CONTRACT REPORT

Australian Capital Territory drivers' and riders' perceived risk of driving or riding in New South Wales

Project No: 009295

by Tariro Makwasha

for NRMA-ACT Road Safety Trust

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AUSTRALIAN CAPITAL TERRITORY DRIVERS' AND RIDERS' PERCEIVED RISK OF DRIVING OR RIDING IN NEW SOUTH WALES

SUMMARY

The Australian Capital Territory (the ACT) consistently has the lowest number of fatalities and fatal crash rates per head of population of all Australian jurisdictions. This good safety record generally indicates the high quality of the ACT road network and refers to crashes and fatalities occurring within the boundaries of the ACT. However, research has found that, in addition to the fatal and injury crashes within the ACT, ACT controllers and vehicles also have an equivalent number of fatal and serious injury crashes in NSW. Taking into account the amount of travel involved, the risk of a fatality or injury is approximately 3–5 times greater for ACT vehicles and controllers on NSW roads than within the ACT.

This study aimed to investigate the driving behaviours, attitudes, conditions and perceived safety of Australian Capital Territory (ACT) residents when they drive or ride in New South Wales (NSW). The study involved a self-reported survey of ACT residents who have travelled in NSW as vehicle controllers (drivers or riders). The sample consisted of 217 participants, 145 male, 71 female and 1 of other gender.

The study aimed to understand the high incidence of crashes in NSW involving ACT controllers by asking the following questions.

1. Are ACT drivers and riders behaving differently on NSW roads? If so, how does the behaviour differ?

The survey showed that ACT controllers tend to be slightly more careful on NSW roads compared to within the ACT. This was reflected in the slightly reduced frequency of alcohol consumption and arranging for shared driving/riding or alternative transportation on NSW roads in contrast to the ACT. The survey also found slightly more careful mobile phone use on NSW roads, with respondents more likely to use connectivity technologies, pull over to use the phone or maps or choose to ignore the phone.

2. Are they facing different conditions? If so, how do they differ and how do the ACT controllers adapt to the conditions?

Travel in NSW is generally longer than travel within the ACT. This led to a greater awareness of tiredness and sleepiness on NSW roads compared to ACT roads. Consequently, respondents tended to pull over and rest or share the vehicle control. Additionally, respondents indicated awareness of differences in speed zones, road surfaces and types and traffic volume and mix. Also, 57% of respondents indicated that they often planned their trips to NSW. While most of the respondents indicated that they drove/rode to prevailing conditions or at the posted speed limit on the different road types, research shows that this careful behaviour is not reflected in practice.

3. Are there differences in perceived safety on different road types and conditions?

Overall, respondents had safety concerns on winding roads (sealed and unsealed), narrow undivided sealed roads and on unsealed roads. This was more so for female respondents than males. Also, perceived safety varied by road environment (country roads, regional centre roads and urban roads). Around 40% of respondents felt less safe on country NSW roads than on ACT roads. Moreover, most respondents felt just as safe on regional centre roads and less safe on Sydney roads as on ACT roads.

4. What can be done to make ACT controllers feel safer when driving/riding in NSW?

It was evident that the differences and concerns that exist could be addressed through trip planning, an increased awareness of how the travel conditions in NSW differ from those in the ACT, e.g. the different road pavement conditions, road types and traffic volume and mix, reminders of the importance of taking breaks and resting and information on gap acceptance and driving or riding behavior in mixed traffic.

Improved safety for ACT drivers and riders in NSW can be achieved by focusing on:

- education/information resources on speed selection on different road types, taking into consideration the varied nature of the NSW road network
- increased enforcement on NSW roads to deter excessive speeds
- trip planning to increase awareness of different road pavement conditions and surfaces, traffic mix and the typical speed limits on the different road types
- education/information resources on safe overtaking behaviour
- use of variable message signs to increase driver and rider awareness of their travelling speed
- education and publicity regarding the issue of tiredness and sleepiness, is required in order to increase the awareness of this issue, as opposed to the issue of fatigue
- trip planning advice allowing ACT riders and drivers to take into account the activities they undertake prior to travelling within the ACT; the information should be made available both within the ACT and NSW
- advertising the importance of resting when tired and provision of amenities at rest stops to reduce the levels and frequency of fatigue-related crashes
- use of variable message signs at key locations or distances in the trip to prompt controllers to rest
- education and publicity regarding the issue of drug driving and its role in crashes – this needs to be a broader issue, not constrained to the ACT or NSW only
- further research into the prevalence of drug-related crashes
- drug driving enforcement as widespread as alcohol enforcement
- nationwide education and publicity regarding the distraction from mobile phone use, regardless of connectivity technology
- education and advertising regarding the distraction from eating or drinking while driving
- trip planning advice to reduce or minimise the need for consulting navigation systems
- continued advertising and education regarding gap acceptance and tailgating, emphasising gap acceptance in different traffic and road conditions
- driver and rider information on speed selection, overtaking behaviour and lane adherence in mixed traffic conditions, especially around heavy vehicles
- emphasis on the importance of trip planning and how this affects speed selection, tailgating behaviour, distraction and inattention, and tiredness and sleepiness.

PROJECT TEAM

Tariro Makwasha was the project leader. She was responsible for the project design, conducting the workshop, all data preparation and analyses.

David McTiernan was the quality manager. He reviewed the project outputs.

Dr Peter Cairney was the project advisor. He provided guidance and input to the project design, the workshops and reviewed the project at every stage.

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- RiotACT, Living Streets Canberra, Council of ACT motor Clubs, DASH (Driving, Ageing, Safety and Health) coordinators at Australia National University.
- Survey participants for the participation and input that formed the basis of this research.

CONTENTS

TABLES

FIGURES

1 INTRODUCTION

1.1 Background

The Australian Capital Territory (ACT) consistently has the lowest number of fatalities and fatal crash rates per head of population of all Australian jurisdictions. This good safety record generally indicates the high quality of the ACT road network and refers to crashes and fatalities occurring within the boundaries of the ACT. However, given the location of the ACT, there is a great proportion of travel by ACT registered vehicles within other jurisdictions, particularly New South Wales (NSW). Therefore, many crashes involving ACT vehicles and controllers are likely to occur outside the ACT boundaries.

ARRB has previously conducted studies for the NRMA-ACT Road Safety Trust (The Trust) investigating the involvement of ACT vehicles and drivers and riders (controllers) in crashes within NSW. The studies were:

1. Cairney and Gunatillake (2000) analysing the crash patterns for ACT controllers and vehicles in NSW from 1992 to 2003.
2. Imberger, Styles and Cairney (2005) updating the crashes for the period 1999 to 2003.
3. Pyta (2007) reviewing the amount of travel by ACT controllers in NSW and comparing the crash rates for ACT controllers within NSW to the crash rates within the ACT.
4. Pyta, Makwasha and Hore-Lacy (2013) further analysing crash patterns of ACT controllers and vehicles in NSW from 1999 to 2010.

These studies identified the overall crash trends, crashes by age and gender, crash cause factors, vehicle type and the spatial distribution of these crashes. The studies revealed that the number of fatalities and fatal crashes involving ACT vehicles and controllers in NSW was comparable to those within the ACT. Taking into account the amount of travel involved, the risk of a fatality or injury is approximately 3–5 times greater for ACT vehicles and controllers on NSW roads than within the ACT.

1.2 Project Objectives

While the preceding studies investigated crash circumstances and locations, little is understood about the perception of risk of driving/riding in NSW by ACT vehicle controllers, how they plan their travel and whether they drive or ride differently.

The aim of the current project is to obtain a better understanding of the driving experience, road conditions and issues faced by ACT vehicle controllers in NSW, adding insight into the crash problem and crash risk factors identified in previous projects. Specifically, the study aims to:

- identify key concerns of ACT controllers on NSW roads
- provide an understanding of driver attitudes to speed, fatigue, distraction, alcohol and drugs and restraint use
- provide comments and insight on potential targeted road safety strategies that can be applied to address the issues identified in the research.

The study also aims to provide practitioners with information they require in order to manage and address the key concerns and crash problems facing ACT drivers in NSW. These issues, outlined in Table 1.1, formed the basis of the survey design.

Table 1.1: Key issues and concerns among practitioners

Issue	Specific information
Speed selection on different road environments	▪ speed selection on narrow roads ▪ speed selection on winding roads ▪ speed selection on unsealed roads
Safety on different road types	▪ perceived safety on country roads ▪ perceived safety on regional roads ▪ perceived safety on Sydney roads
Mobile phone and device use	▪ frequency of device use, i.e. mobile phones, GPS and maps while driving ▪ interaction with devices - do participants pull over to use the phone, verify directions, send or read texts and emails ▪ safe use of devices - if respondents pull over, are they doing so safely
Speeding	▪ perception of sticking to the posted speed limit ▪ actions to ensure compliance ▪ awareness of enforcement
Restraint use and protective gear	▪ headrest positions due to increased levels of whiplash in crashes ▪ seatbelt use ▪ awareness of what constitutes protective gear
Advisory signs	▪ awareness of signs ▪ compliance with signs
Impairment (alcohol and drugs)	▪ road user attitudes ▪ perceived impairment especially the day after drinking or taking drugs ▪ enforcement

In addressing these aims, the study seeks to answer the following questions:

- Are ACT drivers and riders aware that travel in NSW is different and riskier than in the ACT?
- Do ACT drivers and riders understand the type of events that lead to higher risk and does the awareness of risk differ by age and gender?
- What precautions do ACT drivers and riders take when travelling in NSW?
- What are the implications of the actions, awareness and perceived safety of ACT drivers and riders in NSW?
- What can be done to make ACT drivers and riders travel more safely when on the NSW road network?

2 Methodology

It is generally accepted that road user surveys provide insight into respondents' perceptions and attitudes directly (Allen & Mercer 2007). Attitudes towards risk, safe driving practices and self-perception of driving ability were analysed in Sticher (2005). The study indicated that while road conditions and exposure contributed to crashes, the highest factor was road user behaviour.

Department for Transport, London (2006) found that intentions, attitudes and perceived behavioural control are the strongest indicators of driver behaviour and an understanding of these will assist in designing behaviour modifying programs such as speed awareness campaigns.

In a study on young driver attitudes and perceptions in NSW, Hatfield et al. (2007) developed a campaign targeted at young drivers based on an understanding of young driver perceptions of own ability, speed, road safety and behaviour.

Department for Transport, London (2010) conducted a large-scale literature review on road user perceptions (attitudes and behaviour) on road safety. The literature review indicated that attitudes and behaviour were highly contextual; hence there was a need for an indication or understanding of road users within a particular geographic area when formulating a program.

The main component of the project was a road user self-reporting survey. The questionnaire was developed through a review of existing literature, previous ARRB research on crash patterns and factors involving ACT vehicles and controllers in NSW and reference group discussions.

2.1 Questionnaire Design

The questionnaire design process involved determining the target audience, a literature review on behavioural targeted policies and interventions, a reference group meeting and a pilot of the survey.

1. Target audience – The survey was aimed at ACT drivers and riders (regardless of licence type) who have previously travelled on NSW roads as the vehicle controllers. The travel to NSW had no specific distance threshold as many of the NSW crashes occur within surrounding local government areas (LGAs) e.g. Queanbeyan. Given the absence of a database on ACT vehicle controllers who have travelled on NSW roads, invitations to participate in the survey were distributed to several groups within the ACT. Respondents were therefore unselected volunteers.
2. Literature review – A review of existing literature on targeted policies or interventions aimed at enhancing human behaviour on roads indicated the importance of capturing and identifying road user behaviour and perceptions on crash risk factors such as driver fatigue, speed and overall behavioural issues. This is because driver or road user perception of risk offers insight into road use patterns, behaviour and a measure of driver awareness of the surrounding environment. Additionally, literature on key crash concerns from the earlier research by ARRB, the driver behaviour questionnaire (DBQ) developed by the Manchester Driver Behaviour Group (Reason et al. 1990) and existing survey based studies on road user behaviour, perceptions and attitudes in Australia was also reviewed.
3. Reference group meeting – a reference group consisting of road safety practitioners in the ACT and the surrounding NSW LGAs was set up at the inception of the project. The members included representatives from regional Roads and Maritime Services NSW (RMS), local government, the ACT chapter of the Australian College of Road Safety (ACRS), ACT Police, NSW Police, The National Roads and Motorists' Association (NRMA) Motoring, and

Insurance Australia Group (IAG), The Trust as well as the ACT Government (Appendix C). A meeting with the reference group identified the key issues and concerns among practitioners and information required to address these concerns (Table 1.1). Another reference group meeting was conducted in May 2015. The aim of the second meeting was to present the key findings, discuss the findings, recommendations and policy implications of these findings.

4. Pilot survey – Based on the literature review, the project reference group and the ARRB crash evaluations, a pilot study was conducted online from 10 November 2014 to 19 November 2014 using the same platform as the final survey (Survey Monkey). Respondents were sought from a range of community, motoring, motorcycle and university groups within the ACT. Different groups were contacted and a handful of respondents from each group completed the pilot survey. The feedback from the respondents led to further refinements, and the final survey version was approved by the project reference group (Appendix A).
5. Final questionnaire – The questionnaire had four sections. The first section contained demographic and driver/rider experience questions, i.e. age, gender, licence held and the number of years' experience. The second section contained questions on the driving/riding experience on NSW roads. The questions covered the frequency of trips, trip length, purpose, route used, destination, time of day, road surface type and associated concerns. The third section, which formed a large portion of the questionnaire, contained items on crash risk factors, i.e. fatigue, alcohol and drugs, speed, distraction and restraint use. The subsection on restraint use separated motor vehicles and motorcycles. The final section of the questionnaire investigated overall perception of safety on NSW roads and controller awareness of the overall environment and specific safety initiatives.

Based on the crash analysis by ARRB, the key crash cause factors for NSW crashes involving ACT vehicles and drivers included speed, fatigue, alcohol and drugs and restraint use. Other key concerns were young drivers and crashes on unsealed roads (Pyta, Makwasha and Hore-Lacy 2013). These findings informed the survey questions. Other issues addressed in the survey were the perceived safety on NSW roads compared to within the ACT, and overall travel behaviour.

The survey was designed as a self-administered anonymous internet or paper based survey. The respondents were informed of the intended use of the information gathered and the anonymity and confidentiality of responses received. The survey initially ran from the 18 December 2014 to the 12 January 2015 but was extended to the 20 March 2015 due to a low response rate.

2.1.1 Advertising and Promotion

The absence of a database on travel patterns by age and gender obliged the study to use a self-selected sample. To this end, an email campaign was launched in November 2014 aimed at recruiting potential participants. Participants were sought from different community groups, universities and motoring and motorcycling groups and professional networks in the ACT. Information on the survey, both the internet and paper based versions, was provided at this stage, including an indication of the completion time and the purpose of the survey.

Furthermore, at the launch of the survey in December 2014, emails with the link to the internet survey and information on the paper based survey were sent to the groups and individuals that had indicated an interest in participation, the reference group, ARRB's website and social media accounts. Another email campaign and several media releases were sent out to different community websites and major media outlets in an effort to increase the response rate. These were followed up, but did not result in increased coverage or prominence of the survey. Initially, a participation incentive was considered in order to encourage participation. However, this was later shelved due to complexities of the size of incentive, type of incentive (to suit different age groups

and gender) and incentive dissemination, especially considering the confidential nature of the survey.

In the end, the survey was disseminated through:

- social media and websites, specifically, Facebook, Twitter, LinkedIn, RiotAct, Living Streets, Canberra
- community groups, e.g. council of ACT motor clubs, participants in the DASH study at Australia National University
- word of mouth, e.g. through colleagues and family members
- reference group members (including NRMA and the ACRS Chapter).

The survey dissemination ensured that participants were sought from different groups in order to reduce selection bias and obtain as close to a representative sample as possible. In order to reduce selection bias arising from an internet based survey, i.e. in order to avoid exclusion of computer illiterate respondents or those without access to a computer, paper based questionnaires were also mailed out. Overall, 23 responses were paper based and 194 internet based.

2.1.2 Concerns with Self-reporting

As indicated earlier, this study was based on a self-reported survey of road user perceptions, behaviour and attitudes. Surveys are used to obtain information on user attitudes and behaviour and can be online questionnaires, mail questionnaires or phone/video interviews. While self-reported surveys are a common tool for collecting road user information, there are concerns with the validity of this method.

Some of the key issues or concerns with self-reporting surveys include:

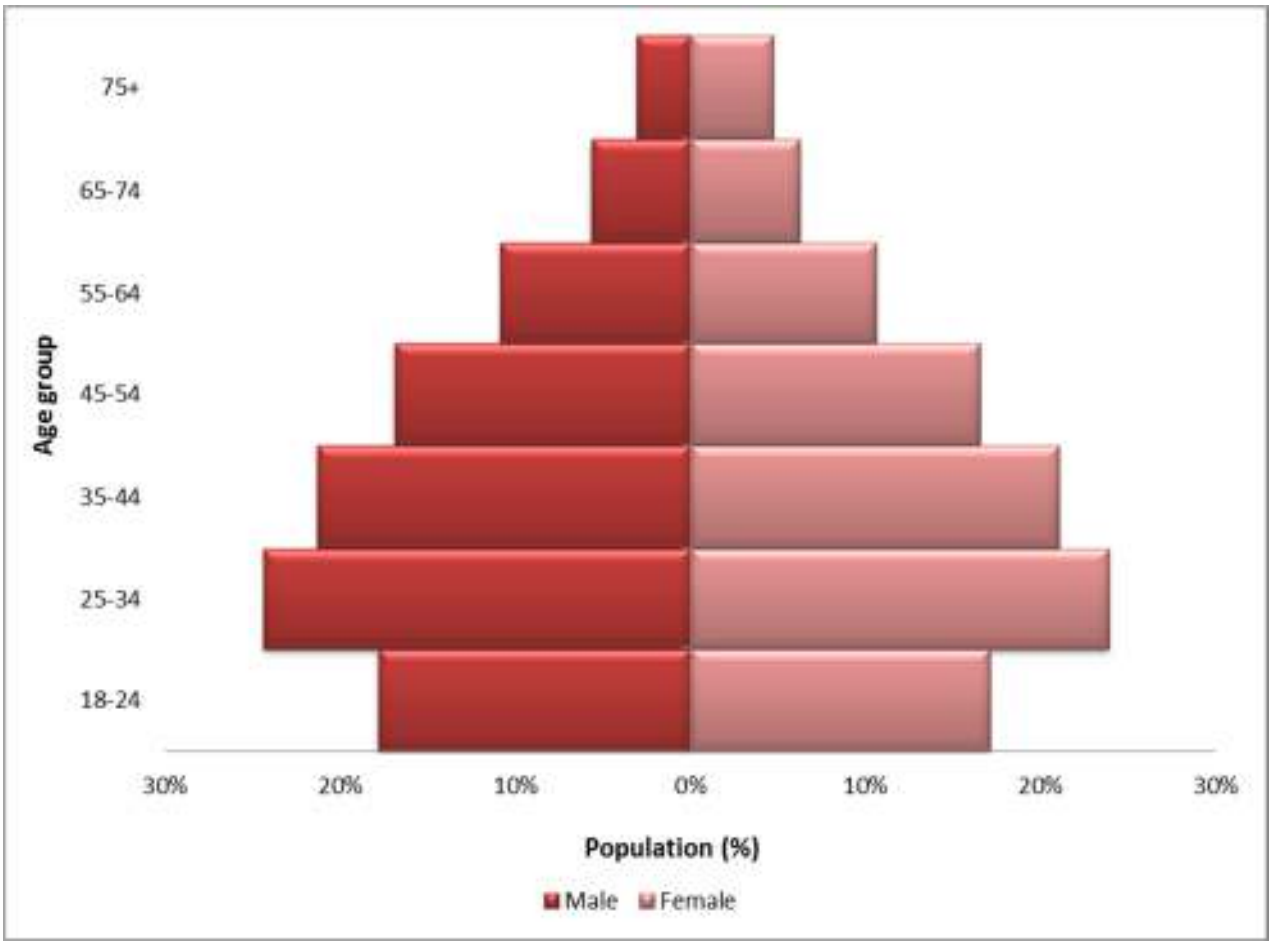
- response bias, including positive and socially desirable responses – respondents could provide socially desirable responses only, affecting validity, or respond in a certain way to every question, e.g. always answering 'yes' regardless of question or context (Wåhlberg, Dorn & Kline 2010)
- honesty – no way of verifying the responses honesty and thoroughness of responses (De Winter & Dodou 2010)
- sample control – particularly with online surveys, no control over the amount of attention a respondent pays each question (Wåhlberget al. 2010)
- rating scales – interpreting rating scales is open to personal interpretation, there is a tendency to select either extreme values or mid-point values (De Winter & Dodou 2010).

The survey was voluntary and also anonymous. This was done so as to encourage more honest, accurate and therefore reliable responses.

2.2 Sampling

At the onset of the project, the aim was to match as closely as possible the gender and age distribution in the ACT. The population distribution by relevant age and gender is outlined in Figure 2.1. Males in the 18–24 years cohort make up 18% of the male population in the ACT, while females in the same age group make up 17% of the female population. There is little or no difference in the gender split for the rest of the age groups (from 25 years up to 65 years).

Figure 2.1: Age and gender distribution ACT from 1971–2013



Source: ABS 2014, Australian Demographic Statistics, Cat.3101.0 TABLE 58. Estimated Resident Population by Single Year of Age, Australian Capital Territory.

Sample characteristics

The achieved sample at the conclusion of the survey consisted of 145 (66.8%) males and 71 (32.7%) females and 1(0.4%) listed as other gender. The highest proportion of respondents was aged between 45 and 64 years of ages, constituting 34% of the overall respondents. The highest proportion of male respondents was aged between 45 and 64 years and between 18 and 34 years for female respondents as shown in Table 2.1.

Table 2.1: Age and gender of survey respondents

	Count				Percentage			
	Male	Female	Other	Total	Male	Female	Other	Total
18–34 years	35	26	1	62	24%	37%	100%	29%
35–44 years	43	14	0	57	30%	20%	0%	26%
45–64 years	50	23	0	73	34%	32%	0%	34%
65+ years	17	8	0	25	12%	11%	0%	12%
Total	145	71	1	217	100%	100%	100%	100%

Although the distribution by gender and age in the survey sample does not closely resemble the overall age and gender distribution in the ACT, respondents were from both genders and all age groups of interest. Importantly, the distribution by gender matches that of ACT controllers involved in crashes on NSW roads from 2006 to 2010, where males constituted 65%, females 32% and 3% were of unspecified gender (Pyta, Makwasha & Hore-Lacy 2013).

Since no data are available on the age and gender of ACT controllers driving or riding on NSW roads, it would not be possible to match the survey sample with the population of interest. The broad cross-section of ACT controllers obtained in the survey is considered adequate for the purposes of the project.

Most of the respondents held a full car licence (90%), 19% full motorcycle licences and 14% heavy vehicle licences. Of the full car licence holders, 67% (131) were males and 32% (63) females. Males also held 95% (40) of the full motorcycle licences with females holding 5% (2). Only two respondents had a probationary motorcycle licence (one male and one female). One male respondent aged between 45 and 64 years held a public vehicle licence, while five males and seven females held probationary car licences (Appendix B Figure B 1).

2.3 Reported Findings

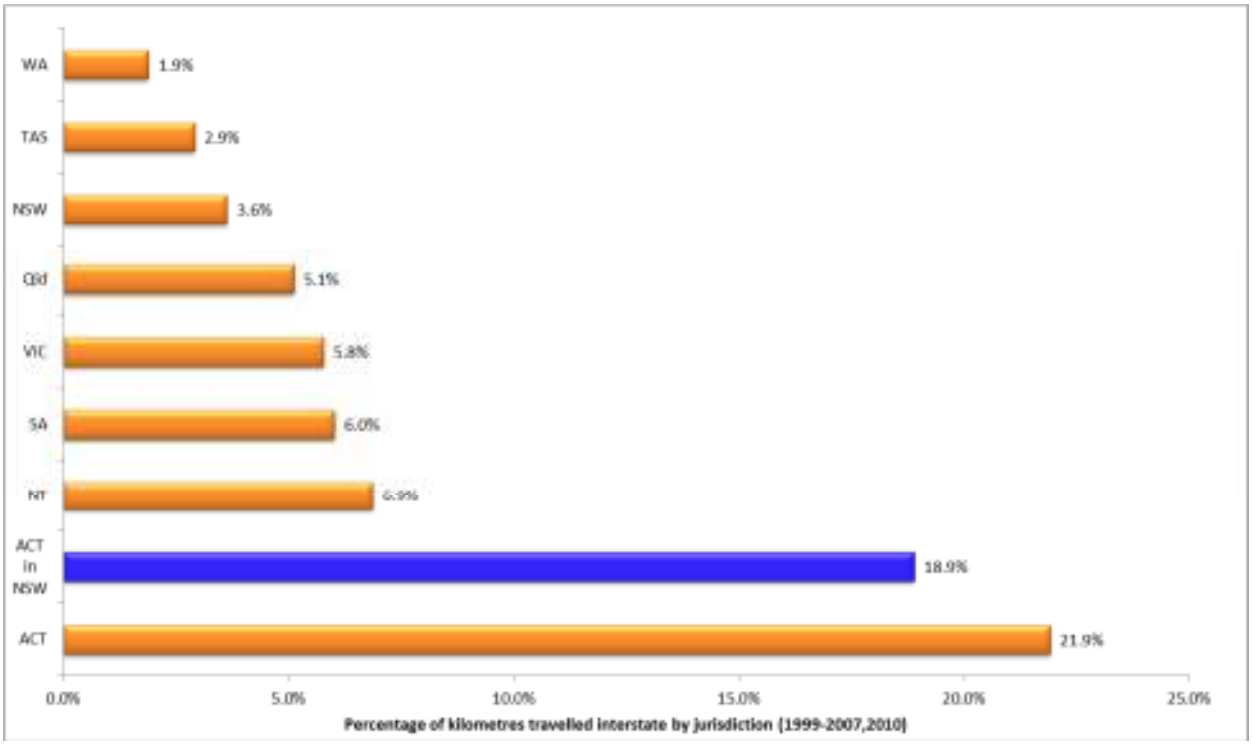
Responses were analysed using IBM's Statistical Package for Social Sciences version 22 and Microsoft Excel 2010. Frequency distributions, crosstabs, an analysis of variance and chi-square tests of significance were used to examine the relationships in these data. The statistical analyses conducted differed depending on the available data. Also, statistical analyses were conducted on all results; however, only the statistically significant outcomes are reported.

Additionally, given the small sample size achieved (n=217), the findings discussed in Section 4 are those with a defined or clear response pattern.

3 SCALE OF THE PROBLEM

Figure 3.1 shows the percentage of interstate travel by vehicles registered in each jurisdiction in Australia from 1999 to 2007 and 2010. ACT registered vehicles had the highest percentage of interstate travel of all jurisdictions in Australia (22%). Of the interstate travel for ACT vehicles, 86% was in NSW (19% of all ACT registered vehicles). The high percentage of ACT vehicle travel within NSW stems from the fact that the ACT is a small urban region within the NSW borders.

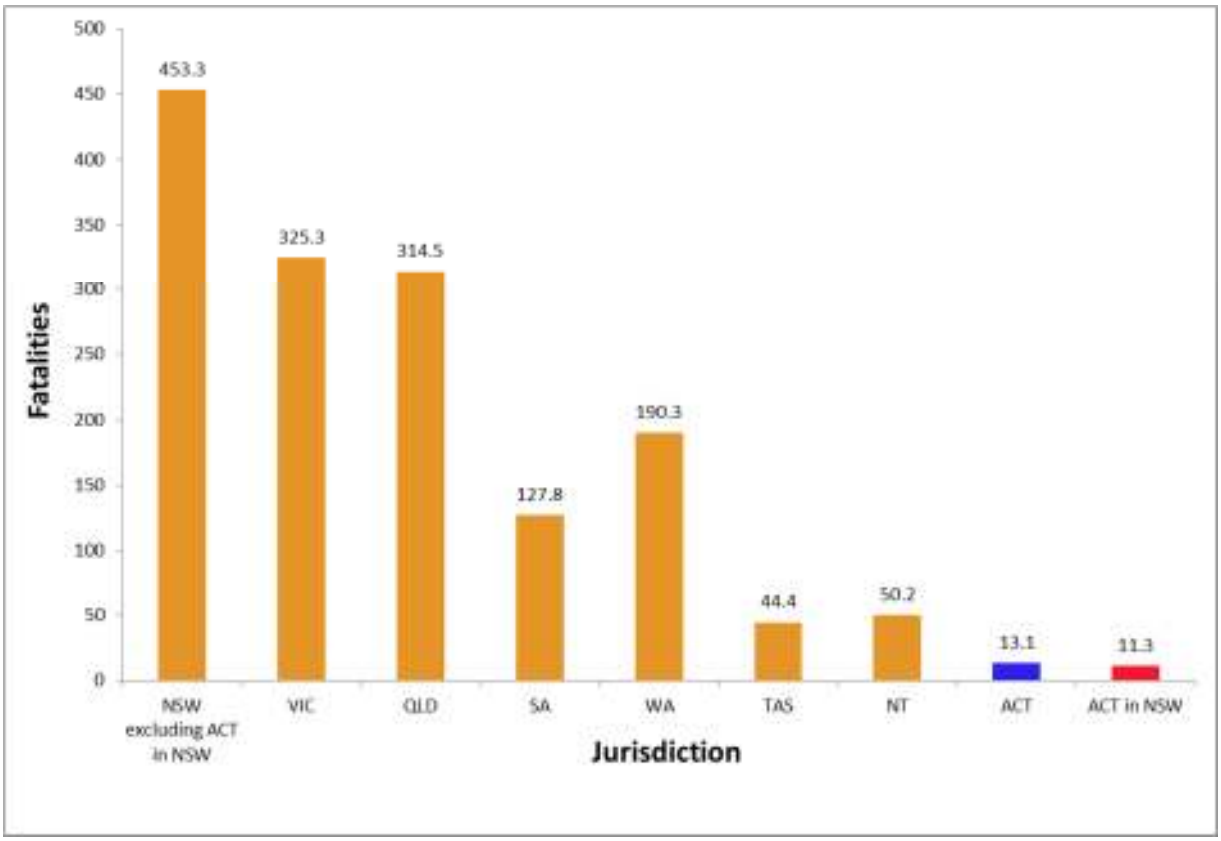
Figure 3.1: Percentage of interstate travel by jurisdiction of vehicle registration from 1999 to 2007 and 2010



Source: Adapted from ABS Survey of motor vehicle use Cat.9208.0.

Figure 3.2 shows average annual fatalities for Australian states and territories from 2002 to 2011. The ACT recorded the lowest average annual fatalities in Australia (13.1) while NSW recorded the highest (453.3). The average annual number of fatalities in the ACT was almost the same as the average number of fatalities involving ACT controllers in NSW (11.3).

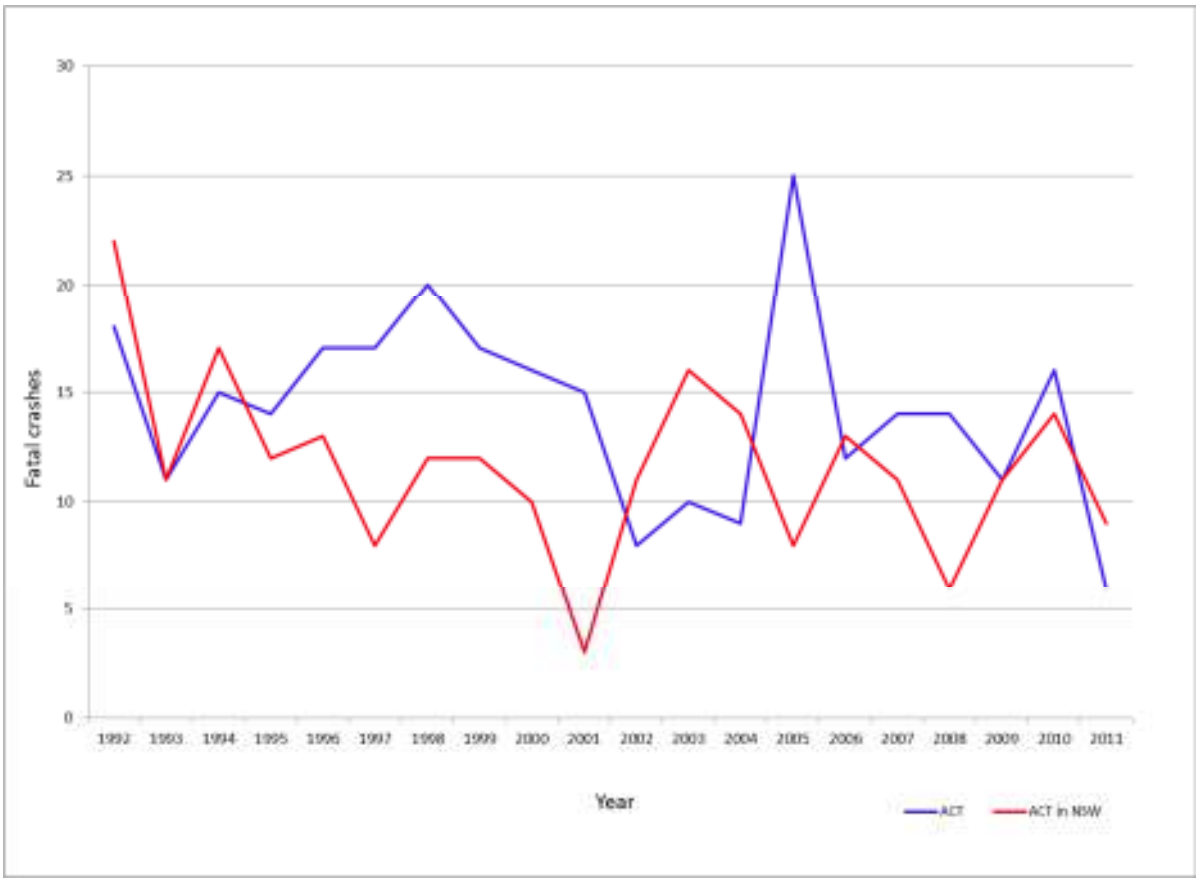
Figure 3.2: Average annual road fatalities (2002–2011)



Source: Adapted from Australian Road Deaths Database.

Further analysis of fatal crashes within the ACT compared to those involving ACT vehicles and controllers in NSW from 1992 to 2011 showed that there were actually more fatal crashes in NSW than in the ACT except for 1992, 1994 and 2003, as shown in Figure 3.3.

Figure 3.3: Fatal crashes within ACT and those involving ACT vehicle controllers in NSW 1992–2011



The crash data showed that the number of fatal crashes and fatalities in NSW involving ACT vehicles and controllers was comparable to the number within the ACT, although there were year-on-year fluctuations. Similarly, there was a high percentage of ACT vehicles travelling within NSW.

4 RESULTS

4.1 Driving/Riding Experience in NSW

4.1.1 Research Findings

Research indicates that time of day, trip purpose, distance travelled, road surface type and route familiarity are key factors in crash occurrence. According to Yanko (2013), route familiarity reduces driver attentiveness and increases reaction time to any changes in the environment. The crash data used by ARRB in the crash analyses reports for the Trust did not include information on vehicle controllers' route familiarity.

4.1.2 Survey Findings

A chi-square test of association conducted to determine the relationship between gender and crash involvement showed a statistically significant difference in crash history by gender ($\chi^2(2,216) = 5.864, p < 0.05$). The survey showed that males were more likely to have experienced a crash at the time of the survey (73% compared to 27% for females) as shown in Appendix B, Table B 1. Furthermore, most of these crashes occurred on NSW roads (63%). This difference in crash involvement by gender reflects the findings in Pyta, Makwasha and Hore-Lacy (2013) indicated in Section 3.

Most of the respondents, regardless of gender and age, felt there was a difference in travelling on NSW roads compared to ACT roads (65%) as shown in Appendix B, Figure B 2. The respondents indicated that these differences were mainly due to:

- speed limit differences, especially 110 km/h roads
- different road surface conditions, particularly on rural roads
- traffic mix, especially the presence of heavy vehicles
- higher traffic volumes on urban roads.

Additionally, respondents had safety concerns (mainly visibility and vehicle damage) when travelling on unsealed roads. They also had concerns on winding roads and narrow roads. The main concerns were visibility of oncoming traffic, especially heavy vehicles, speed of oncoming traffic and running off road. In general, female respondents tended to be more concerned on the different road types than male respondents. Consequently, more female than male respondents changed their driving or riding on the different road types in NSW. Figure 4.1 summarises the key concerns on NSW roads.

Figure 4.1: Driving/riding experience in NSW – key concerns from left to right: unsealed roads, heavy vehicles and narrow winding roads

Source: ARRB Group.

Recommendation

Driver and rider education on what to expect when travelling interstate is recommended, drawing attention to the different road types, speed zones, traffic mix and volumes on NSW roads. There are marked differences in traffic volumes in rural, regional and urban NSW. There is therefore a need to provide ACT controllers with as much information as possible prior to and during their trips in NSW. An increased focus on the importance of trip planning and informed speed selection behaviour in the different environments is recommended. This information can be made available at tourist information centers, on road authority websites and through media campaigns.

4.2 Crash Risk Factors

Alcohol and/or drugs, inappropriate and excessive speed, lack of or improper use of restraints (including protective clothing), controller inexperience, distraction and fatigue are widely identified as crash risk factors. In Australia, the role of speed, distraction, alcohol and/or drugs and fatigue in crashes has been well documented (Beanland et al. 2013, Bambach et al. 2012, Bureau of Transport, Infrastructure and Regional Economics (BITRE) 2011).

According to the ACT Road Safety Action Plan 2011–20, the main risk factors for fatal and serious crashes within the ACT include alcohol and or/drugs, speeding, failure to wear restraints, distraction and fatigue for interstate travel (Australian Capital Territory Government Justice and Community Safety Directorate (JACS) 2011).

Driver error, distraction or unintended impairment were identified as factors in 39% of fatal crashes, while alcohol and/or drugs, excessive speed and other risk-taking, fatigue and adverse weather or road conditions were identified as a factor in 34%, 28% and 8% of all crashes respectively (BITRE 2011).

4.2.1 Speed

Research findings

Speed has been widely identified as a major contributory factor in the severity and occurrence of crashes (Haworth & Rechnitzer 1993, Austroads 2014). Speeding generally refers to either inappropriate speed for prevailing conditions, such as low visibility, limited sight distance, poor road surface type and condition, or to exceeding the speed limit. Globally, it is suggested that speed contributes to around one-third of all fatal crashes (OECD 2006). In Australia, a study on rural

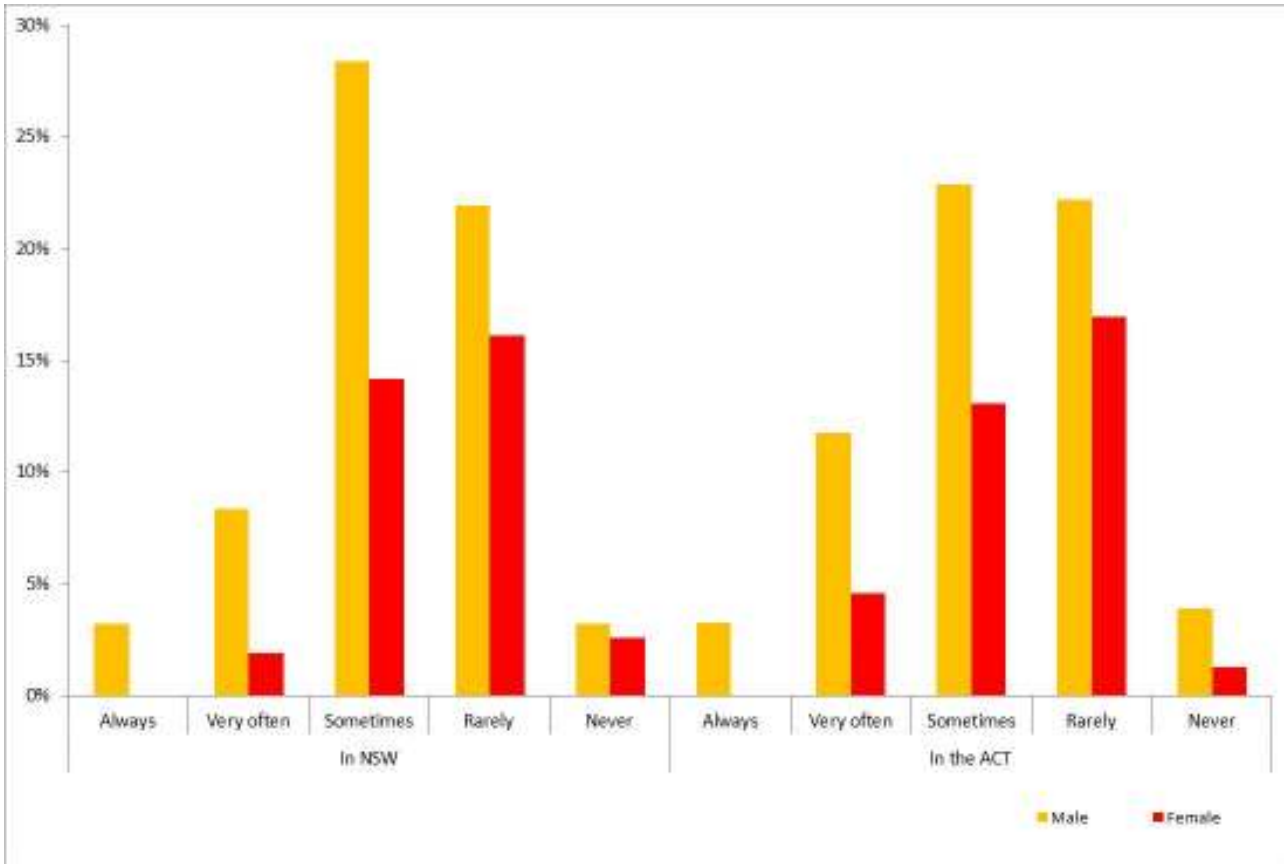
speed found that the risk of involvement in a casualty crash more than doubled when travelling 10 km/h above the average speed of non-crash involved vehicles, and that it was nearly six times as great when travelling 20 km/h above that average speed (Kloeden, Ponte & McLean 2001).

Speed was identified as a contributing factor for 662 (23%) of the 2927 crashes in NSW involving ACT vehicles and controllers between 2006 and 2010 (Pyta, Makwasha & Hore-Lacy 2013).

Survey findings

The survey found little difference in self-reported speed selection in NSW compared to the ACT, with respondents showing slightly more careful speed selection in NSW. Generally, males tended to exceed the posted speed limit more often than females, as shown in Figure 4.2.

Figure 4.2: Frequency of exceeding the speed limit by gender



Most of the respondents indicated that they used cruise control or regularly checked their speedometer to ensure that they did not exceed the speed limit while travelling in NSW. The use of cruise control was more prevalent among the male respondents than the female respondents.

The survey also showed that the overall awareness of the posted speed limit was slightly lower in NSW compared to within the ACT. The awareness levels tended to be higher for male than female respondents. Additionally, respondents revealed that they either drove or rode to the prevailing conditions or at the posted speed limit on different road types on NSW roads (Appendix B Table B 2). This was taken to mean that they adjust and select their speed according to the prevailing road conditions. However, this finding is contrary to the crash analysis conducted by Pyta, Makwasha

and Hore-Lacy (2013) where speed was identified as one of the leading causes in crashes in NSW involving ACT vehicles and controllers.

This suggests that drivers and riders are either not aware of how fast they are travelling or are reluctant to recognise that they may sometimes driver or ride too fast. Either interpretation suggests that it may be worth raising awareness of speed issues and associated risks.

The results also showed slightly higher proportions of male respondents with speed infringement history in ACT than in NSW.

Recommendation

While the respondents indicated safe speed selection, generally driving or riding to conditions or at the posted speed limits, evidence from earlier research indicated a high number of speed related crashes in NSW involving ACT controllers. As a result, speed messages and monitoring aimed at increasing driver and rider awareness of their travelling speed is recommended.

Additionally, increased speed enforcement, visibility of speed limit signs and road user education on speed selection behaviour on different road types is recommended.

4.2.2 Tiredness and Sleepiness

Research findings

Jackson et al. 2011 defined fatigue as a steady and cumulative process, associated with a loss of efficiency and a disinclination for any kind of effort, increasing with time spent on the task. This is distinguished from sleepiness or drowsiness, defined as difficulty in staying awake, determined by two independent mechanisms. These are the body clock or the pattern of alertness and sleepiness over the course of the day, and balance between how much sleep a person has had and the amount of time they have been awake. This distinction is important for understanding the nature of the problem.

Fatigue in road safety generally refers to tiredness and sleepiness. According to the Australian Transport Council (2011), “a driver who has been awake for 17 hours has a driving ability similar to that of a driver with a blood alcohol concentration (BAC) of 0.05, and after 21 hours, similar to a BAC of 0.15”.

In the UK, drivers most at risk of being involved in fatigue-related crashes include shift workers, young male drivers, long-haul drivers and those taking medications (RoSPA 2011). The study also reported that fatigue contributes to 20-30% of all deaths on the road and is considered a major contributory factor to crashes.

Jackson et al. (2011) concluded that fatigue affects driving skills in three ways:

- It increases the frequency of errors, e.g. the number of times a driver intrudes on a neighbouring lane.
- It increases the size of errors, e.g. the distance that a driver intrudes on a neighbouring lane.
- It increases the variability of errors, e.g. reductions in the amount of time a driver drives in the centre of the lane.

According to the Australian Transport Safety Bureau (2002), fatigue-related crashes tend to lead to more severe outcomes as the controller either fails to employ avoidance manoeuvres or their

reaction is delayed. In Australia, fatigue is considered a major crash contributory factor, as contributing between 20–30% of fatalities (Centre for Accident Research and Road Safety-Queensland (CARRS-Q) 2011).

Research by Armstrong et al. (2011) found that a large proportion of ACT residents reported feeling sleepy while driving. Additionally, the study also found that a larger proportion of ACT residents, compared to NSW residents, continued driving while or after experiencing symptoms of sleepiness. The research also found that around half of the ACT respondents indicated that they experienced a close call incident outside of the ACT. These findings were based on a survey of 1609 individuals, 803 from the ACT and 806 from NSW.

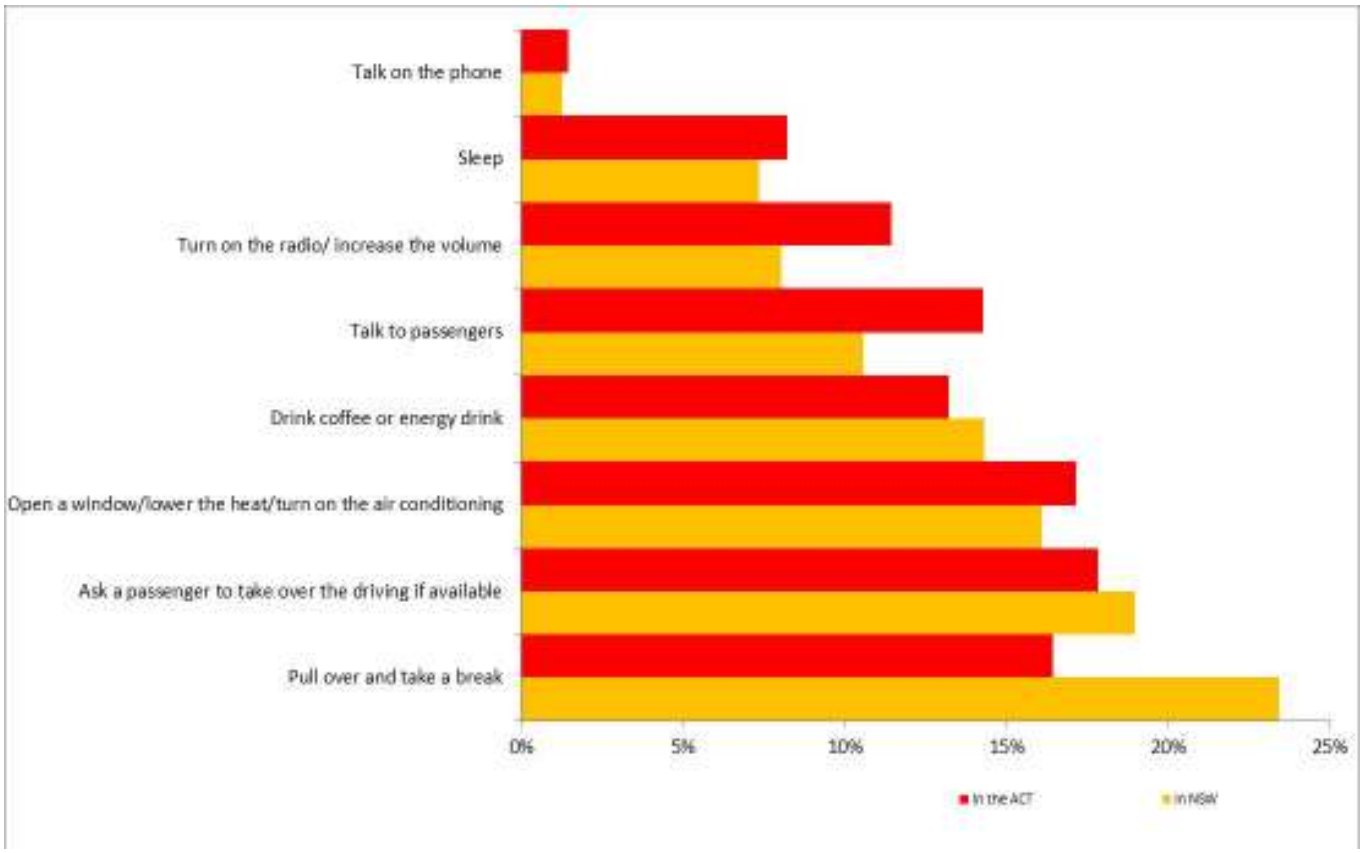
Survey findings

The survey showed that most of the respondents were aware of changes in their driving or riding when tired. Additionally, there was a higher awareness of tiredness when travelling on NSW roads, particularly for male respondents. As expected, the number of respondents who reported drifting off-lane or nearly drifting off-lane or off-road was higher for travel in NSW than within the ACT, 35% and 24% respectively, as shown in Appendix B Figure B 3.

Most of the respondents indicated that they usually pulled over to rest rather than keep on driving or riding when too tired while travelling in NSW. A chi-square test showed that women were more likely than men to pull over and rest when tired ($\chi^2(4,160) = 10.96, p < 0.05$). These results indicated slightly more care on NSW roads.

To stay alert when driving or riding in NSW, respondents often pull over to rest, share the vehicle control or open a window/lower the heat/turn on the air conditioning as Figure 4.3 shows.

Figure 4.3: Actions to stay alert on NSW roads



Recommendation

Tiredness and sleepiness, indicated by the higher proportion of respondents who drifted off path on NSW roads, is an issue due to the differences in distances travelled in NSW and those within the ACT. Providing ACT controllers with information on rest stops, advertising the importance of resting when tired and provision of amenities at rest stops can be used to reduce the levels and frequency of fatigue or tiredness related crashes. Given the awareness of road safety variable message signs by ACT respondents, these could be used at key locations or distances in the trip to prompt controllers to rest.

The high level of tiredness related incidents within the ACT indicates that awareness of tiredness and its effects also needs to be promoted within the ACT.

4.2.3 Alcohol and drugs

Research findings

Research has identified alcohol as a leading contributor to road crashes and injuries. It has been shown that the risk of involvement in a crash increases with an increase in the blood alcohol concentration (BAC) (Blomberg et al. 2009, Phillips & Brewer 2011). Furthermore, studies have shown that the involvement of drugs in crashes is a concern for road safety (Bates & Blakely 1999, Davey, Freeman & Lavelle 2009, Kelly, Darke & Ross 2004, Li, Brady & Chen 2013 and Longo et al. 2000). Drummer et al. (2003) showed a strong relationship between drug use, increased crash

probability and culpability. There is also a growing volume of literature indicating the impact of medical drugs on vehicle control (Austroads 2000, Drummer 2008).

The effects of alcohol and drugs on vehicle control include (CARRS-Q 2012):

- slower reaction time
- reduced ability to multi-task
- impaired view of distance and time
- reduced attention span
- aggression
- increased risk-taking behaviour.

In Australia, the majority of impaired driving involves alcohol (30%) and is more prevalent among males under 30 years of age (Devlin & Fitzharris 2013). A recent study on Australian crash trends found a reduction in fatal crash rates per billion vehicle kilometres travelled (vkt) attributable to the BAC legislation and enforcement (BITRE 2011).

In NSW crashes involving ACT vehicles and controllers, 101 controllers of 2927 (3%) had BACs above the legal limit and 2084 were within the legal limit. Those above the legal limit were 11 times more likely to be involved in a fatal crash compared with those below the limit, and represented 20% of controllers involved in fatal crashes. They were also 1.2 times more likely to be involved in injury crashes (Pyta, Makwasha & Hore-Lacy 2013).

Survey findings

There were very slight differences in the frequency of alcohol consumption, with indications towards more careful behaviour when travelling in NSW (Appendix B Table B 3). This finding was consistent with Pyta, Makwasha and Hore-Lacy (2013) above. Most of the respondents indicated that they either avoided alcohol or limited their alcohol intake two hours prior to driving or riding in NSW. In cases where alcohol is served, slightly more respondents indicated that they either avoided alcohol on the occasion or arranged for alternative drivers when travelling in NSW.

While the survey sought to obtain information on alcohol and drug behaviour, there were limited responses to determine the drug driving behaviour of the respondents.

Recommendation

The findings of this survey suggest that current policy and campaigns on drink driving have been effective in increasing awareness and responsible drinking behaviour, as reflected by the absence of marked differences in the careful alcohol consumption both in NSW and within the ACT. Current policy measures should therefore be maintained and campaigns refreshed and relaunched as required.

4.2.4 Distraction and Inattention

Research findings

Driver distraction is occurs when vehicle controllers divert their attention away from the vehicle control task to focus on another competing task (Regan, Lee & Young 2009, Regan, Hallett & Gordon 2011 and Lee et al. 2013). Distractions may be physical, visual, auditory or cognitive.

According to Western Australia Office of Road Safety (2014), sources of distraction include:

- food consumption
- outside object, event or person
- adjusting radio
- auditory stimuli
- other vehicle occupants
- reaching for objects in the vehicle
- mobile phone use
- smoking-related activity
- other electronic devices, e.g. portable games, GPS etc.
- adjusting climate controls.

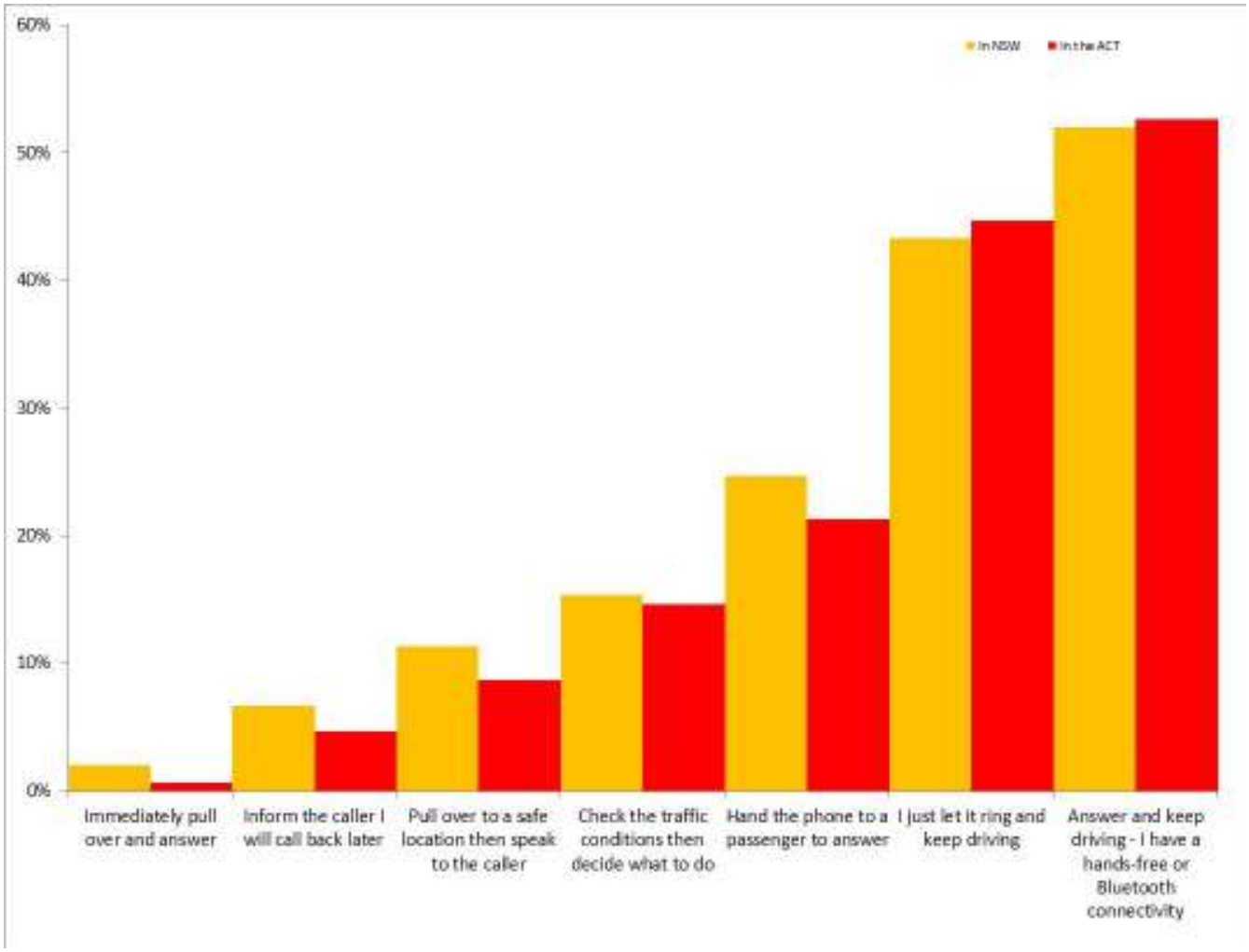
Any of the sources of distraction affect reaction time, hazard perception, and vehicle control and increase the risk of crashing (Wundersitz & Grigo 2013). While statistics on crashes attributed to controller distraction or inattention are available, the level of accuracy varies due to difficulties in data collection and observation.

Survey findings

The main sources of distraction identified in the study include talking to passengers, adjusting the car radio or using a map or GPS system while driving or riding in NSW. For male respondents, the most common sources of distraction were talking to passenger, adjusting the car radio and using a map or GPS, while for female respondents, eating as they drive or ride was also a leading factor. With regard to mobile phone use, most of the respondents indicated that they often answer or make phone calls when they have hands-free technology or Bluetooth connectivity.

There was slightly more careful use of mobile phones while driving or riding in NSW than in the ACT (Figure 4.4). This was indicated by the slight reductions in the proportion of respondents who answer the phone and keep driving (regardless of connectivity technologies), slight increases in the proportion of respondents who pull over to answer the phone, hand the phone to passengers, and those who let the phone ring.

Figure 4.4: Actions when the phone rings while controlling a vehicle



The respondents also indicated that the main reasons for making or answering a phone call, sending or reading a text message and sending or reading an email while controlling a vehicle included the urgency and importance of the call, text message or email, personal safety concerns and the availability of hands-free and Bluetooth connectivity.

Recommendation

Drivers who had a hands-free or Bluetooth connected phone were more likely to take calls and keep driving. This in itself leads to distracted driving and the associated crash risk. Increased publicity about the distraction from mobile phone use, regardless of connectivity technology, is encouraged. Additionally, more education and advertising on the distraction from eating or drinking while driving is also encouraged.

Trip planning advice can be used to reduce or minimise the need for consulting the navigation system.

4.2.5 Restraint Use and Motorcycle Protective Gear

Research findings

In Australia, rural and remote road crashes are usually characterised by lower seatbelt wearing rates than urban crashes, particularly among male drivers (King 1986 and Sahai et al. 1998 in Tziotis et al. 2006). Another study found lower levels of seat belt use among commercial drivers in NSW (Mooren & Williamson 2014). A recent study of crashes in Australia between 2006 and 2010 found that 1% of the injuries for all injured persons who were wearing a seat belt in Australia were fatal and 31% were serious. Conversely, 11% of the injuries of all the persons injured while not wearing a seatbelt were fatal and 43% were serious (Austroads 2015).

Survey findings

The survey found high levels of seatbelt use among the respondents, regardless of age or gender, or trip length and destination. However, there were a number of respondents who indicated that they do not always check to make sure their passengers are wearing appropriate restraints (12% as shown in Appendix B Figure B 7).

While 51% the respondents indicated that they often adjust the headrest, 32% indicated that they rarely or never thought to check the headrest position (Appendix B Figure B 6). A chi-square test showed statistically significant differences in the headrest adjustments by gender ($\chi^2(4,152) = 11.24, p < 0.05$) with more males than females often checking the headrest position. Additionally, 47% of the respondents aged between 18 and 34 years of age never thought to check the headrest position.

Most of the motorcyclists reported that they often wear a helmet (89%), visor (79%) and motorcycling jacket and pants (76%) when travelling in NSW (Appendix B Figure B 8). Also, these articles were also considered appropriate protective gear by most of the respondents.

Recommendation

The survey showed much higher seat belt usage in the front seat compared to the back seat of cars. This highlights the need for further education on the seatbelt usage for all vehicle occupants.

The survey showed a need for increased information on headrest adjustments and the role they play in car safety. This advertising should be targeted at all drivers, regardless of age or gender.

4.3 Perceived Safety

Perceived safety on country, regional and Sydney roads was assessed by asking respondents to compare the safety levels on these roads with those on ACT roads (Appendix B Figure B 9 to Figure B 11).

Table 4.1: Perceived safety on different road types in NSW

Perceived safety	
Country roads 	▪ 45% of respondents felt just as safe on NSW country roads as on the ACT roads. ▪ 36% felt less safe on NSW country roads and 5% much less safe. ▪ ANOVA test of variance showed a statistically significant difference in perceived safety on country roads by gender, with females feeling less safe than males $[(F(1,141) = 9.85, p < 0.005)]$.
Regional centre roads 	▪ 21% of respondents felt less safe on regional centre roads than in the ACT and 1% felt much less safe. ▪ Overall, most of the respondents felt just as safe on regional centre roads as on ACT roads (65%). ▪ A chi-square test showed a statistically significant association between perceived safety on regional roads and gender $[\chi^2(5,142) = 12.193, p < 0.05]$

Sydney roads

- 37% of respondents felt less safe on Sydney roads than on ACT roads.
- The proportion of respondents who indicated that they felt much less safe was higher on Sydney roads than the other road types (18%).

The survey tested respondents' familiarity with some frequently used warning signs. Almost 100% of respondents had seen winding road, curve and wildlife warning signs and 70–80% slowed down to the speed on the advisory plate where that was provided. Fewer (49%) reported having seen the motorcycle hazard warning sign. This is of less concern since it is specifically directed to motorcyclists (Appendix B Table B 6).

Most of the respondents indicated that they had come across driver reviver stops (92%) or rest areas (97%), and 87% indicated that they had come across road safety variable message signs (Figure 4.5) while driving or riding in NSW. Furthermore, 90% of the respondents indicated that they had used rest areas and 54% indicated they had used driver reviver stops while driving or riding in NSW. The main reason respondents cited for not using driver reviver stops was the long queues and proximity of driver reviver stations to their destination. On the other hand, some of the reasons cited for not using rest areas included a lack of amenities, poor lighting and close proximity to the roadway.

Figure 4.5: Example Variable message sign (VMS)

Source: M Weller, Yass City Council.

Overall, respondents identified the following issues as being of concern:

- road user interactions, e.g. tailgating, overtaking and right of way
- speeding, i.e. exceeding the speed limit and or driving or riding at inappropriate speed for prevailing conditions
- speed differences, e.g. work zones, changing speed zones, speed limit conditions for probationary licence holders on highways
- traffic volumes and traffic mix, e.g. peak traffic in Sydney and heavy vehicles
- the presence of wildlife
- poor road pavement conditions, especially on country roads.

Recommendation

Advertising campaigns on gap acceptance is recommended. This will address the tailgating behaviour indicated as one of the key issues in NSW. This can also be coupled with recommended gaps in different traffic conditions and mix, especially driving and riding alongside heavy vehicles.

As indicated earlier, there is a need for increased education on speed selection and appropriate speed for overtaking, on rural roads (sealed and unsealed), on winding roads, and on inner city roads and for prevailing conditions. To address the speeding problem, greater speed enforcement on NSW roads is recommended.

Emphasis and advice on the importance of trip planning is needed to ensure that ACT vehicle controllers are aware of the different road conditions, surfaces and traffic mix and volumes they are likely to encounter on their trip.

5 METHODOLOGICAL ISSUES

This study had several limitations. The achieved sample comprised a large proportion of individuals in the 35 to 44 years age group and a relatively smaller number of young drivers and older drivers. Additionally, while several efforts were made to recruit participants from different age groups and gender, there were more male participants compared to female. Also, the lack of a database on interstate travel patterns, particularly to NSW, by age and gender might restrict the extent to which the findings can be generalised across the different age groups.

Another limitation is that, while the achieved sample had 217 participants, there were only 189 complete responses. This was due to the length and content of the survey. The final limitation was the self-reporting nature of the survey, as outlined in Section 2.1.2. The self-reported behaviour, in terms of distraction, impairment (alcohol and drugs), fatigue, restraint use and speed, indicated generally safe practices and socially acceptable responses, which could be seen as either an indication of actual behaviour and practice or a bias concern associated with self-reporting.

A direction for future research is the provision of:

- guidance on what to expect while travelling in NSW,
- how to plan and prepare for the different traffic mix, road conditions and stereotypes
- tiredness and sleepiness
- reduce distraction levels and increase awareness of the speed environment
- how to increase awareness of road safety initiatives in NSW.

6 REFERENCE GROUP FEEDBACK AND CONCLUSION

The reference group meeting on the 28 May 2015 discussed the key findings from the survey, exploring whether the findings aligned with existing knowledge and observed behaviour of ACT drivers and riders on NSW roads, and obtaining feedback from local stakeholders.

The feedback obtained from the stakeholders was useful in informing the key discussions in the current report and the recommendations and their application and practicality.

6.1.1 Speed

The survey findings showed that ACT drivers and riders are not recognising their excess speed, which was identified as a major contributory factor in serious crashes involving ACT controllers in NSW. This finding reflects the self-reporting nature of the survey and highlights speed awareness as an area for future research. Research identifying the location of speed-related crashes is required in order to target enforcement and education in these locations. The survey findings also emphasise the need for messages aimed at increasing driver and rider awareness of their travelling speed.

The issue of posted speed limits on unsealed rural roads was also addressed. The concern was that respondents indicated they adjusted speeds to prevailing road conditions and posted speed limits on rural roads. However, there are no speed limit signs on unsealed rural roads as they would require frequent maintenance and ongoing repair. Instead, there is a default speed limit on these roads. The survey finding therefore highlighted the need for trip planning to ensure ACT drivers and riders are aware of the default speed limit and the changing speed environments they are likely to encounter on their trip.

There is scope for further research into speed selection on the different rural roads, both classified and unclassified roads.

The differences in speeding behaviour in NSW and within the ACT could be due to differences in enforcement levels, the variability of posted speed limits and different campaigns in the respective jurisdictions. In July 2014, JACS and ACT Policing launched a road safety campaign focused on speeding. The campaign included a television commercial, social media (including interactive forums), as well as public events in Civic, Woden and at the University of Canberra, which included a physical display of a crashed vehicle from ACT Policing and Australasian New Car Assessment Program (ANCAP).

Overall recommendations informed by research, survey and reference group findings:
– education/information resources on speed selection on different road types, taking into consideration the varied nature of the NSW road network – more enforcement on NSW roads to deter excessive speeds – trip planning to increase awareness of different road pavement conditions and surfaces, traffic mix and the typical speed limits on the different road types – education/information resources on safe overtaking behaviour – use of variable message signs to increase driver and rider awareness of their travelling speed
Future research – speed selection on different rural road types – identification of locations with a high incidence of speed-related crashes for a more targeted approach to speeding – developing an understanding the relationship between speed and the road pavement conditions

6.1.2 Tiredness and Sleepiness

The survey raised an interesting issue with regard to tiredness and sleepiness in the ACT, identified in earlier research by Armstrong et al. (2011). This has implications for travel in NSW as it means that, in some cases, ACT drivers and riders are already experiencing symptoms of tiredness and sleepiness before they begin their trip, for example when travelling to the coast or Queanbeyan. Additionally, using the term tiredness rather than fatigue highlights the issue of tiredness in short trips, as fatigue is usually associated with long trips. The survey also showed that some of the actions respondents take when tired or sleepy are also linked to distraction.

Overall recommendations informed by research, survey and reference group findings:
– education and publicity into the issue of tiredness and sleepiness, specifically, a paradigm shift from fatigue is required in order to increase awareness of this issue – more enforcement on NSW roads to deter excessive speeds – trip planning advice also required as this will allow ACT riders and drivers to take into account the activities they engage in prior to travelling within the ACT; the information should be made available both within the ACT and NSW – advertising the importance of resting when tired and provision of amenities at rest stops to reduce the levels and frequency of fatigue-related crashes – use of variable message signs at key locations or distances in the trip to prompt controllers to rest

6.1.3 Alcohol and Drugs

The survey findings showed careful alcohol behaviour in both NSW and the ACT, a result that is supported by observations and research. As indicated in the earlier recommendations (Section 4.2.3), this shows the overall effectiveness of the different drink-driving campaigns. The survey could not provide a useful perspective on this issue due to the limited responses and the demographics of the respondents.

The ACT government representative indicated that legislation in the ACT enables random roadside drug testing, with penalties that may include fines, licence disqualification or imprisonment. ACT Policing can test for all drugs, however, random (roadside) drug testing mainly involves tests for the active ingredients in cannabis, speed and ice, or ecstasy using saliva samples.

Overall recommendations informed by research, survey and reference group findings:
– education and publicity into the issue of drug driving and its role in crashes – this needs to be a broader issue, not constrained to the ACT or NSW only – further research into the prevalence of drug-related crashes – enforcement to be as widespread as alcohol enforcement

6.1.4 Distraction and Inattention

The survey findings showed that respondents associated distracted driving and inattention with handheld device use, but did not consider other concerns such as eating, interacting with connected devices, etc. There was general consensus that the issue of driver and rider distraction needs to be addressed at a national level rather than only at local level.

Overall recommendations informed by research, survey and reference group findings:
– nationwide education and publicity on the distraction from mobile phone use, regardless of connectivity technology – education and advertising on the distraction from eating or drinking while driving – trip planning advice to reduce or minimise the need for consulting the navigation system

6.1.5 Restraint Use and Motorcycle Protective Gear

The survey showed much higher seatbelt use in the front seat compared to the back seat. This finding is consistent with general findings. The survey also raised the issue of headrest adjustments. This was identified as a crash outcome factor rather than a causal factor and likely to be of more interest to insurance companies.

Overall recommendations informed by research, survey and reference group findings:
– research into the importance of headrest adjustments – alerting drivers and vehicle occupants to the importance of headrest adjustments and associated protection benefits in the event of a crash or incident **Future research** – assessment of restraint use on short trips and on unclassified rural roads

6.2 Perceived Safety

The issue of tailgating by ACT drivers raised in the survey is a reflection of impatience, highlighting the need for trip planning. One of the local government representatives indicated that there were not many rear-end crashes on 100 km/h and above roads; however, this does not necessarily mean there is no tailgating on these roads.

Another representative indicated that in October 2014, the ACT Attorney-General, Simon Corbell, launched a road safety commercial on tailgating. The campaign was intended to raise awareness of the impact of tailgating and encourage drivers to slow down and provide a safe gap to the car in front. This shows that the survey findings were consistent with observed behaviour and this was already being addressed.

The survey showed that, overall, 35% of respondents did not feel safe on NSW roads. This is a major finding, as was the breakdown by the different road types, indicating the heterogeneous nature of NSW roads and how travel on the different road types and environment differs.

Overall recommendation informed by research, survey and reference group findings:
– continued advertising and education on gap acceptance and tailgating, emphasising gap acceptance in different traffic and road conditions – driver and rider information on speed selection, overtaking behaviour and lane adherence in mixed traffic conditions, especially around heavy vehicles – emphasis of the importance of trip planning and how this affects speed selection, tailgating behaviour, distraction and inattention and tiredness and sleepiness.

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APPENDIX A QUESTIONNAIRE

Perceived risk of driving/riding in New South Wales- road user survey

The Australian Capital Territory (ACT) has the lowest annual road crashes and fatalities per 100,000 population among all Australian states and territories. However, previous studies by ARRB Group for the NRMA-ACT Road Safety Trust on crashes involving Australian Capital Territory (ACT) vehicles, drivers and riders in New South Wales (NSW) between 1992 and 2011 found that residents of the ACT are equally likely to be involved in a fatal crash in New South Wales (NSW) as they are in the ACT.

ARRB Group is conducting a project for the NRMA-ACT Road Safety trust to examine the different risks, behaviour and attitudes of ACT drivers and riders towards road safety on New South Wales roads. The survey aims to investigate how ACT drivers and riders perceive the risk of driving and the precautions they take when driving in New South Wales (NSW), with a view to providing better and more targeted advice to reduce crashes involving ACT vehicles, drivers and riders in NSW.

The findings of this survey will be examined and used to develop recommendations for strategies to assist ACT inhabitants travel safely in NSW.

Participants

This survey is aimed at ACT drivers and riders (regardless of licence type) who have ridden or driven on NSW roads as the vehicle controllers. This questionnaire includes questions on: your driving or riding experience, frequency of travel in NSW; your driving or riding experience on NSW roads; your opinion on speed, drink and drug driving, restraint use, driver distraction and road safety in NSW.

The questionnaire will take approximately 20 to 25 minutes to complete.

Confidentiality

The information collected will be used for research purposes only. The survey does not aim to identify the individual respondent, only your experience on NSW roads will be captured and analysed. The information you provide will only be viewed by the research team.

The outcomes of this study will be published by the NRMA-ACT Road Safety Trust and also conference papers and journal articles may ensue from the project.

If you have any queries, please contact Ms Tariro Makwasha (ARRB Group)

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1

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Perceived risk of driving/riding in New South Wales- road user survey

A. Driver/rider demographics and experience

1. Age (please enter your age)

2. Gender: ☐ Male ☐ Female ☐ Other

3. Type of licence currently held

Full car licence ☐ Full motorcycle licence ☐ Heavy vehicle licence ☐
Provisional car licence ☐ Provisional motorcycle licence ☐

Other (please specify)

4. How many years have you held your licence? If you hold more than one, please enter the years for each licence type.

	Less than 1 year	Between 1 and 3 years	Between 3 and 5 years	Between 5 and 10 years	More than 10 years
Full car licence	☐	☐	☐	☐	☐
Full motorcycle licence	☐	☐	☐	☐	☐
Heavy vehicle licence	☐	☐	☐	☐	☐
Provisional car licence	☐	☐	☐	☐	☐
Provisional motorcycle licence	☐	☐	☐	☐	☐
Other	☐	☐	☐	☐	☐

5. Have you ever been involved in a crash? ☐ Yes ☐ No

If yes, was the crash in New South Wales?

2

arrb GROUP Perceived risk of driving/riding in New South Wales- road user survey

B. Driving/riding experience in New South Wales as driver/rider

1. How often do you drive or ride to NSW?

☐Daily ☐At least weekly ☐At least monthly ☐At least quarterly ☐At least yearly ☐Once a year ☐First time

Other (please specify)

2. Which roads do you most often drive/ride on in NSW?

Road 1	
Road 2	
Road 3	
Road 4	

Questions 3-8 refer to your last trip to NSW

3. Was your last trip as a driver/rider to NSW

	Yes	No
During school holidays	☐	☐
During public holidays	☐	☐
During uni holidays	☐	☐
During weekdays	☐	☐
During the weekend	☐	☐

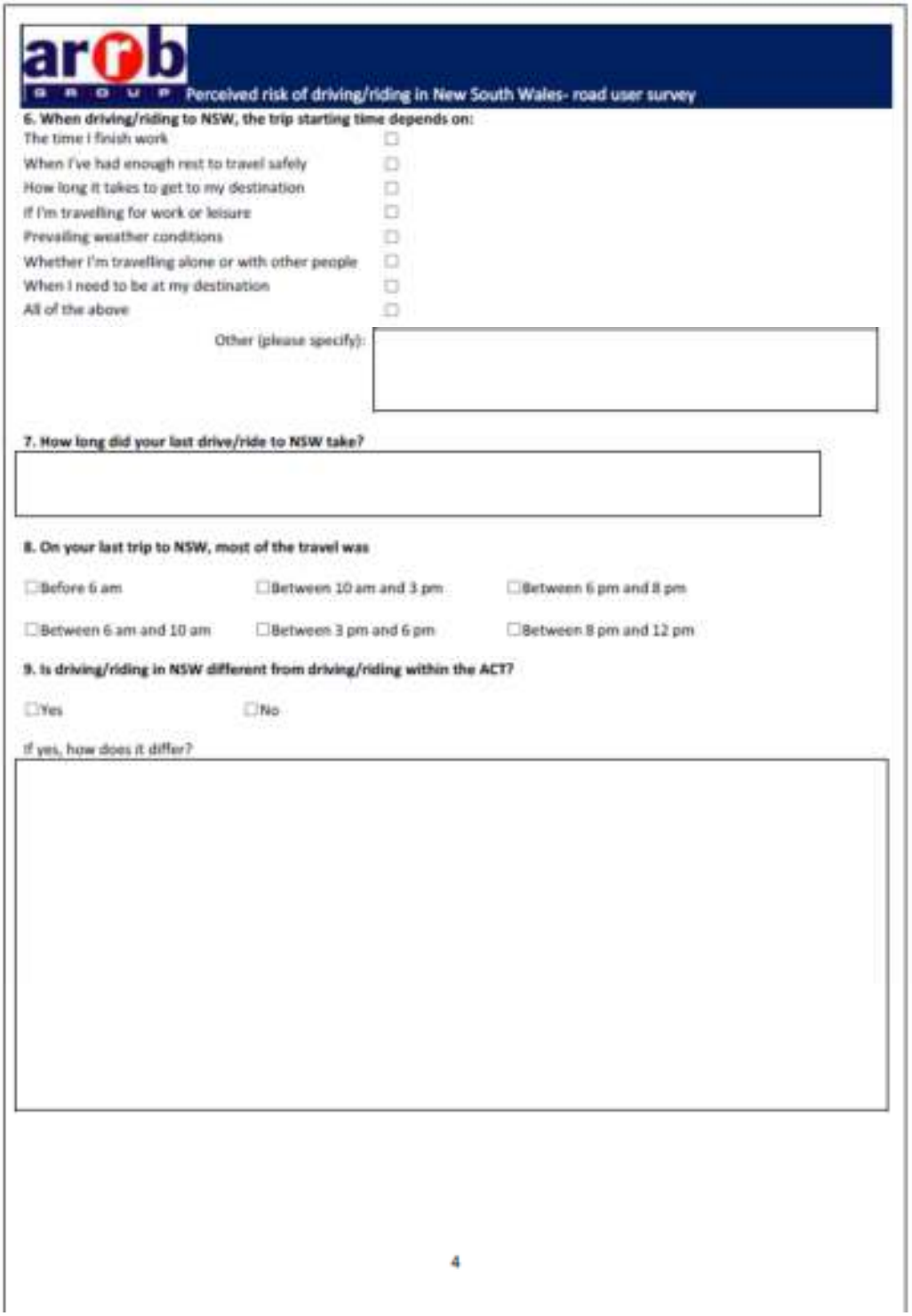
4. What was your destination?

5. What was the purpose of your last trip to NSW?

☐Work ☐Leisure ☐Family

Other (please specify)

3



Perceived risk of driving/riding in New South Wales- road user survey

6. When driving/riding to NSW, the trip starting time depends on:

- The time I finish work ☐
- When I've had enough rest to travel safely ☐
- How long it takes to get to my destination ☐
- If I'm travelling for work or leisure ☐
- Prevailing weather conditions ☐
- Whether I'm travelling alone or with other people ☐
- When I need to be at my destination ☐
- All of the above ☐

Other (please specify):

7. How long did your last drive/ride to NSW take?

8. On your last trip to NSW, most of the travel was

☐Before 6 am ☐Between 10 am and 3 pm ☐Between 6 pm and 8 pm

☐Between 6 am and 10 am ☐Between 3 pm and 6 pm ☐Between 8 pm and 12 pm

9. Is driving/riding in NSW different from driving/riding within the ACT?

☐Yes ☐No

If yes, how does it differ?

4

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Perceived risk of driving/riding in New South Wales- road user survey

Road types- Questions 1 – 4

1. Do you have concerns when driving/riding in NSW?

	Yes	No
On narrow unsealed roads	☐	☐
On wide unsealed roads	☐	☐
On sealed divided roads	☐	☐
On sealed undivided roads	☐	☐
On winding sealed and unsealed roads	☐	☐

If yes, what is the main concern?

Perceived risk of driving/riding in New South Wales- road user survey

2. Do you drive/ride differently when driving/riding in NSW?

	Yes	No
On narrow unsealed roads	☐	☐
On wide unsealed roads	☐	☐
On sealed divided roads	☐	☐
On sealed undivided roads	☐	☐
On winding sealed and unsealed roads	☐	☐

If yes, what is the main concern?

3. When traveling to NSW, do you plan your trip in advance?

☐Always ☐Very often ☐Sometimes ☐Rarely ☐Never

Additional comments

4. If you plan your trip in advance, where possible, do you avoid each of these?

	Yes	No
unsealed roads	☐	☐
narrow roads	☐	☐
winding roads	☐	☐

If yes, why?

6

Perceived risk of driving/riding in New South Wales- road user survey

C. Risk factors

All questions in this section, unless specified, refer to driving/riding in NSW

C1. Fatigue

1. Have you ever drifted out of a lane or run off road while driving/riding?

	In New South Wales	In the ACT
Yes	☐	☐
No	☐	☐
Nearly	☐	☐

If Nearly, please specify

2. If yes, how often has this happened?

	In New South Wales	In the ACT
Always	☐	☐
Very often	☐	☐
Sometimes	☐	☐
Rarely	☐	☐
Never	☐	☐

3. How often do you realise you are too tired to ride or drive?

	In New South Wales	In the ACT
Always	☐	☐
Very often	☐	☐
Sometimes	☐	☐
Rarely	☐	☐
Never	☐	☐

7

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4. How often do you keep driving or riding when you are too tired?

	In New South Wales	In the ACT
Always	☐	☐
Very often	☐	☐
Sometimes	☐	☐
Rarely	☐	☐
Never	☐	☐

5. When traveling in NSW, how often do you pull over to rest when you are tired?

☐Always ☐Very often ☐Sometimes ☐Rarely ☐Never

6. How often do you share the driving on long trips when traveling in NSW?

☐Always ☐Very often ☐Sometimes ☐Rarely ☐Never

7. Do you think your riding/driving changes when you are tired?

☐Strongly disagree ☐Disagree ☐Neither agree nor disagree ☐Agree ☐Strongly agree

8. What actions do you take to stay alert when driving/riding Tick appropriate boxes

	In New South Wales	In the ACT
Pull over and take a break	☐	☐
Sleep	☐	☐
Drink coffee or energy drink	☐	☐
Turn on the radio/increase the volume	☐	☐
Talk on the phone	☐	☐
Talk to passengers	☐	☐
Open a window/lower heat/turn on air conditioning	☐	☐
Ask a passenger to take over the driving	☐	☐
Other (please specify)		

8

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C2. Alcohol and drugs

All questions in this section, unless specified, refer to driving/riding in NSW

1. Do you ever drink alcohol in the two hour period before you ride or drive?

	In New South Wales	In the ACT
I don't drink at any time	☐	☐
I don't drink if I'm driving/riding	☐	☐
I don't drink if I am driving/riding	☐	☐
Someone else drives if I drink	☐	☐
Very often	☐	☐
Sometimes	☐	☐
I restrict my drinking if I'm driving/driving	☐	☐
I don't restrict my drinking if I'm driving/riding	☐	☐
Other (please specify)		

2. Have you ever driven/ridden when you thought you were over the limit?

	In New South Wales	In the ACT
Always	☐	☐
Very often	☐	☐
Sometimes	☐	☐
Rarely	☐	☐
Never	☐	☐
I don't drink at any time	☐	☐
I don't drink if I am riding/driving	☐	☐
I can't tell if I am over the limit	☐	☐
Other (please specify)		

9

Perceived risk of driving/riding in New South Wales- road user survey

3. Have you ever ridden/driven the morning after drinking large amounts of alcohol?

	In New South Wales	In the ACT
Always	☐	☐
Very often	☐	☐
Sometimes	☐	☐
Rarely	☐	☐
Never	☐	☐
I don't drink large amounts of alcohol	☐	☐

4. Have you ever used drugs other than those required for medical reasons?

☐Yes ☐No Other (please specify)

5. Have you ever driven/ridden when you thought you might have been affected by or under the influence of illegal drugs?

	In New South Wales	In the ACT
Always	☐	☐
Very often	☐	☐
Sometimes	☐	☐
Rarely	☐	☐
Never	☐	☐
Not applicable	☐	☐

10

Perceived risk of driving/riding in New South Wales- road user survey

6. What do you do when attending an occasion where alcohol is served before you drive/ride?

	In New South Wales	In the ACT
Carefully monitor my alcohol intake	☐	☐
Arrange for someone else to drive	☐	☐
Rely on taxis and public transport	☐	☐
Use a breathalyser to make sure I'm not over the limit	☐	☐
Avoid alcohol on the occasion	☐	☐
Other (please specify)		

7. In the last two years, how many times have you seen the police conducting roadside breath tests while driving/riding?

	In New South Wales	In the ACT
Never	☐	☐
Once	☐	☐
Twice	☐	☐
More than twice	☐	☐

8. In the last two years, how many times have the police pulled you over to check for alcohol or drugs?

	In New South Wales	In the ACT
Never	☐	☐
Once	☐	☐
Twice	☐	☐
More than twice	☐	☐

11

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Perceived risk of driving/riding in New South Wales- road user survey

C3. Speed

All questions in this section, unless specified, refer to driving/riding in NSW

1. How often do you find yourself exceeding the speed limit?

	In New South Wales	In the ACT
Always	☐	☐
Very often	☐	☐
Sometimes	☐	☐
Rarely	☐	☐
Never	☐	☐

Other (please specify) _____

2. When driving/riding in NSW, what do you do to make sure you do not exceed the speed limit?

☐ Regularly check my speedometer ☐ I use cruise control

☐ Keep pace with surrounding traffic ☐ I use a phone app or other device to warn if the speed limit is exceeded

☐ Plan my trip to allow plenty of time ☐ Nothing

Other (please specify) _____

3. I'm aware of what the speed limit is

	In New South Wales	In the ACT
Always	☐	☐
Very often	☐	☐
Sometimes	☐	☐
Rarely	☐	☐
Never	☐	☐

12

Perceived risk of driving/riding in New South Wales- road user survey

4. How fast do you ride/drive when traveling in NSW on each of these road types:

	Narrow sealed roads	Unsealed roads	Winding roads
I normally drive/ride more than 10 km/h over the speed limit	☐	☐	☐
I normally drive/ride between 5 and 10 km/h above the speed limit	☐	☐	☐
I normally drive/ride around 5 km/h above the speed limit	☐	☐	☐
I normally drive/ride at the speed limit	☐	☐	☐
I normally drive/ride to the conditions	☐	☐	☐
I normally drive/ride at least 5 km/h below the speed limit	☐	☐	☐
I normally drive/ride at least 10 km/h below the speed limit	☐	☐	☐

5. In the last two years, how many times have you seen the police enforcing speed while riding/driving?

	In New South Wales	In the ACT
Never	☐	☐
Once	☐	☐
Twice	☐	☐
More than twice	☐	☐

6. In the last two years, how many times have you been booked for speeding while riding/driving?

	In New South Wales	In the ACT
Never	☐	☐
Once	☐	☐
Twice	☐	☐
More than twice	☐	☐

13

Perceived risk of driving/riding in New South Wales- road user survey

C3. Restraint use

All questions in this section, unless specified, refer to driving/riding in NSW

1. Which best describes your seatbelt use?

- ☐ I always drive with it fastened
- ☐ I sometimes neglect to fasten it
- ☐ I might not fasten it for very short trips
- ☐ I don't use it

Other (please specify)

2. I always make sure the top of my head rest is as high as the top of my head

☐Always ☐Very often ☐Sometimes ☐Never ☐Rarely

3. I always move the head restraint as close to the back of my head as possible

☐Always ☐Very often ☐Sometimes ☐Never ☐Rarely

4. I make sure all my passenger are wearing the appropriate restraint

☐Always ☐Very often ☐Sometimes ☐Never ☐Rarely

5. When traveling with children, I restrain any children under seven years of age in an appropriate child restraint

☐Always ☐Very often ☐Sometimes ☐Never ☐Rarely

If never, why?

14

Perceived risk of driving/riding in New South Wales- road user survey

C4. Distraction

1. When driving/riding in NSW, how often do you

	Always	Very often	Sometimes	Rarely	Never
eat as you drive?	☐	☐	☐	☐	☐
make/receive phone calls?	☐	☐	☐	☐	☐
talk to passengers in the vehicle?	☐	☐	☐	☐	☐
send/read texts or emails?	☐	☐	☐	☐	☐
adjust the car radio?	☐	☐	☐	☐	☐
use GPS or road map?	☐	☐	☐	☐	☐
check on the children in the backseat?	☐	☐	☐	☐	☐

Other (please specify):

2. When driving/riding in NSW, how often do you pull over to

	Always	Very often	Sometimes	Rarely	Never
make/receive phone calls?	☐	☐	☐	☐	☐
send/read texts or emails?	☐	☐	☐	☐	☐
use GPS or road map?	☐	☐	☐	☐	☐

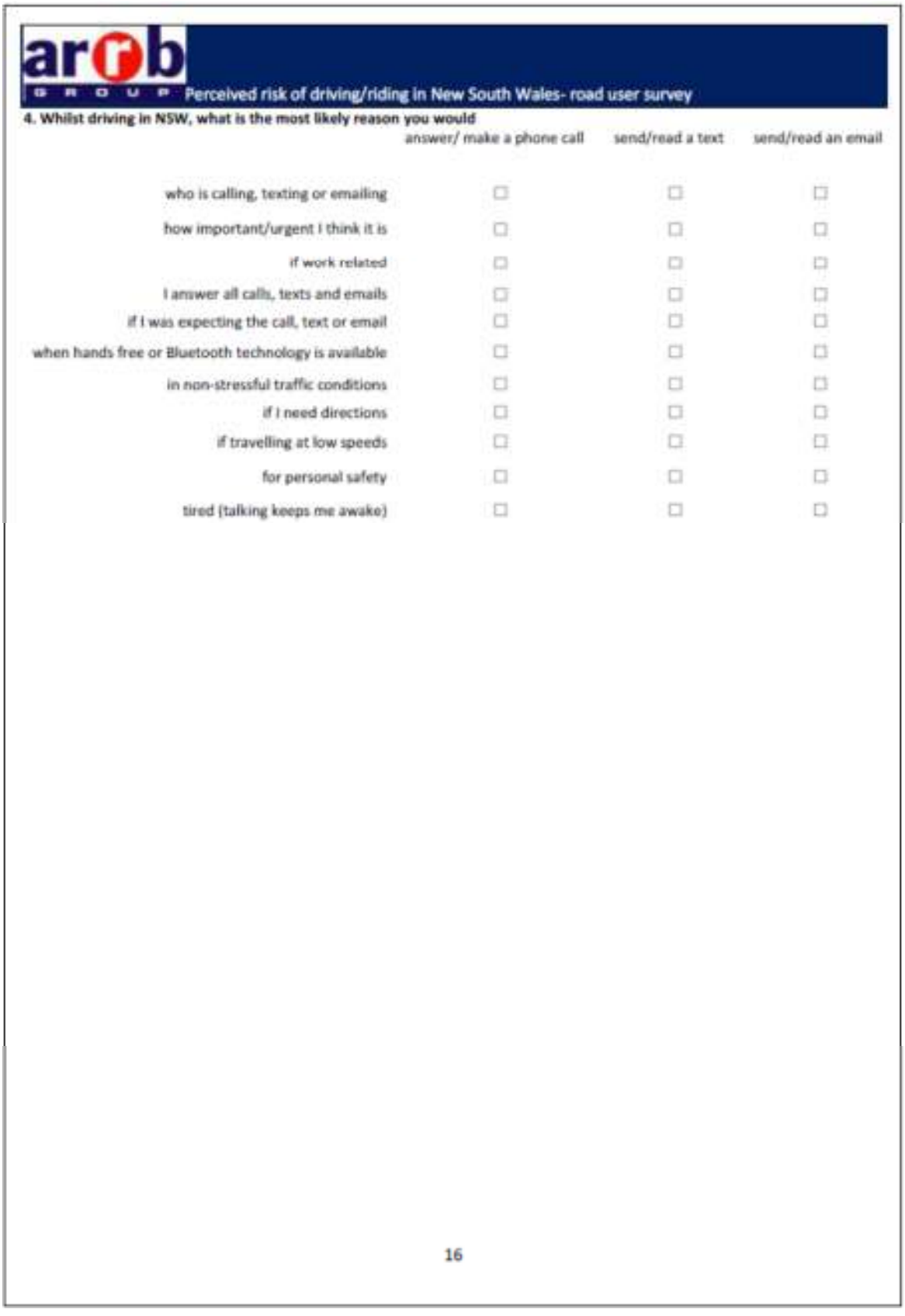
Other (please specify):

3. When my phone rings while driving, I usually

	In New South Wales	In the ACT
answer and keep driving	☐	☐
answer and keep driving – I have hands free or Bluetooth connectivity	☐	☐
immediately pull over and answer	☐	☐
pull over to a safe location then speak to the caller	☐	☐
inform the caller I will call back	☐	☐
hand the phone to a passenger to answer	☐	☐
I just let it ring and keep driving	☐	☐

Other (please specify)

15



Perceived risk of driving/riding in New South Wales- road user survey

4. Whilst driving in NSW, what is the most likely reason you would

	answer/ make a phone call	send/read a text	send/read an email
who is calling, texting or emailing	☐	☐	☐
how important/urgent I think it is	☐	☐	☐
if work related	☐	☐	☐
I answer all calls, texts and emails	☐	☐	☐
if I was expecting the call, text or email	☐	☐	☐
when hands free or Bluetooth technology is available	☐	☐	☐
in non-stressful traffic conditions	☐	☐	☐
if I need directions	☐	☐	☐
if travelling at low speeds	☐	☐	☐
for personal safety	☐	☐	☐
tired (talking keeps me awake)	☐	☐	☐

16

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C5. Motorcyclist protective gear

All questions in this section, unless specified, refer to driving/riding in NSW. The questions are specifically for motorcyclists only

1. When I ride in NSW, I wear

	Always	Very often	Sometimes	Rarely	Never
Helmet	☐	☐	☐	☐	☐
Visor	☐	☐	☐	☐	☐
Back protector	☐	☐	☐	☐	☐
Gloves	☐	☐	☐	☐	☐
Motorcycling jacket and pants	☐	☐	☐	☐	☐
Motorcycling boots	☐	☐	☐	☐	☐
Singlet and shorts	☐	☐	☐	☐	☐

Other (please specify):

2. When I ride in the ACT, I wear

	Always	Very often	Sometimes	Rarely	Never
Helmet	☐	☐	☐	☐	☐
Visor	☐	☐	☐	☐	☐
Back protector	☐	☐	☐	☐	☐
Gloves	☐	☐	☐	☐	☐
Motorcycling jacket and pants	☐	☐	☐	☐	☐
Motorcycling boots	☐	☐	☐	☐	☐
Singlet and shorts	☐	☐	☐	☐	☐

Other (please specify):

3. What do you consider appropriate protective clothing?

☐ anything that covers my arms and legs
☐ helmet
☐ motorcycling jacket and pants
☐ back protector
☐ other (please specify)

☐ gloves
☐ visor
☐ boots

17

Perceived risk of driving/riding in New South Wales- road user survey

D. Perceived safety

1. Compared to driving/riding in the ACT, when I drive/ride on NSW country roads (e.g. Bylong Valley Way), it seems:

much safer ☐ a bit safer ☐ just as safe ☐ less safe ☐ much less safe ☐

Other (please specify)

2. Compared to driving/riding in the ACT, when I drive/ride on roads in major country towns in NSW (e.g. Hume Street, Goulburn), it seems

much safer ☐ a bit safer ☐ just as safe ☐ less safe ☐ much less safe ☐

Other (please specify)

3. Compared to driving/riding in the ACT, when I drive/ride on Sydney roads, it seems

much safer ☐ a bit safer ☐ just as safe ☐ less safe ☐ much less safe ☐

Other (please specify)

Warning signs – Question 4 – 5

Wildlife warning signs

Winding road and curve warning signs

Motorcycle warning signs

4. Which of the following signs have you come across while riding or driving in NSW?

Wildlife warning sign ☐
Winding road warning sign ☐
Curve warning sign ☐
Motorcycle warning sign ☐

5. When there is an advisory speed, do you follow the recommended speed on the signs?

	Curve warning sign	Winding road warning sign	Motorcycle warning sign
Always	☐	☐	☐
Very often	☐	☐	☐
Sometimes	☐	☐	☐
Rarely	☐	☐	☐
Never	☐	☐	☐

18

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6. Which of the following road safety programs have you come across while driving or riding in NSW?

Driver reviver ☐
Rest areas ☐
Variable message signs (with different safety messages) ☐

7. Which of these programs have you used?

Driver reviver ☐ Rest areas ☐

If no, why?

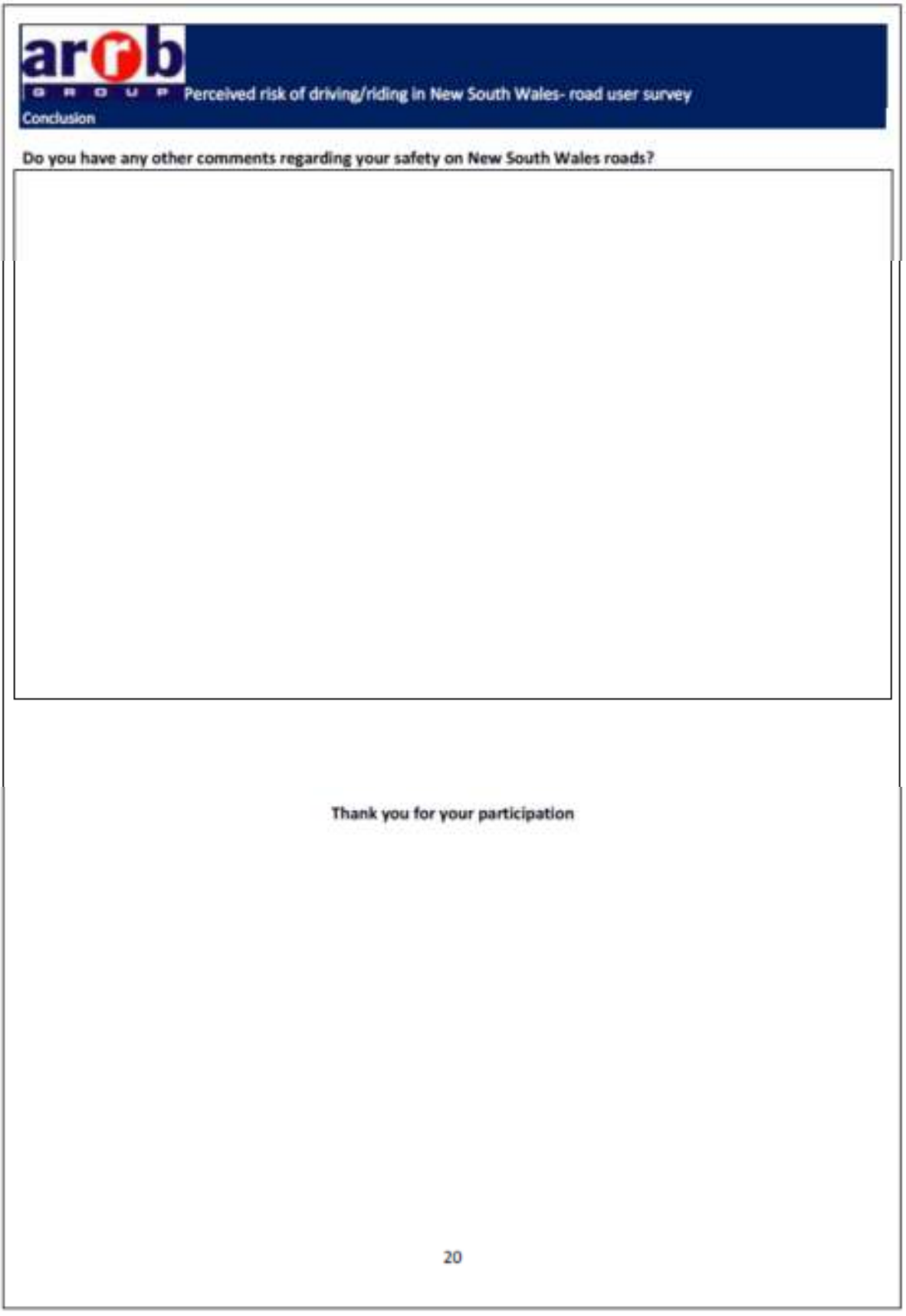
8. Would you use any of these programs if you came across them?

Driver reviver ☐ Rest areas ☐

If no, why?

9. What can be done to make you feel safer when driving/riding in NSW?

19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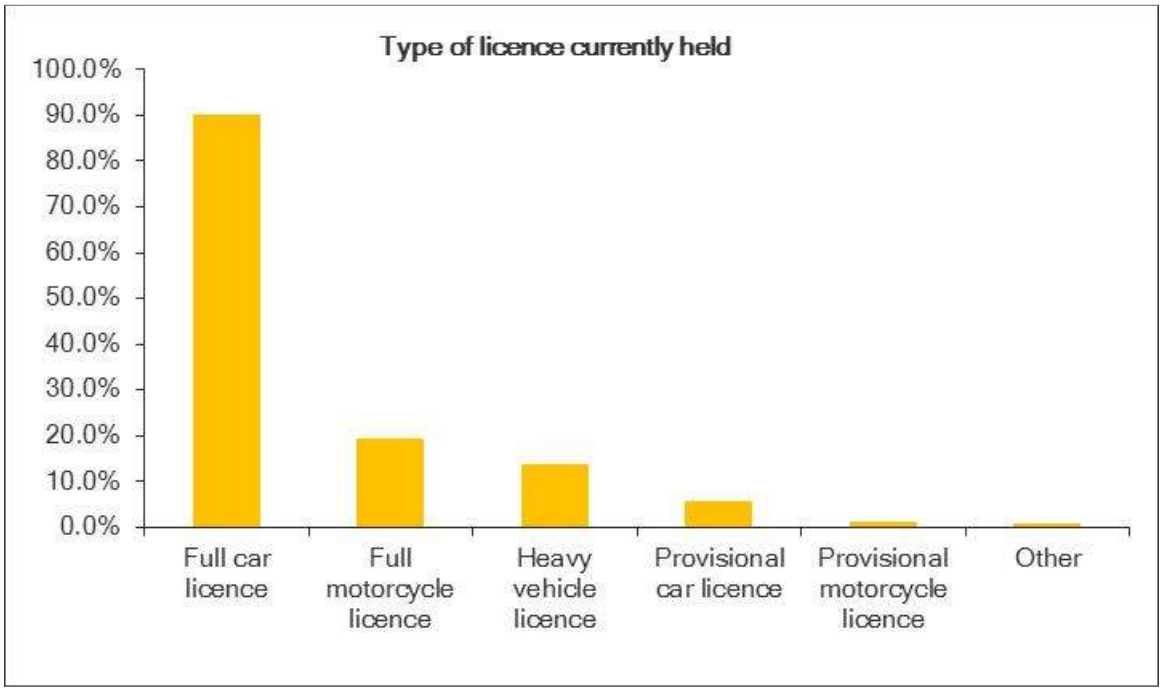
Perceived risk of driving/riding in New South Wales- road user survey
Conclusion
Do you have any other comments regarding your safety on New South Wales roads?
Thank you for your participation
20

APPENDIX B DETAILED RESULTS

Licence class

Figure B 1: Licence class

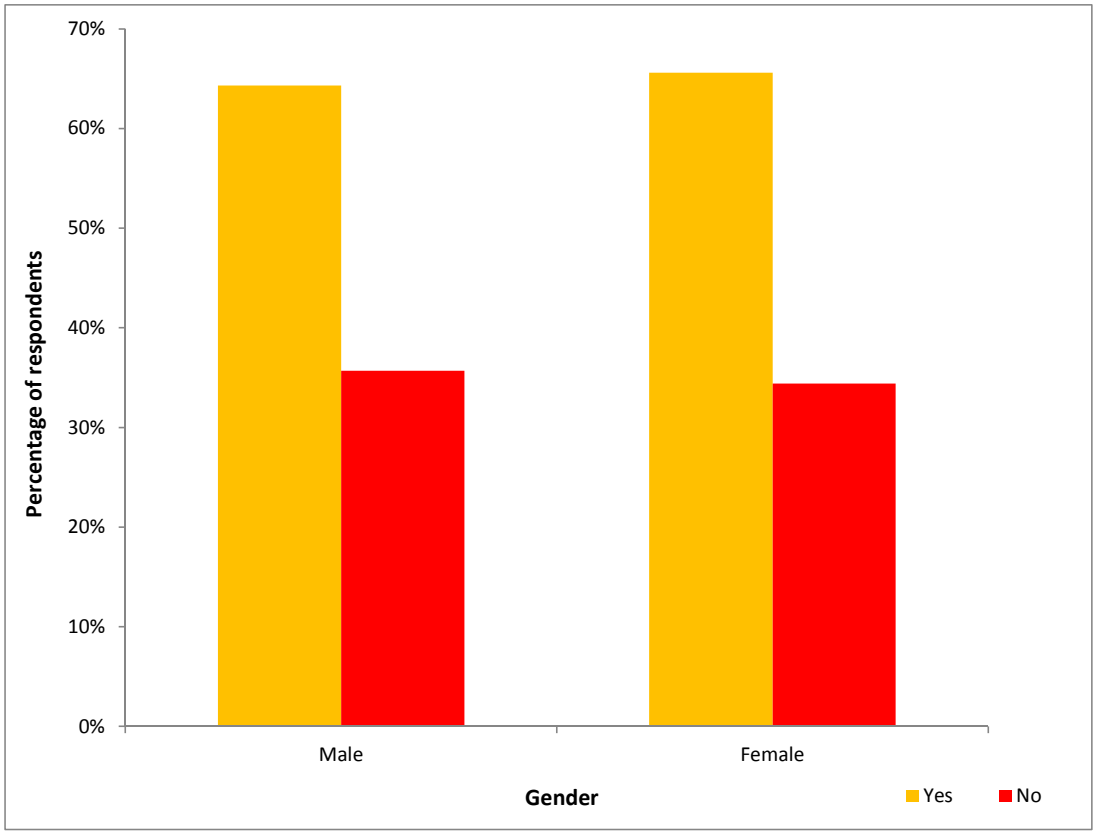


Crash history and driving experience in NSW

Table B 1: Crash history by gender

Gender	N			%		
	Yes	No	Total	Yes	No	Total
Male	104	42	146	73%	57%	67%
Female	39	32	71	27%	43%	33%
Total	143	74	217	66%	34%	100%

Figure B 2: Differences in travel on NSW roads compared to the ACT



Speed

Table B 2: Speed selection on different road types by gender

Speed selection	Narrow sealed roads		Unsealed roads		Winding roads	
	Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)
I often ride/drive more than 10 km/h over the speed limit	2	0	1	0	2	0
I normally ride/drive between 5 km/h and 10 km/h above the speed limit	3	1	1	0	2	0
I normally ride/drive around 5 km/h above the speed limit	8	2	2	0	5	1
I normally ride/drive at the posted speed limit	16	7	7	4	11	4
I normally drive/ride to the conditions	32	19	38	20	38	18
I normally ride/drive at least 5km/h below the speed limit	3	5	6	6	3	9
I normally ride/drive at least 10 km/h below the speed limit	1	0	5	7	2	3

Tiredness and sleepiness

Figure B 3: History of lane departure

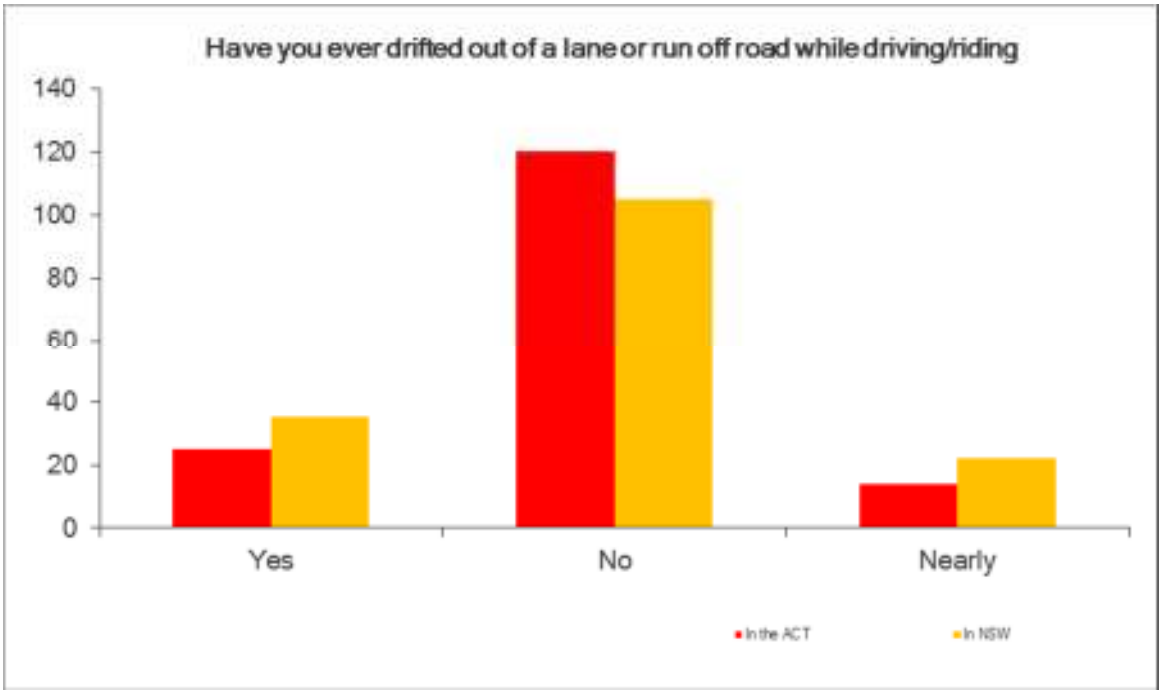
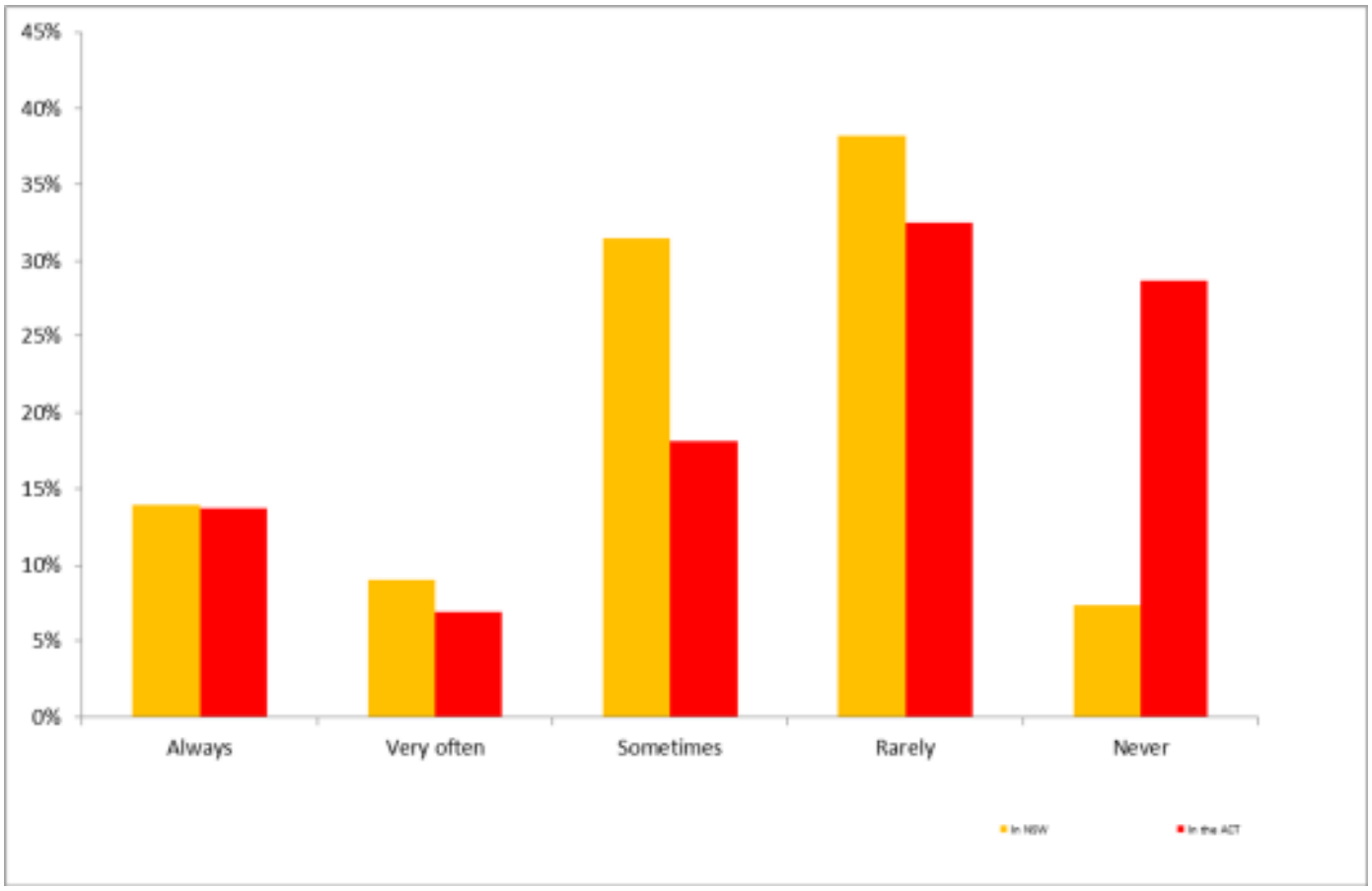


Figure B 4: Vehicle controller awareness of tiredness



Alcohol and drugs

Table B 3: Frequency of alcohol consumption prior to controlling a vehicle by gender

	NSW		ACT	
	Male (%)	Female (%)	Male (%)	Female (%)
I don't drink at any time	12	13	10	13
I don't drink if I am driving/riding	39	46	34	40
Someone else drives if I drink	15	18	16	22
Very often	2	0	2	0
Sometimes	5	1	9	4
I restrict my drinking if I'm driving/driving	26	19	28	18
I don't restrict my drinking if I'm driving/riding	1	1	0	1

Distraction and inattention

Table B 4: Sources of distraction by gender

Frequency of action		Always (%)	Very often (%)	Sometimes (%)	Rarely (%)	Never (%)
Male	eat as you drive?	3	13	38	32	14
	make/receive phone calls?	2	9	17	39	33
	talk to passengers in the vehicle?	23	41	31	4	1
	send/read texts or emails?	0	0	4	16	80
	adjust the car radio?	17	26	46	10	1
	check on the children in the backseat?	12	13	23	17	36
	use a GPS system or road map?	11	29	31	20	8
Female	eat as you drive?	2	22	44	22	11
	make/receive phone calls?	0	5	22	15	58
	talk to passengers in the vehicle?	13	49	23	9	6
	send/read texts or emails?	0	2	0	20	78
	adjust the car radio?	9	21	58	11	0
	check on the children in the backseat?	4	10	20	14	51
	use a GPS system or road map?	7	28	26	13	26

Figure B 5: Pulling over when using devices

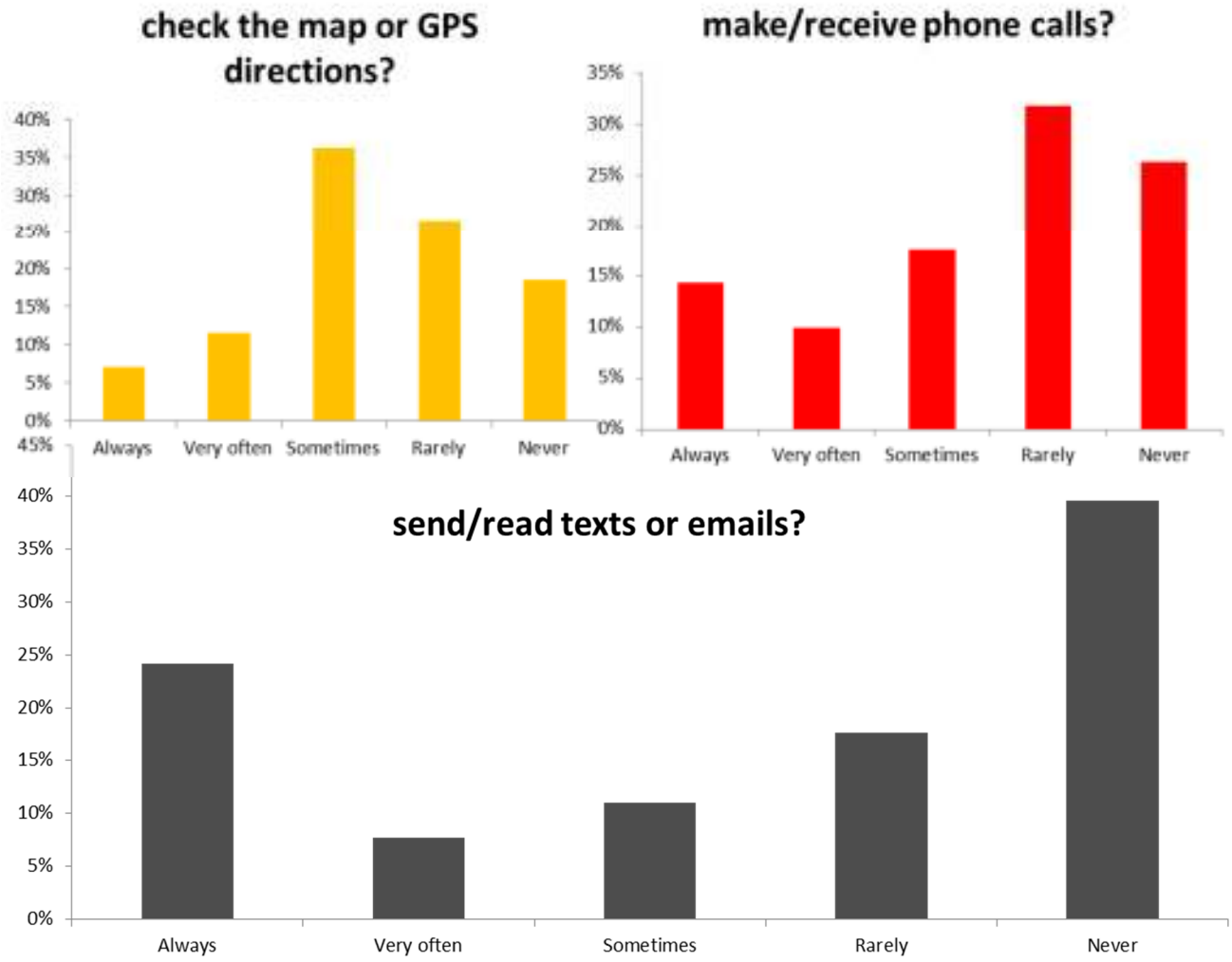


Table B 5: Most likely reason for different actions

	answer/make a phone call (%)	send/read a text message (%)	send/read an email (%)
Who is calling, texting or emailing	10	16	13
How important I think/urgent it is	14	19	19
If work related	3	2	6
I answer all calls	6	2	2
If I was expecting the call, text or email	6	10	8
When hands-free or Bluetooth technology is available	39	23	27
In non-stressful traffic conditions	6	10	8
If I need directions	5	4	2
If traveling at low speeds	1	4	2
For personal safety	8	11	13
Tired (talking keeps me awake)	1	0	0

Restraint use and motorcycle protective gear

Figure B 6: Headrest adjustment

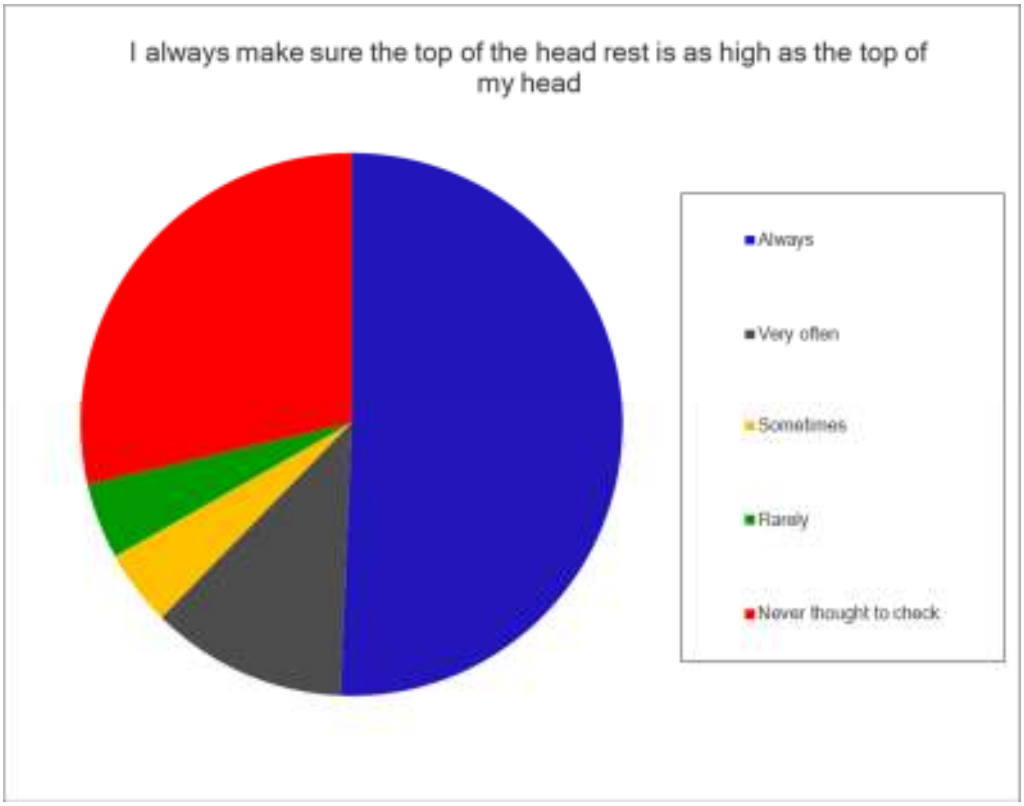


Figure B 7: Passenger restraint use

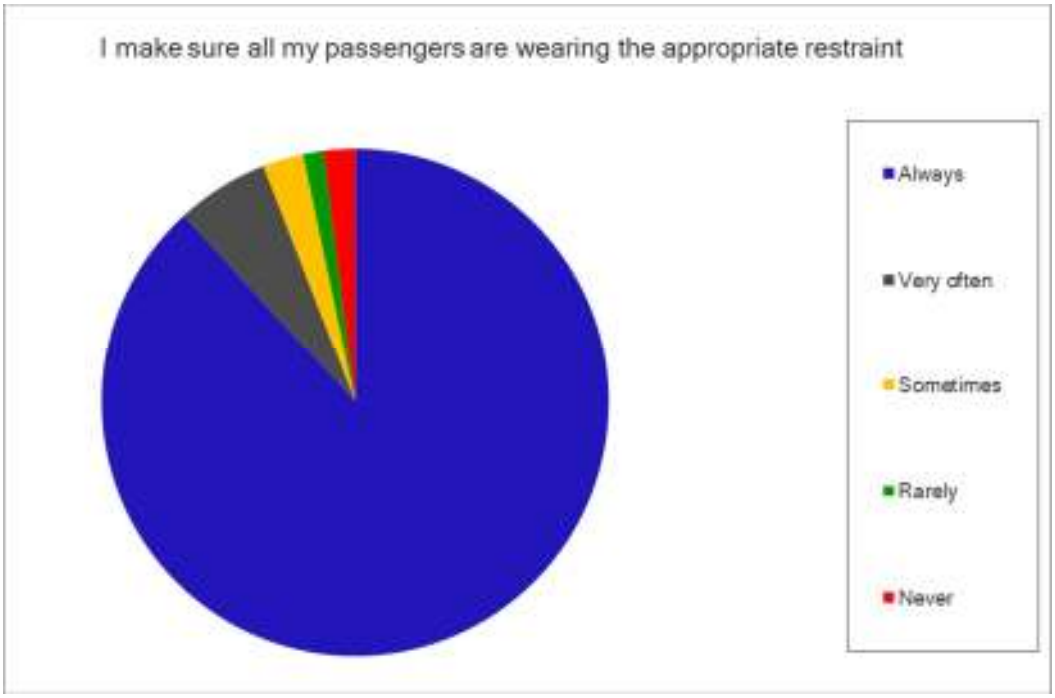
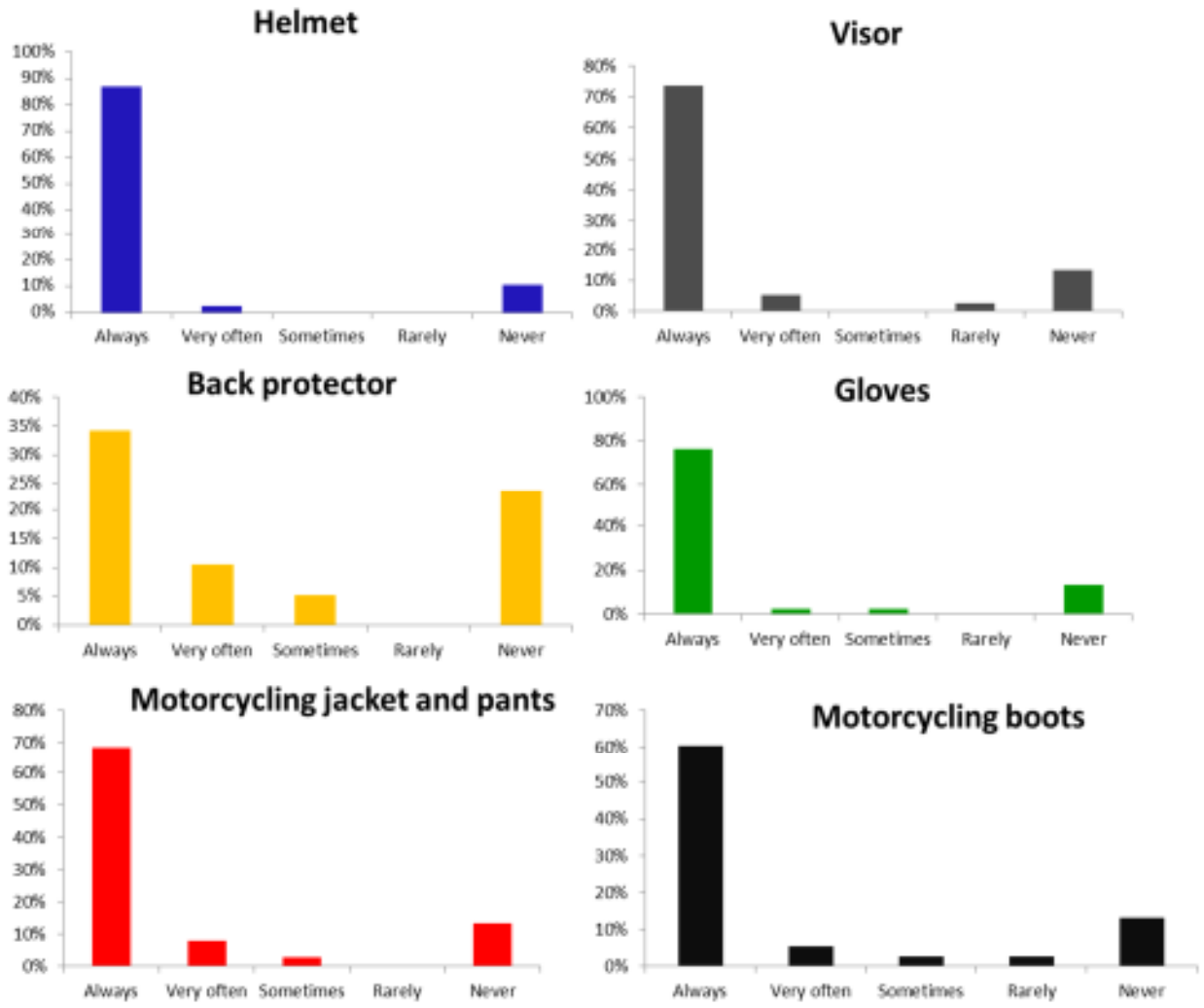


Figure B 8: Motorcyclist protective gear when travelling in NSW



Perceived safety

Figure B 9: Perceived safety of driving/riding on country NSW roads compared to ACT

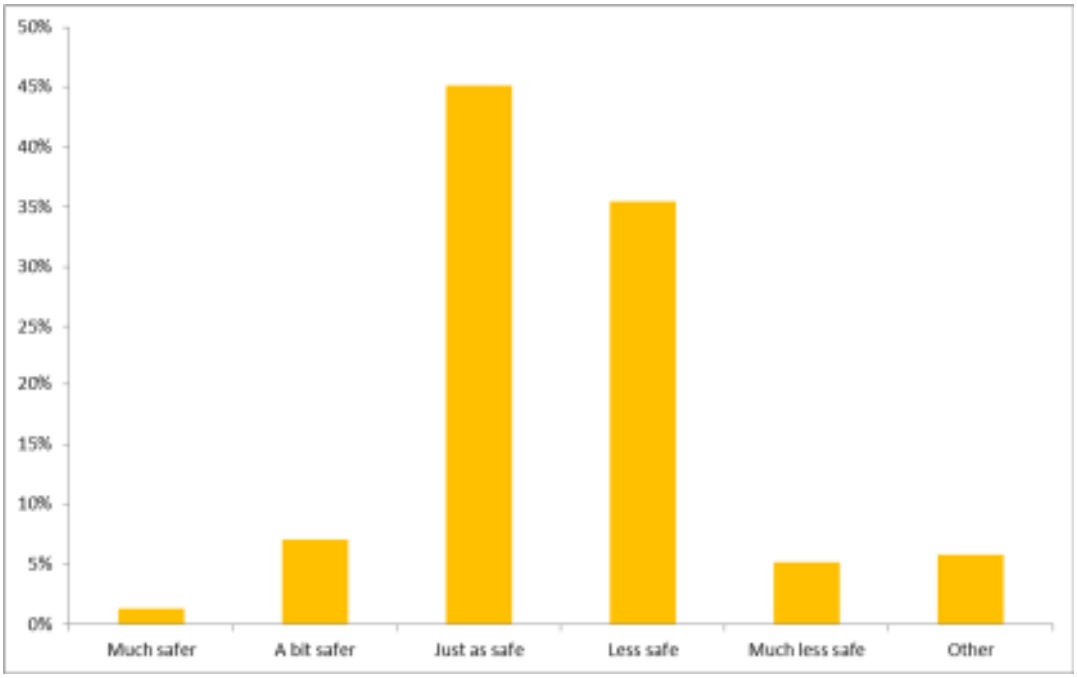


Figure B 10: Perceived safety on NSW regional centre roads

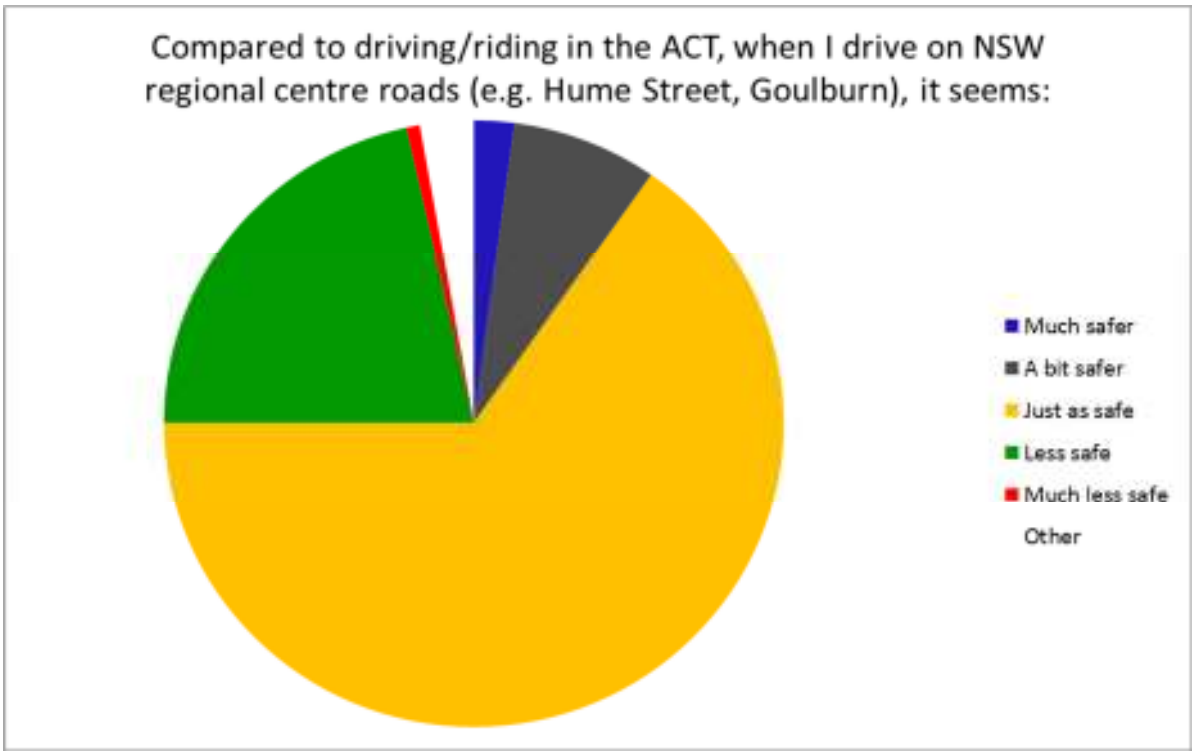


Figure B 11: Perceived safety of driving/riding on Sydney roads compared to ACT

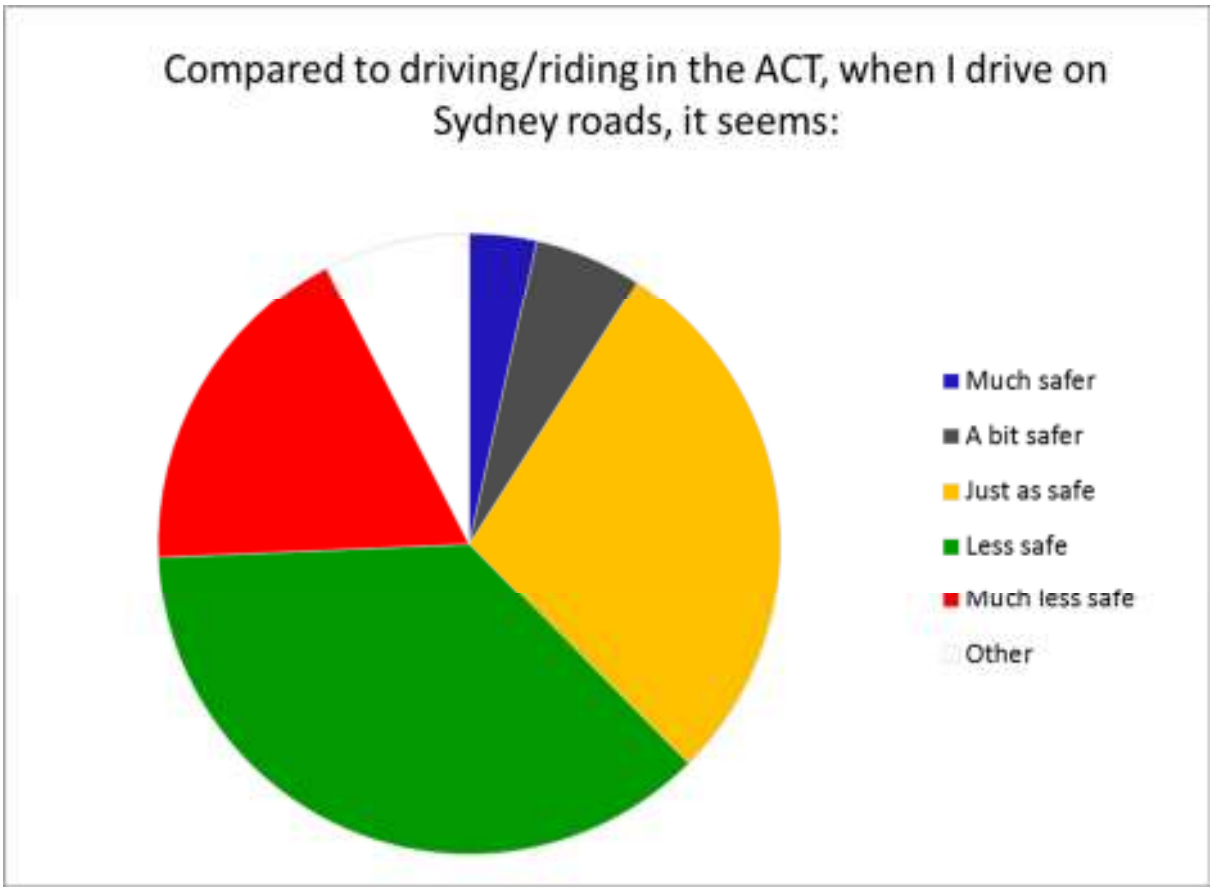


Table B 6: Warning sign awareness by gender

Sign type	Male (%)	Female (%)
Wildlife warning sign	100	98
Winding road warning sign	100	100
Curve warning sign	100	96
Motorcycle warning sign	56	36

APPENDIX C PROJECT REFERENCE GROUP

Table C 7: Project reference group

Name	Affiliation
Linda Cooke	NRMA-ACT Road Safety Trust
Melissa Weller	Yass Council
Tracey Norberg	Goulburn Mulwaree Council
Mitchell Sweeney	Insurance Australia Group (IAG)
Ron Collins	NRMA Motoring and Services, ACT
Rod Anderson	Australia Federal Police, ACT Policing
Belinda Owen	ACT Government
Dominic Goodyer	NSW Police
Rob Reynolds	NSW RMS Southern Region
Mark Cutting	Queanbeyan City Council
Keith Wheatley	Australasian College of Road Safety ACT Chapter
Eric Chalmers	Australasian College of Road Safety ACT Chapter