



What are the differences in management characteristics of heavy vehicle operators with high insurance claims versus low insurance claims?



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ABSTRACT

An exploratory survey of Australian organisations that operate fleets of heavy freight vehicles was undertaken to identify differences in management characteristics between those that have good safety records compared with those that have poorer safety records, using vehicle insurance claim rates as a proxy for safety. Fifty organisations that operate heavy vehicles and had either low or higher recent claim rates completed a questionnaire. These included various industry sectors, such as local government councils, utility companies, and freight transport companies. The questionnaire asked about the participants' use of a wide range of safety management practices relevant to heavy vehicle drivers. The results showed that despite controlling for fleet size, companies with larger fleets had poorer claim rates. The results also suggested that higher claimers relied more on setting criteria and rules for vehicles and drivers, than low claimers. Low claimers seemed to focus more strongly on proactive risk assessment, and that drivers are paid for time worked and consulted on safety issues. A number of the findings were counterintuitive. For example, higher claimers more often than low claimers reported that they did more checking during recruitment, had more policies and some accreditation as well as doing more in-vehicle monitoring. The study showed that there are safety management characteristics that distinguish between good and poorer safety performers but that further research must assess both the use and quality of the safety management practices implemented.

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1. Introduction

This paper seeks to advance knowledge of what works best in reducing road trauma risk in heavy vehicle transport operations. In order to define the scope of this problem, comparative data from OECD countries is examined. These data can be used for comparison as rates, rather than raw numbers of fatalities. Typically, three types of rates are used. The rate for fatalities per population provides a public health rate that can be used to compare relative chances of road fatalities per person in a country. Two other rates are fatalities per number of registered motor vehicles and fatalities per number of kilometres travelled. These two rates are forms of *exposure* rates. OECD countries tend to keep the most reliable and consistent data to enable calculation of all three of these rates.

The types of motor vehicles registered can also enable a comparison between fatality rates of light versus heavy vehicles.

Australian road safety efforts have succeeded in reducing the rates and numbers of road fatalities from being one of the highest rates of fatalities per 100,000 inhabitants from 25 in the early 1970s to 6.1 in 2010. By comparison road fatality rates in the United States of America (USA) are still relatively high at 11.1 per 100,000 people (World Health Organisation, 2013). However, looking at the fatal and serious injury crash rates for heavy trucks in Australia compared with the USA shows that Australia is not a better performer. Heavy trucks in the USA make up 3% of all registered vehicles, and account for 7% of vehicle miles driven but they are involved in 11% of all road fatalities (Bezwarda, 2010). Similarly trucks and buses are only 3% of the total number of vehicles registered in Australian jurisdictions and represent only 8% of total vehicle kilometres travelled, but they are involved in 18% of fatal and serious injury crashes and hence have higher over-representation in road trauma statistics than in the USA (Australian Transport Council, 2011). Indeed, a study commissioned by the National Transport Commission (NTC) in 2002, benchmarking truck safety across Australia, Canada, France, Germany, New Zealand, Sweden,

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United Kingdom and USA found that the USA had the lowest rate of truck involved fatalities per exposure to 100 million kilometres (kms) travelled. The rate for Australian truck fatalities was 2.5 per 100 million kms travelled versus the American rate of 1.7 (Haworth et al., 2002). As the geographic area dimensions of the US and Australia are similar, the comparisons between them are worth noting.

While there are similarities between the regulatory systems in the USA and Australia, Australian trucking allows considerably more liberal hours of service than in the USA which may account for some differences, but the US system is also more prescriptive and transparent than the Australian system (Mooren et al., 2012). For example, new entrants to the trucking industry in the US are audited within 18 months of operating against specific safety management criteria, whereas Australian companies do not go through this process. Also, safety ratings and compliance data on drivers and trucking companies can be accessed by the public in the USA. The Australian system requires compliance of trucks and drivers, but it is usually indirectly through Chain of Responsibility or duty of care legislation, that the authorities enforce safety management practices.

From the viewpoint of workplace safety, too, the effective management of heavy vehicle (HV) driver safety is important because heavy vehicle drivers have one of the highest rates of serious occupational injury both on and off the road. Safe Work Australia reported that in the years 2003–2011 a cumulative total of 649 workers were killed in truck related incidents (Safe Work Australia, 2012). Of all Australian workers, people working in or around trucks have made up between one quarter and one third of all work related deaths in recent years. The trucking industry has been identified to be a high-risk industry for workplace injury in other countries, despite overall low road fatality rates. For example, in Japan the transport industry, including trucks, buses and taxis, has a crash fatality rate three times higher than that of private motor vehicles (Li and Itoh, 2013).

Although a range of risk factors have been identified for HV driver injury (Department of Transportation U.S., 2006; Loeb and Clarke, 2007; Lueck and Murray, 2011; Parker et al., 1995; Williamson, 2005, 2007; Williamson and Friswell, 2013), organisational practices that may be used to manage the risks to drivers have received surprisingly little research attention. It has been recognised since the 1980s that workplace Health and Safety outcomes are determined, at least in part, by formal practices and policies in the workplace (Zohar, 1980). In particular, the role of the safety culture of the workplace has attracted a large literature (Zohar, 2010), but little of this research relates directly to the trucking industry.

A recent literature search focussing specifically on heavy vehicle transport revealed little robust empirical research in the HV transport sector and little evidence for effective safety management characteristics that can reduce crashes and injuries (Mooren et al., 2014). This review identified some safety management practices and characteristics that have been found to have some effect on work related road safety (for both heavy and light vehicles). These include: safety characteristics of the fleet, driver recruitment practices, safety policies, safety training, driver remuneration, using in-vehicle monitoring devices, being accredited in a safety management program, communication and employee input into OHS, and employee discipline and incentives. Among the management practices that have been investigated in HV transport, strong evidence indicative of an effect has been reported only for payment practices (Belzer et al., 2002; Quinlan and Wright, 2008a; Rodriguez et al., 2006).

In other work settings, such as in government agencies, the construction and manufacturing industries there is a number of safety management and organisational attributes that have been associated with safety outcomes including attitudinal, self-reported

behavioural, and incident rate changes (Fernandez-Muniz et al., 2007; Geldart et al., 2010), but it is difficult to gauge the relative importance of these management practices (Mooren et al., 2014). This is because the studies have often been constrained by the available data to focus on only small sets of practices or a collection of safety management practices, and the measures of safety performance have varied across studies. For example, Geldart et al. (2010) found that monitoring injury statistics, auditing, safety awards, and worker participation influenced lost time injury rates, but we do not know whether there are other more important safety management practices from this research alone or in combination with other evidence based factors. Fernandez-Muniz et al. (2007) found that a safety management system including policies, incentives, safety training, communications, preventative planning, emergency planning, enforcement, and incident reporting was associated with employee satisfaction with the number of personal injuries. Similarly in a light vehicle work related road safety study, Banks (2008) found that companies with comprehensive risk management strategies have fewer self-reported errors, fatigue and violations. But these studies did not quantify the contributions of each strategy.

This paper reports the findings of a survey of companies that aimed to assess whether safety management practices and organisational characteristics differentiated heavy vehicle transport companies with good track records (low insurance claim rates) from those with poorer safety records (higher insurance claim rates). An extensive range of safety management characteristics relevant to organisations that operate heavy vehicles for transport tasks were examined in the survey on the basis that they have shown a potential to deliver safety benefits in previous research. While the main focus of this research is on occupational safety, as the work of heavy trucking necessarily involves public roads and other traffic, the results will also be relevant to road and public safety in general.

Based on the review of literature (Mooren et al., 2014), it was expected that companies with low rates of insurance claims would exhibit:

1. Truck fleets that were well maintained and had a comprehensive set of safety features (Banks, 2008; Bruning, 1989; de Pont, 2005; Langwieder et al., 2001).
2. Rigorous and consistent journey and site risk assessment processes (Banks, 2008; Crum and Morrow, 2002; Oystein Saksvik et al., 2003).
3. Driver recruitment criteria that would endeavour to preclude high risk drivers (Banks, 2008; Vredenburgh, 2002).
4. Remuneration methods that would not encourage unsafe driving practices (pay for all hours worked) (Belzer et al., 2002; Corsi et al., 2002; Crum and Morrow, 2002; Monaco and Williams, 2000; Quinlan and Wright, 2008a; Williamson, 2007).
5. A comprehensive set of safety policies effectively communicated to drivers (Banks, 2008; Fernandez-Muniz et al., 2007).
6. Accreditation under an auditable safety management scheme (Baas and Taramoeroa, 2008; Naveh and Marcus, 2007).
7. Scheduling and rostering practices that minimise fatigue risk for drivers (Crum and Morrow, 2002; Feyer and Williamson, 1995; Golob and Hensher, 1994).
8. Comprehensive safety training of drivers (Arboleda et al., 2003; Huang et al., 2006; Wills et al., 2005).
9. Effective safety communications and driver input into safety decision-making (Geldart et al., 2010; Gregersen et al., 1996; Huang et al., 2006; Salminen, 2008).
10. Use of more in-vehicle safety monitoring devices (Wouters and Bos, 2000).

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