Work-related drivers

A review of the evidence on road safety initiatives for individuals at work: implications for practice

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The aim of this research is to identify initiatives that increase the safety of those who drive for work. The Health and Safety Executive estimate that 25%-33% of all serious and fatal road collisions involve someone who was 'at work' when the collision occurred. This report examines the evidence to establish why at work drivers are over represented in road collisions, examines the effectiveness of current initiatives and presents recommendations for reducing collisions that involve work-related drivers.

Contents

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Executive Summary

This report is written in response to the increasing awareness of work-related collisions occurring on the roads. At work drivers are acknowledged to be a risk group by Devon County Council's safety and sustainable travel team.

Examination of research on collision data implies that there are a number of key factors that are related to at work drivers:

- Males are more prone to being involved in a work-related road collision compared to females
- Fatigue, speeding and driving under the influence of alcohol are contributory factors associated with collisions

A number of recommendations have been made from the evidence on road safety initiatives for individuals driving for work.

Initiatives could be embedded in an organisational context:

- Employers' knowledge could be increased about the importance of safety culture for road safety within an organisation and how safety culture could be integrated into organisational policies, procedures and processes
- Work-related driver initiatives could identify the reasons for focusing on work-related road safety, understanding the needs and current performance in terms of addressing work-related road safety in an organisation
- Work-related initiatives could be based on key areas outlined by the HSE framework including policy; responsibility; organisation; structure; systems and monitoring
- Employers' knowledge could be increased about the value of policies being written about work-related road safety and that commitment is gained through senior management
- Employers understanding of key performance indicators could be increased in order to evaluate the effectiveness and impact of different initiatives used in organisations
- The hidden costs associated with work-related collisions could be highlighted to organisations
- Organisations could be informed of the numerous benefits of addressing work-related road safety

- The reporting of 'purpose of journey' could be increased to provide information about the types of work-related collisions that occur
- Evaluation could usefully be carried out on training and education initiatives to establish which are most effective at increasing road safety in order to build an evidence base in this area

Initiatives could focus on individual differences and risk factors relating to work-related drivers:

- Males could be targeted specifically as they tend to be more prone to being involved in a work-related road collision compared to females
- The issue of speeding and driving whilst tired could be addressed as these are shown to be the highest contributing factors for collisions involving drivers at work
- Employers could be made aware of the risks placed on employees driving when they are experiencing time pressures, such as increased stress
- Employers could be made aware of the negative implications of increased exposure for work-related drivers and address this issue through organisational policies, procedures and processes

Considerations and caveats

- Evaluation could be carried out specifically on the use of online training and education for work-related road safety in order to build the evidence base in this area
- The barriers against organisations undertaking work-related road safety could be usefully researched in order to determine where issues occur
- Case studies could be developed locally to provide examples of the benefits of work-related road safety for other organisations
- The level of work-related road safety initiatives being carried out by local authorities could be examined further to identify methods of overcoming barriers to road safety involvement in organisations
- Collision data could be collected from insurance companies and organisations to gain further understanding of factors related to work-related road collisions
- Further research and evaluation could be carried out on the proposed model of work-related safety to determine its effectiveness in organisations

1 Introduction

The aim of this research is to identify approaches that increase safety and reduce casualty involvement for people who drive for work. This is to fulfil the strategic goal of the Devon Road Casualty Reduction Partnership to reduce those injured or killed on the road while undertaking a journey related to work.

An 'at work' driver is defined for the purpose of the report as:

- Individuals driving their own car to commute to work
- Individuals driving their own/company car for work purposes
- Individuals driving fleet vehicles for work purposes

Drivers of cars and light commercial vehicles are included in this review, heavy goods vehicles are excluded. Light goods vehicles are those 'designed and constructed for the carriage of goods and having a maximum mass not exceeding 3.5 tonnes'[1].

Work-related driving is an activity that a majority of motorists will engage with at some point during their lives[2]. In the UK there are approximately 4.7 million business vehicles and an additional 2.1 million private cars used for company business each year[3]. Company owned and financed cars make up a large proportion of the total vehicle fleet in the UK. It has been suggested that over 2 million cars are company owned and in terms of new cars sold each year over a half are registered in a company's name[4].

There are legal responsibilities for employers associated with work-related driving for example, The Health and Safety at Work ect Act (1974) [5]. This requires employers to ensure the health and safety of employees as far as reasonably possible. The Management of Health and Safety at Work Regulations (1999)[6] require employers to manage health and safety effectively. This includes undertaking an assessment of the risks to health and safety of employees whilst at work and others who may be affected by work activities. The health and safety law does not apply to those commuting unless an employee is travelling from home to a location that is not their usual place of work[7]. There has been increasing awareness of the importance of work-related road safety. This has led to a number of national government policies being developed and a growing number of activities being undertaken by employers, such as driver evaluations[8].

This report examines:

- Worldwide collision data analysing the types of collisions and the reasons for their occurrence
- The costs of collisions resulting from work-related road traffic are highlighted and the benefits that can be gained from incorporating and managing road safety within an organisation
- The key risk factors relating to at work drivers are reviewed, including individual and work-related issues
- The influence of organisational culture on work-related road safety
- Frameworks for managing work-related road safety and effective initiatives

It is important to consider the reasons for the occurrence of collisions involving work-related drivers so that initiatives can be designed and developed to address these issues. The following section examines collision data from around the world.

2 Collision Data

Individuals who drive for work are claimed to be over represented in road casualty statistics[9]. Work-related drivers are estimated to have crash rates that are 30-40% higher compared to other drivers[10]. It has been calculated that car drivers who drive 25,000 miles a year as part of their job roughly have a 1 in 8,000 chance of being killed in a road collision[11].

The issue of whether or not work-related drivers are over represented in collisions is linked to exposure. Work-related drivers have increased exposure compared to other drivers; this is caused by the high average annual mileage associated with driving for work[12]. The increased time spent on the road means work-related drivers are expected to have higher involvement in collisions[4]. However even when exposure (and demographic variables) are controlled for, company car drivers are still found to have 50% more collisions[13], therefore they do appear to be over represented in the collision data. Individual characteristics and work-related factors that have been proposed to account for the over-representation of at-work drivers in the collision data will be discussed in a subsequent section of the report. However, the exact reasons for work-related drivers having high collision liability are not clear[4].

It is important that organisations record information about the extent and causes of collisions to understand the issues that drivers are facing and the areas that need to be addressed[14]. STATs19 collision data collected by the police includes a section for reporting whether a collision was work-related, this is analysed by Devon County Council. This will be discussed in the following section with an examination of studies that have explored and described collision data for work-related drivers.

2.1 Worldwide

Work-related road traffic collisions have been suggested to account for between 20% and 40% of work fatalities in industrialised countries[15]. It is estimated that in the European Union around 5500 people are killed in accidents whilst at work every year, with a third being related to road traffic collisions[16]. In comparison, the European Commission for Road Safety implies that work-related collisions for EU countries comprise at least a quarter or over a third of all work-related fatalities[17].

A study compared work-related road collision fatalities in Australia (A), New Zealand (NZ) and the United States (US). Traffic collisions that related to fatalities consisted of 16% (NZ), 22% (US) and 31% (A) of all work-related deaths during the years studied (1985-1998). In all of the countries studied those with the highest risk included male workers, older workers and truck drivers[18].

The Census of Fatal Occupational Injuries is a source of data for all occupational fatalities in the United States. The data indicates that 11,952 fatalities were work-related during 1992-2000; this suggests an annual rate of 1.08 deaths per 100,000 full time equivalent workers. The majority of work-related road fatalities included road collisions between two vehicles (more than 49%). The highest number of collisions occurred between 07.00 and 16.00 hours[19].

Fatalities arising from work-related collisions in Australia were investigated during 1989-1992[20]. There were 543 worker fatalities during this period with a fatality rate of 1.7 per 100,000 people per year. The majority of fatalities were males (92.8%), with most being under forty-five years old. The fatal collisions tended to have similar and common factors. This included cars and vans losing control on a slippery road surface, crossing to the incorrect side of the road and colliding with oncoming vehicles. There were 605 fatalities that occurred whilst commuting, resulting in a fatality rate of 2 per 100,000 people per year.

New South Wales collision data was investigated from 1995-2000 to understand the nature and extent of work-related road collisions. The data collected by the New South Wales Road and Traffic Authority allowed vehicles to be identified as fleet or non-fleet vehicles. Fleet vehicles were those registered to fleet owners (organisations or individuals with one/more business registration). Fleet vehicles were shown to have an increased involvement in collisions per 10,000 registered vehicles per year compared to non-fleet vehicles. Fleet vehicle drivers were shown to be less likely to be driving whilst fatigued, travelling at excessive speeds and being under the influence of alcohol compared to non-fleet vehicles. Fleet vehicle drivers were less likely to wear their seatbelts; however this did not account for taxi drivers who are not required to wear seatbelts in this area[21].

An additional study carried out in New South Wales examined traffic collision data between 1998 and 2002 where drivers involved were either killed or injured[22]. The results showed that approximately three quarters of the collisions occurred whilst the drivers were commuting (74.8%). Males were involved in three quarters of the collisions. One in six male drivers were speeding at the time of the collision compared to one in ten females. Males were also significantly more likely to be fatigued at the time of the collision compared to females.

In New South Wales, matching compensation and collision data showed that collisions related to fatigue were similar for work-related and non work-related collisions. Collisions where fatigue was involved were more likely to result in a fatality, involve higher costs, heavy and light trucks, alcohol and speeding[23].

The contribution of alcohol to work-related collisions was analysed during 1996 to 2000 from data produced by New South Wales Roads and Traffic Authority. During this period a total of 396,899 registered vehicles were involved in a collision, over a quarter of the vehicles were fleet vehicles. In 78% of the collisions drivers were under the alcohol limit. Illegal blood alcohol levels are shown to be lower among fleet vehicles compared to non-fleet vehicles involved in a collision[24].

A study carried out in Finland analysed drivers involved in road traffic collisions during work and whilst commuting[25]. The main conclusions were that those aged between 50 and 65 had the highest road collision frequency. Individuals who were married were involved in fewer traffic collisions compared to those of other marital status groups. White collar and self-employed workers had a higher frequency of being involved in a road collision.

Work-related collisions in France have been analysed for two time periods (1997-2000 and 2003-2006). The collision data divided types of journeys into commuting, working hours and non-work-related. The percentage of work related collisions varied little between the time periods (10% during work hours and 18% while commuting). The age group 25-34 year olds were most represented in terms of collisions occurring while at work and commuting. Males were involved in the majority of collisions[26].

2.2 Great Britain

Research commissioned by the Health and Safety Executive (HSE) indicated that between 25% and 33% of serious and fatal road collisions involve an individual at work[27]. It has been estimated by Office for National Statistics (ONS) data that 7% of all traffic fatalities involve a car 'at work' and 23% of fatalities involve commercial vehicles 'at work'[28]. It has been estimated that 1,000 workers are killed in work-related road accidents, and an additional 7,500 suffer serious injury[29].

A study investigated the collision liability of company car drivers in a sample of companies taken from Key British Enterprises (1988). This involved identifying the number of collisions that an individual is expected to experience during a specific period of time. The company car drivers in the study were defined as those 'drivers of company owned or company financed cars who drive regularly for business purposes'. The main findings included that young and inexperienced drivers were shown to have higher accident liability compared to older drivers[13].

In the UK over 2000 collisions were analysed from police forces between 1996 and 2004[30].The conclusions drawn from the study included that work-related road collisions were 'not fundamentally different in their causal structure to any other road collisions'. However, company car collisions were over represented by excess speeds. Those drivers that appeared to be more blameworthy for collisions included those driving company cars, vans/pickups or large goods vehicles. The suggestions for this finding are that these drivers tend to drive above average mileage and are exposed to a variety of stressors. The errors and traffic violations associated with these drivers does not tend to be different to the general population, they just have more opportunity to commit them.

A questionnaire was developed and completed by a sample of privately registered vehicles identified by the DVLA (Driver and Vehicle Licensing Agency) and drivers of 57 companies from a number of industry sectors. The findings showed that car drivers with high levels of work related mileage have a higher risk of being involved in collisions involving injury. Individuals who drive more than 80 per cent of their annual mileage for work related journeys had 53% more collisions involving injuries than similar individuals who do no work related mileage. In contrast those individuals with 1-80% of their total mileage being work-related had an average of 13% more collisions compared to non-work drivers with the same mileage[2].

2.3 Devon

STATS19 data was examined from Devon in terms of collisions relating to work. This was drawn from the reporting of 'purpose of journey' between 2005-2009. The numbers where 'purpose of journey' was reported were small so analysis was not carried out on this data. This is argued to be due to the under-reporting of 'purpose of journey' being recorded as work-related. There are a number of points outlined below about the limitations of STATs 1910[8].

- Due to the police providing the information through forms for the STATs 19 there is a lack of continuity over time and this will influence the amount and reliability of collision information obtained. A variety of police will process the collision data and receive different amounts of training about how to complete a STATs19 form

- The injury severity coding is difficult as the police are not medically trained; this reduces the reliability of the data collected
- There is also an issue of under reporting of road collisions due to the time it takes to fill out a form and subsequent verification processes that must occur by the police

2.4 Summary

The high annual mileage associated with driving for work results in people being exposed to risk on the road for longer periods of time, therefore increasing people's chance of being involved in a collision. The collision data suggests that there are also individual and work-related factors that lead to involvement in collisions. Males are over represented in work-related collisions. Fatigue is suggested to be the main contributory factor for collision involvement. Additional factors for collision involvement include speeding and driving under the influence of alcohol.

3 Costs of work-related road traffic collisions

There are a number of costs associated with work-related road collisions for employees and the wider society.

In terms of costs for society, collisions involving vehicles driven for work purposes have been estimated to cost £4.4 billion each year. This estimate is reduced to £3.7 billion a year when cases are taken into account where work-related drivers couldn't reasonably avoid the collision, even following best practice guidelines[31]. The UK Trades Union Congress (2004) suggests that the annual costs of work-related drivers killed or injured on the road is £3.5 billion[32].

In terms of costs for employers, these tend to be underestimated[33]. This has been explained in terms of the iceberg effect, where the obvious costs are located above the waterline. In comparison the hidden costs such as administration and reflections on customer service are below the waterline[34]. These hidden costs may be particularly present in smaller fleets where maintenance and repairs are undertaken within the organisation. The cost of 'at work' collisions for employers has been estimated to be £2.7 billion per year in the UK, this includes obvious and hidden costs[31].

It is suggested that a voluntary approach will be adopted by organisations to address road safety when the benefits of managing work-related road safety is perceived to outweigh the costs[11]. Generally, managers tend to focus on fleet safety as a response to a number of negative events, such as expensive collisions, increasing maintenance costs and rising numbers of claims within an organisation[35]. The general areas of costs associated with at work driving include lost working and production time, emergency medical costs, vehicle repair and maintenance costs, legal and insurance costs, damage to employer reputation and environmental costs[8]. It is important to consider the negative impact on staff of collisions including a reduction in staff morale and damage to an organisation's reputation[11].

Many of the costs highlighted in this section are estimates as there are a variety of factors that influence the cost of work-related collisions, for example the different damage costs that may occur[31]. In future, larger collision samples need to be examined and insurance costs analysed by crash severity to gain an understanding of the cost factors associated with work-related collisions[36].

4 Benefits of work-related road safety

There are a variety of benefits for employers who manage road safety. These include control over factors such as insurance premiums, legal fees and claims from employees and third parties. Organisations are able to manage costs, such as vehicle maintenance and fuel[7]. Various claims have been made that by improving driver competence this is estimated to save society around £2.5 billion annually. In addition, reducing fatigue may save around £750 million and improving vehicle selection and maintenance could result in savings of £275 million[37]. However, it is difficult to confirm the true benefits of managing work-related safety because initiatives are rarely evaluated.

Analysing and monitoring collisions means that employers can make informed decisions about where improvements can be made and tailor driver training and education to address the identified issues[7,38]. It has been argued that the rewards of creating a work safety culture leads to a reduction in the rate of collisions resulting in decreased amount of personal injury, liability and lost productivity[39].

The Driving for Better Business website (www.drivingforbetterbusiness.com) provides details of specific benefits associated with a number of companies that have implemented road safety initiatives. This is a campaign run through RoadSafe with the Department for Transport. The aim of the campaign is to 'raise awareness of the importance of work-related road safety in the business community and public sector by using advocates drawn from these communities to promote the business benefits of managing it effectively'. There are a variety of case studies that have been compiled from business champions. Examples of benefits from road safety initiatives include higher staff motivation and morale, improving relationships with insurers, enhanced public image and overall increased business performance[40].

Case studies have also incorporated the community in which the organisations operate. This can result in positive road safety initiatives for the wider community. Examples from the case studies include involvement in local community events supporting road safety, involving family members in safety initiatives and linking safety with environmental initiatives[41].

There are benefits related to the environment from managing work-related road safety. Eco driving has been estimated to reduce fuel consumption by 10%. Eco driving involves driving behaviour such as accelerating moderately, anticipating traffic flows, signals and driving at an even pace[42]. Individuals who drive for work tend to have a high mileage; therefore by adopting aspects of eco-driving this can lead to a reduction in fuel costs and carbon emissions. Organisations addressing road safety may link this to environmental initiatives, such as developing smarter ways of working without travelling, optimising journey schedules and opting for safer modes of transport[43].

This section outlines that there are a number of benefits associated with road traffic collisions for both employers and the wider society. However there are also barriers associated with adopting work-related road safety. A number of barriers to fleet safety have been identified in Australia, but are relevant to other areas of the world. This includes the limited collection of data under 'purpose of journey', current operational procedures and management structures, limited commitment from senior management and issues with integrating fleet safety with occupational health and safety[44]. The time taken to implement road safety policies and procedures is perceived to be the most common barrier. In addition employees' attitude to road safety may be a barrier as employees may be reluctant to understand the risks associated with driving and overestimate their ability[7].

The following section identifies the key risk factors for at work drivers, this provides information about the areas that effective initiatives might address.

5 Key risk factors for work-related drivers

Individual characteristics have been suggested as reasons for some work-related drivers having elevated collision risk and involvement[4]. There are also work-related factors that have been linked to collision involvement. These areas will be discussed in this section.

5.1 Individual factors

It is generally acknowledged that individual differences influence safe driving performance. To ensure that effective and appropriate road safety policies and procedures are adopted a better understanding of individual differences is essential for reducing work-related collisions[45].

Research commissioned by the Health and Safety Executive (2002) examined the contribution of individual factors to work-related driving behaviour[45]. They found that young drivers were more likely to be involved in a collision; this was linked to an overestimation of driving ability and underestimation of risks. There were also differences in collisions experienced by males and females. Males were involved in more collisions and were more likely to have a road collision caused by a violation (illegal driving behaviour), whereas females were more likely to be involved in collisions due to errors in judgement and perception. Individuals with higher levels of education were more likely to report speeding and reported seat-belt use was found to increase with education. Personality characteristics associated with risky driving behaviour included high levels of sensation seeking, aggression and depression.

The Health and Safety Executive (2005) states that stress is 'the adverse reaction people have to excessive pressures or other types of demand placed on them'[46]. It has been estimated that 1 in 5 people find their jobs either very or extremely stressful, with over half a million people reporting work-related stress at a level that is making them ill. Individuals that are unable to cope with stress have been shown to experience anger and aggression whilst driving[47]. Those individuals with a high level of stress may be inclined to ruminate about work whilst driving, diverting their attention from traffic[48].

Stress reactions, speeding and collision involvement among males of different driver groups were investigated in Finland. This included taxi drivers, minibus drivers, heavy vehicle drivers and non-professional drivers. Individuals were required to complete the Driver Stress Inventory. Findings showed that aggression, a dislike of driving and hazard monitoring were related to collision involvement after controlling age, annual mileage and driver group. A dislike of driving and thrill seeking was related to speeding on city roads[49].

A framework has been developed to investigate the factors that influence safety whilst driving a work vehicle. Links were found between safety motivation and safety outcomes. Those employees that were motivated to engage in safe behaviours were less likely to have accidents in the workplace[50]. This implies that focusing on increasing drivers' belief in their ability to drive safely and their attitudes towards road safety may increase levels of motivation and reduce road collisions.

5.2 Work-related factors

The 'fleet driver effect' has been outlined in various reports examining work-related drivers[4, 51,52]. It implies that there are particular risk factors associated with company car drivers that result in higher collision liability. The risks include increased exposure on the roads, driving unfamiliar and powerful vehicles, work pressures, driving for long periods of time resulting in fatigue and driving in adverse weather conditions[53,54].

The car has been described as a 'mobile office' due to increasing business pressures of 'staying in touch' in a competitive working environment[55]. Mobile working may result in greater risks to individual's occupational health due to its association with extended working hours and employers' lack of concern for drivers' safety[56]. Long periods of time spent driving during busy periods of the day may result in fatigue. The vehicle is often used as part of the workplace therefore drivers are likely to participate in distracting activities linked to work, such as using a mobile phone[57].

A study carried out in France suggests that driving for work was linked to difficult working conditions. Risk factors that emerged after controlling for road exposure included 'scheduling issues, difficulties with communicating with supervisors, low seniority in the activity, low educational level and physical constraints at work'. In terms of scheduling issues this incorporated inflexible schedules and lack of consecutive rest days[15].

Driver fatigue is 'characterised by reduced alertness associated with diminished cognitive and motor performance'[58]. Fatigue has been shown to be a result of high pressure working environments, working to a fixed schedule and experiencing stress. This is particularly associated with sales and marketing staff that tend to drive late at night after a long workday[48]. Sleepiness may depend on the nature of the driving and the demands placed on an individual[59]. It is suggested that sleepiness has been identified as a reason for fatal collisions occurring at work[60]. A systematic review has been carried out investigating the risk factors associated with work-related collisions. It was concluded that fatigue and sleepiness were the most researched areas and were consistently linked to increased risk[61].

Speeding has been associated with work-related traffic due to time pressures with individuals trying to save time whilst driving and meet scheduled deadlines[48,62,63]. Many people feel it is necessary to exceed speed limits whilst driving for work[64]. Time pressures may influence drivers to participate in unsafe behaviour whilst driving, such as speeding, overtaking and following vehicles closely. However, the extent to which individuals will engage in these types of behaviour varies[2].

It has been implied that individuals who drive for work tend to adopt less safe driving behaviours compared to other drivers[21]. It has been implied that drivers may take less care whilst driving work-related vehicles as the driver does not own the vehicle and there is little or no financial burden in the case of damage. A survey carried out on 204 people within four different organisations examined speeding in work and non-related work vehicles. It was predicted that work-related drivers would report a higher intention to speed in work vehicles compared to their personal vehicles. The findings showed that respondents actually reported less speeding and intention to speed in work-related vehicles compared to personal vehicles. A limitation associated with this study is that a self-report method was used to obtain data that may have biased the results, with respondents answering in a way that would be seen as desirable by their employer[65].

There has been research to suggest differences between safety belt use in work and non-work-related vehicles. A study carried out in Michigan showed that occupant safety belt use in commercial light-vehicles was significantly lower than belt use in non-commercial light-vehicles. However, a possibility for the low rate could be due to the mandatory safety belt law allowing certain commercial vehicles to be exempt[66]. Seat belt wearing rates have been found to be low in occupants of LCVs and minibuses where fatalities have occurred[67].

5.3 Summary

There are a number of risk factors that have been outlined at an individual and work level. Certain individual characteristics predispose drivers to have higher risks of being involved in a collision. This includes gender differences, with males being over represented in work-related collisions and types of personality associated with collision involvement, such as sensation seeking and aggression. An individual's level of stress may also influence their driving. Work-related drivers' risk is increased with the addition of work-related factors such as time pressures and driving for long periods of time resulting in excess speed and symptoms of fatigue.

The subsequent section identifies the influence of organisational culture and climate on employees' driving attitudes and behaviour.

6 Organisational and Safety Culture

It is important to consider organisational and work structures around work-related drivers, as these tend to shape drivers' attitudes and behaviours at work[30]. Organisational culture and climate have been discussed in terms of their influence on work-related driving and management. These terms are used interchangeably and are related to an organisation's social context[49]. For the purpose of the report organisational and safety culture will be examined.

Organisational culture has been linked to shaping and defining how an organisation is represented and how it functions[38]. Organisational culture and the behaviours of professional drivers were examined in 230 male drivers[49]. The results showed that there were significant differences between individuals with low and high levels of work orientation. Work orientation is the importance placed on the completion of work, the result of the work, working style of the employee and rules for work-related activities by the organisation. Drivers with low work orientation scores reported significantly higher frequencies of violations and errors compared to individuals with high scores of work orientation. This implies that drivers may be screened to access a variety of factors that may influence their driving behaviour.

Safety culture is shared attitudes, values, beliefs and behaviours related to safety[68,69]. Safety culture is shown to 'reflect the extent to which employees believe that safety is valued within an organisational context'. This includes the organisation's perception of safety procedures, policies and process. The general culture in the organisation has a significant impact on safety culture[70]. It has been implied that adopting a safety culture can minimise the risks faced by those driving for work[71,12]. There are certain ways that driver safety culture can be integrated into an organisation. This includes ensuring fleet safety is part of the hiring process so candidates understand the organisation's approach to safety from initial contact with the organisation. In addition, drivers can be categorised on their level of risk to focus collision exposure within an organisation and attempt to reduce it. Lastly, the allocation of resources to fleet safety within an organisation needs to reflect the risk levels involved. It is vital that organisations 'build and maintain' fleet safety culture in order to ensure positive results are sustained. The costs and benefits associated with fleet safety training need to be identified in order to gain management commitment[71].

There are a number of dimensions that have been associated with safety culture. This includes the following factors; management attitudes; effects of safe conduct on promotion; work pace; and status of safety officers[72]. Safety climate has been shown to be a stronger predictor of fatigue related behaviour and near misses compared to occupational stress. However, there were limitations related to the study findings due to the biases associated with self-report methods and the low response rate[73]. Work safety climate in terms of road safety has been described as 'the mental framework or set of perceptions that drivers hold about fleet safety policies and practices in their organisation'. A study showed that fleet safety culture influences current fleet driver behaviour, however, the effects on long-term effects collisions and offence rates is unclear[74].

A study carried out by the Department of Transport examined the relationship between safety culture, driver attitudes and collision liability. It was concluded that the relationship between organisational safety culture and driver attitudes was at least moderate in the seven companies studied. This relationship was shown to be strong enough to imply that changes made to improve an organisation's safety culture could influence drivers' attitudes and reduce accident liability of drivers[69]. The costs associated with implementing a safety culture are often perceived as being a barrier, however undertaking a cost benefit analysis suggests that a system involving more collisions will be more costly than a safety system[75].

The relationship between safety culture and aspects of work-related driving was studied in 1,000 workers in three organisations in Australia. The measures used for safety climate included communication; procedures; work pressures; relationships; safety rules; driver training and management commitment. Work-related driving was measured using self-reports about traffic violations; driver error; distractions whilst driving and pre-trip vehicle maintenance. The results showed that the safety culture measures related to aspects of work-related driving, with the strongest relationship including safety rules, communication and management commitment[74].

Fleet safety culture may be influenced by corporate procedures, processes and policies[8,76]. This influences how safely employees drive and the management practices that impact the value of safe driving[77]. Safety culture in an organisation has been shown to have a significant influence on behaviour whilst driving for work[78,79]. It has been suggested that if supervisors and fleet managers are perceived to be committed to safety then other drivers in the organisation are motivated to drive safely[80,81]. A study suggested that a driver's perception of their fleet manager's safety values but not their supervisor's safety values were related to motivation. This shows that fleet managers are an important influence for promoting driver safety in an organisation[81].

Overall, there are strong influences within the organisation that determine the level of safety experienced by employees. It is important that these areas are addressed through policies and procedures. This leads onto the following section on frameworks for adopting work-related road safety in an organisation.

7 Frameworks for addressing at work driver safety

There are frameworks that have been developed discussing how to integrate fleet safety into organisations. These frameworks have been established from knowledge about the risk factors associated with driving for work and research undertaken on the influence of organisational and safety culture. A few of the main frameworks that have been developed and applied in organisations are outlined in this section. This section commences with a discussion about the proposed framework suggested by the Health and Safety Executive and how additional models have included components of this framework.

7.1 Health and Safety Executive

A framework for managing work-related road safety has been established by the HSE[7]. This is suggested to be effective only when it is integrated into the management of health and safety at work. The main areas that need to be addressed include policy, responsibility, organisation and structure, systems and monitoring. The policy should be written if the company employs more than five people. Commitment should be gained from senior management and the responsibilities linked to road safety should be clearly defined. Organisations need to aim to integrate departments that have responsibilities for road safety. Systems should be developed to ensure that work-related road safety can be managed and performance should be monitored to determine whether policies are effective. These areas have been considered important for impacting driver behaviour in the organisation[77].

7.1.1 Haddon Matrix

The Haddon Matrix framework examines factors related to personal, environmental and social attributes[82]. The matrix has been used to understand the importance of different factors and assist with the development of initiatives. Occupational road safety initiatives have been incorporated into the matrix. The main factors include management culture, journey, road/site environment, people (drivers and managers), vehicle and social attributes[83]. The matrix incorporates three phases including:

- Pre-event phase: prevention of collisions and injuries e.g. risk assessment
- Event phase: minimising the potential for injuries to occur e.g. emergency support to driver

- Post-event stage: reducing the consequences and impact of the injuries e.g. policy and process to report, record and investigate collisions

The matrix provides a clear indication of fleet safety countermeasures and helps focus work on a variety of areas[35].

A report contracted by the National Institute for Occupational Safety and Health (NIOSH), a US federal agency responsibly for conducting research and making recommendations to prevent injury reviewed occupational road safety around the world. The Haddon Matrix was used to provide a summary of the road safety initiatives discussed in the report (see Appendix A). The report makes recommendations from research about key areas for initiatives. It is acknowledged that the framework includes good practice initiatives identified in the report that are supported by increasing evaluation data and other outcomes. The report suggests that initially management culture needs to be addressed. This includes examining the extent of the problem in an organisation by analysing relevant data. This will lead to development of a business case and commitment gained from senior managers. The other initiatives under management culture can then be reviewed to ensure work-related safety systems are in place[83].

A case study was carried out on British Telecommunications[84]. The main focus of the study was developing and evaluating effective processes of improving road safety in an organisation over a long period of time. The Haddon Matrix was used as a framework to structure the organisational road safety programme. The evaluation of outcomes suggests a reduction in claims and annual costs.

The Haddon Matrix integrates several components of the HSE framework. This includes aspects within pre-event stage, event stage and post-event stage. Pre-event stage involves responsibility, organisation, structure and systems as described in the HSE framework. Post-event stage incorporates policy, responsibility and monitoring from the HSE framework.

7.1.2 WIPE Fleet Safety Process Model

The WIPE fleet safety process model was created from a number of theories and concepts discussed in the NIOSH report integrating occupational health and safety, fleet management and road safety research (see Appendix B)[83]. This framework can be used to write a business case for fleet safety. The model is split into four stages of an organisation's fleet safety process. The first stage is to investigate the reason for focusing on fleet safety taking into account the impact on society and business, legal considerations and costs. The second stage involves undertaking an initial and continuous status review to gain understanding of the current situation of the organisation. The next stage involves piloting, implementing and managing the initiatives. The Haddon Matrix is suggested to be useful for identifying fleet safety programmes. The final stage is evaluating the programme by monitoring key performance indicators.

An in-depth study was carried out on Wolseley, a heating and plumbing distributor operating in 28 countries, employing 16,000 people in the United Kingdom[84]. Many of the employees drive as part of their work (7,000) using commercial and company cars. Most of the workforce commutes to work by road. Wolseley has used the WIPE fleet safety model described previously to structure their fleet safety programme. The Haddon Matrix has also been used to develop a framework for piloting, implementing and managing change of fleet safety countermeasures. The main lessons learnt from the case study include the advantages of using structured models to lead organisational road safety. However, it has been acknowledged that a limitation of the approach is that it may be difficult to identify the impact individual countermeasures may have. The attitude of senior management towards fleet safety was suggested to be vital to the success of programmes. Other areas included the focus on continual improvement, benchmarking and identifying gaps where improvements can be made[85].

The WIPE fleet safety process model discusses responsibility, organisation, structure, systems and monitoring from the HSE framework. However, it does not specifically mention policy.

7.1.3 Ten Step Fleet Safety Model

This model is based on Australian legislative frameworks and can be used for a number of purposes (see Appendix C) including gap analysis, benchmarking, structuring fleet improvement workshops, developing a fleet safety manual and improving programmes[86]. The model is represented by a cycle with four main areas; foundations; management; investigation and resolution. A number of organisations have implemented the model. However, several limitations have been identified and it has not been formally evaluated. The limitations include a lack of detail about how to develop a business case and influence on society[83]. There is also the issue of being able to generalise the model to the UK as it is based on Australian legislative frameworks. This model incorporates all of the aspects described in the HSE model as a cyclical process.

7.1.4 RoSPA (The Royal Society for the Prevention of Accidents): MORR: Risk management cycle

RoSPA campaigns for organisations to take a proactive approach to managing and reducing risks related to work-related road safety. A risk management cycle has been proposed to manage work-related road safety (see Appendix D). The cycle is suggested to incorporate continuous improvement for occupational road risk. An initial status review is undertaken to develop an understanding of the current performance and collision risk associated with the organisation. Recommendations are developed through this consultation period to reduce the number of collisions and associated costs for the organisation. A management system approach considers a proactive rather than reactive approach to managing risks. Safety is prioritised in conjunction with other key objectives of an organisation such as sales and profitability[11]. This model includes all of the aspects outlined in the HSE framework.

7.1.5 Occupational Light Vehicle Use (research based)

A conceptual model has been developed to provide a structure for identifying research needs, proposing policy and identifying fleet safety initiatives (see Appendix E)[53]. The model shows the worker as the locus of injury in the centre of work-related road injuries. There are various levels of influence including; physical work environments; immediate and external; organisational environment and policy environment. The model was used to examine existing knowledge and findings suggest that the majority of research is undertaken on company cars. It is implied that there is a lack of research focusing on exposure, work design factors and risk associated with the wider occupational light vehicle use population. However, the model has not been evaluated in terms of its practical application[83]. This model includes policy, organisation and responsibility described in the HSE framework.

7.1.6 Work-related road safety framework

Frameworks have been developed to direct road safety professionals in designing initiatives to improve road safety at work. This model has been contrasted with the Haddon Matrix framework as it is developed through organisational and management literature. The approach incorporates three levels; organisational; work group and individual. At the organisational level it is important that there is commitment from senior level to act as change agents for developing and integrating initiatives (see Appendix F). Senior level management must ensure that employees' workload allows for safety to be prioritised. At a work-group level the change agent responsible for ensuring that safety outcomes are successful includes supervisors and fleet managers.

Individual level initiatives incorporate group and individual based discussion and feedback and goal setting exercises. This initiative level tends to be cost effective, however external observers are required to provide feedback and initiate discussions[51]. This framework discussed work-related road safety in terms of the organisation, workgroup and individual. In comparison, the HSE framework discusses policy; responsibility; organisation; structure; systems and monitoring.

7.2 Summary

There are a number of similar themes that are present in the frameworks outlined in this section. These include identifying the reasons for focusing on work-related road safety and understanding the needs and current performance in terms of addressing work-related road safety in an organisation. It is important that policies are written about work-related road safety and that commitment is gained from senior management. A lack of commitment to adopting policies may influence the effectiveness of road safety initiatives such as selection and training due to working practice being undermined[2]. Initiatives can be developed to prevent, minimise and reduce the impact of work-related collisions. In addition, key performance indicators can be examined to evaluate the effectiveness and impact of different initiatives used in organisations.

It is important that occupational road safety programmes are evaluated in order to access their effectiveness and to make improvements. It has been suggested that evaluation of safety and risk management programmes should examine incident rates, costs and qualitative measures. A number of key performance indicators associated with work-related safety have been identified[87]. A couple of examples have been provided below:

- Incident rates; number of incidents per week/month; number of claims; number of injuries; percentage of vehicles in an incident; incidents per million miles driven
- Incident costs; vehicle costs (repair of vehicle, increased insurance excess and premiums); driver costs (loss of expertise, compensation); third party costs (vehicle damage, legal fees)
- Qualitative measures; management attitude; employee turnover; morale and job satisfaction

Organisations need to ensure that baseline measures are collected as this influences the development and evaluation of initiatives[88].

The majority of the models discussed previously integrate aspects of the HSE framework. There are a variety of work-related road safety initiatives, which means that frameworks are useful for structuring programs of work. However, it is difficult to suggest which models may be most effective at increasing road safety in an organisation and delivering the most benefits associated with work-related road safety. However, frameworks that identify elements of the HSE framework may be useful as they address a number of factors related to improving work-related safety.

7.3 Proposed model

The diagram below shows a cyclical model that incorporates aspects from frameworks described in the previous sections. This model ensures that a business case is written to gain commitment and support from senior management. This leads onto policy being created around work-related driving in the organisation with clear processes and procedures. Following this, evidence is reviewed in terms of collision data and effective work-related road safety initiatives. This research would result in key performance indicators (KPIs) being created. The organisation could then be addressed as a whole and a safety culture could be embedded. This will involve responsibility for road safety in the organisation being determined and the implication for all personnel determined. The structure of road safety initiatives and ways to incorporate work-related road safety policy will be examined. Monitoring and evaluation is an on-going process in the model which continually informs the business case for undertaking work-related road safety measures in the organisation.

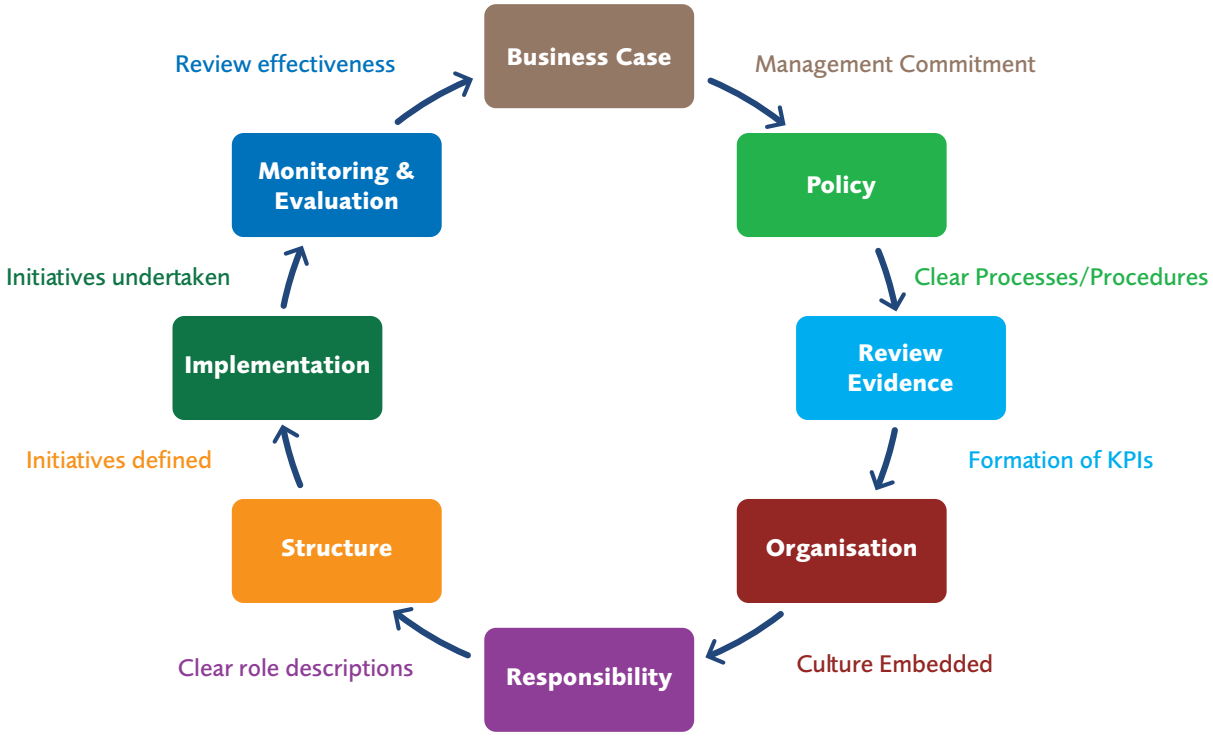

Figure 1 Proposed work-related road safety model

The previous model can be integrated with the framework below to discuss where each of the components described previously will be influenced and managed. It is important to integrate the wider industry and legal implications to individual organisations. The main levels of an organisation described below include senior management, supervisors and staff.

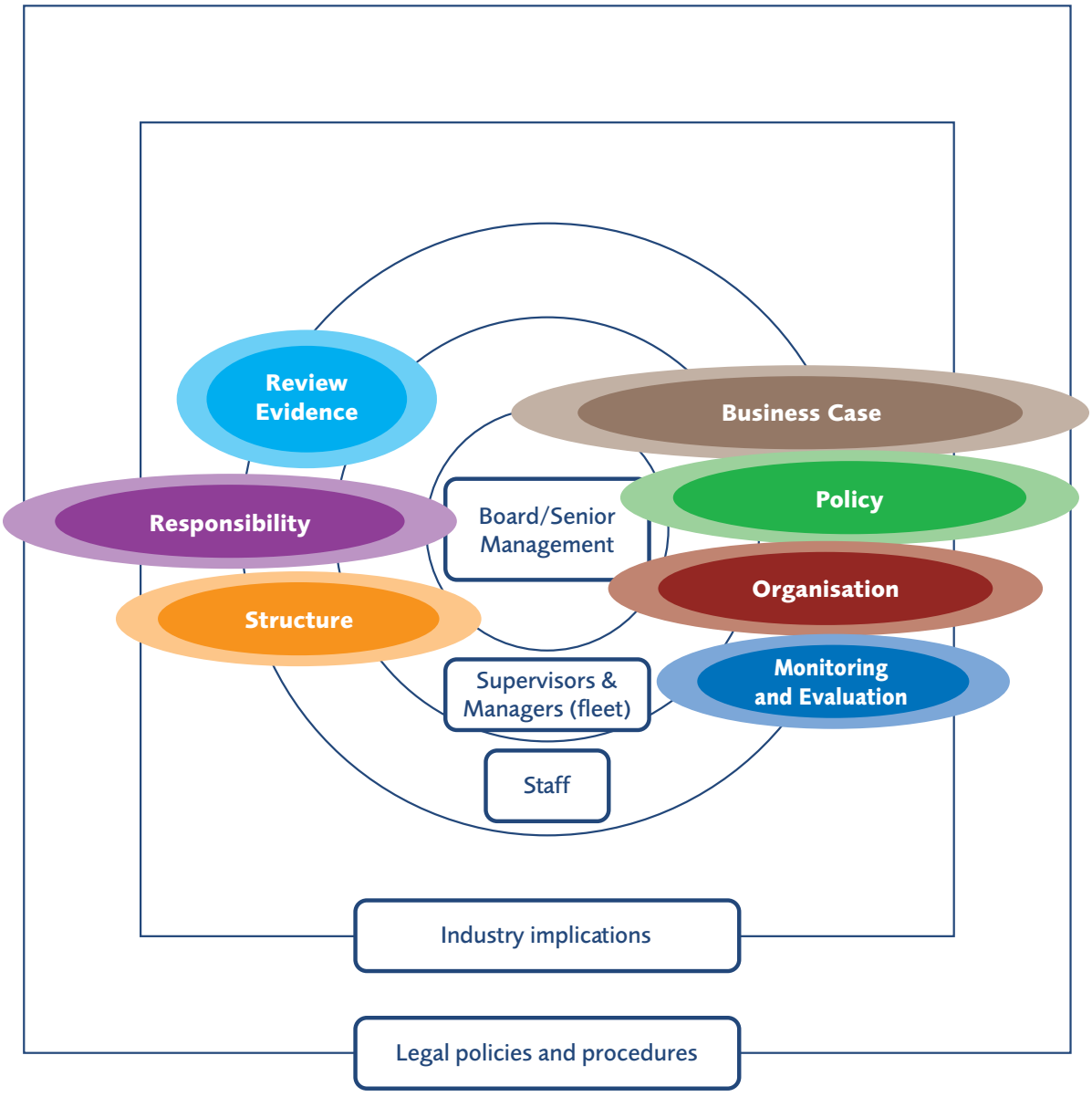

Figure 2 Framework of responsibilities

The table below suggests actions that may be carried out in each of the stages illustrated in the proposed work-related road safety model. A few examples have been given about certain actions that could be carried out during each of the stages. These examples have been derived from frameworks examined in the previous section.

Stage	Actions
Business Case	• Examine legal, economic, business and social reasons for undertaking work-related road safety in the organisation • Complete the business case and gain commitment from senior management
Policy	• Examine current work-related road safety policy in the organisation • Examine health and safety policy within the organisation • Research and determine relevant road safety policies from external influential bodies • Determine legal standards for work-related safety nationally and worldwide • Develop policy from research including processes to report and examine work-related road collisions
Review Evidence	• Undertake an analysis of the organisation's current work-related road collision data • Examine existing intelligence on effective work-related road safety initiatives • Form a report on learning outcomes from this stage
Organisation	• Access the current level of safety culture in the organisation • Determine a suitable change management process for embedding safety culture
Responsibility	• Determine the current roles and responsibilities for health and safety in the organisation • Identify the hierarchical structure of the organisation and personnel responsibilities • Create new roles and responsibilities for road safety in the organisation • Integrate work-related road safety in the health and safety aspects of the organisation
Structure	• Determine which work-related road safety initiatives are going to be developed in the organisation • Establish aims and objectives of each initiative • Ensure that there are champions within the organisation that will be responsible for each road safety initiative undertaken • Examine structure of each of the initiatives, including time, cost and personnel involved
Implementation	• Apply the initiatives into the organisation • Ensure initiatives follow structure that has been pre-determined
Monitoring & Evaluation	• Determine personnel responsible for monitoring and evaluation • Examine aims and objectives of all of the initiatives • Develop monitoring and evaluation structures for each of the initiatives • Analyse the amount safety culture has been integrated into the organisation • Provide reports on progress of the work-related road safety initiatives • Use outcomes from reports to inform business case

Table 1 Proposed work-related road safety stages and actions

8 Road Safety Initiatives for at work drivers

8.1 Overview

It is acknowledged that preventing work-related road collisions is one of the greatest challenges for occupational safety. This is due to the road environment being unique and the limited amount of controls that can be placed on employees driving compared to other working environments[83,89].

Road safety procedures and policies led by organisations have tended to focus on managing separate issues such as vehicle maintenance[83]. In addition, the majority of road safety initiatives at work have adopted an individual centred approach. Organisations generally focus on pre-employment or current service driver evaluation and driver improvement programmes. In comparison, measures that are less likely to be undertaken by organisations include an integrated approach, such as developing policy around vehicle safety, analysing collision data and adapting schedules of work to reduce stress levels[11]. These issues are important to consider, and generally good practice is seen to be moving towards a systems-based approach that incorporates both the organisation and individual[51]. This is emphasised in the previous section through the factors contained in various frameworks discussed.

It has been further suggested that fleet safety initiatives have tended to adopt a 'one size fits all' approach. In order to focus on the particular issues of an organisation it is important to undertake a needs analysis to establish the issues within an organisation[88]. This is highlighted in the second section of the WIPE fleet safety process model where a review is carried out on the current situation in the organisation.

The European Agency for Safety and Health at work outlines that there are specific responsibilities employers should ensure are met through initiatives. These include following a general framework of health and safety that assesses and prevents risks, prioritises measures to eliminate risk, consults with employees, provides information and training[16]. The Motorists Forum (2005) suggests areas that need to be addressed in terms of increasing work-related road safety[3]. The appropriate health and safety policies need to be assessed in terms of work-related driving. Responsibility for work-related road safety should be gained from top-level management. In addition, there should be clear lines of accountability and commitment from managers and drivers to policies. Organisations should have systems to undertake assessments and deliver training with measures in place for monitoring.

8.2 Work-related road safety initiatives

There are a variety of road safety initiatives that have attempted to reduce the risk of driving for work. A study that examined road safety initiatives within corporate environments suggested that those with the potential to be effective focussed on the selection of safer vehicles; certain incentive schemes; driver training and education programmes[90].

Detailed case studies of work-related road safety initiatives can be located on the Driving for Better Business website. There are a number of areas that the case studies discuss. This includes; organisational structure; work-related road safety policies and procedures; performance measures; collision reduction; financial benefits and lessons learnt. Many of the case studies show a reduction in collisions and other benefits, such as improved public image, lower staff absences and enhanced business performance. A number of road safety initiatives will be discussed in the following sections.

8.2.1 Training and Education

There are a number of training and education programmes that have targeted at-work driver safety, but relatively few of these have been rigorously evaluated. This implies that the evidence base in terms of effective road safety initiatives addressing work-related road safety is relatively weak. Several reasons have been suggested to explain methodological evaluation difficulties. These include creating control groups, bias in selecting drivers for an initiative and the number of measures being used to address driver safety; therefore it is difficult to understand which measure is most effective[4]. A few studies are discussed below that have evaluated training and education initiatives.

An evaluation study carried out within a Swedish telephone company (Televerket) compared four different initiatives for reducing collision involvement by focusing on driver behaviour. The first initiative included driver training with manoeuvring, skid training and commentary driving. The second was a campaign that covered road safety aspects. This involved meetings covering information on 'specific seasonal problems'. The third involved three group discussions lasting an hour, which were held with groups of 8-15 drivers where problems about road safety were discussed. Finally, a group received a bonus scheme whereby money was allocated depending on the fleet size and collision involvement. After a year, the remaining money was given to the drivers to organise a group activity, such as a trip. The collision risks and costs were analysed two years after the initiatives were undertaken. Group discussions and driver training reduced the collision risk compared to the control group. Collision costs were reduced for all groups, but not the control. It was concluded that group discussions should be tested further especially in terms of young drivers as they are a high-risk group[91].

A review of car fleet performance was carried out due to the costs of collisions occurring in a relatively small fleet within an organisation. Baseline data was collected during 1994 for all Post Office fleet vehicles (approximately 37,000 vehicles). The Occupational Health Service (OHS) fleet consists of 48 vehicles and collision rate was shown to be high with a total cost of claims in excess of £75,000 with an average of £2,000 per claim. As a result, senior management decided to introduce an initiative with three areas including raising drivers' awareness, identifying high risk drivers and providing advanced driver training and support for drivers after a collision. The programme received positive feedback from drivers and the ratio of claims to fleet size improved over 4 years. For the OHS fleet collision costs reduced from £75,000 to below £10,000[92].

Training has been developed that focuses on particular risk factors. A fatigue management-training programme for light vehicle (LV) drivers was delivered to British Petroleum drivers in Australia and New Zealand between 2000-2002. The first section covered demographics, sleep habits and risks. The second section contained thirteen questions on causes of fatigue and countermeasure strategies, this information was contained in the training modules. The results showed that the majority of respondents answered questions correctly about fatigue and countermeasure strategies. 91% found the fatigue training at least moderately useful and 50% claimed they had changed strategies at home and 43% had changed strategies at work[93].

An additional study examined two initiatives focusing on the prevention of work-related road collisions in two companies. The first initiative involved a social psychological discussion. This has previously been shown to change attitudes after a decision more effectively than a traditional lecture[94]. Employees participated in three small group meetings of 7-14 drivers. The areas that were discussed included, problems related to driving for work and decisions about changing driving behaviour in the future. The second initiative included driver training to improve road safety for all employees and setting a goal of zero collisions. The driver training involved a one-day course of anticipatory driving including lectures and driving in individuals' own cars. The group discussion method reduced road collisions in the company. The anticipatory driving evaluations (audit of driving skills) of employees improved and many employees had discussed the principles of anticipatory driving with their family. However, 3 years after the driver training there were 6 traffic collisions, compared to the 4 traffic collisions occurring 3 years before the initiatives[95]. This may be due to the Hawthorne Effect where individuals in the study improve or modify their behaviour because they are being studied[109].

An information pack for work-related road safety has been developed and evaluated. The aim of the pack was to raise awareness of the risks associated with work-related driving and provide information for managers to implement or improve existing work-related road safety management systems. Furthermore, it aimed to encourage change in an organisation's culture in terms of safety to improve driver behaviour and organisation systems. The information pack was presented as a CD-ROM. The evaluation of the information pack suggested that organisations found it effective in reminding them of the importance of work-related road safety and raising awareness of the risks associated with driving for work. Around 20% of organisations reported changes to their systems as a result of using the information pack. However, another 35% responded that changes to their systems were not a result of using the information pack. This was suggested to be due to the sample already being positively biased towards work-related road safety management. A number of factors were identified for facilitating change. This included commitment from senior management, duty of care towards employees and participating in the study. There were also a number of barriers associated with implementing change, these included changes in personnel within the organisation, lack of time, resources and a dedicated safety representative[96].

Research carried out by RoSPA focused on young drivers to gain understanding of the risks associated with young drivers at work and the development of a workshop for employees. They found that 60% of employers surveyed felt that the current driver training and testing was 'not at all' or 'not very' adequate for preparing young people to drive for work. It was highlighted that many employers do not rely on an individual's driving licence and carry out their own assessment of driving. Many of the employers commented that young employees were driving in situations that were not covered by the driving test. In addition, many employers implement a probation period and place restrictions on young employees driving similar to a graduated licensing approach. More than half of the employers surveyed would like to see a post-test driving qualification introduced due to collision reduction and compliance with health and safety legislation. A workshop was developed based on the research. It aimed to develop a participant's knowledge of issues related to driving for work, help young drivers understand that they can develop additional skills related to driving and identify ways employers can assist with young drivers' safety at work. This is currently in the process of being evaluated[97].

8.2.2 Online fleet assessments, training and education

Online fleet driver assessments have been used to identify, target and reduce road safety risks. Online education and training is increasingly being developed due to the claims that it is a cost efficient method of providing support and reducing delivery time[98,99]. Blended courses have also been adopted that incorporate both online and face-to-face training[100]. It is suggested that the increasing acceptance of online training has not been matched with research indicating its success as a learning environment[101].

A few studies have compared online and classroom training in academic environments. This has suggested that there is no difference between online and face-to-face training in terms of learning outcomes[102]. However, students receiving online support have reported poorer experiences compared to those receiving face-to-face tuition. A meta-analysis used to examine the effectiveness of online and classroom instruction suggested that online training was more effective for teaching declarative knowledge; however both methods were equally effective for teaching procedural knowledge and trainee satisfaction levels. Declarative knowledge includes memory of facts and principles. In comparison, procedural knowledge involves an understanding of actions and skills[103]. The positive impacts of online training and education include supporting collaboration and networking, time and location flexibility, unlimited access to knowledge and the creation of an interactive community of learners. Negative impacts include the elimination of non-verbal communication, difficulties of using technology to interact and the requirement for strong self-discipline[104].

8.2.3 Incentive Schemes

Incentive programmes aim to promote or encourage specific activities or behaviours by a group of individuals over a set time period; these have been used within the management of work-related road safety[90]. There are a number of advantages and disadvantages associated with incentive programmes. Advantages include promoting culture change, rewarding positive behaviour, increasing employee self esteem and reducing costs. Whereas disadvantages include pressure to meet targets, difficulty of administering schemes and negative impact on staff morale. A number of steps have been suggested for introducing driver incentive programmes, these include management commitment and communication with the target population, building the scheme into controls and appraisals, using rewards that are simple and short-term, continuous and fair, discouraging under reporting with investigation policies, incorporating all management levels in the organisation and ensuring a proactive approach is implemented[105].

8.2.4 Vehicle Technology

There are a number of types of in-vehicle technology designed to assist with driving safely. However, this report will not cover this area in detail. Information published by RoSPA describes different types of in-vehicle technology including driver assistance and safety systems, in-vehicle information systems, speed management devices, electronic braking and stability systems and monitoring devices[106].

8.3 Summary

There are a variety of initiatives that have been developed to address work-related road safety. However, there is a lack of robust evaluations that have been carried out, therefore resulting in a weak evidence base. A collaborative approach is required between governments, researchers and road safety practitioners to increase knowledge about effective initiatives[107].

9 Current work-related road safety initiatives

Anecdotal reports of current initiatives in the UK were gathered using the help request on the Road Safety Knowledge Centre. A number of local authorities replied with reports discussing the current initiatives that were being undertaken in a variety of local authority areas.

The main information that was gathered included whether the focus of initiatives was on mangers, drivers or a combination of both. In addition, information was collected about the nature of the initiative and if this was preceded by a review of the organisation's approach to road safety. Finally, whether the initiative had been evaluated and the main drawbacks local authorities face working in this area.

Initiatives tended to focus on both managers and drivers. The majority of initiatives included workshop presentations and assessments of the organisation's work-related road safety policy. The areas that the workshops cover include driver fatigue, distractions, time management, routine vehicle checks, affects of drinks and drugs on driving and legislation relating to driving a vehicle for work. The assessments involve identifying the current level of road safety in an organisation and providing recommendations about where improvements may be made.

There was a lack of robust evaluation carried out on the current initiatives. However, anecdotal feedback from organisations receiving road safety initiatives is generally positive. It is implied that the majority of evaluations are carried out by the organisation.

The main problems identified were the lack of budget available within companies for addressing road safety. However, it is suggested that when training is offered for free it may be perceived as having little value. Numbers attending workshops offered by one council actually increased when organisations were being charged for the service. Some local authorities are able to subsidise the service they provide organisations.

Organisations tend to have different needs; therefore initiatives need to be tailored to specific needs, which is time consuming. There is also a lack of knowledge in terms of organisations relating road safety to health and safety. Therefore raising the awareness of work-related road safety ensures organisations understand its importance. Fleet safety managers are perceived to ensure that changes are made following road safety initiatives provided by local authorities.

10 Recommendations

Initiatives could be embedded in an organisational context:

- Employers' knowledge could be increased about the importance of safety culture for road safety within an organisation and how safety culture could be integrated into organisational policies, procedures and processes
- Work-related driver initiatives could identify the reasons for focusing on work-related road safety, understanding the needs and current performance in terms of addressing work-related road safety in an organisation
- Work-related initiatives could be based on key areas outlined by the HSE framework including policy; responsibility; organisation; structure; systems and monitoring
- Employers' knowledge could be increased about the value of policies being written about work-related road safety and that commitment is gained through senior management
- Employers understanding of key performance indicators could be increased in order to evaluate the effectiveness and impact of different initiatives used in organisations
- The hidden costs associated with work-related collisions could be highlighted to organisations
- Organisations could be informed of the numerous benefits of addressing work-related road safety
- The reporting of 'purpose of journey' could be increased to provide information about the types of work-related collisions that occur
- Evaluation could usefully be carried out on training and education initiatives to establish which are most effective at increasing road safety in order to build an evidence base in this area

Initiatives could focus on individual differences and risk factors relating to work-related drivers:

- Males could be targeted specifically as they tend to be more prone to being involved in a work-related road collision compared to females
- The issue of speeding and driving whilst tired could be addressed as these are shown to be the highest contributing factors for collisions involving drivers at work

- Employers could be made aware of the risks placed on employees driving when they are experiencing time pressures, such as increased stress
- Employers could be made aware of the negative implications of increased exposure for work-related drivers and address this issue through organisational policies, procedures and processes

Considerations and caveats

- Evaluation could be carried out specifically on the use of online training and education for work-related road safety in order to build the evidence base in this area
- The barriers against organisations undertaking work-related road safety could be usefully researched in order to determine where issues occur
- Case studies could be developed locally to provide examples of the benefits of work-related road safety for other organisations
- The level of work-related road safety initiatives being carried out by local authorities could be examined further to identify methods of overcoming barriers to road safety involvement in organisations
- Collision data could be collected from insurance companies and organisations to gain further understanding of factors related to work-related road collisions
- Further research and evaluation could be carried out on the proposed model of work-related safety to determine its effectiveness in organisations

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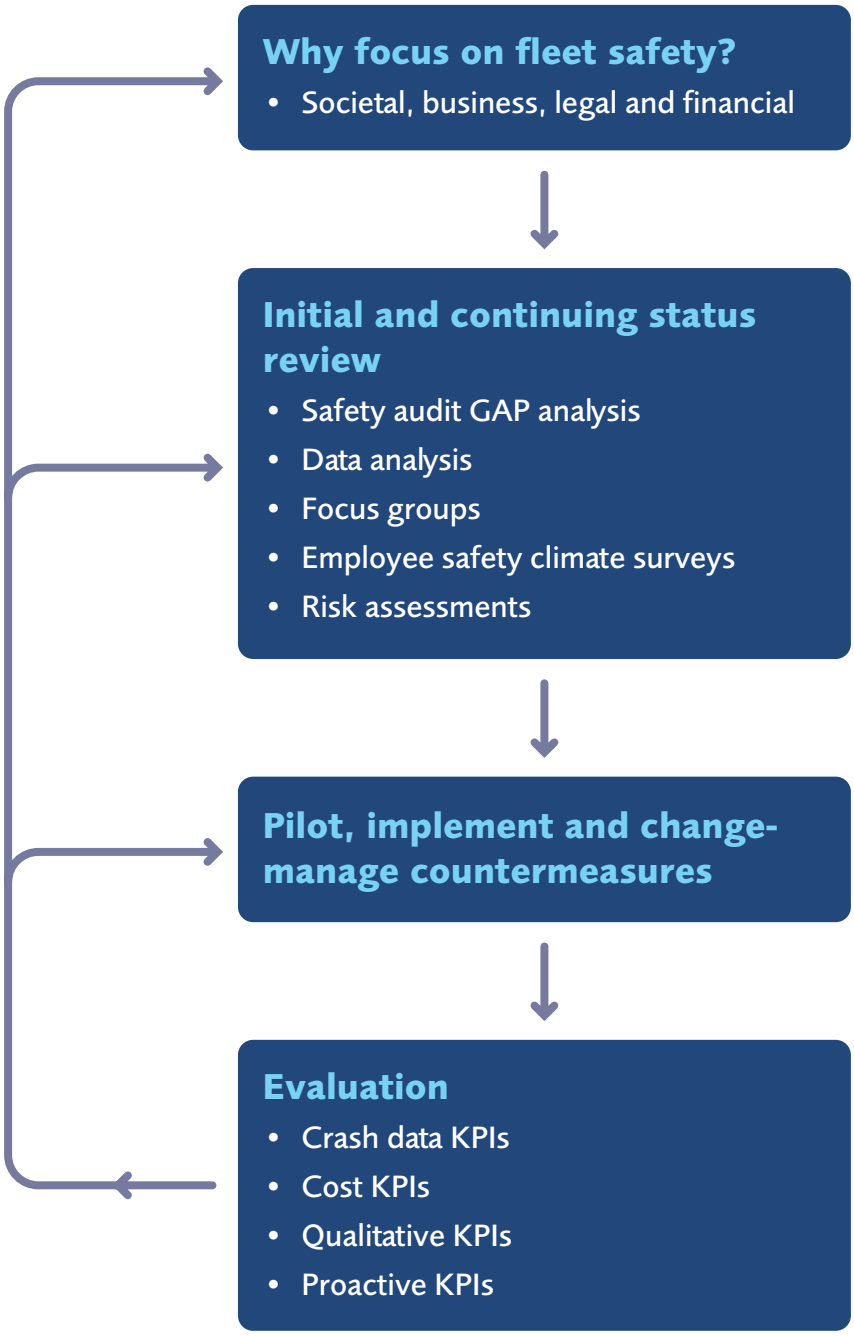
12 Appendices

Appendix A: Haddon Matrix[83]

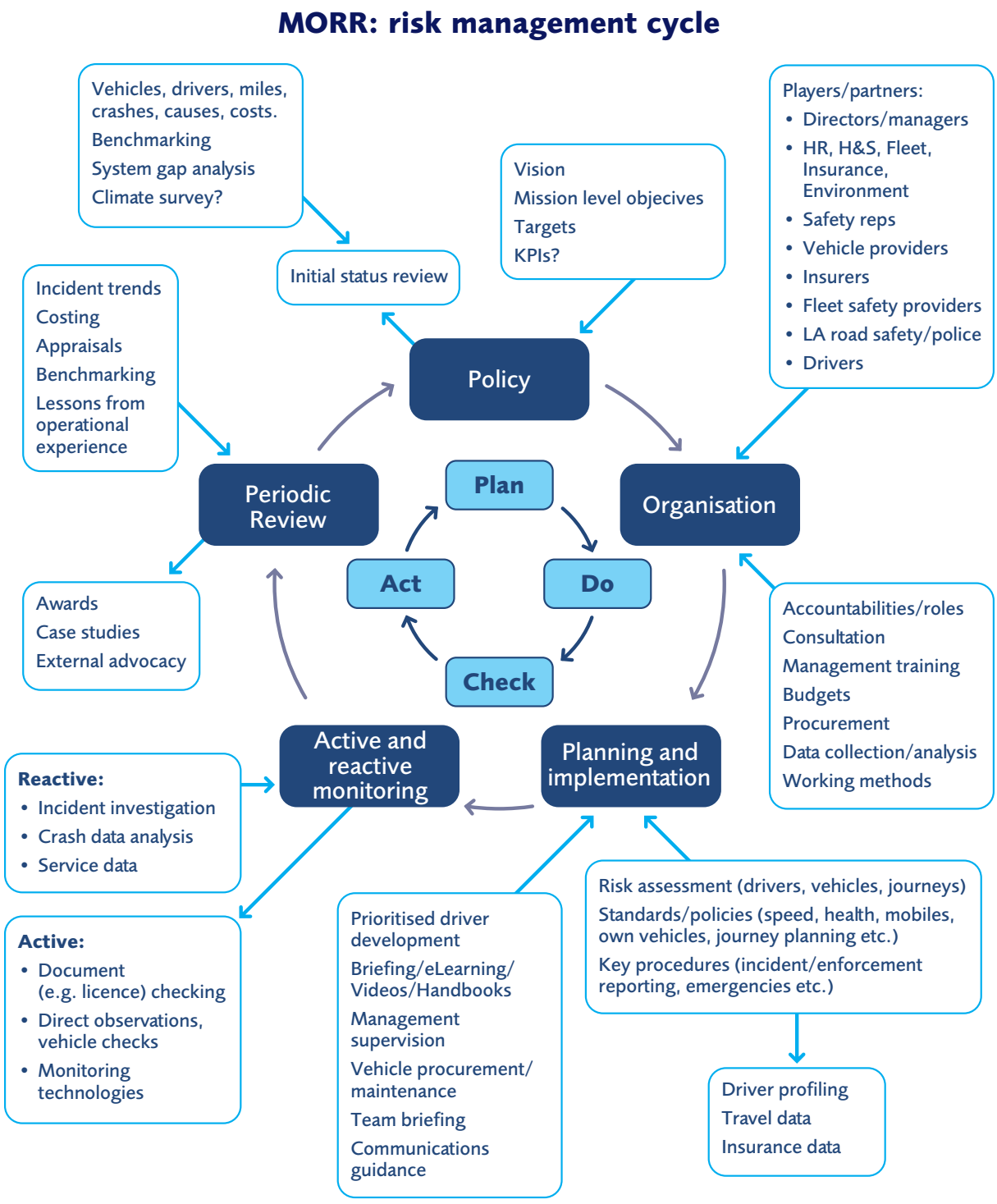
	Management Culture	Journey	Road/site environment	People – drivers and managers	Vehicle	External/societal/ community/brand
Pre-crash or pre-drive	Business case Business case Safety audit, claims analysis & focus group discussions Benchmarking Board level champions Pilot studies & trials Goals, policies & procedures Safety culture/climate Management structure Fleet safety committee Safety leadership by example and commitment Communications program Contractor standards Grey fleet (own vehicle) policy	Travel survey Travel policy Purpose Need to travel Modal choice Journey planning and route selection Route risk assessment Journey scheduling Emergency preparedness Shifts/working time Fatigue management	Risk assess Observation Guidelines 7 rules Site layout & signs Work permits Delivery & collection procedures Road improvement Black-spot mapping and hazard assessments Engage local and national agencies	Select Recruit Contract Induct Licensed & qualified Handbook Risk assess Train Work instructions Engage & encourage Equip eg high viz Communicate Driving pledge/rules Health & wellbeing Monitor Correct	Risk assessment Selection Specification Active and passive safety features Standards Servicing Maintenance Checking Use policy and legal compliance eg loading Mobile communication and navigation policy Intelligent Transport Systems (ITS) and telematics to monitor Wear and tear policy Grey fleet standards	Regulator/policy engagement Insurer engagement CSR External benchmarking External communications Family members program Community involvement Engaging other road users Road safety weeks/days Safety Eco groups European Road Safety Charter Road safety conference presentations Media outreach/PR Safety & environmental achievement awards
At scene	Emergency support to driver	Engage local investigators	Manage scene	Known process and 'crash pack/bumpcard' to manage scene	Reactive safety features Crashworthy ITS data capture	Escalation process
Post-crash	Policy and process to report, record & investigate incidents Change management process Ongoing claims data analysis Date warehousing & linkages Evaluation, KPI benchmarking & program development	Debrief and review Review journey elements of collision data Ongoing journey management review	Investigate and improve Review site/road element of collision data	Reporting and investigation process Driver debrief and corrective action Review people elements of collision data Counselling, trauma management & support Reassess/train	Strong openable doors Investigate ITS data Vehicle inspection & repair Review vehicle elements of collision data Review vehicle selection & use	Manage reputation and community learning process

Appendix B: WIPE Safety Model[83]



Appendix C: 10 Step Fleet Safety Model[86]

Appendix D: MORR risk cycle (RoSPA)



Appendix E: Occupational Light Vehicle Model[53]

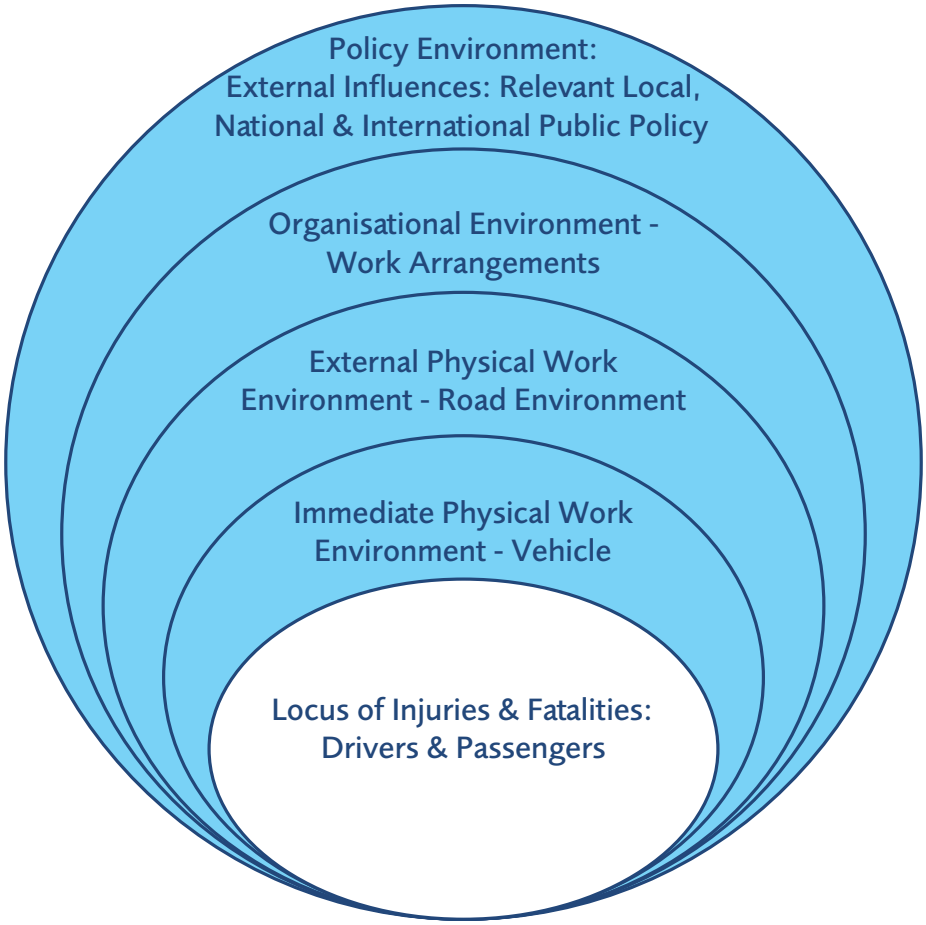


Figure Legend:

OLV - Users

Appendix F: Initiative framework for work-related road safety[51]