TRANSPORT RESEARCH LABORATORY

The safety of fleet car drivers: a review

Prepared for Road Safety Division, Department of the Envronment, Transport and the Regions

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Executive Summary

Britain is unlike most other European countries in that cars that are owned or financed by companies make up a significant proportion of the total vehicle fleet, with over half of the new cars sold each year in this country being registered in the name of an organisation. The drivers of company cars are an important sub-group of the driving population, and it has been suggested that they make a disproportionate contribution to the total numbers of road accidents.

The aim of this report is to examine the evidence for such a 'fleet driver effect', the factors contributing to it, and the measures that could be employed to reduce the effect. After defining and describing the area of study, the report reviews the literature on accident risk to compare 'company' and 'private' drivers, drawing upon the programme of accident liability studies carried out by TRL in the last decade. It then examines the various measures to improve safety that have been used in the past, with special reference to fleet driver training, and assesses the evidence for their effectiveness. Following this, the results are presented of some qualitative research carried out with fleet managers, trainers, drivers, and fleet insurers.

The main conclusions arising from this study of fleet car driver safety may be summarised as follows:

- Company owned or financed cars form a significant part of the total vehicle fleet in this country. Over 2¼ million cars are company owned, and over half of all new cars sold each year are registered in a company's name.
- On average, company cars are considerably younger than are private ones, and they also have larger engines.
- Fleets vary greatly in size and function.
- The fleet car driver population is even more diverse, covering a broad spectrum from those who work specifically as drivers, through those who need a car to fulfil their job functions, to those who receive a car simply as a form of remuneration.
- Company car drivers are predominantly male non-manual workers from high-income households.
- Information on the breakdown of the fleet driver population by job function is scanty, and little is known about the distribution of driving patterns and car usage. This has important implications for the deployment of countermeasures.
- On average, fleet car drivers are somewhat younger and drive considerably more miles than do private motorists, but even after these factors have been taken into account by statistical techniques there is clear evidence of a fleet driver effect on accident liability.
- The size of this effect depends upon the definition of fleet driver used. A broad definition based only on car ownership indicates an effect that elevates accident liability by some 30%. When the comparison is confined to those who drive regularly on business, then the effect lies between 40 and 50%.
- Numerous reasons have been advanced to 'explain' the higher accident liability of fleet car drivers, such as time pressures on the driving task, the characteristics of business drivers, the nature of the vehicles driven, and differing responsibility for the costs of accidents. However, while the existence and size of the effect have been established, the reasons underlying it are still poorly understood.
- Fleet driving training is a rapidly growing industry. Some 60,000 drivers are trained every year, but this is still only a small proportion of fleet drivers on the road.
- Training companies often report substantial accident reductions after the introduction of training courses. but the evidence on effectiveness from other sources is anecdotal and equivocal. In the largest study to date in this country on fleet driver accidents, it was found that trained drivers had accident rates that were slightly lower than untrained ones, but the difference was not statistically significant.
- There is no evidence in the literature in the form of scientific controlled studies that conventional fleet driver training as practised in the UK is effective in reducing accident rates.
- There are a number of other measures that have been employed by fleet managers to improve safety (and reduce costs). These include incentives, penalties, accident reviews, driver monitoring systems, and driver feedback procedures.
- Again, there is little evidence in the literature that these measures are effective in reducing the accidents within fleets. However the organisations that felt that they had achieved most in safety terms were those that had introduced a package of safety measures, rather than a single procedure such as training.
- Qualitative research has provided useful insights into organisational processes and behavioural mechanisms. These indicate strongly that it is the 'safety culture' of an organisation that is critical in determining how organisations address safety problems and how satisfied they are with the outcome.
- Although there is little evidence that the measures currently employed to improve fleet safety are in fact effective, there are clear indications that fleet safety is most likely to be improved by the introduction of an integrated set of measures based on a strong safety culture within the organisation.

1 Introduction

1.1 Overview

Britain is unlike most other European countries in that cars that are owned or financed by companies make up a significant proportion of the total vehicle fleet, with over half of the new cars sold each year in this country being registered in the name of an organisation. The drivers of company cars are an important sub-group of the driving population, and it has been suggested that they make a disproportionate contribution to the numbers of road accidents.

The aim of this report is to examine the evidence for such a 'fleet driver effect', the factors contributing to it, and the measures that could be employed to reduce the effect. After defining and describing the area of study, the report reviews the literature on accident risk to compare 'company' and 'private' drivers, drawing upon the programme of accident liability studies carried out by TRL in the last decade. It then examines the various measures to improve safety that have been used in the past, with special reference to fleet driver training, and assesses the evidence for their effectiveness. Following this, the results are presented of some qualitative research carried out with fleet managers, trainers, drivers, and fleet insurers.

1.2 The fleet car population

For the purposes of this report, 'fleet cars' or 'company cars' are defined as cars owned and registered by companies, which may include leasing companies acting for other organisations. Some of these vehicles will be retained on-site by companies for use as 'pool' cars, but the majority are allocated to an employee keeper for either main or sole use. According to recent statistics (DETR, 1998) 10.5% of the 22.8m cars licensed in Great Britain are company owned, giving a business car population of over 2¼m vehicles. The turnover in this is rapid; over 1m new cars each year are registered in the name of a company, which is 52% of annual new car sales. As a result, company cars are on average much younger than private ones, with 76% being three years of age or less, compared with 18% of privately owned ones (DETR, 1997). With an average engine capacity of some 1900cc, company cars are also larger than private ones, where the average capacity is 1500cc.

However, the most striking feature of the fleet car population is that fleets themselves vary enormously in both size and function, ranging from cars used by the directors of a small business to the several thousands of vehicles in the fleets of some major companies.

1.3 The fleet driver population

Equally diverse is the fleet driver population; indeed, it could be said that there is no such thing as a typical fleet driver. If a driver is defined as an employee of an organisation who drives a car provided by that organisation, then this will cover both a delivery person and the managing director of a major company. Between these extremes there is a broad spectrum of tasks and roles, ranging from those drivers who receive a car in order to fulfil their job functions (sometimes called 'need' drivers) to those who receive a car as part of a remuneration package, and who may use it predominantly for domestic and leisure purposes.

National Travel Survey data show that company cars are possessed mainly by non-manual workers in high income households. Overall, 8% of employees have the use of a company car, but this proportion rises to 25% in the professional and managerial group. Within this group, men are three times more likely than women to be given a company car.

While there is a stereotype of the company car driver as being a salesman, there are many other job functions that can involve the use of fleet cars: getting business, servicing customers, working off-site, and attending meetings all account for some of the total business mileage. However, information on the numbers of drivers in each function within the population is scanty. This is unfortunate, because job functions will affect driving patterns, which in turn may influence accident liability. If there is widely differing accident liability within the fleet driver population, or even within a particular fleet, then this will have implications for the formulation and implementation of remedial measures.

2 The accident liability of fleet car drivers

2.1 Introduction

It has long been held that fleet car drivers have higher accident rates than do private drivers. Many reasons have been put forward to support this argument. Those who drive company cars will tend to have above average annual mileages, which would be expected to lead to more accidents. Business drivers are often exposed to time pressures, which could encourage higher driving speeds and an increased likelihood of driving while fatigued. As mentioned earlier, company cars are on average newer and larger than private cars. There is also a widespread belief in the 'not mine' argument: less care may be taken of company vehicles simply because they are not owned by the drivers, because the cost of a damage accident is less for a fleet driver than a private one, and because business needs will ensure that a replacement vehicle is usually provided immediately. Another suggestion that has been made is that fleet drivers have individual characteristics such as extraversion or aggressiveness that will give them an elevated accident liability.

These suggestions are all plausible, but what is lacking is empirical evidence of the size or even the existence of the fleet driver effect. To obtain this it is necessary to examine data from large-scale surveys of the accident liability of both 'ordinary' and fleet drivers.

In February 1989, a postal survey was carried out of company car drivers, defined as drivers of company owned or financed vehicles who drove regularly (at least once a week) on business. The survey is reported in Lynn and Lockwood (1998). To determine how the accident liability of these drivers relates to that of drivers in general, the rate

of occurrence of accidents reported by those company car drivers responding to the questionnaire has been compared to accident frequencies reported by a survey of 'ordinary' drivers carried out in 1987 and repeated in 1990.

The purpose of the present review is to examine three aspects of the data from these surveys: (i) the appropriateness of the 1987/90 surveys as a measure of the accident liability of 'ordinary' drivers, (ii) the validity of the accident information obtained from the company car drivers, and (iii) the techniques used to allow for the very different exposure characteristics (notably annual mileage) of the two groups of drivers.

2.2 'Ordinary' drivers

2.2.1 The 1987/90 surveys

The survey of 'ordinary' drivers was carried out in 1987 using a structured sample of drivers supplied by DVLA (for details see Maycock *et al.*, 1991). The sample surveyed in 1987 was formed from three sub-samples: a sample selected randomly from the DVLA driver file, a sample of older drivers selected so that together the random and older driver distribution was fairly uniformly spread over the whole age range, and a sample of drivers of all ages with driving experience of less than 10 years. This sample was supplemented in 1988 with a sample of young drivers. However, since the sample of company car drivers was drawn by a randomised selection process from drivers of all ages, the young driver sample has not been used in this review.

Respondents in the 1987 sample provided information on, among other things, the number of accidents they had experienced in a period of three years prior to the survey date. Accidents in this and the other surveys included in this review are all accidents in which the respondent is involved as a driver, which result in damage to vehicle or property or injury to anyone involved, and which occur on public roads. About 12,500 drivers responded to the 1987 survey, and were also asked whether they would be willing to assist in further research. Those that said they would were sent a 'follow-up' questionnaire in 1990. Those that responded to this follow-up survey provided accident liability data for a further period of three years following the original survey period. The average accident frequencies, annual mileage and age for the original survey sample and those that responded to the follow-up survey are shown in Table 1, together with the numbers of drivers involved.

Table 1 Characteristics of the samples of 'ordinary' drivers

	Drivers who responded to the original survey		*Drivers who responded to the follow-up survey*			
	1987 data		*1987 data*		*1990 data*	
	Male	*Female*	*Male*	*Female*	*Male*	*Female*
Accidents in 3 years	0.260	0.180	0.245	0.174	0.217	0.182
Annual mileage	10,450	4,530	11,080	4,970	11,700	5,325
Age (November 1987/90)	47.5	46.7	46.3	43.7	49.3	46.7
Number of respondents	5881	6605	2593	2633	2593	2633

Table 1 shows that the sub-set of drivers who responded to the follow-up survey were somewhat younger and covered slightly higher annual mileages than the totality of drivers who responded in the original survey. Despite these differences (both of which would be expected to increase accident liability), the accident liability of the sub-set was a few per cent lower than that of the original sample. Those who responded to the follow-up survey would thus seem to be slightly safer drivers.

A detailed analysis of the changes in accident rates between the original and the follow-up survey for this group of drivers has been carried out by Maycock *et al*. (1996). Their analysis showed that once the variations in age, experience and annual mileage between the original and the follow up surveys have been taken into account, the difference in accident frequency between the two surveys was a non-significant 1% (standard error of ±5 percentage points). The 1987 and 1990 data will therefore be combined for the purposes of this review.

2.2.2 Company car drivers in the 1990/91 survey

The 1990 follow up survey - including the young driver sub-set - included the question: 'Is the car you drive most, company or business owned or privately owned?' Table 2 shows the average accident frequencies, mileages and ages for this sample.

Table 2 Company car drivers compared with private car drivers in the 1990 follow up survey (including young drivers)

	Drivers of company owned vehicles		*Driver of privately owned vehicles*		*Overall averages*	
	Male	*Female*	*Male*	*Female*	*Male*	*Female*
Accidents in 3 years	0.427	0.342	0.293	0.237	0.323	0.245
Annual mileage	20,790	11,470	9,660	5,520	12,230	5970
Age (November 1990)	35.2	33.8	39.9	37.0	38.8	36.8
Number of respondents	937	333	3234	4041	4171	4374

From the data presented in Table 2 it can be calculated that 22% of men and 8% of women said that they drove company owned cars. Moreover, the drivers of company owned cars drove over twice the annual mileage of those driving privately owned cars. Because of the inclusion of the young drivers, the average age of the sample of drivers in Table 2 is lower than that in Table 1; as a result, the accident frequencies, even for the drivers of privately owned cars, are higher.

Table 2 also shows that the average accident frequency of company car drivers is considerably higher than that of private car drivers for both sexes. Of course, some of this difference will be due to the higher mileage covered by the company car drivers combined with the fact that they are younger. When the effects of age, experience and mileage are adjusted for using multivariate analysis, then the company car drivers have 29% more accidents than the drivers of privately owned cars. The survey collected only

limited information about the driving patterns of the company car drivers, but in view of the average mileages covered it seems likely that many of these drivers were driving as part of their job.

2.2.3 The representativeness of the 1987/90 accident data

The 1987 composite sample included a sub-set of drivers selected randomly from the DVLA file as well as the older and inexperienced driver sub-sets. Compared to a random sample of drivers, over-sampling older drivers would tend to reduce the overall average accident rate of the sample while over-sampling inexperienced drivers would tend to increase it. The detailed analysis of this sample (Maycock *et al*., 1996) has shown that when mileage, age, sex and driving experience have been taken into account, the random sub-sample has an accident rate which is a non-significant 6% higher than the remainder of the sample.

Thus, for the present purpose of comparing 'ordinary' drivers with company car drivers, it is not unreasonable to use the full six years of data provided by the drivers who responded both to the 1987 survey and to the follow-up survey in 1990. The analysis that has been carried out suggests that the average accident frequency of this group will not be more than 10% different (lower) than that of a random sample of drivers. In addition, the time difference between the 1987 survey and the 1989 survey of company car drivers is sufficiently small to enable time trends to be ignored.

2.2.4 Other surveys

In support of the claim that the 1987/90 survey data is representative of ordinary drivers, Table 3 shows the average accident rates, annual mileage and ages of drivers selected at random for a survey related to fatigue and driving (Maycock, 1995). The sample consisted of male drivers only, sampled approximately uniformly across the age range. Respondents were asked whether or not they drove a company car, and Table 3 shows the average accident frequencies, annual mileages and ages of those that drove company cars and those that did not.

Table 3 The average accident rates of a structured sample of male drivers obtained during a study of fatigue and driving

	Drivers of company owned vehicles	*Driver of privately owned vehicles*	*Overall average*
Accidents in 3 years	0.310	0.198	0.218
Annual mileage	21,030	9,380	11,400
Age (August 1994)	42.6	48.8	47.7
Number of respondents	797	3800	4597

About 17% of male drivers reported driving a company car - a figure not dissimilar to that given in Table 2 for the 1990 follow-up survey. Also like that survey, the company car drivers drove just over 20,000 miles annually, and were somewhat younger than the drivers of privately owned cars. Table 3 shows that they have a considerably higher accident frequency than the drivers of privately owned vehicles. The final column in the table provides overall average values for comparison with the 1987/90 sample results in Table 1.

Table 4 shows the average accident frequencies of a sample of drivers involved in a survey related to the enforcement of speed. In the course of this study, just over 10,000 drivers in different parts of the country responded to a postal questionnaire which asked them among other things to report the number of accidents in which they had been involved in the last three years.

Table 4 The average accident rates of a random sample of drivers obtained during a study of speed enforcement

	Male	*Female*	*Overall average*
Accidents in 3 years	0.245	0.229	0.240
Annual mileage	11,160	6,200	9,630
Age (March 1993)	47.5	42.1	45.5
Number of respondents	7422	3333	10775

Comparing the accident rates in Tables 1 and 3 with Table 4 for male drivers shows a remarkable degree of consistency both in annual mileage and in average accident frequencies, bearing in mind that the surveys were conducted over a period of seven years. For female drivers, a comparison of Tables 1 and 4 suggests that the speed survey data is perhaps a little higher than that obtained in the 1987/90 survey (taking the age differences into account), though again the differences are not particularly large.

Without undertaking a full multivariate analysis it is not possible to be precise about the comparability of these various surveys once the effects of mileage, age and other factors have been properly taken into account. However, the comparisons presented above confirm the earlier assessment that the 1987/90 results are unlikely to be more than 10% lower than a true random sample of the driving population.

2.3 Company car drivers

2.3.1 The survey

The survey set out to obtain a reasonably random sample of drivers who drove a company owned or company financed car regularly for business purposes. Such drivers will for convenience be termed 'business drivers' to distinguish them from company car drivers in the surveys referred to earlier. It is also important to note that only 4% of respondents to the survey were employed as professional drivers. Most of the business drivers drove to attend meetings, to communicate with others in the organisation, to service customers, to make sales, or to get business.

Drivers were recruited by sampling companies from Dun and Bradstreet's business database, and inviting them to supply the names and addresses of drivers who drove as a necessary part of their work. As a result of this procedure, 6543 questionnaires were sent out to potential survey respondents and 4479 drivers responded, of whom 3929 drove frequently as part of their job. Respondents

were asked to provide details of the accidents in which they had been involved, and how many of these accidents took place while driving 'for their current employer'. They were also asked to estimate the business mileage they had done in the past three years, and the business and private mileage they had covered in the past year. Drivers also reported the proportion of time they had spent on motorways and built up roads, and provided information about their age, sex, and length of driving experience.

2.3.2 The accident data

About one-third of the drivers in the sample had not been driving for their current employer for a full three years. To avoid the need to correct for memory loss effects, only drivers who had been driving for their current employer for three years or more will be considered. Excluding those drivers who had not driven for their current employer for three years or more, and also some drivers who had not supplied information on critical variables such as work and non-work mileages, or the proportions of time spent on different type of road, reduced the number of drivers available for analysis to 2417.

In order to compare the number of accidents these drivers had had in three years with the corresponding figure for 'ordinary' drivers, it will be necessary to decide how to deal with the fact that the exposure characteristics business drivers are likely to be different from those of ordinary drivers. The differences in overall mileage between the two groups and the relationship of annual mileage to accidents will be discussed in detail in the next section. For the moment it is sufficient to note that, although information was collected on accidents occurring both whilst driving 'for their current employer' and on non-business trips, for reasons to be discussed in Section 2.4 the comparison between the two groups will be made in terms of total accidents only.

Table 5 shows the average total accident frequencies for these drivers together with average mileages and average ages. A comparison of Table 5 with the 'company car' driver data given in Tables 2 (for the 1990 follow-up survey) and in Table 3 (for the fatigue survey), shows that the business drivers drive considerably more miles on average than do the company car drivers included in the other surveys. Roughly speaking, the annual business mileage of these drivers is on its own about the same as the total mileage of the company car drivers in the other surveys. In total, the business drivers drive nearly three times the annual mileage of the drivers of privately owned vehicles.

Table 5 also shows that the accident frequency of business drivers is considerably higher than that of the company car drivers in the other surveys. Although the number of women included in this sample of business drivers is relatively small, they have an average accident frequency that is higher than that of their male counterparts, despite the fact that they drive fewer miles each year. With the small numbers involved, this difference is unlikely to be statistically significant in a multivariate analysis, although the Lynn and Lockwood (1998) analysis of the full dataset reported a significantly higher accident rate for the women business drivers.

Table 5 The overall average accident rates of a sample of business drivers

	Male	*Female*	*Overall average*
Accidents in 3 years	0.505	0.637	0.510
Total annual mileage	27,010	21,520	26,810
Business mileage	20,170	15,600	20,000
Private mileage	6,840	5,920	6,810
Age (February 1989)	45.7	39.4	45.5
Number of respondents	2326	91	2417

It seems clear that compared with 'ordinary' drivers, business drivers are involved in considerably higher numbers of accidents in a three year period. The crucial question is whether they still have a relatively high accident rate when their very much higher annual mileage is taken into account.

2.4 Exposure

The problem in comparing the 1987/90 sample of 'ordinary' drivers with the sample of business drivers lies in the fact that each year the 'ordinary' drivers drive less than half the mileage of the business drivers. For men, the figures are 11,700 miles for ordinary drivers compared with 27,000 miles for business drivers. Clearly, if the comparison were to be based on accident rates per mile, then the two sets of drivers would appear to be very similar, both having a rate of between 18 and 19 accidents per million miles.

Figure 1 shows the average accident frequencies for the two sets of drivers as a function of annual mileage, using grouped data. Table 6 shows the same data, and includes in addition the average proportion of time the drivers estimate that they spend on motorways, rural roads, and urban roads.

It is clear from Table 6 and Figure 1 that accidents are not proportional to annual mileage, and because of this a comparison between ordinary drivers and business drivers in terms of accidents rates per mile is misleading. In the region where the two types of drivers cover similar mileages, the business drivers have an accident frequency which is about 50% higher than that of the ordinary drivers. This agrees almost exactly with the result of the Lynn and Lockwood multivariate analysis of the full dataset. It should also be noted that in order to facilitate comparison between the samples, no correction has been made to account for the memory loss effect (see Maycock *et al.*, 1991). Had this been applied, then the absolute accident frequencies shown in Table 6 would be higher by a factor of about 1.5.

It is also clear from Table 6 that compared with low mileage drivers, high mileage drivers (whether ordinary or business) spend more time on motorways than do low mileage drivers - in fact, the proportion of time spent on rural roads remains roughly constant, while the increase in motorway driving by the high mileage drivers is largely at

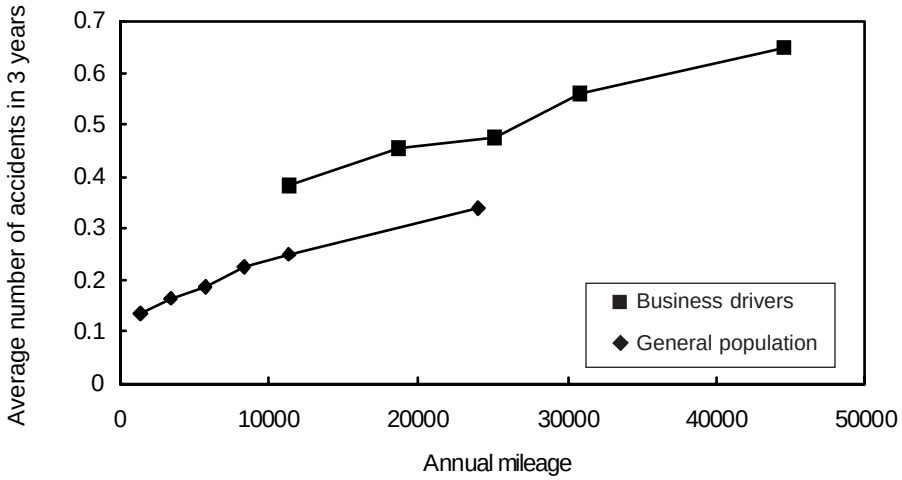

Figure 1 Accident frequencies as a function of annual mileage

Table 6 Accident frequencies and the proportion of time spent on different types of road for 'ordinary' drivers (average of 1987 and 1990 surveys) and 'business' drivers by annual mileage

			Percentage of time spent on:		
Mileage bands	*Accidents in 3 years*	*Average mileage*	*Motor -ways*	*Built-up roads*	*Rural roads*
Ordinary drivers:					
0 - 2,500	0.135	1,360	12.4	58.9	28.7
2,500 - 5,000	0.165	3,390	12.9	57.1	30.0
5,000 - 7,500	0.185	5,790	15.1	54.0	30.9
7,500 - 10,000	0.226	8,320	16.7	51.4	31.9
10,000 - 15,000	0.249	11,340	19.3	46.9	33.8
Over 15,000	0.341	24,080	31.0	38.5	30.5
Business drivers:					
5,000 - 15,000	0.381	11,280	29.0	35.0	36.0
15,000 - 22,500	0.453	18,760	35.7	27.5	36.8
22,500 - 28,000	0.475	25,130	39.1	25.3	35.6
28,000 - 35,000	0.559	30,910	44.5	22.4	33.1
Over 35,000	0.647	44,590	50.8	20.9	28.3

the expense of mileage in built-up areas. It seems likely that the greater use of motorways for high mileage drivers contributes to the non-linearity of accidents with mileage, but is probably not the whole story. A separate analysis of business and non-business accidents by Lynn and Lockwood (1998) suggests, moreover, that the relationship between the number of accidents and a range of exposure variables (not just the overall mileage, but also variables such as trip frequency, trip length distribution, type of road, and so on) is complex, and that the role of these variables and the interactions between them is not fully understood. As a result it is not obvious how to disaggregate an individual driver's total driving experience into its various components – in particular the business and non-business components. For this reason it is considered to be more robust to base a comparison between business and ordinary drivers on all the accidents incurred on all the trips undertaken by an individual driver. The rationale underlying such a comparison would be that, in that range of mileages which are common to both ordinary and business drivers, the exposure characteristics (other than mileage) which may have an influence on accident liability are sufficiently similar so as not to render the comparison between drivers invalid.

If this rationale is accepted, the message of Figure 1 is clear: business drivers have an overall accident rate which is about 50% higher than ordinary drivers covering similar annual mileages. Indeed, this figure is likely to be a conservative one, since the sample of ordinary drivers will itself have included some company car drivers.

2.5 Multivariate analysis

In order to make appropriate allowances between data sets for those variables which could influence accident liability, a multivariate method is essential. To this end, a statistical model has been fitted to a dataset consisting of the 1987/90 survey data (excluding the young drivers) combined with the data from the fleet drivers who had reported a full three years of accident information.

The methodology used is the Generalised Linear Modeling method described in detail by Maycock *et al.*, 1991. In the present case, no corrections have been made for accidents that may have been forgotten, since all the reported accidents relate to a full three year period. In addition, the model complexity has been kept to minimum by excluding those variables that only played a modest role in the Maycock *et al.* models. Since differences in accident liability between the sexes were significant only for younger drivers in the 'ordinary' sample, and since there were very few women drivers in the business driver sample, sex is not included in the model reported here. By implication, the differences in the sexes shown in the tables presented earlier result solely from differences in age or mileage. Moreover, since age and driving experience are highly correlated for random samples of drivers (such as the business drivers), a simple but well fitting model can be constructed for this data set in which the reduction in accidents which occurs with increasing age and experience is represented using the age variable alone.

The model is as follows:

$$A = 0.0075\ M^{0.31}\ \exp[b/Age]$$

Where A is the number of accidents a driver is expected to report in a 3 year period,

M is the annual mileage,

Age is the driver's age at the mid-point of the accident period, and,

b is a coefficient which is different for ordinary drivers and for business drivers:
b (ordinary drivers) = 24.8, and b (business drivers) = 44.4.

Figure 2 illustrates the predictions of this model. The figure shows that the business drivers have an accident liability which exceeds that of the ordinary drivers by a factor of about 1.96 for the younger drivers, falling to about 1.39 for the older drivers; at the mean age of the drivers (47 years), the ratio is just over 1.5 - the 50% difference noted above.

It can therefore be concluded that, even if the accident frequency data for ordinary drivers is 10% too low (as was suggested earlier), there would seem to be little doubt that when comparing drivers covering similar annual mileages, business drivers have an involvement in accidents which is at least 40% higher than that of ordinary drivers. Since the sample of ordinary drivers itself includes some business drivers, the best estimate of the 'real' difference is likely to lie between 40 and 50%.

2.6 Conclusions

This examination of survey data has shown conclusively that a 'fleet driver effect' does exist. It should be noted, though, that the *size* of the effect depends on the definition of fleet driver. Thus, in the Maycock *et al*. (1996) study respondents were asked whether the car they drove most was company or business owned, or privately owned. This broad definition, which would include drivers of 'status' cars, gave a fleet driver effect on accident liability of 29%. When, as in the Lynn and Lockwood (1998) survey, a fleet driver is defined as one who drives regularly on business, then the fleet driver effect on accidents is considerably larger, at between 40 and 50%.

3 Remedial measures

3.1 Fleet driver training

3.1.1 Provision of training

Fleet operators can incur large costs from road traffic accidents involving fleet drivers. These costs stem not just from injury, damage, and the need for repairs, but also from time spent on investigation and administration, loss of productive time, and increased insurance premiums. Traditionally, the principal means of attempting to reduce these costs has been through the use of fleet driver training.

Kompfner and Divey (1992) noted that 'fleet training is a rapidly growing, multi-million pound business'. Surveys of the fleet industry give some indication of this growth. A survey by Gallup (1990) found that 9% of fleets were using training, while three years later Alan Jones (1993) gave a figure of 19% and Hertz (1993) reported that 22% of fleet operators in their survey employed training procedures. However, these figures are not particularly helpful without knowing the size of the fleets concerned. A more informative measure of the extent of fleet driver training needs to be sought from the providers of training, rather than the consumers.

In order to address this problem, TRL carried out a telephone survey of over 40 providers of training services, many of whom advertised regularly in the fleet press. On the basis of the information given by these organisations it was estimated that some 60,000 fleet drivers receive training each year, with the three largest providers accounting for over half of this total. However, the figure of 60,000 per year also indicates that the take up of training by fleet operators is quite low, with only some 2% of drivers being trained each year. Some industry surveys (e.g. Hertz, 1993) suggest that industry sector is an

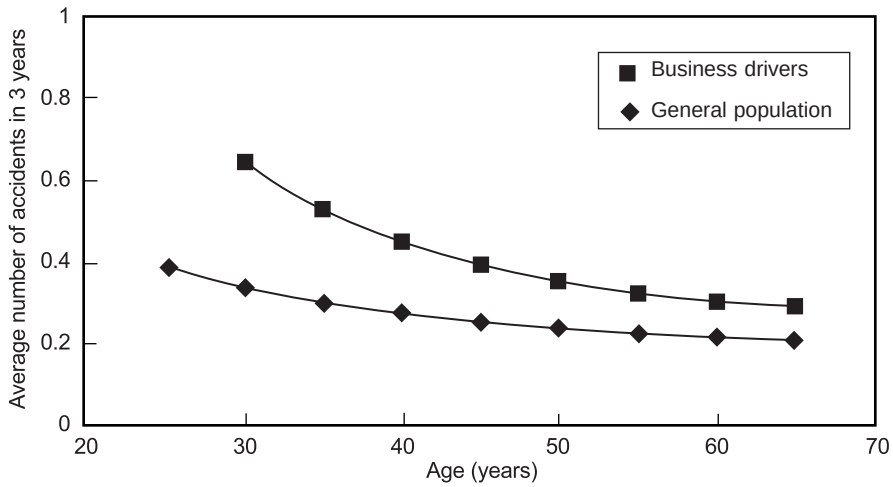

Figure 2 Accident frequencies as a function of age for drivers driving 15,000 miles annually

important factor that influences the use of driver training, with sectors such as pharmaceuticals and petrochemicals being more likely to engage in training than are the financial or general manufacturing sectors.

3.1.2 Effectiveness of training

There have been many claims from within the fleet industry regarding the effectiveness of fleet driver training in reducing accident involvement and insurance costs. Perhaps not surprisingly, the greatest enthusiasm has come from the training providers, who have claimed that accident reductions of up to 70% can be achieved as a result of driver training (e.g. Bibbings, 1997).

Fleet operators have tended to be more equivocal. Of the respondents to the Alan Jones (1993) survey, only one in five operators had used driver training courses, and of these only one in five reported that these had reduced insurance costs. Overall, only 12% of operators responding to the survey held that driver training 'worked'.

If one turns to the scientific literature for evidence that is less anecdotal and more factually based, then it soon becomes clear that studies of the effectiveness of fleet driver training are extremely rare. Manders and Rennie (1984) reported on a longitudinal study of more than 200 drivers in an Australian company who had received a short theoretical and practical course in driver training, but were unable to identify any reduction in accident rates as a result. Manders (1986) described a seven year study of an Australian transport company, and concluded that accident reductions were possible through the implementation of a package of safety measures. The driver training element was not found to have any beneficial effect. Gray (1990) reported on the experience of a single UK company that introduced a range of safety initiatives including training, publicity, and incentives. It was claimed that the accident rate was nearly halved as a result, but again it was not possible to state whether driver training had made any contribution to this.

The three studies just described were all longitudinal. By contrast, the Lynn and Lockwood (1998) survey of company car drivers reported in Section 2 was cross-sectional in design. The study included driver training in its multivariate model of accident liability, and found that trained drivers had an accident liability that was some 8% lower than those who had not been trained, although the difference was not statistically significant.

None of the studies reviewed to date was experimental or even quasi-experimental in design, and as evaluations of driver training all suffer from methodological shortcomings. One study in the literature that has attempted to overcome these problems is that of Gregersen *et al.* (1996). This investigation looked at drivers within a large Swedish organisation, and compared the effects of four interventions - driver training, group discussions, bonus schemes, and publicity campaigns - with a control group of 'untreated' drivers. Two years after the intervention, the accident rates for the training, group discussion, and bonus scheme groups showed significant reductions compared with the control group. However, it needs to be borne in mind that Gregersen *et al.* used a specially developed training procedure (insight training) that is far removed from the techniques that are conventionally employed in this country by fleet trainers.

3.1.3 Assessment

Fleet operators have used driver training for many years in an attempt to reduce accidents and the costs associated with them. Despite this, reports on the effectiveness of training remain largely anecdotal, and scientific evaluation is virtually non-existent. While it has proved difficult over the years to demonstrate the effectiveness of driver training in general (see e.g. Brown *et al.*, 1987), fleets should in principle be well placed to provide evidence on this issue given their high accident rates, the degree of control they have over their drivers, and their potential to collect reliable accident data.

There are many reasons that could explain the dearth of reports in the scientific literature attesting to the effectiveness of fleet driver training. At a practical level, it is possible that organisations are reluctant to disclose the scale of their accident problems, or may regard the information as commercially sensitive and therefore inappropriate for publication. It is also possible that accident data is not always collected in a sufficiently reliable and consistent way that would permit statistical analysis.

There are also numerous methodological problems that make evaluation difficult. These include the need for proper control groups, the statistical problem of regression to the mean, the often protracted implementation periods associated with training fleet drivers, and possible bias in the selection of drivers for treatment (e.g. drivers might be selected because they have poor accident records, or might select themselves because they are safety conscious). A further complication is that training is not usually used on its own, but is more often introduced within a package of measures designed to tackle a perceived safety problem. Without addressing these issues, it is not possible to attribute an apparently positive result to the effects of training itself, rather than to other potentially confounding factors. While there can be no doubt that it is more difficult to achieve high levels of experimental control in the real world than it is in the laboratory, there are a number of established procedures that can be employed to overcome these difficulties (see e.g. Robson, 1993), and the study of Gregersen *et al.* (1996) has shown what can be done in practice.

There are also questions that can be asked about the nature of the training that is carried out. Traditionally, fleet driver training has tended to emphasise control skills in driving. Current models of driver behaviour regard these as now being less important than used to be considered in the past in influencing how safely the driving task can be carried out (Grayson, 1991), with the emphasis having shifted to 'higher order' factors such as motivation, risk acceptance and hazard perception. Similarly, many training providers have based their programmes on defensive driving techniques. These have been employed for many years in the US, but extensive research has failed to demonstrate that they have any beneficial effect in reducing accident rates (Lund and Williams, 1985).

Whatever the reason or reasons, the fact remains that there is no evidence in the literature in the form of scientific controlled studies that conventional fleet driver training as practised in the UK is effective in reducing accident rates.

3.2 Other safety initiatives

While training has been the main measure, it is far from being the only initiative that has been taken by fleet operators in their attempts to improve safety and reduce accident costs. The wide range of activities that have been undertaken may be grouped broadly into the three categories of penalties, rewards, and 'involvement'.

Efforts to improve safety by discouraging or penalising unsafe behaviour have usually been retrospective in nature. They include downgrading the level of car entitlement after an accident, requiring drivers deemed blameworthy in accidents to pay the excess on insurance claims, and making accident involved drivers subject to administrative review or even disciplinary procedures. There is no evidence on the effectiveness of such procedures, and it can readily be envisaged that they could lead to resentment (particularly where the attribution of blame in accidents is concerned), and to possible distortions in accident reporting systems.

One prospective procedure that might be seen as a potentially punitive measure is the use of in-vehicle monitoring systems. Accident data recorders (analogous to the 'black boxes' of the aviation world) are available that can record detailed information about the period immediately preceding an accident. A recent EC study (SAMOVAR, 1995) investigated the effects of installing these devices in a number of fleets in Belgium and the Netherlands and making the drivers aware that the information collected could be used in the assessment of responsibility for any accidents that occurred. A statistically significant 28% reduction in accident rates was reported, though with considerable variation among the fleets involved.

Procedures that reward safe driving (and, more importantly, provide incentives for future safe driving) have rather more evidence in their favour than do systems based on sanctions. Wilde (1994) reported on the effectiveness of incentive schemes in a variety of occupational settings, and argued that they should be employed more widely to improve driver safety. Schneider (1990) described a long term scheme in which professional drivers in a large German fleet were offered a financial reward for every half year of driving without culpable accidents. The result was a marked and sustained reduction in accident rates. More recently, in the Swedish study of Gregersen *et al.* (1996) a bonus system was one of three interventions that resulted in a significant improvement in fleet driver safety.

In this country, the only evidence comes from the study by Lynn and Lockwood (1998) reported earlier. In their survey of company car drivers, respondents were asked whether their companies provided any form of rewards for accident-free driving. Only 4% replied in the affirmative. However, the multivariate accident model showed that drivers receiving rewards had fewer accidents than those that did not. Although only marginally significant (p=0.09), the effect was large at 21% ±14%. Interestingly, the rewards were generally small; the majority were under £60, with some of only £5 and a few being non-monetary (e.g. certificates or diplomas). The authors suggest that the lower accident rates may to some extent be reflecting non-financial aspects of the scheme, such as official recognition as a good driver and the status that this may bring.

The third category of safety initiative, termed 'involvement' above, refers to efforts to raise the level of safety consciousness within an organisation. In its simplest form it may rely on feedback, where information on accident rates and costs and insurance claims is disseminated to drivers within a fleet on a regular basis. A novel procedure was used by Gregersen *et al.* (1996), who found that getting fleet drivers to participate in group discussions about safety matters was the most effective of the four safety initiatives they investigated. More generally, however, involvement measures result from policy decisions to improve safety and tend to incorporate a variety of interventions, which may include training, sanctions, rewards, or any combinations of these. Both the Manders (1986) and Gray (1990) studies referred to earlier reported significant accident reductions as a result of the introduction of a package of safety measures.

One theme that has come to the fore in recent years is that of organisational culture, which some have claimed is a critical factor in determining fleet safety. To investigate this matter further a programme of qualitative research was undertaken, the results of which will be discussed in the next section.

4 Qualitative research

4.1 Aims and objectives

Using a mix of interviews and focus groups, the aim was to explore the processes, both individual and organisational, that lead fleet drivers to be at greater risk than drivers in general, and also to investigate measures which can reduce that risk. The objectives were to obtain insights into the following issues:

- how trainers try to improve fleet driver safety, and the claims they make for the effectiveness of their training;
- organisational processes which may influence fleet driver safety;
- behavioural processes involved in fleet driver accidents;
- how the insurance industry influences fleet driver safety.

4.2 Procedures

Four groups were studied: fleet trainers, fleet managers, fleet drivers, and the insurance industry.

Two studies were conducted; in the first, TRL carried out interviews with managers, trainers, and personnel from the insurance industry, while in the second an external research agency conducted interviews and focus groups with fleet managers, fleet trainers, and fleet drivers.

Fleet managers included managers responsible for fleet policy and practice. The aim was to study their decision making when considering safety policy (whether training, incentives or other measures), and their views on fleet driver safety.

In the work with fleet trainers, various personnel in fleet training organisations were the focus of interest, particularly those who designed and delivered training, conducted safety audits of fleets, and assessed the problems and needs of employers with fleets. The aim was to understand how trainers assessed clients' needs, what methods they used to make fleet drivers safer, and their opinions on fleet driver safety and its improvement.

With fleet drivers the goal was to assess the circumstances of accidents, to explore relevant organisational influences (e.g. productivity pressures, corporate safety values), and to investigate drivers' perceptions of fleet driver safety.

The insurance industry also plays a key role, since it influences the way fleet managers approach fleet safety. Interviews with brokers, underwriters, and other key personnel were intended to help understand the problem of fleet driver accident risk from the insurance perspective.

4.2.1 Study one (TRL)

Interviews were conducted by TRL with fleet trainers (eight interviews), fleet managers (six interviews), and insurance industry fleet specialists (six interviews). These interviews helped to clarify basic concepts, practices, and issues in the risk management of fleets and also served to ensure that the brief for the subsequent external research was well-informed.

4.2.2 Study two (external)

Sampling by the external research agency was designed to provide insight into the research questions, rather than to provide a representative sample from the three populations. It was structured as follows:

Fleet managers*:* six depth interviews were held with decision makers. Since fleets are very diverse, three key dimensions were used to structure the sampling - nature of safety policy/culture, mix of need/status vehicles, and size of fleet.

Since 'ultra-safe' companies (i.e. those with a target of zero or virtually zero accidents) were of particular interest, it was deemed important to include two of these. A simple set of questions to help identify such organisations was written into the recruitment questionnaire. Further depth interviews were carried out with two organisations with a high proportion of business use vehicles, and two with a high proportion of cars provided mainly as part of a remuneration package.

Trainers*:* four case studies were conducted using linked depth interviews (i.e. depth interviews where the respondent was recruited by referral from a previous interviewee) during a half day visit. Two market leaders and two smaller organisations were included in the sample.

Drivers*:* focus groups and depth interviews were carried out with a total of 44 drivers, with interviews geared to explore individual accidents in depth, and focus groups to explore other aspects of the research questions.

4.3 Results

4.3.1 Fleet managers

Interviews were conducted with fleet managers in several organisations from various sectors, and with personnel ranging from car fleet managers, corporate finance managers, to health and safety managers.

A broad spectrum of attitudes to safety and accident reduction policies emerged from these interviews. Some companies pursued a policy of zero accidents with great dedication, and claimed to have been successful in achieving this aim. Often these companies had a strong safety culture more generally. By contrast, other organisations believed they had a tolerable level of accidents within their sector, and thus felt they had no need to consider training or other remedial measures. In some cases these were organisations where getting business was a high priority and an active fleet of sales or consultant personnel was central to achieving this. Yet other companies were in a transitional state and had recently started to use training or other measures to try to reduce accidents.

According to comments made by fleet managers, there are three kinds of culture that can play a role in influencing the safety of fleet drivers:

- the general safety culture of an organisation;
- the driving culture of an organisation;
- the driving culture in society as a whole.

The general safety culture of an organisation*.* Organisations can vary a great deal in strength of safety culture, and this seems to be influenced by a number of factors, particularly industry sector and size of the organisation. Companies with a strong safety culture tend to follow health and safety procedures rigorously, whereas there are some organisations that appear to have what might be called a 'non-safety' culture, where minimal action is taken to comply with health and safety rules. Those companies with a strong general safety culture were likely also to be proactive in driving safety, but there with exceptions. Some organisations that were very conscientious about safety in their core business did not always apply similar standards to driving safety.

The driving culture of an organisation. From the responses of the fleet managers there were indications that organisations tend to create a driving culture that is based on values, assumptions and 'messages' about the importance of driving in that organisation, and which is communicated by both formal and informal means within the organisation. While most formal communications encourage safety, some informal messages may stress the importance of meeting goals which may conflict with safety objectives, and thereby suggest to employees that safety has a lower priority than business goals.

The driving culture in society as a whole. A number of respondents referred to the importance of the more general driving culture in society. In this culture there are many expectations, attitudes, or stereotypes about driving which may predispose fleet drivers to drive unsafely, for example, the idea that driving slowly is interpreted as a sign of weakness, or that men should drive faster than women.

Looking more broadly at policy on safety, discussions with fleet managers suggested that companies might be broadly classified into three groups, as summarised in Table 7.

Respondents suggested that among the factors which may make a company more likely to be active in driver safety are:

- a strong safety culture generally;
- driving or distribution as a core business;
- transporting expensive or dangerous materials;
- concern for company image or 'green' issues;
- perception of safety measures providing financial benefits;
- concern for employees' well-being.

On the other hand, factors such as:

- perception of level of accidents as tolerable;
- perception of cost of accidents as acceptable;

tend to work against the pursuit of more active safety policies.

Discussions with managers suggested that employers who introduce new policies will tend not to initiate a single measure, but will instead look at a combination of measures. Often the hope is that this will create synergy because a clear message about safety will be sent to employees.

Fleet managers were also asked about the factors they take into account when they consider introducing training, or other safety measures. Respondents identified many factors, and often these appeared to be related to cost-effectiveness and acceptability by employees. For instance, training could be seen as costly and therefore not worth introducing, whereas interviewing drivers after an accident might be seen to be a cheap measure. Some measures, it was suggested, worked better with certain kinds of driver.

Table 8 summarises the views expressed by respondents; it should be noted that these are factors which managers reported that they considered when introducing safety measures, and are not a reflection on the effectiveness of measures themselves.

Table 8 Factors considered by fleet managers when introducing safety measures

Advantages	*Disadvantages*
Training (e.g. in car, classroom, etc)	
Easy to target	Costly
Popular	Ineffective
Effective	Need to repeat it
Cost effective	
Good PR	
Penalties (e.g. insurance excess, car downgrading)	
Insurance companies like them	Can lead to deceit
Natural justice	Drivers dislike them
Acceptable - like 'excess'	Punitive/not constructive
Incentives (e.g. safe driver awards, media awards)	
Popular	Costly
More effective with certain drivers	Ineffective
	Withdrawal = penalty
In-car monitors (black boxes)	
Accurate management information	Costly
Deterrent	Bad fit to company culture
Information for training	Unpopular
Accident investigation (e.g. interviewing driver, insurance company investigator)	
Cheap (interview)	Takes time
Targeted	Reactive
Effective	
Employee feedback (e.g. on insurance premiums)	
Cheap	Hard to do it well
Reminder to drivers	Must be sincere

Many people in an organisation may take part in deciding whether to introduce safety policies, including fleet managers, health and safety specialists, risk managers, financial managers, and human resource staff, as well as outside agencies as a result of the increasing number of companies that 'outsource' their fleet functions.

Table 7 Approaches to driver safety — a classification of organisations

	Approaches to safety		
Elements of safety strategy	*Active*	*Limited*	*Weak*
Training	All or remedial	Considered - not liked	None
Incentives	Used	—	—
Penalties	Considered	Probably	Perhaps
Accident investigation	Yes	If several	Weak or punitive
Work pressures strategies	e.g. Overnight stay encouraged	e.g. Overnight stay allowed (not encouraged)	Part of the job
Communication by fleet manager	Strong	Mainly post-accident	Poor/none

4.3.2 Fleet driver trainers

Long established training companies tend to be non-profit making, and often follow a traditional emphasis on control skills. There is a network of self-employed trainers who work for the bigger training companies. In recent years companies with a more commercial ethos have come into the market.

The trainers who were interviewed reported that they would typically offer a package including training, advice on penalties, rewards, good communication and journey planning. Some training courses (particularly with those trainers who followed police training methods) were structured around the police driving course, modified to take account of each client's concerns, and would usually include:

- classroom session using video, also role of training company and attitude, awareness and anticipation stressed;
- trainee assessment drive;
- trainer demonstration drive;
- commentary driving (teaching).

The trainers reported that some fleet drivers could be reluctant to modify their driving, and that special training skills were needed to improve their receptiveness. Some of the bigger trainers carry out 'fleet audits' before supplying training. In such audits they investigate journey types, vehicles used, recruitment, and other related aspects of fleet management.

For some trainers, strategic partnerships with insurance companies or other businesses have become important. It was felt that market pressures would force many training companies to follow suit. Two of the market leaders had insurance company partners, with insurance incentives being made available to clients if they bought training.

The trainers in the sample felt that they were most successful when their clients had a positive commitment from management, a serious approach to maintaining sensible work patterns, good communication, and where driver training was viewed as part of a commitment to employees. A trainer would seek to build a partnership with a company, and refresher courses were seen as important.

Respondents stated that some companies were motivated to buy driver training by their recognition of the high cost of accidents. These were typically high profile, ultra-safe companies, including some in the petrochemical industry and certain household name retailers. Other companies were less convinced of the benefits of training, mainly because of cost. Trainers considered that most of their clients had a fairly active safety culture, but this may well have been because they had already chosen to purchase driver training. Trainers felt that any impact of safety culture was tempered by the importance placed on personal safety by an organisation, and the stereotypes held by the drivers.

Trainers varied in how they sought to make drivers safer. While some trainers claimed that their 'product' was unique and highly effective, a few were quite sceptical about the effectiveness of their own training. Some trainers (often ex-police) focused on the skills and attitudes of the individual driver, while others tended to apply techniques based on organisational development or empowerment. Typically these would try to influence the culture of the organisation, often with little or no in-car training (e.g. Pritchard, 1995). This latter approach is based on the belief that fleet drivers are strongly influenced by such organisational characteristics, and that changing the organisational safety culture is the most effective way of improving fleet driver safety.

This is a persuasive point of view, and one well supported by evidence elsewhere. For example, Reason (1990) has documented the shift in emphasis when considering system failures from seeking to identify individual responsibility to the present approach where far greater stress is attached to the organisation's responsibility for managing risk. Of particular relevance here is the argument by Reason (1994) that driver failures (i.e. accidents) need to be considered in the light of the actions of decision makers and managers as well as those of the individual drivers concerned.

4.3.3 Fleet drivers

Drivers were asked to give their views on factors that contributed to accidents or to being accident free, and on training and other safety policies. Two themes dominated the responses: individual characteristics, and work-related influences.

Several respondents commented on the effect of family circumstances and age; it was felt that younger drivers were more likely to drive faster and more riskily, while older drivers and those with families were more likely to drive safely. However, it was also noted that family responsibilities could lead to pressures to return home rather than stay overnight after a long day away.

Most drivers seemed to feel that driving skill *per se* was not a factor in accidents - a view shared by fleet managers. Instead, skill was seen as becoming irrelevant when bad habits, circumstances, or poor judgement intervened. Thus, accidents were attributed mainly to lack of concentration, distraction, or driving fast or aggressively. Even when respondents saw themselves to blame, the contributory factors often seemed to be viewed by drivers as a result of work pressures, or self-generated pressures in response to work load. A commitment to achieving sales targets or to time keeping could influence driving habits, and many drivers reported driving while distracted by using mobile phones, reading maps, or eating and drinking, and also driving while tired.

Drivers who were accident free explained this by a variety of factors including training, maturity, being free from pressure (particularly time pressure), and driving conventional, rather than high performance cars. Incentives or penalties were not judged as having a strong influence in this respect.

In general, fleet drivers expressed positive views about training, both for initial training and refresher courses. Drivers who had been trained tended to stress control skills benefits, although help in controlling emotions was also mentioned.

It has been suggested that vehicle ownership may be a factor affecting accident involvement, in that fleet drivers who do not own their vehicles will be less concerned than the private driver about damage. Conflicting views

emerged on this point: some respondents agreed with the argument, some felt that fleet drivers were likely to treat other's property more carefully than their own, while others believed that individual factors such as driving style had the greater influence. Several employers now provide personal leasing and other schemes that may engender a sense of ownership, and some respondents believed that this strategy increased a driver's feelings of responsibility.

4.3.4 The insurance industry

Interviews were conducted with several fleet insurance specialists, including underwriters, directors, and managers, with the aim of investigating how insurers influence employers' safety policies, and why they do so.

In recent times the market for fleet cover in the UK has been very volatile. There is fierce competition in the fleet sector and margins are very narrow. Insurance companies vary in their attitude to fleet cover; for some, it accounts for a large part of their business, but others do not provide any fleet cover at all. A large proportion of fleet insurance is transacted through a small number of leading brokers.

Several insurance companies have created strategic partnerships with fleet trainers, and offer incentives for clients who use their partner's training, or sometimes an approved training supplier. Such partnerships seem to be on the increase.

In their dealings with clients, insurers said that they often discussed the use of a wide range of measures, covering not just training but also penalties, awards, safety campaigns, and devolving cost accountability. Especially where clients have a very big fleet, discussions may involve the broker and the insurance carrier, and entail regular reviews of claims experience, and even workshops and seminars.

Some insurance companies also employ specialist fleet safety auditors who investigate the risk of the client's fleet operations, and several approach fleet cover from the perspective of risk management, with some offering specialist advice and consultancy in this field.

In the opinion of some insurers, fleet managers in organisations are very aware of the importance of controlling claims frequency and costs. Novel methods of funding fleet accident costs, with a mix of traditional cover against large claims, and self-insurance against more routine losses have become more common.

To an extent the kind of insurance advice offered will depend on the nature of the fleet. Fleets are very diverse, and a small one may not justify the cost of using a risk management consultant. Similarly, for a fleet with high employee turnover driver training may not be seen as a worthwhile option. In addition, many insurers stressed the importance of the culture of the organisation in its philosophy, values, and ethos in relation to safety generally as a factor in determining the effectiveness of specific safety measures.

4.3.5 Summary

Findings from these qualitative studies should be treated with some caution, since the work is based on quite small samples. Qualitative techniques are generally intended to provide insight, and to generate hypotheses for further research.

The results from this research have provided a useful insight into the organisational processes and behavioural mechanisms which are associated with accidents, and with the measure taken to reduce them. However, further quantitative evidence on the effectiveness of safety measures is still required.

The fleet population and the fleet driver population are very diverse, as are the views that are held on the causes of fleet driver accidents, the measures that could be taken to reduce accidents, and how to implement such measures. Because of this diversity, and because of the need for further quantitative evidence on effectiveness, it is difficult to identify a solution that would be effective for all employers.

These findings are based on a small number of interviews and their generality has to be tested in further research. If they were substantiated, perhaps the main implication is that organisations should not rely on single measures, whether training or any other, but on a cohesive, organisation-wide strategy to reduce accident risk.

The results of the qualitative research point strongly to the conclusion that fleet driver training *per se* will not necessarily provide a solution to the fleet driver problem. In the view of many respondents, what is needed instead is an integrated set of measures based on a strong safety culture within the organisation.

5 Conclusions

The main conclusions arising from this study of fleet car driver safety may be summarised as follows:

- Company owned or financed cars form a significant part of the total vehicle fleet in this country. Over 2¼ million cars are company owned, and over half of all new cars sold each year are registered in a company's name.
- On average, company cars are considerably younger than are private ones, and they also have larger engines.
- Fleets vary greatly in size and function.
- The fleet car driver population is even more diverse, with a broad spectrum from those who work specifically as drivers, through those who need a car to fulfil their job functions, to those who receive a car simply as a form of remuneration.
- Company car drivers are predominantly male non-manual workers from high income households.
- Information on the breakdown of the fleet driver population by job function is scanty, and little is known about the distribution of driving patterns and car usage. This has important implications for the deployment of countermeasures, and merits further research.
- On average, fleet car drivers are somewhat younger and drive considerably more miles than do private motorists, but even after these factors have been taken into account by statistical techniques there is clear evidence of a fleet driver effect on accident liability.

- The size of this effect depends upon the definition of fleet driver used. A broad definition based only on car ownership indicates an effect that elevates accident liability by some 30%. When the comparison is confined to those who drive regularly on business, then the effect lies between 40 and 50%.
- Numerous reasons have been advanced to 'explain' the higher accident liability of fleet car drivers, such as time pressures on the driving task, the characteristics of business drivers, the nature of the vehicles driven, and differing responsibility for the costs of accidents. However, while the existence and size of the effect have been established, the reasons underlying it are still poorly understood.
- Fleet driving training is a rapidly growing industry. Some 60,000 drivers are trained every year, but this is still only a small proportion of fleet drivers on the road.
- Training companies often report substantial accidents reductions after the introduction of training courses, but the evidence on effectiveness from other sources is anecdotal and equivocal. In the largest study to date on fleet driver accidents, it was found that trained drivers had accident rates that were slightly lower than untrained ones, but the difference was not statistically significant.
- There is no evidence in the literature in the form of scientific controlled studies that conventional fleet driver training as practised in the UK is effective in reducing accident rates.
- There are a number of other measures that have been employed by fleet managers to improve safety (and reduce costs). These include incentives, penalties, accident reviews, driver monitoring systems, and driver feedback procedures.
- Again, there is little evidence in the literature that these measures are effective in reducing the accidents within fleets. However the organisations that felt that they had achieved most in safety terms were those that had introduced a package of safety measures, rather than a single procedure such as training.
- Qualitative research has provided useful insights into organisational processes and behavioural mechanisms. These indicate strongly that it is the 'safety culture' of an organisation that is critical in determining how organisations address safety problems and how satisfied they are with the outcome.
- Although there is little evidence that the measures currently employed to improve fleet safety are in fact effective, there are clear indications that fleet safety is most likely to be improved by the introduction of an integrated set of measures based on a strong safety culture within the organisation.

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Abstract

Britain is unlike most other European countries in that cars that are owned or financed by companies make up a significant proportion of the total vehicle fleet, with over half of the new cars sold each year in this country being registered in the name of an organisation. The drivers of company cars are an important sub-group of the driving population, and it has been suggested that they make a disproportionate contribution to the total numbers of road accidents.

The aim of this report is to examine the evidence for such a 'fleet driver effect', the factors contributing to it, and the measures that could be employed to reduce the effect. After defining and describing the area of study, the report reviews the literature on accident risk to compare 'company' and 'private' drivers, drawing upon the programme of accident liability studies carried out by TRL in the last decade. It then examines the various measures to improve safety that have been used in the past, with special reference to fleet driver training, and assesses the evidence for their effectiveness. Following this, the results are presented of some qualitative research carried out with fleet managers, trainers, drivers, and fleet insurers.

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