

Knowledge of workplace transport hazards amongst British businesses

Prepared by the **Health and Safety Laboratory**
for the Health and Safety Executive 2007

Knowledge of workplace transport hazards amongst British businesses

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As part of the Health and Safety Executive's (HSE) workplace transport priority programme, there is interest in establishing the areas in which knowledge of the hazards associated with workplace transport is lacking amongst industry, as these may then be targeted for future improvements. To assist in this undertaking, the Health and Safety Laboratory (HSL) was commissioned by HSE to gather baseline data on the current level of understanding regarding workplace transport hazards by British businesses, through consultations with their safety managers. A nationwide telephone questionnaire survey was conducted across a stratified sample of businesses from five major sectors of industry, seeking information on a range of issues known to be associated with workplace transport risk, as well as subsidiary questions on other inter-related workplace transport issues.

This report summarises the findings of the questionnaire survey, which are anticipated to make a significant contribution to the workplace transport priority programme information base. Providing a baseline of knowledge against which future activities may be evaluated will help to encourage more focussed interventions, through supplying the foundations that will allow HSE to assess the impact of awareness raising campaigns related to workplace transport hazards.

This report and the work it describes were funded by the Health and Safety Executive (HSE). Its contents, including any opinions and/or conclusions expressed, are those of the authors alone and do not necessarily reflect HSE policy.

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First published 2007

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EXECUTIVE SUMMARY

OBJECTIVES

As part of the Health and Safety Executive's (HSE) workplace transport priority programme, there is interest in establishing the areas in which knowledge of the hazards associated with workplace transport is lacking amongst industry, as these may then be targeted for future improvements. To assist in this undertaking, the Health and Safety Laboratory (HSL) was commissioned by HSE to gather baseline data on the current level of understanding regarding workplace transport hazards by British businesses, through consultations with their safety managers. A nationwide telephone questionnaire survey was conducted across a stratified sample of businesses from five major sectors of industry, seeking information on a range of issues known to be associated with workplace transport risk, as well as subsidiary questions on other inter-related workplace transport issues.

This report summarises the findings of the questionnaire survey, which are anticipated to make a significant contribution to the workplace transport priority programme information base. Providing a baseline of knowledge against which future activities may be evaluated will help to encourage more focussed interventions, through supplying the foundations that will allow HSE to assess the impact of awareness raising campaigns related to workplace transport hazards.

MAIN FINDINGS

- 502 telephone interviews were completed in total from the five industry sectors (extraction & utility supply: 125, manufacturing: 112, services: 111, agriculture: 101, construction: 53). With the exception of the low response level from construction, the sample gained was considered to be representative.
- In broad terms, the sample ascribed greatest importance to issues related to safe vehicle, followed by safe driver, then safe site. With respect to safe vehicle, the most important issues were considered to be vehicle condition, vehicle maintenance, and protection of the driver. In relation to safe site, good lighting, separating pedestrians and vehicles, and vehicle routes free from obstructions and congestion were most significant, whilst in terms of safe driver, following safe driving procedures, and the provision of driver training were deemed of most importance.
- On average across the sample, the least important issues were regarded to be the provision of a one-way system, speed bumps and a speed limit, provision of a designated area for reversing, minimising vehicle activity at peak pedestrian times (e.g. shift change, meals), and time pressure and / or incentives to complete driving duties.
- When analysed by sector, the ratings of hazard importance from agriculture were markedly lower with respect to PPE provision, driver training and refresher training, separation of pedestrians and vehicles, and driver supervision. The respondents from extraction & utility supply considered minimising reversing operations, separating pedestrians and vehicles, and reverse-in safety systems to be of greater importance than the sample as a whole.
- 28% of the sample stated that they had not performed a risk assessment that considered workplace transport issues.

- 132 organisations (~26%) reported that they provided no training for their workplace transport operators. Of particular concern, 65% of respondents from agriculture, and 32% from construction offered no training for their operators.
- 57% of respondents were unaware of HSE's workplace transport safety initiative. The most commonly utilised of HSE's workplace transport guidance publications was HS (G) 136 Workplace Transport Safety: Guidance for Employers, which 19% of the sample reported to have made use of. By far the most commonly used format for the HSE material obtained were booklets, used by 35% of the sample.

RECOMMENDATIONS

- There is a need to further educate all sectors of industry regarding the dangers associated with the use of workplace transport, in particular with respect to lack of supervision, reversing and inadequate safe systems of work, as these are the three main areas where perceptions of importance were lowest.
- In certain instances, awareness campaigns would benefit from taking a more focused approach tailored to specific workplace transport hazards, particularly as regards agriculture, where the risks posed by a number of important hazards appear to be underestimated by businesses.
- There exists a requirement to increase the overall level of training provision for workplace transport operators in a significant proportion of the companies surveyed in order to comply with the Management of Health & Safety at Work Regulations (1999), most prominently within agriculture, but also for the construction, manufacturing and services sectors to a lesser degree.
- Further research may be required to examine the mismatch between the high perceived importance of training provision and the low actual level of provision.
- There is a need to raise awareness of the duty to perform risk assessments in order to assess, monitor and control the risks arising from the use of workplace transport, in order to comply with the Management of Health & Safety at Work Regulations (1999).
- There is potential for awareness campaigns to target alternative communication sources used by industry to gain workplace transport information. This would increase the scope of businesses that are likely to encounter the material, thus increasing the likelihood of getting the message across.
- Greater emphasis should be placed on engaging businesses through HSE publications, as the current uptake of this information is heavily limited, despite the abundance of relevant materials.

1 INTRODUCTION

1.1 BACKGROUND

Every year approximately 70 people are killed and a further 1000 are seriously injured through workplace transport accidents in the United Kingdom, making it the second largest cause of fatal and major accidents in the workplace (Dickety, 2001). Therefore, whilst the type of equipment and the working environment may differ significantly between workplaces, workplace transport should be recognised as a significant risk factor throughout all industries. According to the Health and Safety Executive (HSE), four out of five workplace transport accidents are preventable (HSE, 2000). As a consequence of this considerable scope for improvement, workplace transport has been designated as one of eight HSE priority programme areas within the Revitalising Health and Safety scheme¹. This 10-year strategy seeks to make significant progress in enhancing workplace health and safety by setting challenging targets aimed at reducing the incidence of work-related ill health, fatal and major injuries, and working days lost through injuries and ill health.

With regards to workplace transport, the Revitalising programme has set a target of a 5% reduction in fatal, major, and over 3-day absence workplace transport incidents by 2004, and 10% by 2010. In order to achieve these targets, HSE have implemented a range of schemes to enhance health and safety standards in the workplace, from legislative changes to contributions to standards setting, from improved guidance publications to scientific advice and support. The current project seeks to provide the foundations from which to assess the impact of yet another strand of the initiative: awareness raising. More specifically, HSE are targeting the apparent lack of knowledge with respect to workplace transport hazards, with the aim of encouraging businesses to adopt safer work practices as a result of increased awareness, anticipating that this will contribute ultimately to a reduction in workplace transport incidents.

This project intends to provide a baseline evaluation of the current level of knowledge with respect to workplace transport issues among British industry, taking account of how far managers in industry understand these hazards and their own obligations to manage the risks they present. It is important to establish the extent of this knowledge at present, in order to gain insight into where future effort, in terms of awareness raising, guidance, and assistance from regulatory bodies, may be best targeted. Concurrently, the survey will also serve the dual purpose of raising industry's general awareness of the risks arising from use of workplace transport.

HSE has defined workplace transport as '*any vehicle or piece of mobile equipment that is used in a work setting*'. This specifically excludes travelling on public roads, air, rail or water transport, and specialised transport used in underground mining. Workplace transport is widely used throughout all sectors of industry, and when used properly is a valuable tool. However, used improperly or by inexperienced workers, workplace transport can be deadly. Most transport related accidents involve people being struck by moving vehicles, falling from vehicles, being struck by parts of loads falling from vehicles, or being injured as a result of vehicles overturning. Apart from the obvious personal distress an accident causes, the financial implications of an accident are also sizeable: A relatively minor accident (for example, one which results in an employee being off work for only a few days) is likely to cost around £3500, and a major accident (i.e. accidents which result in broken bones, amputations etc.) around £50,000 (HSE, 1996).

¹ For more details, visit www.hse.gov.uk/revitalising/

The Health & Safety at Work Act (1974) states that legal responsibility for ensuring that the workplace is safe for both employees and members of the public rests mutually with the employers and employees. However, as is demonstrated by the alarming statistics given earlier, it is apparent that in many cases the risks posed by workplace transport are not being suitably identified and sufficiently controlled. Unfortunately, management often fail to establish and monitor safe systems of working with vehicles, or neglect to raise awareness of the risks involved, usually through too little information provision, instruction, training or supervision. The current study is intended to help understand whether these circumstances prevail as the result of a widespread lack of knowledge of the hazards associated with workplace transport usage.

This report summarises findings on a range of workplace transport issues, based on a survey of British businesses (n=502). In particular, the report highlights areas where knowledge regarding workplace transport issues is weak, and contains supplementary information to inform as to where future awareness raising schemes might best be directed.

1.2 AIM

The primary aim of the project is to gather baseline data on the current level of knowledge regarding workplace transport hazards by British businesses, through consultation with safety managers within the organisation.

1.3 OBJECTIVES

- Develop a survey instrument designed to assess current levels of knowledge and awareness of workplace transport hazards amongst a representative sample of businesses. The survey instrument should be suitable for data gathering by telephone interview.
- Engage a market research company to conduct the survey using the survey instrument developed by HSL.
- Elicit responses to the survey instrument from a sample of 500 individuals within organisations with responsibility for health and safety matters in general, and workplace transport risk assessments in particular.
- Provide a written report to the customer on the analysis and interpretation of results arising from the survey.

2 METHOD

2.1 QUESTIONNAIRE DEVELOPMENT

The main purpose of the survey questionnaire was to ascertain respondent's perceptions of the importance of a range of safety and managerial issues known to be associated with workplace transport accidents. This variety of issues can ostensibly be split into three separate areas of risk: worksite, driver, and vehicle hazards. This three-pronged approach to workplace transport safety has been adopted by HSE within their guidance (see for example, HS (G) 136 Workplace Transport Safety, Guidance for employers). In total, 27 key workplace transport issues were identified from the information contained within HSE guidance documents, which are listed in full below:

SAFE SITE ISSUES	
1	The separation of pedestrians and vehicles (e.g. use of barriers to separate, separate entrances, provision of pedestrian crossing points)
2	Minimising reversing operations
3	The provision of mirrors at blind corners / sharp bends
4	Good lighting
5	Vehicle routes that are free from obstructions and congestion
6	Uneven floor and surface conditions (i.e. potholes, spillages, debris, gradients)
7	The provision of signs (i.e. directional, speed limit, give-way, no-entry)
8	Minimising vehicle activity at peak pedestrian times (e.g. shift change, meal times)
9	The provision of a one-way system, speed bumps, and a speed limit
10	Pedestrian routes that are free from obstruction and congestion
11	The provision of a designated area for reversing operations.
SAFE DRIVER ISSUES	
1	Inexperienced / newly qualified drivers
2	Drivers unfamiliar with site layout (e.g. visitors, delivery drivers)
3	Providing drivers with training
4	Tiredness and driver fatigue
5	The provision of refresher training
6	Pedestrian awareness of vehicle capabilities (i.e. rear-end swing on forklift trucks, stopping distance, lack of visibility)
7	Time pressure and / or incentives to complete driving duties
8	The supervision of drivers
9	Following safe driving procedures (e.g. drive within speed limit, park within designated areas, secure load safely and evenly)
10	Provision of Personal Protective Equipment (e.g. high visibility clothing, safety shoes, safety hat etc).

SAFE VEHICLE ISSUES	
1	Suitable means of access to & from cabs (e.g. well designed steps, hand grips conveniently located)
2	Comfort of the driver in the vehicle cab (i.e. vibration damping, noise reduction, adjustable seating, good ventilation, and weather protection)
3	Protection of the driver (e.g. seatbelts, rollover protection system, guards, exposed exhaust pipes)
4	Condition of the vehicle (e.g. horns, brakes, reflectors, mirrors all in good working order)
5	Reverse-in-safety systems (e.g. CCTV, wide angle mirrors, sirens)
6	Vehicle maintenance (e.g. regular servicing, pre-use start-up checks)

Company safety managers were asked to ‘rate’ how *important* they considered the above issues to be, *if they were to conduct a workplace transport risk assessment* (regardless of whether they had actually performed such an assessment or not). The judgement was made on a Likert scale from 1 to 5, as depicted below:

5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Definitely important	Important	No opinion	Not important	Definitely not important

In the text accompanying the questionnaire, the workplace transport issues were deliberately not termed as ‘hazards’, as it was felt that this phraseology might have instinctively led respondents to rate their importance more highly, due to the risk connotations associated with this word. In the majority of instances, the items were phrased either positively (e.g. ‘good lighting’) or neutrally (e.g. ‘the provision of signs’), although in a number of situations, it was only possible to term the item negatively (e.g. ‘uneven floor and surface conditions’), which perhaps may have been leading as to its actual importance.

In addition to these enquiries, the questionnaire also explored more factual aspects of workplace transport related issues, including the following:

- Total number of employees working at all sites within the organisation
- Type of workplace transport vehicles utilised
- Number of employees using of workplace transport
- Presence of workplace transport risk assessments
- Proportion of workplace transport vehicles hired in / rented at the site
- Vehicle maintenance management arrangements
- Training and competence of workplace transport vehicle operators
 - This section sought to discover the source of any workplace transport training provided, and in particular, with respect to forklift trucks, whether the services of an HSE accredited training body had been utilised.
- Sources used for information regarding workplace transport health & safety matters
 - This section intended to ascertain whether HSE material was utilised as an information source, and if so, which publications in particular. Specific frequently used industry-wide HSE workplace transport literature was included in the questionnaire in order to act as an *aid memoir* for respondents. In addition, some common sector specific publications were included for construction and agriculture.

- Awareness of HSE’s workplace transport safety initiative, and potential impact this knowledge may have on managerial actions.

The questionnaire was presented in an appropriate format for conducting telephone interviews, with apposite instructions for the interviewers. A telephone interview format was chosen for this questionnaire survey due to a multitude of advantages. Although they tend to be more expensive than self-administered questionnaires, telephone interviewing has the benefit of greater cost effectiveness and speed of data collection, and allows the interviewer to probe, clarify, and encourage the respondent to complete the questionnaire. In addition, this approach allows excellent sample coverage and generally yields response rates that are as good as face-to-face or intercept methods (Frey & Oishi, 1995). Responses to the survey were kept entirely confidential and were not made available outside the research team in a format that would allow identification of individuals or the company they represented.

See Appendix 1 for a full copy of the questionnaire.

2.2 SAMPLING

The target population for the survey was a stratified sample of 500 businesses that use workplace transport, 100 from each of the five following industry sectors: Agriculture, Extraction & Utility Supply, Construction, Manufacturing, and Services. A sample size of 500 was considered sufficiently large to detect a significant difference between the mean levels of knowledge at successive time points. In addition, it would not be cost effective to increase the sample size further so as to produce a significant reduction in the sampling error. Furthermore, 100 responses from each industry sector was considered to provide adequate statistical power to allow between-sectors comparisons to be made. No stipulation was made as to company size or number of employees, with all organisations within the five industry sector boundaries that used workplace transport being eligible to participate. Moreover, the survey did not investigate potential differences in perceptions between geographical locations or business premises of varying ages.

2.3 PROCEDURE

Following the initial questionnaire development, a small pilot study of 10 telephone interviews was conducted by the researchers to gain comments and feedback on the structure and content of the questionnaire. The information gained from this exercise helped to refine items and ensure that the questionnaire was fit for purpose, covered the key issues, and was comprehensible and acceptable for respondents. Piloting also allowed the researchers to establish the length of time taken to complete the questionnaire.

In order to perform the telephone interviews, HSL subcontracted the services of a market research company, WirthlinEurope. Before interviewing commenced, WirthlinEurope were furnished with a list of potential business contacts, obtained through using the services of two business database search agencies. The contact list involved a randomised sample obtained from a number of specified 1992 UK SIC codes relating to each of the five industry sectors, the rationale being that these codes were more likely to encompass organisations that utilised workplace transport. The contact records requested included the company name, location, telephone number, contact name, and SIC code.

WirthlinEurope staff were fully briefed in how to conduct the interviews during an initial training session, as the questionnaire assumed a degree of knowledge. The WirthlinEurope team

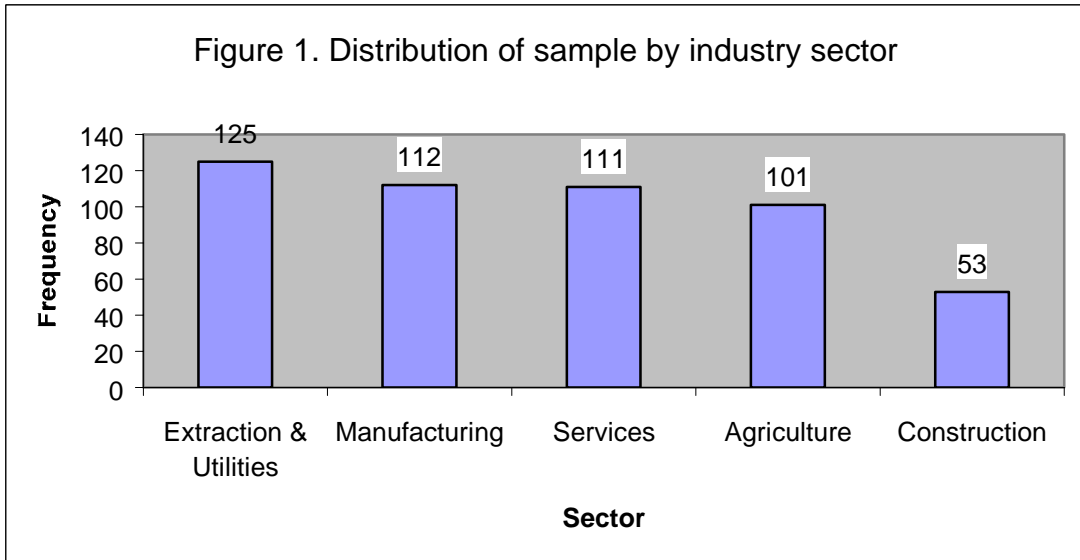
leader provided regular reviews of the data collected to ensure both the consistency of the approach, and the reliability of data obtained. The telephone interviews were conducted with the appropriate individual who had responsibility for safety in relation to workplace transport (usually the site safety officer / manager). It was established initially whether the businesses contacted actually used workplace transport vehicles, as a basis for continuing the interview. Organisations were either contacted by telephone to obtain their agreement to complete the questionnaire either at the initial time, or at a more suitable alternative time.

SPSS 11.0 for Windows was utilised to analyse the data from the completed interviews and perform statistical analyses.

3 ANALYSIS OF RESULTS

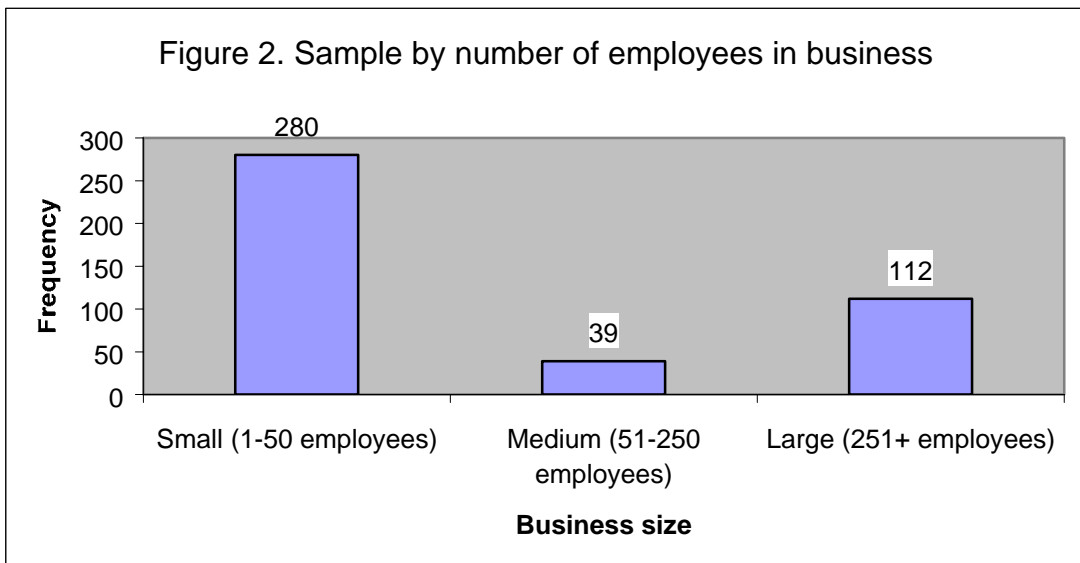
3.1 BREAKDOWN OF SAMPLE

In total, 502 questionnaires were completed from a list of approximately 6,000 contacts provided to the market research company, giving a response rate of ~8%. The sample can be broken down by industry sector as follows:



With the exception of the construction sector, Figure 1 indicates that an appropriately representative number of responses were gained from the other four sectors in the sample. The relatively low response rate gained from the construction sector may be attributable to factors such as difficulty in locating the safety manager for organisations that cover multiple sites or may often be temporary.

The sample was also analysed by size of business responding to the questionnaire, in terms of total number of employees at all the sites within the organisation, as shown below in Figure 2.



The above graph indicates that the vast majority of respondents were from small organisations (65% had between 1-50 employees), with 26% and 9% of responses from large and medium organisations respectively. When analysed by sector, the same trend in business size was observed, with the exception of extraction and utility supply, where large organisations made up the majority of respondents.

3.2 KNOWLEDGE OF WORKPLACE TRANSPORT HAZARDS

3.2.1 Importance ratings for the whole sample

As outlined in the methodology, 27 workplace transport hazards were identified, and logically separated into three categories grouped under the headings of site, driver, and vehicle. Respondents were asked to rate each item in terms of perceived importance on a five-point Likert scale ranging from 1 (definitely not important) to 5 (definitely important). The mean scores for each of the issues were calculated across the whole sample, and are outlined below in Figures 3-5.

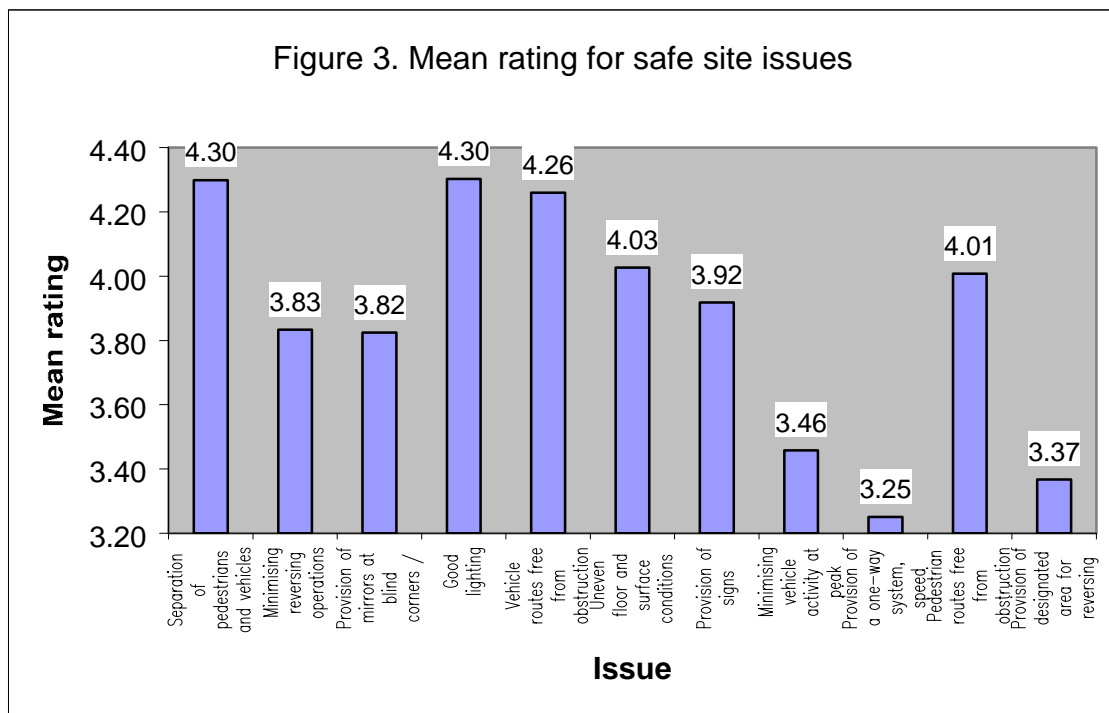


Figure 3 above indicates that the site issues considered to be most important by the sample on average were the separation of pedestrians from vehicles, good lighting, and vehicle routes free from obstruction and congestion, all of which were rated over 4.2. The least important issues, in the opinion of the sample, were the provision of a one-way system, speed bumps and a speed limit, and the provision of designated areas for reversing operations (which were only slightly above having a 'no opinion' rating of 3).

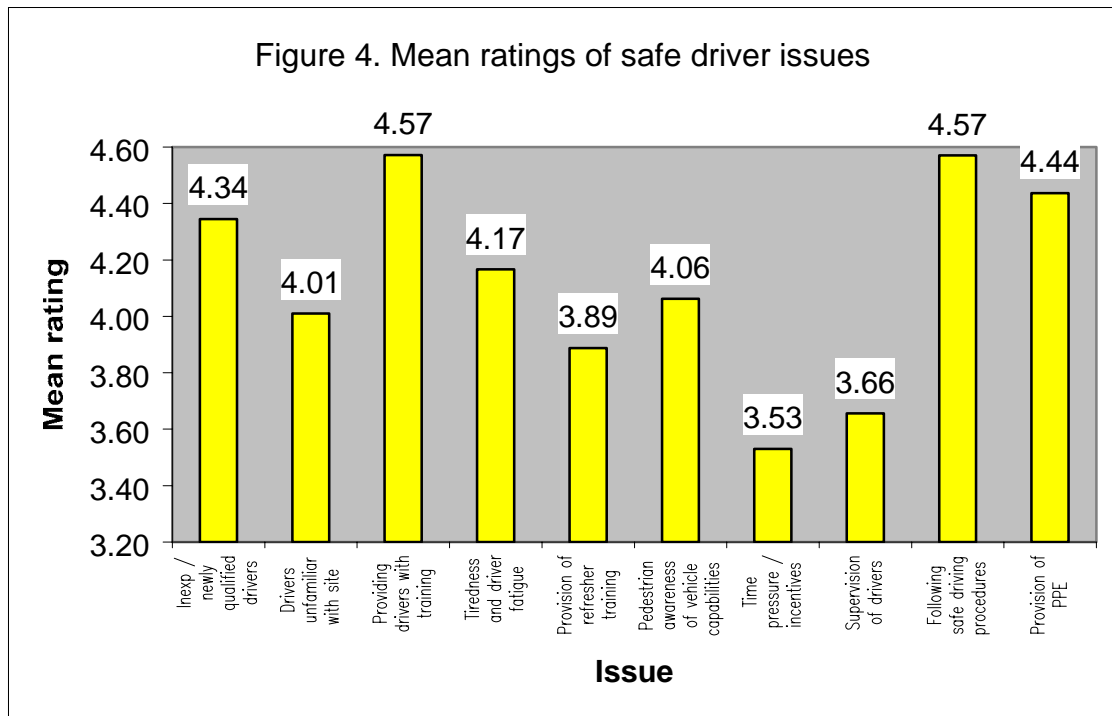


Figure 4 above shows that of the ten issues relating to safe drivers, the provision of driver training and adherence to safe driving procedures are considered to be most important. Interestingly, the potential hazards of time pressure and / or incentives to complete driving duties, and the supervision of drivers were considered least important, having mean ratings of 3.55 and 3.63 respectively.

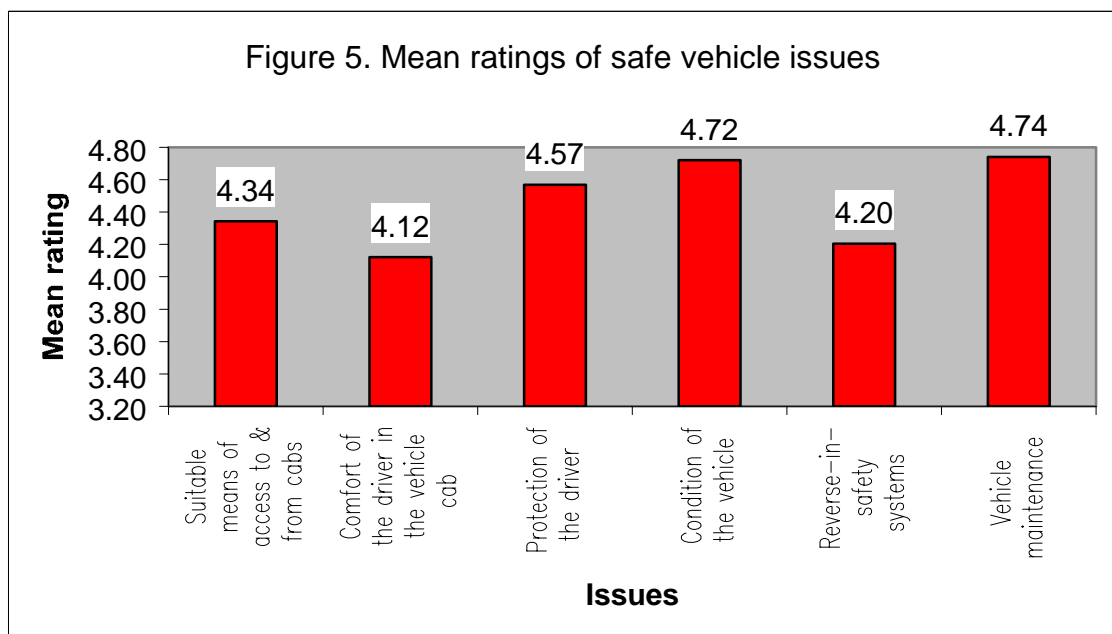
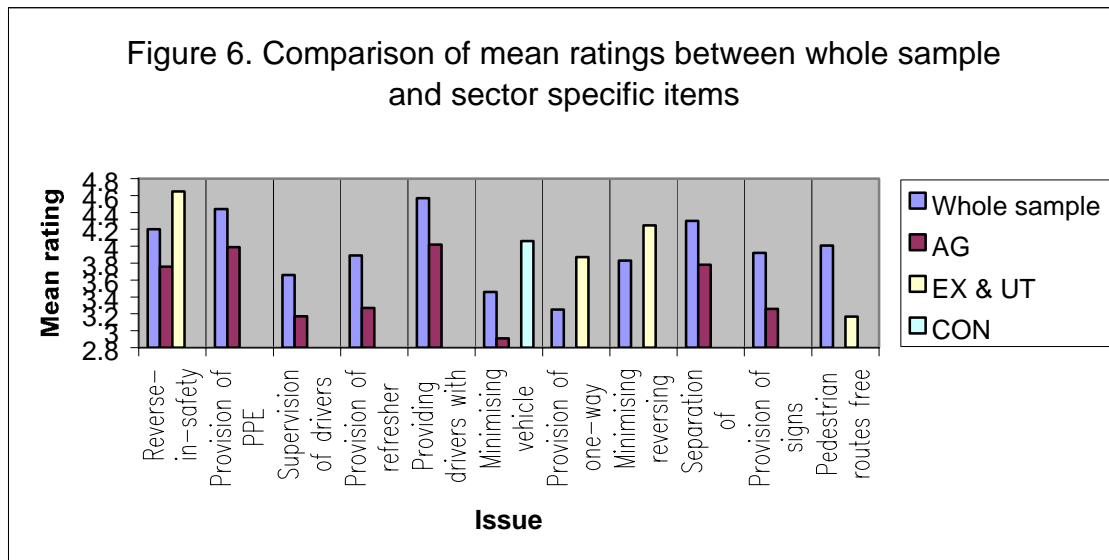


Figure 5 above highlights that vehicle maintenance issues (such as regular servicing and pre-use start up checks) were given highest priority by the sample in terms of safe vehicle issues. Also considered very important was the condition of the vehicle (e.g. horns, brakes, reflectors,

mirrors all in good working order). Generally speaking however, all the safe vehicle issues were considered to be important on average, recording mean scores greater than 4.

3.2.2 Between-sector ratings comparisons

Sector specific mean ratings for the workplace transport issues were also calculated. With the exception of the responses gained to some items mainly from the agricultural and extraction and utility sectors, the sector specific means accurately mirrored those gained for the whole sample. Figure 6 below highlights the major discrepancies in ratings on specific items between the sample and responses from individual sectors. Note comparisons have only been made between the sample and the sector where the ranking is noticeably different (+/- 0.4 rating points).



It is notable that there are a number of issues, particularly those pertaining to a safe site and driver, on which respondents from the agricultural sector ranked as markedly less important. The other main difference relates to the ratings of the extraction and utility sector, who consider minimising reversing operations, separating pedestrians and vehicles, and reverse-in safety systems to be of greater importance than the sample as a whole.

3.2.3 Other workplace transport issues

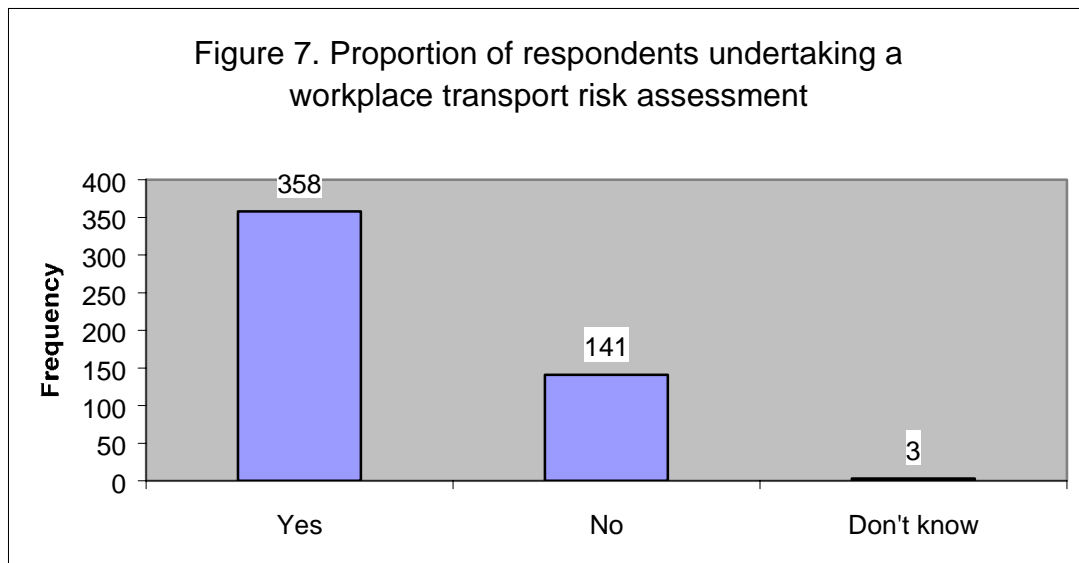
The sample was also asked to highlight any other workplace transport hazards / safety issues that they felt were not covered adequately in the list of 27 compiled for the survey. The vast majority of those mentioned were in actual fact highly similar to those the respondents had been asked to rate previously. However, a number of interesting issues were raised:

1. Public access to the worksite (for example, within agriculture) can create additional safety issues, particularly through a lack of knowledge of vehicle capabilities.
2. Businesses with railway link running through the site introduce new safety issues relating to loading and unloading, as well as responsibility for the railway workers and their own operations.
3. Vehicle selection issues: must ensure that choose suitable vehicle for the task.
4. The carriage of dangerous goods, such as chemicals, waste, or goods that could fall (and issues relating to their potential spillage).

5. Standardisation of vehicle controls between vehicle manufacturers.
6. Introduction of driver passport schemes.
7. Enclosed working areas with limited ventilation can create hazardous build-up of exhaust fumes.
8. Security issues of workplace transport vehicles stored overnight (with particular reference to construction vehicles parked in public places). Public liability regarding security and break-ins.
9. Safety issues relating to mobile phone use when driving, which are often used to keep in touch with other sites.
10. Adverse weather conditions (ice, fog, high winds etc).
11. Fitness to work issues for workplace transport operators (including health checks on drivers, and the effects of age on performance)
12. Distractions to driving from loud noises.
13. Installations of automatic sheeting systems to prevent drivers from injuring themselves were they to do it manually.
14. Authorised driver control on workplace transport vehicles (particularly forklift trucks) by implementing a lockout system. Alternatively, have named drivers with a key, so they are the only person who can start and use a vehicle.
15. Safe systems for tipping.
16. Vehicle loading capacity.

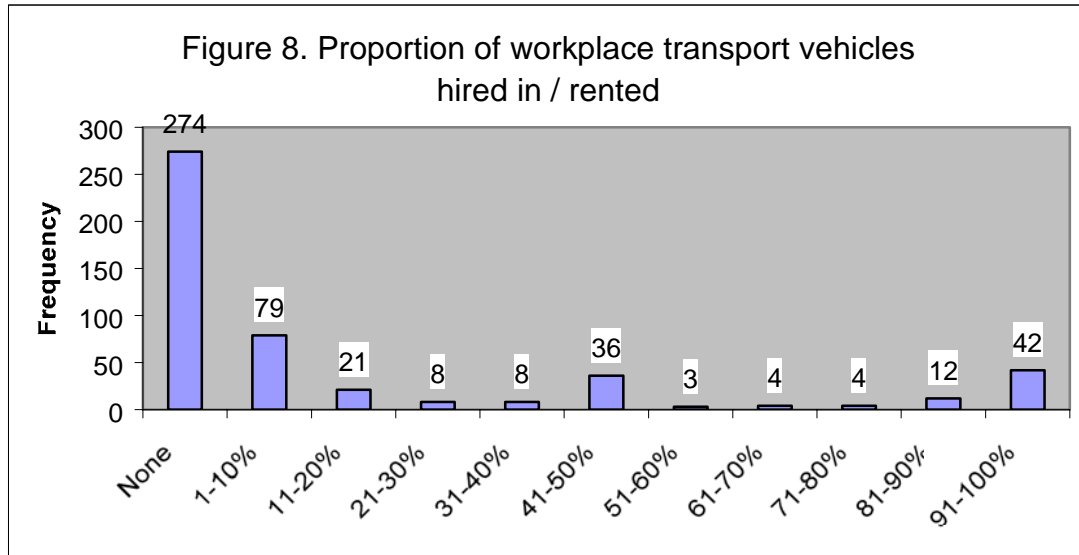
3.3 WORKPLACE TRANSPORT RISK ASSESSMENT

Respondents were asked whether they had performed a risk assessment at their site that included a consideration of workplace transport issues. The results are shown in Figure 7 below. Encouragingly, over 71% of the managers surveyed claimed to have conducted a risk assessment, thus complying with the Management of Health & Safety at Work Regulations (1999). However, it is plausible that some of these claims may be false and were only made in order to avoid adverse attention from the HSE, although the survey was anonymised as a control. Unfortunately, it is beyond the scope of this project to check whether a risk assessment has been performed or not, hence the responses given must be taken at face value.



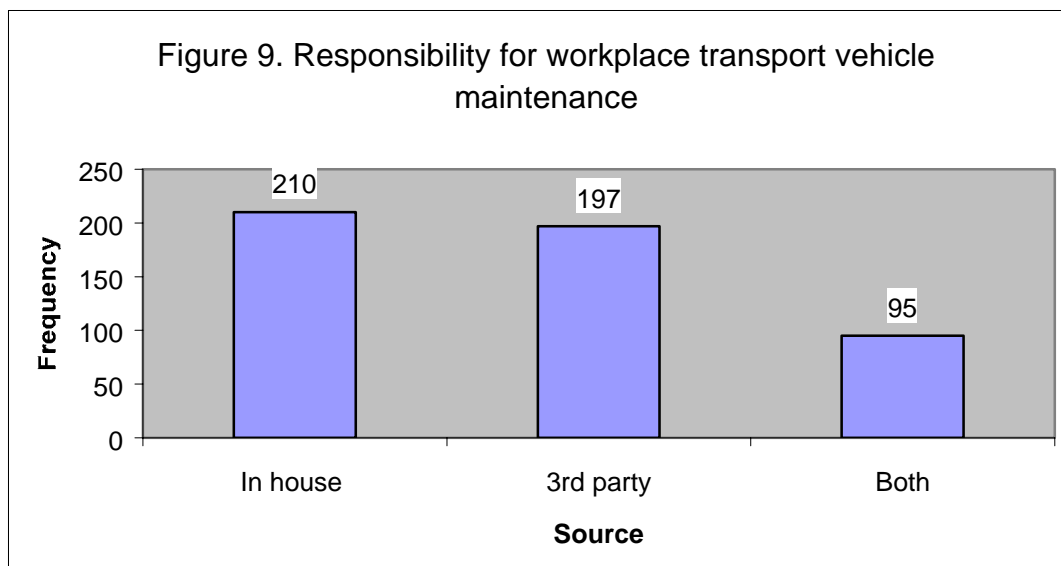
3.4 OWNERSHIP OF WORKPLACE TRANSPORT VEHICLES

The questionnaire inquired as to the proportion of workplace transport vehicles that were hired in or rented by each business. As Figure 8 reveals, over half (~55%) of the organisations completing the questionnaire owned all of the workplace transport vehicles used at their site. Of the remainder, 16% hired in fewer than 10% of their vehicles, and roughly 8% hired in 90-100% of the vehicles they use.



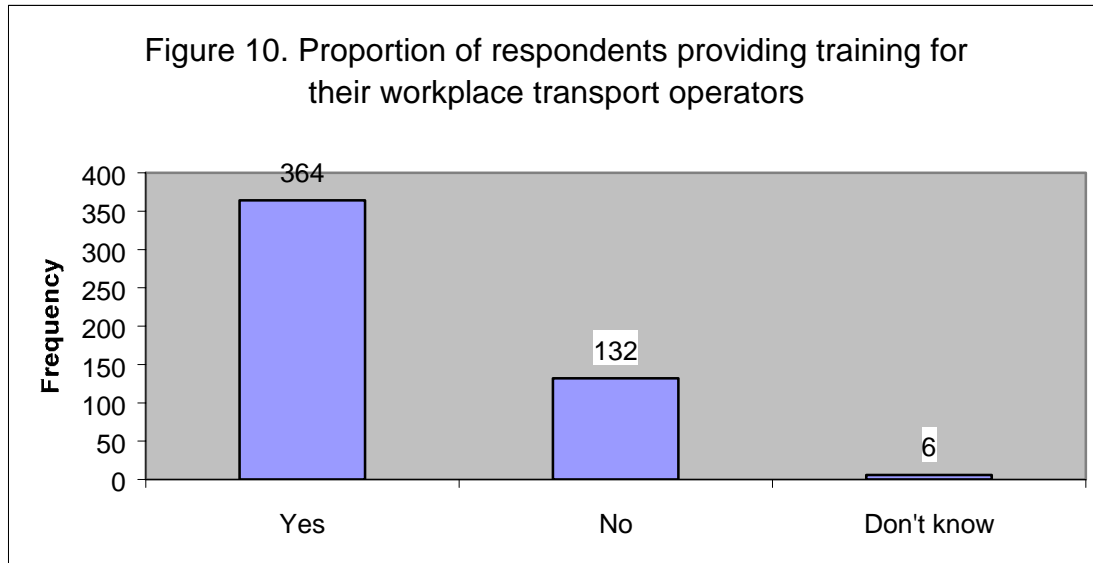
3.5 MAINTENANCE OF WORKPLACE TRANSPORT VEHICLES

The survey investigated the source of maintenance arrangements for workplace transport vehicles belonging to each business. Figure 9 below indicates that roughly equal numbers from the sample, taken as whole, use in-house or had 3rd party maintenance arrangements for their workplace transport. 19% of the sample stated that they use both sources for vehicle maintenance.

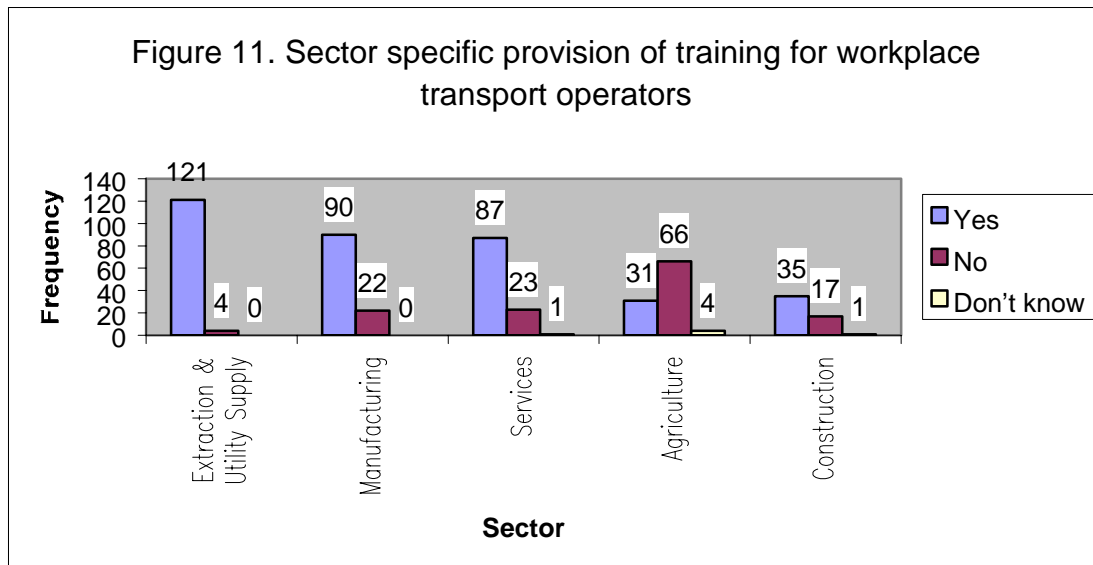


3.6 TRAINING OF WORKPLACE TRANSPORT OPERATORS

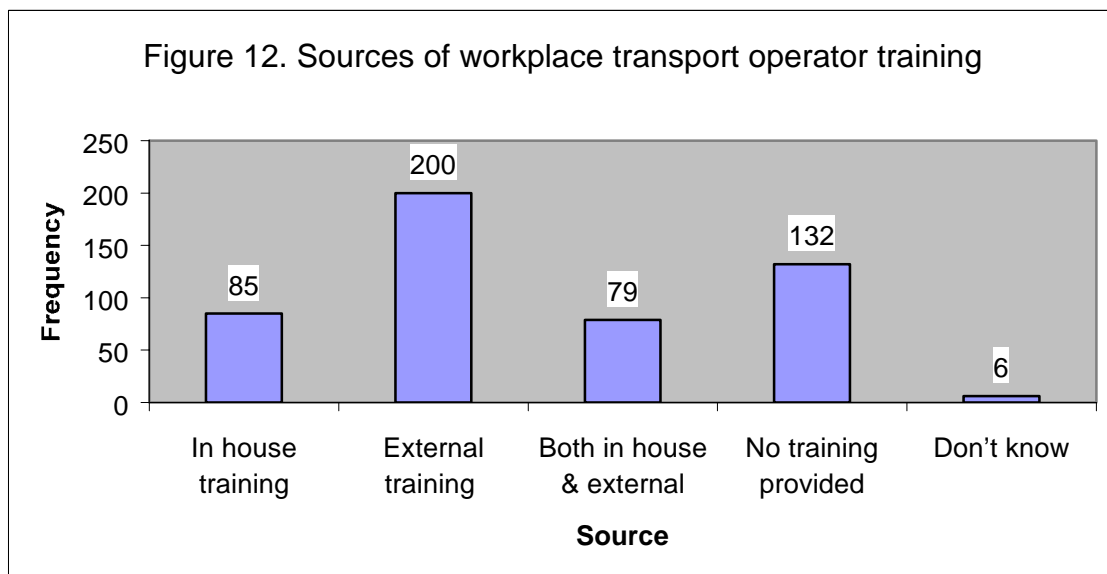
This strand of the survey included a number of questions regarding different aspects of operator training. Of primary interest was establishing the proportion of organisations that provided *any* training for their workplace transport operators (see Figure 10 below). Here it can be seen that the vast majority provided *some* form of training (~73%), although the respondents were not required to make specific stipulations as to the nature of this training. However, it is of real concern that 132 organisations (roughly 26%) stated that no formal training was provided for their vehicle operators.



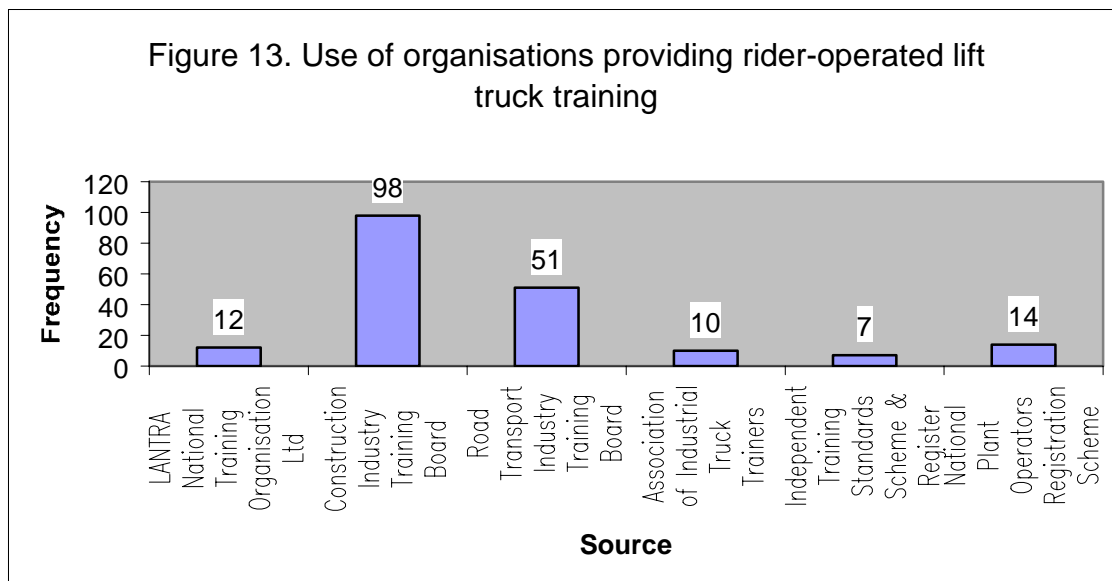
To further inform as to the sectors where training provision was lacking, a sector specific analysis was performed, as shown in Figure 11. This graph highlights the fact that of the responses gained within the agricultural sector, 65% of those surveyed did not provide any training for their workplace transport operators. Also worrying, although to a lesser degree, is the finding that 32% of workplace transport operators within the construction industry had not received formal training (although one should bear in mind that the sample gained here may not be fully representative, as only 53 organisations were surveyed). Also of concern, within both the manufacturing and services sectors, ~20% of respondents did not provide the appropriate training.



Information was also sought as to the source of training for workplace transport operators. Figure 12 below indicates that of the 364 businesses providing training, in majority of 55%, the workplace transport training for operators was provided by external organisations. 23% had in-house training capabilities, whereas roughly 22% of businesses utilised both forms of training provider.



In instances where the organisation used forklift trucks on site, respondents were asked to specify whether rider-operated lift truck training was provided through one of the HSC accredited training bodies: 303 businesses responded that they used forklift trucks on their site, of which 192 claimed to use a professional body for training their staff. Therefore, 111 of those businesses using forklift trucks (~36%) either do not use an HSE accredited training body, or simply do not provide training, although the question did not investigate this issue further. Figure 13 below provides greater detail as to which of the HSE accredited training bodies the 192 organisations claimed to use. Of these, 98 utilised the services of the Construction Industry Training Board (CITB), by far the most widely used body, 51 used the Road Transport Industry Training Board (RTITB), and fewer than 15 respondents each used the remaining boards.

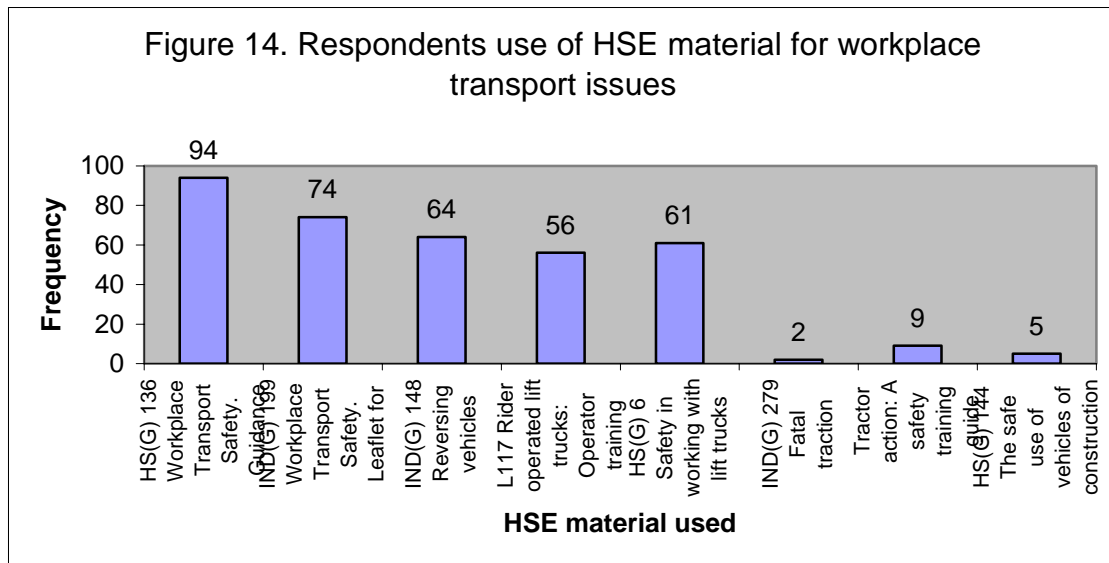


3.7 SOURCES OF WORKPLACE TRANSPORT INFORMATION

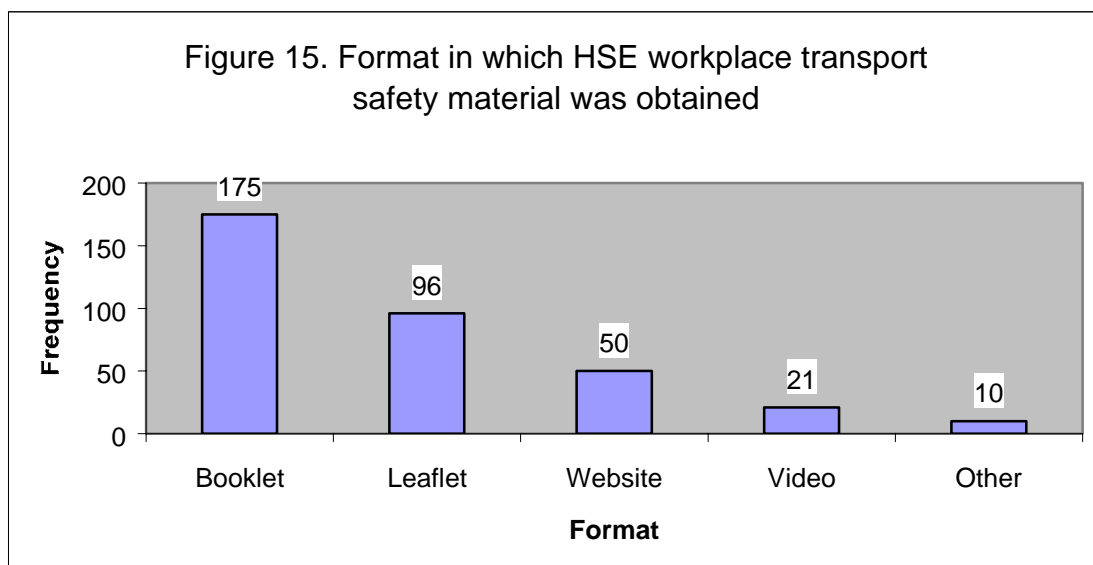
The questionnaire included questions designed to understand which sources businesses use in order to gain information on workplace transport health and safety. As would be expected, the main source was the myriad of related publications produced by the HSE. In addition to this, there were some non-HSE sector specific sources of information suggested by a number of respondents as shown below:

Sector	Alternative sources of information
Extraction & Utility supply	CITB, EPIC training, NVQ assessors
Construction	CITB, Federation of Master Builders
Agriculture	NFU, LANTRA
Services	Croner (UK health & safety consultants)
Manufacturing	Croner, RoSPA

In order to further appreciate which specific HSE material is used by British businesses, respondents were asked to describe which publications they had used. A number of the most commonly used sources of HSE guidance were listed in the questionnaire as prompts, as it was considered that some managers might not be able to recall the exact title of the guidance they had used. Figure 14 below shows that HS (G) 136 Workplace Transport Safety; Guidance for Employers was used most frequently (by roughly 19% of the sample). The other 4 suggested pieces of guidance were used by between 11-15% of the sample. The last three types of guidance shown in Figure 14 are specific to the agricultural and construction sectors, which are reflected in the very low usage rate, whereas the other publications are relevant throughout all industries. The sector-specific publications were used by less than 10% of respondents from their matching sector.



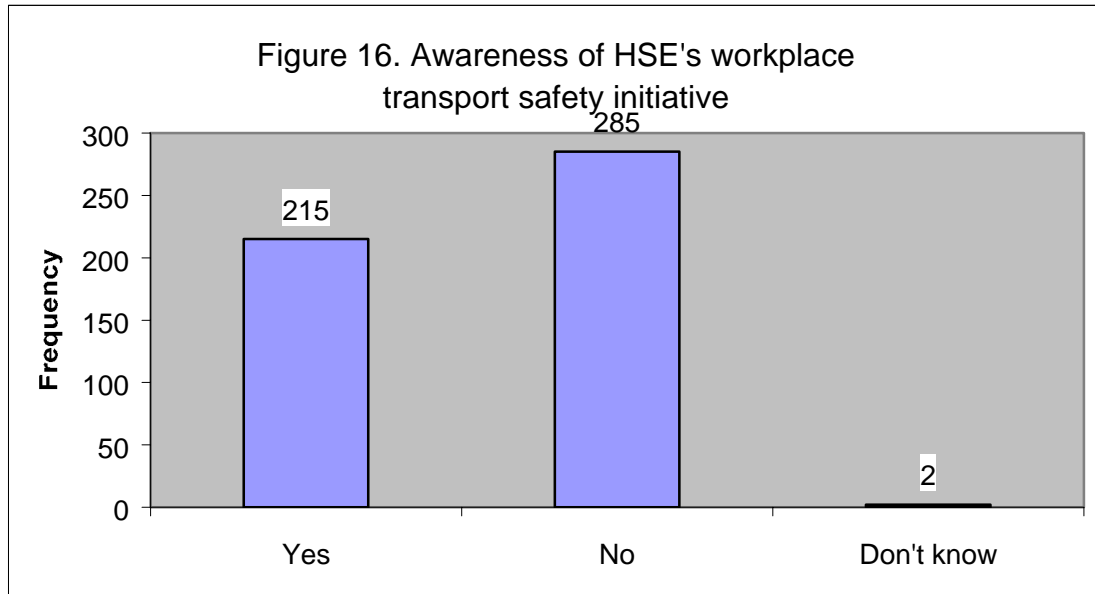
As shown in Figure 15 below, of those respondents that utilised HSE workplace transport guidance, the majority obtained this guidance in booklet format. This makes intuitive sense, as this is the format in which the bulk of HSE guidance is produced. Encouragingly, roughly 10% of the respondents had used the HSE website as a means of accessing workplace transport safety guidance. The 10 responses gained that utilised ‘other’ forms of guidance included posters, CD-ROMs, manuals, training courses, and demonstrations / presentations.



3.8 AWARENESS OF HSE’S WORKPLACE TRANSPORT SAFETY INITIATIVE

Interestingly, as depicted in Figure 16, the majority of respondents (~57%) were unaware of the HSE’s workplace transport safety initiative. Of the 215 organisations that asserted they were aware of HSE’s workplace transport safety initiative, a number made interesting points about changes they had made to their day-to-day running of business, as a result of this awareness. For example, many mentioned that knowledge of the programme had inspired them to conduct

initial risk assessments, or improved assessments where previously they had been inadequate. Specific examples of improvements pertaining to site layout (such as redesigning traffic routes, improved signage and segregation of pedestrians and vehicles, and installation of one-way systems and speed limits), vehicle upgrade (such as fitting seatbelts, CCTV systems, reversing sirens, and anti-roll bars), and improvement of driver's working conditions (including improved training schedules and refresher training, reduced working hours, and providing suitable PPE) were also cited.



4 DISCUSSION

4.1 MAIN FINDINGS

4.1.1 Knowledge of workplace transport hazards [whole sample]

The main purpose of the questionnaire survey was to capture respondent's opinions on the importance of workplace transport issues. Broadly speaking, of the three sets of issues identified (site, vehicle and driver), safe vehicle issues were rated most highly by the sample as a whole, as shown in the table below. One should however be cautious about reading too much into this simplistic calculation, as with such a small number of issues in each group, any outlying values can significantly affect the overall mean.

Group of workplace transport issues	Mean rating across all items within group
Safe site	3.87
Safe driver	4.12
Safe vehicle	4.45

In terms of the mean ratings ascribed to individual items, it is of particular interest that three of the highest scoring items related to the safe vehicle grouping (vehicle condition, vehicle maintenance and protection of the driver, all of which were rated over 4.5). One conceivable reason for this is the more concrete, physical nature of these issues, in that their importance is easier to access in immediate terms. It is plausible that many of the safety managers responding to the questionnaire may formerly have frequently worked with transport vehicles, hence they are familiar with factors relating directly to the vehicle condition and maintenance, and consider them to be significant.

Other issues that were considered to be very important by the entire sample, with respect to safe site, were good lighting, separating pedestrians and vehicles, and vehicle routes free from obstructions and congestion (although taken as a whole, the safe site issues were considered less important than the other two dimensions). In terms of the driver, the issues that gained the highest mean ratings were the following of safe driving procedures, and the provision of drivers with training.

It is noteworthy that the sample rated training provision as a critical issue, yet roughly one third of the sample provided no training at all for their workplace transport operators (and within agriculture, this figure rises to 65% of operators untrained). Considering the high importance ratings ascribed to training, and to a lesser degree refresher training, it would be expected that a higher proportion of the businesses sampled would provide some form of training. There appears to exist significant room for improvement in order to comply with the law, as Regulation 13 of the Management of Health & Safety at Work Regulations (1999) states that employers must ensure that employees are provided with adequate health and safety training a) on being recruited, and b) on being exposed to new or increased risks at the workplace. Currently, a clear disparity exists between perceptions and action taken, which would benefit from further investigation.

The least important workplace transport issues, in the opinion of the sample as a whole, are shown in the table overleaf. It should however, be noted that the 101 responses from the agriculture sector, which had significantly lower mean ratings for many of these issues, will have decreased the overall ratings for the entire sample.

Workplace Transport Issue	Mean rating
Provision of a one-way system, speed bumps and a speed limit	3.25
Provision of a designated area for reversing	3.37
Minimising vehicle activity at peak pedestrian times (e.g. shift change, meals)	3.46
Time pressure and / or incentives to complete driving duties	3.53
The supervision of drivers	3.66

These interesting results have significant implications for the directions of future awareness campaigns (although it is difficult to separate out each element in the causality chain). In particular, the lack of attributing importance to the supervision of drivers is important, as this factor may often be implicated in workplace transport accidents. This perception may be borne of a feeling that if trained, employees will be capable of performing their work tasks without being supervised. However, in reality, it is sometimes the case that when unsupervised, the likelihood that drivers take risks and cut-corners that they would not consider under surveillance is increased (Dickety, 2001).

Also of interest is the fact that respondents rated the provision of designated areas for reversing, and the minimising of reversing operations as relatively unimportant issues, which is perhaps surprising considering a substantial proportion of workplace transport accidents are the result of reversing actions (reversing is accountable for 25% of all workplace transport deaths, HSE, 2000). Furthermore, it was interesting that no mention of use of banksmen was made when respondents were encouraged to list other workplace transport issues. These findings may also be indicative of a lack of consultation with HSE workplace transport guidance, which goes to great lengths to underscore the importance of careful reversing practices. However, it is also plausible that in many industrial sites there are clear limitations on the amount of space available; hence, when thinking in terms of their own sites, respondents may have regarded a designated area for reversing to be unviable.

4.1.2 Knowledge of workplace transport hazards [specific sectors]

It is notable that there are a number of issues, particularly those pertaining to a safe site and driver, which respondents from the agricultural sector ranked as markedly less important. In particular, PPE provision, driver training and refresher training, separation of pedestrians and vehicles, and driver supervision were all ranked as considerably lower. These ratings may reflect a perception of lower traffic flow in agricultural settings, or alternatively, may be indicative of a less formalised / structured approach to tackling certain workplace transport hazards in these businesses, whereby different issues take priority.

The other main sector specific difference relates to the ratings of the extraction and utility sector, whose respondents consider minimising reversing operations, separating pedestrians and vehicles, and reverse-in safety systems to be of greater importance than the sample as a whole. It is plausible that these issues are key in this sector due to large size of the vehicles used (dumpers, excavators, loaders) where visibility in all driving activities, especially reversing, can be limited.

4.1.3 Workplace transport risk assessments

The results revealed that 28% of the respondents had not performed a risk assessment that included a consideration of workplace transport issues, thus are not complying with the current law. Regulation 3 of the Management of Health & Safety at Work Regulations (MHSW, 1999) requires employers and self-employed people to assess the risks to workers and members of the

public who may be affected by the work activities being undertaken, including those involving workplace transport.

The overt lack of risk assessments by over a quarter of the sample suggests that in these cases, the ratings of issue importance were not based upon insight derived from risk assessment procedures. This fact may have also clouded the judgement of the importance of the 27 issues, as this question was phrased “*if you were to conduct a workplace transport risk assessment, how important would you consider the following issues to be...*” It is plausible that some of those respondents who had failed to perform a risk assessment would be unaware of what this process entailed, thus may have been inclined to rate all the issues as more important, to appear as though they *had* given detailed considerations to these issues, or possibly for fear of appearing ignorant.

4.1.4 Awareness of HSE’s workplace transport safety initiative

285 respondents (~57% of the sample) stated that they were unaware of the HSE’s workplace transport safety initiative. This widespread lack of awareness may be indicative of a shortage of interest in HSE’s activities in general, or possibly a more specific indifference to workplace transport issues. Alternatively, this finding may intimate that there is a difficulty in filtering the relevant information through to businesses. This may be compounded by the fact that it is likely that the majority of the businesses responding to the survey were small and medium sized enterprises (SME’s; firms with under 250 employees), as these constitute 95% of the UK economy and employ more people in total than large firms (Ghobadian & Gallear, 1996; Storey, 1994). Considerable literature points to the difficulty in engaging these smaller private sector stakeholders, particularly with respect to various aspect of safety performance (see for example, Marlow, 2002).

The above disinterest is corroborated by the results indicating only limited use of HSE workplace transport guidance publications. The key publication, HS (G) 136 Workplace Transport Safety: Guidance for Employers, was only utilised by roughly one fifth of respondents, whereas other major publications were used by merely 15% or less of the sample. Again, this appears to be indicative of the struggle to get stakeholders to engage in the material produced, rather than an issue of lack of availability, as there are numerous relevant publications designed to improve workplace transport health and safety. This would appear to suggest that the method by which these publications are made available to the public might be influential in their uptake rate.

4.2 LIMITATIONS

The major, yet unavoidable, limitation of the current project concerns the questionnaire design, relating specifically to shortcomings of the Likert scale in requesting issue importance ratings from the respondents. This element of the questionnaire could not help but be slightly leading, as all the items are obviously of some importance (being as there were no ‘red herring’ issues). Therefore, when prompted with these items, the respondents were likely to rate them *all* as high importance, regardless of their actual perception of importance or knowledge of the issues.

The reasons for this event may be considered twofold. Firstly, the respondents were dealing with the HSE, so even though responses remained confidential, there may have existed some underlying concerns of recriminations, hence the respondents wanted to appear as proactive (that stated, if socially desirable responses were given by the sample, then this would be reflected in consistently high scores, which were not evident in the result). Secondly, 27 items is

a large number to rate individually, so there is some likelihood that participants may have lost interest, or alternatively, in a bid to finish the questionnaire rapidly, simply reeled out a string of high rating numbers. However, it was felt that an appropriate balance was struck in the questionnaire between the number of items and the window of opportunity in terms of respondent's concentration levels.

Although the potential for these motivations should be highlighted, their influence cannot be defined. Furthermore, if the validity of the project is not to be undermined, the responses given must inevitably be taken at face value.

The generally low successful response rate for this survey (slightly over 8%), which is far below the expected rate for telephone interviews, may be attributed to the quality of the contacts taken from the 1992 UK SIC codes which were supplied to the market research company. In order for the respondent to be eligible to participate in the survey, it was necessary that they utilised workplace transport vehicles at their site. However, it is often not immediately obvious, from a brief examination of UK SIC codes, which were likely to use workplace transport. As a result, a large number of the contacts sent out were of no use, particularly initially before the search criterion had been successfully narrowed, covering segments of industry where workplace transport was not employed. Appropriate refinement of the SIC codes that contacts were randomly gained from resulted in a higher percentage of telephone calls resulting in successful interviews.

Finally, it is questionable whether the project is actually an investigation of 'knowledge' as such, and should rather more appropriately be named as an analysis of perceptions of importance. In order to determine the level of knowledge per se, it would have been necessary to investigate *why* exactly the respondents rated the issues as they did. However, such an in-depth line of questioning would have dramatically increased the administration length of the telephone interviews, and hence may have been unacceptable in terms of cost and time. Further research may wish to consider the use of alternative elicitation techniques (e.g. case studies, face-to-face interviews) to gain greater insight into respondents understanding of the relevant issues. The primary sampling aim of the present project however was simply to achieve a robust sample size.

4.3 NEXT STEPS

The completion of this project has allowed a reasonably robust baseline of the level of awareness of workplace transport hazards to be established (a sample of 500 is considered to be relatively representative, despite the low response rate from the construction sector), which will allow a solid foundation from which to assess knowledge levels on future occasions, if desired. The baseline should be repeated again following the implementation of appropriate interventions as a means of assessing their effectiveness in improving knowledge levels. This will also allow the information gained to be fed back into the priority programme to influence future decisions.

However, in order to allow valid inferences to be drawn subsequently, repetition of the present project at a later date must be conducted under duplicate circumstances. Therefore, the exact same organisations that were contacted in the present survey must be re-contacted (a record was maintained by the market research company of the overall number of companies contacted, in order to provide a full picture of the sample in terms of the representativeness of the telephone survey respondents). It is imperative to compare like with like, so as to minimise variation in the multitude of factors that may contribute to a high level of 'noise' within the data. If this is

achieved, appropriate statistical tests may be performed to ascertain whether there is a statistically significant difference between the scores for the knowledge level at Times 1 and 2.

Future knowledge questionnaires may also wish to consider issues such as the provision and maintenance of safe systems of work, the detection and correction of unsafe behaviour, manager's knowledge of relevant regulations, and their current approach to managing the risks associated with workplace transport. In addition, it may be helpful to gain more knowledge of the types of hazards businesses tend to address in their risk assessments. Without wishing to increase the length of the questionnaire excessively, due cognisance should be given to the inclusion of an expanded list of HSE workplace transport publications that the sample may have used (including PUWER 1998, LOLER 1998), considering the huge amount of guidance produced on this subject. Finally, some breakdown by size of the businesses may be useful to allow comparisons between knowledge levels.

4.4 RECOMMENDATIONS

- There is a need to further educate all sectors of industry regarding the dangers associated with the use of workplace transport, in particular with respect to lack of supervision, reversing and inadequate safe systems of work, as these are the three main areas where perceptions of importance were lowest.
- In certain instances, awareness campaigns would benefit from taking a more focused approach tailored to specific workplace transport hazards, particularly as regards agriculture, where the risks posed by a number of important hazards appear to be underestimated by businesses.
- There exists a requirement to increase the overall level of training provision for workplace transport operators in a significant proportion of the companies surveyed in order to comply with the Management of Health & Safety at Work Regulations (1999), most prominently within agriculture, but also for the construction, manufacturing and services sectors to a lesser degree.
- Further research may be required to examine the mismatch between the high perceived importance of training provision and the low actual level of provision.
- There is a need to raise awareness of the duty to perform risk assessments in order to assess, monitor and control the risks arising from the use of workplace transport, in order to comply with the Management of Health & Safety at Work Regulations (1999).
- There is potential for awareness campaigns to target alternative communication sources used by industry to gain workplace transport information. This would increase the scope of businesses that are likely to encounter the material, thus increasing the likelihood of getting the message across.
- Greater emphasis should be placed on engaging businesses through HSE publications, as the current uptake of this information is heavily limited, despite the abundance of relevant materials.

5 APPENDIX 1

KNOWLEDGE OF WORKPLACE TRANSPORT HAZARDS QUESTIONNAIRE

Good morning / afternoon, my name is ... from Wirthlin Europe, an independent market research company, working on behalf of the **Health & Safety Executive**. Could I please speak to the site safety officer? [NAMED CONTACT?]

We are conducting a survey for the **HSE** investigating knowledge of workplace transport hazards in British businesses. **Workplace transport has been defined by HSE as any vehicle or piece of mobile equipment that is used in a work setting. This does not include travelling on public roads.** The results of the survey will make a significant contribution to workplace transport policy, and help identify areas where future effort might be best targeted.

Firstly, would you be willing to answer a few questions on this issue? The interview will take approximately 15-20 minutes.

<u>Yes</u>	1	<u>Continue</u>
<u>Yes, at a later date</u>	2	<u>Arrange Call back Time</u>
No	3	<u>Thank & Close</u>

Thank you very much for your assistance. The information you give will be treated as confidential and will not be attributed to you.

[GENERAL INFORMATION]

Q1. Do you use workplace transport at your site? [READ OUT, REPEAT DEFINITION IF NECESSARY]

<u>Yes</u>	1	<u>Continue</u>
No	2	<u>Thank & Close</u>

Q2. Which of the following types of workplace transport do you use at your site? [READ OUT, TICK AS APPROPRIATE]

	Yes	No
a) HGV / LGV		
b) Lift trucks [IF YES, NOTE FOR Q8C.]		
c) Loaders (including skid-steer, backhoe, shovels etc.)		
d) Excavators (including tracked and wheeled)		
e) Telehandlers		
f) Mobile access equipment (including booms, scissor lifts etc.)		
g) Other, please state:		

[KNOWLEDGE OF HAZARDS]

We would like to get your views on workplace transport safety issues. There are no right or wrong answers, we are only interested in your opinions / perceptions. **[READ OUT]**

[SAFE SITE]

Q3a. Thinking about the layout of a work site, if you were to conduct a workplace transport risk assessment, how **important** would you consider the following issues to be on a scale of 1-5?

(5) <input type="checkbox"/>	(4) <input type="checkbox"/>	(3) <input type="checkbox"/>	(2) <input type="checkbox"/>	(1) <input type="checkbox"/>
Definitely important	Important	No opinion	Not important	Definitely not important

- a) The separation of pedestrians and vehicles (e.g. use of barriers to separate, separate entrances, provision of pedestrian crossing points)
- b) Minimising reversing operations
- c) The provision of mirrors at blind corners / sharp bends
- d) Good lighting
- e) Vehicle routes that are free from obstructions and congestion
- f) Uneven floor and surface conditions (i.e. potholes, spillages, debris, gradients)
- g) The provision of signs (i.e. directional, speed limit, give-way, no-entry)
- h) Minimising vehicle activity at peak pedestrian times (e.g. shift change, meal times)
- i) The provision of a one-way system, speed bumps, and a speed limit
- j) Pedestrian routes that are free from obstruction and congestion
- k) The provision of a designated area for reversing operations.

[SAFE DRIVER]

Q3b. Thinking about driver safety, if you were to conduct a workplace transport risk assessment how **important** would you consider the following issues to be on a scale of 1-5?

(5) <input type="checkbox"/>	(4) <input type="checkbox"/>	(3) <input type="checkbox"/>	(2) <input type="checkbox"/>	(1) <input type="checkbox"/>
Definitely important	Important	No opinion	Not important	Definitely not important

- l) Inexperienced / newly qualified drivers
- m) Drivers unfamiliar with site layout (e.g. visitors, delivery drivers)
- n) Providing drivers with training
- o) Tiredness and driver fatigue
- p) The provision of refresher training
- q) Pedestrian awareness of vehicle capabilities (i.e. rear-end swing on forklift trucks, stopping distance, lack of visibility)
- r) Time pressure and / or incentives to complete driving duties
- s) The supervision of drivers
- t) Following safe driving procedures (e.g. drive within speed limit, park within designated areas, secure load safely and evenly)
- u) Provision of Personal Protective Equipment (e.g. high visibility clothing, safety shoes, safety hat etc).

[SAFE VEHICLE]

Q3c. Thinking about vehicle safety, if you were to conduct a workplace transport risk assessment, how **important** would you consider the following issues to be on a scale of 1-5?

- | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| (5) | (4) | (3) | (2) | (1) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Definitely important | Important | No opinion | Not important | Definitely not important |

- v) Suitable means of access to & from cabs (e.g. well designed steps, hand grips conveniently located)
- w) Comfort of the driver in the vehicle cab (i.e. vibration damping, noise reduction, adjustable seating, good ventilation, and weather protection)
- x) Protection of the driver (e.g. seatbelts, rollover protection system, guards, exposed exhaust pipes)
- y) Condition of the vehicle (e.g. horns, brakes, reflectors, mirrors all in good working order)
- z) Reverse-in-safety systems (e.g. CCTV, wide angle mirrors, sirens)
- aa) Vehicle maintenance (e.g. regular servicing, pre-use start-up checks)

Q3d. Thank you for rating these issues. Are there any other workplace transport issues you can think of, in addition to those mentioned? **[READ OUT]**

Q4. Have you undertaken a risk assessment at your site that includes workplace transport issues? **[READ OUT]**

- | | |
|-----|---|
| Yes | 1 |
| No | 2 |

Q5. Approximately what proportion of your workplace transport vehicles used at your site are hired in / rented? **[READ OUT]**

_____ %

Q6. Who is responsible for maintenance of workplace transport vehicles? (failure / fault finding) **[READ OUT, PROMPT, IN-HOUSE, 3RD PARTY ETC]**

Q7. How many people at your site operate workplace transport? **[READ OUT]**

[TRAINING]

Q8a. Do you provide training for your workplace transport operators? **[READ OUT]**

- | | |
|-----|---|
| Yes | 1 |
| No | 2 |

Q8b. [IF YES] Who trains the operators? [READ OUT, PROMPT: IN-HOUSE / EXTERNAL]

[SEE Q2a. IF USE FORKLIFT TRUCKS, ASK Q8c. IF NOT, PROCEED TO Q9a.]

Q8c. Is the rider operated lift trucks training provided through any of the following bodies? [READ OUT]

	Yes	No
a) LANTRA (Lantra National Training Organisation Ltd)		
b) CITB (Construction Industry Training Board)		
c) RTITB (formerly the Road Transport Industry Training Board)		
d) AITT (Association of Industrial Truck Trainers)		
e) ITSSAR (Independent Training Standards Scheme and Register)		
f) National Plant Operators Registration Scheme		

[INFORMATION SEEKING]

Q9a. If you require information relating to workplace transport safety, what sources do you use? [READ OUT]

[IF HSE MATERIAL IS USED, GO TO QUESTION 9b, IF NOT, PROCEED TO Q10]

Q9b. Which HSE material related to workplace transport safety do you use? [READ OUT]

[THEN PROMPT WITH THE FOLLOWING]

	Yes	No
a) <i>HS(G) 136</i> Workplace Transport Safety. Guidance for employers.		
b) <i>IND(G) 199</i> Workplace Transport Safety. Leaflet for employers.		
c) <i>IND(G) 148</i> Reversing vehicles		
d) <i>L117</i> Rider operated lift trucks: Operator training ACOP guidance		
e) <i>HS(G) 6</i> Safety in working with lift trucks		

[IF BUSINESS IS FROM AGRICULTURAL SECTOR, ASK FOLLOWING]

	Yes	No
f) <i>IND(G) 279</i> Fatal traction		
g) Tractor action: A safety training guide		

[IF BUSINESS IS FROM CONSTRUCTION SECTOR, ASK FOLLOWING]

g) <i>HS(G) 144</i> The safe use of vehicles on construction sites		
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Q9c. What format did you obtain this HSE material in?

	Yes	No
f) Booklet		

- g) Leaflet
 - h) Website
 - i) Video
 - j) Other, [PLEASE STATE]
-
-

Q10a. And finally, are you aware of HSE's workplace transport safety initiative? [READ OUT]

Yes	1
No	2

Q10b. If yes, have you done anything differently as a result of this knowledge? [READ OUT]

Thank you for assisting the Health & Safety Executive in this research. The results of this survey will be used to inform future HSE policy and guidance to industry in dealing with workplace transport safety hazards.

6 APPENDIX 2 - FACTOR ANALYSIS

Further to the descriptive and qualitative findings reported in section 3.2, a factor analysis was conducted on the rating scores given by the sample for the 27 workplace transport issues, with the aim of identifying the existence of any underlying factors. After varimax rotation, the analysis revealed the presence of 5 factors, which explained approximately 54% of the variance. Reassuringly, the 5 component factors produced broadly matched those adopted throughout HSE's workplace transport guidance of site, driver and vehicle issues, thus helping to confirm this method of segregating the issues. One of the 11 items making up the site category was removed, and the remainder were further differentiated into 2 separate factors. Similarly, 3 or the 10 driver issues were removed during analysis, and the remaining seven were split into two separate factors.

Although for some of the factors created it is not immediately obvious as to what precisely they represent (as they do not easily lend themselves to classification), an attempt to label each factor has been made below:

Factor 1. Psychological / managerial characteristics of the site (all site issues)

1. Minimising reversing operations
2. The provision of signs (i.e. directional, speed limit, give-way, no- entry)
3. Minimising vehicle activity at peak pedestrian times (e.g. shift change, meal times)
4. The provision of a one-way system, speed bumps, and a speed limit
5. Pedestrian routes that are free from obstruction and congestion
6. The provision of a designated area for reversing operations

Factor 2. Vehicle condition / design (all vehicle issues)

1. Suitable means of access to & from cabs (e.g. well designed steps, hand grips conveniently located)
2. Comfort of the driver in the vehicle cab (i.e. vibration damping, noise reduction, adjustable seating, good ventilation, and weather protection)
3. Protection of the driver (e.g. seatbelts, rollover protection system, guards, exposed exhaust pipes)
4. Condition of the vehicle (e.g. horns, brakes, reflectors, mirrors all in good working order)
5. Reverse-in-safety systems (e.g. CCTV, wide angle mirrors, sirens)
6. Vehicle maintenance (e.g. regular servicing, pre-use start-up checks)

Factor 3. Training and procedural issues (all driver issues)

1. Providing drivers with training
2. The provision of refresher training
3. Following safe driving procedures (e.g. drive within speed limit, park within designated areas, secure load safely and evenly)
4. Provision of Personal Protective Equipment (e.g. high visibility clothing, safety shoes, safety hat etc)

Factor 4. Physical characteristics of the site (all site issues)

1. The provision of mirrors at blind corners / sharp bends
2. Good lighting
3. Vehicle routes that are free from obstructions and congestion
4. Uneven floor and surface conditions (i.e. potholes, spillages, debris, gradients)

Factor 5. Driver's lack of familiarity with site (all driver issues)

1. Inexperienced / newly qualified drivers
2. Drivers unfamiliar with site layout (e.g. visitors, delivery drivers)

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Knowledge of workplace transport hazards amongst British businesses

As part of the Health and Safety Executive's (HSE) workplace transport priority programme, there is interest in establishing the areas in which knowledge of the hazards associated with workplace transport is lacking amongst industry, as these may then be targeted for future improvements. To assist in this undertaking, the Health and Safety Laboratory (HSL) was commissioned by HSE to gather baseline data on the current level of understanding regarding workplace transport hazards by British businesses, through consultations with their safety managers. A nationwide telephone questionnaire survey was conducted across a stratified sample of businesses from five major sectors of industry, seeking information on a range of issues known to be associated with workplace transport risk, as well as subsidiary questions on other inter-related workplace transport issues.

This report summarises the findings of the questionnaire survey, which are anticipated to make a significant contribution to the workplace transport priority programme information base. Providing a baseline of knowledge against which future activities may be evaluated will help to encourage more focussed interventions, through supplying the foundations that will allow HSE to assess the impact of awareness raising campaigns related to workplace transport hazards.

This report and the work it describes were funded by the Health and Safety Executive (HSE). Its contents, including any opinions and/or conclusions expressed, are those of the authors alone and do not necessarily reflect HSE policy.