

WORK RELATED ROAD SAFETY

INITIAL REGULATORY IMPACT ASSESSMENT

PURPOSE AND INTENDED EFFECT

Issue and objective

1. Each year about 3,500 people are killed on GB roads and 40,000 are seriously injured. In total there are nearly 250,000 injury accidents and 300,000 road casualties every year. The Government is determined to reduce these figures and in March 2000 it published its road safety strategy, "Tomorrow's Roads : safer for everyone". One part of the strategy is to see whether more can be done to reduce road traffic accidents that are connected to work.

Information sources and definitions

2. Information used in the preparation of this RIA primarily comes from the Business Strategy Group's (BSG) report : Quantification of 'at work' traffic accidents. Estimates of the value of prevention of road accidents were taken from the Department of Transport, Local government and Regions (DTLR) Highways economics note No.1 - 1999. Additional information was gained from the Road Haulage Association (RHA), The Royal Society for the Prevention of Accidents (RoSPA) and internal HSE sources.

Technical Definitions

3. The definition of injury used in road accidents is as follows. A serious injury is defined as an injury for which a person is detained in hospital as an 'in-patient', or any of the following injuries whether or not they are detained in hospital: fractures, concussion, internal injuries, crushings, burns (excluding friction burns), severe cuts and lacerations, severe general shock requiring medical treatment and injuries causing death 30 or more days after the accident. A slight injury is an injury of a minor character such as a sprain (including neck whiplash injury), bruise or cut which are not judged to be severe, or slight shock requiring roadside attention. This definition also includes injuries not requiring medical attention.

RISK ASSESSMENT

The total value of prevention of road accidents in Great Britain

4. In 1999, 3,138 fatal accidents, 33,267 serious accidents and 198,643 slight accidents were reported. An injury accident is classified according to the most severe category but will on average involve more than one casualty - for example in 1999, a *fatal* accident on average involved 1.1 fatalities, 0.42 serious casualties and 0.51 slight casualties. Road accidents in 1999, resulted in 3,423 people being killed, 39,122 seriously injured and 277,765 slightly injured. There were also an estimated 3.5 million damage only accidents.

5. By far the largest single element of the cost of both fatal and non-fatal road traffic accidents are the human costs to the individuals involved. These estimates are based on a consistent willingness to pay (WTP) approach. For fatal accidents, it is an estimate of the average value that individuals would pay to gain a very small reduction in the chance of a premature death, in advance of the event. For example, if this risk reduction was one chance per million (cpm), and one million individuals would pay about £1 to avoid this risk, then the statistical risk amongst this population is then equivalent to exactly one fatality in this example, and the value of preventing a fatality is equal to $1,000,000 * £1 = £1$ million. This is not the value of compensating a named individual for the future certainty of a 'premature' death, or the family after a death occurred, and in fact compensation payments and values of risk reduction would not generally be related.

6. The DTLR publication 'Road Accidents Great Britain (RAGB) 1997' contained an article describing recent research on the value of prevention of a road accident fatality. The research showed that the figure is likely to lie in the range of £750,000 to £1,250,000. It was decided to use the precise mid-point of this range as the basis for the value of prevention of a fatality, despite this uncertainty. The current figure represents an up-rating of this central figure to 1999 prices. The table below shows the average value of preventing a casualty of various severities.

Table 1: Average value of prevention per casualty by severity and element of cost (£)

Accident severity	Lost output	Human costs	Medical and ambulance	Total
Fatal	1,088,500		640	1,089,140
Serious	14,420	99,230	8,740	122,380
Slight	1,530	7,260	650	9,440
Average, all casualties	7,080	26,050	1,640	34,770

7. ***On this basis, the total value of prevention of all road accidents was estimated by DTLR to have been £16.3 billion in 1999.*** This figure encompasses all aspects of the valuation of the accidents including the direct economic costs (i.e lost output, damage and medical costs) and the human costs (an amount to reflect pain, grief and suffering). The table below shows the total value of prevention of accidents broken down by severity of accident and element of cost.

Table 2: Total value of prevention of accidents in 1999, by severity and element of cost (£m)

Accident Severity	Cost element					Total
	Lost output	Human Costs	Medical/ ambulance and police	Admin	Damage	
Fatal	3,890		19	1	20	3,930
Serious	570	3,860	344	4	110	4,890
Slight	400	1,900	178	20	400	2,900
All injury	10,610		540	25	530	11,710
Damage only	-	-	10	130	4,440	4,580
All accidents	10,610		550	155	4,970	16,300

The scale of 'at work' road traffic accidents

8. HSE has commissioned research to estimate the extent of 'at work' road traffic accidents and to begin to identify the key factors that appear to be involved (Business Strategies Group - BSG - forthcoming). The researchers analysed data from a number of different sources including, a specially commissioned police study, a study of accidents in Cambridgeshire, fleet insurance claim data and research reports published by the Transport Research Laboratory (TRL) and other academic institutions. ONS data on road traffic deaths and Labour Force Survey information on injuries was also analysed in detail.

9. The findings of the research broadly indicate that between 25% and 33% of all serious and fatal road traffic incidents involve someone who was 'at work' at the time. However the important issues relating to the causation of and responsibility for, the incidents remain uncertain, and are the subject of ongoing research.

10. For the purposes of the analysis below we use the results of the study into ONS data on road traffic data for the estimate of commercial vehicle types involved in at work fatalities. The estimates are subject to uncertainty as in some cases there was insufficient data to determine whether certain commercial vehicle types were being used for leisure at the time of the accident. The study concluded that 23% of all traffic fatalities involve one or more 'at work' commercial vehicles. The ONS data proved inconclusive with regard to the involvement of 'at work' cars in fatal accidents where the 'at work' driver was not killed. The BSG report estimated this by using published data on the involvement of cars in fatal incidents, the increased risk of company owned cars and the proportion of mileage driven by the main groups of cars on business. The report estimated that 7% of all traffic fatalities are likely to involve a car 'at work'. Adding this estimate to the figure of 23% of fatalities involve a commercial vehicle 'at work' indicates that around 30% of all traffic deaths are likely to involve someone 'at work'.

11. In order to estimate the involvement of 'at work' vehicles in serious and slight accident we use figures taken from RAGB 1999 on vehicle user and pedestrian casualties by type of vehicle involved. Clear trends emerged as to the various vehicle types involvement in accidents of the three severities. For example, HGV's were involved in around 12% of fatalities, but in only 5% of serious injuries and 4.5% of slight injuries. A similar trend existed for motorbikes, whereas the trend went in the opposite direction with cars, these vehicles being involved in 78% of fatalities, 85% of serious injuries and 90% of slight injuries. For buses/coaches the figures showed an involvement in a large number of serious injuries (11%) compared to their involvement in fatalities and slight injuries, 4% and 5% respectively. This is likely to be due to the relatively large number of serious injuries that occur to passengers.

12. We extrapolate the proportion of serious and slight accidents involving 'at work' vehicles by applying these trends to the proportion of 'at work' vehicles involved in fatalities, obtained from the ONS database. We apply the most appropriate trend, where no specific trend exists for the individual 'at work' vehicle types (e.g for taxi's we apply the trend for cars, for maintenance vehicles we apply the trend for LGV's). The results are shown below.

Table 3 : Proportion of incidents involving ‘at work’ vehicles by severity and vehicle type (%)

Vehicle Type	Injury severity		
	Fatal	Serious	Slight
Cars	7.4%	7.9%	8.5%
Heavy Goods Vehicles	12.2%	4.9%	4.5%
Light Goods Vehicles	4.3%	4.4%	4.1%
Bus/coach	2.8%	8.2%	3.8%
Motorbikes	0.3%	0.3%	0.1%
Taxi	0.9%	1.0%	1.1%
Farm vehicle	0.5%	0.4%	0.4%
Minibus	0.5%	1.3%	0.6%
Police Vehicle	0.2%	0.2%	0.2%
Maintenance vehicles	0.2%	0.2%	0.2%
Milk float	0.2%	0.1%	0.1%
Recovery vehicles	0.1%	0.1%	0.1%
Ambulance	0.1%	0.1%	0.1%
Refuse vehicles	0.1%	0.1%	0.1%
Total	30%	29%	24%

The costs to society of ‘at work’ road traffic accidents

13. We then apply these proportions to the costs to society of road accidents of the various severities to obtain approximate costs of road accidents involving ‘at work’ vehicles of various types. We have no information on the proportion of different vehicle types involved in damage only accidents, so we apply the same proportion to the total costs of damage only accidents as that of slight accidents involving vehicles ‘at work’. Uncertainty surrounds these estimates as although they take account of the varying number of casualties involving accidents of the various vehicle types, they do not take account of the different damage costs that may occur. *The table below shows that accidents involving ‘at work’ vehicles are estimated to cost society a total of £4.4 billion each year.*

Table 4 : Total costs to society of road accidents involving ‘at work’ vehicles (£m)

Vehicle Type	Injury severity			Damage only accidents	Total
	Fatal	Serious	Slight		
Car	291	388	245	388	1,313
Heavy Goods Vehicle	481	240	129	204	1,054
Light Goods Vehicle	170	214	118	187	689
Bus/coach	112	402	110	175	799
Motorbikes	11	14	4	7	36
Taxi	37	49	31	49	165
Farm vehicle	21	17	11	17	66
Minibus	18	65	18	28	129
Police vehicle	8	11	7	11	38
Maintenance vehicle	8	10	5	8	31
Milk float	6	5	3	5	20
Recovery vehicles	6	5	3	5	18
Ambulance	6	7	4	6	23
Refuse vehicle	5	4	3	4	16
Total (£m)	1,179	1,432	691	1,095	4,396

Accidents where the deceased was ‘at work’

14. The fatality/injury may not be the person who was ‘at work’ at the time of the incident. The ONS database also contains information as to whether the deceased was ‘at work’ at the time of the incident. Around 123 people die each year in traffic accidents while ‘at work’. This represents 4% of all traffic fatalities, these fatalities by the deceased vehicle are shown in the table below. This proportion is several times lower than the proportion of ‘at work’ vehicles involved in fatal incidents where the deceased was not necessarily the person who was ‘at work’. This could be due to several factors, firstly a proportion of the fatal incidents will involve pedestrians being struck by the ‘at work’ vehicle which would be unlikely to result in a fatal injury to the vehicles operator. Secondly, the protection offered to the occupants and bulk of certain categories of ‘at work’ vehicles such as HGV’s and LGV’s would mean that in a collision the fatality is more likely to occur in the other vehicle.

Table 5 : Vehicle associated with the deceased, where the deceased was at work (1994 & 1999)

Deceased's Vehicle	Number	Percent
Cars	25	10%
Heavy Goods Vehicle	70	28%
Light Goods Vehicle	32	13%
Motorbike	17	7%
Maintenance vehicle	9	4%
Taxi	10	4%
Farm vehicle	10	4%
Police vehicle	7	3%
Other specified vehicle	35	14%
Vehicle unknown	13	5%
No vehicle associated with the deceased	19	8%
Total	247	100%
Average each year	123	

15. 58 (23%) of fatalities involved the deceased being on foot at the time of the accident. of those on foot 19 (8% of total) were not associated with a vehicle such as someone delivering leaflets. The other 39 were associated with a vehicle but on foot at the time of death e.g a HGV driver uncoupling his trailer, a recovery vehicle driver working on the vehicle he is attending.

Proportion of accidents within the scope of these proposals

16. A vehicle's involvement is not meant to indicate any fault or responsibility. Although 'at work' vehicles are estimated to be involved in 30% of fatalities, less than this number will be in the scope of any proposals aimed at reducing 'at work' road risk. In terms of scope we mean in the sense that some action (e.g safer driving, better vehicle maintenance) on behalf the person at work involved *could* prevent the accident or mitigate the outcome. We therefore reduce the 30% by one sixth, to 25%, to account for the cases where person 'at work' couldn't reasonably avoid or mitigate the accident, even with best practice. We make a similar reduction of one sixth for serious and slight injuries and for damage only accidents. This working assumption on the proportion in scope will be reviewed following forthcoming research on accident causation.

17. This one sixth reduction will involve occasions such as the 'at work' vehicle being hit in the rear in a stationary queue of traffic. Most accidents in this category will be preventable, but not through the actions of the 'at work' driver involved. Following this reduction, the remaining accidents will be occasions where one of the at work drivers involved was at fault or where they could have done at least something to mitigate/prevent the accident through some action such as defensive driving, not exceeding the speed limit or adjusting driving style to suit the weather conditions. ***This reduction leaves the costs to society of road accidents within the scope of these proposals estimated at £3.7 billion.***

Table 6 : Total cost to society of accidents estimated to be within the scope of proposals aimed at reducing ‘at work’ road risk (£ million)

Vehicle Type	Accident severity			Damage only accidents	Total
	Fatal	Serious	Slight		
Car	242	324	204	324	1,094
Heavy Goods Vehicle	401	200	107	170	878
Light Goods Vehicle	142	178	98	156	574
Bus/coach	93	335	92	146	666
Motorbikes	9	12	3	5	30
Taxi	30	41	26	41	137
Farm vehicle	18	15	9	14	55
Minibus	15	54	15	23	107
Police vehicle	7	9	6	9	31
Maintenance vehicle	6	8	4	7	26
Milk float	5	4	3	4	17
Recovery vehicles	5	4	2	4	15
Ambulance	5	6	3	5	19
Refuse vehicle	4	4	2	3	13
Total (£ million)	983	1,193	576	912	3,664

The costs to employers of ‘at work’ road traffic accidents

18. HSE has estimated the costs to employers and society of workplace accidents and work related ill health. The annual cost to employers was estimated to be between £3.5 billion and £7.3 billion each year in 1995. This figure excludes costs arising from ‘at-work’ road traffic accidents, which could consist of the following elements. Firstly, the costs resulting from absence from work due to injury. Secondly, there will also be the costs of replacing those employees that are killed or are forced to quit their job due to injury. Employers will also incur costs through insurance and compensation requirements, which will reflect the cost of the damage to the vehicle involved, where an insurance claim was made. Finally, there may also be a loss of productivity while the vehicle is repaired.

19. For the employer, the net financial cost of absence is equal to the amount paid in sick pay (plus any administrative costs)¹. This proportion is equal to around 25% of lost output, given evidence on the length and amount of sick pay entitlement. The cost of lost output for injury accidents in the DTLR statistics is £970 million and ‘at work’ vehicles are involved in around one third of all injury accidents. This leads to a cost to employers from absence resulting from injury of around £100 million each year (including some allowance for administrative/recruitment costs). These costs will fall on the employer of the person that is injured who may not necessarily be the ‘at work’ driver.

20. We make a crude estimate of the cost of insurance to employers by taking the average value of claims for accidental damage and personal injury and multiplying it by the claims rate and the

1. The costs to Britain of workplace accidents and work-related ill health in 1995/96 - HSE.

numbers of commercial vehicles. We also include an extra 15% of this figure to take account of insurance companies administration and profits from dealing with claims, which are also recovered from the premium paid by employers. We then make an approximation of the non-insured damage costs by using figures from RAC risk management that suggest that 83% of all crashes go unreported, since many claims fall below the insurance excess and do not get recorded. This leads to a total cost to employers of insurance and damage from 'at work' road traffic accidents of £2.2 billion.

21. The cost of lost productivity through the loss of the vehicle while it is being repaired is very difficult to quantify. We assume that each accident result in the loss of two and a half days of productivity on average. Multiplying this by the average wage for the 900,000 accidents involving 'at work' vehicles yields a yearly cost of £450 million. There may also be costs to the employers through loss of business and goodwill through being unable to complete orders/contracts, these are unquantifiable.

22. *The above calculations lead to the cost to employers of 'at work' road traffic accidents estimated at being in the region of £2.7 billion per year.* This is not directly comparable with the costs to society of 'at work' road traffic accidents estimated above due to differences in method. Damage will be an equivalent cost to society and employers. Where costs to employers are higher in our estimates, it is because of personal injury claims and also the fact that the insurance data we use in this section will reflect the higher than average cost relating to damage of some workplace vehicles. At least some element of personal injury claims are compensation payments and involve no resource cost to society as a whole other than their administration, however other payments relating to loss of earnings will reflect society's resource cost to some extent. Nevertheless, allowing for these differences the two different estimates are roughly comparable and they broadly indicate that costs to employers of 'at work' road accidents are around half the costs to society of those accidents.

Options considered

General approach

23. The Work-related road safety task group was established by HSC in 2000 to look at issues surrounding work-related road traffic accidents. A discussion document : Preventing at-work road traffic accidents, was published in March 2001. The group looked at a number of options on which the general approach to improving at-work road safety could be based. Some of the options considered are listed below.

- i. Generic HSE guidance
- ii. Explicitly apply existing health and safety law to cover those workers who undertake on-the-road activities
- iii. Approved Code of Practice (ACoP)
- iv. Strengthen reporting arrangements
- v. Guidance under the Highway Code Explained series

vi. Extend license system/occupational driving test

24. Of these options, the task group recommended that HSE in consultation with stakeholders should publish generic guidance for employers and others on how to reduce at-work road traffic incidents (option 1). Also, that existing health and safety law should be explicitly applied to cover all workers who undertake on-the road work activities (option 2). That at the next review of RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrence Regulations), HSE proposes that 'at work' road traffic incidents involving fatalities, major and over 3-day injuries should be reported to the enforcing authorities (option 5). The task group did not recommend a specific driving test for occupational drivers, but advised that further work should be conducted to look into the desirability and feasibility of an extended licensing system to cover light goods vehicles (option 6).

25. Of the recommended options we subject options 1, 2, 3 and 4 to cost-benefit analysis. Under options 1, 2 and 3 we examine some of the actions that may be taken by employers under in response to either new guidance or an approved code of practice (ACoP) to control work related road risk.

26. Some of the action areas examined will relate to specific areas of risk, whilst some will relate to accidents as a whole, regardless of the factors involved in their causation. For the purposes of this analysis only, we identify the following as specific areas which could contribute to an accident, and could be mitigated by targeting this particular factor. This classification does not prejudice any final form that guidance may take.

- a Competence (assessment of competence & induction, vehicle operating training - eg defensive driving)
- b Fatigue
- c Vehicle selection and maintenance
- d Alcohol/drugs

27. Other action may not address a specific area, but relate to all accidents. For example, enforcement action by employers and enforcement agencies, and accident investigation. Whether an action address all risk, or a particular area, is considered below.

28. The list of interventions by employers considered in this RIA is not intended to be exhaustive. Action could be taken addressing other specific risk areas not considered here, such as the use of mobile phones whilst driving, specific training for dealing with breakdowns and seeking alternatives to road journeys.

BENEFITS

Health and safety benefits

29. Health and safety benefits will be the prevention of injuries occurring in 'at-work' road accidents. There will also be a substantial saving from the damage and other costs associated with

the accidents prevented. We are unable to quantify the exact scale of this benefit, lacking substantial data on accident causation - which is the subject of ongoing research. Instead we look at the contributing factors that cause at work road accidents. We seek to estimate the proportion of accidents where a particular category of risk, such as fatigue on the part of the 'at work' driver, contributed to the accident occurring. This will give us a broad indication of the numbers of accidents where action taken to control specific risks may have some effect in preventing the accident or mitigating the outcome. Many accidents will have several contributing factors and removing one of them from the equation may not necessarily prevent the accident. The estimates below may be revised in the light of further research into accident causation.

Category a - Driver competence

30. Many of the remaining accidents where one of the factors below did not contribute may be preventable (or the outcome mitigated) through defensive driving and increased competence amongst the 'at work' drivers involved. Increased driver competence may also help reduce accidents in the other categories, however this reduction is likely to be small as the quality of the 'at work' drivers defensive driving may be significantly impaired by the factors below. In these cases, we assume that there no further benefit gained by expenditure on competency, since it is outweighed by the other factors if they are present. The proportion of accidents not accounted for by the factors below is calculated at 68.5%. ***This gives us a potential cost saving to society from the prevention of these accidents of around £2.5 billion.***

31. These accidents will be more likely to occur in those of limited driving experience. TRL work showed that those with less than five years experience since passing their test had an annual frequency of 'at work' driving accidents five times greater than those with 30 years experience. They may also be concentrated amongst drivers who intentionally contravene road laws. In terms of driver grouping they may also be more likely to occur amongst non professional drivers who are less likely to have had additional training. Given the relative proportions of accidents relating to the other factors among professional and non-professional drivers, of this £2.5 billion potential cost saving around £1.1 billion will apply to professional drivers and the remaining £1.4 billion to non professional drivers.

Category b - Fatigue

32. There are difficulties in determining the level of fatigue related accidents because there is no simple, reliable way for an investigating police officer to determine whether fatigue was a factor in an accident, and if it was, what level of fatigue the driver was suffering. A recent study by the Sleep Research Centre indicates that driver fatigue causes up to 20% of accidents on monotonous roads². An earlier study of road accidents between 1987-1992 found that sleep related accidents comprised 16% of all road accidents³. Research by the Transport Research Laboratory (TRL) found slightly lower proportions of sleep related accidents : 9% - 10% of accidents on all roads and 15% of accidents on motorways⁴.

2. J.Horne and L.Rayner, Sleep related vehicle accidents, Sleep research laboratory, Loughborough university

3. J.Horne and L.Rayner, Sleep related vehicle accidents, British medical journal March 1995

4. G.Maycock, Driver sleepiness as a factor in Car and HGV accidents, TRL report 169 - 1995

33. These proportions may be even higher when considering only accidents involving ‘at work’ drivers. A study from America indicated that driver fatigue may be a contributing factor in as many as 30% to 40% of all accidents involving HGV’s⁵. Several studies also identified company car drivers as having a higher than average probability of a fatigue related accident because they tend to drive higher mileage on monotonous roads. Given the results of all the above studies we estimate that fatigue will be a contributing factor in 20% of all accidents involving ‘at work’ drivers under scope of these proposals. ***This leads us to estimate the potential cost savings to society from the prevention of these accidents at around £750 million each year.***

Category c - Vehicle selection and maintenance

34. Mechanical faults are estimated to be a factor in 5.5% of all vehicle accidents⁶. This figure may also be applicable to those accidents involving ‘at work’ vehicles under the scope of these proposals. However, figures from the Vehicle Inspectorate show that of 11,700 LGV’s inspected, 3,700 (32%) were issued with prohibition notices due to mechanical defects. The proportion of HGV’s inspected issued with prohibitions was lower at 21%. To take account of these factors we increase the estimate of the proportion of accidents involving ‘at work’ vehicles where there was a mechanical fault to 7.5% of the accidents under the scope of these proposals. ***This yields a potential cost saving to society from the prevention of such accidents, estimated at £275 million each year.***

Category d - Alcohol and drugs

35. In 1999 around 460 people were killed in drink driving related accidents and there were around 15,000 casualties of all severities. This is 14% of all fatalities and 5% of all injuries. The proportion of accidents involving ‘at work’ drivers under the influence of alcohol is likely to be several times lower than this. For fatalities involving ‘at work’ commercial vehicles, information from the ONS database indicates that it could be as low as 1% of all fatalities involving commercial vehicles. For ‘at work’ cars, this proportion is likely to be higher and we assume a proportion of 5%.

36. Given the numbers of different vehicle types involved in ‘at work’ accidents, this means that in around 2% of fatal accidents involving ‘at work’, drink driving on the part of the ‘at work’ driver is a contributing factor. This is equivalent to 2.6% of the accidents in the scope of these proposals. For other types of injury and damage only accidents the proportion will probably be around 0.7% (0.9% of those in scope). We add one tenth to these figures for accidents where drugs were a contributing factor. This leads to a total of 3% of fatal accidents and 1% of other types of accident in the scope of these proposals where drug and alcohol intoxication may have been a contributing factor. ***The total potential cost saving to society from preventing these accidents is therefore estimated at £55 million each year.***

5. Safety Study, Factors that affect fatigue in heavy truck accidents, National transportation safety board, Washington - USA

6. Road Safety factsheet, RoSPA

Enforcement

37. Enforcement action may reduce accidents caused by any of the above factors. This could range from increased effort at enforcing road traffic laws to HSE action on health and safety laws. Increased co-ordination between the enforcement agencies could also take place. Enforcement by the employer would also have some effect. This could involve action such as reducing the 'not mine' effect for fleet cars and commercial vehicles through a system of rewards for safe driving in an effort to foster an improved safety culture within the organisation. Also the techniques of incident reporting/mechanical fault reporting, tachographs and regular driver assessments may be used to create a loop of constant feedback leading to improvement. The scale of the benefits from these actions is unknown but research has suggested that 'at work' vehicle safety is most likely to be improved through an integrated set of measures based on a strong safety culture within the organisation. Enforcement action by the authorities and individual employers may have a strong role to play in such an approach.

Wider benefits

38. There will also be benefits in the reduction of non 'at-work' accidents. For measures such as driver training and increased defensive driving, the benefits of accident reduction are very likely to extend to when the driver is not at work. It is impossible to quantify the exact scale of these benefits, but they could be substantial. There may also be gains through less damage to the environment, as safer driving is less polluting, this benefit is also difficult to quantify.

Business sectors affected

Road Haulage Industry, and other heavy goods vehicle operators

39. The Road Haulage Association (RHA) estimate that there are around 112,000 companies hold operating licences for Heavy Goods Vehicles (HGV), either as owner operators or in order to offer haulage services to other businesses. Some 80% of HGV vehicle haulage is contracted out. Together, these companies operate 421,000 HGV's (vehicles over 3.5 tonnes), of which some 38,000 are 38 tonne lorries, which is consistent with DVLA data on the number of goods vehicles licensed in 1998 (412,000). The industry employs around 500,000 drivers, pointing to an average ratio of 1.2 drivers per vehicle. We take this total will include road tankers of all types, of which HSE has previously estimated that there are 14,000 tank trailers (and associated pulling vehicles) and some 6,000 rigid tankers.

Light goods vehicles and vans

40. There were 2,362,000 light goods vehicles licensed in 1998. Applying the same ratio for drivers to vehicles as for heavy goods vehicles indicates around 2.8 million drivers. However, some of these vehicles may not be used at all for work purposes. More significantly, one van dedicated to commercial purpose may be driven by several people.

41. According to the Spring 2000 Labour Force Survey, 498,000 people gave their occupational description as "drivers of road goods vehicles" under the 1990 Standard Occupational

Classification (SOC). Using the new SOC 2000 classification, some 310,000 people classed themselves as heavy goods vehicle drivers and 200,000 as 'van drivers', making a slightly higher total of 510,000 in the same survey. The figure for heavy goods vehicle drivers is significantly lower than the RHA estimates, and also well below the actual number of licensed vehicles. Similarly, the figure for LGV drivers from the ONS may also be on the low side. One reason for these discrepancies is that drivers of vehicles owned and operated by large manufacturing, wholesale and retail organisations may have given a different occupational description. Also, some of the licensed vehicles may not actually be goods vehicles.

42. The ONS data does, however, indicate that the number of drivers *dedicated* to driving light goods vehicles is only around 10% of the total number of these vehicles. The vast majority of light goods vehicles will therefore be driven by occasional drivers. This points to a ratio of drivers to vehicles of at least two to one for the 90% of vans not driven by dedicated drivers. This would indicate some that 4 million workers may drive a light goods van occasionally, and some 240,000 (10% of the vehicle total, allowing for underestimation in the ONS data) for the majority of their time at work.

Passenger vehicles other than taxis

43. In 1998, there were 80,000 public road vehicles registered at this date as a passenger vehicle capable of carrying over eight passengers (as distinct from private vehicles). Occupational data on the number of drivers of these vehicles is lacking because of the wide classification in official statistics. Since these vehicles would typically be driven daily by drivers working anywhere between one and three shifts, we make the assumption that there are on average two drivers for each of these vehicles, giving a total of 160,000 drivers of 'buses and coaches'. This average of two driver per vehicle could vary between one dedicated driver per vehicle for a coach company and up to three for a public bus (the latter proportion is consistent with the ratio of train drivers to trains).

Cars used for commercial purposes

44. The Royal Automobile Club estimates there are 2,993,000 'company cars' in 719,920 UK companies, this includes hire cars. The BSG report estimates 1,550,000 cars owned or financed by companies (not clear if this includes hire cars, may explain difference). However, the BSG report also estimates 880,000 cars are used by the self-employed and some 2,870,000 are owned or financed by households but used for business purposes.

45. The BSG report points to some 5.3 million cars that may be used 'for business'. We draw the distinction between what are usually termed 'fleet cars' owned and operated by employing organisations, and cars used by the self-employed for commercial purposes. With respect to fleet cars, the RAC report some 600,000 companies only operate one car. Since self-employed persons who are their own company are very likely to operate only one or two vehicles, the RAC figures are therefore likely to include some, but not all, cars operated by the self employed for business purposes. However, many businesses with employees may also own or operate one or two vehicles, and these leaves a significant discrepancy between the RAC and BSG figures.

46. Government transport statistics indicate that some 10.5% of the 1997 total of 22.8 million cars were company owned or financed. We therefore take the number of fleet cars owned and operated by employing organisations (ie organisations with employees) to be 2.5 million in 2001, including hire cars. This figure assumes that around half the number of cars estimated by BSG to be operated by the self employed are included in the RAC estimates. This indicates that a further 2.8 million vehicles are owned and operated by the self-employed (880,000) or private individuals (1.9 million). It should be noted that those owned by private individuals may be used for the business of the individuals employing organisation, which may be a large company. We assume an average of one driver per vehicle for all cars used for commercial purposes. Taxi drivers, numbering some 400,000, will fall into the self-employed category.

Mobile work equipment (including farm vehicles)

47. These are generally licensed as 'special concession vehicles', or 'special vehicles'. The number of vehicles in this group, and in the previous agricultural tractors etc' group, has fallen steadily from a figure of 383,000 in 1988. In 1998, there were 243,000 GB licensed special concession vehicles (including agricultural and mowing machines, sand gritters and snowploughs) and 47,000 special vehicles (including mobile cranes, works trucks, diggers and rollers). The vast majority of special concession vehicles are agricultural tractors, and the vast majority of special vehicles are construction vehicles.

48. We assume a ratio of 1.2 'dedicated drivers' per vehicle, giving some 340,000 drivers. HSE has previously estimated that there are around 50,000 farm employees who drive or use agricultural machinery to a large extent. The majority of drivers of other special vehicles will be employees, some 56,000 people, giving a figure of 106,000 people employed to drive work equipment. The remaining 234,000 drivers will be self-employed, the majority of them farmers.

Other vehicles

49. This group will include drivers of motorcycles. However the majority of commercial drivers using motorcycles we assume are professional drivers. Other vehicles in this group will include crown vehicles, of which there are 15,000.

Total number of commercial vehicles and drivers

50. The above data point to a total of some 10.5 million people who at some point drive a licensed road vehicle (other than a motorcycle) for business purposes, or approximately one in three of the UK working population. For the purposes of the cost analysis, it is useful to identify two distinct groups within this population, as follows:

51. Full-time commercial drivers. This group will include 740,000 dedicated goods vehicle drivers, 160,000 bus and coach drivers, and 56,000 drivers of mobile work equipment. It will also include some car drivers, particular 400,000 taxi drivers. This group is intended to consist of those people who would describe themselves as "driving for a living". Allowing 150,000 car drivers other than taxis to fall into this group gives an approximate total of 1.5 million.

52. Other business drivers. This group will include all the remaining drivers of light goods vehicles, very approximately estimated at some 4 million, and almost all of the drivers of fleet cars, and drivers of privately owned vehicles. We include all the vehicles operated by the self-employed, except taxis. The total number of drivers in this group is estimated to be around 9 million.

COSTS

Existing good practice and the costs of management action

53. HSE has gathered information on how employers manage the traffic risk associated with working and driving on public roads. Of the companies taking part in the survey 94% said that they had workers who drove vehicles on public highways as part of their work. 82% of respondents said that they had a safety policy and 67% said that they had considered the road safety implications of work related journeys. Respondents were also asked to indicate which specific road safety matters were covered by the safety policy. The results of these questions have been used below in the estimates of the costs of extending certain elements of good practice across all firms. The survey is not representative in terms of action currently being taken by industry as a whole, as inspectors were specifically asked to make a proportion of their visits to firms who might be expected to demonstrate current best practice. Also there may be an under representation of small firms and the self employed in the sample.

54. All the strategies that we outline below would require some additional management action to put into place. Time would be required to assess current behavior, develop a policy, and perhaps even conduct formal risk assessment in some cases. We have not costed this element of an overall strategy. Detailed evaluation of previous health and safety proposals has found that the costs of administrative time in developing a policy are typically only a small fraction of the actual costs of the action taken under the policy. In terms of comparing costs and benefits, it is the cost of implementing the policy that are of primary importance, rather than the costs of developing the policy itself.

55. To take a simple example, we find below that the costs of advanced driver training at £200 per driver is broadly justifiable in cost benefit terms. Developing such a policy might cost an additional £20 per driver, or £2,000 for 100 drivers in a large organisation. This is the equivalent of around eight days middle management time, some of which could be devoted to risk assessment. Developing what could be a fairly detailed policy is therefore only a small proportion of the costs of implementation, and by extension well worthwhile in cost-benefit terms. In addition, some action taken under a given policy might be almost costless, and these cases alone would make consideration of policy worthwhile.

Standards on driving hours and rest

56. The Royal Society for the Prevention of Accidents has compiled a report which looks in some detail at existing research on fatigue, together with surveys of existing practice. In summary, it was found that standard techniques to ward off tiredness adopted by drivers in order to continue driving were largely unsuccessful, or at best temporary. Longer lasting results are only achievable with adequate rest. Even then, significant effects were only observed for stops which included at

least 15 minutes of actual sleep, or ones which included rest and the consumption of a mild stimulant (caffeine).

57. In terms of action that would have a significant effect on the accident rate, the two principal strategies for dealing with driver fatigue are therefore in avoiding either long periods on the road, or inadequate nightly sleep, or both. The principal cost of implementing restrictions on working hours is therefore either in terms of lost productivity if the driver is paid during the rest period, or lost leisure time if the driver is paid by the day, or on a delivery by delivery basis. For the purpose of estimating costs, we assume that driver hours and pay are adjusted to accommodate any further breaks, otherwise any policy would be largely self-defeating. The costs of the strategy are therefore born by the firm.

58. Policies on driving hours and rest will impact most significantly on the group we have termed 'professional drivers'. Some professional drivers are known to work very long hours, much of which is spent on the road. However, both heavy and light goods vehicle drivers and public passenger vehicle drivers are already subject to restrictions on driver hours (most significantly a maximum of 90 hours each fortnight), although light goods vehicle drivers are exempt from record keeping. Because the safety benefits of these restrictions already form part of the baseline risk, we cannot assess their effectiveness. However, we can assess the effectiveness of *further* reducing hours. For the group of professional drivers as a whole, this could result in tightening the existing controls where they apply, increasing compliance with existing controls, or implementing some control where limits do not currently apply in practice.

59. According to the New Earnings Survey, average hours including overtime for professional drivers are just over fifty hours per week, although not all of this time would be spent on the road. In order to investigate the effectiveness in safety terms of avoiding further accidents caused by tiredness, we make the assumption that this problem could be *significantly mitigated* if half of all professional drivers rested for an additional 30 minutes each day on average. This group we take to be those working above median hours, which we take to be approximately fifty hours per week (arithmetic average and median average hours may be slightly different, depending on the distribution).

60. This time allowance could be thought of as being 'spent' by the driver on the most suitable strategy for that individual, for example either stopping twice a day for 15 minutes, or simply sleeping for an half-hour. The time can also be thought of as a weekly average, so that a driver could spend the time allowance on avoiding one or two occasions of extreme shortage of sleep, or significantly breaking up one or two extremely long journeys. Whatever the strategy, we assume it is aimed explicitly at avoiding tiredness, and so is different in principle than (for example) setting a limit on driver hours that simply reduces the weekly average by 2.5 hours. However, where a driver is subject to and already in compliance with existing controls, this would in practice reduce the weekly maximum from 45 hours per week to 42.5 hours, given a five day working week.

61. In order to compare these costs with safety benefits, we assume this strategy is applied to a subgroup of all drivers we have termed professional drivers. Some of these, for example bus drivers, will already have well regulated shifts, as well as legal limits. We are therefore presenting the costs and benefits of eliminating the risk, rather than predicting the actual costs and benefits of future

action. The cost-benefit balance in this section is therefore far more important than the actual scale of the costs and benefits.

62. Finally, some of this additional reduction in hours could be absorbed by re-planning existing breaks - for example splitting a lunch break into two. This would be a costless action on behalf of the driver, but may require some management action to put into practice (this is discussed in the preceding section). As a generous estimate, we assume that this can be done in half of all cases. Costs therefore apply to one-quarter of the group we have termed professional drivers.

63. The average weekly wage of goods drivers is currently £331, which are numerically the largest group of professional drivers. Construction workers, taxi drivers, and certain other drivers will also be in this group, but this wage would seem fairly representative of the average for the group. Goods vehicle drivers work on average fifty hours each week, a figure which again is probably representative of the group as a whole. The total annual wage bill for the group is therefore $1.5m * £331 * 52 = £26$ billion. The full economic cost of employment for this group as a whole is $£26 \text{ billion} * 1.27 = £33$ billion. Full economic costs for one-quarter of these drivers is £8.25 billion.

64. The additional allowance of 30 minutes per day therefore translates into 2.5 or 3 hours per week, or roughly 5% of the annual wage bill for that group that incurs these costs. The cost of providing sufficient rest periods to the group would therefore be in the order of £400 million each year. This cost can be thought of either as lost productivity, or as the national cost of hiring additional drivers so that sufficient drivers are always available to ensure this reduction in average hours is maintained.

Balance of costs and benefits

65. The cost to the economy of accidents involving professional drivers in which tiredness was at least a contributory factor is estimated to be in the order of £500 million each year (of the £750 million total estimated above). The reduction we have illustrated would therefore have to almost fully eliminate the risk.

66. This suggests that a broad policy of eliminating these accidents as far as possible by simply further reducing the workload of long hours drivers 'across the board' is unlikely to be economic. However, it does not mean that action on driver fatigue is unwarranted. The likelihood of fatigue being a factor in an accident will increase at an exponential rate with the length of the journey (or the lack of sleep the previous night). This suggests that targeting drivers most at risk is highly likely to be economic. For example, if the risks to the top quartile of drivers in terms of hours (the 25% who work the longest hours) were double the average, then a reduction in hours as illustrated would be economically justifiable.

67. The conclusion also cannot be seen to oppose existing controls. Although further non-targeted controls are marginal in cost-benefit terms, we do not know what risks would be without existing controls, and they may much higher than we observe with the controls already in place. In fact, the figures imply that the most appropriate action would be to retain limiting rules. However, any extension to these rules would need to be very carefully considered.

Driver competency training

68. Training and competency can cover a wide range of issues, not just 'safe driving'. The BSG report noted that fleet driver training is a growing industry, with an estimated 60,000 drivers newly trained each year. Fleet drivers and drivers of light goods vehicles would typically have had no other specific driving training other than their general driving test. At the other end of the spectrum, full-time professional drivers will have typically undergone (at least some) specialist training concerning the vehicles that they would usually be driving.

69. For the purposes of estimating costs, we look at the costs and benefits of extending driver competency for the two groups already identified, that of full-time professional drivers and non-professional drivers.

Non-professional drivers

70. For non-professional drivers, we look - in broad terms - at the costs and benefits of extending driver competency by attendance at a one day advanced driving course. This would typically refresh existing skills, cover defensive driving, and driving under adverse conditions. For light goods vehicles, this would also cover loading and unloading.

71. We then assess these costs against the benefits of those accidents that could have been avoided by this training. A more detailed course would cover additional areas, and would bring more benefit. The marginal advantage of more detailed training can also be broadly assessed. As BSG note, driver training is thought to be more effective when combined with an overall management strategy to reduce at work driving risk, and this is discussed in a separate section.

72. The costs of advanced driver training consist of two elements, the cost of the course, and also the full economic cost of the person's attendance. A one day advanced driving course (involving two to one tuition) typically costs in the order of £100. To estimate the wage costs of those involved, we simply take the current UK average wage of £411 per week. This is an overestimate for goods vehicle drivers (£331), but will be an underestimate for employees of large firms provided with a complimentary vehicle. Allowing 27% for non-wage costs gives a full economic cost of £104 per day. The total economic cost of a one day training course will therefore be £200, rounded to the nearest £10.

73. The HSE survey found that almost exactly half of employers they contacted had implemented a driver training policy covering driver training. As already stated this was not a statistically representative sample, and in any case, because of the inclusion of self-employed drivers in our estimates this is likely to be a maximum estimate of existing practice. In addition, the detail of the training provided was not specified in the HSE survey, and some of it may not have been the formal training we have assumed. Allowing for this, a reasonable estimate is that one-third of non-professional drivers have already had training to at least the standard we assume.

74. We therefore apply the advanced driving costs to two-thirds of the nine million non-professional drivers, or six million in total. The total cost of advanced driver training to all non-professional business drivers not already trained to this standard is therefore estimated at £1.2

billion. This would essentially be a one-off expenditure in order to receive a recurring safety benefit. It could be argued that in order to maintain this benefit over the longer term, refresher training would be required. In order to allow for this, we assume that these costs are fully re-incurred after five years, and then balanced against ten years worth of safety benefit in current terms. This further expenditure may take the form of one or two hours refresher training each year, rather than a repeat course lasting one day at the five year mark.

Balance of costs and benefits: non-professional drivers

75. Of the total costs to society of accidents that may be preventable by enhanced driver competence of £2.5 billion, around £1.1 billion will apply to professional drivers and the remaining £1.4 billion to non professional drivers. Taking a ten year total of these costs gives a figure of £14 billion. Against this, we balance costs of £1.2 billion incurred at present and at five years, or £2.4 billion in total. Advanced driver training for non-professional drivers would therefore have to prevent 17% of these accidents for benefits to society to balance costs. The employer themselves will incur around half of the accident costs, so that the training would have to prevent around one-third of accidents in which poor competency is a factor.

76. Whether reduction is achievable is a matter of judgment. The figures do indicate that advanced driver training for non-professional drivers who drive well above the average business mileage would almost certainly be worthwhile in terms of future savings to the organisation alone, let alone the wider costs to society. Whether this is the case for all non-professional drivers is less clear.

Professional drivers

77. Almost all members of this group will have had some specific training in operation of the vehicle that they drive for the majority of time at work, beyond that required for a general driving licence. Heavy goods vehicle drivers and coach drivers are subject to separate examination by the DVLA. Bus drivers will be trained by their employing organisation. For existing drivers, further training is likely to take the form of additional competency checking rather attendance at a formal course.

78. For cost-benefit comparison purposes, we look at the cost-effectiveness of additional competency checking taking one-half day of time, but repeated on a yearly basis. In practice, the procedures adopted will vary depending on the nature of the industry in which the driver works. Whatever the procedure adopted, we assume it will cost the equivalent of a one to one competency examination lasting three hours. From the figures above, the full economic cost of this would be in the order of £80 including the cost of both the examiner and the driver. This is an overestimate to the extent that competency checking could take place in some cases whilst the driver continues to work. Applied to all professional driver groups, this would lead to costs of £80 * 1.5 million = £120 million per year.

Balance of costs and benefits: professional drivers

79. The total cost to society of work-related traffic accidents involving professional drivers, in which driver competency might be expected to prevent or mitigate the accident is £1.1 billion. Further competency testing as outlined above would therefore have to prevent around 11% of these accidents for benefits to balance costs. As far as an employing organisation is concerned, the figure doubles to approximately 22%. As with the non-professional drivers, whether this is achievable is a matter of judgement.

Driver selection and induction

80. We examine action in this area for all drivers working for an employer, and also those self-employed drivers who contract their services to an employing organisation. In the HSE survey, around one-third of employers reported that this area was covered explicitly in their road safety policy. Action in driver selection could cover a number of different elements, including planning ahead so that the most suitable driver can be allocated to a particular task, employing new drivers according to specific criteria and perhaps background checking. Induction could include making sure the person is appropriately briefed on the companies policy, and also that the person is suitable for the driving tasks they will be undertaking.

81. Whatever the elements included, the main investment will be the time of those with management responsibility, and the driver. In terms of induction, we allow two hours of time for both persons. For non-professional drivers, this could include a briefing on company policy followed by an examination of the drivers performance in the vehicle, at an economic cost of around £80. For professional drivers, and those contracting their services (who typically have their own vehicle) the driving examination may not be required, but a longer briefing covering particular operations may be required.

82. Applying induction costs to all 8.4 million commercial drivers not already covered by an employers policy (80% of the total of 10.5 million) gives a figure of £670 million. Allowing for 10% employee turnover per year, means that these costs will be fully re-incurred over a period of around 10 years, giving a ten year figure of £1.3 billion. Again, this is not a projection of expected future costs, it is a cost used to balance against long term benefits, assuming that induction training is full adopted as best practice by all employers of commercial drivers.

83. The costs of selecting drivers for particular tasks is an ongoing cost, and much more difficult to quantify. This could range from being an almost costless addition to logistical work that would need to be done in any case, to administrative work taking some time. As this is an ongoing cost, we include it under the journey planning costs below.

Comparison of costs and benefits

84. Induction training could be expected to impact to some extent on all accidents involving commercial vehicles. The ten year cost can therefore be set against the total cost of accidents involving 'at work' vehicles under the scope of these proposals over the ten year period, or £37 billion. Induction training along the lines costed would therefore only have to prevent 35% of

accidents for the benefits to society to balance the costs. Ten year costs to employers would be around half of the total to society, requiring a reduction by 7% for benefits to employers to balance costs. In that high quality induction training can be expected to set the tone for the drivers behavior and understanding of how seriously the organisation takes driver safety, these reductions, and more, could easily be expected.

Journey planning and scheduling

85. One quarter of employers responding to the HSE survey said that this was explicitly covered in their policy, which we take to apply to around 15% of all drivers allowing for the self-employed and small firms. Journey planning and scheduling would require a small time investment up front. This would ensure that where possible, journeys avoided rush hour congestion and involved maximum use of the safest roads.

86. In terms of costs, we assume that the task is to plan the safest journey without any loss in journey time. For drivers dedicated to specific routes, this is something which would only have to be done once during their time on that route. For those making different journeys this would need to be a daily activity. This makes cost estimation very difficult, since we do not know the proportions of dedicated and non-dedicated drivers.

87. At one extreme, detailed route planning for a non-dedicated driver might take ten minutes extra time each day. This would represent an additional one-hour each week engaged in this activity, or a 2% increase in effective wage costs (equivalent to a loss in productivity) for these drivers. At the other extreme, for a dedicated driver, a small time investment in time considering the drivers route from a safety point of view could bring an ongoing benefit for some time.

Comparison of costs and benefits

88. Journey planning could be expected to impact to some extent on all accidents involving commercial vehicles. The yearly cost to society of all accidents involving professional drivers is just under half of the total costs of accidents involving 'at work' vehicles, or approximately £2 billion each year.

89. Considering non-dedicated drivers, a daily consideration of the route would have to prevent around one-third of all accidents for these drivers. This reduction is highly unlikely to be achievable. However, for dedicated drivers, only a tiny fraction of accidents would have to be avoided for what is a one-off cost, rather than a cost incurred on a daily basis.

90. The net economic benefit of action taken is therefore highly dependent on the particular work situation. As with action on fatigue, this does not mean that it is not worth paying attention to safe journey planning. However, the figures indicate that, in economic terms, effective action for non-dedicated drivers should best take the form of company rules which can be easily applied on a checklist basis, rather than a detailed consideration of each journey.

Investigating and recording accident performance

91. There are two issues to consider in this section. Firstly, the reporting/investigation of incidents within the organisations employing the ‘at work’ drivers. Secondly, the reporting/recording and investigation of incidents by enforcement authorities such as HSE and the police.

92. The number of accidents involving ‘at work’ vehicles are shown in the table below. (Note - Each accident could involve more than one casualty)

Table 5 : Numbers of accidents involving ‘at work’ vehicles

Accident Severity	Number
Fatal	930
Serious	10,000
Slight	48,000
Damage Only	980,000

Investigation and incident reporting within organisations

93. HSE has previously estimated the average unit costs to employers of investigating accidents. Research findings identified three broad classes of investigation. Firstly, a simple investigation, involving the line manager interviewing the employee involved and any other key witnesses who would be easily available. Secondly a standard investigation, this would involve the line manager interviewing the employee involved and any witnesses and also contain input from employee safety representatives or specialists. The investigation would typically follow a ‘checklist’ approach using a standard proforma. Finally, an elaborate investigation which would usually be conducted into a serious accident and would typically involve several personnel on the investigation team and detailed witness statements. In smaller organisations, an external safety advisor may be involved. It was estimated that unit costs of the simple, standard and elaborate investigations were £20, £80 and £500 respectively.

94. Information from the HSE survey indicates that 50% of firms already have incident investigation procedures. We reduce this figure to one third due to the lack of the statistically representative sample and the reasons given in earlier sections. The investigation would attempt to uncover any work related factors which contributed to the accident and the results also recorded to monitor individual driver performance. There may be some duplication of investigation that is carried out by the police, but the employers investigation would have a different emphasis. If we assume that fatal accidents are subject to elaborate investigations, serious accident subject to standard investigations with the remaining accidents subject to simple investigations, then the cost to employers of investigating all accidents not currently investigated will be in the region of £15 million.

Reporting of accidents to enforcing authorities

95. RIDDOR requires an employer, self employed person or someone in control of premises to report certain work related accidents, diseases and dangerous occurrences and applies to all work

activities. The regulations exclude road accidents on a public highway in the course of work activities. Extending RIDDOR to apply to 'at work' road accidents could present some practical difficulties. RIDDOR definitions of major and 3-day injuries apply to the employee. Injuries to members of the public are reportable if the person is killed or taken to hospital. As discussed in the risk assessment section, the person 'at work' involved in fatal accidents is only killed a proportion of the time, but under RIDDOR the accident would be reportable anyway. Serious injuries would also be reportable as the person involved would be taken to hospital. Slight injuries occurring to employees would be reportable under RIDDOR if the employee is absent from work for over three days. They would not be reportable if a member of the public was injured and not taken to hospital. Damage only accidents would also not be reportable.

96. The average cost to companies of compiling a written RIDDOR report was estimated at £12 in 1996 (we uprate this to £14 in current prices). HSE now also allows reporting of accidents over the internet and through a call centre and this may reduce this unit cost. We assume that all fatal and serious accidents and 50% of slight accidents, in road accidents involving 'at work' vehicles would be reportable under existing RIDDOR regulations. We also assume one report per accident rather than per casualty. Reporting these accidents would cost companies £500,000 per year, assuming full compliance. If the reporting rate reflects that of RIDDOR currently (50%), then the costs to business will be in the region of £250,000 per year. HSE would also incur administrative costs in dealing with the reports estimated at £50,000 per year.

97. There may also be substantial costs to HSE in terms of increased investigation and inspector time. HSE inspectors currently investigate around 300 workplace fatalities each year. Widening investigation to the estimated 1,000 people killed in road accidents involving 'at work' vehicles could represent up to a tripling of the inspectors workload. The exact increase in work is difficult to predict, it is envisaged that police would retain the lead in investigating road traffic incidents as they have both the expertise and the personnel for the task. However it would be important to establish a liaison scheme, between the police and HSE to ensure that the police involve HSE inspectors where there is a possibility of an accident being work related.

98. As a complementary, or alternative approach the STATS19 form could be amended to include questions about journey purpose. This would involve a small increase in cost for each form, depending on the number of additional questions.

Comparison of costs and benefits

99. Increasing reporting and investigation of road traffic accidents involving 'at work' vehicles by employers and by enforcing authorities will help inform on the scale of the problem. It will also help enforcement authorities identify priority areas for intervention and ensure that the enforcement effort is proportionate and effectively targeted in relation to the scale of the problem. The costs of increased reporting and investigation requirements are less than 1% of the total costs to society of accidents within the scope of these proposals, additional action in these areas therefore seems justified.

Alcohol and drug policy

100. Of the respondents to the HSE survey, around 40% stated that as part of their road safety policy there were either specific rules on alcohol/drugs misuse or a link to general company alcohol and drug policy. Where the firm has a central alcohol/drug policy, amending it to take account of issues relating to work related road travel should be a relatively straight forward process. Where no such policy exists, compiling and disseminating one should take no more than two hours of management time in a small firm, four hours for a medium sized firm and perhaps ten hours for a large firm (spread among several personnel). This gives unit costs of £30, £60, and £150 respectively.

101. We reduce the 40% to 30% of employers currently taking action to take account of the unrepresentative sample of the HSE survey. Of the 70% of companies who do not deal with alcohol and drugs as part of their road safety policy, some will have explicit policies covering the workplace, perhaps as part of their general health and safety policy. However some employers will not have a policy and deal with problems on an ad-hoc basis as they arise. There are no reliable figures on the number of companies who have a general policy in place. Applying the unit costs above to the 70% of companies with a non-driving specific policy would result in one-off costs of around £35 million, this will be an over estimate to the extent that general policies are already in place that can be utilised.

Comparison of costs and benefits

102. The above costs exclude the self employed and relate to the administrative costs of implementing the policy. The costs of road accidents under the scope of these proposals where alcohol and drugs may have been a factor is estimated at £550 million, over ten years. The administrative costs are therefore only around 7% of this figure.

Vehicle selection and maintenance

103. The costs of enhanced vehicle maintenance are difficult to estimate, since unlike many of the other actions so far examined, enhanced vehicle maintenance is very likely to be simply bringing forward a cost that may be incurred in the future in any case. In addition, the costs of delaying or avoiding maintenance would in almost all cases be higher than the costs of tackling the problem in advance. Commercially, these gains would be felt by the employer or self-employed person in terms of less frequent loss of time at work, and lower insurance premiums. Planned maintenance is more likely to be able to be accommodated with limited loss to work time than an unplanned breakdown.

104. The economic cost of bringing forward expenditure is far less than the actual expenditure itself, and standard discounting convention indicates a figure of around 2.5% of the gross figure for expenditure incurred now rather than in six months time. On the other hand, the economic cost of a breakdown which can be repaired in a day would cost on average at least half of the drivers full economic daily cost, or £40 (more if a single journey cannot be completed). Calling out breakdown services (leaving aside time spent on repair) could add another £20. Enhanced maintenance that avoids this breakdown, including any repairs or replacements might cost around £500. The economic cost of bringing forward this expenditure would be £12.50. In this simple example, if there

is more than a 20% chance of avoiding a breakdown during the year by bringing forward, then it is worth doing in commercial terms alone. Moreover, this example assumes that the cost of the breakdown repair is also £500 (this amount is simply bought forward), whereas in fact it could be much higher than this if leaving the problem made it worse.

Balance of costs and benefits

105. Both companies and society would also benefit from avoiding accidents where vehicle failure was a contributing factor, a potential saving estimated above at £275 million each year. Taken together with the potential commercial savings, this indicates that enhanced routine maintenance is highly likely to be worthwhile in cost-benefit terms.

CONCLUSIONS

106. Although the estimates in this document are every broad, the economic analysis can be used to indicate to what extent additional action should be taken in a particular area, and also whether this should be the subject of guidance or an ACoP (or even regulation).

107. Where the benefits of avoiding accidents could be expected to result in savings to employers that are likely to outweigh the costs of the action, then this is a good argument for introducing guidance which it would be in the employers own interests to follow. Guidance is more flexible, in that recommendations can be acted on according to the employer (or self-employed persons) own circumstances. However, where the case is more marginal as far as employers are concerned, but more persuasive as far as the wider savings to society are concerned, then this argues for an ACoP or regulation. In this latter case, society is typically setting minimum standards which must be followed in order to gain a wider benefit, and imposing a cost on all employers in order to gain this benefit.

Guidance

108. This documents finds a strong economic argument that the majority of action areas to improve commercial road safety should be addressed by means of guidance. The overriding argument supporting this conclusion is that, of the costs of these accidents, employers would bear around half of the total cost to society. This is a significantly higher proportion than that relating to the costs of other workplace accidents, and arises chiefly because, as far as the employer is concerned, a significant piece of work equipment is often damaged and also temporarily or permanently put out of action. This directly contrasts with action taken by HSE and more widely the EU, on (for example) working at height. Here, regulations are proposed because the costs to both the individual and society of a person who is forced to leave the labour force following a fall in which no equipment is damaged is often far higher than the costs to the employer. Regulation is necessary in this case to protect the individual and societies interests.

109. Of the areas so far examined, the cost-benefit analysis has found that guidance is likely to be a *sufficient* approach in itself in all areas except driver fatigue and detailed journey planning. Aside from these latter areas, the costs to employers of implementing the example policies as outlined above could be expected to result in longer term financial savings to the company. Guidance would

also give the flexibility of allowing employers to adopt the practice that best suits them, and tailor any action precisely to the individual employers circumstances.

110. This conclusion is in line with the fact that good practice is becoming increasingly adopted by companies, a trend we would expect to continue as the costs to companies of accidents involving their drivers becomes more apparent. Making further information available to employers on the costs of accidents involving commercial drivers would therefore form an important part of any policy. It is well known that the full costs of any accident, whether road related or not, are not fully apparent at first. For example, case studies assessing the full costs of real events have been used by HSE as way of demonstrating the full costs of work-related accidents to employers.

Extending existing rules via regulation or ACoP

111. This analysis has found no clear example where the costs to society (including the individual worker) warrant action, but where the costs to the employer do not. The case for further action on journey planning and fatigue to the extent that this would make a *significant overall* impact on accidents appears marginal in societal terms, rather than persuasive. The case is less strong when considering action that may be taken voluntarily by employers, since benefits to employers would be around half the total benefits to society.

112. This suggests that further action on driver hours - if warranted - would require some legislative force to ensure that action is taken to the level desirable by society, taking the wider costs to individuals and the labour force as a whole into account. Whether such action, which could be facilitated by means of an ACoP, is in fact desirable would require further detailed investigation. Meanwhile, guidance on complying with existing requirements, and avoiding 'worst cases' where controls do not already exist, would almost certainly be economically worthwhile from both the employers societies point of view.