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REPORT 4

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

Safer Commuting to Work

PRAISE is a project co-funded by the European Commission and implemented by ETSC on Preventing Road Accidents and Injuries for the Safety of Employees (PRAISE). The project aims to advance work-related Road Safety Management and provide the know-how to employers who have to take on that challenge. It also aims to present the work-related road safety standards of EU Member States and carry out advocacy work at the EU level: work-related road safety is an area of road safety policy that clearly needs renewed political commitment.

Introduction 2

1. The Business Case 2

2. Commuting overview 2

2.1 Working Hours and Commuting Risk 5
2.2 Aggravating trends? 6

3. Risks across the modes 6

4. Employee Travel Plans including Commuting 7

4.1 What is a Travel Plan 7
4.2 Commuting as part of a travel plan 7
4.3 Staff Involvement 7
4.4 Model to increase safety and reduce environmental risks in commuting and work related traffic 7
4.5 Good Practice - Travel Plan Essentials 8
4.6 Working In Partnership 8

5. Making Modes Safer for Commuting 8

5.1 Company Cars 8
5.1.1 Future Visions for Business mobility and Company Car Fleets 8
5.1.2 Grey Fleet 9
5.1.3 Car Pooling 10
5.2 Powered Two Wheelers 10
5.3 Offering Targeted Public Transport 11
5.3.1 Shuttle Services 12
5.3.2 The "Smart Bus Stop" case study: Rome 12
5.4 Walking and Cycling 13
5.4.1 Cycling 13
5.4.1.2 Example of an Employer that took Measures to Improve Cycling for Commuters 14
5.4.1.3 Commuting by Bicycle in Copenhagen 14
5.4.1.4 Using the Paris Public Bike System Vélib to commute 14
5.4.2 Walking 14

6. Factors Influencing Commuting 15

6.1 Flexible Time and Shift Work 15
6.2 Safer Routes 15
6.3 Land Use 16

7. National Level Actions 16

7.1 France 17
7.2 Italy 17
7.3 Switzerland 18
7.4 United Kingdom 18
7.5 Luxembourg 19
7.6 Germany 19
7.7 Belgium 20

8. EU Level Actions 20

8.1 Data Collection and Analysis 20
8.2 Employment Policy 20
8.3 ITS to support management of commuting risk 20
8.4 Urban Mobility 21

References 22

Introduction

PRAISE is an EC co-funded project run by ETSC on Preventing Road Accidents and Injuries for the Safety of Employees (http://www.etsc.eu/PRAISE.php). The project aims to advance work-related Road Safety Management and provide the know-how to employers who have to take on the challenge of reducing road risk for their employees. This fourth thematic report aims to present how measures taken by employers to mitigate the commuting risk of their employees can improve road safety. It gives an overview of the scale of commuting related road deaths within the EU and the legal responsibility to make commuting safer in different countries. It then introduces travel plans which include parts on commuting and presents tips on how to set these up. It then examines each different mode, the associated risk and measures that can be undertaken mostly by employers themselves as well as local and central government. It also covers other related issues that affect commuting and road safety such as land use planning and site location and flexible hours and shift work. There is finally a section giving an overview of what can be done by national governments and the EU to promote employers' taking initiatives to improve safety of their commuting employees.

1. The Business Case

Duty of care, health and safety compliance are legal necessities in most EU Member States, and are an essential consideration for employers. In some countries employers have a legal obligation to compensate, through their insurance, road traffic collisions also occurring during commuting time (see France for example in the section below on national initiatives). This means that they also have a very strong interest to apply measures to prevent these collisions from occurring. In many workplaces, the trip to and from work is the most risky part related to occupational safety. This is the case for instance in office work. Commuting accidents also lead on average to longer absences from work compared to other occupational accidents. Moreover, it most often also makes sound business sense to draw up and implement a travel plan that covers safety of employees commuting to work.

Employers can benefit from Travel Plans through:

- Reduced costs and time spent on commuting and business travel
- More cost-effective car parks and reduced congestion around the site
- More effective use of land (through reduced car parking)
- Higher staff retention and recruitment and improved staff fitness levels
- Protection of the environment and enhancement of the company's image with the community and the clients
- Improved productivity
- Improved staff health and reduced absenteeism.
- Reduced journey times to work and improved staff punctuality by reducing congestion delays and supporting more reliable means of transport.

Travel Plans that apply safety measures to reduce risk whilst commuting can also lead to:

- Fewer working days lost due to injury;
- Reduced risk of work-related ill health;
- Reduced stress and improved morale / job satisfaction;
- Less need for investigation and paperwork;
- Less lost time due to work rescheduling;
- Fewer missed orders and business opportunities, reduced risk of losing the goodwill of customers.

Travel plans often involve only limited capital expenditure, on items such as new cycle shelters, footpaths, bus stops or car park barriers. Mostly they concentrate on improving existing travel choices whilst giving the incentives to use more sustainable travel and disincentives to solo car use. This is backed up by information campaigns to inform staff about travel alternatives that offer them realistic options. Good travel plans have typically succeeded in cutting the number of people driving to work by 15% (DfT 2002).

2. Commuting overview

At present there is little data covering commuting accidents in the EU Member States and this remains somewhat of a grey area. Some countries do not collect such data, or are only starting to collect it (by including "purpose of journey" information in traffic accident datasets). It is therefore difficult to compare road risk while commuting across the whole EU. However, data for a number of countries are available, and this can be used to demonstrate the importance of this topic. A report from 2009 on occupational road safety including collecting and comparing work related road safety data from five EU Member States was published by Eurogip[1] and suggests that commuting is an important road safety risk factor that organisations should focus on as part of their occupational road safety programs to protect the safety and wellbeing of workers.

1 Eurogip is a public interest grouping (GIP) set up in 1991 by the Occupational Injuries and Diseases Branch of the French Social Security system

Country	Year	Commuting road accidents as % of fatal occupational accidents	Number of commuting deaths	Number of commuting deaths on the road (and % out of all modes)
Austria	2007	32.3%	62	62 (100%)
Belgium	2007	36.6%	79	64 (81%)
France	2007	34%	407	350 (86%)
Germany	2008	41.5%	475	463 (97.5%)
Spain	2007	26.1%	341	305 (89.4%)

Eurogip (2009)

This report makes very clear the fact that commuting accidents are a very significant proportion of all fatal occupational accidents, and that most commuting accidents are, unsurprisingly, road accidents.

In Germany more recent data show that in absolute terms, reportable occupational accidents numbered 886,122 in 2009, 8.8% fewer than in the previous year. The number of reportable commuting accidents rose slightly to 178,590, an increase of 1%. New disability pensions resulting from an occupational or commuting accident numbered 22,534. The occupational accident insurance institutions recorded 456 fatal occupational accidents and 362 fatal commuting accidents[2] .

The issue of commuting accidents and their impact on the workers' compensation system was also reviewed in detail for Germany and several other countries in an earlier report by the Munich Re Group (a reinsurance company) in 2004. The report concluded that commuting accidents are a financial drain on the worker compensation systems due to their higher frequency and severity. The commercial Motor Third Party Liability might also be affected in case neither the employee nor the company car was damaged, but only the Third Party. The report also cites that as populations decentralise and travel further distances to work, commuting collisions increase as a proportion of the road toll in many countries. It found that:

- 45% of deaths and 10% of occupational accidents in Belgium involve commuting.
- 45% of deaths and 13% of occupational accidents in Finland involve commuting.
- 47% of deaths and 10% of occupational accidents in France involve commuting.
- 43% of deaths and 15% of occupational accidents in Germany involve commuting.
- 21% of deaths and 6% of occupational accidents in Italy involve commuting.
- 16% of deaths and 6% of occupational accidents in Portugal involve commuting.
- 29% of deaths and 8% of occupational accidents in Spain involve commuting.

2 Source: German Social Accident Insurance http://www.dguv.de/inhalt/zahlen/au_wu/wu/toedlich/index.jsp

However, comparisons between countries are difficult because of very different legal definitions of commuting accident. While in some countries this is very broad and detailed, other countries have a very narrow definition. For example a very detailed and encompassing definition is the one in France where it is considered that an accident is a commuting accident if it occurs (CNAMTS[3] , 2004 / MRG 2004):

1. Between the first place of residence, or a secondary place of residence that has a 'stability character', or any other place where the employee goes regularly for family purposes, and the place of work. The route to work may not be the most direct one when it is necessary to take a longer route as part of a car sharing habit.
2. Between the place of work and the restaurant, the canteen, or in general where the employee usually takes his/her lunch, and as long as the journey has not been interrupted or modified for any other personal purpose unrelated to any everyday life necessity or work related necessity.

In practice this means that an accident will be considered a commuting accidents even when an interruption or detour is justified by the essential requirements of everyday life. This includes buying food, obtaining medicines, drawing money from a cash dispenser or posting a letter. Detours and interruptions that are in some way connected to work are also included. Someone who regularly gives a colleague a lift home, buys work equipment, organises flowers for a staff party or visits the doctor following an accident at work, is therefore covered under the insurance (MRG, 2004).

In contrast in Spain the legal definition is worded very concisely and merely states that an accident suffered by a worker on his/her way to or from work will be treated in the same way as an occupational accident. The following conditions are laid down:

3 CNAMTS is the French National Health Insurance Fund for Salaried Worker.

1. The "normal" journey between the place of residence or usual starting point and the place of work.
2. The shortest and most suitable journey.

Detours are only covered if the employee can give good reasons such as traffic jams, or avoiding a dangerous route (MRG, 2004). Portugal is also an example of a country where the law interprets commuting accidents very narrowly (MRG, 2004). In Germany commuting accidents are defined by the law covering insurance for work. These are accidents that occur on the most 'direct' route between home and the place where the insurance is taken out, this is mostly the place of work but this can also include school. The direct route choice is left open thus the driver can decide depending on geography or time and can also choose mode: car, public transport or bike.

To gain a better understanding of the different national regulatory and legal frameworks covering the issue of work related safety, and in order to provide information needed for comparative analysis at EU level, ETSC conducted a survey involving the 27 Members States and Switzerland in the context of the PRAISE project. On commuting the following question was asked: "If a vehicle is used for commuting, is this also covered in the employer's risk assessment?". Twenty one countries responded to this question (at the time of publication): 13 answered No (Czech Republic, Belgium, France, Greece, Latvia, Lithuania, Netherlands, Poland, Slovakia, Spain, Sweden, Switzerland, UK) and 8 answered Yes (Austria, Cyprus, Estonia, Finland, Ireland, Luxembourg, Romania, Slovenia). Hence, in a number of countries (8) there is a legal obligation to include commuting in the risk assessments that have to be conducted according to occupational health and safety legislation. Commuting accidents are not covered by occupational injury insurance in the Czech Republic, Latvia, the Netherlands, Slovakia and the UK. However, out of the countries that answered "No", 4 of them commented that when the vehicle belongs to the employer then it also has to cover commuting in its risk assessment (France, Greece, Lithuania, Poland).

The German Social Accident Insurance is a branch of Germany's social insurance system. The responsible institutions, i.e. the accident insurance institutions for the private and public sectors, insure around 75 million people in Germany against occupational and commuting accidents, accidents in educational establishments, accidents suffered by volunteers, and occupational diseases.

Germany: Fatal commuting accidents by sector and branch of industry[1]

	2006	2007	2008	Change in %
Accident insurance in industrial sector	475	460	412	- 10.43
of which in branch of industry				
Mining	1	1	2	x
Pit and quarry	9	7	3	x
Gas, district heating and water	2	2	3	x
Metal	68	64	53	- 17.19
Electrical/precision engineering, textiles, leather	42	38	51	+ 34.21
Chemicals	21	20	18	- 10.00
Timber	13	11	6	- 45.45
Paper and printing	14	8	6	x
Foods	44	51	34	- 33.33
Construction	45	47	46	- 2.13
Commerce and administration	140	149	129	- 13.42
Transport	34	29	21	- 27.59
Health service	42	33	40	+ 21.21
Accident insurance in public sector	60	43	46	+ 6.98
Total	535	503	458	- 8.95

The table below shows the number of fatal commuting accidents by sector and industry branch between 2006 and 2008.
German statutory accident insurance association
http://www.dguv.de/content/facts_figures/au_wu/wu_toedlich/index.jsp

1 Source: German statutory accident insurance association Http://www.dguv.de/content/facts_figures/au_wu/wu_toedlich/index.jsp

The modal split for commuting is also a source of information that can be of tremendous help for making policy decisions, and Member States but also employers should be encouraged to run surveys to learn more about the modes commuters use. For example a survey conducted in Finland indicates that the car is still by far the preferred commuting mode in that country. It also shows that most commuters by car are drivers (only about 6% of commuters are car passengers compared to 61.5% who are car drivers) emphasising significant room for improving car pooling.

Commuting trips	Of all commuting trips	Of distance travelled to commute
Walking	8.8 %	0.9 %
Cycling	10.3 %	2.8 %
Bus, coach	6.6 %	7.3 %
Train	2.1 %	3.8 %
Metro, tram	1.7 %	1.1 %
Taxi	0.2 %	0.2 %
Aeroplane	0.0 %	0.0 %
Ferry	0.0 %	0.0 %
Car (driver)	61.5 %	73.2 %
Car (passenger)	5.9 %	6.2 %
Other private motorised	3.0 %	4.5 %
Total	100.0 %	100.0 %

Source: The Finnish National Travel Survey 2004-2005 http://hlt.fi/english/results/6_21_mode.xls

Data about the causes of commuting accidents are also scarcely available but would be of great help to inform policies and actions on commuting safety. Risk factors such as fatigue, stress, alcohol (morning after effect), and speed (rushing to be to work on time) might be particularly relevant when considering commuting accidents. Only for a few countries do we have data for the causes of commuting accidents. The example below for Finland indicates that fatigue is the leading risk factor while commuting in that country.

Falling asleep, reduced alertness	15.0 %
Fitness (sudden attack of illness)	11.6 %
Failed to perceive the other party/situation	11.6 %
Incorrect line of driving (approaching the bend, etc.)	11.0 %
Incorrect estimation of own possibilities of moving	8.7 %
Incorrect manoeuvre (sudden, slow, etc.)	8.7 %
Combination of incorrect manoeuvres	8.1 %
Others	25.4 %

Source: Fatal accidents investigated by the Finnish road accident investigation teams (2002-2008) Finnish Motor Insurer's Centre, Traffic Safety Committee of Insurance Companies VALT.

2.1. Working Hours and Commuting Risk

A study conducted in Germany (Geiler, Musahl, 2003) revealed that the risk to be involved in a commuting accident is double during darkness and early morning hours. Between midnight and 5:59 AM 1.8 more drivers per 1 Million km driven are involved in a commuting accident than between noon and 19:59 AM. Beside the factor of fatigue, the survey conducted in the context of the study showed that the drivers have the subjective feeling to be less at risk due to less traffic during night commuting. Due to darkness, often the weather conditions and the traffic and road circumstances are not interpreted in an appropriate way by the drivers.

The study showed also that the risk is higher for young commuters until 25 years of age (2.5 higher than for commuters between 25 and 50 years) and for women. Women are frequently involved in pedestrian accidents (including accidents where they trip, which are also registered as commuting accidents but are not real traffic accidents). Men have a higher risk as women while using bicycles for commuting. As car drivers, women are higher at risk, probably because they tend to use smaller cars, they have shorter trips but more on rural roads which are more dangerous.

A subsequent study undertaken by Geiler and Pfeiffer in 2007 showed a relationship between the amount of working hours and the accident risk while commuting. Commuting after a very short working period and after 6-8 hours of working time represents a high risk to be involved in an accident. This can be attributed to the fact that women, who have a higher risk to be involved in commuting accidents tend to work less hours as they are more likely to hold part-time jobs. Also after 7 to 8 hours of working time, the employees commute during the rush hours which are more risky. For working time between 9 and 13 hours the commuting accident risk is much lower.

Commuting also depends on the personal situation of the employee. The higher the income the longer the average commute and the own car is chosen as transport mode. Part time workers are less ready to take on long journeys. Women's average commuting time is shorter than men.

Data indicate that the most significant amount of time people spend on the roads is for getting to or returning from work, hence reinforcing the point for improving commuting safety.

2.2. Aggravating trends?

As already noted, the risk of being involved in commuting accidents might be increasing as populations decentralise and choose to live further away from work. Data from the Fourth European Working Conditions Survey (Eurofound, 2005) on "commuting time", an indicator defined as the percentage of workers living 20 minutes or less away from work, demonstrate that the percentage of workers living more than 20 minutes away from work has increased.

Countries	2000	2003	2005
AT	27	24	35
BE	33	28	23
BG		32	24
CY			24
CZ		30	26
DK	28	26	23
EE		34	15
FI	31	23	25
FR	27	23	23
DE	32	28	12
EL	25	21	31
HU		30	26
IE	34	21	26
IT	24	21	31
LV		26	17
LT		35	18
LU	25	16	22
MT		16	25
NL	30	33	19
PL		34	31
PT	34	21	33
RO		34	22
SK		26	21
SI		28	29
ES	34	27	25
TR		34	30
UK	30	24	23
EU-15	30	25	22
EU-25		26	23

Percentage of workers living 20mins or less away from work (Eurofound, 2005).

Commuting time however is not the same as distances, nor does these data tell us the modes that people choose to use to commute. While it is therefore difficult to infer from such data the precise change in exposure to road risk while commuting, it can be assumed that decentralisation and urban sprawl have a negative impact on commuting accidents.

Another risk factor to be aware of is the increase in the use of two wheelers (bicycles, mopeds, motorcycles) that are environmentally less harmful than the passenger car, but suffer from a higher risk (see section below on Powered Two Wheelers and cycling). In the centre of Paris, for example, the number of people using PTWs has increased by 50% over the past ten years while at the same time the number of people using public transport has decreased by 16%. In the whole of France 50% of people who use PTWs to commute to work were previously commuting with public transport, whereas only 25% of them previously used an individual transport mode (Comité de Pilotage pour la Prévention du Risque Routier Professionnel, 2009).

In Germany, every 4 years the Federal Statistical Office undertakes a survey regarding the commuting behaviour of employees[4] . The last survey from 2008 showed that 62% of employees travel to work by car or motorbike. Corresponding to high levels of public transport the numbers who drive to work are lowest in urban areas. Cycling and walking to work is higher in the east German regions. Cycling and walking is also lower in urban areas where many commuters make use of public transport. The number of cyclists and pedestrians relates to commutes of under 10km. Also less cycle and walk if their income is higher. The use of public transport varies between 8 and 42% in the different regions.

3. Risks across the modes

Road travel has by far the highest death risk per distance travelled. Rail and air travel are the safest modes per distance travelled, followed by bus. The passengers of trains, bus/coach and planes within the EU have the lowest death risk per passenger kilometer. For the average passenger trip in the EU, bus travel has a 10 times lower death risk than car travel (ETSC 2003).

4. Employee Travel Plans including Commuting

4.1. What is a Travel Plan

A travel plan is a package of practical measures to reduce the cost and environmental impact of work-related travel by offering staff realistic and cost-effective alternatives to their car (Derbyshire 2008). Travel plans promote flexible and sustainable transport solutions, such as car share schemes, working from home and cycle facilities, tailored to businesses' individual needs but they are not anti car. When drivers were surveyed

4 www.destatis.de, Mikrozensus 2008

in the UK, about half said they wished to drive less and of these, over a third said they had already made some effort to curtail their car use (Scottish Executive 2006). Thus travel plans primarily work with this group of the willing. Cars are still part of the picture, but the idea is to cut their unnecessary use where alternatives are easily available (DfT 2008). A travel plan is about encouraging people to use cars more wisely and offering them better alternative travel choices. Travel plans should also include the encouragement of safe and fuel efficient modes of transport. Travelling less while still doing the same amount of business, cuts fuel use, fleet risks and operational costs (Murray 2010).

4.2. Commuting as part of a travel plan

A travel plan should include a specific part on commuting. The goal of this part would be to decrease the amount of individual traffic created by movements between home and work. The plan generally has three parts.

- A commuting and access profile is drawn up: who is coming to work, when and by which mode of transport? What is the public transport situation close to the company? What are the key bottlenecks in terms of transport for the company?
- A number of viable alternatives are suggested: better access to public transport; the promotion of more collective forms of transport, such as car-sharing or transport organised by the company and better facilities to promote the use of bicycles.
- The social partners negotiate and work out the details of the alternative options, going into the nature of the arrangements decided and defining the practicalities for the company.

Commuting schedules should be adapted as far as possible to encourage compliance with speed limits, working time regulations, and avoiding times when falling asleep at the wheel is possible. Commuting schedules alongside other journeys should be optimised to minimise the need to travel, journeys should also be shared or consolidated and public transport should be used wherever practical. Journey planning software can be used to optimise journeys. Route planning of commuting could then identify and evaluate issues such as terrain and infrastructure. Traffic conditions (which can vary as regards time of day) should also be taken into account. Moreover, weather conditions and seasonality (such as light and darkness) are also issues to be considered when choosing the route. Driver stress and fatigue can also affect driving and route choice and should be taken into account.

4.3. Staff Involvement

Senior management support for the travel plan is crucial. With management backing staff time can be allocated to develop, promote and run the plan and a budget can be secured. One person should be made responsible for the overall coordination of the travel plan. However, management will need to consult widely to gain the support and views of others in the organisation, for example via a travel plan steering group. To succeed, a travel plan must gain the acceptance of staff, through consultation and active involvement to help foster a sense of ownership. Employers should publicise all new initiatives, and successes. Also, to maintain the interest, they should use a variety of approaches to present their message. Above all they need to make sure that all staff know about the travel plan and what sustainable travel options are available to them.

4.4. Model to increase safety and reduce environmental risks in commuting and work related traffic



This is the model developed in a Finnish Study (Pollanen et al., 2003) to increase safety and reduce environmental risks in commuting and work-related traffic. A similar model is used for many developments in companies. The process is started by a sort of need or a requirement. This can come for instance from changes in legislation, from company's strategy or from problems which need to be resolved. The process continues with analysing what the situation is at the moment: how many accidents occur, how many kilometres are travelled daily by company cars, what are the safety and environmental characteristics of the fleet. Goal setting includes both goals for safety and environment (such as reducing fuel consumption) as well as getting the company committed to these goals. The next step is to define the appropriate measures. The two last phases are implementation and

monitoring. In implementation it is important to know who is responsible for what. Also good planning and tailoring of the chosen measures to fit the company helps to achieve good results. Monitoring is the last step in the diagram, but this has a connection to all the other phases. This makes it an important part of the process (Pollanen et al, 2003).

4.5. Good Practice - Travel Plan Essentials

The table below presents a checklist of what is needed to develop implement and monitor a successful travel plan (DfT 2008).

Travel Plan Coordinator	A person is named, with clarity about how they engage with decision makers in the company.
Travel Plan Document	The Plan is published and made available to the public.
Concrete Measures	Evidence is given that the measures involve tangible outputs, e.g. cycle storage, showers.
Smart Targets	The travel plan contains targets that are specific, measurable, attainable, realistic and time-bound.
Committed resources	Specific allocation of resources, financial and non-financial, has been committed for the implementation of the travel plan.
Baseline Data	A staff travel survey and a site audit have been undertaken
Monitoring Mechanism	Evidence is given of a systematic approach to measuring the performance and thus the impact of the travel plan.

4.6. Working In Partnership

Organisations can also benefit from linking into other actors around them. Local authorities can to a great deal make travel plans more effective through offering advice and funding infrastructure improvements. They can also co-ordinate travel plan networks for local employers. Setting up Travel Plan Networks with other employers can also be helpful. They offer a chance to share ideas and co-operate in local initiatives. Particularly for smaller organisations linking with other employees can give more weight in negotiations with, for example, public transport operators (DfT 2002).

5. Making Modes Safer for Commuting

Having undertaken a travel plan to cover commuting, employers will have identified appropriate modes and associated risks for the journey to and fro from work for each employee. This section presents the different modes used for commuting including the car, public transport, Powered Two Wheelers (PTW), cycling and walking and looks at what employers can do to make their use safer. It should be borne in mind that safety is a very important criterion, however many criteria influence the decision of commuters and it is vital to cater for the needs of every mode.

5.1. Company Cars

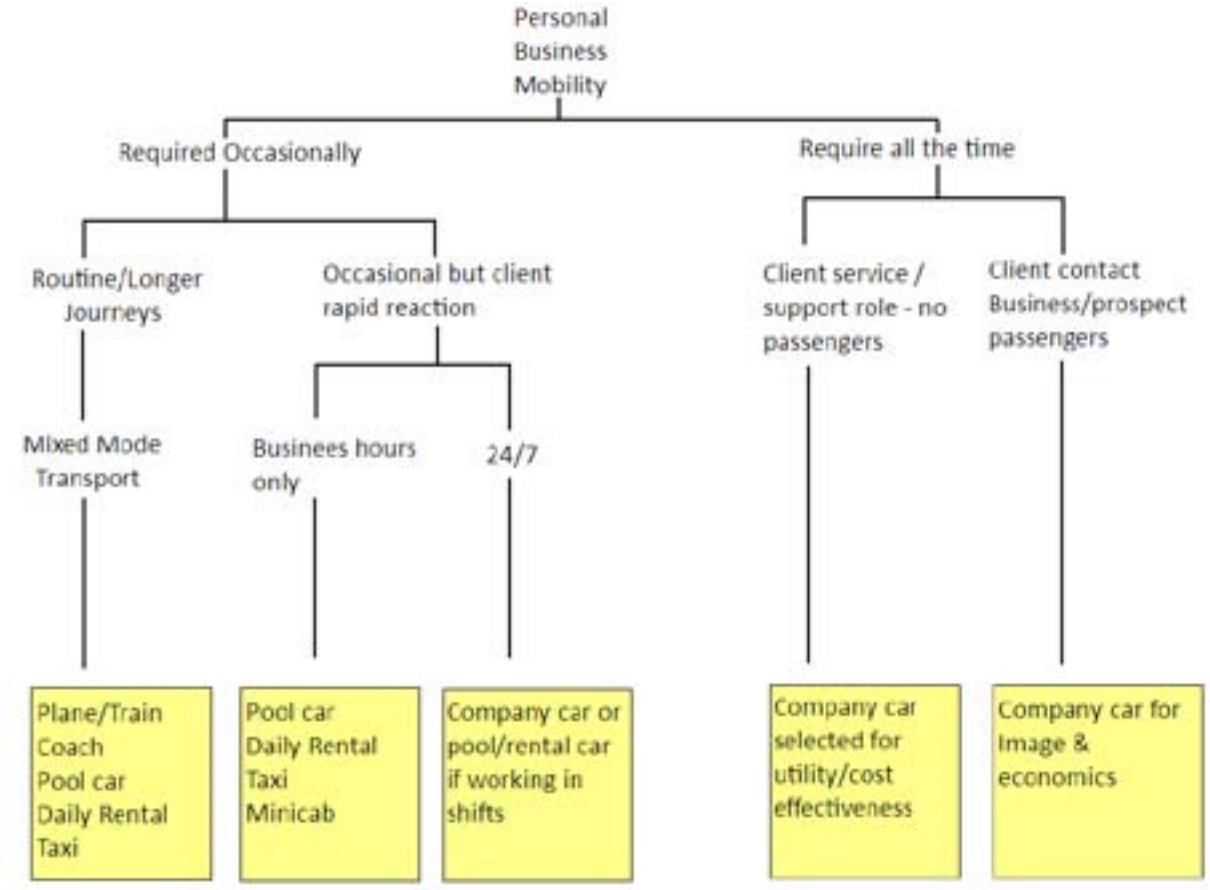
5.1.1. Future Visions for Business mobility and Company Car Fleets

Car drivers mainly cause the road traffic death of other car occupants, motorised two-wheelers, cyclists and pedestrians. Trips by public transport including before and after walking or cycling are collectively safer than car trips (ETSC 2003). Yet, in the short term, business car provision is sure to continue to be a key factor in employees' modal choice. Company car registrations account for 50.5% of the 11.6 million passenger cars registered across 18 EU Member States in 2008 (Polk 2009)[5] . If an employee has a company car and a petrol allowance then the natural choice, notwithstanding all the possible disadvantages of driving to work, may still be to simply drive to and from work. Distance rates, vehicle allocation rules and incentive schemes should aim to minimise vehicle use and any schemes that may encourage artificially high vehicle use should be revised in order to reduce unnecessary on-road exposure (Murray 2010). These factors will also have an impact on commuting. Cooke (2010) stresses the need to review what the employer criteria for allocating company cars are.

As regards fuel costs, only a few Member States ask employees to account for the fuel received from employers for private use. In Belgium and the Netherlands pure business use represents only 20-30% of company car use, the rest being pure private use and home-work commutes. When looking at fiscal treatment of company cars as benefit in kind, employees in many MSs receive benefits that are undertaxed relative to alternative salary remuneration. A recent study carried out for the European Commission estimated that tax revenue losses may approach 0.5% of EU GDP (54 bln EUR) (Polk 2009).

5 However, the share of company cars in total registrations varies between countries. It is lowest in Greece (24%), highest in Germany (60%)

Company cars can absorb a lot of capital and, in the current business climate, economics will also play a big role in deciding the size and type of a company fleet. "The company car will have to earn its keep economically in the future more than it had to in the past" (Cooke 2009). Other important drivers for choice of mode are government tax regimes, both those regulating company cars and personal cars. Risk management, which has already started to rise as an important issue, will continue and be linked to strategies to cut overall business mileage. In the short to medium term there will be a move towards 'City Cars' in some urban situations to minimise and avoid congestion charges. Company, or departmental pool cars, locally hired against a contract may be used to replace "grey fleet" use (see below) and, over time, other company cars. Total business mileage is already under scrutiny and will be cut further by reduced face-face contact replaced by electronic communications (Cooke 2009). 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.



Business Mobility Decision Tree (Cooke 2002).

Having gone through the travel planning process and, if the conclusion is that company cars are still the best option, then clear steps should be taken to ensure that the vehicle and the driver are as safe as possible. A comprehensive risk management programme should be in place that also covers those who do use company cars to drive to work. Employers should specify minimum standards of vehicle safety features and EuroNCAP star rating.

5.1.2. Grey Fleet

"Grey fleet" vehicles are employees' own, 'private', vehicles when used for work. They may also be used for commuting. There are additional concerns that need to be considered here. A gap analysis risk assessment should be undertaken to ensure that if drivers use their own vehicles to commute then they are also included in the employers' work related road safety policy. The vehicle itself should be 'fit for the task': this means also that it should be fully insured, serviced and maintained to a high standard. Employers could also specify minimum standards of vehicle safety features, such as maximum age, if they are being driven also for commuting purposes. As far as risk assessing the driver, this was included in the PRAISE Report on Driver Training (ETSC 2010). Training, following a driver risk assessment, should be offered to all who need to drive for work, regardless of if they are using their own cars or vehicles of the company. Employers

could consider extending the driver risk assessment and relevant training also to employees who use their own vehicles to drive to work.

National level Recommendations
- Consider tax regime changes to the vehicle and mileage undertaken to incentivise reducing vehicle use and on-road risk.

Employer level Recommendations
- Distance rates and incentive schemes should aim to minimise vehicle use and any schemes that may encourage artificially high vehicle use should be revised in order to reduce unnecessary on-road exposure.
- Undertake a risk assessment which covers route for travel to work and mode of transport.
- Run campaigns to raise awareness about regularly maintaining company and grey fleet vehicles.
- Offer driver risk assessment followed up by relevant training to improve driving skills and integrate eco driving training that also tackles correct driving speeds.
- Ensure that grey fleet vehicles used to commute to work are fit for purpose and well maintained and insured.

5.1.3. Car Pooling

Car pooling is a way of reducing the number of cars in cities without restricting individual mobility. Road users who commute along the same routes get together to travel together. They use their private car but share the seats available in their car with other commuters, typically colleagues, and they tend to share the petrol price. This can be as simple and informal as "giving your colleague a lift" or facilitated through the setting up of an information network to find out which people commute along the same route and get them to car pool. For all but very small companies, an online car sharing database will prove useful. This allows people to enter their journeys so that the database can automatically search for colleagues whose journeys match. While some schemes enable staff to find a car partner through the organisation's intranet, others rely on a coordinator who administers the service. A number of software packages exist to help companies set up their car pooling scheme (DfT, 2002).

Integrated into a car sharing system should also be a way of checking the level of maintenance and safety of the car pool fleet, be it 'grey fleet' or belonging to the company itself. Moreover, personal safety implications of sharing lifts home should also be considered. Developed as an environmental measure, car pooling also offers a number of benefits to road users including cheaper commuting costs, reduced congestion, and a reduction of exposure to risk.

National/local level Recommendations
- Promote car sharing by providing less congested lanes to car-poolers (e.g. Madrid).

Employer level Recommendations
- Set up an information network to help employees get involved in car pooling. This can be done notably via the company/organisation's intranet and through the purchase of software packages.
- Provide priority parking or exemptions from parking charge for car pooling employees.
- Set up a guaranteed taxi ride home in case of need to overcome concerns that a car sharer might be stuck at work.

5.2. Powered Two Wheelers

Motorcyclists face a much higher risk of being killed than other road users. For the same distance travelled, the risk for riders to be killed in road accidents is much higher on average than the risk of being killed in traffic for car drivers. In 2006 at least 6,200 Powered Two Wheeler (PTW) riders were killed in road crashes in the EU25 representing 16% of the total number of road deaths while accounting for only 2% of the total kilometers driven (ETSC 2008). There also is a trend of modal shift to PTWs to commute to work to avoid issues such as congestion, congestion charging and parking. In Europe the PTWs circulating parc has increased by 69% between 1994 and 2004[6] . Between the years of 2003-2008 the circulating parc of passenger cars increased by 7.4% (ANFAC, 2008) while in the same period the circulating parc of PTWS increased by 10.2% (ACEM).

While riding a motorcycle will inevitably carry more risk than driving a car, evidence shows that the implementation of dedicated safety measures can substantially improve PTW safety. The measures should aim at improving the behaviour of motorcyclists, but also the behaviour of other road users and providing a safer environment for PTW riders as well as tackling PTW vehicle safety. The rider's skills, training, experience and attitudes are fundamental to safe motorcycling. Riders should receive appropriate training when they start to use a motorcycle (or re-start after a period of not motorcycling) and receive further training as they progress from smaller to larger motorcycles. Motorcyclists should be made aware of the difficulties other road users have in detecting PTWs and evaluating their speed (ETSC PIN 2008). The PRAISE Thematic Report 2 on Driver Training detailed best practice on post licence training for PTWs in the driving 'for work' and 'to work' context. As for company and grey fleet used for commuting to work, employers should include use of PTWs under their risk assessment and

6 ACEM Http://www.acem.eu/cms/ptwfatalities.php

cover both the rider and the vehicle itself.
National level Recommendations

- Enforce the compulsory wearing of helmets.
- Install speed cameras able to detect speeding riders and enforce motorcyclists' compliance with speed limits.
- Improve rider and driver training. Rider training should focus on hazard recognition and risk assessment as well as vehicle control skills. Driver training should ensure that candidates understand the vulnerability of motorcyclists and "look out for them" when driving.
- Educate riders regarding the importance of proper fastening and provide consumer information regarding helmet safety.
- Minimum standards regarding protective clothing should be developed.
- Road design and maintenance should address the specific needs of PTW users (provide good winter maintenance, use of anti-skid surfaces, forgiving roadsides).

Employer level Recommendations

- Undertake a risk assessment which covers route for travel to work followed up by relevant training to improve skills.
- Consider what facilities are provided for PTW parking and if they are secure, well lit and maintained.
- Provide facilities for PTW riders such as lockers.
- Include safety criteria when purchasing PTWs.
- Run campaigns to raise awareness about regularly maintaining PTWs.
- Ensure that company and grey fleet PTWs used to commute to work are fit for purpose and well maintained and insured.

5.3. Offering Targeted Public Transport

The core public transport modes (bus and rail) are the safest modes of transport. Employers can play a key role in offering targeted public transport as an option to commute to work. There are also benefits from other perspectives with public transport as there is less need for cars which results in less congestion and parking problems. At present most of the commuting trips are undertaken in cars. The public transport system has its best level of service at typical rush hour time (starting and ending time of working hours). Access to information such as timetables and real time information concerning disruptions is also vital to ensure users are not discouraged from using public transports (see the "Smart Bus Stop" case study below). Modern information systems such as websites, SMS-services and real time information at stops and in vehicles support a positive image of public transport and are appreciated by the users (GUARD 2010). Key to ensuring that public transport services are a viable option for commuting is ensuring that targeted and reliable public transports are available on commuting routes. As well as reaching safety targets for their employees, employers can also reach the goals for environmental and quality management. All three are important for company image and job retention and satisfaction. Employers would also benefit by needing fewer spaces for parking which would reduce related costs.

When public transport is available for commuting, one barrier can also be the cost (commuting by train for example can be expensive). In this case, discounted ticket deals for companies that encourage their employees to use public transport in their travel plan can be sought. This is likely to please staff, having season tickets also bring in the advantage for them of being able to travel during weekends or evening trips at no extra costs (DfT 2008).

In Germany, so called "Job tickets" are offered to employees, as does for example the German Road Safety Council. These are monthly or annual season tickets, purchased en block from a regional transport association by public or private organisations for use by their staff. Job tickets usually require the purchasing organisation to buy a large number of tickets (typically 20 or more), and for at least 50% of their workforce. In return job tickets offer a large discount on the price of individual season tickets. Many organisations further reduce the cost of the season tickets to their staff by charging a reduced price, or passing the tickets on free of charge - effectively subsidising their employees' travel to work. Purchasing organisations are also responsible for ticketing administration, such as issuing of the photocards and the actual tickets. Nevertheless, SMEs sometimes are not able to fulfill the minimum amount of tickets required by the regional transport associations to be purchased, yet they can build partnerships with their corresponding interest associations.

Interchanges and interoperability with other modes should also be taken into account. A transport network that encourages the non-motorised mode options such as walking and cycling (see section below) is also particularly important in terms of enabling access to urban public transport and interchanges (EEA 2008).

5.3.1. Shuttle Services

When there is no or insufficient public transport available, employers might consider providing their own alternative by setting up shuttle services, for example between train stations and the place of work. Shared shuttle buses are safer than individual car use as explained in the public transport section above. In Italy[7]

7 Source: Roma Servizi per la Mobilità

public administrations (Municipalities/the Ministry of Environment) have set up a scheme to allocate funds and provide support to companies cofunding services of company shuttles. Companies with a Mobility Manager (see section below on national initiatives, the experience of Rome) can submit applications for the co-funding of shuttles: this includes the reimbursement of up to 50% of the total costs of management for a period of two/three years. There is also the possibility for a group of employers located in the same area to submit a project to obtain co-funding for a shared service.



Company Shuttle (Roma Servizi per la Mobilità)

5.3.2. The "Smart Bus Stop" case study: Rome



The so-called "Smart Bus Stop" [8] tells the waiting time for the bus: citizens can thus decide whether to wait or do something else during the minutes available.

This service, which is active on about 200 bus stops in the city of Rome, also has had a widespread diffusion via its application for mobile phones. The service is free (only the operator's cost for connection is applied).

Companies can request to include in their own intranet a specific link to the neighbouring bus lines/ bus stops. Employees can therefore know in real time when "their" bus is getting to "their" bus stop without waiting for it outside. Many companies and institutions opened to the public linked this service to screens to be consulted by customers/clients.

Source: Roma Servizi per la Mobilità

National/local level Recommendations

- Promote the extension, quality, marketing and use of public transport.
- Annually asses the level of service and use of public transport.
- Assess routes (direct routes without changes), suitability of timetables (related to the starting and ending time of working hours), journey times to take commuting with public transport into account.
- Ensure good access to information about public transport (timetable and real time information)
- Encourage the centralisation of work activities so that they can be served better by public transport
- Improve infrastructure: raised kerbs; priority measures such as bus lanes; better quality bus stops and waiting areas in the places where staff travel.
- Promote employer-subsidised public transport tickets (for example annual season tickets).

Employer level Recommendations

- Offer employees subsidised annual season public transport tickets.
- For larger employers, provide on-site travel centres offering comprehensive information.
- Put travel information, such as timetables, on company intranet sites.
- Seek dialogue with public transport operators in order to ensure they provide schedules and routes that are fit for the staff.
- Offer shuttles services to work when there is poor or no public transport alternative available (for example shuttle from train station to place of work.

5.4. Walking and Cycling

Efforts should be made to make walking and cycling a safe travel mode for citizens for commuting to and from work. In 2008 6.7% of all road deaths were cyclists and 20.4% of all road deaths were pedestrians[9] . It is often claimed that cycling or walking should not be encouraged as they are less safe transport modes than cars. But research emphasises that the advantages of more walking and cycling for public health and environment (reduced mortality and healthy lifestyles through regular exercise) outweigh their disadvantages (the risk of death or injury) (Sælensminde 2004). For the individuals who shift from car to bicycle, it is estimated that beneficial effects of increased physical activity are substantially larger (3-14 months gained) than the potential mortality effect of increased inhaled air pollution doses (0.8-40 days lost) and the increase in traffic accidents (5-9 days lost) (Hartog 2010). Many also choose to cycle or walk out of financial reasons. It has also been shown that, when cycling levels reach a certain critical mass, accidents become fewer and fewer. This is evidenced in cities with a high modal share such as Amsterdam and Copenhagen which have seen a decrease in accidents in conjunction with a rise in cycle numbers.

8 Source: Roma Servizi per la Mobilità

9 Http://www.ec.europa.eu/transport/road_safety/pdf/statistics/2008_transport_mode.pdf.

Fear of traffic is an often cited reason for not walking or cycling. Especially in the Nordic countries slipperiness is a major concern during the wintertime; winter maintenance and anti-skid shoes as well as studded tyres for bicycles are some of the solutions for this particular problem. Reluctance to take up these health promoting and sustainable forms of transport is one element of the obesogenic environment (PACTS, 2007). Encouraging cycling and walking to work can also be part of workplace health promotion. Health aspects were also covered by ETSC's third PRAISE Report on Fitness to Drive (ETSC 2010). For example one study shows that employees cycling to work are more productive:

- Cycling reduces stress and depressions
- Cycling reduces sleeping problems and tiredness while increasing stress tolerance and confidence (feeling of freedom and independence);
- Time reliability: cyclists know at what time they arrive at work or for an external meeting

5.4.1. Cycling

Employers can take a number of measures aimed at increasing safety of their employees who choose to cycle to work. One is within the first needs assessment to look at routes to work and work together with the employees to choose the safest routes. A map with these routes can then be published by the employer and included on their website. Internet tools can also be used to help cyclists make best use of the cycle network (GUARD 2010). Employers can also hold Bike To Work days with promotions such as cyclists' breakfasts, bike clinics, and police bike tagging. According to the UK study 'Making Travel Plans Work', which draws on different case studies, such actions can raise cycling levels by five or even ten times. Their popularity suggests good potential for increasing regular cycling if barriers such as local road danger can be effectively tackled (DfT 2002).

Organisations can also try to negotiate with local cycle shops to provide staff discounts on cycling equipment, repairs and servicing including safety equipment such as functioning lights. Employers can also consider incentives such as cash payments for each day cycled, or accumulation of daily tokens which can be used in local cycling shops. Another option could be building up a company bike fleet. The use of such a fleet could be promoted through salary bonuses. A bonus could be given to employees who do not spend their entire allotted amount for fuel on the company car because they cycled to work.

Efforts should be made by local administrations and governments to create a safer environment for walking and cycling. The provision of additional cycle lanes and facilities (often in conjunction with other measures) is generally associated with increased cycle flows and increased percentage of trips made by cycle (GUARD 2010). Experience from some cities also under the same project showed that strong and very visible promotion of cycling, in conjunction with significant improvements to infrastructure, changes the minds of planners, politicians and travel habits of citizens (GUARD 2010). Employers can play a key role in channeling feedback from their employee travel survey on bike routes and safety concerns back to the actors responsible for infrastructure. Some local authorities may have specific cycling officers to respond to such requests.

Training needs to be approached sensitively because learning to cycle is associated with childhood and adults can be reluctant to admit that they are not confident. New cyclists would benefit from a buddy whereby a more experienced rider accompanies them and shows them the best low traffic routes and also how to cycle on routes where no specific facilities are provided. New software also exists to match people for bike journeys in the same way as car pooling databases match up car journeys (DfT 2008). Cycling in groups has the advantage to be better visible to other road users, and therefore decreases number of accidents. Electric bikes are also increasing: training is recommended to adapt cyclists to the different requirements of electric bikes.

5.4.1.2 .Example of an Employer that took Measures to Improve Cycling for Commuters

The Society for Technical Cooperation (GTZ) in Eschborn, Germany (about 1,000 employees) is participating in the project "bike + business" which aims to increase the share of cycling in the modal split of commuter traffic[10] . In addition to measures at company level, the concerns of the GTZ were also drawn into the development of local train stations, and developing the inner city cycling concept for the town. Activities included conducting a staff meeting to "bike + business" and improving bicycle parking facilities (quality, location, lighting, access roads, showers, lockers). Cycle websites were created on the corporate intranet. Another key outcome was the creation of a cycle map for commuting which was developed in close cooperation between the metropolitan planning organisation Frankfurt Rhein-Main, the ADFC Hessen, the city of Eschborn and GTZ. The map was designed to display the cycling network routes of the city from all directions in Eschborn and was based on the experience of cyclists of the GTZ commuting to work.

10 Http://www.bikeandbusiness.de/pilotprojekt.htm.

5.4.1.3. Commuting by Bicycle in Copenhagen

Copenhagen, with a population of 500,000, is an example of a city where 37% of workers reach work or educational establishments by bike and 60% of citizens use their bikes everyday and for all of their trips. It was also calculated that, if cycling increased by a further 10%, 8 million EUR would be saved annually in health costs. Efforts by Copenhagen authorities have led to a 50% reduction of killed and seriously injured cyclists from 2000. To continue having these high levels of cycling and improving safety records, a number of policy interventions have been applied that also improve safety of commuting cyclists. These include for example restrictions for HGVs over 18 tones and recommended routes for HGVs through the city. To further minimise HGV and cyclists collisions LED technology informs HGV drivers if a cyclist is approaching at junctions. So-called "Green Cycle routes" have been developed for cyclists identifying safe routes. Green waves for cyclists, where traffic lights are set at the speed of cyclists, were created. A so-called "cycle bus" system whereby cyclists meet at set places and times on a route map to commute in and out of town together have also been set up. These improve safety and increase the feeling of security of the cyclists themselves (Rassmussen 2010).

5.4.1.4. Using the Paris Public Bike System Vélib to commute

The Vélib public bike system was launched in Paris in 2007 as part of the City of Paris's aims to decrease individual car traffic and promote alternative means of transport including public transport, walking and cycling. Paris now has 20,600 bikes deployed at 1,451 stations with a station every 300 meters. In Paris 61% of long term subscribers use Vélib to go to work or school, 40% as the main mobility means for these trips. Around 61% of people think that Vélib is a service which is easy to use, practical, fast and available. Also 84% of citizens think that Vélib completes the offer of transport. Average duration of a trip is 18 minutes. Road Safety doesn't curb the use of Vélib, only 10% of users name it as a downside. The bikes themselves are fitted with safety features including lights that come on as soon as the bike is used and reflector strips on the wheels. In response to the road safety aspects of the increase in cycling, the Paris City Hall prepared a communication campaign including flyers distributed to all new subscribers of the service describing the safety rules with good advice for cycling in Paris. This was linked by the Police carrying out enforcement of these rules. The results for road safety show that the rate of accidents have not increased but that the overall rate of fatal accidents, particularly involving HGVs, are still too high and need to be tackled. A special campaign around blind spots was developed and run in 2007 targeting both drivers and cyclists.

5.4.2 Walking

As with cycling, safety is a key consideration for employers wanting to encourage walking as part of workplace health promotion. Site location is also an important factor, walking can be a mode of a choice especially when employers are based in towns or close to residential areas. As with cycling, employers can work with local authorities managing infrastructure to improve pedestrian safety. Issues such as route choice and creating a pedestrian friendly map are key. As with cycling, maps showing pedestrian friendly routes can be drawn up and publicised on the employer's website.

National/local level Recommendations

- Improve the safety of unprotected road users within the context of workplace health promotion.
- Promote walking and cycling for commuting but with the emphasis on safe use of the roads.
- Set up cycle buddy and cycle bus schemes to encourage cycling safely.
- Improve infrastructure and especially make roundabouts safer for unprotected road users by reducing the width of the circulatory carriageway, increasing deflection on entry and improving signing, road markings and conspicuity.
- Tackle speeding and set 30km/h as the standard speed limit in urban built-up areas.
- In areas where speed limits are over 30km/h, provide dedicated infrastructure for cyclists.
- Provide shorter and safer routes for pedestrians and cyclists by ensuring that routes are direct and that the quickest routes are also the safest.
- Provide benefits such as fiscal stimuli to promote cycling and walking to work and reduced VAT for cycle repairs.

Employer Recommendations

- Improve quality of off-site cycle and pedestrian access by working in partnership with other employers in the area and local authorities and cycling groups.
- Provide training for those who are not confident cyclists and introduce a cycle buddy scheme.
- Encourage use of safety equipment.
- Create site specific cycle/walking maps identifying safe routes
- Guarantee free use of company bike for commuting with the chance to try different models such as folding and electrically assisted bikes.
- Provide financial or in kind incentives for those agreeing to cycle or walk to work.
- Organise events to encourage cycling and walking also focusing on safety issues such as

cycle maintenance and visibility.
- Provide showers, changing and locker facilities for cyclists and walkers: these can also be used by joggers during lunch breaks.
- Provide cycle shelters for parking that are secure and are situated close to building entrances. Access to parking needs careful consideration to avoid conflict with other site traffic.
- Engage with local authorities to improve infrastructure safety for pedestrians and cyclists.

6. Factors Influencing Commuting

This section will present three other factors influencing commuting times and routes: working patterns, land use and route planning.

6.1. Flexible Time and Shift Work

Flexitime gives the possibility to work more freely and plan the journey accordingly. This means that employees can choose to travel at times that link in with better transport choices. For example, they can drive by car but avoid the rush hour. Or they can car pool and share with other family members. Flexitime has also other advantages, as it can improve the job satisfaction and motivation. Flexitime can also be used to work longer days and create compressed weeks and then employees can take days off which in turn also reduce the days that they commute into work. This makes particular sense for those travelling longer journeys to reach work and for those balancing childcare, for example. However, flexitime is not possible for all types of work such as, for example, in the service sector.

Some employers and employees could also consider telecommuting or home working, for example one or two days a week - and thus reduce the need for commuting into work every day. However, there is also the possibility that home working will encourage people to live further from work so that they may reduce trips but increase miles. Organisations using home working need to cut travel, monitor the effect on car commuting distance and check they are not exchanging fewer trips for more miles[11] .

Commuting for shift workers can pose other problems linked to time and circumstances of travel. Their journeys to and from work may be affected by fatigue. Employers of shift workers should therefore particularly be aware of the risks of fatigue when commuting. Employers should make it possible for workers to rest (even at the workplace) before going into traffic. They should pay attention to individual needs and making alterations if possible considering the individual situation. Moreover, if employees choose public transport, attention should be paid to security concerns of travelling late at night or early in the morning. This issue has been dealt with in more detail in our third PRAISE report on Fitness to Drive (ETSC 2010).

National/local level Recommendations
- Adopt employment policies that enable teleworking and flexi-time and can result in differentiated commuting patterns and a better work/life balance.
- Invest in public transport also at off peak times.

Employer level Recommendations
- Introduce flexitime arrangements if the business model allows to enable employees more choice in mode of transport and to avoid peak travel times.
- Offer home working if business mode allows but monitor length of journey.
- Provide particular support in offering modal choice for shift workers taking safety and also security issues into account.
- Make sure that shift workers work same shifts as much as possible to engender more regular sleep patterns.
- Give particular consideration to night shift workers especially regarding journeys home after work, for example by providing sleeping facilities on site.
- If cost effective provide taxi rides to workers who occasionally work extra hours / overtime and have to return home late.

6.2 Safer Routes

Commuters do not necessarily choose the safest routes to commute. This can be addressed either by reducing the road risk along commuting routes (especially via infrastructure measures) or by providing information to help commuters choose safer routes whichever mode they are using. Commuters typically prefer the quickest route to work (not necessarily the safest), it is therefore necessary to ensure that the road risk on their commuting routes is minimised. There are still many infrastructure deficiencies that can lead to accidents while commuting to work.

Traffic management through ITS can also be of use, for example with the use of tools such as dynamic speed limits that change during peak hours. Helping commuters choose the safest routes to work should also be considered. Road users are not typically aware of the safer alternative offered to them. Safe routes to school programs for children are quite popular and such initiatives should be extended to commuting more generally. Key to this is the involvement of employers. A number of I.T. tools can be used for that, integrating information such as the location of high risk sites and real time informa-

11 Making travel plans work: lessons from UK case studies, Department for Transport, 2002.

tion to avoid congestion or to inform road users of locations where an accident has just occurred.

National/local level Recommendations
- In designing new infrastructure, responsible authorities should make sure that new roads are built without dangerous street furniture and, when this is not possible, street furniture should be designed to be more forgiving.
- Mandatory road safety audits should remove roadside hazards within the design stages of a scheme.
- Responsible authorities should identify a road hierarchy according to the functions of different roads.
- Authorities should create attractive and convenient routes for the journeys on foot or by bicycle that people would actually like to make – routes with less proximity to motor traffic and safer provision for crossing roads.
- Reduce speed limits where motor vehicles still travel in proximity of people walking and cycling.

Employer level Recommendations
- Promote initiatives to help commuters in their route planning / information about safer routes such as EuroRAP (EuroRAP is a programme that aims to provide independent, consistent safety ratings of roads).
- Support employees in route planning to prioritise safe routes to and fro from work.
- Display real time information about congestion and accidents that is posted on the intranet or screens at the place of work.

6.3. Land Use

Integrated land use and transport planning should be made a key tool in managing the demand for travel and transport and in influencing road safety and mobility patterns across the EU. Urban design affects travel patterns. Today the aim is often to reduce the movement of non-essential traffic through new housing areas, towns and cities, whilst increasing accessibility to and viability of public transport services. To deliver integrated land use and transport planning there is a need at the national level for greater collaboration between the Transport Ministry and other ministries that influence transport, such as Finance, Planning, Environment and Industry. Without high-level coordination, the delivery of integrated transport and land use planning will rest in the hands of pioneering authorities rather than being a common deliverable across Europe (EEA 2008).

An example of good practice can be the setting up of collaborations between public authorities and local employers (local employer associations/chambers of commerce/industrial zones/Business parks etc.) who know best what the needs of their employees are in their local surroundings and can therefore have a positive influence on the land use planning process. Local employers can also agree among themselves to group common areas together, such as sharing car parks, to reduce unnecessary trips.

National/local level Recommendations
- Authorities should encourage the integration of road safety into land use and transport planning.
- Work activities should be centralized so that they can be served better by public transport.

Employer level Recommendations
- From the onset when employers consider site locations commuting and ease of access should be considered.
- Employers should be encouraged to get together to inform public institutions of their local needs, or even ask for public funds to coordinate projects.

7. National Level Actions

A number of positive actions can be taken at national level by relevant authorities. A first step should be the good collection of commuting data, lacking in many countries. Depending on the legal compensation system in place, the definition of what constitutes a commuting accident will differ from one country to another (see commuting overview above), and therefore influence the collection and availability of data. Measuring the extent of the problem (as we have seen commuting accidents are a very significant proportion of occupational accidents) and monitoring the patterns/trend is vital to facilitate actions at the national level. Such actions can include the adoption of guidelines and incentives for employers, or the funding of mobility projects as detailed in the examples below.

7.1. France

A lot of work is conducted in France on this topic. In 2008, out of 956 fatal occupational accidents that occurred, 333 were commuting accidents (CNAMTS, 2010). The situation is well known in great part due to the fact that in France commuting accidents are insured by the public occupational injury scheme, and a small part of the compensation paid in case of commuting accidents is also borne by the employers as these accidents are considered when the insurance premiums are calculated. For this reason the decision was taken to draft a working text on the prevention of commuting risk ("risque trajet" in French), this text was adopted in 2004 and serves as guidelines to employers. This follows from an earlier text adopted

in 2003 on the risk while driving during work hours ("risque mission") that had as a reference the European Directive 89/391 on health and safety in the workplace.

The text on the prevention of commuting accidents (CNAMTS, 2004) states that such accidents represent an enormous social and economic burden, about 45% of occupational deaths, and that a number of measures taken by employers and local actors can significantly reduce commuting risk.

As a priority, measures should be taken to avoid or reduce the exposure to risk:

- Reducing unnecessary journeys, including providing a canteen for lunch breaks and, for certain occupations setting shifts that do not provide long breaks that might encourage employees to return home in the middle of the day.
- Prefer public transport modes by providing incentives to employees, or providing shuttles financed by the employer if needed.

When this is not possible:

- Improve the local access to the place of work and provide better parking facilities for employees.
- Encourage employees to ensure their vehicles are well maintained and meet technical standards.
- Help employees to maximise their safety when they are about to use the roads, through adapting working hours accordingly, providing information about the traffic conditions to help employees prepare their trip (weather condition, road works, etc.), providing maps on the best way to reach the place of work.
- Inform and raise awareness of employees about the risks while commuting (via campaigns/info days/training programmes).

The text also encourages local employers to get together, as these measures can be more efficient when they are taken together by a number of employers, and especially to collaborate with the local authorities.

Importantly, this text is the building block for ongoing work by the Steering Committee for the Prevention of Work Related Road Risk (an organisation made up of all the French public health insurance entities). A round table on the prevention of commuting risk was held in Paris, and a White Paper on commuting risk is due to be published in February 2011 (CNAMTS, 2010). In particular the topics that are being discussed by the steering group and that will be published in this White Paper include the setting up of local networks and actions, the merging of safety and environmental goals of improved commuting, and a focus on the risks caused by modal shifts to new modes: car pooling, cycling, powered two wheelers.

Finally, an online tool was created to help employers evaluate their organisations' work related road risk. This tool is called PEDRO[12] and two different PEDRO modules were created (one for road risk during working hours and one for commuting risk). The "PEDRO Trajet" evaluation, on commuting, is divided in three sections that contain information to help employers assess their employees' commuting patterns and accidents, their road safety management, and the actions they have in place. Essentially this is a questionnaire asking questions such as "Do you have this in place?" or "Did you do this?" for a number of items in each of the three sections, and providing information along while the employer undertakes the questionnaire. The "PEDRO Trajet" tool can be accessed online.

7.2. Italy

In March 1998 a Decree introduced the new figure of the Mobility Manager. Private Companies as well as public institutions with more than 300 employees in a single premise or with over 800 employees in more than one premise can nominate a Mobility Manager, responsible for the personnel mobility. Mobility Managers play the role of interface between the Institutions and Decision Makers in the field of urban mobility and the requirements of the company they represent. A number of incentives, such as reduced annual public transport tickets or the possibility to apply for the co-funding of mobility projects, induce companies to nominate a mobility manager. The Mobility Manager's main goals are:

- The reduction of the use of private car for commuting in favour of public transport and /or optimisation of modal shifts
- Promotion of communication and awareness of issues regarding mobility
- Fostering the gradual introduction of low environmental impact vehicles

12 Evaluation and action plan for professional road risk Http://pedro.artifrance.fr/trajet/.



Project of shuttle cofunded by the Municipality of Rome (Source: Roma Servizi per la Mobilità)

The establishment of a home to office Commuting Plan is also one of the Mobility Managers' main tasks. The mobility of employees is first surveyed trough questionnaires asking information about both their present commuting mode of transport used, and their availability to adopt more intelligent commuting habits if a number of measures/tools/incentives are made available. A commuting plan is then drafted, including notably the company's best practices and fostering the use of public transport or its integration with the private car. Appointed Mobility Managers often lack some of the specific technical skills needed for their role, and are therefore guided by a public figure appointed in their region: the Area Mobility Manager. Area Mobility Managers assist all the Mobility Managers and Companies with advisory activities and technical support. The Interaction between Area Mobility Managers and Mobility Managers include:

- Fostering active participation
- Training activities including kick-off initial meeting, events, workshops
- Fostering and creating networks of Mobility Managers, considering that Firms/Companies operating in the same urban areas share similar problems (difficulty of parking, some inadequacy of public transport, etc.)
- Updating Mobility Managers on their activities
- Finding specific solutions for specific cases
- Finding special formulas to foster commuting and integrate companies fleets with car sharing vehicles
- Technical assistance (engineering, planning and design)
- IT support
- Data analyses
- Validation of commuting plans
- Monitoring active projects

Area Mobility Managers are a link between companies and municipalities and public administrations and therefore also provide technical/administrative assistance to municipalities through the following tasks:

- Setting up of administrative acts
- Sharing decision making aspects
- Facilitating contact and meetings with companies on specific topics
- Supporting in the definition/allocation/reform of funds
- Participation in technical commissions

Also, since 2000, a Decree states that all activity poles generating/attracting traffic can be included in the measures/incentives for urban sustainable mobility and can submit projects for co-funding to the relevant public authorities. Potential candidates include: commercial malls, hospitals, universities, auditoriums, etc.[13]

7.3. Switzerland

Some public and private companies have introduced a mobility program for all their employees. The focus is on reducing traffic congestion caused by employees commuting, to promote walking and cycling to work and the use of public transport. The mobility structure of the company is analysed, goals are fixed and measures are suggested. Information, awareness raising, organisation, enforcement and promotion measures enhance health and safety of the employees. For instance, companies who join the mobility program receive a financial incentive of 2,000 CHF (1,400 EUR) from the Canton Tessin (in southern Switzerland) and free advice from the municipality. The cantons of Geneva and Vaud have also developed a mobility plan together with very concrete recommendations for employers. In the mobility plan a list of measures is proposed and for every measure a clear distinction is made between how the measure is applicable to commuting (called "trajet pendulaire" in Switzerland) or travelling during working hours. Some of the measures proposed, such as providing company shuttle services, are actually only intended for commuting. The mobility plan can be accessed online: http://www.unige.ch/ses/geo/oum/doc/Plan%20de%20mobilite.pdf

7.4. United Kingdom

According to the UK Health and Safety Executive commuting is not included in the legal responsibilities of risk assessment. However, actions are being taken to promote the idea of travel planning which also integrates safety issues of different modes for commuting.

At a national level the UK Department for Transport has set up a National Business Travel Network[14] (NBTN) which is hosted by Business in the Community giving access to over 4000 organisations employing one in

13 All information in this section provided by Roma Servizi per la Mobilità

14 Http://www.nbtn.ork.uk/

four of the UK workforce. This is a business-to-business network which enables companies to share best practice and promote the rationale for travel plans. Through research and practical case studies, NBTN is developing and demonstrating the strong business case for workplace travel planning. It organises regular meetings to explore relevant issues in travel planning and has developed free information and guidance for employers on topics including tax and travel plans, motorcycling, cycling, walking. They have also developed practical tools to develop personalised access maps for site location and access for pedestrians and cyclists. This is part of the Cycle to Work Guarantee website[15] .



Example of a map for Cyclists to plan a safe route to work (NBTN)

Local Authorities are promoting travel plans which can also include commuting and safety issues. Many local authorities have appointed travel plan coordinators who can provide advice and support to employers who are interested in developing their own travel plans. Some have also prepared packs and guidance which set out the steps taken to develop travel plans with model plans.

Another example of good practice from the UK is to promote healthier journeys to work and to reduce environmental pollution. The 1999 Finance Act introduced an annual tax exemption which allows employers to loan cycles and cyclists' safety equipment to employees as a tax-free benefit. The exemption was one of a series of measures introduced under the Government's Green Transport Plan. Guidelines[16] clarified how organisations can take advantage of the exemption to implement a Cycle to Work scheme that encourages employees to cycle to work and allows employers to reap the benefits of a healthier workforce.

15 www.nbtn.org.uk or directly through www.cycletoworkguarantee.org.uk/

16 Http://wwww.dft.gov.uk/pgr/sustainable/cycling/cycletoworkguidance/.

7.5. Luxembourg

The Luxemburgish employers' association conducted in 2002 a report on accidents at work showing that, while such accidents were decreasing, the number of commuting collisions on the roads was on the rise, and that as much as 67% of work related collisions leading to deaths were in traffic. An agreement between a number of partners including the employers' association, the insurers' association, the labour inspectorate, trade unions, and the national road safety NGO, was therefore reached to launch a campaign called "Trajet: sécurisons-le!"[17] (this would translate into: "Let's make commuting safer"). The campaign, launched in 2003, aims at providing materials to employers to conduct simple training of their employees. The materials prepared for this campaign were fact sheets on 12 topics (one topic per month of the year) including a reminder of the traffic rules, information about the various risk factors (alcohol, speed, not wearing seat belts, mobile phones) but also explanations about certain important laws of physics (such as braking distances), the impact of weather conditions on safety, or how to prepare for long journeys.

7.6. Germany

In Germany the "bike+business" [18] in the area of Frankfurt-Main aims to link the interests of cycling employees with their employers to improve the image of the bike as a modern form of transport. It highlights that the bike can form part of the transport picture alongside public transport particularly as a daily form of transport within local and regional transport planning. It is run by different partners including the ADFC (German Bike Club Hessen) and the Frankfurt/Rhine-Main Conurbation Planning Association. Bike+business wants to contribute to efforts to motivate commuters to choose to cycle to work and increase the modal split of cycling commuters. Commuting cyclists make up 12% of the commuter traffic in towns between 50,000 and 500,000 inhabitants which drops to 6% in cities larger than 500,000 inhabitants (National Cycle Plan 2002).

The project is made up of different modules including infrastructure and communication and access where the project team advises employers on how they can make their business more friendly for those who want to commute there by bike. The second module covers use of the bike and looks at issues such as route planning. The third module consists of a workshop for employees and their employers to discuss different issues around cycling to work. The next stage is the implementation of identified measures. The project also helps to organise information days around mobility and health.

17 www.trajet.lu

18 Http://www.bikeandbusiness.de/.

Finally, an evaluation of the impact is undertaken. The project has also developed a comprehensive handbook which covers all aspects of cycling to work [19].

Typical prevention activities provided by the Institution for Statutory Accident Insurance 'Berufsgenossenschaften' for their insured companies focus on several areas, also on prevention of commuting accidents. DVR German Road safety Council has been assigned, and is funded by the Statutory Accident Insurance to develop and certify driver/safety officer training and materials such as posters, booklets, brochures, flyers, billboards, videos and computer based training. DVR also provide road safety seminars with the use of mobile and static simulators. Topics include the business case for safety, safe loading, vehicle (car, bus, coach, four wheel drive, van, truck, tanker and blue light) specific issues and fuel efficient driving. The DVR website contains a great deal of material covering road safety at the company level. DVR develops the materials and provides access for the company safety officers (some materials are free, some have to be paid for). The companies paying their insurance premium to the respective Statutory Accident Insurance (according to their risk status) also have an obligation to organize prevention measures in the workplace. DVR supports such company activities. For example, when chemical company BASF organised a road safety week employees participated in simulator training and a seminar. DVR provided the mobile simulator, brochures and a trainer. The Statutory Accident Insurance provided BASF financial support to cover the costs for the simulator and the trainer.

7.7. Belgium

Bike To Work is a continuous support programme run in Belgium to get more people to bike to work more often, possibly in combination with another means of transport (e.g. train, bus or car). Bike to Work is part of LifeCycle which is a project supported by the European Union through the European Agency for Health and Consumers (EAHC). Bike To Work also exists for companies. Companies wanting to encourage cycling give bike points to their employees, which entitle them to interesting benefits such as discounts for bikes and equipment. Part of the campaign is also Friday Bikeday where on Friday employees leave their car at home and cycle. Employers are encouraged to provide staff who cycle to work with a free breakfast when they arrive or choose another way of giving them a special treat. Friday Bikeday is an initiative of Brussels-Capital Region, Fietsersbond, Gracq and Pro Velo. At a national level in Belgium employers can pay their employees for every km cycled from home to work and back 20 Euro cents tax-free. After the introduction of this incentive, 50% more commuters cycled to work. Along with a few other EU countries, Belgium applies a reduced VAT rate (6%) when it comes to repairing bikes in bike shops.

8. EU Level Actions

The EU can also take action to improve the safety of commuting in some areas such as road safety data collection, employment law and within the context of its action plan on urban mobility and on ITS with its related Directive 2010/40/EU.

8.1. Data Collection and Analysis

The EU could support efforts undertaken to make commuting safer in the EU by improving data collection through its CARE database enabling a clearer picture of the number of commuting accidents. Through this, decision makers could determine how to manage the greatest risks.

8.2. Employment Policy

In the field of employment law to protect workers' health and safety, minimum rules on working time are set in all EU Member States under the EU's Working Time Directive (2003/88/EC). Each Member State must ensure that every worker is entitled to a limit to weekly working time, daily rests and breaks and annual leave. However, measures to encourage flexible working hours are left up to the Member States. Yet, in terms of achieving a work/life balance for workers in the EU, the Commission presented in 2008 a framework Communication in order to provide "stronger support for reconciling professional, private and family life" and to achieve the Union's growth and employment objectives. This Communication cites flexible working time as one of the key components in the policy mix.

8.3. ITS to support management of commuting risk

The EU ITS action plan and its related Directive 2010/40/EU suggest a set of concrete objectives laying down the framework for the implementation of ITS Under Area 1 of the ITS Action Plan and in the Directive there are provisions for the optimal use of road, traffic and travel data. This includes the definition of procedures for the provision of EU-wide real-time traffic and travel information services and optimisation of collection and provision of road data and traffic circulation plans, traffic regulations and recommended routes. Another short term application identified in the ITS Action Plan is the promotion of the development of national multimodal door to door journey planners, taking due account of public transport alternatives. This could also be very helpful

19 Https://www.secure.europarl.europa.eu/parliament/public/visit/secured/request.do?language=EN

to inform commuters about their way to work. Under Area 2, the continuity of traffic management, ITS services are covered to manage rising traffic volumes. Progress in both of these areas can also be useful input to managing road risk for commuters.

8.4. Urban Mobility

In Europe, a very large proportion of fatal road acci¬dents happen in urban areas. Lost time and environmental damage caused by traffic jams cost the European economy nearly 100 billion EUR, or 1% of the Union's GDP, according to the Commission. The action plan on urban mobility proposes twenty measures to help local and regional authorities improve the mobility situation in their area. The Action Plan suggests improving travel information including multi modal travel planners (European Commission 2009). It also lists promoting Intelligent Transport Systems in the urban environment and enabling the exchange of best practice on pedestrians' and cyclists' safety. Under the chapter on 'optimising urban mobility', the Action Plan stresses that affordable and family-friendly public transport solutions are key to encourage citizens to become less car-dependent, use public transport, walk and cycle more, and explore new forms of mobility, for example in the form of car-sharing, car-pooling and bike-sharing. It also adds that alternative means of transport, such as electric bicycles, scooters and motorbikes as well as taxis, can also play a role. Finally, it stresses that company mobility management can influence travel behaviour by drawing the employee's attention towards sustainable transport options. Employers and public administrations can provide support through financial incentives and parking regulations. Implementing these aspects of the plan should be extended also to cover safety aspects. Thus efforts to improve safe and sustainable commuting should also be promoted within the context of the EU's Urban Mobility policy.

Recommendations to the EU

- Improve data collection on commuting and collecting "purpose of journey" to inform policy decisions at EU and national level.
- Encourage Member States to promote flexible working hours to stagger commuting times of employees and improve road safety.
- Tailor ITS applications to support traffic management and travel planning for commuting to reduce congestion and improve road safety under the EU's ITS Action Plan and Directive
- Promote safe and sustainable company mobility management.

References

ANFAC (2008), European Motor Vehicle Parc http://www.acea.be/images/uploads/files/20100427_EU_Motor_Vehicles_in_Use_2008.pdf.

ACEM, circulating park http://www.acem.eu/media/d_Circulating_Park_2217.pdf.

Andersen LB, Schnohr P, Schroll M, Hein HO. All-cause mortality associated with physical activity during leisure time, work, sports, and cycling to work. Arch Intern Med 2000;160 (11):1621-8. http://www.ncbi.nlm.nih.gov/pubmed/10847255.

Cavill, N. and Davis, A. (2007) Cycling and Health What's the Evidence Cycling England.

Cooke (2002) Rethinking the Business Car Overdrive Business Solutions, Birmingham, England.

Cooke, P. (2008) Duty of Care and Best Practice Cars on Business University of Buckingham.

Cooke, P. (2010) Fleet 2020 Business Car or Business Mobility? University of Buckingham.

CNAMTS, (2004), Prévenir les accidents routiers de trajet, texte adopté le 28 Janiver 2004 par la Commission des Accidents du Travail et des Maladies Professionnelles.

CNAMTS, (2010) presentation by Thierry Fassenot at the PRAISE Seminar in Barcelona 14th June http://www.etsc.eu/documents/Thierry%20Fassenot%20Work%20Related%20Road%20Safety%20in%20France.pdf.

Comité de Pilotage pour la Prévention du Risque Routier Professionnel (2009). Table Ronde « Mieux prévenir les accidents de trajets » 9 octobre 2009, Paris. http://www.risqueroutierprofessionnel.fr/Publication-des-Actes-de-la-table.html.

Department for Transport (2002) Making travel plans work: lessons from UK case studies.

Department for Transport (2008) Essential Guide to Travel Planning.

Derbyshire County Council (2008) Derbyshire Business Travel Plan Pack.

EEA (2008) Time for a Climate Change: TERM 2007 Indicators tracking transport and environment in the European Union. EEA, Copenhagen.

ETSC (2003) Transport Safety Performance in the EU, A Statistical Overview.

ETSC (2008) 2nd annual PIN report, Reducing Motorcyclists Deaths in Europe http://www.etsc.eu/documents/copy_of_copy_of_2nd%20PIN%20Annual%20Report%202008.pdf.

ETSC (2010) PRAISE Thematic Report 2, Fit for Road Safety from Risk Assessment to Training http://www.etsc.eu/documents/PRAISE%20Report%202.pdf.
ETSC (2010) Thematic Report 3, Fitness to Drive http://www.etsc.eu/documents/PRAISE%20Report%203.pdf.

EU OSHA 2010 "Delivery and despatch riders' safety and health: A European review of good practice guidelines".

Eurofound (2005) Fourth European Working Conditions Survey http://www.eurofound.europa.eu/publications/htmlfiles/ef0698.htm.

Eurogip (2009). Le risque routier encouru par les salariés en Europe, Actualisation du rapport Eurogip-05/F publié en 2003 August, Eurogip-40/F, www.eurogip.fr/en/docs/Eurogip_risque_routier_2009_40F.pdf.

European Commission (2007) Communication: Towards a New Culture of Urban Mobility http://eur-lex.europa.eu/LexUriServ/site/en/com/2007/com2007_0551en01.pdf.

European Commission (2009) Communication: Action Plan on Urban Mobility http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52009DC0490:EN:NOT.

Finnish road accident investigation team (2002-2008) Finnish Motor Insurers' Centre, Traffic Safety Committee of Insurance Companies VALT.

Finnish National Travel Survey 2004-2005 http://hlt.fi/english/results/6_21_mode.xls

GUARD (2010) Cluster 3 Cycling and Walking, CIVITAS Project.

Geiler M, Musahl,H.-P. (2003): Zwischen Wohnung und Arbeitspaltz. Eine Untersuchung zum Arbeitsweg und zum Wegeunfallgeschehen. Zeitschrift für Verkehrssicherheit 49.

Geiler, M., Pfeiffer,M. (2007) Das Unfallgeschehen im Wirtschaftsverkehr: Verletzungsrisiken bei beruflich bedingter Teilnahme.

Hartog, Boogaard, Nijland, Hoek, Do the Health Benefits of Cycling Outweigh the Risks?, June 2010 Hen-

driksen, I. (2010) TNO: Fietsen is groen, gezond en voordelig, pp. 9 -10.

Hendriksen, I. TNO (2009) Reduced Sickness Absence in Regular Commuter Cyclists, TNO Netherlands.

MRG (2004) Commuting accidents. A challenge for workers' compensation systems, Munich Research Group, www.munichre.com/publications/302-04092_en.pdf.

Murray, W. (2010) Travel/Mobility Planning Interactive Driving Systems.

Murray, W. (2010) Interactive Driving Systems Commuting Checklist.

Murray, W., Pratt, S., Hingston, J. & Dubens, E. (2009). Promoting Global Initiatives for Occupational Road Safety: Review of Occupational Road Safety worldwide (Draft) www.cdc.gov/niosh/programs/twu/global.

National Cycle Plan Germany (2002) http://www.nationaler-radverkehrsplan.de/.

PACTS (2007) Beyond 2010: A Holistic Approach to Road Safety in Great Britain, London, UK.

Polk (2009) Copenhagen Economics Company Car Taxation.

Pöllänen, M., Lind, S., Kalenoja, H. and Mäkelä, T. (2003). Improving traffic safety and reducing environmental effects of work-related traffic – traffic safety and mobility management measures in companies (in Finnish). Tampere University of Technology. Institute of Transportation Engineering. Research Report 50. Rassmussen, S. (2010).

Rassmussen, S. (2010) Traffic Safety in Copenhagen a City with Many Cyclists Presentation City of Copenhagen POLIS.

Sælensminde, K., 2004. Cost-benefit analyses of walking or cycling track networks taking into account insecurity, health effects and external costs of motorized traffic. Transportation Research Part A 38, 593–606.

Scottish Executive (2006) Public Perceptions of travel awareness Phase 3.

Statistisches Bundesamt Deutschland: Mikrozensus 2008; www.destatis.de.

SUPREME (2007) Best Practices in Road Safety. Handbook for Measures at the European Level http://ec.europa.eu/transport/roadsafety_library/publications/supreme_d_handbook_for_measures_at_the_european_level.pdf.

Murray, W., Pratt, S., Hingston, J. & Dubens, E. (2009).

Promoting Global Initiatives for Occupational Road Safety: Review of Occupational Road Safety Worldwide (Draft) http://www.cdc.gov/niosh/programs/twu/global/.

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