

Work and Fatigue among Light Truck and Short Haul Drivers in NSW

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ABSTRACT

Light commercial vehicles under 12t GVM make up the second largest group of motorised vehicles on NSW roads behind passenger vehicles. Despite this, surprisingly little is known about the people who drive these vehicles or the factors which influence their safety as road users. As a step towards remedying this information gap, a survey of light freight vehicle and short-haul drivers in NSW was undertaken. Drivers were recruited from seven areas in the state from both ancillary and specialist transport operations. Approximately 40% of the 321 respondents were owner drivers and operators and the remainder were employees. Unlike the long distance heavy vehicle drivers in a previous Australian survey (Williamson, Feyer, Friswell & Sadural, 2001), most of the light vehicle and short-haul drivers (94%) in the current survey were daytime workers. Surprisingly, however, they reported driver fatigue to be as much a personal problem as did the long distance heavy vehicle drivers. The results of the current survey also showed differences between subgroups of light and short-haul drivers in their experiences of driver fatigue and in some characteristics of their work. Sydney-based drivers and owners, for example, were more likely to report fatigue, longer working hours and higher workloads than regional drivers and employees. This paper will explore the relationships between work, fatigue and safety risks for these drivers as well as summarising their views on useful fatigue management initiatives. The survey results suggest that fatigue among light vehicle and short-haul drivers deserves greater attention as a potential road safety issue.

INTRODUCTION

While safety in the long distance heavy vehicle road transport industry has received a considerable amount of research and regulatory attention, very little is known about the safety issues confronting the light and short haul transport sectors. This is despite the fact that light commercial vehicles and light rigid trucks up to 12 tonnes Gross Vehicle Mass (GVM) comprised 15.6% of the vehicles on register in NSW in 2005, making them the second largest group of motorised vehicles on our roads and outnumbering heavy rigid (>12t GVM) and articulated trucks thirteen-fold (Australian Bureau of Statistics, 2005). Moreover, light trucks (up to 4.5t tare) were involved in around 15% of roadway crashes in 2004 whereas trucks over 4.5t tare participated in only 5.9% of crashes (NSW Roads and Traffic Authority, 2005). These statistics suggest that, in focussing on the heavy end of the road transport fleet, the road and occupational safety communities may have been ignoring the proverbial elephant in the room.

Not only is there a dearth of available information about safety issues for light and short haul drivers, there is very little systematic information available about the structure and operation of the industry either. Consequently, the current study was conducted to gather fundamental information about light and short haul drivers, the nature of their work and the factors influencing their safety both on and off the road (Friswell, Williamson, & Dunn, 2006a; Friswell et al., 2006b; Williamson, Friswell, & Dunn, 2006).

METHOD

A survey of light vehicle and short haul drivers in NSW was undertaken. Light vehicles were defined as being rigid bodied vehicles up to 12t GVM and used for the transport of freight or goods, rather than as trades or passenger vehicles. The 12t GVM cut off was adopted because above that weight drivers were subject to the national heavy vehicle driving hours regulations.

Short haul work was defined as occurring within a 100km radius of home base which is consistent with the definition of local work used in the heavy vehicle drivers working hours regulations.

Seven geographical areas of the state were sampled including the Sydney metropolitan area, the Hunter region, the Illawarra, the Central Coast, the Central West, the Coffs Harbour region and the Wagga region. These areas were selected on the basis that they captured local government areas with relatively high numbers of light commercial vehicle registrations and provided geographical spread across the state. In each area, yellow pages telephone listings of classes of companies likely to be involved in light transport were used as the basis for sampling. Both transport specialists and classes of business likely to run ancillary transport operations were included.

Within each geographical area, companies on the telephone list were contacted at random, and those companies that engaged in light and short haul transport were invited to distribute surveys to their drivers or to allow researchers on-site to distribute them. Regional (non-Sydney) areas were intentionally oversampled.

The survey was developed in consultation with industry and driver representatives and the study funding agencies and drew on past work in the long distance heavy vehicle transport industry (Williamson, Feyer, Friswell & Sadural, 2001). The survey covered four basic content areas; driver demographics, the nature of drivers' work, drivers' experiences and views of fatigue, and drivers' views and experiences of occupational health and safety issues generally. Most of the survey questions required multiple choice responses. The surveys took approximately one hour to complete. They were anonymous and reply paid envelopes were provided for their return.

Surveys were received from 321 drivers at a return rate of only 8.1% of distributions. Surveys were returned proportional to distributions in the different freight sectors and geographical areas, with the exception of Sydney where the return rate was somewhat lower (6.4%) than in other areas of the state (range 11.3 to 15.6%).

Thirty one of the participating drivers drove vehicles that exceeded the 12t GVM limit (median GVM = 16t). These drivers were included in the sample because their work patterns were not appreciably different to drivers of light vehicles but also because they tended to be from regional areas where there may be business pressures favouring the use of somewhat larger vehicles for short haul work.

RESULTS

Consistent with the long distance heavy vehicle road transport industry, almost all of the light and short haul drivers (98%) were men. They were typically in their low to mid forties and had a median of ten years experience working in the industry, but owner drivers and operators were slightly older and more experienced than employee drivers (Table 1).

Table 1: Description of participating drivers and their employment circumstances

| Drivers and employment circumstances | | |
|---|---|--|
| Geographical Location (n=321) | | |
| Sydney (%) | 55.1 | |
| Regional (%) | 44.9 | |
| Regional breakdown | Hunter - 11.8%; Central West - 9.7%; Central Coast - 8.4%; Wagga - 5.6%; Illawarra - 4.0%; Coffs Harbour - 2.8%; Other - 2.5% | |
| Employment type (n=321) | | |
| Employees (%) | 60.4 | |
| Owner drivers (%) | 29.3 | |
| Owner operators (%) | 10.3 | |
| Type of owners (n=124) | | |
| Prime contractors/own work (%) | 26.6 | |
| Independent subcontractors (%) | 15.3 | |
| Painted subcontractors (%) | 58.1 | |
| Age (yrs) (n=318) | | |
| All drivers (Mean (SD), Median) | 43.3 (11.4), 44 | |
| Owners vs Employees (Mean (SD), Median) | 48.4 (10.1), 49 vs 40.0 (10.9), 40 | p<0.001 |
| Experience in industry (yrs) (n=317) | | |
| All drivers (Mean (SD), Median) | 12.2 (9.3), 10 | |
| Owners vs Employees (Mean (SD), Median) | 15.4 (9.3), 15 vs 10.1 (8.7), 8 | p<0.001 |
| Vehicle type (n=311) | | |
| Van (%) | 22.8 | (Owners 44.4% vs Employees 8.1%; p<0.001) (Sydney 30.0% vs Regional 14.2%; p=0.002) |
| Rigid truck (%) | 72.0 | |
| Other (%) | 5.1 | |

Just over half of the participating drivers were from the Sydney area (Table 1). Most worked as employees rather than as owner drivers or operators and most of the owners were contracted to a single company, with their vehicle painted in its corporate colours. The majority of employers (66.5%) and contracting companies (88.8%) for whom drivers worked specialised in transport, rather than running transport operations ancillary to their main business. Drivers were typically paid a time-based rate (77.7%) rather than a rate based on kilometres or amount of freight delivered, but this was much more the case for employee drivers (96.3%) than owners (43.5%). The majority of participants drove rigid trucks rather than vans or other light vehicles but Sydney drivers and owners were comparatively more likely to use vans than regional drivers and employees.

Table 2 summarises the main features of drivers work. The largest groups of participants were engaged in courier and taxi truck work, express delivery work, carrying general or mixed freight or moving building materials. Owners tended to be more concentrated in the courier and taxi truck sector than employees and Sydney drivers were more concentrated in both the courier and taxi truck and express freight sectors.

Table 2: Description of drivers' work

| Work characteristics | | | |
|--|--|--|---------|
| Freight task (n=321) ¹ | | | |
| Courier and taxi truck (%) | 32.7 | | |
| Express (%) | 30.2 | | |
| General/mixed (%) | 23.1 | | |
| Building Materials (%) | 20.2 | | |
| Other | Dangerous materials - 12.8%, Refrigerated - 11.8%, Manufactured Goods – 10.9%, Removals - 9.0%, Perishable food – 7.5%, Machinery – 6.9%, Waste – 5.0%, Bulk – 4.0%, Groceries – 2.8%, Other – 9.0% | | |
| Kilometres per week (n=305) | | | |
| All drivers (Mean (SD), Median) | 846 (549), 750 | | |
| Owners vs Employees (Mean (SD), Median) | 970 (539), 1000 vs 763 (541), 600 | | p<0.001 |
| Sydney vs Regional (Mean (SD), Median) | 868 (488), 800 vs 820 (618), 600 | | p=0.03 |
| Work hours per week (n=311) | | | |
| All drivers (Mean (SD), Median) | 49.5 (10.6), 50.0 | | |
| Owners vs Employees (Mean (SD), Median) | 51.4 (12.0), 50.0 vs 48.3 (9.4), 48.3 | | p=0.001 |
| Sydney vs Regional (Mean (SD), Median) | 51.8 (9.2), 52.5 vs 46.6 (11.4), 45.0 | | p<0.001 |
| Stops per day (n=295) | | | |
| All drivers (Mean (SD), Median) | 34 (31), 26 | | |
| Owners vs Employees (Mean (SD), Median) | 42 (38), 37 vs 29 (22), 22 | | p=0.007 |
| Sydney vs Regional (Mean (SD), Median) | 39 (28), 37 vs 29 (33), 17 | | p<0.001 |

¹ Drivers could choose more than one option so percentages do not sum to 100%

Drivers averaged 750km of driving per week, typically over five days and they reported usually working an average of 50 hours per week including overtime. The overwhelming majority of drivers (94.1%) worked day shifts and most drivers were on a permanent roster (90.6%), rather working a rotating or irregular shift pattern. Not surprisingly, drivers work time was typically dominated by driving (54% of shift time), but sorting picking and packing freight and loading and unloading each accounted for approximately 20% of their time. Drivers made a median of 26 stops per day to deliver or pick up freight, and for more than half of the drivers (53.4%) these stops usually occurred according to a fixed time schedule, most commonly set by someone else. There were also differences between owners and employees and between Sydney and regional drivers. In general, owners and Sydney drivers drove more kilometres, worked longer hours and made more stops per day. They were also less likely to report taking a rest break during the day. Not surprisingly, owners and Sydney drivers both rated their jobs as involving more time pressure than employees and regional drivers and Sydney drivers also rated their work as more frustrating and having higher workload overall on the NASA Task Load Index.

The characteristics of drivers' work have interesting implications for their experiences of fatigue because, on the one hand, very few drivers worked during the most vulnerable hours of the day between midnight and dawn, but on the other hand, there was clear evidence that some drivers were working very long hours, or under conditions of high workload and high time pressure.

Over a quarter (27.2%) of the drivers reported that fatigue was a substantial or major problem for them, slightly more than the percentage of long distance heavy vehicle drivers who reported fatigue as a personal problem in an earlier survey (21.4%; Williamson et al., 2001). This result suggests that fatigue is an issue requiring recognition in the light and short haul industry. A sizeable minority of light and short haul drivers (38.1%) experienced fatigue at least once a week with the most common period of susceptibility occurring between 2pm and 4pm in the afternoon and corresponding to the circadian post-lunch dip in alertness. Multivariate analysis of the relationship between fatigue frequency and characteristics of drivers' work revealed that variables reflecting work quanta (working hours, rated workload and door to depot work) provided the most parsimonious set of predictors of fatigue. Not surprisingly, then, owners and Sydney drivers with their longer work hours, greater time pressure and higher workload reported greater problems with fatigue and more frequent fatigue than employees and regional drivers.

The on-road safety risks posed by fatigue are reflected in drivers' reports of driving impairments and of dangerous events during the previous year that they attributed to fatigue. Slowed responses, reduced traffic awareness, inattention to signs, poor gearing, poor steering and driving too slowly were consistently identified by drivers as symptoms of fatigue while driving (Table 3). Indeed, more than half the drivers reported that they had actually missed signs, over-or under-steered, had a near miss incident, crossed lane lines or braked late as a result of fatigue during the previous year. Perhaps more seriously, nearly half of the drivers who experienced fatigue had fallen asleep while driving, a third had run red lights, and around 20% had run off the road or collided with something in the past year. Despite these reports of on-road dangers due to fatigue, however, very few of the drivers who had been injured at work in the past year reported that their last injury was incurred in a vehicle crash (1.7% of injured drivers). Nonetheless, drivers who had incurred injuries in other ways were more likely to experience problematic and frequent fatigue suggesting a role for fatigue in injury events generally.

When drivers' use of strategies to combat fatigue was examined, it was clear that the most commonly used strategies were usually those that did not require the driver to stop working (Table 4) such as adjusting the ventilation, listening to music or the radio, eating while driving, or drinking caffeine drinks. With the exception of listening to the radio, however, the strategies that users judged to be the most helpful were those that involved stopping work and resting (stopping to rest, stopping to nap and stopping to eat). Interestingly, owners and Sydney drivers were more likely to nap than employees and regional drivers, perhaps reflecting the greater difficulty fatigue posed for them.

Table 3: Impact of fatigue

| Impact of fatigue | | |
|---|---|---------|
| Negative impact on driving (n=197) ¹ | | |
| Slow reactions (%) | 60.4 | |
| Poor traffic awareness (%) | 46.2 | |
| Poor steering (%) | 33.5 | |
| Poor attention to signs (%) | 31.0 | |
| Driving too slowly (%) | 27.4 | |
| Poor gearing (%) | 24.9 | |
| Other | Poor braking – 17.8%, Poor signalling – 15.2%, Speeding – 9.1%, Following too closely – 7.1%, Poor overtaking – 6.6% | |
| Events attributed to fatigue in last year ¹ (n=239-254) | | |
| Experienced events due to fatigue (% of drivers) | Late braking – 73.3%, Crossed lane lines – 67.5%, Near miss – 64.3%, Over/understeering – 61.6%, Missed traffic signs – 58.2%, Nodded off – 44.8%, Ran red light – 34.6%, Collided with something – 23.0%, Ran off road – 22.2% | |
| Relationship to injury (n=301 and 297) | | |
| Fatigue a substantial or major problem | 36.3% of injured vs 19.8% of non-injured | p=0.001 |
| Fatigue experienced at least occasionally | 79.8% of injured vs 57.2% of non-injured | p<0.001 |

¹ Drivers could choose more than one option so percentages do not sum to 100%

Drivers were quite consistent in their views regarding the initiatives that companies or government might implement to help them manage fatigue better (Table 4). The two most endorsed initiatives (improving roads and educating the public about driving around trucks) both apply to government and address the demands imposed on drivers by the driving environment. Incidentally, these are also the strategies most commonly endorsed by long distance heavy vehicle drivers. The majority of light truck and short haul drivers also endorsed company based strategies that would ease work pressures resulting from scheduling and high workload, for example, increasing flexibility in delivery and pick up times and scheduling deliveries outside peak traffic times, easing tight schedules, better monitoring of workloads by management, allowing more rest breaks during the day and implementing shorter driving hours. Making customers accountable was judged to be very helpful by a third of drivers. Information and training on fatigue management was also commonly thought to be of some help. Employee drivers and owners were very similar in their views about company and government strategies, except that employees were more likely to see increased rest breaks during the day as helpful. Sydney drivers, however, were much more likely than regional drivers to view changes to work scheduling factors as helpful, particularly easing tight schedules, increasing rest breaks during the day, shorter driving hours, more flexible pick up and delivery times and scheduling deliveries outside peak traffic times. Sydney drivers were also more likely than regional drivers to view increased pay rates as helpful. To the extent that long working hours are a function of the amount of overtime worked (10 hours per week, on average) which, in turn, is a response to low pay rates, drivers' calls for increased pay may simply be another strategy aimed at reducing working time.

Table 4: Strategies and initiatives for fatigue management

| Fatigue management strategies | |
|---|---|
| Strategies used by drivers | (n=241-263) |
| Most commonly used strategies (% of drivers) | Adjust ventilation – 88.7%, Listen to music/radio – 88.6%, Stop to eat – 88.3%, Eat while driving – 82.5%, Caffeine drinks – 79.9% |
| Most helpful strategies used (% of users) | Stop to nap – 46.9%, Stop to rest – 44.3%, Stop to eat – 38.1%, Listen to music/radio – 36.1% |
| Most commonly endorsed corporate and government strategies | (n=238-253) |
| Improve roads | At least somewhat helpful - 92.3% (Very helpful - 56.1%) |
| Educate public about trucks | At least somewhat helpful - 88.9% (Very helpful - 57.2%) |
| Flexible pick-up and delivery times | At least somewhat helpful - 84.9% (Very helpful - 26.5%) Very helpful - Sydney 33.8% vs Regional 15.6% p=0.02 |
| Ease unreasonably tight schedules | At least somewhat helpful - 83.2% (Very helpful - 38.5%) Very helpful - Sydney 46.3% vs Regional 26.8% p=0.004 |
| Information/training on fatigue mgt. | At least somewhat helpful - 83.0% (Very helpful – 10.7%) |
| Allow more rest breaks | At least somewhat helpful - 82.9% (Very helpful – 24.4%) Very helpful - Owners 14.9% vs Employees 30.8% p=0.02 Very helpful - Sydney 31.7% vs Regional 14.3% p=0.02 |
| Better monitoring of workloads | At least somewhat helpful - 79.8% (Very helpful - 33.1%) |
| Reduced driving hours | At least somewhat helpful - 78.7% (Very helpful - 21.3%) Very helpful - Sydney 27.6% vs Regional 12.1% p=0.03 |
| Deliveries at off peak traffic times | At least somewhat helpful - 74.9% (Very helpful - 25.9%) Very helpful - Sydney 32.9% vs Regional 15.6% p=0.03 |
| Make customers accountable | At least somewhat helpful - 74.7% (Very helpful - 36.9%) |
| Increase pay rate ¹ | At least somewhat helpful - 67.7% (Very helpful - 36.7%) Very helpful - Sydney 45.0% vs Regional 24.2% p=0.004 |

¹ Increased pay rate was less commonly endorsed overall than some other strategies that have not been included in the table. It is presented because a relatively high percentage of drivers believed it would be Very helpful.

CONCLUSION

This survey is the first to describe the working arrangements and fatigue experiences of light and short haul drivers in Australia. The results of the survey, somewhat unexpectedly, indicate that fatigue is a relatively common experience for individual drivers in this industry sector, as common as it is among long distance heavy vehicle drivers, and that it has the potential to impact on driver safety both on and off the road. The results highlight a number of work-related factors that are likely to contribute to fatigue among this group of drivers, most notably long working hours, high workload and highly time-sensitive work. Indeed, the greater fatigue experienced by Sydney drivers in particular, but also by owners, mirrors their greater reporting of these work characteristics.

Unfortunately, drivers' choices of strategies for dealing with fatigue when it occurred were clearly biased towards activities that did not provide respite from the demands of work and consequently were less effective than strategies which introduced a break from work. The impact of work demands on fatigue (arising from both the driving environment and from time and workload pressure) was also apparent in drivers' endorsement of government and corporate strategies for managing fatigue. Although the low response rate to the survey begs some caution when generalising the findings, the results suggest that fatigue is an issue for the light and short haul transport sector but they provide clear directions for further investigation and for targeting interventions for fatigue management.

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