

Work-related road traffic injury: Managing the risk study Translation event II “Leadership in workplace road safety: The practices that support and constrain safe driving behaviour”

Monash University Accident Research Centre
(MUARC)

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Executive Summary

Recently, there has been some important discussion about the organisational practices that contribute to safe driving behaviour and reduce work-related road traffic injury. For industry to be able to review current practices, modify and adopt new practices that will act to reduce work-related driving risk, researchers must find an effective means of communicating with industry. This report is the *second* of a series to emerge from a recently completed government funded research project. Together, these reports and associated workshops represent the establishment of a “translation task force”. This taskforce aims to communicate key messages and encourage change in workplace road safety policy and practice. The first report mapped current practice in workplace road safety against an established best practice (i.e., benchmarking) framework. Overall, the results identified areas for greater maturity in the implementation of workplace road safety practices. This *second report* identifies management practices within organisations that support and constrain safe driver behaviour and the effect that drivers’ perceptions of safety have on this relationship. The results of this study both support and challenge current thinking in the management of workplace road safety. Overall, the results support the argument that driver safety is not well integrated within the workplace and, in fact, that this lack of integration negatively impacts safe driving practices. To achieve reductions in injuries and deaths in this critical safety domain, this situation needs to change. The results of this study hope to provide the impetus to generate this essential discussion that will act to initiate change.

Work-related road traffic injury: Managing the risk

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About the larger study

Road traffic injury is the leading cause of death, injury and absence from work in Australia. Over 30% of vehicles on Australian roads are driven for work-related purposes. There is also evidence to suggest that more people are injured driving work-related (light) vehicles than non-work related vehicles.

Despite these statistics, limited attention has been given to identifying organisational factors that may influence the safety of our work-related drivers. Such factors may include, for example:

- the quality of management practices;
- a driver's perception of the value given to safety in the organisation;
- the driver's daily workload, and/or;
- attitudes to safety expressed by the driver's supervisor.

Better understanding of the various organisational determinants is important to be able to reduce work-related road traffic injury. This study was awarded government funding to determine how organisational factors influence driver behaviour. In particular, the study set out to investigate how key factors influence safety at the individual-driver, the supervisor, and organisation levels. The unique findings from this research will have direct relevance to a large proportion of the Australian workforce who drive light vehicles as part of their work role.

Much anticipated findings

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From its inception, this NHMRC-funded research project being carried out by researchers at MUARC has attracted a lot of interest from key stakeholders and the media (e.g. National Safety Magazine, TRB weekly newsletter, NRSPP website), the Insurance and Occupational Health and Safety arenas, and industry.

What makes this project unique? The MUARC researchers have formed an **"occupational translation taskforce"** to ensure that the project findings are adopted into workplace road safety policy and practice. The first workshop of the series, involving key stakeholders, entitled: **'Reviewing the landscape of work-related driving safety policy and practice'** was held in April, 2016

Leadership in workplace road safety: The practices that support and constrain safe driving behaviour

Introduction

Road traffic injury in the workplace is an emerging public health issue in Australia and internationally. Despite this, many organisations are unaware of the factors within their organisations that support and constrain the safety of those employees driving vehicles.

It has been well established that safety goals conflict with other organisational goals, such as profitability. Both safety and profit are important, however, often make competing demands upon limited resources [1]. We need to better understand if the organisational practices designed to enhance overall performance also affect the driving safety of employees. It may be that management practices that improve performance have a positive impact on employee work safety [2]. Alternatively, as employee driving activities are often poorly integrated within OHS [3], investment in practices to support work activities not related to driving (i.e. home based nursing) might create competing demands with safer driving.

This study investigated management practices that are focused on enhancing the operational (i.e. activities that are designed to support productivity and efficiency) activities of the organisation. These practices are known as High Performance Workplace System (HPWS) practices. HPWS practices are defined as distinct but interconnected human resource management practices that are designed to maximise individual employee contributions. The study explored a range of HPWS practices that are capable of supporting or constraining safe driver behaviour. It also explored how drivers' perceptions of the value and priority given to safety within the organisation plays a role in influencing safe driving practices.

Importance of the organisational context

A better understanding of the organisational factors that influence a safe working environment is critical if we are to work toward reducing work-related road traffic injury and deaths. In recent years, research has demonstrated that effective safety leadership has a positive influence on supporting safe performance, including the prevention of incidents and injuries in high-risk industries [4]. For example, the quality of management practices within organisations has been linked to reduced injury rates [2]. It remains to be seen as to whether these results can be replicated in the workplace road safety context.

Research is yet to demonstrate the impact of leadership at the senior-management or organisational level. The senior management level is responsible for developing and implementing policies, procedures and practices designed to guide role-behaviour expectancies at all levels within an organisation. There is little research exploring organisational-level influences on workplace road safety, and this may, in part, be attributed to the challenges in managing behaviour. In this context, the work-

task (i.e., driving) is conducted outside the physical boundaries of the workplace and therefore, direct employer or supervisory control is limited [5,6]. This separation poses a managerial challenge in creating policies, procedures and practices that are both relevant and specific to the driving task.

Despite these challenges, there is some evidence to suggest that senior management commitment to safety is critical in creating a safe driving environment [7,8]. For example, one study found that an online fleet driver assessment program was able to identify, target, and reduce occupational road safety risk [9]. Such findings establish that senior-level management is capable of creating an environment that supports safe driving. However, the *types of management practices*, independent of risk management (i.e., like presented in Report I), that both shape and constrain safe driving behaviour are yet to be determined. This is an important question to consider given the inherent conflict that exists between productivity and safety within the workplace.

Aim

The key objective of this report is to investigate the management practices that support and constrain safe driver behaviour. The report outlines the exploration of independent relationships between nine ‘HPWS practices’ and work-related driver behaviour. These practices, described in Table 1, were identified based on a review of the HPWS literature [10] and were selected as relevant to the workplace road safety context. This study also investigated drivers’ perceptions of the value given to safety in the organisation as a factor influencing the relationship between HPWS and driver behaviour.

Table 1

The nine HPWS practices explored by this research project

Practice	Definition
Remuneration	Direct rewards and payments that employees receive.
Job and work design	Elements of the work-role task, relationships between tasks, and the organisational structure.
Development	Competency training required to complete work-role tasks and future work-role tasks.
Selection	Selection of applicants, both from within and external to the organisation.



Job Security	Level of confidence in retaining employment.
Communication	Formal information sharing programs.
Performance Appraisal	Measuring and improving individual performance for all employees across the organisation.
Promotion	Opportunities and methods to move up to higher level positions within the organisation.
Retention	Identifying and taking steps (i.e., modifying traditional workplace practices) to address the reasons for voluntary turnover.

Methods

See Appendix A for details of the study methods, including recruitment, organisation sample and data analysis.

Research findings and interpretation

Nine multi-level models were developed to investigate the relationships between HPWS practices and driver behaviour. In all models, kilometres driven, age and gender were controlled for in the analyses.

As shown in Figure 1, job and work design, selection and communication had a negative influence on safe driver behaviour (no other significant relationships were identified). These results suggest that HPWS have not been designed or implemented with consideration of the driving role and safety. That is, selectivity is based on skills and knowledge to support operational needs; the work task is designed to support productivity and efficiency, and; the messages and methods of communication are targeted

at the 'primary' job role (e.g., providing medical attention). These arguments are supported when interpreting the results in the context of the study population.

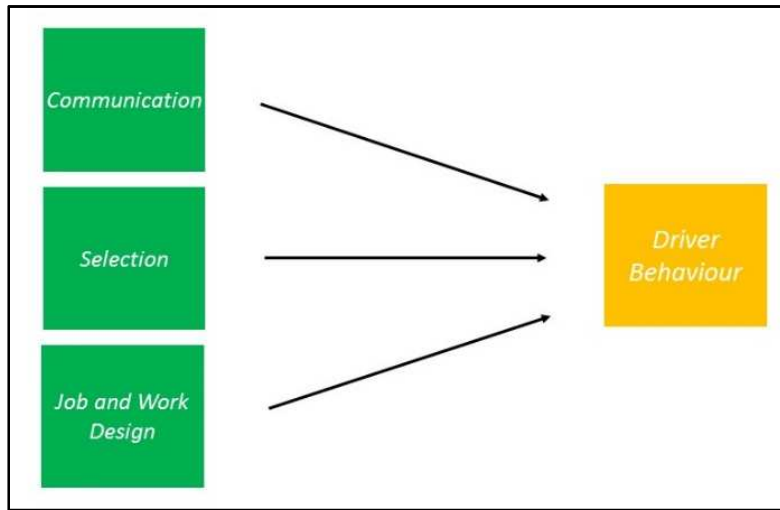


Figure 1

A schematic representation of the (negative) influence of HPWS practices on driver behaviour

The majority of organisations that participated in this study were health care and social assistance organisations (e.g., allied health employees, community nurses). In these organisations, driving is often considered to be a secondary task to the primary job role (e.g., in-home nursing care [6]); with the comparison context being organisations where driving is the core business activity (e.g., transport ancillaries). Thus, the results of this study suggest that HPWS are not designed or implemented with consideration of how these practices will influence driver safety, particularly in organisations where driving is not the core business activity. Thus, these results highlighting the lack the integration of road safety within the workplace.

The results also identified a positive relationship between the level of investment in remuneration practices driver behaviour but only when drivers perceived that their leaders valued and prioritised safety (see Figure 2). That is, drivers' in organisations that invested in financial benefits for their employees reported safer driver behaviour, but only if they perceived that management conveyed a concern for their health and wellbeing.

These results challenge past research investigating the effects of remuneration in workplace road safety. There has been growing recognition that broader economic factors, such as financial pressures and compensation methods can play a significant role in producing conditions that encourage *unsafe* driving behaviour in the heavy vehicle industry [11-14]. The results of this study showed that this effect was countered when management safety values were high. Future research is needed to understand if this effect can be replicated in the heavy vehicle industry.

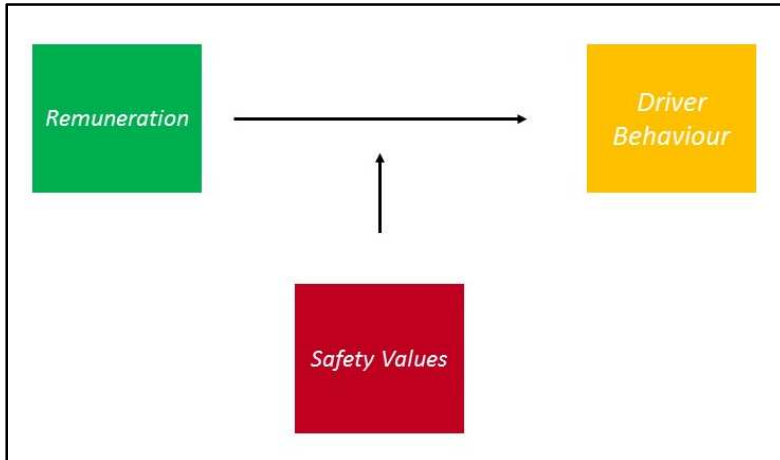


Figure 2

A schematic representation of the conditional relationship between the level of investment in remuneration and driver behaviour

Potential Impact of the Research

This report provides an overview of the findings of a study exploring the relationship between HPWS practices and driver behaviour, and the role of safety climate in moderating these relationships. The results provide a unique contribution to research in this field for two reasons. First, it is the first study to explore management practices, beyond risk management strategies, that support or constrain safe driving behaviour. Second, it is the first study to consider the effect of management practices on driver behaviour across multiple organisations with differing business activities.

The results of this study offer practical guidance for organisations in designing and implementing management practices to encourage safe driver behaviour.

Practical Implications and Recommendations

Firstly, the results indicate that HPWS practices are not being designed or implemented with consideration of the safety of drivers. Rather, HPWS practices are, on the whole, predisposing drivers to unsafe driving conditions.

Recommendation 1: Organisations need to focus on (i) designing jobs where there is clear guidance on role-behaviour expectancies in relation to the driving role (e.g., well-designed and monitored work schedules), (ii) selecting individuals that have a safe driving record (e.g., character reference for driving from previous employment, crash history check, where possible) and can demonstrate the ability to consider safety within role-behaviour expectancies, and (iii) using communication strategies and methods that support safe driver behaviour (e.g., bottom-up information sharing programs, formalised process for reporting hazards).

In regards to remuneration practices, the results suggested that remuneration encourages safe driver behaviour, but only under conditions of high commitment to safety. This finding suggests that investment by senior management in the health, safety and wellbeing of its employees – beyond mandatory requirements – is fundamental in balancing the extrinsic motivations inherent in remuneration. In support, Mearns et al. [15] found that management practices that explicitly placed a priority on worker health were found to implicitly communicate priorities placed on safety within the organisation.

Recommendation 2: Organisations integrate safety initiatives, such as cultural change programs focused on conveying concern for worker health, wellbeing and safety (e.g., 16,17) as part of any initiative designed to reward staff through remuneration.

These recommendations could be achieved through the following approach. First, organisations need to gain a better understanding of the driver context and the factors influencing safe driver behaviour. This understanding would be best achieved through a ‘bottom-up’ approach, whereby drivers are encouraged to discuss the situations that place them at risk on the road. Past research has found support for interventions focused on group discussion, feedback and goal setting in gaining an understanding of the driving context and, ultimately, improving safe driver behaviour [16].

Second, information gained from understanding the factors that predispose drivers to unsafe driving conditions could then be considered in the development and implementation of management practices, including HPWS and risk management strategies. Anecdotal evidence has shown support for this approach in the development of policies and procedures designed to support productivity and safety, including safe driving practices [18].

Translation Workshop

Executive Summary

In order for industry to be able to review current practices, modify and adopt improved practices that will act to reduce work-related driving risk, researchers must find an effective means of communicating research findings. As an essential step in the translation of this study's findings, a second translation workshop, "Leadership in workplace road safety: The practices that support and constrain safe driving behaviour" was held that attracted a variety of key stakeholders such as representatives from work-related injury compensation regulators, insurers, academics and industry (see Appendix B for a list of workshop participants, affiliations and program outline). There were a number of future directions and steps forward that emerged from this forum that will encourage further research and relevant changes to policy and practice to improve work-related driver safety. These steps are summarised below (Table 2) in the form key issues identified in need of being addressed and associated recommended actions (RAs) to better manage the safety of work-related drivers.

Table 2

Key issues and associated recommended actions (RAs) to emerge from the second translation workshop.

Key issue	Recommended Actions (RAs)
Identifying the key person to implement and communicate risk management practices within organisations. Fleet managers are a key target group, but also HR personnel and any identifiable 'Work Health Safety' personnel. As safety is often incompatible with productivity goals, Managers are not generally the most appropriate target group.	Organisations need to identify an appropriate internal person within senior management or HR to take responsibility for the management of the driving employees in the context of work-related driver safety.

Often the fleet manager gets charged with the responsibility for safe driving, when they are responsible for managing the fleet as an 'asset'.	Define the role and responsibilities of fleet managers – are they responsible for asset management or people management?
Convincing employers that workplace road safety is important. Need to tailor the message to different populations.	<ul style="list-style-type: none"> • Publication in Human Resource (HR) management journals or newsletters that reach the practitioners; • Presentation at HR forum • Link on WorkSafe website • Workshops with practitioners
Encouraging senior managers to invest in workplace road safety	<ul style="list-style-type: none"> • Get the CEO or Senior Manager to <i>pay attention</i>, e.g. by pitching the risk management practice as a money saving exercise (cost efficiency, environment and safety often package well together) • Reminding the SM of their duty of care and the need to demonstrate due diligence when it comes to safety of employees; using an incident or 'near miss' as a case in point to increase awareness. • Identify examples of how to build a business case that clearly outlines the insurance cost vs 'true cost' to organisations;
SMEs are difficult to reach. Often they do not employ a fleet manager, and have resource limitations	Create a usable resource including, e.g. one page document on relevant OHS for small-medium businesses – quick, easy, tick box; risk assessment checklist.



Overall Summary

Despite road traffic injury being the leading cause of work-related death in Australia, many organisations are unaware of the management practices, beyond risk management, that predispose drivers to unsafe driving conditions. This study addresses this gap in the literature and, more importantly, provides recommendations to improve the safety of work-related drivers. Overall, these results support the contention that road safety is not well integrated within the workplace and, in fact, that this lack of integration deters safe driving practices. To achieve reductions in injuries and deaths in this safety critical domain, this situation needs to change. The results of this study hope to provide the impetus to generate this essential discussion that will act to initiate change.

Who to contact?



Dr Sharon Newnam

Dr Newnam is a Senior Research Fellow at MUARC and is recognised as a world leader in the area of work-related transportation safety. She has demonstrated significant impact in advancing knowledge of factors that influence the safety of work-related drivers and developing interventions to reduce the social and financial impact of crashes. Using an evidence-based approach, Dr Newnam's contributions to the field have been recognized at the industry level with significant improvements in safety outcomes (e.g. reduced crashes, traffic infringement notices, insurance premiums) identified within several partner organisations.

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Appendices

Appendix A: Methods

Recruitment procedure

Organisations were recruited by selecting eligible organisations from a list of work-related injury claims relating to motor vehicle crashes received by the Work Safe Victoria (WSV) between July 2010 and end of May 2014. For more information regarding recruitment, see the first report of this series.

Participating organisations

The three-stage recruitment process resulted in a final sample of 911 drivers nested within 161 workgroups and 37 organisations. The organisations were categorised according to Australia and New Zealand Standard Classification Index (ANZSIC) and represented over thirteen categories. Matching the three samples within a multi-level structure resulted in 37 sets of complete three level data.

A representative within the Occupational Health and Safety and/or fleet management division of each organisation was approached to participate in a one-on-one interview. This first stage successfully recruited 83 senior managers from OHS or fleet management divisions. All managers had an understanding of the implementation of the workplace practices and the relevance of these practices to safety. The majority of respondents were male (61%) and had a mean age of 47.5 years (Range = 28 to 67 years). Respondents had an average organisational tenure of 8 years and an average of five years in their current role.

The second stage of the process involved recruiting fleet vehicle *drivers* to participate in a telephone interview. An occupational driver was defined as an employee who drove at least once per week for occupational purposes [19]. The sample consisted of 911 drivers who were employed in a range of roles such as nurses, plumbers, construction workers, sales representatives, couriers, and security guards. The majority were male (58.5%) with an average of 45 years (SD = 11.07, Range = 20 to 73 years) and drove an average of 191 km/week for work-related purposes (SD = 1608.38, Range = 2 to 2000km/week).

The final stage involved the recruitment of supervisors. Supervisors were defined as those responsible for the daily management of occupational drivers [6]. Recruitment was conducted by asking fleet vehicle drivers to identify their supervisor or team leader. Emails with an embedded link to an online questionnaire were sent to supervisors, resulting in recruitment of 161 supervisors. The majority of participants were male (59%) with a mean age of 47 years (SD = 9.34, Range = 26 to 67 years), an average organisational tenure of 8.86 years and an average of six years in their current organisational role. Supervisors represented 37 of the 83 organisations recruited for the study and supervised an average of 11 drivers (SD = 17.92, Range = 1 to 125).

Measures

High Performance Workplace Systems. The HPWS model consisted of nine individual practices, where each practice comprised three items within the manager and supervisor surveys. Questions were prefixed with the statement “In thinking about the organisation that you work for...”. Items were measured on a five-point Likert scale, ranging from *strongly disagree* (1) to *strongly agree* (5).

Perceived senior management safety values. Driver’s perceptions of their senior manager’s safety values were assessed using the safety values items from [3]. The three items were reworded to correspond with perceptions of senior management. An example item is “Senior level management place a strong emphasis on motor vehicle safety.” Items were measured on a five-point Likert scale, ranging from *strongly disagree* (1) to *strongly agree* (5).

Occupational Driver Behaviour Scale. The dependent variable was a self-reported driver measure of safety performance consisting of 12 items measuring speeding, rule violations, inattention and tiredness while driving [20]. Questions were prefixed with “During a typical week when you drive for work purposes, how often do you...” An example speeding item is “Deliberately exceed the speed limit on a residential road.” Items were measured on a five-point Likert scale, ranging from *rarely or never* (1) to *very often* (5). As the scale measures frequency of engagement in a particular behaviour, lower scores indicate safer driving practices.

Control measures. Age, gender and the number of kilometres driven were included as control variables in this study. Kilometres per week was used to control for exposure to risk in the traffic environment [3,6]. Gender and age were also included as control measures as they have been shown to be predictors of a number of driving behaviours (for example, [3]).

Data Analysis

The data were analysed using multi-level modelling. Nine models were developed to examine the relationships between the HPWS practices and driver behaviour, as well as safety values as a moderator. For all models, the drivers were nested within a two-level multilevel model and supervisor scores (n=161) on the HPWS scale were aggregated to the senior management level (n=37). The psychometric properties of the HPWS were assessed through a confirmatory factor analysis (CFA), but these results are not reported as they are beyond the scope of this report. Item reliabilities for all scales were also assessed (see Table 3 below).

Table 3

Means, Standard Deviations, (Reliabilities) and Correlations between Constructs

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age (years)	45	11.0	-												
2. Gender (% male)	58.5	-	-.11**	-											
3. Behaviour	1.76	0.44	-.13***	-.01	-										
4. KM driven	4.31	3.70	-.04	-.30***	.11**	-									
5. Remuneration	3.07	0.77	.02	-.20***	.08*	.30***	(.851)								
6. Design	3.60	0.66	.10**	-.08*	.11**	.05	.04	(.913)							
7. Development	3.87	0.63	.05	-.20***	.13***	.22***	.43***	.40***	(.921)						
8. Selection	4.04	0.70	.04	-.02	.13***	-.02	.32***	.36***	.51***	(.833)					
9. Communication	4.19	0.69	.14***	-.05	.11**	.07*	.12***	.39***	.50***	.44***	(.849)				
10. Promotion	3.18	0.75	.06	-.15***	.06	.21***	.59***	.47***	.42***	.16***	.31***	(.910)			
11. Appraisal	3.91	0.75	.08*	-.17***	.09*	.25***	.42***	.17***	.47***	.35***	.66***	.50***	(.900)		
12. Job Security	3.63	0.66	.08*	-.17***	.05	.17***	.29***	.43***	.23***	.09**	.28***	.54***	.27***	(.869)	
13. Retention	3.56	0.70	.17***	-.04	.03	-.07*	.01	.63***	.02	-.01	.36***	.54***	.20***	.43***	(.838)
14. Safety values	4.12	0.83	.05	-.13***	-.18***	.08*	.03	-.04	0.09**	-.04	.002	-.08*	-.03	-.03	-.11**

Note: Supervisor responses to High Performance Workplace Practices have been aggregated into Senior Management level in the table.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Appendix B: Workshop participants and program

Leadership in workplace road safety: The practices that support and constrain safe driving behaviour

Workshop Participants

Research Team

Sharon Newnam (SN), Senior Research Fellow, Monash University Accident Research Centre and ISCRR

Mark Griffin, Centre for Safety, The University of Western Australia Business School

Gillian Heller, Associate Professor of Statistics, Faculty of Science and Engineering, Macquarie University

Amanda Warmerdam (AW), PhD candidate, Monash University Accident Research Centre

Chair

Andrea De Silva, Institute of Safety Compensation and Recovery Research (ISCRR)

Industry / Insurers / Regulators / Independent Researchers

Stephanie Pratt, Centre for Motor Vehicle Safety, US National Institute for Occupational Safety and Health (NIOSH)

Sue Allen, Head of Improvement Programs and Specialist Services, Health and Safety, WorkSafe Victoria

Warwick James, Manager, Operational Strategy & Planning, Health & Safety, WorkSafe Victoria

Mace Hartley, Executive Director, Australasian Fleet Management Association, AFMA, not-for-profit

Dale Garbett, Leader, Risk Engineering Client Services, Vero

Jade Johnston, Senior Motor Fleet Risk Consultant, Vero

Dean Cousins, Manager of Fleet, Mind Australia. Participating organisation representative

Apologies

Mark Stevenson, CI, Melbourne School of Population and Global Health, The University of Melbourne

Dianne Sheppard, Project Manager, Monash University Accident Research Centre (MUARC)

Yvette Mueller, a/g Manager Work Health Safety and Environment, People Management Branch, WHS&E Section, Bureau of Meteorology

Reviewing the Landscape of Work-related Driving Safety Policy and Practice

Workshop Program: Thursday 22nd October, 2016

10:30am	Tea and coffee, introductions
10:45am	Workshop commencement & Opening address: Sharon Newnam (SN) Outline of workshop: Chair, Andrea De Silva Brief address by Stephanie Pratt - An international perspective on academics working with industry and government to initiate change in workplace road safety.
11:30am	Study justification, methods, sample demographics - SN
12:00	Key findings from quantitative multilevel analyses – AW/SN
12:30 – 1:30	LUNCH
1:30	Industry insights session – how do the findings fit with current policy and practice; do they offer any new insights?
2:00	Round table discussion of key findings - ALL
3:00	Open discussion forum: What now? Implications of findings and where to from here
3:45	Closing address – summarise outcomes of workshop and ‘where to from here’, including international insights from Stephanie Pratt. Moderator: Andrea De Silva.
4pm	Formal workshop closing address – SN Informal discussions
4:15pm	END OF WORKSHOP