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A Review of Developing and Implementing Australian Fleet Safety Interventions: a Case Study Approach

Update

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Introduction

Due to relatively little research in Australia and overseas, there is increased attention being devoted to the area of fleet and work related road safety. This is in part due to an awareness of workplace health and safety issues and the overall impact that fleet related safety issues have on business effectiveness and road safety (Downs et al, 1999; Haworth et al, 2000). Historically costs associated with work related vehicle crashes have more often than not been calculated in terms of vehicle damage or write off costs. Murray, Newnam, Watson, Davey, Schonfeld (2003) suggest that the direct cost of crashes in terms of repairs is only the tip of the iceberg. In recent years changes in industry/employer accountability, business processes, OH&S, Workers Compensation legislation, insurance and third party coverage, and a generally a more litigious environment require industry to develop better benchmarking along with more comprehensive programs to improve fleet safety. There is currently only a small amount of work in this area and estimates of the true cost for work related crashes suggest that hidden costs may be somewhere between 8-36 times vehicle repair/replacement costs (Murray et al, 2003). Based solely on workers compensation data estimates of costs to Australian industry for work related crashes have been in the vicinity of $400 - $500 million per year (Wheatley, 1997). Furthermore, a recent estimate of the average cost to society for a fatal crash is approximately $2 million (Austroads, 2006) and the average total insurance cost of a fleet incident to organisations and society is approximately $28,000 (Davey & Banks, 2005).

Previous research has highlighted work related road safety as an area that requires further attention with a focus on developing research informed interventions aimed at improving road safety outcomes and in turn offering huge financial savings to industry and the community (Bibbings, 1997; Murray et al, 2003; Haworth et al, 2000; Staysafe, 1997). In Australia, road crashes are the most common cause of work related injury, death and absence from work (Howarth et al 2000). Work-related traffic injuries are about twice as likely to result in death or
permanent disability than other workplace accidents (Wheatley, 1997) and account for up to 26% of work related fatalities in Australia and 13% of the national road toll (Murray et al, 2003). There is an obvious and growing need for industry, government and the community to allocate resources and build the knowledge and expertise in this area.

Historically in terms of exploring and implementing fleet safety interventions, industry has often taken a “silver bullet” approach aimed at developing and implementing a single countermeasure or intervention strategy to encompass and address all fleet related road safety issues. This approach is often reactive against proactive which aims to only reduce similar incidents but also is aimed at improving behaviour. One shortcoming with a reactive approach is that often times the single implemented countermeasure results in only a short term fix and does not address the underlying contributing behavioural factors relating to the crash. Thus the organisation embarks on a cyclical process similar to a dog chasing its tail and may not demonstrate significant improvement in their fleet safety records over time.

More recently one of the facilitators of progress in fleet safety has been the Occupational Health and Safety domain (OHS). OHS and Chain of Responsibility (COR) legislation has helped to create further awareness of an organisation’s responsibility to ensure safe work practice. Industry as a means of trying to address OHS responsibilities in fleet safety adopts what they consider to be a best practice approach. Historically, best practice to improving fleet safety has often meant any practice or type of intervention being implemented. This can result in countermeasures and intervention strategies that have not been previously evaluated or without organisations implementing a thorough and empirical evaluation process.

Furthermore the silver bullet approach is no longer used in other areas of road safety, as research would suggest that intervention approaches need to be proactive and multi-dimensional. For instance, strategies and interventions to reduce the incidence of drink driving often involve not only law enforcement and random breath testing, but also incorporate advertising and awareness campaigns, rehabilitation programs, and technological interventions such as alcohol interlock devices.

However, the current state of fleet safety has many organisations not addressing the work related road safety issue as comprehensively as other work related safety risk issues within their workplace. For example, organisations often allocate more safety related resources to lower exposure and lower workplace risk processes in contrast to the high exposure and high risk of work related driving.

In attempting to satisfy legislative needs of OHS, organisations will plan the development of work related road safety intervention strategies, although the reality within the majority of organisations is that they often struggle to implement
such interventions. The failure to effectively implement fleet safety interventions often stems from a lack of management commitment and support, and general under resourcing. Thus there is an immense discrepancy between what organisations plan to do and what is actually undertaken in addressing work related road safety risks and initiatives.

Factors of Influence in Fleet Driver Behaviour
A proactive multi-dimensional approach to fleet safety is required to help address the many factors that influence fleet driver behaviour. The following figure provides an indication of the numerous conditions influencing driver behaviour and subsequently fleet driver behaviour (Lonero & Clinton, 1998). Historically, fleet safety initiatives, in part due to fleet safety coming from an asset management perspective, have taken on a one size fits all approach. This approach has often been lacking in addressing the varied influences underlying fleet driver behaviour often resulting in only short term fleet safety improvement.

Figure 1. Conditions Influencing Driver Behaviour
Case study research
Research conducted by CARRS-Q with a variety of industry fleets reveal similar patterns emerging across fleets in relation to causal and contributing factors to crashes, data recording and reporting issues, types of crashes, and the types of vehicles involved.

Throughout a number of large diverse vehicle fleets the most common types of crashes accounting for the vast majority of fleet incidents are represented by;

- Reversing
- Rear Enders
- Road Conditions
- Loss of Control
- Animal Related Incidents
- Damage Whilst Parked
- Accumulated Damage

Interestingly, these crash categories appear to be a reflection of a combination of a blameworthy and asset management approach to crashes. Categorisation in this manner does not provide any insight into the perceptions, attitudes, safety climate and organisational culture contributing to crashes through the influence on human behaviour.

In contrast, transport authorities recording of crashes indicate a broader range of contributing factors to crashes which encompasses driver and road conditions. For example Queensland Transport (2001) lists factors contributing to crashes such as;

- Disobeying Road Rules
- Alcohol/Drugs
- Speed
- Inexperience
- Inattention
- Age
- Fatigue
- Other Driver Conditions
- Negligence
- Rain/Wet Road
- Road Conditions
- Vehicle Defects
- Street Lighting

These two approaches to recording crashes demonstrate the different genres of approaches to fleet safety within organisations. One being asset management and
the second having more of a human behaviour interface. Each method of recording crashes provides different types of information that can be used to inform organisational objectives and interventions. The asset management approach is the most widely used approach to inform interventions. Whilst this may often result in short term financial gain it does not supply the information necessary for large scale behavioural interventions and workplace culture change. The alternate approach used in other domains, focuses more on driver behaviour and road conditions.

These two approaches to data collection which inform interventions are reactive in that the core data collection occur post crash. What is needed is a data collection approach that centres on driver behaviour and subsequently influences safer work related driving. The majority of current approaches in the workplace while helpful to an organisation in some sense, do not provide the information necessary to implement targeted interventions designed to address the specific behavioural, attitudinal, and cultural influences impacting on work related road safety. In addition, the current reactive data collection approaches also does not provide an effective manner in which to empirically evaluate fleet safety interventions and initiatives that are implemented. For example, the collected data is often more reflective of insurance recording mechanisms which incorporates the process of drivers “attributing blame” elsewhere rather than the objective identification of the factors contributing to the crash.

Historical Approach
One of the historical approaches to fleet safety focuses on behind the wheel driver training and education. Although many of these programs are to teach road users the skills necessary for the successful operation of a vehicle on our roads, caution needs to be exercised to ensure that the distinction between performance and behaviour is recognised and what road users are capable of doing, and what they actually do, can be different. Performance levels of road users can often be linked to the skills and demands of certain road situations, whereas road user behaviour is often influenced by cultural, personality, attitudinal and motivational factors (Parker, Lajunen & Stradling, 1998). This suggests that high levels of skill or proficiency in a task, does not necessarily translate into better behaviour. There is also a common misunderstanding that improving road user skills will automatically improve road user behaviour which in turn is expected to result in improved road safety. Furthermore, increased skill proficiency needs to be complimented by organisational processes and procedures that support safe driving behaviour. For example, although training may provide the skills and possible awareness to drive safely (e.g., not speed), organisational processes and work tasks may create time pressure demands that compromise safe driving operations.

Also driver training and education programs involving a strong practical component such as the development of vehicle control skills, may inadvertently create an inflated belief in one’s own driving ability which in turn may lead to an increase in aggressive driving behaviour (Katila, Keskinen, Hatakka, & Laapotti,
In order to improve fleet safety organisations need to adopt a broader perspective and develop initiatives targeted at the underlying cultural issues further influencing fleet safety along with adopting the necessary supportive organisational processes that facilitate safe driving.

**Cultural Approach**
Recent research conducted across various vehicle fleet settings suggests there is a strong influence on work related driving behaviours by an organisation's safety climate (Wills, 2003). Safety climate can be expressed as an employee’s psychological perceptions of safety culture and practice (Hayes et al., 2002). These perceptions are developed from the employee's continual observation of other work colleagues’ safety practice. These observations in turn influence employee behaviour in relation to what are considered accepted levels of safety required to perform work related tasks (Varonen & Mattila, 2000).

An example of the influence that organisational culture and safety climate can have on performance can be demonstrated through the practice of speeding. There is a strong focus in road safety and educational campaigns highlighting the dangers of speeding and the need for drivers to obey speed limits yet enforcement data demonstrates that speeding still frequently occurs. Organisational culture within a fleet setting may dictate that it is more important to attend an appointment on time, or complete a “necessary” task urgently, than it is to be late or leave a task incomplete. In this instance the employee may compromise their safety and the safety of others by driving above the speed limit in order to “make up time” or “deliver the goods”.

**Needs Analysis**
Organisations embarking on a program of improving fleet safety often undertake a needs analysis investigating what is currently being done in relation to addressing fleet safety issues. This process often involves investigation into areas such as:

- Organisational Process
- Interventions
- Reporting
- Recording
- Policy
- Recruitment
- Interventions
- Evaluation

The results of a needs analysis is then often used by organisations to assist in identifying areas for improvement and to ensure that appropriate processes, mechanisms and structure are adequately in place to support change and intervention strategies. However, the information provided by the needs analysis often exposes deficiencies in processes, reporting, recording, and policy
mechanisms without actually informing the design of behavioural based intervention strategies. Future fleet safety research and the subsequent development of intervention programs must address the influences on behaviour to achieve long term improvements in fleet safety. Fleet safety research has previously been lacking in developing research based and informed intervention strategies directed at behaviours, attitudes, intentions, perceptions, organisational culture and safety climate. It is with this in mind that current research should be directed at addressing a number of domains that influence behaviour. The results obtained from baseline measures in these domains should guide the development and implementation of targeted interventions aimed at high risk sectors and behaviours in an operational fleet environment.

Identified Baseline Measures
Organisations need to gather baseline measures from a number of areas that current research has identified as influencing the design, development and implementation of appropriate and targeted intervention strategies. These can include;

- Driver Attitudes
- Road Safety Knowledge
- Behavioural Intentions
- Perceptions
- Risk Taking
- Sensation seeking
- Crash Records
- Driver History
- Safety Climate

Current research undertaken by CARRS-Q is examining the development of targeted intervention strategies tailored toward specific issues identified from baseline measures in the above mentioned areas. The results obtained from these baseline measures are used to assist organisations in making informed choices regarding the implementation of countermeasures.

High risk areas of vehicle fleets can be identified from baseline measures not only in terms of vehicle types and geographical location, but also in relation to influences of human behaviour, perceptions, attitudes, personality traits, beliefs, safety climate and organisational culture. Once identified these high risk sectors assist the design and implementation of appropriate intervention strategies.

As the implementation of intervention strategies and their subsequent results often take time, a further advantage of appropriate baseline measures is that any countermeasures and interventions implemented can be evaluated against changes across a wide variety of performance indicators. For example an intervention strategy may not demonstrate initial improvements in crash rates but may
demonstrate improvements in cultural influences of behaviour and attitudes, which in both the short and longer term can lead to improvements in vehicle fleet safety.

**Conclusion**

In summary, this paper has highlighted some of the major issues that are influencing fleet safety intervention development and implementation in Australia. The importance of undertaking a baseline measurement approach along with accurately measuring driving behaviour has been identified as a crucial element of the development and implementation of work-related road safety initiatives. It is necessary for future fleet safety improvements that organisations and researchers work collaboratively to ensure that fleet intervention strategies are research based aimed at developing targeted interventions toward the numerous high risk sectors and influences on fleet driver behaviour. However, it remains of concern that organisations are reluctant to adequately resource and implement fleet safety interventions that have been tailored to reduce their specific work-related road safety risks. Despite such difficulties, continued efforts to develop, implement and evaluate effective fleet safety interventions can only contribute to the reduction in the burden of work-related road trauma.

**References**


