Swedish Work Environment Authority, Road safety – a work-environment issue.
[20] See PRAISE Thematic Report 9 on Work Related Road Safety Management Programmes.
[21] See also - Pratt, S., "The Role of Institutional Structures, Interest Groups, and Framing in Explaining Occupational Road Safety Policy in the European Union and Member States: An Application of the Advocacy Coalition Framework and Multi-level Governance", West Virginia University, 2011.

PART II

THE BUSINESS CASE FOR WORK-RELATED ROAD RISK MANAGEMENT

2.1 Financial benefits

Reducing costs

Managing road safety provides an opportunity to reduce costs in several ways:

- Reduced running costs such as fuel consumption and vehicle maintenance through better driving standards;
- 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 time lost 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[22].

The first step in quantifying collision losses for organisations is looking at how much a crash costs the employer. This means writing down the approximate repair costs of the last vehicle crash (if occured) or looking at the annual repair bill[23]. Other associated costs covered by employers are health benefits (medical or disability insurance, sick leave, life insurance and medical compensations) or wage premiums for risky activities (if applicable). Many collisions involve third parties, therefore there are also third party costs and potential recoveries that should be considered, which can also have financial implications on a business and can stretch well beyond reported costs. These involve third party vehicles and personal damages, property damage, personal injury compensation, inconvenience, legal fees or fines. Other types of cost could be redelivery, no/late delivery penalties, customer service intervention, missed sales, damaged/lost stock, own property damage, investigation time, management and administration time and, last but not least, image, reputation and public relations considerations. Two of the best documents on safety costs are by the UK Health and Safety Executive[24] and the National Highway Traffic Safety Administration[25] in the USA. Several cost calculators are also available[26].

[22] National Highway Traffic Safety Administration, ''What do traffic crashes cost?''.
[23] Ibid.
[24] HSE (1993) The costs of accidents at work, Health and Safety Executive Publications, Sheffield.
[25] Ibid.
[26] Including the one at www.zurichfleetintelligence.com.

Organisations are encouraged to focus some attention on understanding and quantifying the hidden costs of collisions, which can help support the financial arguments for working towards a 'collision free culture'. Usually this involves:

- Fully understanding the motoring risks faced by the organisation;
- Management engagement to champion road safety issues;
- A proactive risk management strategy rather than acting only after serious events occur;
- Detailed collision investigations and analysis;
- Improved journey, vehicle, management, driver, road and site risk assessments framed by Directive 89/391 OSH led approach using road safety management programmes such as the Haddon Matrix, the ISO39001 standard or similar[27];
- Detailed analysis of safety and operational costs.

Zero-cost initiatives

Many effective road safety management initiatives do not necessarily imply expenditure on behalf of the employer. And this can become the first step when looking at WRRRM. Zero-cost initiatives can be an effective way to manage risk. Together with selecting interventions with a readily identifiable return on investment, this represents a viable option for SMEs.

Risk financing means looking at funding from:

- Detailed internal business case presented to higher management;
- Asking an insurer, leasing company or vehicle supplier to support risk management programmes;
- Focusing attention on uninsured loss recoveries and using the money's clawed back from ''at fault'' third parties to invest in risk programmes[28].

The best way to reduce insurance premiums is to have fewer collisions on an ongoing basis, and to demonstrate to the insurer that both collision frequency and costs are dropping year-on-year. However, it is important not to focus solely on the premium: risk management will also benefit the bottom line through savings on all the costs, direct and hidden, associated with a collision[29].

RECOMMENDATIONS TO EMPLOYERS

- Engage with insurers to look at what's available and suitable for your organisation to introduce risk financing.

Understanding costs

Costs may be recoverable via insurance or from at-fault third parties, but this will depend on individual circumstances and on the seriousness of the event. When evaluating potential costs, these can be split into two types: vehicle costs and driver costs listed in the below table[30 31]. It is also important to note that the full costs of a collision are sometimes hidden. This is also known as the "iceberg effect": while the obvious costs such as repairs are easy to see, the hidden costs such as absenteeism, customer service intervention, downtime, loss of production, damaged reputation, loss of clients and administrative burden are often forgotten.

---

[27] See Section 3 for more details.
[28] Murray,W., 2011, "The Work-Related road safety business case: Societal, business, legal and cost factors".
[29] Brake Factsheet, 2013, "Saving Money Through Fleet Risk Management".
[30] National Highway Traffic Safety Administration, ''What do traffic crashes cost?''.
[31] Murray W and Dubens E, Creating a Crash Free Culture, 2001 and Murray, W. Newnam, S., Watson, B., Davey, J .and Schonfeld, C., 2002, "Evaluating and improving fleet safety in Australia".

Fig. 3: Potential costs divided by vehicle and driver

Vehicle	Driver
Recovery and storage	Loss of expertise
Repairs	Lost productivity due to injury or absence
Downtime & repacement	Replacement driver – overtime, temp.
Reduced resale value	Medical and welfare
Leased vehicle life	Compensation
Increased insurance excess and premiums	Counselling
	Reassessment/training

Employers should consider reducing the hidden costs of collisions by working towards a 'collision free culture'. Some practical ways to achieve this are through:

- Detailed collision investigations and analysis;
- Looking into the offenses of drivers - allowing identification of drivers with high risk profile;
- Championing safety issues through management.

Once all costs are understood and quantified, they can be used to identify and focus on the high cost areas and issues, and to set standards and targets. Cost data is also helpful for targeting effort. Using the example in figure 4, which shows the claims data of a typical mixed car and van fleet, slow-speed collisions (such as hitting a parked car) may appear to be the most important claim type, accounting for a higher percentage of claims. However, collisions at speed (such as rear-end shunts) account for a much higher proportion of costs, despite occurring less frequently[32].

This approach allows organisations to develop a long term sustained driver safety program, which can include, for example, driver coaching targeted at both defensive driving and slow speed manoeuvring, on the basis of risk. Such cost and claims analysis is a key element of successful driver safety programs.

Fig. 4: Claim types split into how often they occur and how much of the total costs they represent.

Claim type	% of claims	% of costs
Third party (unknown) hit client while parked	14.6	11.6
Hit fixed/temporary object	12.0	11.9
Break-in/theft	10.3	5.4
Vehicle returned damaged by user	5.8	4.6
Third party hit client in rear	4.2	5.7
Client hit third party in rear (rear-end shunt)	3.6	14.4
Third party (known) hit client while parked	3.4	3.7
Client reversed into third party	2.9	4.0
Client hit parked /stationary third party vehicle	2.5	3.9
Pulling out: third party into path of client	2.0	4.1
Pulling out: client into path of third party	1.1	4.5
Glass	20.8	3.2
Other (20+ categories)	16.8	23.0

[32] Brake Factsheet, 2013, Saving Money Through Fleet Risk Management

Developing the cost models further, from a business perspective, cost analysis research shows that cost savings made through preventive safety countermeasures translate automatically into the profit margin, detailed in the table below. For example, if return on sales (ROS) is 5%, saving £50,000 on safety costs is financially equivalent to generating £1,000,000 in new turnover[33].

Fig. 5: Correlation of collision costs and additional sales required also taking into account ROS

Collision costs (£$€)	Additional sales required if ROS is 1% (£$€)	Additional sales required if ROS is 5% (£$€)	Additional sales required if ROS is 10% (£$€)
50.000	5.000.000	1.000.000	500.000
80.000	8.000.000	1.600.000	800.000
100.000	10.000.000	2.000.000	1.000.000
130.000	13.000.000	2.600.000	1.300.000

Example – Henkel

Henkel, a consumer goods manufacturer, has two production centres and four distribution centres in the Iberian Peninsula, with around 1,100 employees. With each percentage point that Henkel reduces its absence from work, the company has estimated annual savings of 600,000 Euros. Furthermore, the savings derived from the specific reduction in commuting accidents between 2012 and 2013 are estimated to be around 80,000 Euros. The costs for investing in a Mobility Plan for employees are minimal. The short driving courses offered to employees are having a net cost for the company of 6,000 Euros per year (the courses also benefitted from public subsidies) and will run for 3 years. Leaflets and gifts for employees (such as pedometers) accounted for 4,000 Euros. Benefit-cost ratio (80,000 Euros in annual savings against 10,000 costs) in this case could be as high as 8:1. The company also noticed a visible change in the safety culture, together with the commitment to pursue the zero-accident target, and better awareness of road safety.

RECOMMENDATIONS TO EMPLOYERS

- Understand and evaluate potential costs implied by injuries resulting from work-related road collisions (involving employees as drivers, passengers or pedestrians);
- Prioritise safety as well as sales, understanding that safe organisations are profitable, and profitable organisations are safe;
- Consider that quantified costs can be used to develop a business case and set standards and targets as part of the evaluation process of safety and risk programs. Collision and claims data is particularly useful for such analysis;
- Convince management of the need for proactive collision reduction;
- Analyse fines as a way of detecting the type of risk present in the organisation.

[33] Ibid.

2.2 Administrative benefits

In the case of a collision, there are many administrative duties that can weigh on an employer such as filling out forms and claims, dealing with insurance companies and allocating time to put the business back on track[34]. This can be especially cumbersome for smaller organisations, which can be put out of business as a consequence of a serious collision. This business impact is one of the key reasons why SMEs, as well as larger organisations, should manage road risk proactively. Reducing injuries of any kind reduces workers' compensation claim expenses, reduces or eliminates health and safety fines, reduces lost time from work and improves profitability.

RECOMMENDATIONS TO EMPLOYERS

- Allocate resources and engage relevant stakeholder (including transport, fleet, OSH, HR and operations) to manage road safety proactively and minimise the repercussions of potential collisions.

2.3 Non-financial benefits

From a managerial perspective, and aside from reduced business costs, there is also the achievement of creating a safer workplace and the fulfilment that comes from making great strides in worker safety. Working safe simply is good business[35]. Having a WRRRM programme can also boost staff morale and reduce turnover of staff. The PRAISE Thematic Report 3 on Fitness to Drive[36] explains the benefits, financial and otherwise, of 'Workplace Health Promotion' (WHP). For example, research shows investment in WHP yields a return on investment of one to 2.5 – 4.8 in reduced absenteeism costs.[37] Other non-financial benefits can come from Corporate Social Responsibility (CSR) programmes that address road safety. This is presented in more detail in section 2.6.

RECOMMENDATIONS TO EMPLOYERS

- Understand and familiarise with the common health issues that affect professional drivers and those who drive for work;
- Implement a 'Driver Health Programme';
- Understand the benefits of having a healthy workforce and promote healthy lifestyles through internal communication;
- Consider the financial, business and reputation gains brought about by CSR strategies.

[34] Eurogip, 2013, Statistical review of occupational injuries - France.
[35] Ibid.
[36] ETSC, 2012 PRAISE Thematic Report Fitness to Drive.
[37] Ibid.

Example: Ninatrans NV

This SME, a logistics business, has invested in road safety, particularly in training and coaching of its drivers. The management offers drivers regular training on safety issues including preventive driving, traffic rules and cardiopulmonary resuscitation and also trains coaches among the drivers to support new employees in learning about safety behaviour. This last measure is credited with creating a great sense of ownership and awareness among the drivers. These measures brought savings in insurance rates (-10%) and operability percentage of vehicles (by avoiding collisions) of 0.4%. Other savings came from processing and administration costs of accidents but also commercially, by improving delivery key performance indicators (KPIs). Driver health was also tackled by collaborating with a dietician and stimulating a healthy lifestyle among the drivers. By investing in diet programs and better health for drivers the company estimates a saving in staff costs of 0.5%, translating into a substantial nominative amount.

2.4 Competitive advantage

In an economic climate where organisations are looking to stand out from the rest, approaching road safety in a proactive way can keep organisations ahead of the competition and in line with regulations and legal requirements. This can give employers a level of competitive advantage, compared to more 'reactive' market competitors.[38]

If SMEs can demonstrate that they are managing road risk, they may also benefit their contract tendering and business development processes. This is especially relevant for organisations bidding for sub-contracts where road safety is one of the factors in the tendering process. When road safety procedures are included in other management areas (such as quality certification and marketing promotions), a commercial benefit can be attained in this way.[39]

Incentives to include safety as criteria for contracts should also be included in public procurement. Liability responsibility for WRRS and appropriate risk management and preventative measures must be extended throughout the supply chain[40]. Transport services can be subcontracted but responsibility for this cannot be outsourced. This principle is already included in legislation governing driving and resting hours. It states that consignors, principal contractors, sub-contractors and driver employment agencies must ensure that transport time schedules comply with the provisions on drivers' hours.

Sweden has set up a system to promote safety and sustainability in transport contracting[41], as has Transport for London[42]. Other EU Member States should follow suit. Other organisations can gain many benefits from adopting such an approach.

[38] ETSC, 2012, PRAISE Thematic Report 9 on Work Related Road Safety Management.
[39] European Agency for Safety and Health at Work, 2001, Factsheet on Preventing Road Accidents involving Heavy Goods Vehicles.
[40] This is covered in PRAISE Thematic Report Number 7.
[41] This is covered in more detail in our PRAISE Thematic Report 8 on Speed Management.
[42] http://www.fors-online.org.uk/resource.php?name=Improving%20road%20safety%20through%20procurement.

Example: Thys Transport

Tanktransport Thys is specialised in the transport of liquid foodstuffs by road tankers. The company invested in alcohol-interlocks in all their trucks, so the management is sure that every time a driver starts their engine, they are 100% fit to drive. The goal is not to put a strain on the driver but to make him/her aware of their responsibilities concerning drinking and driving. The devices are set to a Blood Alcohol Concentration of 0.2%. In the 10 months since fitting trucks with alcohol-interlocks there have been little incidents, usually after the weekend and in the 0.2% to 0.5% range. The management noted that the number of incidents is decreasing because the drivers are more aware of the problem and they act proactively. Although calculating the financial benefit of this investment is not straightforward, the alcohol-interlocks act more as a reassurance for both management and the drivers that they are always compliant with the legal requirements for drink driving. The fleet is also equipped with safety systems such as adaptive cruise control, automatic braking, lane change support, lane guard system and driver alert system. Tanktransport Thys is convinced that the gains for the long term will be significant. The company believes that if one accident or one injured person can be avoided, then this will benefit not only the employees' wellbeing but also the business.

RECOMMENDATIONS TO EMPLOYERS

- Use safety criteria to optimise chances of winning procurement contracts;
- When setting up contracts, include road safety in the procurement criteria.

2.5 Road safety and corporate social responsibility (CSR)

Trust and a good reputation are important assets that attract clients and investors. The reputation of a company is hard to make and easy to lose. One high-profile collision involving a company-owned vehicle bearing a company logo can have a long lasting negative impact on a company's image[43]. At the other end of the scale, being recognised externally for performing well in fleet safety can be an effective marketing tool. The true value of CSR is the social good will that sets a good example, such as creating a safer community. This inspires other organisations, companies and individuals to participate in the construction of social and environmental responsibility.

[43] CSR Film from Asda available from: http://www.virtualriskmanager.net/main/casestudies/asda.php.

CSR can be defined as the belief that an organisation needs to be socially, ethically, and environmentally responsible for its actions[44]. Road safety should be included in this definition as it has a significant impact on society, and for this reason can play a major role in improving – or damaging an organisation's CSR[45]. A work-related road risk management programme can bring about environmental synergies and may motivate organisations to also manage their carbon footprint as carbon emissions are one of the main external costs of transportation. To date[46], road safety is almost never offered as an example of good CSR practice. That is a missed opportunity.

Employers, both large and SMEs, can benefit from integrating CSR in corporate policies in a number of ways. SMEs are more likely to have close and more direct relations with employees, the local community and business partners. This often means that they have a naturally responsible approach to business. For most SMEs, the process by which they meet their social responsibility is likely to remain informal and intuitive. The European Commission has developed a number of resources to help SMEs develop CSR[47]. CSR initiatives can benefit road safety greatly in terms of funding, engaging communities and allowing good practice to be transferred[48] [49].

CSR is also an enabler for organisations to focus attention on road safety in the markets in which they operate. This appears to be particularly the case for large 'close to the road' multi-nationals in the oil, vehicle supply and logistics sectors.[50] A company will benefit from these efforts in a number of ways[51]. Clients and suppliers want to work with companies focused on the health and safety of the stakeholders and citizens.

RECOMMENDATIONS TO EMPLOYERS

- Recognise the benefits of a WRRRM programme for CSR and that it can give a competitive advantage;
- Improve the quality of the work place by adopting internal communication suited for the type of activity of the company;
- Adopt a CSR strategy tailored to the community where the company's activities are conducted and engage with local people to find out more about the needs of the area from a social and economic standpoint.

[44] Berkeley, Brand Protection Glossary – available from http://bcbp.berkeley.edu/brand-protection/brand-protection-resources/brand-protection-glossary.
[45] ETSC, 2012, PRAISE Thematic Report 9 on Work Related Road Safety Management Programmes.
[46] Cohen, E., 2011, "Are CSR managers complicit in 1.3 million deaths a year?".
[47] http://ec.europa.eu/enterprise/policies/sustainable-business/files/csr-sme/tips-tricks-csr-sme-advisors_en.pdf.
[48] Murray, W., et al., 2009, "Promoting Global Initiatives for Occupational Road Safety: Review of Occupational Road Safety Worldwide".
[49] Murray W. and Watson B., "Work-related road safety as a conduit for community road safety", Journal of the Australasian College of Road Safety, May 2010, Vol 21 (5), p65-71.
[50] Murray, W. et al, 2009, op.cit.
[51] M.E. Porter and M.R.Kramer, 2006, "The link between competitive advantages and corporate social responsibility, Harvard Business Review".

PART III

WORK-RELATED ROAD RISK MANAGEMENT MODELS

As outlined in an earlier PRAISE Thematic Report[52], there are different models and management frameworks for managing work-related road risk. This section will introduce two examples: the ISO standard and the Haddon Matrix. Both stress the need to look at the business case in the first phase. For a more detailed overview and presentation of other models, refer to the earlier report[53]. Whatever management model an employer might choose, all stress that WRRRM is a core activity and cannot be seen in isolation from business overall[54].

Such an approach and framework, with vehicles and drivers managed as part of the workplace, is relevant to organisations of all types and sizes, including SMEs with small numbers of people. It can also impact positively on subcontractors and hence enlarge the circle affected. See, for example, the three step model made up of: assessment, implementation of measures, monitor and review[55].

3.1 The ISO international standard 'Road Traffic Safety Management System'

The international ISO standard 39001 for road traffic safety management published in 2012 is a useful framework for reviewing and developing a continual improvement process for road safety work. It comes with requirements and guidance for use[56]. For managers looking to begin the process there are several steps that should be undertaken:

- identify the organisation's role in the road traffic system;
- identify the processes, associated activities and functions of the organisation that can have an impact on road traffic safety; i.e. conduct a thorough risk analysis;
- determine the sequence and interaction of these processes, activities and functions;
- propose mitigation measures.

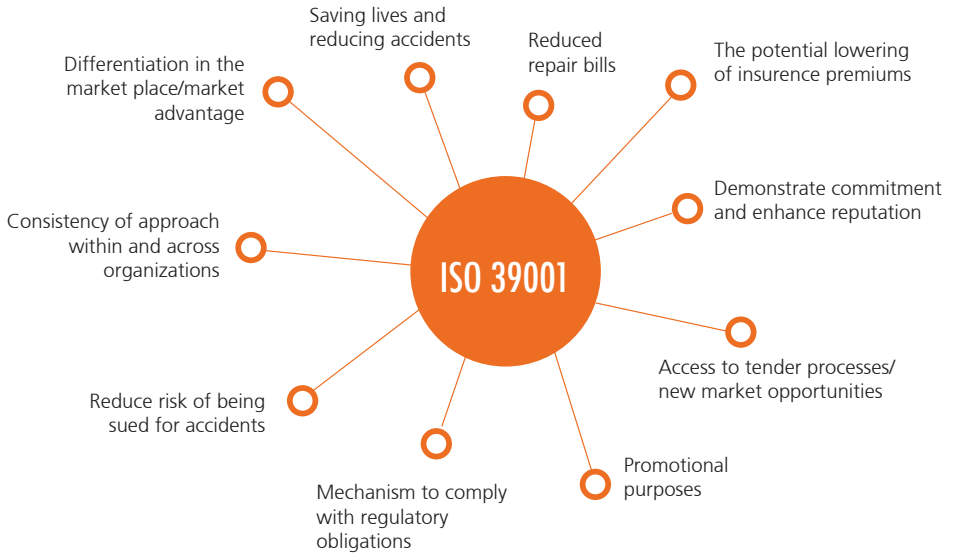
ISO management systems are based on the Plan-Do-Check-Act methodology which is a cyclical stepwise approach and requires strong leadership and commitment from senior management. A management system is defined as "a set of integrated or interacting elements of an organisation to establish policies and objectives and processes to achieve those objectives".

[52] ETSC, 2012, PRAISE Thematic Report 9 on Work Related Road Safety Management Programmes.
[53] Ibid.
[54] Murray, W., 2012, "Work-Related road safety business case: Societal, business, legal and cost factors".
[55] This management model is elaborated in PRAISE Thematic Report 9 on Work-related Road Safety Management Programmes on page 11.
[56] http://www.etsc.eu/documents/ETSC_PRAISE%20Brussels%20May%2018th%202011%20-%20Peter%20Hartzell%2020110511.pdf.

Example: Mark Group

With more than 2,000 employees and a fleet of over 1,000 vehicles, ISO 39001 has provided Mark Group, an energy saving technology installation company, with a platform and structure to deliver and demonstrate a road safety commitment and to mitigate business risk. The management system approach offered by ISO 39001 helped them to reduce waste resource and cost within their fleet department while promoting involvement and ownership. The ISO standard 39001 has shown several benefits, as seen in the figure below. The benefits include continued auditing, which has ensured compliance with the standard and the reduction in 'at fault' collisions from 60% to 40% (despite a continuous increase in the fleet). There has also been a reduction in complaints against drivers and increased engagement from all employees, not only the drivers. Driving is managed thorough a range of measures such as: driver and manager training, a driver handbook and setting Key Performance Indicators (KPIs) to benchmark performance[57].

Fig. 6: Benefits associated with the implementation of the ISO 39001 road safety management scheme



3.2 The Haddon Matrix

This management model is particularly useful as a framework for undertaking an overall review of the organisational safety context. Haddon's original focus on the road, vehicle and driver has been extended and applied to include organisational safety culture, journey management and wider issues in society that affect occupational drivers and their families. This revised version of Haddon's Matrix provides an all-encompassing pre-crash, at-scene and post-crash systems-based, OSH-led framework for fleet safety. As well as classifying improvement interventions to be piloted, implemented and embedded, it can be used as a gap analysis and post incident investigation tool[58].

The starting point lies at the top of the 'management culture' column of the matrix, as follows:

1. Identify, obtain and analyse available data (e.g. vehicle and driver numbers, insurance, licence parking and other traffic fines, vehicle maintenance, illegal tyres and telemetry) on the extent of the problem[59].
2. Use this to help support the business case to relevant senior managers in the organisation. The message can be tailored depending on who is the decision-making audience.

Focus on the other areas shown under Management culture first to ensure appropriate systems are in place.

[57] Mark Group, 2013.
[58] Murray, W., Pratt, S., Hingston, J. & Dubens, E. (2009). Promoting Global Initiatives for Occupational Road Safety: Review of Occupational Road Safety Worldwide.
[59] www.fleetsafetybenchmarking.net.

Fig. 7: HADDON MATRIX

	Management Culture	Journey	Road / Site Environment	People - Drivers & Managers	Vehicle	External / Societal / Community / Brand
Pre-Collision or Pre-Drive	Business case Legal compliance Safety audit, claims analysis & focus group discussions Benchmarking Board level champion Pilot studies & trials Goals, policies & procedures Safety culture / climate Management structure Fleet safety committee Safety leadership by example and commitment Communications program Contractor standards Grey fleet (own vehicle) policy	Travel survey Travel policy Purpose Need to travel Modal choice Journey planning and route selection Route risk assessment Journey scheduling Emergency plan Shifts / working time Fatigue management	Risk assess Observation Guidelines & rules Site layouts & signs Work permits Delivery & collection procedures Road improvement Black-spot mapping and hazard assessments Engage local and national agencies	Select Recruit Contract Induct Licensed & qualified Handbook Risk assess Train Work instructions Engage & encourage Equip e.g. high viz Communicate Driving pledge/ Code of Conduct/Risk Foundation Health & wellbeing Monitor Correct	Risk assessment Selection Specification Active and passive safety features Standards Servicing Maintenance Checking Use policy and legal compliance e.g. loading Mobile communication and navigation policy Telematics to monitor Wear and tear policy Grey fleet standards	Regulator / policy engagement Insurer engagement CSR External benchmarking External communications Family members program Community involvement Engaging other road users Road safety weeks / days Safety / ECO groups European Road Safety Charter Road safety conference presentations Media / outreach / PR Safety & environmental achievement awards
At Scene	Emergency support to driver	Engage local investigators	Manage scene	Known process and 'crash pack / bumpcard' to manage scene	Reactive safety features Crashworthy Telemetry data capture	Escalation process
Post-Collision	Policy and process to report, record & investigate incidents Change management process Ongoing claims data analysis Data warehousing & linkages Evaluation, KPI benchmarking & program development	Debrief and review Review journey elements of collision data Ongoing journey management review	Investigate and improve Review site / road elements of collision data	Reporting and investigation process Driver debrief and corrective action Review people elements of collision data Counselling, trauma management & support Reassess / train	Strong open able doors Investigate telemetry data Vehicle inspection & repair Review vehicle elements of collision data Review vehicle selection & use	Manage reputation and community learning process

Example: British Telecom

Many organisations have utilised the Haddon Matrix to review, improve and manage their WRRS. One example is BT, the UK telecoms company. BT[60] has cut its monthly injury and asset damage collision rate from 60 per thousand vehicles in 2001 to less than 30 per thousand vehicles in 2014, and reduced its costs by approximately £12 million per annum during the same period. This was achieved by applying a 14-point OSH risk assessment-led approach, focusing on its management culture, journeys, people, vehicles and role in society. It has also focused heavily on research. Following a detailed collision analysis undertaken in 2003, BT used the Haddon Matrix to inform, structure and target its long-term work-related road safety program, which has led to significant reductions in claims, collisions and costs over the intervening time period.

RECOMMENDATIONS TO EMPLOYERS

- Choose and implement a WRRRM model.
- Identify clear roles and responsibilities for implementing the WRRRM program within the organisation.

[60] Wallington D, Murray W, Darby P, Raeside R. and Ison S. Work Related Road Safety: Case Study of British Telecommunications (BT), Transport Policy 32 (2014) 194-202.

PART IV

HOW RISK MANAGEMENT HELPS THE BUSINESS CASE

4.1 Managing management

Commitment of top management is crucial for the successful introduction and implementation of a WRRRM programme by an employer. The level of their involvement depends on the size of the organisation. The CEO must be convinced of the added value and should be involved in the process. This shows that the issue is being taken seriously and can help smooth away resistance[61]. "Lead by example[62]" and "Lead from the Top[63]" are catch phrases of many employers who have introduced successful WRRRM programmes. All of the management models for WRRRM stress that this is a core activity and cannot be seen in isolation from business overall[64]. Line managers and supervisors are equally important for WRRRM as most of the time they are the ones directly responsible for the effectiveness of an initiative.

RECOMMENDATIONS TO EMPLOYERS

- Undertake a preliminary assessment to fully understand the level and costs of work-related road risk in the organisation;
- Demonstrate leadership by taking on the responsibility of WRRRM programme at CEO level;
- Assign clear roles for implementing the WRRRM programme within the organisation.

4.2 The importance of risk assessment

As previously mentioned, there are a variety of management models for WRRRM[65] which state the importance of clearly assigning the roles and responsibilities of all staff involved. All of the management models include the need to undertake a risk assessment. It is also a requirement of EU legislation[66]. Specific to transport, and also of relevance to SME employers, is the risk assessment of the three elements of road user (driver, pedestrian, cyclist, motorcyclist), the journey and the vehicle[67].

Risk assessment can be done at the organisation level and the individual level. Organisational level risk assessment templates are provided in the Irish and UK WRRS guidance documents referred to above[68]. Most good insurers will have something similar, either self-administered or undertaken with the support of a qualified risk engineer.

[61] Price, A., et al. Building work-related road safety into organisational DNA: Case study of Vauxhall in "Draft paper, currently in review process for Journal of the Australasian College of Road Safety".
[62] http://etsc.eu/documents/FACTSHEET7.pdf.
[63] http://etsc.eu/documents/PRAISE_Fact_Sheet_8_KTL.pdf.
[64] Murray, W., 2011, "The Work-Related road safety business case: Societal, business, legal and cost factors".
[65] Set out in PRAISE Thematic Report 9 on Work Related Management Programmes 2012.
[66] Ibid.
[67] Ibid.
[68] www.fleetsafeybenchmarking.net also provides a quick organisational level tool.

At the individual driver, vehicle or journey level Murray & Dubens[69] and Murray[70] suggested a six-step approach to implement an assessment, monitoring and improvement programme which has been adapted to reflect the legal requirements of Directive 89/391/EEC[71] and is detailed in our PRAISE Thematic Report on Work-Related Road Safety Management Programmes.

RECOMMENDATIONS TO EMPLOYERS

- Undertake an organisational and driver level risk assessment that covers the road user, journey, vehicle and management systems in compliance with the European Framework Directive 89/391/EEC;
- Provide regular training programs;
- Introduce a probation period for young drivers.

4.3 Reducing road risk – avoiding journeys and choosing the safest modes

Journeys should be optimised to minimise the need to travel, thus reducing risk, preventing harm and leading to financial savings as set out in the Haddon Matrix (fig7). Journeys should also be shared or consolidated as far as possible and public transport should be used wherever practical and appropriate (i.e. attending business meetings). Under journey management and planning, the following are key questions that should form part of the risk assessment process:

- Is the trip necessary?
- If yes: what can be done to reduce the exposure to risk while driving? For example, setting limits on time spent on the road (days of the week and times of the day that are known to be less risky). Risk can be reduced through a reduction in the amount of road use by employees[72].
- Is it possible to use other means of transport? If a risky mode for commuting and or travelling is chosen, efforts should be made to make it safe[73].

Steps taken to reduce exposure to the riskier road modes such as driving have the best chance of reducing road injuries. Offering bus or rail travel is a good alternative when travel cannot be avoided[74]. Research[75] has identified and tested a number of fuel saving interventions ranging from fuel management, to eco-safe driving, to better vehicle selection and journey management. Reducing vehicle use was identified as a key issue. Vehicle optimisation and journey management are good for road safety and business.

[69] Dubens E and Murray W. Creating a crash-free culture, 2000, 4Di, Brighouse, UK.
[70] Murray, W. 2004, "The driver training debate. Roadwise: Journal of the Australasian College of Road Safety", Vol 14 (4), May 2004, pp. 3-5.
[71] Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work.
[72] Grayson, G. B. and Helman, S., 2011, "Work related road safety: a systematic review of the literature on the effectiveness of interventions. Research report 11.3. Institute of Occupational Safety and Health.
[73] See ETSC PRAISE report ''Safer Commuting to work'' 2010.
[74] Ibid.
[75] Coyle, M., 2002, "An evaluation of the effectiveness of fuel management in large goods vehicle operations". PhD, University of Huddersfield, See http://imise.co.uk.

Example - Royal Dutch Shell

Operating globally in the energy and petrochemical sector, Royal Dutch Shell employs around 90,000 employees and over 250,000 contractors in more than 90 countries. Employees and contractors drive around 1.1 billion kilometres a year on company business. Shell improves the safety of their drivers by enforcing their global road safety standards and through awareness programmes and training. The company applies a hierarchy of controls to reduce road risks: firstly eliminating the journey; secondly changing to a lower risk transport mode; thirdly applying driver, vehicle and journey management. When road transport is the only feasible solution, a Journey Management process is used. After all risks are assessed, a Journey Management Plan is implemented. Some of the specific controls in place are:

- Reduced amount of road travel needed by providing accommodation for personnel on the project site;
- Transporting workers by bus and using marine vessels and trains to transport equipment.

4.4 Journey planning

The planning and management of journeys plays a central part in influencing work-related road risk and preventative measures in this area should be developed as part of an organisations' road safety programme.

Journey planning also brings about efficiency savings which support the business case. 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 is critical.[76] The person responsible for journey planning or scheduling (the transport operator) has a duty 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 fuel-saving issues.[77] Organisations should look at implementing a new organisation of work such as, for example, integrating safety considerations into defining deadlines for delivery[78]. Journey planning is also relevant for managing fatigue (see section 4.6). It is vital, for example, to calculate proper rest time and night stays[79].

[76] The Royal Society for the Prevention of Accidents, 2011, "Driving for work: Safer speeds".
[77] Schade, W and Rothengatter, W., 2011, "Economic Aspects of Sustainable Mobility, European Parliament Policy Department".
[78] European Commission, 2005, "Causes and Circumstances of Accidents at Work in the EU".
[79] ETSC, 2010, PRAISE Thematic Report 3 on Fitness to Drive.

Example: Mervielde Transport

Mervielde Transport is an SME specialised in the transport of liquids and holds an ISO 9001 certificate and The Safety and Quality Assessment System attestation. The company invests in a range of measures such as mirror adjustment facilities, preventive maintenance of truck equipment and certified technical inspection facilities. All HGVs are equipped with lane departure warning systems and emergency braking systems. The company also communicates route planning to their clients, the shippers, and encourages them to respect cargo safety and driving and rest times. The health of drivers is also important. There is regular behaviour-based safety training, fatigue training, communication via internal memos, time slots and graphical route planning that respects driving and rest times. Routes are assigned in line with the driver's place of residence, which is correlated to loading and unloading locations (ca. 25,000 km/year). The company is also committed to reducing CO2 emissions by 20% by 2015 through eco driving. The measures achieved a fuel consumption reduction of 5% (between 2010 and 2013), a reduction of 27% for the number of collisions in error (2012-2013), a CO2 emissions reduction of 9% per km driven (2010-2013). Also there has been a drop in the number of fines of 21%. The level of injuries per hour worked also went down by 30%.

RECOMMENDATIONS TO EMPLOYERS

- Promote hotel stay instead of driving in the evenings;
- Optimise journeys to minimise the need to travel;
- In dealing with clients, avoid making any concessions that might adversely affect road safety, such as changes to driving hours and waiting times;
- Avoid peak hours driving;
- Review scheduling, rostering and delivery route planning arrangements to account for speed and fatigue management.

4.5 Managing speed

Excessive speed has a singularly devastating impact on the health and safety of road users, increasing both the risk of a crash and the severity of crash outcomes.

Two areas of road risk (speed and fatigue) have been chosen to illustrate where risk based cost savings could be gained. There is nearly always a relatively high cost associated with transportation and any savings can have a positive impact on profitability. Speeding is a primary factor in about one third of road deaths and an aggravating factor in all collisions[80]. Employers have a strong role to play in making sure that their employees are driving safely and respecting the speed limit. From an economic perspective, collisions and insurance claims involving vehicles travelling at higher speeds also tend to cause the most asset and human harm.

Driving at speeds which are appropriate to the prevailing conditions can offer cost savings 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. 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 a double benefit[81].

[80] OECD/ECMT, 2006, Speed Management.
[81] The Royal Society for the Prevention of Accidents, 2011, "Driving for Work: Safer Speed".

Example : Eco driver training in Germany in real traffic

The German Road Safety Council (DVR) and the German Social Accident Insurance Association (DGUV) have been running a programme called "Driving safely and saving gas along the way: safe, economical and environmentally friendly driving" since 1995. This is primarily aimed at companies that have their own fleet. It includes "training on the job" with driving in real traffic. The programme demonstrates savings on fuel costs and highlights the benefits of this in terms of distance travelled per tank filled over a year.[82]

RECOMMENDATIONS TO EMPLOYERS

- If speed-limiting devices are fitted, check they are not tampered with;
- Establish schedules that allow drivers enough time to obey speed limits;
- Monitor and control driving hours within recommended safe limits and legal requirements.[83]

4.6 Managing fatigue

Driver fatigue is a significant factor in approximately 20% of commercial road transport collisions[84]. Beyond duty of care and legal obligations, a successful organisation will benefit in a number of ways from managing fatigue within their fleet of drivers, and it makes sound business sense to ensure that employees are fit to drive. The European Commission has calculated that non-compliance with obligations for minimum rest periods can result in driver fatigue and is estimated to produce an increase in the societal cost of collisions of 2.8 Billion Euros a year[85]. Employers of professional drivers have clear requirements as regards to setting out driving time for their employees and complying with the EU legislation under Regulation (EC) 561/2006 covering Driving and Rest Times. This is looked at in more detail in a separate ETSC thematic report on tackling fatigue[86].

RECOMMENDATIONS TO EMPLOYERS

- Proactively address driver stress in the context of a driver health management program;
- Provide information, advice and training in personal sleep and fatigue management;
- Provide a mechanism for the continuous improvement of the roster system if the organisation uses one;

[82] http://www.fahrspartraining.de/.
[83] European Agency for Health and Safety at Work, 2001, Factsheet 18, Preventing Road Accidents involving Heavy Goods Vehicles.
[84] http://www.fahrspartraining.de/.
[84] ETSC, 2001, "The Role of Driver Fatigue in Commercial Road Transport Crashes".
[85] (EEC) No 3821/85 on recording equipment in road transport and amending Regulation (EC) No 561/2006 of the European Parliament and the Council. Cited in the CE Delft, Handbook on estimation of external costs in the transport sector, 2008. On the basis of these estimations the EC conservatively estimated the cost of fatigue of professional drivers in terms of accidents to €2.2 billion. Furthermore, it is estimated (CARE Database) that fatalities involving buses represent 28% of those involving heavy Duty Vehicles (HDV). Under the simplifying assumption that other costs of accidents (injuries, damage to the infrastructure, congestion, etc…) involving buses are following the same relation to the same costs generated by HDV, the total cost of accidents for all commercial vehicles above 3.5 t.
[86] ETSC, 2011, "PRAISE Thematic Report on Tackling Fatigue: EU Social Rules and Heavy Goods Vehicle Drivers".

4.7 Vehicle management

Employers should ensure that vehicles are 'fit for the task', they should be fully insured, serviced and maintained to a high standard. Regardless of ownership, employers could also specify minimum standards of vehicle safety features. Over 50% of new vehicles are initially purchased for commercial purposes[87]. Purchasing safe vehicles is therefore an obvious way for employers to provide a safe working place for their employees.

Vehicle fleets can absorb a lot of capital and, in the current business climate, economics also plays a big role in deciding the size and type of an organisation's fleet. "The company car will have to earn its keep economically in the future more than it had to in the past"[88]. Risk management is linked to strategies to cut overall business mileage. Company or public authority fleets, or departmental pool cars, locally hired against a contract may be used to replace "grey fleet" use and, over time, other fleets. As mentioned above, total business mileage is already under scrutiny and will be cut further by reduced face-face contact replaced by electronic communications[89]. In light of this, a current fleet car provider's role may change to taking on a different role with clients and becoming more of a provider of the total personal business mobility mix[90] offering access to different modes and, for example, organising car sharing.

Vehicles and mobility needs should be a central consideration in any WRRRM programme. This is also the case for SMEs who may have even smaller fleets but nevertheless would also benefit financially from more efficient management of vehicles and maintenance. Vehicle management processes and initiatives should be developed in the context of the outcomes of a risk assessment, as outlined above.

Organisations have a duty to ensure that procedures are put in place for regular inspection and maintenance of all vehicles used for work purposes. It is their responsibility to ensure roadworthiness at all times[91]. A preventative maintenance regime makes good business sense in terms of avoiding higher costs if repairs are not undertaken. As a minimum, maintenance regimes recommended by vehicle manufacturers need to be adhered to and more regular checks by drivers, such as daily or pre-shift walk-around vehicle checks, should also be required.

[87] Polk, 2009, "Copenhagen Economics Company Car Taxation".
[88] Cooke, 2002, "Duty of Care and Best Practice Cars on Business University of Buckingham".
[89] Ibid.
[90] See the Business Mobility Decision Tree PRAISE Thematic Report on Safer Commuting.
[91] European Agency for Safety and Health at Work, Factsheet 56 on Maintenance and Work Related Road Safety.

Example: Thorntons Recycling

Thorntons Recycling is an SME in Ireland employing 400 staff and operating a fleet of over 100 trucks[92]. The main aim of its programme is to achieve zero incidents in 2014 and "to help reduce accidents/incidents in the workplace which are primarily linked to driving for work".

They have integrated safety requirements in the recruitment and induction process. Thorntons has written a Driving for Work Policy which includes Key Performance Indicators, analysis, certification and risk assessment. A driver's handbook has been prepared which is updated every 12 months that covers legislation and what the employer expects of its drivers. A workshop on safe driving for work was held for managers in 2013. This included managers of grey fleet and all who have staff driving for them. Drivers must fill out a maintenance check list before leaving the depot each day. The entire fleet is GPS tracked and upgrading of the fleet with visual aids (mirrors and cameras) is currently underway. Weekly tool box talks are held covering different topics such as planning and break times. There is a whole range of education and training measures including monthly newsletters on legislation and on-road risk assessments.

Outputs so far include a reduction of reported collisions down from 35 in 2011 to 25 in 2012 and 6 in 2013. The reported fuel saving was 8% between 2011 and 2013. Through improved driving there has also been a reduction in maintenance costs of 10% over the past three years. Figures for maintenance went down by ten per cent in 2011-12 from 2,000.000 to 1,800.000 Euros. Fuel savings of around ten percent were also made.

RECOMMENDATIONS TO EMPLOYERS

- Develop policies and procedures for the management of vehicles;
- Include safety criteria when purchasing vehicles, including 5 star EuroNCAP cars and
- Vehicles with built-in safety technologies[93];
- Ensure that processes are put in place for regular inspection and maintenance of all vehicles, including leased and employee owned (grey fleet) vehicles.

[92] Thortons Recycling, 2013, Presentation for Driving For Work.
[93] ETSC, 2009, Guidance on in-vehicle safety technologies, 2009, ''How can in-vehicle safety equipment improve road safety at work?''.

PART V
MONITORING AND EVALUATION

Setting targets is a critical part of WRRRM. Their role is to act as a tool for motivating and monitoring action to reduce death and injury in road traffic collisions. As such, targets need to be clearly distinguished from any road safety vision or philosophy that may be adopted, and clearly related to a strategy, or plan of action[94]. Monitoring allows for the identification of changes over time and is a critical part of the ongoing risk management process, which involves measuring key performance indicators[95].

Deciding what is required in terms of monitoring should be linked directly to the risk assessment process, its outcomes and the measures identified to manage risk. Monitoring is useful not only in identifying achievements but also in recognising when measures are not working or targets are not being met. This can also have resource implications which must then be taken into account.

Fig. 8: Suggested key performance indicators[96]

	Indicators
Employee	Number and types of driving violations Insurance claims per employee Complaints from members of the public Number of days absent due to illness Number of employee hours, shift pattern Number of health, eyesight and wellbeing checks Number of staff risk assessed Number of staff turn-over
Journey	Mode of travel to work Mode, journey type and KM travelled High risk locations on regular routes
Vehicles	Number, type, characteristics of vehicles Number, type and severity of collisions Insurance claims per vehicle Fuel Consumption Number of maintenance checks per vehicle Vehicle faults identified Maintenance costs
Business/ Operating Environment	Budget for (road) safety Staff resources for road safety Number of safety meetings/toolbox talks Number of compliance checks, audits and management reviews
Incidents	Number of near misses by KM travelled measured through reporting Number of incidents by KM travelled Repeated incident location or recognised high-risk site Cost of incidents Involvement of third parties Number of crash free days

[94] ETSC, 2003, "Assessing risk and setting targets in transport safety programmes".
[95] This is covered in more detail under PRAISE Thematic Report on Road Safety Management 2012.
[96] Ibid.

The type of indicators will depend largely on the specific characteristics of the organisation, its resources and ability to collect and analyse data. Employers, especially SMEs, should be encouraged to set SMART (specific, measurable, achievable, relevant and time based) objectives. The table below suggests some basic indicators that could be used. Those with particular relevance to the business case include number, type and severity of collisions, costs of incidents and insurance claims.

To inform progress and the business case, compliance checks need to be supplemented and reinforced by more extensive reviews (or audits) of the overall performance of the road safety management programme.

The ISO 39001 standard defines an audit as a 'systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which the audit criteria are fulfilled.[97] A review or audit can be an internal or an external process. However, either way it should be independent and objective and therefore not led by management or the person(s) responsible for the area being reviewed.

Moreover, in order for the monitoring, compliance checks and audits to be truly effective, it is important that management fully consider the findings of such processes on a regular basis and ensure that resulting recommendations are implemented. Management should carry out a comprehensive review, at least annually[98].

RECOMMENDATIONS TO EMPLOYERS

- Identify quantitative or/and qualitative indicators, based on the outcome of the risk assessment, covering drivers, journeys, vehicles, incidents and operational environment;
- Set up clear procedures and lines of responsibility for carrying out the monitoring/ data collection in each of the areas identified;
- Build monitoring and evaluation into the day-to-day operations of the organisation;
- Set up clear, standardised incident and collision reporting and investigation mechanisms;
- Set up procedures and facilitate audits and management reviews.

[97] ISO 39001.
[98] This is covered in more detail under PRAISE Thematic Report 9 on Work Related Road Safety Management Programmes.
[99] http://www.oiraproject.eu/#mainContent#title www.gurom.de.

Examples: Risk Assessment for Organisational Mobility (GUROM)

The risk assessment tool and danger awareness tool on organisational mobility (GUROM[99]) was developed for employees and organisations by the University of Jena and the German Road Safety Council (DVR). As risk assessment is obligatory by law, this new tool gives a systematic application of carrying this out. The project aims to deliver risk assessment specifically for transport. It has recommended measures to increase the safety of an individual person or an entire organisation. The project looks at the scientific outcome of the effectiveness of the measures to prevent collisions and to provide a safe mobility.

It is based on the principle of TOP: Technology/transport context, Organisation and Person. Those who would like to evaluate their risk fill out a questionnaire about their risk when travelling both for work and on the commute to and from work. This is done on the dedicated and data-protected project website. The questions cover a number of issues related directly and indirectly to safety, like choice of mode, job conditions including mental load, and the personal situation. They then receive an individual response about their level of risk together with recommendations and tips on reducing their risk in transport. Their data will also be compared with other participants so that they can form a better picture about their own level of risk. Organisations can also be evaluated as a whole to create a general profile. The suggested measures are based on interventions validated by the DGUV and the DVR. At present, this includes an inventory of 400 measures. The measures are categorised depending on the target groups and effectiveness for individual risks. This database is being adapted and enlarged constantly.

[99] http://www.oiraproject.eu/#mainContent#title www.gurom.de

PART VI
PEER-TO-PEER EXCHANGE

Although competition is a big incentive, proactive employers taking a dedicated interest in improving their work-related road risk can also benefit from exchanging their experiences with other companies. Public authorities have a role to play when it comes to steering employers to provide adequate information and supporting material. At a national level there are a number of fleet forums that are run with this aim. Other stakeholders also have a role to play: insurers, for example, also organise their own seminars. Below is a list of some of the schemes currently operating around Europe.

FRANCE

The French government-backed Committee for the Prevention of Occupational Road Accidents[100] (Comité Pour la Prévention du Risque Routier Professional) was created in 2006 and is supported by state and regional insurance and workers compensation schemes. It acts as an advisory body for the Ministry of Transport and other government bodies and puts forward proposals on WRRS. These include initiating programs and campaigns, proposing measures to prevent occupational road collisions and disseminating good practice information covering issues such as cargo security, training for drivers and safe vehicles. The Committee underlines that both road safety at work and while commuting should be addressed. The Committee supports and publishes good practice information on many topics and also runs a national level competition. When it comes to fleet management the Committee is especially concerned with vans, and publishes the following recommendations in terms of in-vehicle equipment: Airbags, ABS, ESC, a visual display in the dashboard in case of vehicle overload, and tyres fit for the professional use of vehicles.

BELGIUM

Go for Zero

The Belgian Road Safety Institute (BIVV-ISBR) has set up a forum to encourage employers to manage road risk within the context of its 'Go for Zero' campaign. Companies can sign a commitment to road safety and in that way show their engagement in traffic safety. As of March 2014, 257 organisations and 237 companies had signed the charter.

The organisation also runs the Road Safety @ Work[101] project. The project aims to reduce the number of work-related road casualties in an integrated way. This includes a diagnosis of the traffic risk within the company. The programme looks at the various problem areas linked to road safety and proposals are made to address the issues (both infrastructural and behavioural). Afterwards the measures taken are evaluated and adjusted if necessary.

Trucksafe

The TRUCKSAFE charter is an awareness campaign designed by the Flemish Foundation for Traffic Knowledge (FFT), with the support of the Flemish government and all major national employer federations, driver unions and other representatives of the industry, targeting all individual truck drivers and transport companies or companies that have a fleet of HGVs in Flanders, Belgium.

[100] www.risqueroutierprofessionnel.fr
[101] http://ibsr.be/fr/entreprises/road-safety-at-work

The charter supports the truck drivers' and companies' contribution to safer traffic. Anyone who signs the TRUCKSAFE charter undertakes to commit to at least seven measures of their own choosing. For instance, drivers can ensure that they are sufficiently fit and alert when they are behind the wheel, while employers can ensure feasible driving schedules and proper maintenance of their fleet of trucks.

The FFT checks whether organisations have actually delivered on their commitments. Successful organisations are awarded the TRUCKSAFE label for that year.

IRELAND

WRRS is a priority goal for the Irish Health and Safety Authority and the Road Safety Authority, two state agencies. There has been formal cooperation between the agencies together with the National Police Authority (An Garda Siochana) on work-related road safety to inform and advice employers of their responsibilities for Work-related Road Safety. The Road Safety Authority, the Health and Safety Authority and An Garda Siochana have developed a joint program to influence improvement in WRRS particularly in the areas of driving for work, working on or near the road and load securing[102]. The program includes awareness raising, enforcement, education, promotion, research and data analysis activities. To date, a range of resources have been jointly developed to help employers understand and manage work-related road risk including: Guidelines for Employers on Managing Driving for Work, a Safe Driving for Work Driver Handbook, Driver Health Guidelines, a Driving for Work Risk Assessment Checklist, Driving for Work Case Studies, Daily Vehicle pre-check instructional videos and fact sheets. Since 2010, the agencies have held joint seminars for employers on a region-by-region basis. The agencies are working closely with a range of stakeholder groups representing employers, employees, educators and business sectors such as agriculture, construction and transport to influence the uptake and integration of the WRRS message.

EUROPEAN ROAD SAFETY CHARTER

The Road Safety Charter has over 2,000 signatories including local governments, SMEs and global business. Signatories commit to undertaking concrete actions which they will self-assess in order to increase awareness about the need to reduce road traffic deaths. In return, the European Road Safety Charter offers European recognition to the associations that have signed up, and also makes the road safety actions they wish to carry out more visible on a European level. The road safety charter has great potential to provide a forum to share best practice, promote the business case and inspire and motivate employers to improve road safety both at a European and a national level.

RECOMMENDATIONS TO EU MEMBER STATES

- Set up national level forums to enable employers to access information on the business case of setting up road safety programmes and exchange with peers on the benefits of investing in road safety.
- Develop materials which are also accessible and relevant for small and large organisations.

RECOMMENDATIONS TO EMPLOYERS

- Look to seek support from safe fleet forums and other players such as companies, health and safety organisations, trade unions and the enforcement community.

[102] More information on the programme and published resources can be found at www.vehiclesatwork.ie

ANNEX 1

Checklist Business Case for Managing Work-related Road Safety	Yes/No/NA (Non Applicable)	Action if necessary
Investing in Road Safety		
Preliminary assessment to see whether the organisation needs to manage work-related road safety		
Best suited work-related management model in place		
Costs and hidden costs calculated		
CEO engaged in taking responsibility for WRRRM programme		
Clear roles identified for implementation of the WRRRM programme		
Requirements in place to comply with legislation		
Administrative benefits recognised and calculated		
Non competitive benefits recognised and calculated		
Risk insurance management models		
Savings from insurance claims calculated		
Insurer asked for possible funding and support or an alternative program design that rewards improvements in claims performance		
Risk Assessment		
Risk assessment of road user, journey, vehicle and management systems in place in line with 89/391/EEC		
Journey Management		
Journeys are minimised to avoid the need to travel.		
Schedules in place that allow drivers enough time to obey speed limits and manage fatigue and legal requirements of driving and resting hours.		
Review scheduling, rostering and load route planning arrangements and proactively address driver stress in the context of a health and safety plan.		
Vehicle Management		
Policies and procedures in place for the management of vehicles.		
Safety criteria are included when purchasing vehicles, including 5 star EuroNCAP cars and vehicles using in-vehicle safety technologies.		
Processes are in place for regular inspection and maintenance of all vehicles.		

Checklist Business Case for Managing Work-related Road Safety	Yes/No/NA (Non Applicable)	Action if necessary
Monitoring and Evaluation to Inform the Business Case		
Quantitative or/and qualitative indicators are in place based on the outcome of the risk assessment, covering drivers, journeys, vehicles, incidents and operational environment.		
Clear procedures and lines of responsibility for carrying out the monitoring/data collection in each of the areas are identified.		
Monitoring and evaluation included in the day-to-day operations of the organisation.		
Clear, standardised incident and collision reporting and investigation mechanisms in place.		
Procedures to facilitate audits and management reviews in place.		
Corporate Social Responsibility		
Include the benefits of a work-related road safety programme in the CSR programme.		
Road safety included in the CSR materiality matrix.		
Exchanging Good Practice and Gaining Inspiration		
Support requested from safe fleet forums and others such as their peers, Health and Safety organisations, Trade Unions and the enforcement community.		

ANNEX 2

A list of possible costs:[103]

Vehicle costs	Recoverable/insured
Recovery and storage	Yes/no
Repair of vehicle	Yes/no
Vehicle downtime and replacement vehicle	Yes/no
New vehicle if written off	Yes/no
Reduced resale value	Yes/no
Leased vehicle life costs if written off	Yes/no
Increased insurance excess and premiums	Yes/no
Driver costs	**Recoverable/insured**
Loss of expertise	Yes/no
Personal injury compensation	Yes/no
Lost productivity due to injury absence	Yes/no
Replacement driver - overtime, temporary driver	Yes/no
Medical and welfare	Yes/no
Counselling	Yes/no
Reassessment and training	Yes/no
Third party costs	**Recoverable/insured**
Vehicle damage	Yes/no
Vehicle downtime and loss of earnings	Yes/no
Property damage	Yes/no
Personal injury compensation and rehabilitation	Yes/no
Hospital fees	Yes/no
Inconvenience	Yes/no
Disbursements including expert witnesses, police reports, post-mortem if fatality and GP notes or reports	Yes/no
Legal, court issue setting down and specialist report fees	Yes/no
Fines	Yes/no
Other costs	**Recoverable/insured**
Redelivery	Yes/no
Missed/late delivery penalties	Yes/no
Customer service/good will/missed sales	Yes/no
Damaged/lost stock	Yes/no
Own property damage	Yes/no
Investigation time	Yes/no
Management and administration time	Yes/no
Image/reputation/PR	Yes/no
Increased congestion	Yes/no
Extra tax to cover road safety improvements	Yes/no

[103] Murray, W. (2011) Sustaining Work-Related Road Safety in Hard Times: understanding collision costs.

ANNEX 3

		2005	2006	2007	2008	2009	2010	2011	2012
Belgium	All fatal accidents at work				164	118	134	130	109
	Fatal accidents due to commuting				61	42	52	48	42
	Share fatal accidents due to commuting				37,2%	35,6%	38,8%	36,9%	38,5%
France	All fatal accidents at work			1029	956	894	888	945	881
	Fatal accidents due to commuting			407	387	356	359	393	323
	Share fatal accidents due to commuting			39,6%	40,5%	39,8%	40,4%	41,6%	36,7%
Germany	All fatal accidents at work	1208	1246	1122	1030	818	886	892	886
	Fatal accidents due to commuting	562	535	503	458	362	367	394	386
	Share fatal accidents due to commuting	45,7%	42,9	44,8%	44,5%	44,3%	41,4%	44,2%	43,6%
Finland	All fatal accidents at work		71	76	60				
	Fatal accidents due to commuting		17	28	19				
	Share fatal accidents due to commuting		23,9%	36,8%	31,7%				
Spain	All fatal accidents at work					831	757	716	564
	Fatal accidents due to commuting					199	188	128	100
	Share fatal accidents due to commuting					23,9%	24,8%	17,9%	17,7%
Sweden	All fatal accidents at work	91	99	110	84	56			
	Fatal accidents due to commuting	23	31	35	16	16			
	Share fatal accidents due to commuting	25,3%	31,3%	31,8%	19,0%	28,6%			

DATA AGGREGATED FROM THE FOLLOWING SOURCES:

Fonds des accidents du travail Belgium, Available from:
http://fat.fgov.be/site_fr/stats_etudes/tableaux_stats/tableaux-2012/accidents-chemin-2012/documents/22.1.1.-2012-FR.pdf

Fonds des accidents du travail Belgium, Available from:
http://fat.fgov.be/site_fr/stats_etudes/tableaux_stats/tableaux-2012/accidents-lieux-2012/documents/2.1.-2012-FR.pdf

Eurogip, 2013, "Statistical review of occupational injuries, France, 2012 data", Available from:
http://www.eurogip.fr/images/documents/3597/Eurogip_90EN.pdf

Eurogip, 2011, "Statistical review of occupational injuries, Finland, 2008 data'', Available from:
http://www.eurogip.fr/images/publications/Eurogip_point_stat_FI08_66E.pdf

Eurogip, 2014, "Statistical review of occupational injuries, Germany, 2009-2012 data", Available from:
http://www.eurogip.fr/images/publications/Eurogip_Point_Stat_All0912_93EN.pdf

Eurogip, 2011, "Statistical review of occupational injuries Sweden, 2008-2009 data", Available from: http://www.eurogip.fr/images/publications/Eurogip_Point_stat_Sweden_08_09EN.pdf

Instituto Nacional de Seguridad e Higiene en el Trabajo, 2009, "Accidentes de Trabajo-Tráfico durante el año 2009", p. 3, Available from:
http://www.oect.es/Observatorio/Contenidos/InformesPropios/Desarrollados/Ficheros/Informe%20de%20ATT%202009.pdf

Instituto Nacional de Seguridad e Higiene en el Trabajo, 2010, "Informe de Accidented Laborales de Tráfico", p.3, Available from:
http://www.oect.es/Observatorio/5%20Estudios%20tecnicos/Monografias/Estudios%20sobre%20Accidentes%20de%20trabajo%20relacionados%20con%20el%20trafico/Ficheros/Informe%20accidentes%20laborales%20de%20tr%C3%A1fico%202010.pdf

Instituto Nacional de Seguridad e Higiene en el Trabajo, 2011, "Accidentes laborales de Tráfico 2011", Available from:
http://www.oect.es/Observatorio/5%20Estudios%20tecnicos/Monografias/Estudios%20sobre%20Accidentes%20de%20trabajo%20relacionados%20con%20el%20trafico/Ficheros/ACCIDENTES%20DE%20TRAFICO%202011%20%283%29.pdf

Instituto Nacional de Seguridad e Higiene en el Trabajo, 2012, "Accidentes laborales de Tráfico 2012", Available from:
http://www.oect.es/Observatorio/5%20Estudios%20tecnicos/Monografias/Estudios%20sobre%20Accidentes%20de%20trabajo%20relacionados%20con%20el%20trafico/Ficheros/ACCIDENTES%20DE%20TRAFICO%202012.pdf

BIBLIOGRAPHY

Brake Factsheet, (2013), Saving Money Through Fleet Risk Management: http://www.rse.org.au/getattachment/1328a6e4-421a-4ba9-86cc-ee6c7e097203/Saving-money-through-fleet-risk-management.aspx

Cooke, P. (2002), Duty of Care and Best Practice Cars on Business, University of Buckingham
Department for Transport, Reported Road Casualties Great Britain 2011, 2012, Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/269601/rrcgb-2012-complete.pdf

Cohen, E. (2011), Are CSR managers complicit in 1.3 million deaths a year? http://www.csrwire.com/blog/posts/139-are-csr-managers-complicit-in-1-3-million-deaths-per-year#

Coyle, M. (2002), An evaluation of the effectiveness of fuel management in large goods vehicle operations. PhD, University of Huddersfield See http://imise.co.uk

Dubens, E. and Murray, W. (2000), Creating a crash-free culture, 4Di, Brighouse, UK

ETSC (2001), The Role of Driver Fatigue in Commercial Road Transport Crashes

ETSC (2011), EU Social Rules and Heavy Goods Vehicle Drivers PRAISE Thematic Report 7

ETSC (2011), Driving for Work Managing Speed PRAISE Thematic Report 8

ETSC, (2012), Work-related Road Safety Management Programmes PRAISE Thematic Report 9

ETSC, (2013), 7th Annual Road Safety Performance Index (PIN) Report, Back on track to reach the EU 2020 Road Safety Target?

European Commission (2011), Road Safety Policy Orientations

European Commission (2005), Causes and Circumstances of Accidents at Work in the EU

Grayson, G. B. and Helman, S. (2011), Work-related road safety: a systematic review of the literature on the effectiveness of interventions. Research report 11.3. Institute of Occupational Safety and Health

ISO 39001 International Standard

Murray, W. & Dubens, E. (2001), Driver assessment including the use of interactive CD-ROMs, Paper presented at the 9th World Conference on Transportation Research, Seoul, 24-27 July

Murray, W. (2002), CARRS-Q, Evaluating and improving Fleet safety in Australia

Murray, W., Newnam, S., Watson, B., Davey, J. & Schonfeld, C. (2003), Evaluating and improving fleet safety in Australia. Canberra: ATSB. www.infrastructure.gov.au/roads/safety/publications/2003/eval_fleetsafe.aspx

Murray, W. (2004), The driver training debate. Roadwise: Journal of the Australasian College of Road Safety, Vol 14 (4), May 2004, pp. 3-5.

Murray, W., Faulks, I. & Watson, B. (2007), Targeting road safety interventions at young workers and family members through the workplace. In Proceedings of the Australasian College of Road Safety's 2007 Conference – 'Infants, Children and Young People and Road Safety', Sydney, August 2007

Murray, W., et al., (2009), Promoting Global Initiatives for Occupational Road Safety: Review of occupational road safety worldwide. www.virtualriskmanger.net/niosh

Murray, W. (2010), Sustaining work-related road safety in hard times: understanding collision costs. Unpublished guidance on fleet safety costs. Interactive Driving Systems.

Murray W and Watson B. (2010), Work-related road safety as a conduit for community road safety. Journal of the Australasian College of Road Safety, Vol 21 (5), p65-71

Murray, W. (2012), The Work-Related road safety business case: Societal, business, legal and cost factors", available at http://archive.etsc.eu/documents/workrelated_road_safety_business_case_template_2012.pdf

National Highway Traffic Safety Administration (retrieved 04/2014) The Economic Burden of Traffic Crashes on Employers, http://www.nhtsa.gov/people/injury/airbags/EconomicBurden/index.html

Navestad, T-O., Phililips, R.O. (2013) Traffic Accidents Triggered by Drivers at Work – a Survey and Analysis of Contributing Factors TOI Report

OECD (2006), Speed Management

Polk (2009), Copenhagen Economics Company Car Taxation

Porter, M.E. and Kramer, M.R. (2006), The link between competitive advantages and corporate social responsibility, Harvard Business Review

Pratt, S. (2011), The Role of Institutional Structures, Interest Groups, and Framing in Explaining Occupational Road Safety Policy in the European Union and Member States: An Application of the Advocacy Coalition Framework and Multi-level Governance

Price, A., et al, (2009), Building work-related road safety into organisational DNA: Case study of Vauxhall. Draft paper, currently in review process for Journal of the Australasian College of Road Safety

Safety Net (2009), Work Related Road Safety, Available from: http://ec.europa.eu/transport/road_safety/specialist/knowledge/pdf/work_related_road_safety.pdf

Schade, W. and Rothengatter, W., (2011), W. Economic Aspects of Sustainable Mobility, European Parliament Policy Department, Available from: http://www.europarl.europa.eu/document/activities/cont/201111/20111118ATT31837/20111118ATT31837EN.pdf

Shaw, K. (2009), Global Road Safety Partnership Draft Fleet Safety Manual Part 1
Transport for London (2013), Improving Road Safety Through Procurement

Wallington D., Murray W., Darby P., Raeside R. and Ison S. (2014), Work-related Road Safety: Case Study of British Telecommunications (BT). Transport Policy 32, p. 194-202

Work-related traumatic injury fatalities, (2012), Safe work Australia
Virtual Risk Manager (2011), Safety Project Plan

Graphic Design: mazout.nu

European Transport Safety Council

20 Avenue des Celtes
B-1040 Brussels
information@etsc.eu
Tel: +32 2 230 4106
www.etsc.eu/praise
@ETSC_EU

European Transport Safety Council