LONG DISTANCE TRUCK DRIVERS

A PILOT SURVEY ON-ROAD PERFORMANCE AND ECONOMIC REWARD

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1.0 PREAMBLE

This report outlines the fmdings of a pilot survey conducted by the Transport Research Centre (TRC) at Macquarie University and National Survey Research Pty Ltd (NSR), of long distance truck drivers in Sydney in September **1989.**

The pilot survey was funded as a seeding grant from the Federal Office of Road Safety and is the forerunner to a wider study of long distance truck drivers throughout Australia in **1990.**

The objective of the study is to explore the **links** between the economic conditions in the long distance road freight industry, the pressures placed on the on-road behaviour of drivers and the implications for the safety of the road environment

The objective of the pilot survey was to collect information from drivers so as to clarify the hypotheses to be tested in the main study and **to** set the parameters for the analysis. In the pilot study **41** in-depth interviews were conducted with drivers at a freight forwarding depot on the southern outskirts of Sydney. The information collected in this survey will be used to revise the survey instrument for the main study in **1990.** The data collected has been analysed using regression analysis to test for relationships between a range of variables relating **to** drivers and the economic conditions under which they operate and road safety factors. Some of these variables have been found to be significant, however it must be emphasised that given the limited sample size, only preliminary conclusions can be drawn **from** this data. The results **at** this stage **are** useful only in that they indicate the hypotheses which should be explored further in the main survey.

2.0 INTRODUCTION

The Transport Research Centre (TRC) at Macquarie University was awarded a 1989 seeding grant from the Federal Office of Road Safety to undertake a pilot investigation of the relationship between the economic conditions faced by the long distance road haulage industry and the on-road behaviour of truck drivers, especially as it affects safety.

Justifiably there is concern about the safe use of the roads. Over the past year the incidence of fatal crashes involving semi-trailers has increased markedly on the national highways *(see* Table 1). The recent crash in northern NSW between a semi-trailer and an interstate scheduled coach which claimed the lives of *20* people and injured 18 passengers, has highlighted the concern expressed about safety on the roads.

Table 1 N.S.W. Crash Statistics - 1986, 1987, 1988

	1986	1987	1988
Total number of people killed	1029	959	1037
No. killed in crashes involving articulated vehicles	96	75	151
No. of articulated vehicle occupants killed	31	19	30
Total fatal crashes	908	858	912
Fatal crashes involving articulated vehicles	77	59	120
Total single vehicle fatal crashes	315	318	292
Total single articulated vehicle crashes	18	9	20
Alcohol related fatal crashes	236	200	199
Fatal crashes in speed zone <60kph	461	426	475
Fatal crashes in speed zone 80 kph	85	74	78
Fatal crashes in speed zone100 kph	329	327	337
Fatal crashes in unknown speed zone	25	15	11
Total vehicle registrations (x 10^6)	3034.1	3041.8	3081.2
Total articulated vehicle registrations (x 10^3)	17.4	16.6	16.1
Total annual vehicle kiiometres (x 10^6)	47526.4	47550.8	48194.1
Total annual articulated vehicle kilometres (x 10^6)	1379.8	1380.5	. 1399.2

Source: NSW Traffic Authority Annual Statistcs, 1986. 1987, 1988

Long distance truck drivers have received extensive negative media coverage in recent years as a consequence of the number of fatal crashes involving large trucks. It is recognised that certain elements of the media have a brief **to** sensationalise such events at the expense of the reputation of the trucking industry as a whole. When it is recognised that the majority of long-distance truck drivers complete between 200,000 to 300,000 kilometres per year (compared to an average of **15,600** kilometres for a passenger car), the incidence of crashes relative to exposure on the road is infinitesimal, and (after coaches) represents an impressive safety record.

Reports which highlight, out of context, the increase in fatal crashes involving truck drivers during **1988** also do not represent the full picture. While it is fact that the number of crashes did increase in **1988** compared with **1987,** and the human tragedy of even one fatal crash cannot be ignored, when looked at over the longer term (Table 2), the decline in the number of crashes in **1987** appears as the aberation from the trend. This problem also seems to be confined to **NSW** as data presented in Staysafe **15 (1989)** indicates that crash levels in the other states have **remained** fairly steady over the past 10 years.

Table **2** **Fatallty** Trends, Articulated Trucks • **NSW**

Year	**Total** road fatalities	Articulated trucks involved **in** fatal crashes
1980	**1,303**	**135**
1981	**1,291**	**121**
1982	**1,253**	**119**
1983	**966**	**111**
1984	**1,037**	**124**
1985	**1,067**	**103**
1986	**1,029**	**77**
1987	**959**	**67**
1988	**1,037**	**128**

Source: Staysafe **15, (1989)**

The high profiie currently given to truck drivers and truck safety has spawned an industry of explanations, often anecdotes, about the reasons for the highly publicised crashes. Pressure is placed on governments to take action to discourage certain patterns of driver behaviour by introducing tachographs and speed limiters to monitor and control the speed of trucks on the road, as well as adherence to the mandatory rest breaks. In response m this pressure the NSW government recently announced compulsory use of tachographs in all trucks travelling through NSW, by July 1990.

The "evidence" may be suitable in illustrating case-specific behaviour, but is potentially dangerous in its representation of the behaviour patterns within the industry as a whole. Arguments used to "explain" a particular scenario of dangerous driving include fatigue, the competitive pressures to secure loads which result in depressed rates and fees, the tightness of freight forwarder imposed schedules (resulting from the requirements of the cargo owners), the "cowboy" mentality of drivers who see no risks in dangerous driving, the high levels of concentration required to handle large trucks *over* long distances, the state of the roads, and the poor physical and mechanical state of some trucks just prior to inspection.

The current study evolved out of a concern that there is a dearth of systematic scientific evidence, especially in relation to the underlying economic structure of the industry, to prove or disprove many of the offered hypotheses, and that consequently we run the risk of regulatory Authorities proposing inappropriate strategies to improve on-road performance and reverse the negative image of the long-distance trucking industry.

3.0 THE STUDY APPROACH

3.1 Objectives

The objective of this pilot (and the main) study is to investigate, in a systematic manner, the role of a number of facets of the industry which may bear on the on-road performance of truck drivers, operating as either owner drivers or employee drivers. The study concentrates on the collection of evidence of the economic pressures that exist in the trucking industry, the pressures which are placed on owner drivers and on employee drivers by freight forwarders and companies to maintain their livelihood. This information we hope will allow us to establish if there is any link between particular conditions within the industry and the driver's behaviour on the road which may result in lower than acceptable safety conditions in the road environment. We believe that speed, fatigue and non-adherence to service hours are strongly linked to the underlying economic conditions offered to drivers. Very little scientific inquiry (none in Australia to our knowledge) has investigated the behavioural links between on-road performance and economic reward. The dimensions of particular interest include:

1. The economic environment available to truck drivers (rates, fees, market competitiveness, access to contracts/once-off loads etc.). The distinction between owner-drivers, small business employee drivers and large business employee drivers is important.

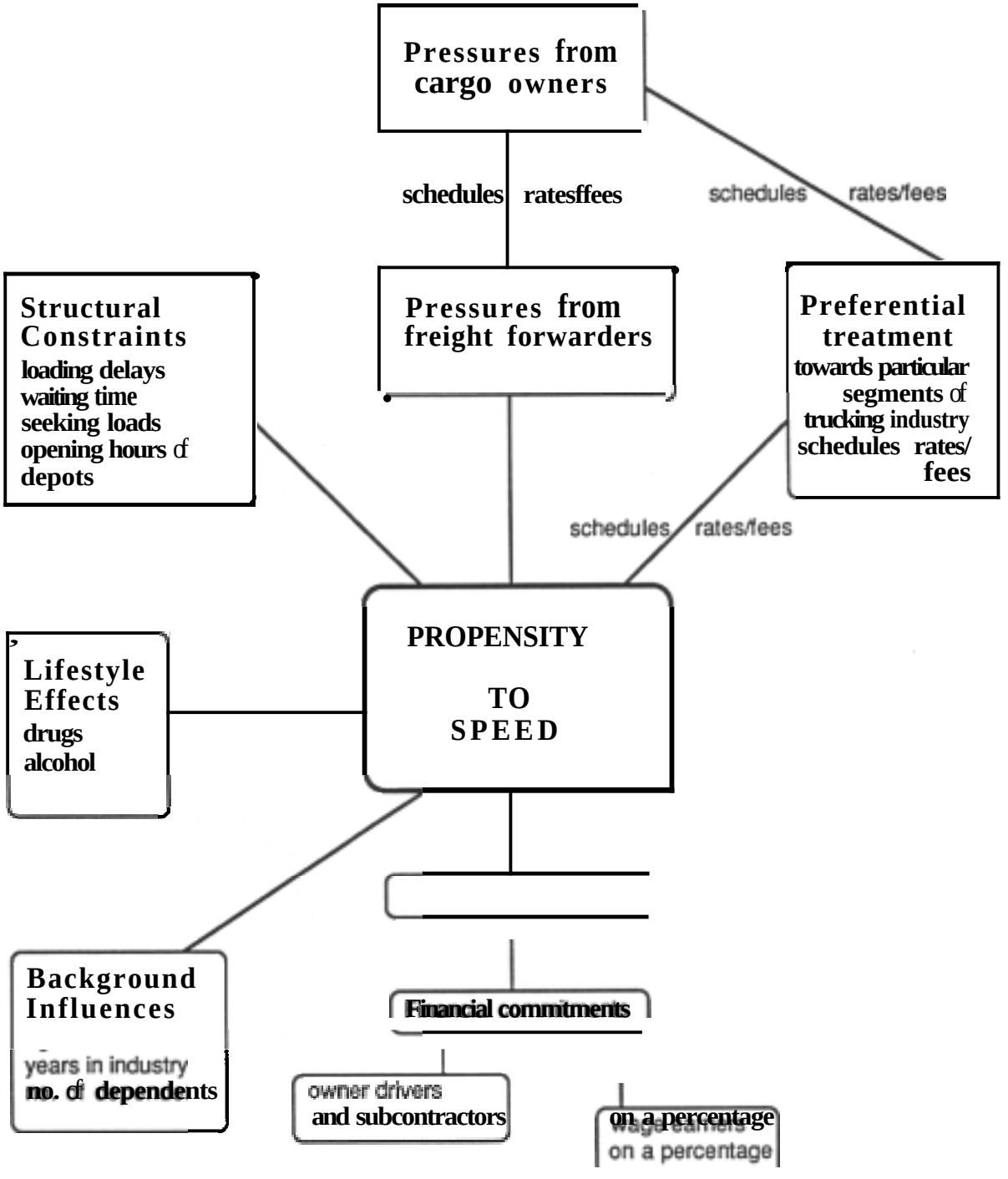
2. The constraints imposed by the freight fowarders/cargo owners and the self-imposed schedules of drivers, especially owner drivers. These constraints include delays at loading/unloading terminals due to opening hours, service support etc.

3. The history of experience in the industry of drivers.

4. The profile of particular trips (origin-destination, road environment, distances and travel times between stops, activities at stops, number of stops etc.) and its relationship to items 1 to 3 above in order to identify any statistically significant associations between dimensions of speed (average for trip, maximum between stops, average excess over the speed limit etc.) economic conditions, constraints, experience, and the road environment.

The interactions between the major elements of the study are summarised schematically in Figure 1.

Figure 1. Relationship between the major elements of the study



3.2 Data collection approach

It is our aim to collect data directly from truck drivers which will allow us to look more closely at the economic conditions faced by drivers, especially by owner drivers, and the demands due to the economic conditions of the industry, put on all drivers by truck companies, freight forwarders and the owners and receivers of cargo.

The survey design and data collection strategy were developed jointly by TRC and National Survey Research Pty Ltd (NSR). The primary source of data is from in-depth interactive face to face interviews with owner drivers and employee drivers. There are three stages to the data collection strategy, with the first two being vital for the development of the survey method and survey instrument to be **used** in the final survey.

(i) **A** pre-pilot skirmish, conducted by the two principle researchers from TRC and NSR to check both the selection of survey sites for the pilot and the content of the questionnaire;

(ii) A pilot survey conducted by TRC and NSR researchers; and

(iii) The main survey of 1,000 truck drivers sampled at sites throughout Australia, conducted by NSR interviewers in the first half of 1990.

4.0 THE PRE-PILOT SKIRMISH

4.1 Selection of the survey site.

The pre-pilot skirmish was undertaken in August 1989 at the Southern Cross Truck Terminal at Chipping Norton, near Liverpool on the southern outskirts of Sydney. This truck stop is a depot for freight forwarders, where cargo is loaded or unloaded for long-distance trips throughout Australia. A number of other truck stop locations in the area along the Hume Highway were also investigated, however enquiries revealed that drivers stopping at these locations did so for only a short period of time in order to have a meal or a quick snack. The flow of drivers stopping at these locations was also thin and intermittent. They were therefore not considered as ideal sites for interviewing given an average interview time of 20 minutes, and the uncertainty in securing a sufficient number of interviews by an interviewer stationed at such a location.

By contrast the Southern Cross Truck Stop was found to provide an excellent site for interviewing. The truck stop is a loading depot where 15 freight forwarders have their offices and sheds. Therefore drivers spend time there waiting for their next load. Consequently there is plenty of time to conduct a 20 minute face to face interview. The Truck Stop manager was most co-operative in allowing us to conduct the interviews. He provided introductions to some of the freight forwarders, who have also, mostly, been supportive of our survey work. The drivers can be interviewed either whilst having a meal in the Truck Stop's cafe or whilst waiting around the freight forwarder's sheds or their trucks. We found it preferable to conduct interviews with drivers who are waiting for a load rather than drivers waiting to unload.

The pre-pilot skirmish at the Southern Cross Truck Terminal confumed the benefits of concentrating interviewing at loading/unloading locations. It also highlighted the possibility of being able to confine interviewing to a limited number of locations, because a large number of truck drivers at any one loading/unloading site transport cargo between many origins and destinations throughout Australia. Thus, for example, it is not necessary to interview in Perth someone who is driving between **Perth** and Adelaide. Details of that specific trip can be obtained from an interview at a terminal in Sydney. Some small amount of interviewing is desirable throughout Australia however, to accommodate intrastate long-distance trucking activity.

4.2 Selection of the survey method

In the pre-pilot skirmish 5 informal interviews, structured loosley around a set of questions, were conducted with owner drivers and employee drivers of small freight forwarders. These interactive interviews and discussions provided a significant amount of new information and ideas which were incorporated into a revised version of the questionnaire. As well as conducting face to face interviews, a number of questionnaires were left at the truck terminal with an explanatory letter seeking respondents to complete the survey and return it to us by post. The questionnaires were accompanied by a pre-paid mail back facility. Leaflets were also left at the Truck Stop, briefly outlining the purpose of the study and inviting interested respondents to contact us by telephone or by returning the slip with their name (optional) and address so that we would send them a survey form to complete. By conducting face to face interviews and also providing the option of a self administered mail back questionnaire in this pre-pilot stage, we were able to guage which method would yield the most reliable results for use in the main survey. The survey instruments used in the pre-pilot skirmish are included in Appendix A.

The response to both survey methods was very informative. Of the 6 surveys left at the truck stop for self completion, 3 were completed and returned to the University. Of the 100 leaflets dismbuted 10 were returned requesting survey forms and another couple of requests were received by telephone. Respondents replying via the leaflet promotion were sent the revised pilot questionnaires. In the face to face interviews no driver, who was approached, declined to take part in the interview.

After looking closely at the information received from the face to face and the mail back questionnaires, a content analysis confirmed the problems of data reliability from the latter method of data collection. It was decided that a face to face survey strategy would be adopted for the main survey. It is vital for our analysis that we obtain accurate driver information on the precise origin and destination, the time of arrival and departure of a specific trip. and details of the stops made during this trip, including time between stops and time spent at stops. The self-administered approach highlighted the problems of obtaining this information accurately without a face to face interview. The face to face interview has the added bonus of information which may not be directly addressed in the questionniare, such as extra opinions offered by the drivers. Some indication of the driver's personality and attitudes can also be gleened by an interviewer which may provide very important contextual information for the analysis of the results. A face to face interview also has the advantage of a higher response rate and greater control of sampling and sample error. Truck drivers have no problems with direct interviewing, they generally prefer it because it saves them having to write, and importantly it

is **an** interesting diversion from the repetitive cycle of waiting for loads. The pre-pilot skirmish confiied that truck drivers were very willing to participate in a study which was presented as a University research project focussing on the state of the industry as it pertains to the truck driver.

As a result of the pre-pilot skirmish it was decided that the pilot survey would be conducted using face to face interviews at the Southern **Cross** Truck Terminal by members of TRC and NSR. The questionnaire was substantially revised following **the** pre-pilot skirmish and a number of the original hypotheses altered as **a** result of the information collected. **This** revised structured questionnaire formed the basis of the pilot interviews but was complemented by adopting a less formal approach **to** the interview which encouraged the offering of additional ideas by the drivers. The content of the questionnaire and the development of the hypotheses to be tested in the main survey is discussed in more detail in a later section of this report.

5.0 THE PILOT SURVEY.

5.1 The survey method and selection of the survey site

Over a period of two days in September 1989, 41 interviews were conducted with drivers at the Southern Cross Truck Terminal at Chipping Norton. As in the pre-pilot skirmish the response to the survey from drivers was excellent with no driver, who was approached, refusing to be interviewed. This very positive response we believe was due mainly to the presention of the survey as a University research project investigating the economic conditions of the truck industry, with no reference to any other organisation. It was emphasised that we wanted to hear the story and collect the information directly from the drivers as they were the ones that continually faced the pressures on the road. Adverse media publicity, and the questionable behaviour of a fringe element of drivers, has gained them a bad reputation with the public. Drivers were therefore most appreciative of our approach and that someone at last was interested enough to talk to them about the industry.

The survey instrument used in the pilot survey is included in Appendix B.

5.2 Profile of the pilot survey sample

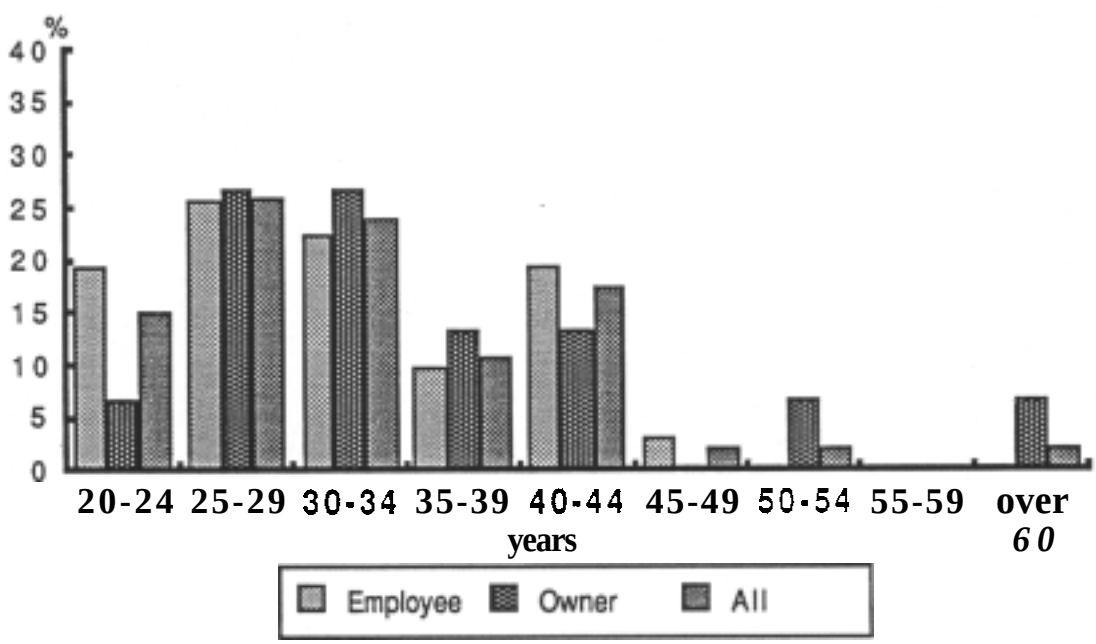
The pilot sample population included 46 drivers (41 face to face interviews and 5 mail back responses). Of this population 31 were employee drivers and 15 were owner drivers.

Some summary statistics from the pilot survey are presented in graphical form below. The accompanying tables are in Appendix C. It must be stressed that care should be taken when drawing conclusions from these statistics given the limited size of the sample. However, they give a reasonable indication of some of the trends in the data which will either be confiied or refuted in the main study.

5.2.1. The age of drivers

The age distribution of drivers is shown in Graph 1, (Table 1, Appendix C). As could be expected, there are more employee drivers concentrated in the lowest age range; at this age it is unlikely that many drivers would have the access to the capital necessary to finance the purchase of their own truck. We encountered very few drivers in the older age brackets, but those that were interviewed in these groups were predominantly owner drivers for whom driving was such a way of life that retirement seemed unthinkable.

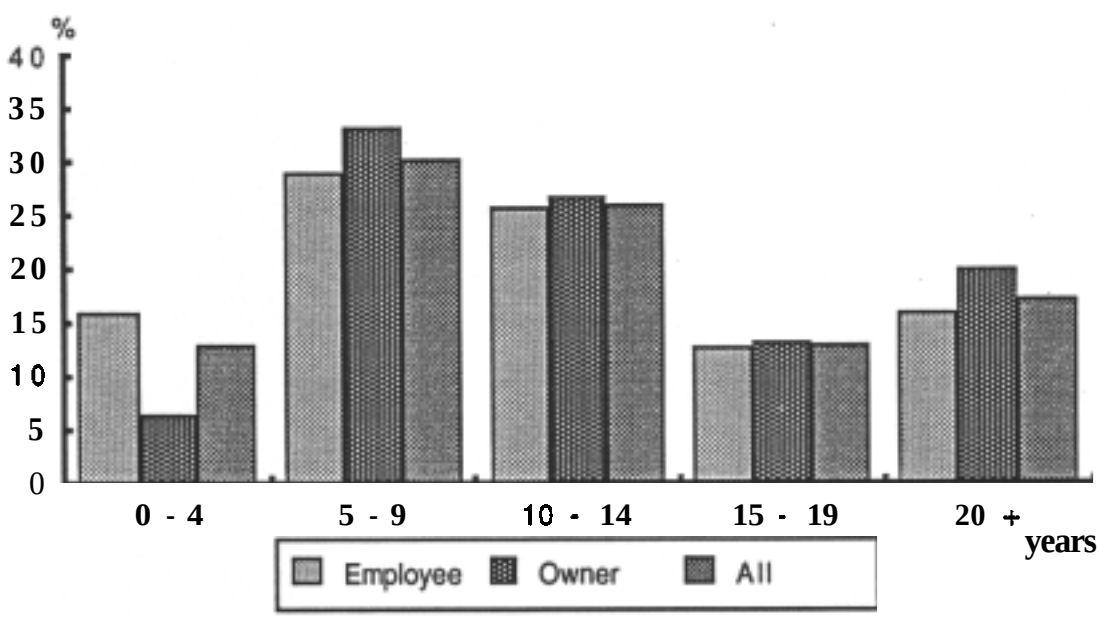
Graph 1 Age of drivers



5.2.2. Years of driving experience

The profile of years of driving experience for the pilot sample is shown in Graph 2, (Table 2, Appendix C). About one-third of drivers interviewed had over 15 years experience driving large freight trucks and over half the drivers interviewed had been driving large trucks for more than 10 years. These statistics indicate that there is a sizable stable long term population of drivers in the industry. It is often maintained by the media that truck drivers are often only in the industry for quick rewards, often at the expense of road safety. While there is certain to be a shifting population element in the industry the predominance of this long term stable population should be emphasised.

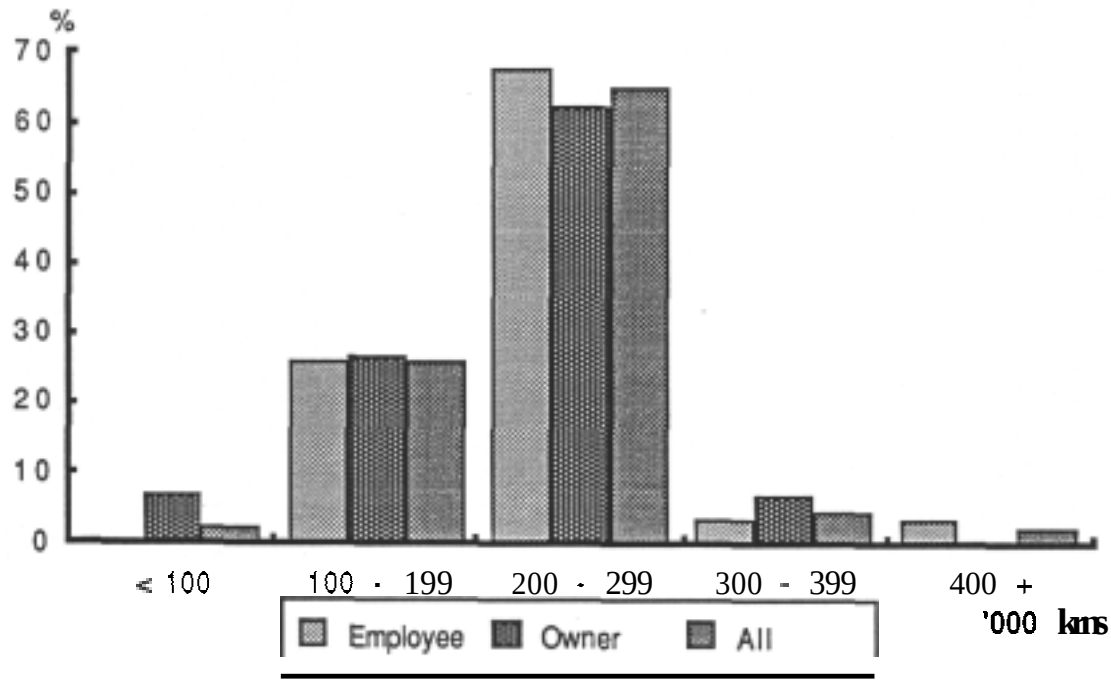
Graph 2 Years of driving experience



5.2.3. Annual distances' travelled

Our sample confiied the high number of kilometres travelled by truck drivers every year. Nearly all drivers reported travelling annual distances in excess of 100,000 kms, with 65% of drivers travelling between 200,000 and 300,000 kms per year. These statistics were approximately the same for both employee and owner drivers. The profile of distances travelled by the sample population is shown in Graph 3. (Table 3, Appendix C).

Graph 3 Annual distances travelled



5.3 Information collected on specific trip profiles.

The central feature of the survey instrument was the collection from each driver of the details of a specific trip which had been completed within the last one or two weeks. We used this approach to obtain the information necessary to assess the actual conditions faced by drivers on the road.

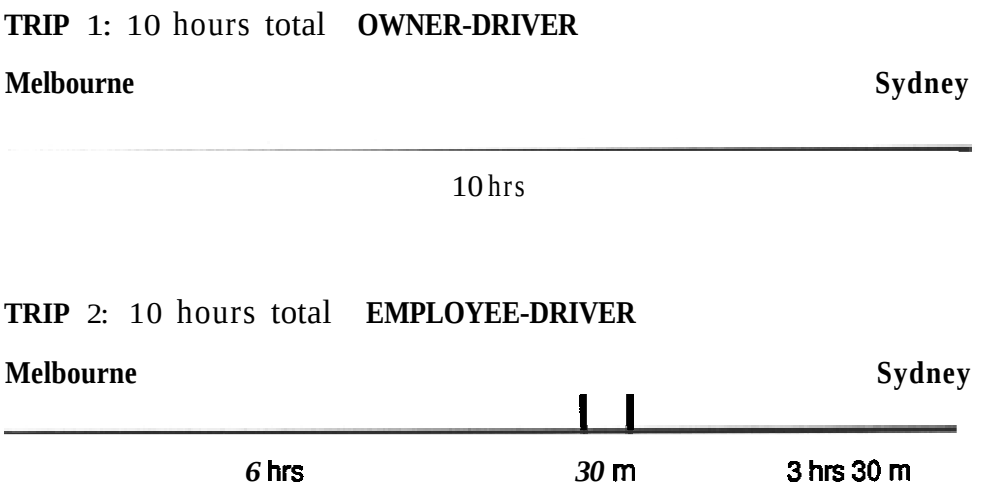
For the selected mp the following details were collected:

1. exact origin of the trip
2. destination
3. driver's activities in the 8 hours before departure
4. how the truck was loaded
5. mp starting time
6. cargo weight, type and value
7. how the load was obtained
8. rate or fee for the load
9. method of payment for employee drivers
10. estimated profit from the trip for owner drivers
11. details of the stops on the mp - place of stop, distance travelled between stops, time between stops, time at the stop and the reason for the stop
12. arrival time at destination
13. details of any schedule requirements and any associated penalties/incentives for complying with that schedule
14. unloading details - delays at unloading sites, time spent unloading and involvement of the driver in unloading
15. time before loading up for another trip.

A list of the mp routes on which data was collected and the number of each mp type is given in Appendix D. The routines for the most common trips surveyed have been depicted by a series of trip lines in Appendix D. The lines have been grouped according to origin-destination pairs so that the different routines of drivers on the same routes can be compared. As well as providing a visual comparision of the varying trip times of drivers on the same route, they also provide a ready means of identifying where drivers have exceeded the legal driving time requirements. Driving hour regulations in NSW, Victoria, and South Australia require drivers to stop for 30 minutes after every 5 hours driving and that drivers are not to spend more than 12 hours behind the wheel in any 24 hour period. In Queensland and Western Australia drivers are allowed to travel for 51/2 hours before stopping for 30 minutes.

Drivers were quite willing to tell us about the routine of a specific trip even when they had violated the legal stopping times on that particular nip, as is illustrated by the lines in Figure 2.

Figure 2. Trip Lines - Examples of Sydney - Melbourne Route



For the majority of drivers (77%), the average time between stops was 5 hours or less i.e. within the legal driving regulations. But for 23% of drivers the average time between stops exceeded 5 hours. (Table 4, Appendix C). In our sample a higher percentage of owner drivers than employee drivers exceeded the legal driving time, however, given the limited size of the sample it is not wise to draw any conclusions from this data at this stage.

The information, as outlined above, which was collected for each nip provided important data on speed which was used in the analysis of the pilot survey as detailed in Section 6 below. Asking driven to focus on a specific trip was also important in providing us with data which is specific to particular origin-destination pairs. Although the sample size for the pilot does not allow us to undertake any conclusive analysis at the specific route level, the strategy of obtaining from each drivers the details of a recent trip will be important in the main survey in facilitating route-specific analysis. This strategy also allowed us to obtain valuable insights into the routine faced by the drivers in earning their living on the road and was vital in highlighting the important issues and providing clarification of the hypotheses to be addressed in the main survey.

5.4 Findings from the pilot survey and the development of the hypotheses to be tested

In the proposal for this study we suggested a number of hypotheses for empirical investigation which formed the basis for the questionnaire design in the pilot survey.
These included:

1. The tighmess of schedules force many drivers to exceed the legal speed limit;
2. Carrier type *or* ownership of the freight has an influence on the propensity to speed;
3. Contexts of greater competition are associated with higher speeds;
4. Less experienced drivers are more likely to have tighter timetables;
5. Schedule tightness is strongly related to distance travelled and particular trip origin and destinations;
6. Trip tighmess is linked to the consignment type;
7. The road environment is the major factor influencing speed.

The information collected in the pilot survey confirms that our basic hypotheses appear to be worth investigating further, however, it is becoming evident that the factors underlying these hypotheses are perhaps not what were originally postulated.

The following conclusions are drawn from the data collected from drivers, especially that given in response to the questions relating the specific nip for each driver, but also from the general comments and opinions expressed by the drivers. For a ***summary*** of the responses to the general comments section of the questionnaire ***see*** Appendix **E.**

5.4.1. Schedules and loading delays

Our original hypothesis was that there are economic pressures within the industry which cause truck drivers to have to meet tight schedules in order to maintain economic viablity either for themselves, if they **are** an owner driver, or for their company if they **are** an employee driver. It was originally thought that companies and freight forwarders were solely responsible for setting tight schedules for their drivers and that these schedules were enforced by the use of financial or other penalties and incentives for drivers.

We have found little evidence to date of drivers being forced to meet unreasonably tight schedules and **being** financially penalised if they do not meet them. However we have heard references from drivers to such practices in the industry and expect that data collected in the main survey will further support *or* refute this hypothesis. From the evidence collected to date, from a small sample of drivers, indications **are** emerging that schedules set on the long distance routes e.g. Perth to Melbourne/Sydney *or* Adelaide to Melbourne/Sydney appear to give the

driver ample time to arrive within the driving hours regulations. However there is constant reference to the fact that deliveries between Sydney/ Melbourne and Sydney /Brisbane have to be overnight. The reasonableness of the schedule for the driver on these trips depends to a large extent on the time that they can get loaded and **are** able to leave on the trip.

The preliminary investigations suggest that the routine for these "shorter haul" trips is to get into the unloading depot as early as possible **so** as to reduce delays at the unloading site. This gives the driver more time to secure another load, load up and be back on the road ***so*** that the load can be in the other state next morning and the routine repeated. Even if the driver is an employee driver the company does not always have loads ready for the return trip.

Nearly all drivers have emphasised the need to get to the unloading site **as** early in the day as possible. **As** a result we questioned them further about the possible sources of delay at unloading depots and these include:

1. The site is not open when I arrive. Most unloading depots, particularly factory sites, do not open until **7** a.m.. Consequently trucks arriving at **5** a.m. have to wait around for a couple of hours before they can unload. The major bottleneck appears to be factory hours for pick up/unloading, rather than freight forwarder hours. In some instances factories are only open to receive loads for a l i i t e d period, with drivers sometimes allocated to particular unloading times. If the driver misses the appointed unloading time he runs the risk of having to wait **24** hours before he can unload. **This** represents a significant loss of productive time. The impact of these constraints on drivers' productivity will be investigated further in the **main** survey.

2. Drivers **stress** the need to arrive early so as to be at the head of the queue, to get unloaded and then to ***secure*** a favourable position in the queue with a freight forwarder for the next load. Loads are generally allocated to drivers on a first come first served basis, not on the basis of price competition between drivers. Price competition is a more macro phenomenon, imposed on the (owner) drivers by the freight forwarders and indirectly by the shippers as a consequence of an oversupply of trucks and competition from other modes such as the railways. Loads are available at set rates and are offered to drivers who have registered on the list with the freight forwarder. Owner drivers have the option of not accepting loads and the load is then offered to the next driver on the list. The rate. is not negotiable as it always ***seems*** that there is someone who will eventually take the load at the set rate. Common reasons for refusing to accept loads are that the rate is too low or that it will take a driver to a destination e.g. **Perth** or Brisbane, from which it is hard to get a back load, either at all, or at a reasonable rate.

3. Other delays or hassles for drivers when they have reached their destination city are caused by the need to either make multiple drop offs of cargo and hence are subjected to compounding delays at each unloading site, or to have to deliver their cargo to a site which requires them to travel to the other side of the city through the city traffic, for example to make a delivery to North Sydney from Melbourne. In this case there is the added incentive to at least arrive very early at the outskirts of the city which allows them to drive across the city before the morning peak traffic. The concept of a super peripheral terminal has been suggested, located on the southern and northern outskirts of the major cities. The large long distance trucks would service these locations and smaller rigid vehicles being used for intra-urban dismbution. This concept may not be greeted favourably by freight forwarders. Currently intra-urban drivers are paid on an hourly basis rather than a fee per tonne, hence a greater role for intra-state drivers in the delivery process could be financially unattractive to the freight forwarder and the shippers of goods. However this cost has to be weighed against the benefits to society of improved safety on the road.

4. Other delays at the unloading site are caused by competition for unloading time from local (intra-urban) trucks. Since local truck drivers are paid on an hourly rate, they either have set times for loading and unloading, or are given preference for unloading/loading by the freight forwarders as the driver's waiting around time is expensive. By contrast long distance drivers, who are paid a rate per tonne or per mp, are made to wait around because their time, or the storage of the goods on their truck, is not an expense for the freight forwarder. It is however indirectly a cost which is eventually passed on as a social cost to the driving public. If by waiting around at the loading depot the long distance driver reduces the time in which he has to deliver the next load, particularly where there is pressure to make overnight runs on the eastern seabord routes, his need to speed becomes a social cost of decreased safety on the road.

As a result of this information we intend to look more closely in the main survey at:

1. the opening hours of freight forwarding depots and major factories;
2. the location of loading/unloading depots in the urban areas,
3 the incidence of multi drop off requirements, and
4. the alternative payment structures (fixed fee, percent of truck eamings, fixed salary).

5.4.2 The level of competition.

We began the study with the hypothesis that competition between drivers for loads was forcing rates down. Although this hypothesis has been to date supported by our investigations, the mechanism of competition in the market works somewhat differently than the way we had expected. The starting premiss was that drivers/companies bid for loads with the load being given to the lowest price bidder. But it seems that the load rates are already set by the freight forwarders and loads are allocated to the first available driver on the day who is willing to take the load. Drivers do not engage in open price competition by bidding against each other for loads. However, by following the ostensibly fair practice of "first in first ***served"*** they are competing against each other in terms of time on the road.

This, surprisingly, drivers do not see as competition for loads. When asked if there were too many drivers in the business, with the assumption that this oversupply is pushing down rates, they did not **think** that this was the case. They believe that it is the companies who are forcing the rates down, especially the larger companies who are willing to take loads at low rates, and sustain losses in the short term to try and force out the individual owner drivers who are not able to do this.

We have also had some feed back from owners of small trucking companies who feel under pressure from the large companies who are able to undercut their rates. It may be that in order to sustain these low rates the larger companies may set tighter schedules for their drivers backed up with fmancial penalties for non-compliance. We heard evidence that employee drivers receive greater effective (i.e. actually enforced) penalties for failing to meet schedules. Although owner drivers are subject to penalties for schedule non-adherence, they often do not pay the fmes, and rarely receive a disadvantage as a consequence.

In the analysis of the data in the main survey we will explore the hypothesis that the level of competition in the industry and scheduling constraints have **an** influence on the speed at which the driver travels on the road. Given the limited size of the pilot survey, it is not possible to draw conclusive evidence from that data to support or refute this hypothesis. However, in the course of our interviews we found that owner drivers generally argued that employee drivers, particularly of the large companies, have a tendency to drive more dangerously and exceed the speed limit more than owner drivers. This may reflect the tighter schedules under which they have to operate. From the specific trip data collected from drivers in the pilot survey we calculated an average speed for that trip. The mean of these average speeds was found to be **83** kph for owner drivers and **85** kph for employee drivers. The propomon of drivers exceeding the speed limit of 100 kph was found to be **7.7%** (1 driver) for owner drivers and 20% ***(6***

drivers) for employee drivers. The dismbution of average speeds over the specific trips sampled is given in Table **5,** Appendix **C.** This evidence, although very preliminary, suggests a possible link between type of driver and speed on the road, which may be influenced by scheduling. We will follow up this information in the main survey which will incorporate drivers from the larger companies (employees and sub-contractors) and also if possible interviews with managers from both large and **small** companies.

The Bureau of Transport Economics **(1979)** in their study of the long distance road haulage industry, reports that the major problem in the industry is the financial plight of the owner driver which results partly from an oversupply of owner drivers. This however, they conclude is "essentially a short-term disequilibrium problem which should eventually correct itself'. ***Our*** investigations in **1989** indicate firstly that there is possibly still an oversupply of drivers in the industry, suggesting that **this** is not a short-term disequilibrium problem, but a structural feature of the industry, and secondly that it is not necessarily only the owner driver segment of the industry which is responsible for this oversupply situation. We will explore further these issues of competition and industry structure and consider the possibility that the concept known as "wasteful competition" applies to the trucking industry. **This** level of wasteful competition may exist as a result of the easy conditions of entry to the industry and/or the attractiveness of the lifestyle to some sectors of the population which will always exist regardless of the harshness of the economic realities.

When asked about the level of competition in their industry, drivers also mention the pressure of competition from the railways. They believe that the railways, whose rates are heavily subsidised by the taxpayer, are able to unfairly undercut the rates offered for road transport. The recent increased activity of the **NSW** State Rail Authority (SRA) has had a depressing effect on prices, with owner drivers forced to accept lower rates to compete with the subsidised SRA services (Fast Freight). Unfortunately the situation seems set to get worse with a statement from the NSW Minister of Transport on **19** September that the State Government plans to further subsidise rail freight rates in order to reduce the amount of truck kilometres on the road, putting even more pressure on road freight rates.

5.4.3 Loading rates

One of the starting hypotheses for **this** study was that the economic pressure in the industry, evidenced by declining real freight rates, was influencing the on-road behaviour of some drivers to the detriment of the safety of the road environment. Statistics from the Bureau of Transport Economics **(1988)** indicate that there has been a **33%** decline in real freight rates between Sydney and Melbourne in the period **1978** to **1988.** This reflects the increased

capacity on this route in terms of increased truck capacity and also shorter travelling time. Despite the decline in rates, the evidence from the pilot survey suggests that there is greater competition for the Melbourne - Sydney route, as the overnight rates between these capitals are the high volume routes where rates are higher relative to other intercapital **routes.** This may reflect the greater competition for this route, but may also be a result of the fact that it is now technologically possible to make the Sydney - Melbourne run in 10 to **12** hours, i.e. overnight, freight forwarders and cargo agents are demanding tighter schedules for deliveries between these capitals.

The imbalance between forward and backloading rates is an important issue. Backloading from centres such as Perth, Brisbane and Adelaide are reported by drivers to be very bad, with loads hard to obtain and the rates offered are very low, often not covering more than the truck expenses of the trip. The situation in Perth was quoted by one owner driver as being **so** bad that he preferred to travel unloaded from Perth to Adelaide, where he **was** able to pick up a load to Sydney, rather than take a load out of Perth at rates which would not cover the cost of his hip. Other drivers also supported this evidence claiming that in some cases if rates only cover the cost of the trip in terms of fuel and truck expenses, the driver is worse off by **taking** those loads because he also has to expend time and effort in loading and unloading for which there is no return.

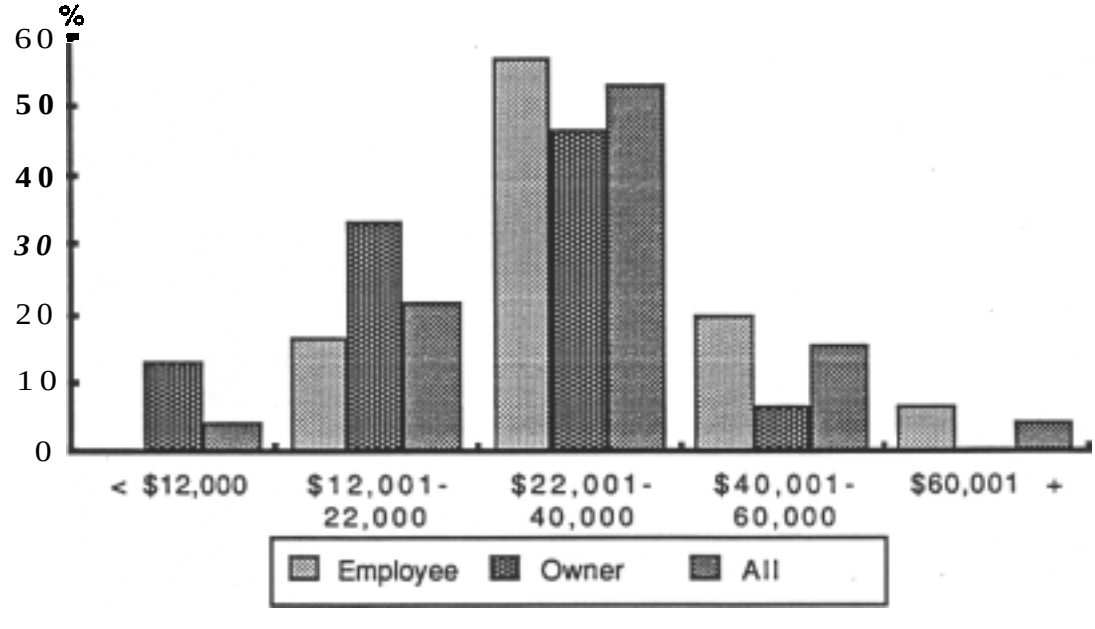
These rate structures are related to the imbalance in the flows of freight in Australia as a result of the concentration of manufacturing and the flow of imports through the South Eastern Capitals. However, if the road freight industry is to operate efficiently, and safely, some consideration has to be given to allowances for the cost of the backload to the driver in the forward load rate structure. Many owner drivers work with deals which ensure that they are paid at the full or agreed reduced rate per tonne for the trip for a minimum of **22** tonnes, regardless of whether they have a load. But as the BTE **(1979)** points out the setting of minimum freight rates for **owner** drivers is fraught with difficulties, for if the legislated minimum rates did not reflect the freight imbalance, between capital cities, the shippers of freight from the smaller capitals would be penalised. In the main survey we plan to collect more detailed data on the fee structure under which drivers operate *so* as to explore more fully the links between the economic pressures on the driver and their behaviour on the mad.

5.4.4 Economic return to drivers

Linklater (1977,1978) in her work on the attitudes and behaviour of truck drivers, states that although truck drivers were found to be generally of lower educational level than the general driving public, they reported higher income levels. It would not appear that this income differential has been sustained into the late 1980's. We have found little evidence to date that owner drivers receive more than an average wage. All report declining income levels and tightening financial conditions which have worked against drivers so that they have had to work longer hours to receive an ever eroding level of income. In our sample ***60%*** of owner drivers had a **gross** income in 1988-89 of less than $26,000. When this is considered within the context of a working week of at least 100 to 120 hours, it represents a very low hourly rate.

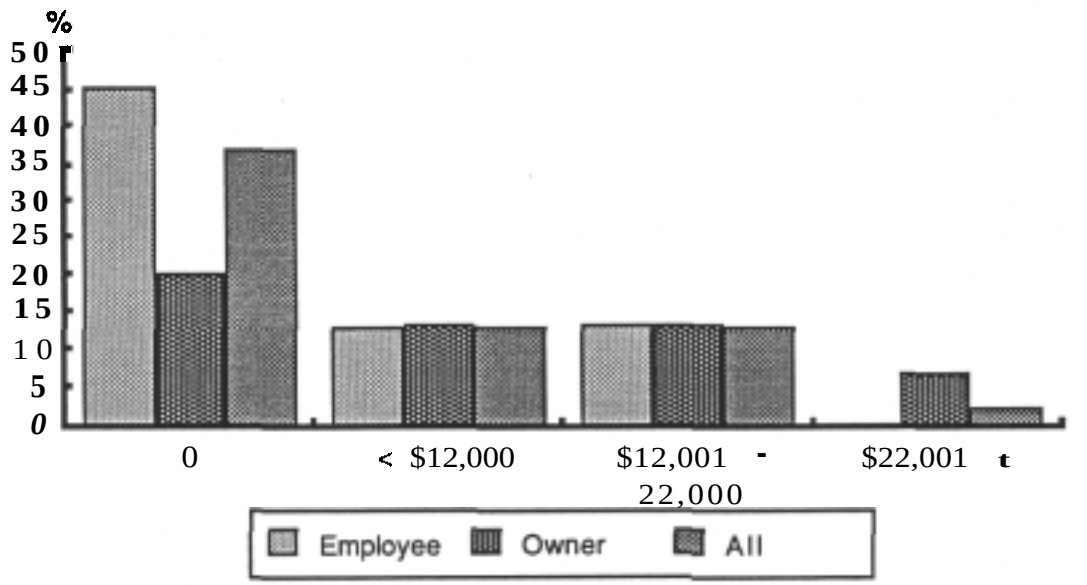
Drivers were asked for their annual **gross** income received from their truck driving activity but after truck related expenses. This is shown in Graph **4,** (Table 6, Appendix **C.)** Owner drivers were found to have much lower income levels than employee drivers. The median income for employee drivers falls within the range of $32,000 to $40,000, while that of owner drivers falls within the range of $22,000 to $26,000. Due to union awards, no employee driver earned less than $18,000, while 2 owner drivers claimed to have cleared less than $12,000 after their expenses, from their truck activity, and 2 others earned between $12,000 and $15,000.

Graph **4** Gross income of drivers from truck driving after truck expenses **1988-89**



Drivers were also asked about the income earned by other members of their household from activities other than truck driving. This income profile for the sample is shown in Graph **5.** (Table **7,** Appendix **C.)**

Graph 5. Gross income of other members of the household from non-truck activities 1988 -1989



With the exception of one owner driver whose household was earning over **$70,000** from another business activity which was managed by his wife, other income of the driver's household for most drivers, who had other members in their household, was less than **$12,000.** However a greater percentage of other members of owner driver households were earning some income. Only **20%** of other members of owner driver households were not earning any income compared with **45%** for employee drivers. **This** reflects the need by other members of owner driver households to supplement the low, and often irregular income of the owner driver. However for both categories of drivers income earned by other members of their household was quite low thus improving little the income status of the truck drivers household. These figures emphasise the financial pressures placed on drivers as the main income supporters of their households.

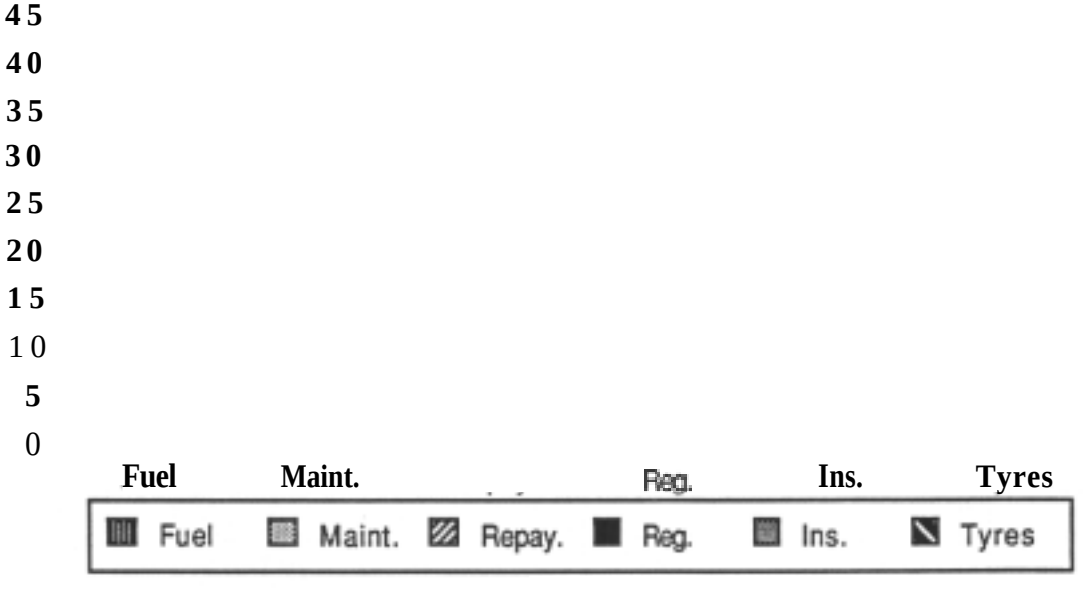
It is important to note that for **29%** of employee drivers and for **46%** of owner drivers this question was not applicable as they were the only members of their household. These statistics would tend to underline the individualistic nature of the truck driver and/or the difficulty for drivers of maintaining family relationships given their long periods away from home on the road. In the course of the interviews it became apparent that for some drivers this was **a** very

real problem and concern, and in some cases we encountered drivers taking their families along with them on the road. For some there was a preference for the solitary lifestyle without the responsibility of family ties.

As well as considering the income received by drivers in the context of a very long working week, it is also important for owner drivers to look at their income in relation to the level of expenses and capital commitments required to maintain their business operations.

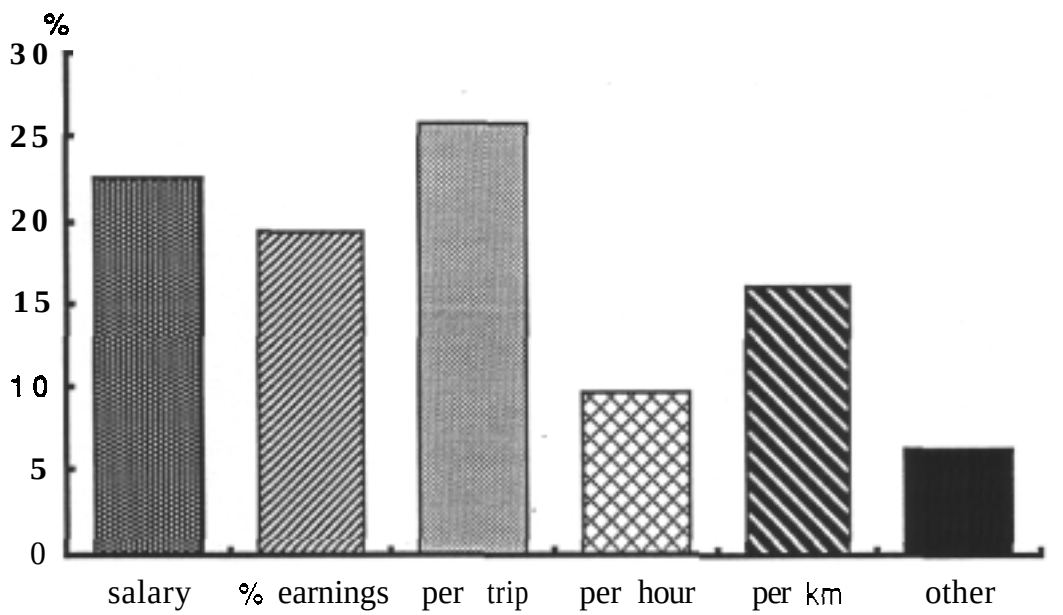
The income figure obtained from owner drivers was net of truck related expenses. They were asked separately for estimates of their financial expenses. Total costs for the majority of owner drivers **(77%)** were between $100,000 and $200,000 for the financial year 1988-89. Fuel, repayments on their vehicle, maintenance, and tyres were the major expenses. Repayments on the vehicle were revealed **to** be the second major expense item, after fuel, accounting for up to **43%** of total costs for one driver, with a mean percentage for the sample of 27% of total **costs.** The distribution of costs for owner drivers, as shown in Graph ***6,*** (Table 8, Appendix C), highlights the level of repayments as a percentage of the driver's total costs. Repayments on the vehicle represent a severe financial burden for the owner driver amounting to a mean, for our sample of 29% of earnings. It is a plausible hypothesis that the obligation to meet these repayment commitments influences the drivers behaviour on the road, and although there was some support for this in the pilot data, this relationship will be explored more fully in the **main** survey.

Graph. **6.** Percentage distribution **of *costs* for owner** drivers 1988-89



The pilot survey revealed that employee drivers are paid by a variety of arrangements. The most common methods of payment for employee drivers were by fixed salary (22.6%), as a percentage of earnings of the truck (19.4%) and a fixed payment for the trip (25.8%). The percentage of drivers in our sample paid by each method is shown in Graph 7, (Table 9, Appendix C). In the analysis of the pilot data, which is described in Section 6 below, we have looked at the influence of each of these methods of payment on the driver's on-road behaviour.

Graph 7. Method of payment for employee drivers



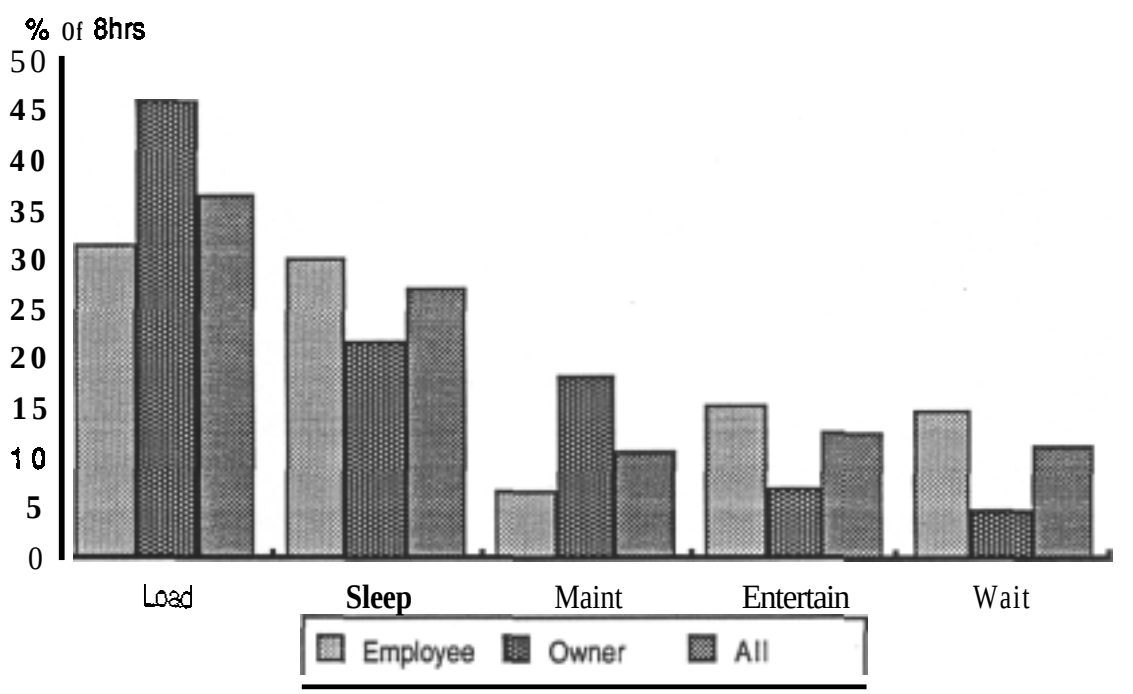
5.4.5 Driver fatigue

Driver fatigue is a commonly reported cause of crashes involving long distance trucks. Given the number of annual kilometres travelled by long distance truck drivers it is to be expected that drivers, at least at some times, experience fatigue on the mad. We want to focus in our study not just on the incidence of fatigue and the implications for road safety, but on the reasons for driver fatigue. We began this study with the hypothesis that the economic conditions in the industry forced drivers to spend long hours on the road. The pilot data supports this hypothesis but has also revealed other factors contributing to driver fatigue such as long hours waiting around to get a load, the physical demands of having to load and/or unload the truck and the lack of opportunity within the routine of securing loads and making deliveries, to obtain lengthy periods of sleep.

In relation to the specific trip selected by each driver, drivers were asked about their activities in the eight hours prior to departure on that trip. This information highlighted the extremely demanding and stressful workload of the driver even when off the road.

In our sample **57%** of drivers had less than **1** hour of sleep in the eight hours before starting out on the trip and for owner drivers ***80%*** had less than **2** hours sleep. Although **54%** of employee drivers had less than **1** hour of sleep, the other **46%** had between **2** and **8** hours sleep. Loading the truck was the main activity in which drivers were occupied in the eight hours prior to the trip. In our sample **63%** of drivers spent more than **1** hour loading the truck with the median loading time being **2** to **3** hours for owner drivers compared with **1** to **2** hours for employee drivers. Other activites in which drivers were involved in the eight hours prior to departure include maintenance on the truck, entertainment, and just waiting around for a load. *Summary* tables of the time spent in these activities are given *in* Table 10, **Appendix** C. Other activites mentioned by drivers were personal business and in some cases being on the road delivering a previous load. The mean percentage distribution of the time spent in activities undertaken in the eight hours prior **to** leaving on the trip are shown in Graph **8,** (Table 11, Appendix **C.)** The graph highlights the more demanding routine of the owner driver who spent more hours loading and carrying out maintenance on the truck, and less hours sleeping than the employee driver in the **8** hours prior to departing on the trip.

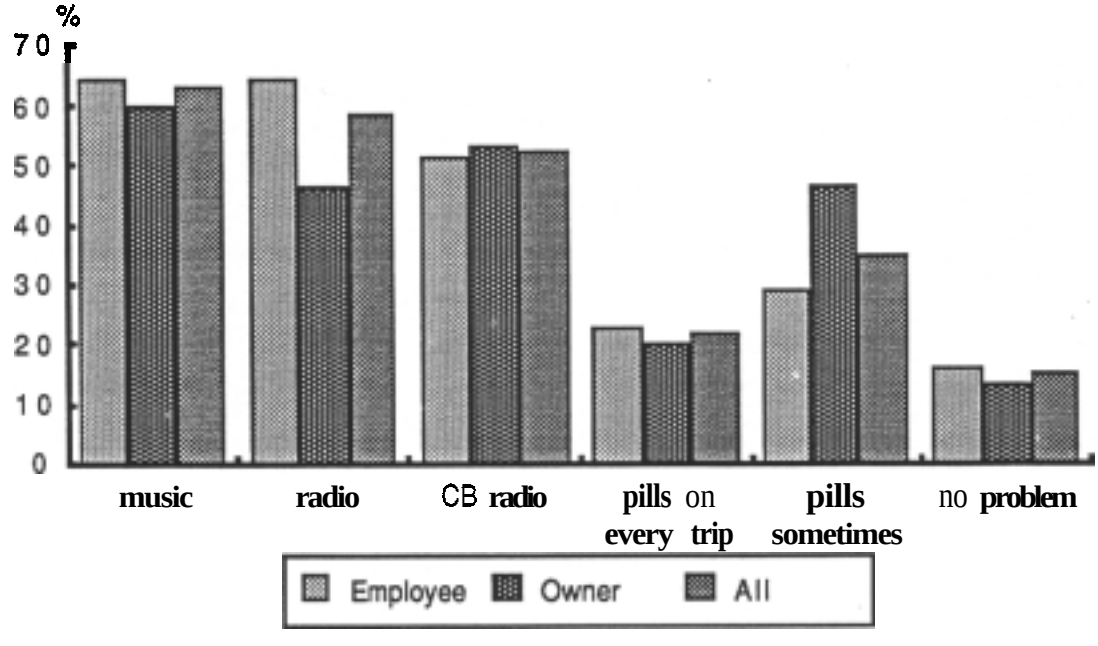
Graph 8. Percentage distribution of the time spent in activities prior to departure



The physical involvement of the driver in the unloading and and loading of the truck must also be **stressed** as a significant source of fatigue before setting out on the trip. In our sample **80%** of owner drivers were actually involved in loading the truck either on their own, or helped by someone else. At the other end of the trip **60%** of owner drivers were involved in unloading the truck. These figures were slightly lower for employee drivers but still 60% of employee drivers were involved in loading and unloading. (Tables **12** and **13,** Appendix C.)

It is widely reported in the media, and also confumed by other research (Linklater **1977,** Abkowitz et. al. **(1989))** that long distance truck drivers take stimulants to overcome fatigue. By asking drivers how they maintained their concentration level while driving for long periods, and including in the options taking "stay awake" pills for some or all trips, we attempted to ascertain the incidence of the use of stimulants by drivers. Our findings are illustrated in Graph **9,** (Table **14,** Appendix C.)

Graph 9. Methods used by drivers of maintaining concentration whilst on the road



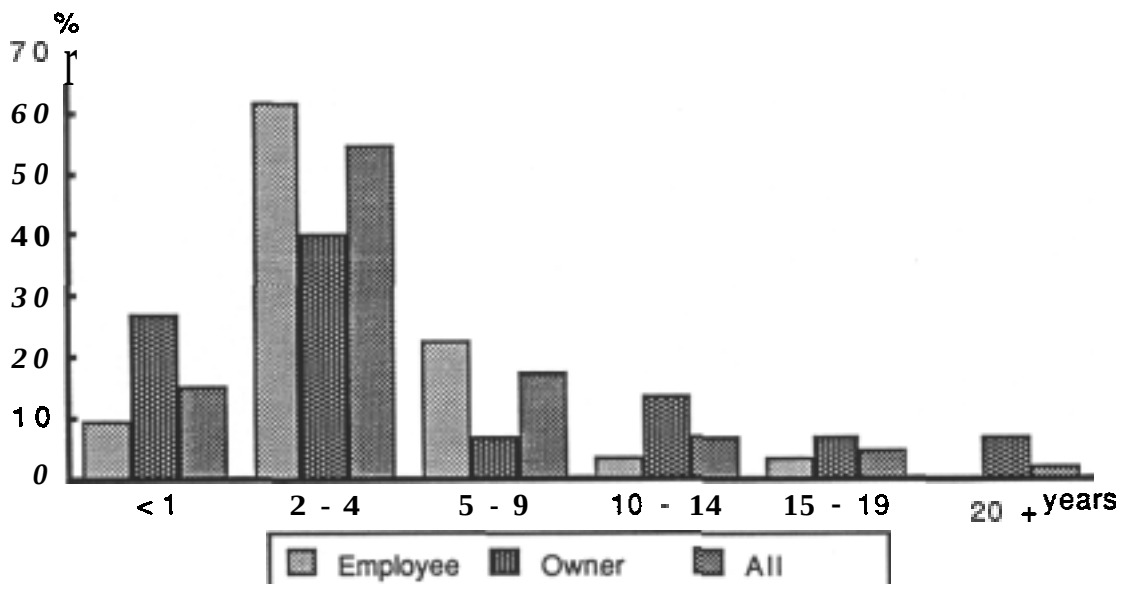
Drivers were not hesitant in admitting to the use of stimulant drugs. Of the drivers interviewed **22%** took "stay awake" pills on every trip, this percentage being the same for both owner and employee drivers. Another **35%** took pills on some trips, however there. was a difference here between owner drivers and employee drivers with **47%** of owner drivers taking pills on some trips compared with **29%** of employee drivers. Thus in total a higher percentage of owner drivers **(67%)** said they took pills at least on some trips compared with employee drivers **(52%).** These figures are somewhat higher than those found by Linklater **(1978)** in a **1976** survey of truck drivers, which stated that **40%** of drivers took stimulant drugs.

5.4.6 Other factors affecting road safety

5.4.6.1 The age of driver's trucks

It is often suggested that the age, and by inference poor mechanical state of trucks, especially those of owner drivers, is a major contributor to the safety hazard that large trucks present on the roads. The age profile of the truck cabins being driven by drivers interviewed in the pilot survey is shown in Graph 10, (Table 15, Appendix C.)

Graph 10. The age of truck cabins



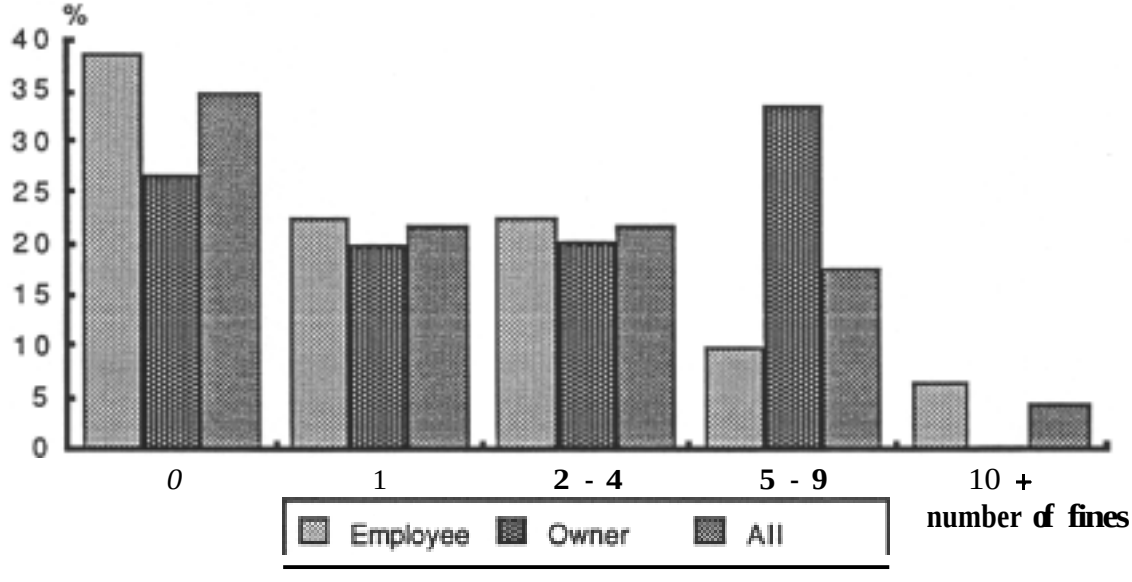
The statistics from the pilot survey found that more owner drivers than employee drivers were driving trucks in the older age brackets, but this still only represented a small propomon of the sample. The majority of all drivers were driving trucks with cabins less than 5 years old. More owner drivers than employee drivers were found to have trucks less than one year old. In the main survey as well as considering the implications for road safety of the age of trucks, we will also extend the analysis to include an investigation of the relationship between truck type, size and the type of commodities being carried and the behaviour of drivers on the road.

5.4.6.2 Speeding and default fines incurred by drivers

We were careful throughout the questionnaire to maintain the driver's cooperation by not referring directly to the possibility of their speeding on the road. The data on speed was deduced from the information collected from drivers on their specific trip. The analysis of this data is discussed in Section 6.

However drivers were asked how many speeding fines they had incurred in the last **12** months. As with the question about taking "stay awake" pills, we found drivers were not hesitant in admitting to being fined for speeding. However, **57%** of drivers reported being fined only once *or* not at all in the last **12** months. Two employee drivers reported being fined for speeding more than **10** times in the last **12** months, while **5** owner drivers and **3** employed drivers had between **5** and **9** speeding fines in the last **12** months. The number of speeding fmes incurred by drivers in our sample is shown in Graph **11,** (Table **16,** Appendix **C.)**

Graph 11. The number of speeding fines incurred by drivers over the past 12 months



We also asked drivers about the number of fines they had incurred in the last **12** months for truck defaults. **78%** of all drivers had not been fined at all in the last **12** months **(73%** for owner drivers and **81%** for employee drivers). (Table **17,** Appendix C.)

We did not ask drivers about log book fines in the pilot survey, but most drivers mentioned being fined for log book infringements. There were many complaints from drivers about the unfairness of many log book fines which, they claimed, were often for very trivial omissions of recording details. The questionnaire in the **main** study will collect more details **from** drivers on the incidence of, and reasons for log book fmes.

6.0 ANALYSIS OF THE PILOT DATA.

The interactive indepth interviews have been essential to develop the survey instrument and to consolidate the set of hypotheses for investigation. Some of the ideas which have evolved out of this pilot inquiry will be more fully investigated in the main survey. A number of issues however can be analysed in the pilot study, with the proviso that any results are preliminary and subject to change in the main study.

Given the complex nature of the interrelationships between the propensity to speed, the economic pressures in the industry, lifestyle attributes and backgrounds of truck drivers, a multivariate statistical analysis is required if we are to separate out the of influences on on-road performance. Although we recognise that there are a number of important endogenous variables linked to on-road performance, especially availability of work, rates of pay, mean speed, and speed variance, a simple one-equation approach will be adopted in this pilot study because of the small sample size. The dependent variable for this single equation is the average mp speed. In the main study in 1990 we plan to develop a much more complex set of structural equations to represent the two-way causality inherent in the sources of influence on on-road performance.

Our particular interest is in any systematic relationship between a number of alternative specifications of speed and variables defining the economic conditions facing the driving sector of the long distance trucking industry. Since speed as an influence on exposure to risk on the road is a complex phenomenon, we begin by preparing a number of alternative definitions:

1. average speed for the entire trip,
2. average speed for each leg of a trip
3. the number of legs with an average speed in excess of a particular level. We will consider average thresholds of 80kph, 90kph and 100kph.
4. the differences between the time required to complete a trip if travelling at the speed limit all the time, and if travelling at the average achieved speed.

In the analysis of the pilot data we have restricted our investigation to the first definition. The first definition of speed is regressed against the following possible influences on speed differences for a typical trip:

1. employment status (owner driver, employee driver for small business, employee driver for large business),
2. driver experience (years driving large trucks),
3. socio-economic characteristics of the driver (age, income from truck activity, other household income, financial dependencies),

4. particular route (Sydney-Melbourne, Melbourne-Sydney, Brisbane-Sydney etc, experience on this route in last month),
5. stops enroute (number, activity, stop time as percentage of total time)
6. total annual kilometres all up
7. activities by duration in previous 8 hours
8. age of truck and trailer
9. alternative reward rules
10. time of day trip began
11. hours travelled in darkness
12. concentration aids
13. financial obligation on the truck

We were unable to satisfactorily investigate many of the dimensions because of the lack of variablity in the data, due primarily to the size of the sample. Despite the **small** sample of **43** long distance trips, the data per se is extremely accurate and can provide an illustration of the way in which an econometric model **can** assist in seeking **out** the sources of influence on the propensity to **speed.** The empirical fmdings are intuitively plausible and serve to highlight the types of influences on the average speed of long distance truck drivers. The preliminary models are summarised in Table **3.** Separate analyses have been undertaken for each of the two main driver segments - employee drivers and owner drivers - as well as an analysis of the pooled data.

In our search for suitable preliminary models of average trip speed, we set up a number of hypotheses and undertook an exploratory data analysis using a partial correlation matrix. This highlighted which variables are likely to have an influence on average speed and which variables are correlated to such an extent that multicollinearity would distort the role of the variable (in the presence of the two highly correlated variables) in its contribution **to** explaining the variation in average trip speed across the sample.

Table 3. Preliminary Results of Factors Influencing the Average Speed of Long Distance Truck Drivers.

Dependent variable = average trip speed (kph)

	Total sample (43 obs.)	Employee drivers (30 obs.)	Owner drivers (13 obs.)
Constant	80.3055 (26.17)	79.4638 (19.23)	60.8935 (16.25)
Driver takes 'stay awake" pills on every trip (1.0)			15.3778 (3.09)
Driver takes "stay awake "pills sometimes (1,0)		9.5302 (1.89)	
Staying awake/ maintaining concentration is not a problem (1,0)	- 20.1949 (- 4.07)	-17.3326 (- 2.97)	
Driver is paid a %of truck earnings	15.4640 (2.92)	13.6864 (2.02)	
Truck is Federally registered (1.0)	11.1230 (2.95)	13.2012 (3.03)	
Truck is registered in NSW (1,0)	-15.2842 (-1.79)		
Age of chassis/ cabin (yrs)		-0.9552 (-1.45)	
Time spent doing nothing, just waiting for a bad in prior 8 hours (mins)			0.2029 (3.74)
Total trip kms of travel (kms)			0.007962 (5.08)
Average time at destination is before 10 a.m. (1.0)			10.1298 (2.78)
Overall fit (R^2)	0.502	0.624	0.865

Five variables were found to have a statistically significant influence on the average trip speed for the total sample, explaining **50.2%** of the variance in the mean trip speed. The most interesting influences **are** associated with "stay awake" pills and the conditions of pay. We have established that drivers who do not use any pills at all to stay awake (i.e. maintaining concentration is not a problem) travel at an average speed which is less than drivers who depend on such pills sometimes *or* always. **All** other things being equal, the mean speed is **20** kph lower for drug nondependent drivers. **This** is a significant difference. Likewise, drivers paid on the basis of a percentage of trip earnings tend, on average, to travel at an average speed which is **15** kph above the average of drivers paid other ways, predominantly by a fixed fee.

The State of registration of the truck was also found to have a significant influence on average speed. Trucks registered in **NSW** tend to be associated with drivers whose average speed is **15** kph less than that of drivers with trucks registered elsewhere, and Federally registered trucks travel at speeds averaging **11** kph higher than the average for other trucks. However, the reasoning underlying this observed pattern of on-road performance is unclear. We believe that there are some behavioural characteristics of the drivers and/or State-specific penalties associated with the driving licence (assuming for example that the majority of drivers of **NSW** registered trucks have a NSW driving licence) which are highly correlated with truck registration and which have an influence on average trip ***speed.***

The segmentation of the data into employee drivers and owner drivers suggests a different set of influences on the average trip speed for each driver segment. The influences of "stay awake" pills is quite different. Owner drivers tend to be more reliant on such pills which contributes to mean speeds **15** kph above the mean speed for owner drivers not reliant on such pills. We were able to find a statistically significant influence of non-dependence on pills on mean trip speed for employee drivers (reducing average speed by **17** kph), although those employee drivers who sometimes take these pills, average **9.5** kph above the mean of all other drivers (predominantly drivers who never take pills).

The owner driver model has identified three other influences on average trip speed. Since all these three effects have positive coefficient estimates, they exert an upward influence on average trip speed. Owner drivers who arrived at the final destination prior to **10** a.m. tend to have mean trip speeds which are 10 kph above the mean speed of drivers arriving **after 10** a.m. We investigated a number of arrival time thresholds and found that **10** a.m. was the only statistically significant threshold. The temporal composition of the trip is a very important issue since it suggests that the pressure placed on the drivers varies significantly between trips undertaken primarily during daylight hours and those undertaken primarily during the night. This may be linked to scheduling constraints (e.g. the opening hours of factories), the nature

of commodities being carried (e.g. express parcels overnight), and the simple fact of less traffic and maybe less police surveillance at night. The potential source(s) of influence will be investigated in detail in the **main** study.

Another important finding is that owner drivers who spend large amounts of **time** in the eight hours prior to departure simply waiting around for a load tend, once on the road, to have higher speeds. For example, a driver who spends one unproductive hour waiting for a load tends on average to travel at **12** kph above the average of drivers who have no load-waiting time. **This** preliminary evidence confirms a view that unproductive time encourages drivers to speed (but not necessarily to exceed the speed limit) and that this association is linked to the need to spend less time travelling so as to cushion the effect of unproductive time spent in securing loads, and be in the line to get subsequent loads.

We have also established a statistically significant relationship between average trip speed and total kilometres of the trip. Owner drivers on the longer trips have a tendency, all other things being equal, to travel at higher mean speeds than drivers on shorter trips. This effect however needs careful interpretation because it may be due to the fact that there is more opportunity on the longer routes e.g. Perth - Sydney to travel at higher speeds than on the shorter routes. Due to the limited sample size of the pilot survey it was not possible to explore fully the statistical relationships on an individual route basis. The size of the sample in the main survey will be large enough to allow stratification of the data on a route basis so that route specific effects can be identified.

Finally, the employee driver model has identified a mildly significant influence of the age of the chassis/cabin. All other things being equal, there **is** a tendency to travel at a slower average speed as the rig ages. Each additional year reduces the mean speed by approximately **1** kph. In the main study we will cross-tabulate this effect by the background characteristics of the driver (especially age) in order to ensure that what we **are** identifying is a vehicle-specific constraint rather than any possibility that older vehicles are driven by older **persons.**

7.0 THE MAIN SURVEY

7.1 The survey method

It has been proposed that a survey of 1,000 truck drivers be undertaken in the first half of 1990. The pilot survey confiied our intention to conduct the main survey using a face to face interview method. Because of the success of interviewing at the loading depot at Chipping **Norton,** this site, and other similar sites in Sydney, Melbourne, Adelaide, Perth and Brisbane will be focussed on in the main survey. These loading depot sites will provide interviews of owner drivers and drivers employed by small companies. So as to include drivers of the larger transport companies we will approach some of these companies and request permission to interview their drivers. **As** a result of our pre-pilot skirmish leaflet and media publicity, we have been contacted by some smaller companies who have agreed to allow us to interview their drivers. These interview sites will ensure that drivers from all sections of the industry are included in the sample.

In drawing the sample for the main study we will investigate the usefulness of data bases collected as part of the Review of Road Vehicle Limits (RoRVL) Study commissioned by **NAASRA** in 1984. **In** this study records were collected for over 17,000 heavy vehicle trips. This data will provide guidelines necessary for stratification of the survey sample according to truck type, commodity carried, origindestination pairs and vehicle dimensions.

7.2 The hypotheses to be tested

A larger sample would clearly facilitate investigation of many more influences on the propensity to speed as well as to undertake extensive segmentation of the data such as by origin-destination (e.g. Sydney to Melbourne route), by time of mp commencement (e.g. night trips compared to day trips), by payment structure (e.g. hourly rate vs percentage of trip earnings vs flat fee), type of truck and the nature of commodities carried The more extensive set of hypotheses to investigate would include:

1. The payment structure has a major influence on on-road performance.
2. Better advice on load and repayment conditions associated with truck purchases for owner drivers would lessen substantially the debt burden and hence the pressures imposed on such drivers to speed in order to increase the economic reward.
3. The economic rewards vary from city pair to city pair due to different degrees of competition and the absence of any regulation of minimum fees for identical services. There is no relationship between recommended published rates and actual rates.

4. Delays at delivery locations, especially factory depots, due to limited opening hours impose financial pressures on drivers, especially those paid a fixed fee or a percentage of the trip earnings.
5. The size and age of the truck, the age of the driver, and the commodity type being canied combine to influence the on-road performance of the driver.
6. The source of the load (e.g. size and nature of the freight forwarder) has a major influence on the pressures exerted on the driver and hence the on-road performance.
7. The proportion of the mp in which the driver is exceeding the legal speed limit, or advisory speed limit, is influenced by the economic reward system. The rewards are influenced by the amount of unproductive time outlayed in order to secure a paying load, the profit margin after expenses, and agreements/arrangements with particular freight forwarders.
8. The age of the driver, and the level of driving experience, has an influence on his behaviour, particularly in terms of speed, on the road.

7.3 The questionnaire

A copy of the final survey form used in the pilot survey is given in Appendix A. As a result of the information collected in the pilot survey the questionnaire for the main survey will further be revised as our knowledge of the issues facing the industry both increases and clarifies. Although it is too early yet, and indeed the size of our pilot sample does not allow us to draw conclusions about the proposed hypotheses, the pilot interviews have given us a better understanding of the issues which require closer attention.

The strategy of collecting from each driver the details of a specific trip has not been altered. This approach appears to be one that is easily accepted by the drivers and which already has yielded many insights into the conditions that are faced by them daily. A number of changes will be made to the survey instrument. At this stage we have decided to implement the following changes:

1. Distinguish freelance owner drivers, employee drivers and owner-driver subcontractors.
2. *Seek* out ideas for positive incentives for good on-road performance.
3. Get more detail on fee structure overall and for a particular trip
4. Ask most questions to all drivers, not just owner drivers.
5. Get some detail on size and composition of organisation a subcontractor and employee driver work for.
6. Determine truck carying capacity.

7. Attitude questions on overloading as the big pressure from freight forwarders.
8. More detailed breakdown **of** typical weekly hours worked into productive and unproductive time.
9. Driver's history of crashes (by category and location) in last **5** years.
10. **Type** of freight being ***carried.***
11. More detailed information on truck type.
12. Number of years committed to repayment of loan for the truck and repayment terms.

8.0 SOME PRELIMINARY CONCLUSIONS

8.1 The political climate

The road transport industry is an unregulated "free" market (in the economic *sense)* but not one where competition operates freely. There are vast imbalances of power within the industry brought about by the imbalance in the size of the players in the market, further exacerbated by political interference. At one extreme is the large company employing many trucks and drivers. As the market becomes tighter they have a lot *to* lose by competition from other companies and owner drivers. They have the economic and political power to influence the market in a number of ways. Firstly, they can undercut rates and sustain losses for longer periods than the smaller companies or owner drivers. There are also rumours in the industry that the large freight forwarders get preferential treatment from government contracts for which regulations such as driving hours and hip schedules are loosely applied. Secondly, they have political power in the industry. It is also rumoured that their drivers are used to create disruptions, such as stikes and blockades, which coupled with bad publicity about the safety hazards of trucks on the roads, helps to create a bad public image, especially of the owner driver. The government is then under political pressure to introduce measures, such as speed limiters and tachographs, the economic consequences of which impact more heavily on owner drivers than on the large companies which have both the economic resources and/or political power to reduce their impact. In short, the owner driver and the small company are being increasingly squeezed by the large company.

At the other extreme is the owner driver who has little *or* no economic *or* political power in the industry, but who sees the industry as a lifestyle and is determined to survive. Aspersions have been cast on the owner driver's ability as a business person, and we hope to gather further information on this in the main survey. Few appear to have undertaken any business courses or sought any business advice, however all use an accountant. Owner drivers have very high levels of capital commitment in the purchase of a truck. It would also seem from our initial discussions with drivers, that owner drivers typically finance their vehicle over a 5 year period, which requires annual repayments in excess of $35,000. If this is the case, the short *term* loan is an unnecessary financial pressure which could be removed by advice on the merits of longer-term loans and repayments, and appropriate instalment provisions (e.g. fortnightly rather than monthly) in order to reduce interest payments.

We there is probably an element in the industry which purchases the "top of the range" latest gadgetry in truck design, mainly as a status symbol (the "macho" image), the purchase of a new expensive truck is not necessarily a sign of bad business practice. If mainrained properly the truck is an appreciating asset and, presumably if new, is more reliable and hence less

expensive in terms of maintenance and repairs, and also less hazardous on the road. However, a number of drivers have reported very serious mechanical problems with new trucks and very poor after sales support service which has been an expensive drain on their business.

The owner driver has little if any political influence in the market. All drivers maintain that their union does little, if anything, for them and, those that are members of the union, report that they are only in the union because there are some loading sites that will not load non-union members. Employee drivers were also found to be unimpressed with the support given to them by the union, and were generally only members if it was required by their company. However, ironically while most drivers recognise the ineffectiveness of the union and the need for drivers to have a greater input into the decisions governing their industry, it was suggested to us during our pilot survey that drivers are unwilling, or unable, to organise the level of effective cooperation necessary to exert an influence on the industry. As one driver said, drivers are such an individualistic lot, they all agree that there are a lot of problems in the industry but they cannot agree on the solutions.

This situation, however, may be changing. The Road Transport Operators, drivers, their families and others involved with trucks have formed a lobby group known as Australian Road Transport Industry Conference (ARTIC) to defend the reputation of truck drivers and to promote research into the trucking industry. This move has primarily been in response to the vast amount of negative media publicity given to truck drivers as a result of the spate of fatal crashes involving trucks over the past month in NSW. While nobody would attempt to deny the horror of these crashes, media reports were quick to lay all the blame at the hands of the truck drivers involved. Drivers angered by these unsubstantiated allegations have rallied to defend their reputation. The success of their venture is yet to be determined.

8.2 Driver personality

The inability, or unwillingness, of drivers to effectively cooperate in bringing about changes in their industry may be a function of the personality type of the long distance driver who essentially must have a strong individualistic element to be able to sustain the long and constant periods alone on the road.

The influence of the personality of the truck driver on the driver's behaviour on the road is one that has been studied in the past, and in some senses, is peripheral to the main thrust of our study which focuses on the economic factors in the industry. As economists we are also not qualified to draw conclusions about the behavioural patterns of drivers, however it has to be

considered as important contextual information for studying the economic conditions of the industry.

It is well recognised that a strong mateship and commaraderie exists between truck drivers. This is manifested in the help which they will give each other with problems and repairs on their trucks. The conversations over the CB radio on the road are a vital communication **link** for drivers. It is the most important means by which information on changes in regulations, police activity and other road conditions is communicated amongst drivers. The CB talk is also important in helping a driver maintain his level of awareness on the road and drivers often warn each other of deteriorating concenuation levels.

8.3 Road safety and the heavy vehicle industry

The impetus for this study into the truck industry began with the concem about public safety on the road. There is justifiable concern about the implications for road safety of the on-road performance of the long distance truck driver. Past research has concentrated on the personalities and attitudes of the truck driver and the implications that **this** has for the behaviour on the road and consequently for road safety (Linklater (1977,1978), Siromath (1988), Abkowitz (1989)). More emphasis needs to be given to the implications that the economic conditions in the truck industry itself have on the issue of road safety.

The information about the trucking industry abounds with many myths and anecdotes about driver behaviour and attitudes on the road. It is important to clarify a number of issues:

1. Long distance truck drivers typically clock up 200,000-400,000 annual kilometres. This is considerably more than the average motorist, who in terms of long distance driving would be lucky to average about 5,000 **kms per** year (Hensher et. al. 1988)
2. The safety record of truck drivers in terms of the number of crashes per distance travelled is better than that of the average motorist
3. Crashes involving heavy vehicles always attract a lot of media attention. **This** is unfortunately because they are nearly always fatal when a car is involved given the relative sizes of the two vehicles.
4. Partly because of the media attention given to the crashes involving heavy vehicles, truck drivers have a bad public image. **This** public image influences the reaction of motorists on the road when encountering a heavy vehicle. Truck drivers constantly complain of the "terrorist behaviour" of car drivers on the road, who become obsessed with the need to overtake trucks and consequently take unnecessary risks to achieve that goal. They also maintain that motorists have little appreciation of the stopping

distances required by trucks or the need to give them wide clearance when turning or manoeuvering on the road.

5. The other major cause of crashes is seen by the truck drivers as the conditions of the roads which in general are reported to be very bad.

6. Is speeding the cause of crashes? It certainly plays a role. The solution to this problem requires a detailed investigation of the motivations for the speeding. This is the aim of our study.

7. Other factors sighted as contributors to crashes involving heavy vehicles are alcohol, other drugs and driver fatigue. Research in Australia and overseas has shown that alcohol and driving is not a problem contributing to crashes in the long distance trucking industry. Driver fatigue however must be considered as a contributor to road risk. A substantial proportion of drivers admit to taking stimulants to stay awake while on long trips and for going for long periods with very little sleep. This behaviour however is a function of the economic conditions in the industry. The demands of the industry (particularly on the eastern seaboard routes) dictate a routine for the driver of driving all night, unloading, arranging a load, loading during the day, and then driving all night again, allowing only snatches of rest along the way. It is necessary for the driver to maintain this routine to maintain economic viability. If there is evidence to suggest that reaction times are slower in darkness than in light, then Government should seriously consider non-uniform or differential maximum driving periods throughout **a 24** hour period in order to encourage more day light travel. There is however, a problem with this proposal if road safety is reduced because of the presence of trucks on the road during the day in combination with a higher volume of car traffic. Dr Lisper from Uppsala University in Sweden has evidence to support **this** differential in reaction time and research in Europe and the U.S. (Abkowitz **1989)** also reports that the hours of the lowest levels of alterness for drivers are between **2** a.m. and **7** a.m. Adjustments would also have to be made to access times to depots etc. Since fatigue is a state **a** person has in advance of the driving task (i.e. driving per se does not result in fatigue), then the knowledge of the driver's activities in the hours prior to commencing the trip can provide useful information in the search for influences on on-road performance. There is evidence that reactions are worse where physical (as distinct from mental) work was undertaken in the hours prior to driving.

8. It is sometimes suggested that owner drivers do not **maintain** their trucks adequately. Information that we have collected to date suggests that owner drivers cannot afford **not** to maintain their truck properly. Employee drivers are reported to take less care of their vehicles as they are not their fmancial responsibility. It has also been suggested that often companies do not have sufficient mechanics to maintain their fleet of vehicles.

9. The long distance road freight industry is not homogeneous. There are three important segments in the industry.
    1. Owner drivers.
    2. Small company employee drivers
    3. Big company employee drivers

    The owner driver sector of the industry also includes drivers with a number of different arrangements such as those without any fixed contracts, drivers with some regular fixed contracts and drivers known as "painted subcontractors", who operate similarly to employee drivers, but with the capital commitments of owner drivers. Each of these type of driver is facing different economic pressures on the road. The information collected in the main survey will allow us to draw conclusions about the behaviour in these segments and the links with road safety.

10. There is a lack of adequate training opportunities for drivers and monitoring or checking on driver's skills in relation to the vehicle size and type that he is required to handle. This point was mentioned by a number of drivers in our pilot study who were concerned about the safety of their industry. It is also one of the items included in the proposals of the newly formed ARTIC. Thus as well as monitoring the on-road performance of drivers in terms of speed and rest periods, consideration should also be given to providing adequate training and education opportunities for truck drivers.

9.0 CONCLUSION

As emphasised throughout this report, the conclusions that we have drawn from the analysis of the data collected in our pilot survey must be considered in the light of the limited sample size of that survey and thus can only be considered as preliminary and subject to change in the main survey. However, the pilot survey has been successful in clarifying a number of important issues in the trucking industry which are worthy of further investigation. It has confirmed our initial hypothesis that the underlying economic conditions in the industry are a significant contributor to the on-road behaviour of drivers. These conditions, which manifest themselves in declining freight rates, tightening schedules and increasing competition confront drivers daily as they try to forge a living on the road. If the problem of safety on our roads is to be addressed, and solved satisfactorily, it is important to look beyond the symptoms of speeding, infringement of driving time regulations, and driver fatigue and consider the underlying causes which result in this behaviour. The data collected in the main survey will allow us to analyse the relationship between these symptoms and possible causes which we believe will add to the understanding of the structure and the operation of the trucking industry in Australia and form the basis for recommendations for changes which will contribute to improving safety on our roads.

REFERENCES

Abkowitz, M., Lepofsky, M., & Abkowitz, S.B. (1989), "The Impacts of Human Factors on Heavy Truck Safety", Department of Civil & Environmental Engineering, Vanderbilt University.

Bureau of Transport Economics (1979), "The Long Distance Road Haulage Industry" (Australian Government Publishing Service, Canberra).

Bureau of Transport and Communications Economics (1988), "Road Freight Operators in Profit Squeeze", Transport and Communications Indicators, Bulletin 23, December Quarter, 1988.

Dobinson, K.W. & Prince, P.S. (1985) "Should Larger and Heavier Trucks Be Allowed on Australian Roads?", Transport '85 Conference, Sydney 17-19 July.

Hensher, D.A., Smith, N.C., Milthorpe, F.W. & Bamard, P.B.,(1988), "Dimensions of Automobile Demand Transport Research Centre, Macquarie University.

Linklater, D.R. (1977), "A Profile of Long Distance Truck Drivers", Traffic Accident Research Unit, Department of Motor Transport, NSW, Reserach Report 9/77.

Linklater, D.R. (1978) "Traffic Safety and the Long Distance Truck Driver" Traffic Accident Research Unit, Department of Motor Transport, NSW, Research Report 8/78

May,T.E, Mills,G.M. & Scully J. (1984) "National Road Freight Industry Inquiry", Report of Inquiry to the Minister for Transport, Australian Government Publishing Service, Canberra,

Pearson, R.A. & Assocs. (1987) "Information Paper 1 Road Vehicle Regulations" Paper prepared for the Inter-State Commission, Australian Government Publishing Service, Canberra.

Savage, I.(1989)" The economic underpinning of transportation safety control", Department of Economics, Northwestern, Evanston, Illinois, August (mimeo).

Siromath Pty Ltd (1988) "Attitude Survey of Truck Drivers and Operators", Report prepared for the Federal Office of Road Safety.

Staysafe 15 (1989) From the Joint Standing Committee Upon Road Safety, "Alert Drivers, and Safe Speeds for Heavy Vehicles".

APPENDIX A

A SURVEY OF TRUCK DRIVERS

ARE YOU SICK OF THE BAD PRESS THAT YOUR INDUSTRY HAS BEEN GETTING LATELY?

DO YOU WANT TO HAVE YOUR SAY TO SET THE RECORD STRAIGHT?

THE TRANSPORT RESEARCH CENTRE AT MACQUARIE UNIVERSITY IS INTERESTED IN GETTING THE FACTS FROM TRUCK DRIVERS ABOUT THE DEMANDING CONDITIONS UNDER WHICH THEY HAVE TO WORK.

WE BELIEVE THAT THE MAJORITY OF DRIVERS ARE HARD WORKING AND HAVE EXCELLENT SAFETY RECORDS. TRUCK DRIVERS COULD BE GIVEN A BETTER DEAL IF THE TRUTH WERE KNOWN ABOUT THEIR INDUSTRY.

IF YOU WOULD LIKE TO HELP US HELP YOUR INDUSTRY

PLEASE CONTACT US ON (02) 805 8578

OR

RETURN THE BOTTOM SECTION OF THIS FORM TO THIS ADDRESS

THE TRANSPORT RESEARCH CENTRE
MACQUARIE UNIVERSITY
NSW 2109

AND WE WILL SEND YOU A SURVEY FORM TO FILL IN

.....

I would like to take part in the survey of truck drivers, please send me a form [ ]

Address_____

_____

Name (optional) _____

Telephone number (optional) _____

TRANSPORT RESEARCH CENTRE

SCHOOL OF ECONOMIC AND FINANCIAL STUDIES
MACQUARIE UNIVERSITY

NEW SOUTH WALES AUSTRALIA 2109
Tel. (02) 805 8578 Fax. (02) 805 8586

A SURVEY OF TRUCK DRIVERS

August 1989

Dear driver,

We are seeking your support in providing information which will help us help your industry

The majority of members of the trucking industry are hard-working and respectable people. Press coverage in recent months has painted an unfair picture of the trucking industry. It is our belief that there is a need for much better information on the important role of the trucking industry in Australia, and in particular, that most truck drivers are not "cowboys".

Indeed, the safety record of the trucking industry is one of the best, with the majority of drivers having an excellent record. given the hundreds of thousands of kilometres they have travelled over the years. In order to "set the record straight", the Transport Research Centre at Macquarie University (Sydney), is collecting data from a random sample of truck drivers, which will be needed to highlight the importance of your job to the nation. We believe that truck drivers could be given a better deal if the truth were known about the demanding conditions under which you have to work *to* make a reasonable living (and pay off the truck).

The information sought in this questionnaire is strictly confidential. It will assist us in putting the truckies case for a better deal to those in a position to implement change. Real data and not anecdotes is required to do this. A few minutes of your time would be appreciated. Please complete this questionnaire and mail it back in the reply post-paid envelope to:

Professor David Hensher
Transport Research Centre
School of Economic and Financial Studies
Macquarie University
NSW **2109**

I wish to thank you in advance for your support. If you have any questions, please telephone us on **02 805 8578.**

Yours faithfully,

David A. Hensher
Project Director

A SURVEY OF TRUCK DRIVERS

SECTION 1 - Some background information

We are interested in obtaining the facts from you, and your views as a truck driver. We need to get the information directly from the driver because it is the driver who has to daily deal with the problems on the road.

1. Are you

An owner driver	1 (Please circle)
An ancillary operator.....	2
Other e.g. hire & reward, operator.....	3

2. How many years have you been driving these large trucks on a regular basis? _____years

3. How many kilometres do you estimate you have done in these trucks in the last 12 months? _____kms

4. What city/town is your base?_____

5. In the past month have you made trips from your base to: Please tick

Sydney	[1	Perth	[ ]
Melbourne	[ ]	Brisbane	[ ]
Adelaide	[ ]	Canberra	[ ]

Other _____

6. How many of these round trips did you do in the past month? _____round trips

7. What type of truck do you usually drive?

Rigid	1 (Please circle)
Articulated.....	2
Semi-trailer.....	3

Other, please describe_____

8. What is the unladen weight of the complete unit? _____kg

9. What is the overall length of the complete unit? _____metres

10. What year was the chassis/cabin first registered? 19_____

11. What year was the current trailer first registered? 19_____

12. What year did you, or your employer, acquire the chassis/cabin? 19_____

SECTION 2 - Trip details

So that we can understand the conditions under which you have to work, we would like you to tell us about the work routine of any one-way long distance trip (over 600km) which you have made in the last week or so.

A one-way trip is, for example from Sydney to Melbourne.

We also need to know the tasks you had to do before leaving on your trip and those that had to be done when you arrived at your final unloading place. This information is very important because it will highlight the stressful conditions under which truck drivers have to work.

PLEASE ANSWER THE FOLLOWING QUESTIONS FOR ONE RECENT ONE-WAY LONG DISTANCE TRIP

1. In which town/city did the trip start? _____

2. In which town/city did the trip end? _____

3. Before a trip begins there are a number of things to do.

How many hours before your departure did you do any of the following?
(Please circle only those things which you did before leaving on this trip)

	NUMBER OF HOURS BEFORE DEPARTURE							
Loaded the truck	1	2	3	4	5	6	7	8
Completed paperwork	1	2	3	4	5	6	7	8
Cleaned/fuelled the truck	1	2	3	4	5	6	7	8
Made minor repairs to the truck	1	2	3	4	5	6	7	8
Made major repairs to the truck	1	2	3	4	5	6	7	8
Had a sleep at home	1	2	3	4	5	6	7	8
Had a meal at home	1	2	3	4	5	6	7	8
Had a few drinks	1	2	3	4	5	6	7	8

4. When getting ready for this trip, how long did it take to:

Load the truck _____hrs

Do the paperwork _____hrs

Do maintenance/make repairs on the truck _____hrs

5. In the 8 hours before this trip, how much sleep or relaxation time did you get? _____**hrs**

6. What time did you start the trip? _____day _____am/pm

7. On this trip, how many stops did you make? _____stops
NOT including your final destination.

8. Could you tell us about those stops. If you can't remember the exact details, could you please give us estimates.

	1st stop	2nd Stop	3rd Stop	4th Stop
Distance travelled before stopping, or since last stop	kms	kms	kms	kms
Place stopped at				
Time travelled before stopping, or since last stop	hrs	hrs	hrs	hrs
Time slopped for	mins	mins	mins	mins
Reason/s for stop				
1. Sleeping/eating	[ ]	[ ]	[ ]	[ ]
2. Cargo pickup	[ ]	[ ]	[ ]	[ ]
3. Off load cargo	[ ]	[ ]	[ ]	[ ]
4. Truck inspection	[ ]	[ ]	[ ]	[ ]
5. Change driver	[ ]	[ ]	[ ]	[ ]

SECTION 3 Cargo details

On the trlp which you have just told us about

1. What was the total weight of cargo? _____ tonnes

2. How much of this was

general cargo _____ tonnes
perlshables _____ tonnes
other _____ tonnes

3. What was the total value of the cargo? $_____

4. How did you obtain the contract for this cargo? (Please circle)

My employer organised it..... 1
I put in a bid and competed with other owner-drivers..... 2
I have a fixed period contract with a freight forwarder..... 3
Other, please explain

_____

5. What rate or fee did you (or your organisation) receive for that entire task?
(This is important if we are to argue for a better deal)

$_____ Don't know [ ]

6. How many other operators were bidding for this load?

_____ Don'tknow [ ]

SECTION 4 Arrival at your destination

On thls same trip

1. What was the planned scheduled time of arrival at your final (or only) destination?

_____day _____a.m./p.m.

2. What time DID you arrive at your final unloading point?

_____day _____a.m./p.m.

3. How long afler the scheduled arrival time would you be considered late?

_____hours_____minutes

4. Were there any incentives, or penalties, for keeping to the schedule on this trip?

Incentives	Yes.....	1
	No.....	2
Penalties	Yes.....	1
	No.....	2

4a. If there were Incentives, please give details _____

_____

_____

_____

4b. If there were penalties, please give details _____

_____

_____

_____

5. At your final unloading location, how much time did you spend

Waiting before the cargo could be unloaded	_____hrs
Unloading the cargo	_____hrs
Doing the paperwork	_____hrs

6. If there were any delays at the unloading site, why was that?

_____

_____

7. How long after you arrived did you start loading up foranother trip?

_____hours

SECTION 5 - Your views and opinions

We would like to get your opinion on the following issues.

Please answer yes or no by circling the number next to it.

Do you think.....

1. There are too many new entrants in your business

Yes.....1 No..... 2

2. Maintenance practices of most ownerdrivers are adequate

Yes.....1 No..... 2

3. Training standards for drivers have been deteriorating in recent years

Yes.....1 No..... 2

4. There are too many owner-driver operators in the industry

Yes.....1 No..... 2

5. Competition for jobs is so cut-throat that I have to take loads at rates which would be quite unacceptable to most workers in other industries

Yes..... 1 No.....2

6. The trucking industry itself should put more effort into self-regulation

Yes..... 1 No..... 2

7. The financial pressures in this industry are getting worse all the time, especially for owner-drivers

Yes.....1 No..... 2

8. Freight companies demand unreasonably tight schedules

Yes.....1 No.....2

9. Cargo agents operating out of small offices have no idea of costings and rate settings, making it impossible for ownerdrivers to work for safe conditions

Yes.....1 No..... 2

10. Most companies want a fast truck before negotiating a deal

Yes.....1 No.....2

11. The conditions of the roads are the main cause of accidents

Yes.....1 No..... 2

12. Most accidents occur due to driver fatigue

Yes.....1 No.....2

13. Deals between union leaders and freight forwarders work in my favour

Yes.....1 No..... 2

Are there any other comments that you would like io make about your industry or the conditions under which you have to work?

_____

_____

_____

_____

_____

_____

SECTION *6*. Some other details to help us with the analysis

1. Could you tell us which age group you are in (Please circle)

Under **20** years.....	1
20 to **24** years.....	**2**
25 to **29** years.....	**3**
30 to **34** years.....	**4**
35 to **39** years.....	**5**
40 to **44** years.....	**6**
45 to **49** years.....	**7**
50 to **54** years.....	**8**
55 to **59** years.....	**9**
Over **60** years.....	10

2. If you have children. how many are you supporting financially? _____

3. Over the last 3 years. about how many days holiday per year would you have had? _____

4. Is there a family history of involvement in truck driving and/or ownership?

Yes.....	1
No.....	**2**

5. If you are an owner-driver, can you please give us estimates for the following expenses for the financial year 1988-1989

Fuel	$_____
Maintenance costs (exclude fuel)	$_____
Repayments on the vehicle	$_____
Registration	$_____
All forms of insurance	$_____
Tyres & tubes etc.	$_____
Fines (truck defaults, speeding etc.)	$_____
Other_____(Please specify)	$_____
Total	$_____

7. What range does your personal Income (beforetax) for 1988-1989 fall into? (Please circle the number.)

up to $12.000 pa	1
$12.001 to $15.000 pa	2
$15.001 to $18,000 pa	3
$18.001 to $22.000 pa	4
$22.001 to $26.000 pa	5
$26.001 to $32.000 pa	6
$32.001 to $40.000 pa	7
$40,001 to $50.000 pa	8
over $50.000 pa	9

8. And your household income (before tax) for 1988-1989? (Please circle the number.)

up to $12.000 pa	1
$12.001 to $15.000 pa	2
$15.001 to $18.000 pa	3
$18.001 to $22.000 pa	4
$22.001 to $26.000 pa	5
$26.001 to $32.000 pa	6
$32.001 to $40.000 pa	7
$40.001 to $50.000 pa	8
over $50.000 pa	9

Thank you for your help

APPENDIX B

SURVEY OF TRUCK DRIVERS

September 1989

INTERVIEWER I.D. ☐☐ RESPONDENT I.D. ☐☐☐

DATE OF INTERVIEW ☐☐☐☐

LENGTH OF INTERVIEW BEGAN INTERVIEW ☐☐☐☐

FINISHED INTERVIEW ☐☐☐☐

INTERVIEW SITE _____

INTERVIEWERS COMMENTS:

_____

_____

_____

_____

_____

Interviewer's signature: _____

STRICTLY CONFIDENTIAL

A SURVEY OF TRUCK DRIVERS

September 1989

SECTION 1 - Some background information about you, the driver

We are interested in obtaining the facts from you, and your views as a truck driver. We need to get the information directly from the driver because it is the driver who has to daily deal with the problems on the road.

1. Are you An owner driver ..... 1 (Please circle the number)
   A driver for someone else..... 2

1a. If you drive for someone else, how many trucks do they have? _____

2. How many years have you been driving large trucks on a regular basis? _____years

3. How many kilometres do you estimate you have done in these trucks in the last 12 months _____kms

4. What city/town is your base? _____

5. In the past month how many trips have you made

Sydney to Melbourne	____	Melbourne to Sydney	____
Sydney to Adelaide	____	Adelaide to Sydney	____
Sydney to Brisbane	____	Brisbane to Sydney	____
Sydney to Perth	____	Perth to Sydney	____
Sydney to Canberra	____	Canberra to Sydney	____
Melbourne to Adelaide	____	Adelaide to Melboure	____
Melbourne to Erisbane	____	Erisbane to Melbourne	____
Melbourne to Perth	____	Perth to Melbourne	____
Melbourne to Canberra	____	Canberra to Melbourne	____

Other route/s _____ _____

_____ _____

6. About how much sleep have you had in the last 7 days? _____hrs

iection 2 - About your truck

. What type of truck do you usually drive? Rigid 1
Semi-trailer 2

Other, please describe _____

!. What is the weight of the complete unit when unloaded? _____tonnes

I. What is the total length of the complete unit? _____metres

I. What year was the chassis/cabin first registered? 19_____

5. If not rigid, what year was the current trailer first registered? 19_____

5. What year did you,or your employer, acquire the chassis/cabin? 19_____

7. In which state is the truck registered? (Please circle the number)

NSW	1	WA	4
VIC	2	NT	5
SA	3	Qld	6
Federal registration	7		

B. Is the truck registered for travel (Please circle the number)

Intrastate 1
Interstate 2

SECTION 3 - For Owner drivers only

(If you are NOT an owner drlver, please go to Section 4- Trip details)

If you are an owner driver, can you tell us about how you get your loads.

1. Do you have a fixed, regular contract for (Please circle the number)

All your loads 1
Only some of your loads 2
None of your loads 3

IF FOR NONE OF YOUR LOADS, GO TO QUESTION 3

. If you have a fixed regular contract for some, or all loads, are there any provisions in this contract to cover your backloads?

Yes.....1 No.....0

a. If YES, please explain what these are

_____

_____

b. If NO, are the rates offered on backloads often lower than on forward loads?

Yes.....1 No.....0

c. If, YES, do you often have to accept these lower rates for backloads?

Yes.....1 No.....0

GO TO QUESTION 4

I. If you DON'T have a regular contract how long does it usually take to line up the next job?

Less than 12 hours.....	1	(Please circle the number)
12 to 24 hours.....	2	
24 to 36 hours.....	3	
36 to 48 hours.....	4	
More than 48 hours.....	5	

la. In the last 6 months how often has it taken more than 48 hours to get a load? _____

l. In the last 12 months have you ever knocked back loads

Yes.....1 No.....0

i. If yes, is this usually because (Please circle the numbers)

The rate is too low.....	1
You don't want to go to wherever the load has to go.....	2
You need more sleep.....	3
You would be exceeding your legal driving time.....	4

Other, please explain

_____

. After you bill the freight forwarder. how long do you usually have to wait to get paid for a load? (please circle the number)

Paid on delivery..... 1
Within 2 weeks..... 2
About 2 to 4 weeks.....3
About 4 to 8 weeks.....4
More than 2 months..... 5

'. In your experience as an Owner driver, has your truck business ever
(Please circle 1 for Yes, or 0 for No for each statement)

	Yes	No
Been declared bankrupt.....	1.....	0
Been close to bankruptcy.....	1.....	0

I. Have you ever

(Please circle 1 for Yes, or 0 for No foreach statement)

	Yes	No
Sought advice on business practices ..... (for example from the Government)	1.....	0
Attended a course on business principles.....	1.....	0

I. Do you use an accountant/tax accountant to prepare your tax return?

Yes.....1 No.....0

I 0. When you are buying a truck, where do you mainly get advice about what type of truck to buy?

(please circle the numbers)

Other truck drivers..... 1
Truck magazines..... 2
Bank or finance company..... 3
Truck dealer..... 4
I don't get any advice..... 5
Other (please specify)_____

I 1. How do you rate your skills as a businessman?
(Please circle the number on the Scale of 1 to 5 where 1 is not very efficient and 5 is very efficient.)

Not very efficient Very efficient

I ..... 2..... 3..... 4..... 5

ECTION 4 - Trip details

› that we can understand the conditions under which you have to work, we would like you to tell , about the work routine of any one-way long distance trip which you have made in the st week or two.

one-way trip is. for example from Sydney to Melbourne.

'e also need to know the tasks you had to do before leaving on your trip and those that had to › done when you arrived at your final unloading place. This information is very important ?causeit will highlight the stressful conditions underwhich truck drivers have to work.

LEASE ANSWER THE FOLLOWING QUESTIONS FOR ONE RECENT ONE-WAY DNG DISTANCE TRIP

. In which suburb/ town did the trip start? _____ State_____

In which suburb/ town did the trip end? _____State_____

. In the 8 hours before you set off on the trip, how long did you spend

Loading the truck/waiting while it was loaded	_____hrs
Sleeping	_____hrs
Doing repairs/maintenance on the truck	_____hrs
Doing paperwork	_____rnins
Taking part in some entertainment activity	_____hrs
Doing nothing, just waiting for a load	_____hrs

I. Was the truck loaded by (please circle the number)

You on your own.....	1
You but with some help (paid or unpaid).....	2
Someone that you paid to do it all for you.....	3
The freight forwarder or your company.....	4

5. What tlme did you start the trip? _____ day_____am/pm

Your cargo on this trip

6. On this trip what was the total weight of cargo? _____ tonnes

7. How much of this was perishables _____ tonnes

other _____ tonnes

8. What was the total value of the cargo? $_____ Don't know [ ]

9. How did you get this load? (Please circle the number)

My employer organised it..... 1
I put in a bid and competed with other owner drivers..... 2
I have a fixed period contract with a freight forwarder..... 3
Picked it up as a one-off with a freight forwarder..... 4
I got preferential treatment from a freight forwarder..... 5
Other, please explain

_____

10. How many other operators were bidding for this bad?

_____ Don'tknow [ ]

11. What rate or fee did you (or your organisation) receive for that load?
(This is important if we are to argue for a better deal)

$_____ Don'tknow [ ]

11a. If you are paid a rate per hour, for how many hours was that _____ hrs

12. If you are employed by a company, are you paid (Please circle the number)

A fixed salary..... 1
A percentage of the trucks earnings..... 2
Other arrangement, please explain

_____

13. If you are an Owner driver. after taking into account all the expenses that you can allocate to this trip, how much do you think you made out of the trip?

$_____ Don'tknow [ ]

Your stops on this trlp

14. On this trip, how many stops did you make? _____stops
NOT including your final destination.

14a. Could you tell us about those stops. If you can't remember the exact details, could you please give us estimates.

	1st stop	2nd Stop	3rd Stop	4th Stop
Place stopped at?				
Distance travelled before stopping, or since last stop	kms	kms	kms	kms
Time travelled before stopping, or since last stop (or actual time of stop)	hrs amlpm	hrs am/pm	hrs am/pm	hrs am/pm
How long did you stop for?	mins	mins	mins	mins
Reason/s for stop				
1. Sleeping/eating	[ ]	1 1	[ ]	[ ]
2. Cargo pickup	[ ]	[ ]	[ ]	[ ]
3. Off load cargo	[ ]	[ ]	[ ]	[ ]
4. Truck inspection	[ ]	[ ]	[ ]	[ ]
5. Change driver	[ ]	[ ]	I 1	[ ]
6. Toilet stop	[ ]	[ ]	[ ]	[ ]
7. Check tarps/freight	[ ]	[ ]	[ ]	[ ]
8. Breakdown/flat tyre	[ ]	[ ]	1 1	[ ]

15. What time dld you arrive at your final unloading point?

_____day _____a.m./p.m.

	5th stop	6th Stop	7th Stop	8th Stop
Place stopped at?				
Distance travelled before stopping, or since last stop	krns	kms	kms	krns
Time travelled before stopping, or since last stop (or actual time of stop)	hrs am/pm	hrs am/pm	hrs am/pm	hrs am/pm
How long did you stop for?	mins	mins	mins	mins
Reason/s for stop				
1. Sleeping/eating	[ ]	[ ]	[ ]	[ ]
2. Cargo pickup	[ ]	[ ]	[ ]	[ ]
3. Off load cargo	[ ]	[ ]	[ ]	[ ]
4. Truck inspection	[ ]	[ ]	[ ]	[ ]
5. Change driver	[ ]	[ ]	[ ]	[ ]
6. Toilet stop	[ ]	[ ]	[ ]	[ ]
7. Check tarps/freight	[ ]	[ ]	[ ]	[ ]
8. Breakdown/flat tyre	[ ]	[ ]	[ ]	[ ]

	9th stop	10th stop
Placestopped at?		
Distance travelled before stopping, or since last stop	kms	krns
Time travelled before stopping, or since last stop (or actual time of stop)	hrs am/pm	hrs am/pm
How long did you stop for?	rnins	mins
Reasonls for stop		
1. Sleepingleating	[ ]	[ ]
2. Cargo pickup	[ ]	[ ]
3. Off load cargo	[ ]	[ ]
4. Truck inspection	[ ]	[ ]
5. Change driver	[ ]	[ ]
6. Toilet stop	[ ]	[ ]
7. Check tarps/freigh	[ ]	[ ]
8. Breakdown/flat tyr	[ ]	[ ]

'our schedule on thls trip

6. On thls trip, did you have a scheduled time of arrival at your final (or only) destination set by your company/the freight forwarder?

Yes..... 1 No..... *0*

IF NO GOT TO QUESTION 20

7. If YES, what was your scheduled time of arrival?

_____day _____a.m./p.m.

8. How long after the scheduled arrival time would you be considered late?

(please circle the number)

Up to 1 hour.....	1
1 to 2 hours.....	2
2 to 3 hours.....	3
3 to 4 hours.....	4
Being late is not a problem.....	5

19. Were there any incentives, or penalties, for keeping to the schedule on this trip?

lncentlves	Yes.....	1
	No.....	*0*
Penalties	Yes.....	1
	No.....	*0*

19a. If there were lncentlves, please give details _____

_____

_____

19b. If there were penalties, please give details _____

_____

_____

Unloading on *this* trip

20. When you arrived at your unloading destination, were there any delays before you could unload?

Yes..... 1 No..... *0*

20a. If YES, was that because (Please circle the numbers that apply)

The loading depot was not open when you arrived..... 1
You were held up in a queue of trucks which arrived before you..... 2
The staff at the loading depot were mucking around wasting time..... 3
Other, please explain

_____

21. What are the opening hours of this unloading depot _____ to _____

21a. Are these convenient hours that fit in with your driving schedule?

Yes..... 1 No..... *0*

21b. If NO, why is that _____

_____

22. At your final unloading location, how much time did you spend

Waiting before the cargo could be unloaded _____ hrs
Unloading/waiting while the cargo was unloaded _____ hrs
Doing the paperwork _____ mins

23. Was the truck unloaded by (please circle the number)

You on your own..... 1
You but with some help (paid or unpaid)..... 2
Someone that you paid to do it all for you..... 3
The freight forwarder or your company..... 4

24. How long after you arrived did you start loading up for another trip? _____ hours

ECTION 5 - Your views and opinions

le would like to get your opinion on the following issues.

lease answer yes or no by circling the number next to it. You can also make a omment in the space provided if you wish to expand on your answer.

o you think.....

There are too many new entrants in your business

Yes.....1 **No.....** 0

Comment_____

Maintenance practices of most ownerdrivers are adequate

Yes..... 1 **No.....** **0**

Comment_____

There are too many owner-driver operators in the industry:

Yes..... 1 **No.....** 0

Comment_____

I. **Competition for jobs is so cut-throat that I have to take loads at rates which would be quite unacceptable to most workers mother industries**

Yes..... 1 **No.....** **0**

Comment_____

5. **We could save a lot of time and hassels if loading depots were put in more convenient locations**

Yes.....1 **No.....** 0

Comment_____

5. **The personality of the driver does, in your opinion, have an influence on their performance on the road**

Yes.....1 **No.....** ***0***

Comment_____

9. **The financial pressures in this industry are getting worse all the time, especially for owner-drivers:**

Yes .....1 **No** 0

Comment_____

8. **Freight companies demand unreasonably tight schedules:**

Yes ..... 1 **No** **0**

Comment_____

9. **Even if I don't have a set schedule, it is important that I arrive at the loading depot as early as possible so that I can get another load and leave later that same day.**

Yes .....1 **No** **0**

Comment_____

10. **Customers/cargo agents set rates which make it impossible for owner-drivers to work for safer condtions:**

Yes .....1 **No** **0**

Comment_____

11. **The condtions of the roads are the main cause of accidents:**

Yes.....1 **No** **0**

Comment_____

12. **Most accidents occur due to driver fatigue:**

Yes ..... 1 **No** 0

Comment_____

13. **Deals between union leaders and freight forwarders work in my favour**

Yes.....1 No 0

Comment_____

14. What do you do to maintain your level of concentration while you are driving on long trips?
(Please circle the numbers)

Listen to music	1
Listen to the radio/CB radio	2
Talk on the CB radio	3
Take "stay awake"' pills on every trip	4
Take "stay awake" pills sometimes	5
Staying awakelmaintaining concentration is not a problem	6
Other. please explain	

15. What do you think is the most important issue facing your industry?

Are there any other comments that you would like to make about your industry or the conditions under which you have to work?

SECTION 6. Some other details to help us with the analysis

1. Could you tell us which age group you are in
(SHOWCARD 1) (Please circle the number)

20 to 24 years	1
25 to 29 years	2
30 to 34 years	3
35 to 39 years	4
40 to 44 years	5
45 to 49 years	6
50 to 54 years	7
55 to 59 years	8
Over 60 years	9

4. If you have children, how many are you supporting financially? _____

3. Over the last year, how many days have you chosen not to work? _____

4. Over the last year, how many days work have you lost due to sickness or injury? _____

5. What was your previous occupation, if any, before becoming a truck driver?

_____

I have always been a truck driver [ ]

6. If you are an owner-driver, can you please give us estimates of the following expenses for the financial year 1988-1989 (SHOWCARD 2)

Fuel	$_____
Maintenance costs (exclude fuel)	$_____
Repayments on the vehicle	$_____
Registration (including 3rd party insurance)	$_____
Other vehicle insurance	$_____
Personal insurance (superannuation, health)	$_____
Tyres & tubes etc.	$_____
Accommodation/entertainment	$_____
Other_____(Please specify)	$_____
Total	$_____

7. In the last 12 months how many speeding fines have you had? _____

7a. How much did that *cost* you in total? $_____

8. In the last 12 months how many fines have you had for truck defauits _____

8a. How much did that cost you in total? $_____

9. What do you think would be a reasonable annual (before tax) income for the hours you put in and type of work you do?

$_____ Don't know [ ]

0. What range did the Income from truck driving. after truck related expenses (but beforetax) fall into for 1988-1989? (that is the total income for your household from your truck driving activity) (SHOWCARD 3)

(Please circle the number.)

up to $12.000 pa	1
$12.001 to $15,000 pa	2
$15,001 to $18,000 pa	3
$18,001 to $22,000 pa	4
$22.001 to $26,000 pa	5
$26,001 to $32,000 pa	6
$32,001 to $40.000 pa	7
$40,001 to $50.000 pa	8
$50,001 to $60,000 pa	9
$60,001 to $70,000pa	10
$70,001 to $80,000 pa	11
over $80,000 pa	12

1. If any other members of your household earn income from activites other than truck driving. can you tell us what range that fell into. before tax. for the financial year 1988-89. (SHOWCARD 3)

(Pleasecircle the number.)

up to $12.000 pa	1
$12.001 to $15.000 pa	2
$15.001 to $18.000 pa	3
$18.001 to $22.000 pa	4
$22.001 to $28.000 pa	5
$26.001 to $32.000 pa	6
$32.001 to $40.000 pa	7
$40. 001 to $50. 000 pa	8
$50.001 to $60.000 pa	9
$60.001 to $70.000pa	10
$70.001 to $80.000 pa	11
over $80.000 pa	12

Date survey completed _____

Thank you for your help

APPENDIX *C*

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Table 1. Age distribution of drivers

Age (years)	Employee Drivers No.	(%)	Owner Drivers No.	(%)	All Drivers No.	(%)
20 - 24	6	(19.4)	1	(6.7)	7	(15.2)
25 - 29	8	(25.8)	4	(26.7)	12	(26.1)
30 - 34	7	(22.6)	4	(26.7)	11	(23.9)
35 - 39	3	(9.7)	2	(13.3)	5	(10.9)
40 - 44	6	(19.4)	2	(13.3)	8	(17.4)
45 - 49	1	(3.2)	0		1	(2.2)
50 - 54	1	(2.2)	1	(6.7)	0	
55 - 59	0		0		0	
over 60	1	(2.2)	1	(6.7)	0	

Table 2. Years of drlvlng experience

Years	Employee Drivers No.	(%)	Owner Driven No.	(%)	All Drivers No.	(%)
0 - 4	5	(16.2)	1	(6.7)	6	(13.0)
5 - 9	9	(29.1)	5	(33.4)	14	(30.4)
10 - 14	8	(25.9)	4	(26.7)	12	(26.1)
15 - 19	4	(12.9)	2	(13.4)	6	(13.0)
over 20	5	(16.1)	3	(20.1)	8	(17.4)

Table 3. Annual distance travelled

Kilometres	Employee Drivers No.	(%)	Owner Drivers NO.	(%)	All Drivers No.	(%)
less than 100,000	0		1	(6.7)	1	(2.2)
100,000 - 199,000	8	(25.8)	4	(26.7)	12	(26.1)
200.000 - 299,000	21	(67.7)	9	(62.7)	30	(65.2)
300,000 - 399,000	1	(3.2)	1	(6.7)	2	(4.3)
over 400,000	1	(3.2)	0		1	(2.2)

Table 4. Average time between stops

Time between stops (hours)	Employee Drivers No.	(%)	Owner Drivers No.	(%)	All Drivers No.	(%)
< 3	12	(39.9)	2	(15.4)	14	(32.5)
3 - 4	7	(23.2)	4	(30.8)	11	(25.4)
4 - 5	5	(16.5)	3	(23.1)	8	(18.6)
5 - 6	0		3	(23.1)	3	(7.0)
6 - 7	3	(9.9)	0		3	(7.0)
7 - 8	1	(3.3)	0		1	(2.3)
8 - 9	0		1	(7.7)	1	(2.3)
9 +	2	(6.6)	0		2	(4.6)

Table 5. Average speed over the specific trip

Speed kph	Employee Drivers NO.	(%)	Owner Drivers NO.	(%)	All Drivers No.	(%)
less than 80	11	(39.7)	6	(46.2)	17	(39.2)
80 - 89	7	(23.1)	3	(23.1)	10	(23.0)
90 - 99	6	(19.8)	3	(23.1)	9	(20.8)
100 - 109	4	(13.2)	1	(7.7)	5	(11.5)
over 110	2	(6.6)	0		2	(4.6)

Table 6. **Gross Income of drivers from truck driving, after truck expenses 1988 -1989**

income $	Employee Drivers No.	(%)	Owner Drivers No.	(%)	All Drivers No.	(%)
up to 12,000	0		2	(13.3)	2	(4.4)
12,001 - 15,000	0		2	(13.3)	2	(4.4)
15,001 - 18,000	0		0		0	
18,001 - 22,000	5	(16.7)	3	(20.0)	8	(17.4)
22.001 - 26.000	4	(13.3)	2	(13.3)	6	(13.3)
26,001 - 32,000	5	(16.7)	2	(13.3)	7	(15.6)
32,001 - 40,000	8	(26.7)	3	(20.0)	11	(24.4)
40,001 - 50,000	5	(16.7)	1	(6.7)	6	(13.3)
50,001 - *60,000*	1	(3.3)	0		1	(2.2)
60.001 - 70,000	2	(6.7)	0		2	(4.4)
over 70,000	0		0		0	

Table 7. **Gross income of other members of the household from non-truck activities 1988 -1989**

Income $	Employee Drivers No.	(%)	Owner Drivers No.	(%)	All Drivers No.	(%)
0	14	(45.2)	3	(20.0)	17	(37.0)
1.00 - 12.000	4	(12.9)	2	(13.3)	6	(13.0)
12,001 - 15.000	1	(3.2)	0		1	(2.2)
15,001 - 18,000	1	(3.2)	2	(13.3)	3	(6.5)
18,001 - 22,000	2	(6.5)	0		2	(4.3)
22,001 - 26,000	0		0		0	
26.001 - 32,000	0		0		0	
32.001 - 40,000	0		0		0	
40,001 - 50,000	0		0		0	
50,001 - 60,000	0		0		0	
60,001 - 70,000	0		0		0	
over 70,000	0		1	(6.7)	1	(2.2)
n.a.	9	(29.1)	7	(46.7)	16	(34.8)

Table 8. % Distribution of costs for owner drivers

cost	% of total costs
Fuel	46.8
Maintenance costs (excl. fuel)	7.6
Repayments on the vehicle	27.0
Registration (incl. 3rd party ins.)	2.7
Other vehicle insurance	5.2
Personal insurance	0
Tyres & tubes etc.	6.8
Accommodation/on road costs	5.6
Other	0.6

Table 9. Method of payment for employee drivers

Method	Employee drivers No.	(%)
A fixed salary	7	(22.6)
A percentage of the truck's earnings	6	(19.4)
Payment by the trip	8	(25.8)
Hourly rate per trip	3	(9.7)
Rate per kilometre	5	(16.1)
Rate per kilometre for driving time/ rate per hour for load/wait time	1	(3.2)
Regular wage + trip money	1	(3.2)

Table 10. Activities in the 8 hours prior to beginning the trip

Sleep (hours)	Employee Drivers No.	(%)	Owner Drivers No.	(%)	All Drivers No.	(%)
0-1	17	(54.6)	9	(60.0)	26	(56.5)
1-2	0		3	(20.0)	3	(6.5)
2-3	3	(9.7)	0		3	(6.5)
3-4	2	(6.5)	0		2	(4.3)
4-5	3	(9.7)	0		3	(6.5)
5-6	0		0		0	
6-7	1	(3.2)	1	(6.7)	2	(4.4)
7-8	5	(16.1)	2	(13.4)	7	(15.2)

Maintenance (hours)	Employee Drivers No.	(%)	Owner Drivers No.	(%)	All Drivers No.	(%)
0-1	25	(80.6)	11	(73.4)	36	(76.2)
1-2	1	(3.2)	1	(6.7)	2	(4.3)
2-3	2	(6.5)	0		2	(4.3)
3-4	3	(9.7)	1	(6.7)	4	(8.7)
4-5	0		0		0	
5-6	0		0		0	
6-7	0		0		0	
7-8	0		2	(13.3)	2	(4.3)

Load (hours)	Employee Drivers No.	(%)	Owner Drivers No.	(%)	Ail Drivers No.	(%)
0-1	12	(38.7)	5	(33.3)	17	(37.0)
1-2	3	(9.7)	2	(13.4)	5	(10.9)
2-3	2	(6.5)	0		2	(4.3)
3-4	4	(12.9)	1	(6.7)	5	(10.9)
4-5	6	(19.4)	2	(13.3)	8	(17.4)
5-6	1	(3.2)	0		I	(2.2)
6-7	0		1	(6.7)	1	(2.2)
7-8	3	(9.7)	4	(26.7)	7	(15.2)

Table 10. Activities in the 8 hours prior to beginning the trip (continued)

Waiting to Load (hours)	Employee Drivers No.	(%)	Owner Drivers No.	(%)	All Drivers No.	(%)
0-1	23	(74.2)	13	(86.7)	36	(78.2)
1-2	2	(6.5)	1	(6.7)	3	(6.5)
2-3	3	(9.7)	1	(6.7)	4	(8.7)
3-4	0		0		0	
4-5	2	(6.5)	0		2	(4.3)
5-6	0		0		0	
6-7	0		0		0	
7-8	1	(3.2)	0		1	(2.2)

Entertainment (hours)	Employee Drivers NO.	(%)	Owner Drivers NO.	(%)	All Drivers No.	(%)
0-1	24	(77.4)	14	(93.3)	38	(82.6)
1-2	2	(6.4)	0		4	(4.4)
2-3	0		0		0	
3-4	3	(9.7)	0		3	(6.5)
4-5	0		0		0	
5-6	0		0		0	
6-7	1	(3.2)	0		1	(2.2)
7-8	1	(3.2)	1	(6.7)	2	(4.3)

Paperwork (minutes)	Employee Drivers No.	(%)	Owner Drivers No.	(%)	All Drivers NO.	(%)
0-5	26	(83.9)	13	(86.7)	39	(84.8)
6-15	2	(6.5)	1	(6.7)	6	(6.5)
16-30	2	(6.5)	1	(6.7)	3	(6.5)
30 +	1	(3.2)	0		1	(2.2)

Table 11. Mean % distribution of activities undertaken in the 8 hours prior to beginning the trip

Activity	Employee Drivers (%)	Owner Drivers (%)	All Drivers (%)
Loading truck	31.6	46.0	36.5
Sleeping	30.1	21.9	27.3
Maintenance on truck	6.8	18.5	10.8
Paperwork	1.2	0.7	1.0
Entertainment	15.5	7.1	12.7
Waiting for a load	14.8	4.9	11.4

Table 12. Loading of the truck

	Employee Drivers NO.	(%)	Owner Drivers NO.	(%)	All Drivers No.	(%)
By the driver alone	8	(25.8)	6	(40.0)	14	(30.4)
Driver with some help	4	(12.9)	3	(20.0)	7	(15.2)
Paid someone else	2	(6.5)	0		2	(4.3)
Freight forwarder	11	(35.5)	3	(20.0)	14	(30.4)
Driver and forklift	6	(19.4)	3	(20.0)	9	(19.6)

Table 13. Unloading of the truck

	Employee Drivers No.	(%)	Owner Drivers No.	(%)	All Drivers No.	(%)
By the driver alone	3	(10.0)	2	(13.3)	5	(11.1)
Driver with some help	8	(26.7)	4	(26.7)	12	(26.7)
Paid someone else	2	(6.7)	1	(6.7)	3	(6.7)
Freight forwarder	9	(30.0)	5	(33.3)	14	(31.1)
Driver and forklift	7	(23.3)	3	(20.0)	10	(22.2)
Crane	1	(3.3)	0		1	(202

Table 14. Methods of maintaining concentration whilst drivlng on long trips

Activity	Employee Drivers No.	(%)	Owner Drivers No.	(%)	Ail Drivers No.	(%)
Listen to music	20	(64.5)	9	(60.0)	29	(63.0)
Listen to the radio/ CB radio	20	(64.5)	7	(46.7)	27	(58.7)
Talk on the CB radio	16	(51.6)	8	(53.3)	24	(52.2)
Take "stay awake" pills on every trip	7	(22.6)	3	(20.0)	10	(21.7)
Take "stay awake" pills sometimes	9	(29.0)	7	(46.7)	16	(34.8)
Staying awake/maintaining concentration is not a prob.	5	(16.1)	2	(13.3.)	7	(15.2)

Table 15. Age of truck cabins

Age (years)	Employee Drivers NO.	(%)	Owner Drivers NO.	(%)	All Drivers No.	(%)
less than 1	3	(9.7)	4	(26.7)	7	(15.2)
2 - 4	19	(61.4)	6	(40.0)	25	(54.3)
5 - 9	7	(22.6)	1	(6.7)	8	(17.3)
10 - 14	1	(3.2)	2	(13.4)	3	(6.6)
15 - 19	1	(3.2)	1	(6.7)	2	(4.4)
over 20	0		1	(6.7)	1	(2.2)

Table 16. Number of speeding fines in the last 12 months

Fines	Employee Drivers No.	(%)	Owner Drivers No.	(%)	All Drivers No.	(%)
0	12	(38.7)	49	(26.7)	16	(34.8)
1	7	(22.6)	3	(20.0)	10	(21.7)
2	3	(9.7)	1	(6.7)	4	(8.7)
3	3	(9.7)	1	(6.7)	4	(8.7)
4	1	(3.2)	1	(6.7)	2	(4.3)
5-9	3	(9.7)	5	(3.3)	8	17.3)
10 +	2	(4.4)	0		2	(6.4)

Table 17. Number of truck default fines in the last 12 months

Fines	Employee Drivers No.	(%)	Owner Drivers No.	(%)	All Drivers NO,	(%)
0	25	(80.6)	11	(73.3)	36	(78.3)
1	5	(16.1)	4	(26.7)	9	(19.6)
2	1	(3.2)	0		1	(2.2)

APPENDIX D

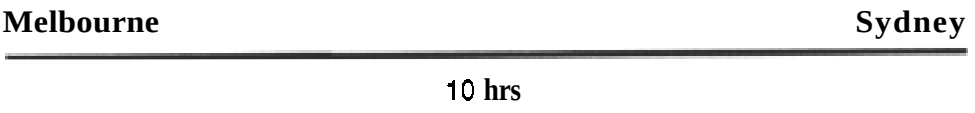
TRIPS SAMPLED

ORIGIN	DESTINATION	No. of trips in sample
Melbourne	Sydney	a
Perth	Sydney	3
Adelaide	Sydney	2
Brisbane	Sydney	2
Murwillumbah (NSW)	Sydney	2
Shepparton (Vic)	Sydney	2
Adelaide	Brisbane	1
Adelaide	Melbourne	1
Ballarat (Vi)	Brisbane	1
Ballarat (Vic)	Sydney	1
Barossa Valley (SA)	Sydney	1
Bowen (Qld)	Melbourne	1
Brisbane	Cairns (Qld)	1
Castlemaine (Vic)	Mackay (Qld)	1
Dartmoor (Vi)	Sydney	1
Geelong (Vic)	Adelaide	1
Gladstone (SA)	Sydney	1
Heywood (Vic)	Sydney	1
Hillston (NSW)	Newcastle (NSW)	1
Kooweerup (Vic)	Sydney	1
Melbourne	Brisbane	1
Melbourne	Canberra	1
Melbourne	Townsville (Qld)	1
Salisbury (SA)	Sydney	1
Sornerton (Vic)	Townsville (Qld)	1
Sydney	Cairns (Qld)	1
Sydney	Melbourne	1
Sydney	Perth	1
Sydney	Townsville (Qld)	1
Taree (NSW)	Sydney	1
Toowoomba (Qld)	Sydney	1
Toowoomba (Qld)	Taree (NSW)	1
Windfield (SA)	Sydney	1

TRIP LINES

MELBOURNE - SYDNEY ROUTE

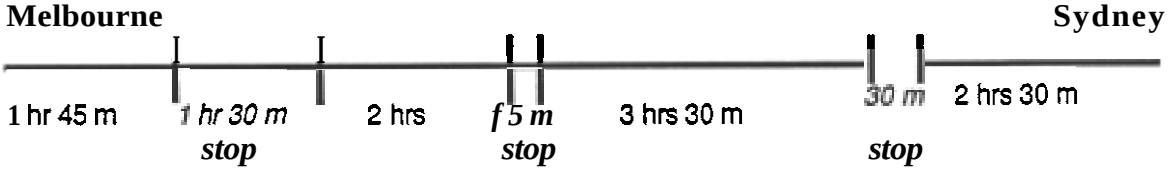
TRIP 1: 10 **hours** total OWNER-DRIVER



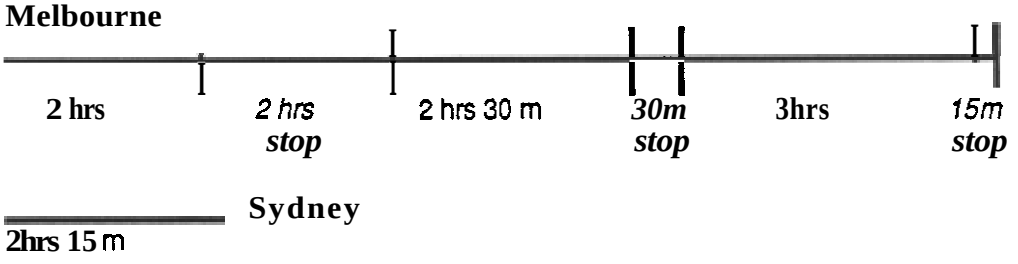
TRIP 2: 10 **hours** total EMPLOYEE-DRIVER

TRIP 3 12 hours total OWNER-DRIVER

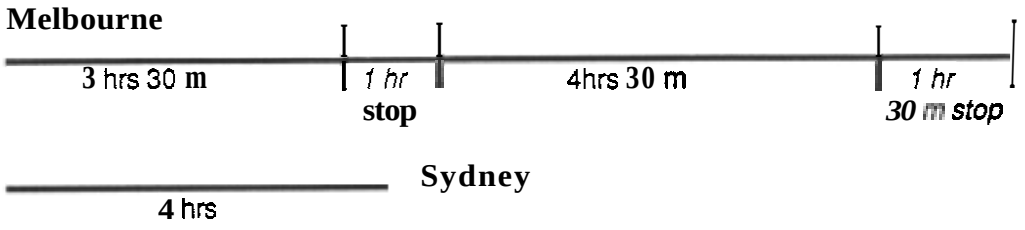
TRIP 4: 12 hours total OWNER-DRIVER



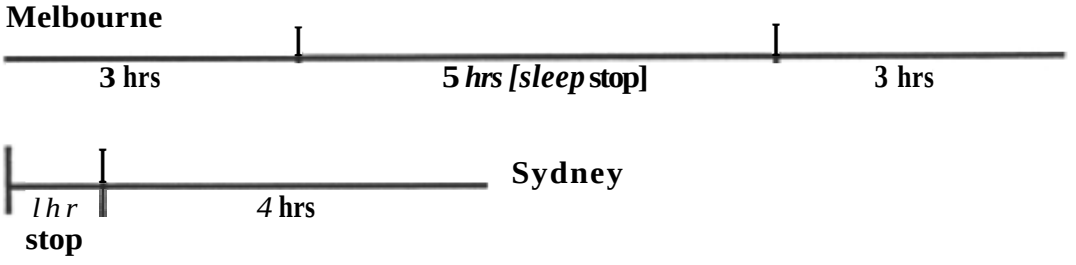
TRIP 5: 13 hours total EMPLOYEE-DRIVER



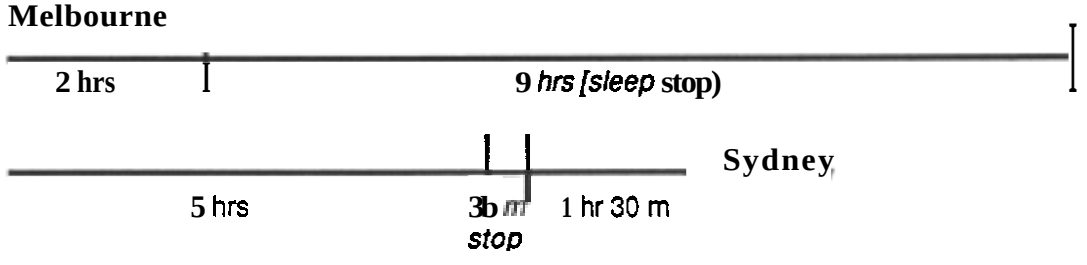
TRIP 6: 14hours **30 mins** total EMPLOYEE-DRIVER



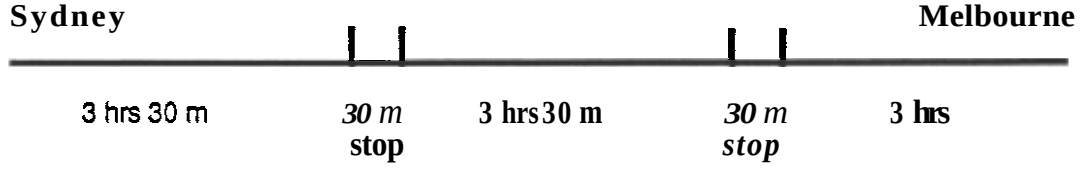
TRIP 7: 16 hours total OWNER-DRIVER



TRIP 8: 18 hours total OWNER-DRIVER

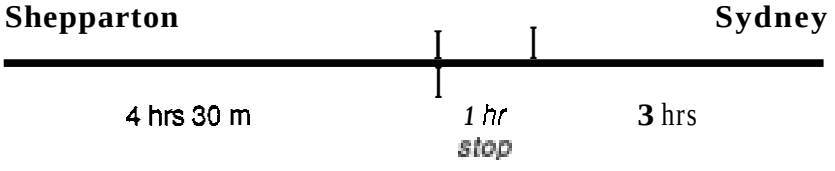


TRIP 9: 11 hours total EMPLOYEE-DRIVER

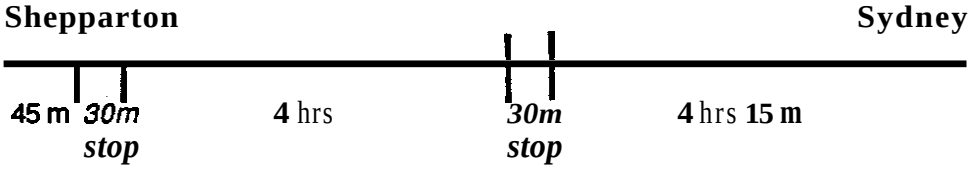


SHEPPARTON - SYDNEY ROUTE

TRIP 1: 8 hours **30 mins total** EMPLOYEE-DRIVER

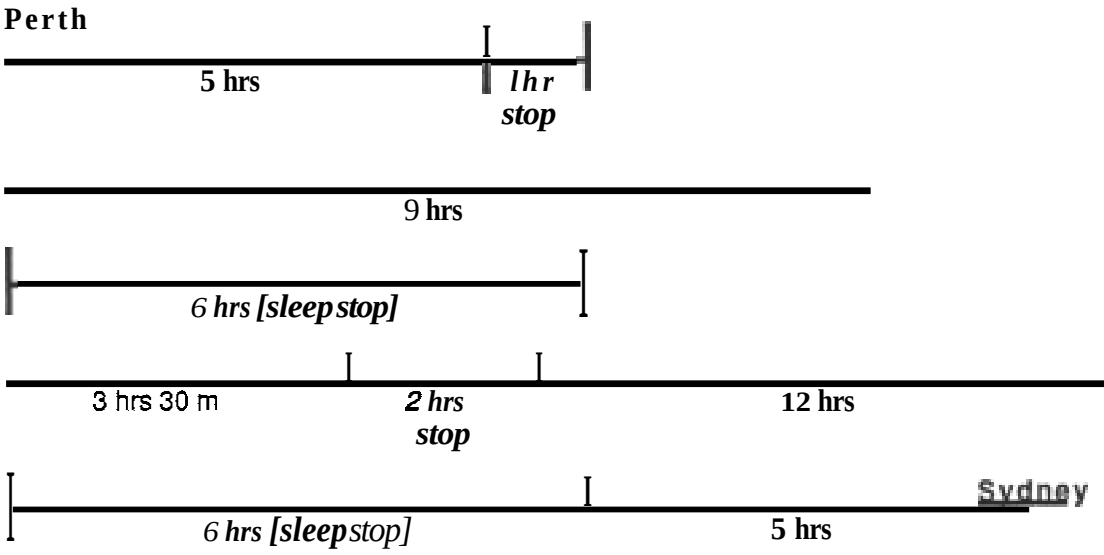


TRIP 2 10 hours total EMPLOYEE- DRIVER

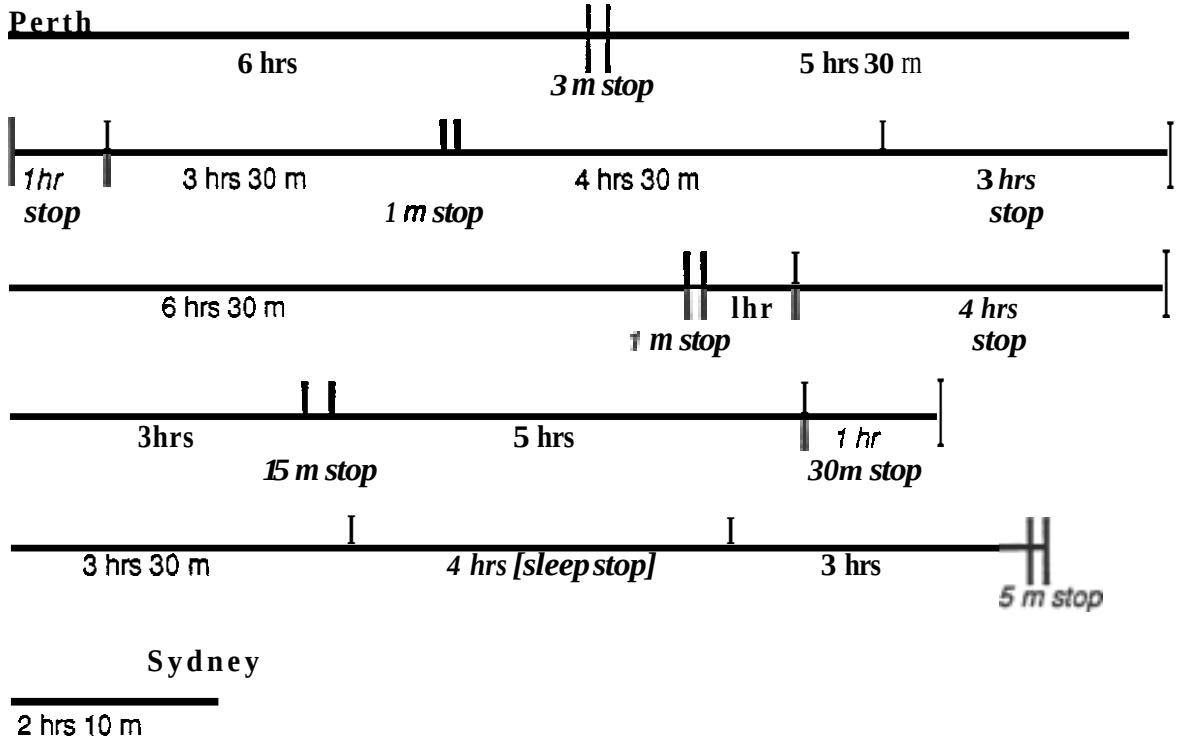


PERTH - SYDNEY ROUTE

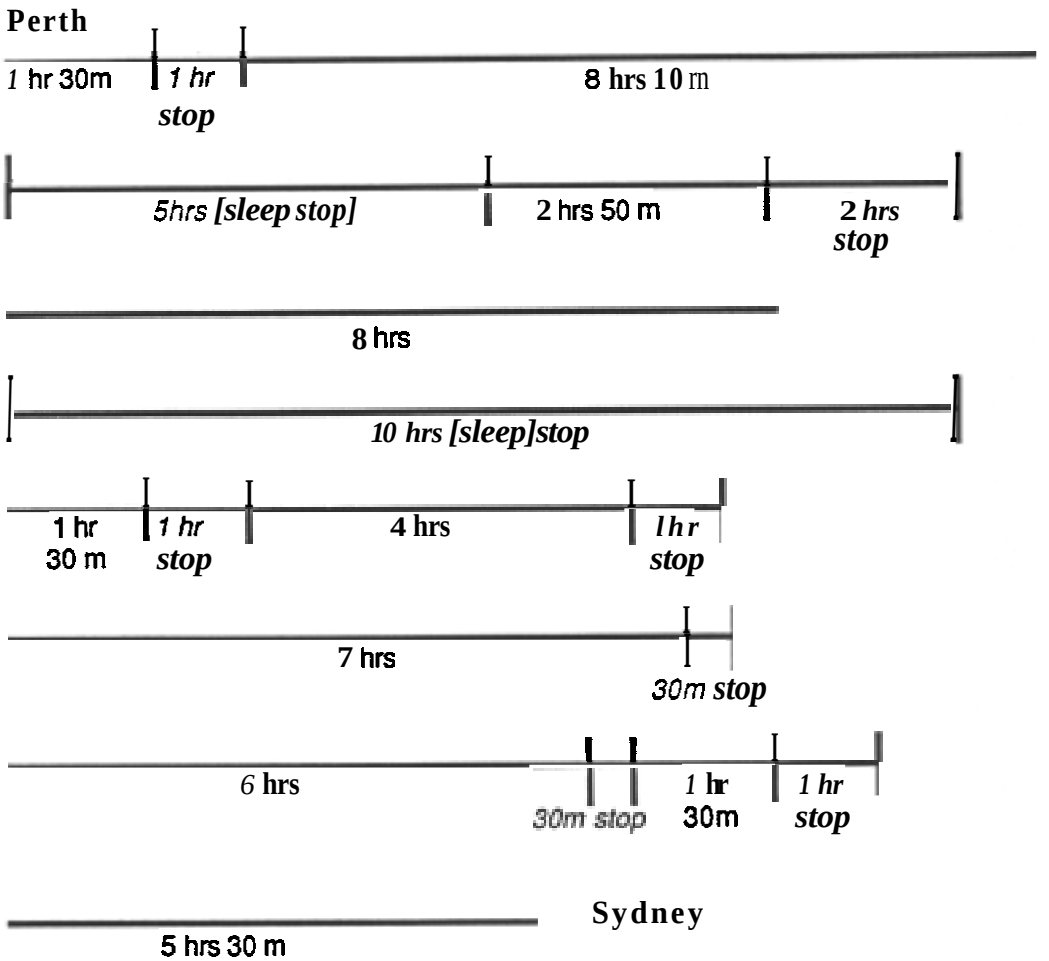
TRIP 1: 49 hours 30 mins total EMPLOYEE-DRIVER



TRIP 2: 57 hours 30 mins EMPLOYEE-DRIVER (2 drivers)

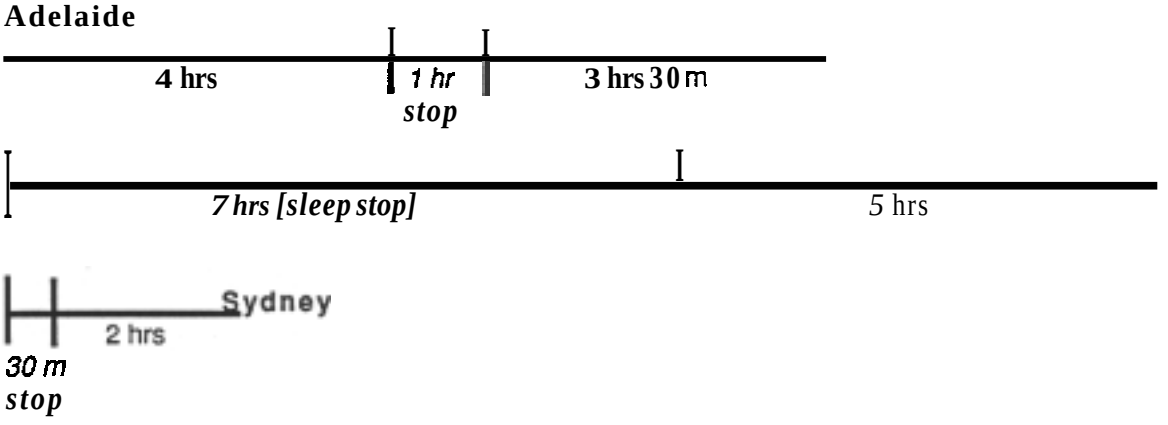


TRIP 3: ***68*** **hours** total OWNER-DRIVER

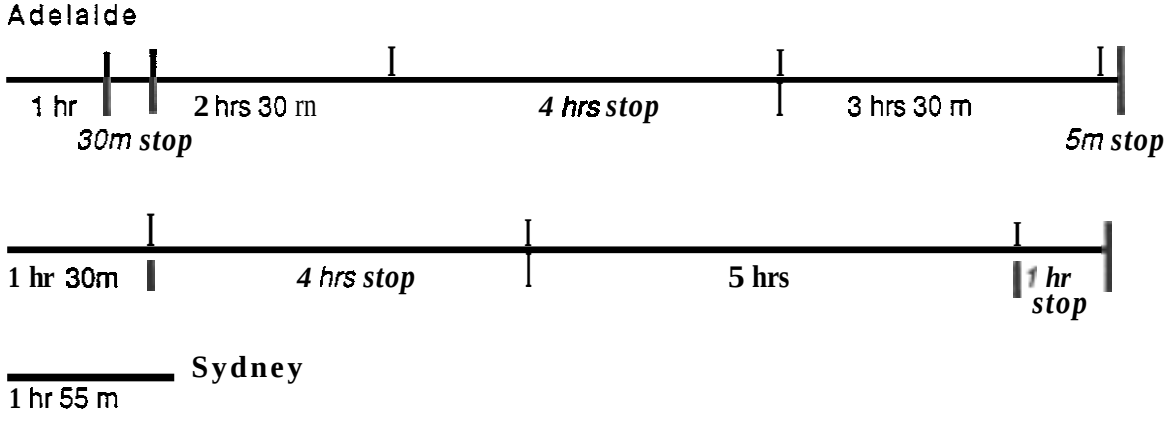


ADELAIDE • SYDNEY ROUTE

TRIP 1: 23 hours total EMPLOYEE-DRIVER



TRIP 2: 30 hours total OWNER-DRIVER



APPENDIX E

Table 1. Views and opinions of drivers

(Number and (%) of drivers who agreed with the comment)

	Employee	Owner	All drivers
	No. (%)	No. (%)	No. (%)
1. There are too many new entrants in your business.	**18 (58.1)**	**5 (33.3)**	**28 (60.9)**
2. Maintenance practices of most owner drivers are adequate.	**20 (64.5)**	**11 (73.3)**	**31 (67.4)**
3. There are too many owner driver operators in the industry.	**8 (25.8)**	**1 (6.7)**	**9 (19.6)**
4. Competition for jobs is so cut-throat that I have to take loads at rates which would be quite unacceptable to most workers in other industries.	**21 (67.7)**	**12 (80.0)**	**33 (71.7)**
5. We could save a lot of time and hassles if loading depots were put in more convenient locations.	**22 (71.0)**	**11 (73.3)**	**33 (71.7)**
6. The personality of the driver does, in your opinion, have an influence on their performance on the road.	**27 (87.1)**	**12 (60.0)**	**39 (84.8)**
7. The financial pressures in this industry are getting worse all the time, especially for owner drivers.	**30 (96.8)**	**15 (100.0)**	**45 (97.8)**
8. Freight companies demand unreasonably tight schedules.	**23 (74.2)**	**10 (66.7)**	**33 (71.7)**
9. Even if I don't have a set schedule, it is important that I arrive at the loading depot as early as possible so that I can get another load and leave later that same day.	**26 (83.9)**	**12 (80.0)**	**38 (82.6)**
10. Customers/cargo agents set rates which make it impossible for owner drivers to work for safer condtions.	**23 (74.2)**	**9** *(60.0)*	**32 (69.6)**
11. The conditions of the roads are the roads are the main cause of accidents.	**27 (87.1)**	**13 (86.7)**	**40 (87.0)**
12. Most accidents occur due to driver fatigue.	**15 (48.4)**	**9 (60.0)**	**24 (52.2)**
13. Deals between union leaders and freight forwarders work in my favour.	**2 (6.5)**	**3 (20.0)**	**5 (10.0)**

Table 2. The issues most often mentioned by drivers as being the most important issue facing the trucking industry

(Number and (%) of drivers who made this comment)

	Employee		Owner		All drivers	
	NO.	(%)	No.	(%)	No.	(%)
1. Freight rates are not increasing in line with costs	8	(28.6)	3	(21.4)	11	(26.2)
2. Roads are in very bad condition	6	(21.4)	3	(21.4)	9	(21.4)
3. Need set freight rates	5	(17.9)	3	(21.4)	8	(19.0)
4. Police harassment	4	(14.3)	2	(14.3)	6	(14.3)
5. Cut- throat competition/undercutting rates	4	(14.3)	0		4	(9.5)
6. If freight rates were higher we could slow down	2	(7.1)	1	(7.1)	3	(7.1)
7. Competition from subsidised rail freight	2	(7.1)	1	(7.1)	3	(7.1)
8. The poor public opinion of the industry	2	(7.1)	1	(7.1)	3	(7.1)