

**Submission  
No 32**

## **INQUIRY INTO HEAVY VEHICLE SAFETY AND USE OF TECHNOLOGY TO IMPROVE ROAD SAFETY**

**Organisation:** UNSW Canberra and Macquarie University  
**Name:** Dr Sharron O'Neill  
**Position:** Academic, School of Business, UNSW Canberra  
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Submission to:

**Staysife Committee Inquiry into  
Heavy Vehicle Safety and  
use of technology to improve road safety**

NSW Parliament, Sydney, N.S.W. 2000

23rd February, 2018

Sharron O'Neill

School of Business, UNSW Canberra

Email: [REDACTED]

Louise Thornthwaite

Faculty of Business and Economics, Macquarie University

Email: [REDACTED]

23<sup>rd</sup> February, 2018

Mr Gregory Alpin MP  
Chair,  
Staysafe Committee (Joint Standing Committee on Road Safety)  
Parliament of New South Wales  
Macquarie Street, Sydney, NSW. 2000.

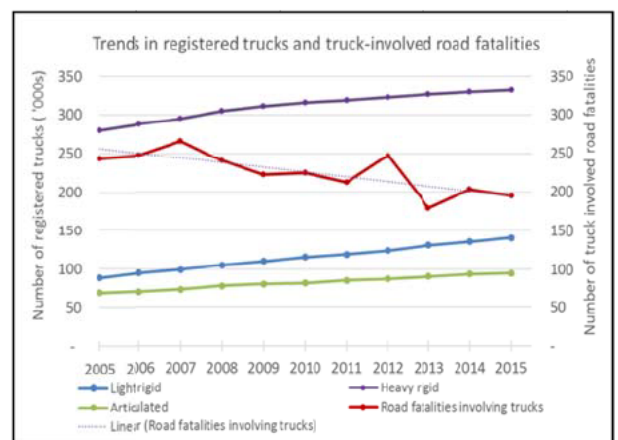
Dear Mr Alpin,

**Re: Inquiry into heavy vehicle safety and the use of technology to improve road safety**

We welcome the invitation to make a submission to the Staysafe Committee on the issue of heavy vehicle safety and the potential for technology to improve road safety. We also note the terms of reference was expanded on 1<sup>st</sup> January, 2018 to include a review of the tragic increase in road fatalities over the holiday period. Our submission draws attention to the complexity of heavy vehicle safety risk and provides evidence and observations drawing heavily on recent research undertaken at Macquarie University and UNSW Canberra. This research was funded by an Enterprise Collaboration Grant involving Macquarie University and the Transport, Education, Audit, Compliance Health Organisation (TEACHO). The study included findings on a survey of 559 freight truck drivers, primarily from NSW. We would be happy to provide a full or summary copy of the published Report: [\*Evaluating Approaches to Regulating WHS in the Australian Road Freight Transport Industry\*](#) (ISBN9 8-0-6480260-1-3). We refer to the full report in this submission, cited as the TEACHO Report.

**1 Trends in heavy vehicle safety**

Vehicle registration data<sup>1</sup> suggests that the number of heavy vehicles on Australia's roads is increasing, yet despite this, the number of road users whose lives are lost in crashes with heavy vehicles<sup>2</sup> has declined by more than 20% over the past decade. Nevertheless, these numbers remain unacceptably high. Despite significant improvements in reducing the rate of compensated fatalities and serious injuries for road transport workers, the rate of serious injury remains



Source: TEACHO Report, p10

<sup>1</sup> Australian Bureau of Statistics, 2016.

<sup>2</sup> Australian Road Deaths Database 2016

almost double the National average and the rate of fatality over eight times the National average<sup>3</sup>.

Compensation data provided by Safe Work Australia is summarised in the following table.

Year	Fatalities - Road transport					Serious injuries - Road transport				
	2010-11	2011-12	2012-13	2013-14	2014-15	2010-11	2011-12	2012-13	2013-14	2014-15
Number of RT workers	29	52	39	39	34	5,165	5,210	4,970	4,530	4,245
National RT frequency rate	12.7	23.1	16.6	16.2	13.3	14.9	15.1	12.9	12.1	11.3
NSW RT frequency rate	(not shown)					15.0	14.9	11.6	11.2	9.5
National all-industry rate	2	2	1.7	1.7	1.6	7.6	7.4	6.7	6.3	6.5

Source: Safe Work Australia, 2017

Of these, “vehicle accidents” were identified as a mechanism of injury in 10% of the 24,120 serious injury cases and 77% of 108 fatal cases for road transport workers<sup>4</sup>. Other mechanisms of serious injury and fatality include falls from heights (e.g. when checking loads or alighting at rest stops), musculoskeletal damage (e.g. while lifting or carrying objects, or from vibration or jarring due to road conditions) and being hit by falling or moving objects while outside the truck loading, unloading or undertaking routine or breakdown maintenance. Given fatalities, and a majority of the serious injuries, sustained by workers and others in the road transport sector occur at locations and times when drivers are undertaking activities other than driving, these examples highlight the importance for analyses of heavy vehicle safety to include, but also extend beyond, consideration of on-road vehicle crashes.

## 2 The need to understand risk and accident/injury causation

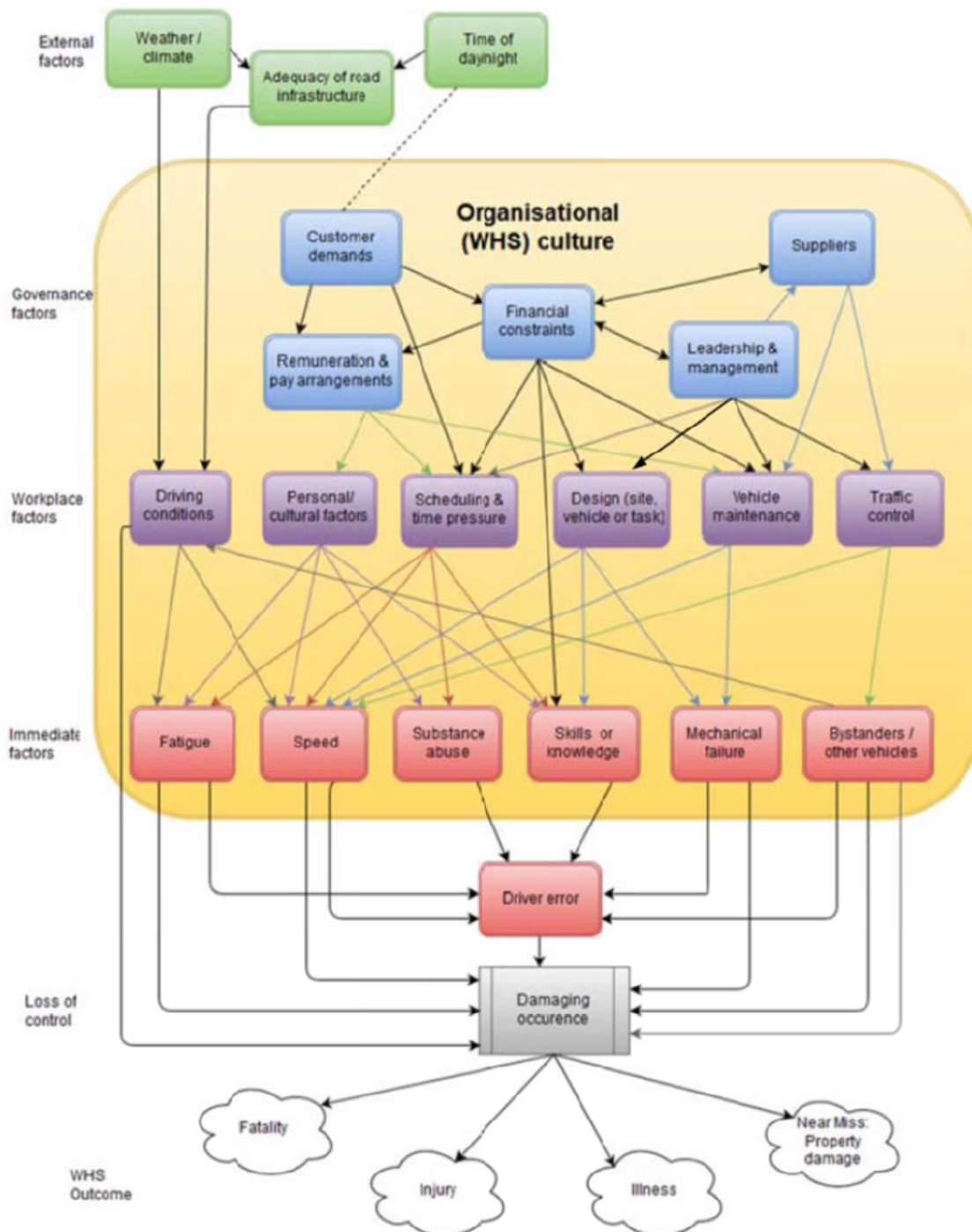
It is crucial that policy initiatives are based on an accurate understanding of risks in this industry and the causal factors underpinning accidents and injuries both on and off the road. The significant contribution of other (light) vehicles to the vast majority of crashes involving heavy vehicles is well recognised. Our literature review also identified a wide range of additional factors contributing in complex and multiple ways to work-related accidents, injury and illness in the heavy vehicle transport sector. These include factors over which significant influence is exerted by workers, by workers and management, by management, and by parties outside the organisation.

Readily identifiable (end of chain) factors include driver fatigue, excessive speed, inadequate driver knowledge, mechanical failure and interactions with the general public. However, these factors are only the tip of the proverbial iceberg. Moreover, while in the media and public discussion, fatigue and speeding are often associated with driver choices, these can be motivated or exacerbated by other factors. Those include various workplace, governance and external factors – many of which are

<sup>3</sup> Source: [Road transport industry profile](#), Safe Work Australia, 2017

<sup>4</sup> This data covered the period 2011-2015 for serious injury and 2013-2015 for fatalities.

heavily influenced by parties along the supply chain. The following diagram maps the various hazards and contributing factors identified in the literature review. **Most importantly, rather than relying on driver behaviour controls, these relationships reveal multiple additional opportunities for effective, upstream, safety interventions including technological interventions.**



Source: TEACHO Report, p16

Some of these relationships, such as the influence on drivers' schedules and practices arising from customer demands for 'less safe' pick up/delivery location and/or timing, pay rates and vehicle

specifications, are well documented. Submission No. 7 to this inquiry provides one such example. Managerial, financial or political choices, dictated in transport contracts or in an organisation's operating procedures, are crucial in determining the extent of safe work practices that flow down the chain of responsibility (COR).

In our research, we surveyed 559 heavy vehicle truck drivers on their perceptions concerning whether they could safely meet the schedules set for them (always, sometimes or rarely/never) and whether they had input into those schedules. While two thirds of both owner drivers and employee drivers responded that they could always safely meet their schedules, a significant minority indicated that they could rarely/never safely meet their schedules. This included: 18% of owner drivers and 14% of employee drivers. Significantly, 27% of owner drivers and 39% of employee drivers also responded that they had rarely/never had any input into their schedules.

We also asked drivers whether they believed they could refuse an unsafe schedule or an unsafe load. Here, we found that while most drivers could refuse unsafe schedules or loads, again a substantial minority could not: this included 18% of owner drivers and 12% of employee drivers who could not refuse an unsafe schedule; and 16% and 9% of owner and employee drivers respectively who indicated that they could not refuse an unsafe load.

This illustrates the practical limitations of targeting immediate risk factors for injury and fatality by focusing on individual driver behaviour. It also highlights a need to pursue preventative strategies aimed at the higher order factors that, in many cases, are more effective in motivating safe practices. Crucially, a need to prioritise organisational and structural (safe design) solutions over behaviour controls, i.e. to seek to eliminate road safety hazards or else minimise risk through the effective design of work processes and infrastructure, is an essential tenet of the hierarchy of control approach embedded in work health and safety regulation.

### **3 Use of technology to improve heavy vehicle safety**

#### **3.1 Technology and infrastructure**

A number of respondents to our survey raised issues of technology, most notably relating to the use of camera technology. Some drivers spoke appreciatively about the point-to-point cameras in NSW, observing that they had "levelled the playing field" and led to reduced pressure to speed and less risk of losing work to "the cowboys". Others, however, felt that the location of cameras was more suited to Sydney-Melbourne or Sydney-Brisbane routes than regional routes. A number of drivers detailed how log books were manipulated around camera locations and fatigue requirements (e.g. see TEACHO Report, p100).

Other improvements suggested by drivers included technologies, such as apps, that could help identify quality rest areas (i.e. with adequate facilities), and in particular, parking availability. The latter was identified as a significant issue with drivers required to take mandatory rest breaks only to find limited truck bays increasingly filled by caravans and motor homes.

The issue of road works in NSW was also raised as a serious concern. Drivers accepted the need to reduce speed to ensure the safety of road workers and other traffic. However, they were frustrated at slowing down and travelling at low speeds for (overly) long distances only to reach the supposed roadworks site and find nothing happening and no (perceived) need to have slowed in the first place. Anecdotally, one respondent spoke of truck drivers, himself included, continuing at regular speed through posted reduced speed areas because “90% of the time there is nothing there”. Another named sections of road, both on major highways and in regional NSW, where roadwork signs have been left in place despite roadworks having long been completed. He said, “Just check the live traffic app. Nothing happening! We all know it.” A failure of road workers to erect and withdraw reduced speed signs appropriately compromises the trust and respect drivers have for roadworks signage, which in turn leads to reduced compliance and increases risk of injury when roadworks actually are occurring. Improved oversight of road construction contractors is thus a critical road safety issue.

### **3.2 In-vehicle technology**

In-vehicle technologies provide potentially useful mechanisms for improving heavy vehicle safety. These may take a number of forms – those that can facilitate safe operations and actively prevent injury clearly being far more useful than those that merely report on unsafe operations after the fact. Responses to our survey questions about improving safety included suggestions for cameras to be installed on and under trucks so drivers can eliminate blind spots and have better visibility of hitching processes.

The active safety technologies available on modern trucks also present important opportunities for improving heavy vehicle safety through design features such as lane departure warnings and autonomous braking systems. However, an over-reliance on systems may be problematic. Again, we have heard anecdotal evidence of a vehicle collision in which dashboard video evidence revealed the emergency braking system had failed to engage and one driver suggested over-reliance on cruise control is one factor implicated in accidents where a truck runs into the back of another.

In addition, drivers identified a critical need for continued improvement to (non-electronic) vehicle safety features. Cited examples included appropriate seat-mounted rather than cab-mounted seat

belts and innovations such as swing out staircases, or at least more appropriate and consistent access steps. As one respondent stated,

“Building Code of Australia mandates a step riser be 175mm maximum... Our trucks are still being made with cab and deck steps made for giants and at times weird uneven spacings. Certainly not conducive for an aging population or a reduction in injuries” (p95).

The various forms of technology identified above can be contrasted with in-vehicle speed and fatigue detection technology. The latter, despite having clear safety potential, also have a potential to introduce additional WHS hazards relating to distraction, stress and anxiety if used as a behavioural control, rather than as defences in depth. The multitude of organisational and supply chain factors that potentially influence speed and fatigue mean these detection technologies may be appropriately viewed as important level 3 risk controls (in the WHS hierarchy of controls), much like personal protective equipment, providing an additional layer of protection against failures of higher order management system controls (e.g. scheduling). As such, alerts signal a need to review, in the first instance, the adequacy of organisational systems for managing speed/fatigue risk.

Other in-vehicle technologies, such as electronic diaries, provide evidence of driver and company compliance with regulations concerning driving hours, rest breaks, speed and so forth. As monitoring devices, they provide ‘after the fact’ information, rather than offer immediate potential for safety intervention. Importantly, where this data provides evidence to enforce the breaches of those rules, the complex, highly interdependent nature of road transport work health and safety risk factors must again be acknowledged since directing attention to heavy vehicle drivers rather than those who employ, contract and otherwise manage them may, in many cases, be unfair, unjust and unreasonable. If the intent is, however, for these in-vehicle technologies to provide evidence of effective safety management systems, including scheduling and other safety critical practices, then they may encourage compliance along the COR by those at the supply chain apex.

#### **4 Compliance and enforcement in maintaining the safety of heavy vehicles on our roads.**

As outlined in our 2017 report, there are three key compliance and enforcement issues needing policy attention. The first is to build better enforcement through the supply chain and COR. The second is to address the retribution culture in the industry that prevents many truck drivers from reporting safety concerns and safety breaches at work. The third is the provision of comprehensive, consistent and longitudinal research data to inform the effective development and enforcement of safety regulations.

Each of these issues is addressed below:



#### 4.1 Building enforcement through the supply chain

Improving the willingness of COR participants to meet their safety obligations must become more of a policy priority. There is too little regulatory attention focused on participants at the higher end and apex of the COR. In the heavy vehicle transport sector there are three types of participation: willingly compliant, obedient and wilfully non-compliant and/or recalcitrant. With the current operation of work health and safety regulations in the heavy vehicle sector in Australia, enforcement resources are directed disproportionately at drivers, rather than those further up the COR who are actually involved in the negotiation of contractual terms that, ultimately, impact safety. It is easier to impose sanctions at the lower end of the supply chain and therefore not surprising that fines are overwhelmingly the most imposed penalty, and it is mostly drivers who are fined for regulatory infringements.

As the National Transport Commission (2013, p.55) wrote:

'Overwhelmingly, it is drivers that bear the brunt of infringements as they are the observable entity at the point of breach. The weakness of this enforcement tool is that it has limited impact on the other parties in the COR. These parties may influence or even induce the non-compliant behaviour of drivers and operators but incur no punishment or deterrent'.

More consistent and better enforcement of compliance on participants through the COR is required. This includes attention to providing substantial administrative orders which commit operators to implementing specific safety measure and practices. It also requires a greater focus on specific deterrence. Evidence suggests that specific deterrence is stronger than general deterrence: the direct experience of having one's own organisation detected and sanctioned for committing an offence has a greater impact than hearing of it happening to others.

In terms of penalties for specific or general deterrence, the risk of sanction may also be too low, particularly for those at the senior management end of the corporate hierarchy and COR, who have ultimate responsibility for safety practices. When it investigated the use that courts were making of financial penalties, for instance, The National Transport Commission (2013, p.65) found that courts were imposing fines that were a tiny fraction of the theoretical maximum available and that other sorts of financial penalty, such as commercial benefit penalties were rarely applied. Increasing the level and range of penalties would ensure that there is a real risk and probability of sanction for specific recalcitrant operators at the apex of the supply chain. Attention is also needed to the severity of sanctions, including the application of criminal sanction provisions, where applicable, to those at the top of the supply chain in the case of avoidable fatalities on the road.

However, penalty regimes are only effective where regulators are funded appropriately to enforce them. In the heavy vehicle sector, more resources for regulators are needed to enable enforcement to meet stakeholder expectations. Our research on the current mix of safety regulations in the heavy vehicle sector indicated the considerable difficulties confronting enforcement agencies. The investigations of potential breaches tend to require substantial resources in terms of people, time and money. Typically, investigations require examination of business premises and vehicles, electronic equipment and data, business documents, contracts and other records. Regulators face considerable difficulties meeting required standards of evidence to attribute liability, prove criminal fault and enforce sanctions.

In our report, we quoted several examples of the difficulties regulators encounter. For example:

‘You’re relying on people having to give direct evidence – ‘this is what we had to do and why’ – and there’s a whole variety of reasons why that won’t happen. The only staff that can give the evidence are staff from the transport company, and they won’t give that evidence because if they do they will potentially lose the contract with the customer., so it’s a very difficult hurdle to jump’. When you’re looking at the bottom end of COR, which is simply driver/operator, it’s still difficult to prove, but in comparison it’s easy because a lot of it’s on the record.’ (Thorntwaite and O’Neill, 2016, p.60)

‘In late 2010 AG-Spread was fined \$95,000 (from a maximum fine of \$3 million) for a litany of fatigue management breaches ... Two investigators each spent more than seven months cross-referencing the types of records (kept) for a sample of drivers for a period of a month ... These cases are labour intensive.’ (Thorntwaite and O’Neill, 2016, p.60)

We also noted in our report the challenges for enforcement presented by the overlapping jurisdictions of the various agencies that investigate and enforce safety breaches associated with major truck crashes (see Teacho Report, p110). This not only hinders effective and consistent investigations but also fragments across agencies the investigation outcomes, data and lessons that may be learned. Industry associations such as the Australian Trucking Association and Natroad have since called for a single organisation to have primary responsibility for investigating truck crashes as one potential way forward.

#### **4.2 Retribution culture**

Our research identified that a significant barrier to improving safety in the heavy vehicle sector lies in what we call a ‘retribution culture’ in the industry. As part of the survey, we asked respondents about whether they would be willing to speak up with safety suggestions, or to report observed or experienced breaches of safety regulations (statutory or otherwise) to employers, supervisors, trade unions, and/or government compliance agencies. The breaches that we listed included an unrealistic schedule, an unsafe site, pressure to do unsafe work, pressure to falsify a work diary and

underpayments. We also asked an open-ended question inviting respondents to explain the reasons for their answers to the question about reporting concerns.

The survey revealed a substantial reluctance among drivers to raise concerns about unsafe work practices through any of the available channels. More than half of all respondents (53 per cent) provided written comments to the open question. These revealed that there were three main reasons for driver being reluctant to voice safety concerns: a fear of dismissal / loss of work and financial harm, a fear of retaliation (in the form of bullying, harassment and intimidation) and a belief that supervisors and managers will not listen or act on the expressed concerns. For some drivers, the perception of likely retribution was based on personal experience, for others it was based on a belief that this is, quite simply, the culture of the industry. This retribution culture undermines the enforcement of safety regulations in the heavy vehicle industry. Until this culture is openly acknowledged and measures are put in place to eliminate it, regulatory provisions to do with safety in truck driving will remain largely symbolic.

#### **4.3 The need for research to inform evidence-based policy solutions.**

Our 2017 report revealed an urgent need for further research on health and safety risks, regulatory effectiveness, compliance and enforcement in this industry. As noted above, despite all the evidence on fatal and disabling injuries and illnesses in this industry, important data is fragmented across agencies and as a result, policy makers and industry participants lack adequate information about the types and sources of WHS risk or processes for effective risk identification and mitigation. A key problem here is the continuing tendency to 'blame the driver' rather than those who direct and/or control drivers' work.

Equally, however, there has been almost no research on the effectiveness of various safety regulations in this industry (eg supply chain codes of practice, accreditation schemes). Research is also needed on the impact of reputational strategies – invoking adverse publicity, for instance - to encourage compliance with safety regulations. There is no single, definitive collection of case law on WHS prosecutions under the Heavy Vehicle National Law, Work Health and Safety Act and Fair Work Act. In the absence of empirical evidence, policy initiatives essentially remain 'stabs in the dark'.

## **5 Conclusion**

In conclusion, the use of technology (in its broader sense) is one of a number of important steps to improving heavy vehicle safety in NSW. To guide these innovations, we need a robust evidence base to inform a better understanding of the types of hazards and risks to which industry participants are exposed, followed by careful evaluation to ensure interventions are appropriate and effective.