PROFILING INDIGENOUS AND NON-INDIGENOUS ROAD TRAUMA IN RURAL AND REMOTE NORTH QUEENSLAND: IT'S NOT ALL BLACK AND WHITE

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Key Words

Injury, road safety, Indigenous, rural, remote, driver, rider, pedestrian, passenger, cyclist, alcohol, drugs, speed, distraction, personal protective equipment (PPE), crash narrative, safe system, licensing, risk factors, culture, context

Abstract

The overarching objective of this research was to identify strategies to improve road safety outcomes for Indigenous and rural and remote populations through an increased understanding of crash causation and the role that ethnicity and remoteness play. Building on knowledge gained through the RRRSS (Sheehan et al., 2008), chapters one through seven presented a diverse but complementary program of research to better understand why crash risk is elevated for people living in remote areas, particularly in Indigenous communities. Findings from the three studies are discussed in relation to a conceptual model *(see Figure 1.1)* to ensure that any recommendations to improve road trauma in this context are informed by a sound understanding of both 'proximal' and 'distal' causation.

Study 1 (described in *Chapter 3*), based on a *National Review of Indigenous Road Safety* (Styles and Edmonston, 2006), identified risk factors for Indigenous road trauma compared to non-Indigenous road trauma. The review showed that Indigenous people are overrepresented in fatal road crashes by a factor of three and serious injury crashes by a factor of 1.4 compared to their non-Indigenous counterparts. In terms of road user profile, Indigenous people are more likely to be killed or injured as passengers or pedestrians, while non-Indigenous people are more likely to be killed or injured as drivers or riders, partly reflecting 'transport disadvantage' (Currie & Senbergs, 2007). *Study 1* also critiqued the relative ineffectiveness of current programs and policies designed to improve Indigenous safety. Central to this commentary were concerns re: the incongruence between program focus and crash causation, lack of Indigenous involvement in program development and a misguided focus on "fixing symptoms" rather than "building on strengths" (McPhail-Bell & Bond, 2013) to address the myriad of 'circumstantial', 'contextual' and 'individual' factors at play (Shore & Spicer, 2004).

Study 2 was prospective in nature. Using a similar methodology to the Interviewed Casualty Study within the RRRSS (described in *Chapter 4*), it was designed to recruit more Indigenous cases through the involvement of three major hospitals (Cairns, Atherton and Mt Isa) and a number of smaller facilities throughout North Queensland. Over an 18-month data collection period, an additional 80 Indigenous and 149 non-Indigenous patients were interviewed resulting in a total sample of 114 Indigenous and 506 non-Indigenous respondents.

Recognising the value of storytelling as a powerful data collection tool in Indigenous research (Bishop, 1996; Chilisa, 2012), *Study 2a* encouraged patients through a crash narrative (with prompts) and a number of qualitative questions to articulate the details of their crash including social determinants and motivational factors underpinning risky behaviours. It also captured patients' emergency response and retrieval experiences, perceptions of enforcement, suggestions to improve road safety and preferred learning methods. In terms of crash causation, behavioural factors figured prominently in both Indigenous and non-Indigenous crash narratives with alcohol, distraction and inappropriate speed featuring. Often the crash involved a combination of these. With regard to culpability, Indigenous patients were more likely to assume responsibility for their crash than their non-Indigenous counterparts who typically ascribed blame to an external factor – a distraction or the road.

Study 2a also provided insight into the social context (Heil, 2006) in which the behaviours were occurring. Two consistent motivations underpinning risk-taking for both Indigenous and non-Indigenous patients were: (i) social acceptance of risk as part of the 'rural way of life'; and (ii) rural bravado through "being a hero" as a young male rite of passage. A third theme, described by Indigenous patients only, related to feelings of hopelessness due to poor life circumstances (poor, bored, not having a job) which manifest in excessive alcohol and other dangerous behaviours, thus elevating crash risk. There was evidence from the interviews to support the methodology, with some patients reporting therapeutic value in sharing their experience. Patients' accounts also highlighted the importance of locals and passers-by in the emergency response and pathway to treatment, as well as evidence to suggest that in some cases Indigenous patients are reluctant to use available health services for a variety of reasons.

The thematic analysis of patients' qualitative responses enabled a number of 'variables of interest' to be identified. *Study 2b* (described in *Chapter 6*) examined these variables of interest quantitatively through a series of statistical comparisons on the basis of Indigenous status and remoteness of residency or crash location, dependent on the nature of the variable. Using a 2 x 2 design and logistic regression analyses, the objective was to determine the individual and cumulative impact of Indigenous status and remoteness on key behaviours, life circumstances and relevant attitudes. Note – tourists and persons residing in urban/metropolitan areas were excluded from all quantitative analyses involving residence.

As hypothesised, the behavioural pattern for Indigenous patients was significantly different to non-Indigenous patients. Indigenous status was statistically linked to increased alcohol consumption, previous self-reported drink driving and passenger of a drink driver episodes, as well as distraction and fatigue prior to the index crash. Illicit drug use prior to the index crash was positively related to remoteness of residency for both groups.

Analysis of key socio-economic indicators (life circumstances) provided further evidence that 'hardship' (Gruen & Yee, 2005) is a precursor to risky behaviour with Indigenous patients reporting higher levels of unemployment and unlicensed driving. Interestingly, remoteness of residency was also linked to higher levels of unlicensed driving highlighting the barriers posed by the licensing process in remote Queensland. *Study 2b* also teased out attitudinal differences between the Indigenous and non-Indigenous samples, most notably, lower perceived locus of control among Indigenous patients and an acknowledgement that their behaviour is similar to others in their community. While non-Indigenous patients were more concerned about personal safety on the road, Indigenous patients were more concerned with the safety of their family and unemployment.

As a means to increasing licensing ownership and employment prospects in Indigenous communities, *Chapter 7* documented the development and evaluation of the *Queensland Indigenous Driver Licensing Program* (IDLP). In doing so, it showed major disparities between Indigenous and non-Indigenous people on a number of transport-related measures including crash involvement, unlicensed driving, as well as related offence and incarceration rates. While recognising the potential of the licensing process to engage Indigenous people in the employment and safety domains, *Study 3* highlighted the detrimental impact of the introduction of Graduated Driver Licensing on those living in remote areas, particularly discrete Indigenous communities.

The discussion section of the thesis *(Chapter 8)* cites the mixed methods design and "collaborative storytelling" approach as major strengths of the research, along with the value of the research from a public health and social justice perspective. The inclusiveness of the project through consultation in all three studies also demonstrated a commitment to empowering Indigenous and remote communities to have input into programs for their communities and peers. In terms of limitations, there remain shortcomings with official datasets when trying to make comparisons between groups

and there was evidence of referral bias in *Study 2*, whereby some clinic staff were more likely to actively promote the study to persons more culpable in their crash.

The collective findings from the body of work, coupled with knowledge elicited on attitudes towards safety and enforcement, preferred modes of learning, crash nature and emergency response experience, inform a series of recommendations focusing on using relevant 'change agents' or persons of influence within communities and 'exposure controls' to minimise risk. Integral platforms with the potential to achieve positive social change in the rural and remote context included: (i) challenging the 'rural way of life' through positive community norms; (ii) creating employment pathways through licensing as a means of improving road safety and perceived locus of control; (iii) investing in speed management and low-cost engineering shown to be effective for prominent crash types; and (iv) coordinating cross-agency decision-making and delivery.

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Glossary of Abbreviations

Abbreviation	Full Title
ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AIHW	Australian Institute of Health & Welfare
AMPs	Alcohol Management Plans
ANOVA	Analysis of Variance
ARIA	Accessibility/Remoteness Index of Australia
ARRB	Australian Road Research Board
ATC	Australian Transport Council
ATSB	Australian Transport Safety Bureau
ATSI	Aboriginal & Torres Strait Islander
ATSIRSWG	Aboriginal & Torres Strait Islander Road Safety Working Group
AUDIT-C	Alcohol Use Disorders Identification Test – Consumption Questions
BITRE	Bureau of Infrastructure, Transport and Regional Economics
CARRS-Q	Centre for Accident Research & Road Safety - Queensland
CDEP	Community Development Employment Projects
DCA	Definitions for Coding Accidents
DD	Drink Driving
DON	Director of Nursing
ED	Emergency Department
EDIS	Emergency Department Information System
FAIRA	Foundation for Aboriginal Islander Research Action (FAIRA)
FNQ	Far North Queensland
FORS	Federal Office of Road Safety
ICD-10	International Classification of Diseases (Version 10)
ID	Identification
IDLP	Indigenous Driver Licensing Program

ISO	International Organisation for Standardisation
JCU	James Cook University
KPMs	Key Performance Measures
LATM	Local Area Traffic Management
LDMPs	Learner Driver Mentor Programs
LGAQ	Local Government Association of Queensland
LOC	Locus of Control
LTSA	Land Transport Safety Authority
MUARC	Monash University Accident Research Centre
MUMA	Manukau Urban Māori Authority
MUTCD	Manual of Uniform Traffic Control Devices
MVA	Motor Vehicle Accident
NHMRC	National Health & Medical Research Council
NHTSA	National Highway Traffic Safety Administration
NSW	New South Wales
NT	Northern Territory
OECD	Organisation for Economic Cooperation & Development
OESR	Office of Economic & Statistical Research
O.R.	Odds Ratio statistic
PhD	Doctor of Philosophy
PTSD	Post-Traumatic Stress Disorder
QATSIP	Queensland Aboriginal and Torres Strait Islander Policing
QHREC	Queensland Health Research Ethics Committee
QPS	Queensland Police Service
QUT	Queensland University of Technology
RRRSS	Rural and Remote Road Safety Study
SA	South Australia
SLA	Statistical Local Area

SPER	State Penalties and Enforcement Registry
TAFE	Technical and Further Education
TAS	Tasmania
TMR	Department of Transport & Main Roads
TORUM	Transport Operations (Road Use Management – Road Rules) Regulation
URN	Unit Record Number (Patient Reference Number)
VIC	Victoria
WA	Western Australia
WHO	World Health Organisation

Statement of Original Authorship

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signature:

Date: 09/11/16

Acknowledgements

With the winning post (thesis completion) in sight, I was interrupted with sad news regarding the passing of a childhood idol. When you *'Think Big'* in terms of Australian racehorse trainers, one man stands above all others - James "Bart" Cummings! Winning a staggering 12 Melbourne Cups and 5 Cox Plates, his training credentials are, and always will be *'Viewed'* as the best ever.

While reflecting on the hole now left in the 'Sport of Kings' and faced with my postgraduate study deadline looming large, I found myself drawing similarities … The commitment required by the wily trainer and his stable staff when preparing a horse for the gruelling two mile test is not unlike the encouragement, guidance and persistence demonstrated by those who have led me to this point. So, in acknowledging the efforts and support of the many people who got an old nag like myself to the academic "barrier stalls", I thought it fitting to pay tribute to **my stable** through a "form guide" of sorts.

Top of the race book, I would like to sincerely thank my **trainers** (Principal Supervisors) who have stood by me through this "true staying test". Much like Bart, and more recently Gai Waterhouse, Professor Mary Sheehan has guided me through many "preparations and agistment periods" with meticulous planning, constant encouragement and expert advice in spades. Close by her side, with stopwatch in hand, Professor Vic Siskind has put me through my paces, making valuable "gear changes" (methodological and analysis suggestions) to improve performance. At times, Vic was even forced to put a "tongue tie" on me when our catch-ups digressed into philosophical discussions about politics, life and everything in between. Seriously though, without either of these wonderful people, I would have certainly been an "early scratching". To Mary and Vic, I'm forever grateful. Your patience throughout this campaign has been nothing short of *'Saintly'* and I'll treasure your friendship for life.

On this journey, I've had many **jockeys** steering me towards success. First and foremost, I am indebted to the Traditional Owners, Elders and Councillors in communities throughout North Queensland for welcoming me into their lands and lives. With *'Light Fingers'* and gentle urgings, you afforded me a "clear run to line" – ensuring your communities and health facilities were well briefed and motivated to take part in this valuable research. To this end, I'm extremely appreciative of the nursing staff and patients who candidly shared their experiences of road trauma. It is

your experiences (living knowledge) that will be used to educate others, with an end goal of better programs, better policy and better outcomes for rural and remote people. I've made many friends along the way and consider myself blessed to have experienced the richness of remote community life.

In the jockey ranks, special thanks must go to "experienced hoops" – Horace 'Nagalai' Nona and Alan Pryde. The most important prerequisite for acceptance in any community is endorsement from a person with established respect. Horace and Prydey not only vouched for me, but also provided valuable insight into Indigenous research protocols and ways of doing business. In addition to race day jockeys, thoroughbreds are partnered by **trackwork riders** working tirelessly behind the scenes. In this instance, it was Hilary Waugh (based in Cairns Base Hospital), Claudia Aguero, 'Late Mail' Dale Steinhardt, Angela Watson, Ross Blackman, Gayle Sticher, Barry Watson, Cynthia Schonfeld, Tanya Smyth, Veronica Baldwin and Veronica Hogan who helped me keep "even sectionals" through the data collection, entry, analysis and write-up "furlongs". You all deserve a "good sling"!

The unsung heroes of any stable are the ever loyal **stable hands**. My Mum, Dad, Nan and Grandad have stood by me through the highs and lows of the last 10 years. Whatever my movements, you always made sure I was "watered and fed" and were the first to "give me a pat" when required. Sadly, my Grandad passed away just two days after my Final Seminar. Cheering loudest from the grandstand, he was my strongest **punter** for completion – I regret that he won't be around to collect.

It would be remiss of me not to thank QUT's Office of Research, particularly Mayuko Bock. In the role of **course curator**, they "took the sting out of the track" for me, offering unparalleled support and understanding, as well "moving the running rail" via several extensions. Likewise, the Indigenous Reference Group and various academic panels involved in the study (including Chelsea Bond and Peter Kolesnik) served as more than fair **racing stewards** with my professional development at heart.

Finally, thanks must go my syndicate of patient **owners** – CARRS-Q, the National Health & Medical Research Council (NHMRC) and Transport and Main Roads (TMR) senior management, particularly Nick Marsden and Dr Graham Fraine. You all could have retired me to the knackery long ago when it came to my studies, but instead persevered when at times my form was moderate at best.

Chapter 1: Introduction

1.1 Positioning the Candidate in the Research

Before the detailed description of the methodology and findings, I (as the candidate) feel compelled to "position myself in the research" and explain why I had to take this journey. Born and bred in the rural town of Rockhampton in Central Queensland, I experienced the tragedy and despair of road trauma first-hand, accepting it as part of growing up in the bush. Very rarely did a week go by without our local paper - *The Morning Bulletin* – reporting on yet another local being killed or seriously injured in a crash. I walked away from a triple rollover in 1998 relatively unscathed but others haven't been so lucky. Blokes I've played footy with, worked beside, shared a beer and a laugh with, now gone – mates I thought I'd have for life.

Over time, it became apparent that young rural men, often from lower socioeconomic or Indigenous backgrounds, were most at risk. It was also clear that mainstream road safety policies and programs were failing against a culture of risk acceptance and an unforgiving environment. Not unique to road safety, the link between 'disadvantage' and poorer life and health outcomes was illustrated daily in my stint working at Emerald Centrelink in the late 1990s. Two decades on and unfortunately little has changed.

Driven by a desire to better understand this link and play a small role in reducing the carnage on rural roads, I joined CARRS-Q in 2000 and worked on several research projects related to rural and remote road safety. Extremely passionate about equity for Indigenous Australians, my proudest achievement was the successful advocacy for Queensland's first Indigenous Driver Licensing Program (IDLP). I led the consultation process, spending time in 16 Indigenous communities and meeting many wonderful people – a priceless experience. Having witnessed and heard horror stories of government's poor attempts at consultation in the past, I was strongly committed to 'actively listening' *(binan goonj)* to communities as they articulated the many barriers they faced when trying to access the licensing system. Listening to the rich stories, it became abundantly clear that continued reliance on agency datasets as the primary source of information on complicated issues had been detrimental to progress. I vividly remember comments from young Hopevale woman with a brother recently imprisoned for unlicensed driving:

> *"Numbers don't tell you the real story … You need to talk to Indigenous people to find out what's really going on … We drive on shit roads, in shit cars that we have to pile into 'cause we only have a few that go … We don't get no driver training – you learn for yourself … Nobody gives a shit about us until the 'bollimen'* [police] *have a blitz and book us all … Some fellas then go to jail – two strikes, you're out"*.

The late Jack Ahmat (former Mayor of Badu Island and personal friend) suggested that supporting agencies have not fully grasped the complex relationship between 'community life', government expectations, crash risk, punitive sanctions and so on. He also described to me the major shortcomings of program delivery claiming that with good intentions, agencies typically visit communities, identify what they believe to be knowledge gaps and then, often years later, roll out an educational program using unsuitable methods. His story was enlightening:

> *"You fellas mean well, but you study things way too much … If a hole needs to be dug, you measure it lots of times, look at lots of different shovels, think about how many fellas you need to dig, try to guess who might be a good digger … Then after a long time you give us a book on it. We don't need all this – we just need some bastard to start digging a hole … If you want a black fella to dig a hole, throw him a shovel and start digging beside him. He'll learn by doing – that's how we learn - through stories and experience. If you dig with him, you'll learn from each other and get the job done in half the time. It's about partnerships"*.

It was these experiences that led me to this point. I agreed with Jack – it was time to dig a hole! So, when I embarked on the Doctorate of Philosophy in 2005, it was truly aligned with the Greek meaning – "love of wisdom". While I refer to myself as the candidate throughout this document (as required by the conventions of a traditional PhD manuscript), I have a strong connection with stories and lessons learned on this journey. Armed with this knowledge, in my role as Road Safety Manager with Transport & Main Roads (TMR) I am slowly influencing the way in

which our agency works with rural and Indigenous communities - one shovelful at a time.

1.2 Introductory Comments and Significance of the Research

Road trauma has been a longstanding cause of death and injury in rural areas of Australia and, like other injury profiles, the risk increases with remoteness (AIHW, 1998). This, and the sequelae of such trauma, places a significant burden on health services in rural areas which tend to be under resourced in terms of health care personnel, specialised skills and capacity (Ring & Wenitong, 2007).

Indigenous people have been identified as a particularly high-risk population (Tziotis et al., 2005). Despite the data limitations plaguing Indigenous research, it is widely accepted that Indigenous Australians are two to three times more likely to be killed and 1.4 times more likely to be hospitalised due to a land transport crash than their non-Indigenous counterparts (Brice, 2000; Harrison & Berry, 2008). While this health differential may partly reflect the large proportion of Indigenous Australians living in highly remote areas (Currie & Senbergs, 2007), disparities in both the scope and nature of Indigenous versus non-Indigenous crash profiles in the rural setting remain (Clapham et al., 2008). For example, Indigenous people are significantly more likely to be seriously injured as passengers or pedestrians, while non-Indigenous people are more likely to be seriously injured as drivers or motorcycle riders (Harrison & Berry, 2008).

From this, it is postulated that Indigenous road trauma is a product of a number of systemic factors directly related to the 'context' and 'culture' of Indigenous "community life", as well as the environment (ARRB Transport Research Ltd & CARRS-Q, 2004; Cercarelli, 1999; Cercarelli et al., 2000; Garrow, 1997). Further research has flagged alienation and exclusion from the licensing process and road safety education (Edmonston et al., 2003), reduced access to culturally-suitable prevention initiatives (Harrison et al., 2001) and reluctance to fully utilise organised health and rehabilitation services (McClure, 1995; Moller, Thomson & Brooks, 2003) as additional issues impacting on Indigenous road trauma outcomes.

International comparisons support the assertion that Indigenous Australians have reduced ownership of, and less affinity with, support services in both the road safety and broader health domains. For example, the Māori population is less overrepresented in New Zealand crash rates due to increased self-determination. Māori

people have ownership, control and responsibility for decisions that affect them under *Article II of the 1840 Treaty of Waitangi*, compared to the Australian situation where no such provision/agreement has been made with Aboriginal or Torres Strait Islander peoples. This importance of self-determination and involving Indigenous people in the development and implementation of road safety initiatives is a theme is revisited in *Chapter 3* of the thesis.

The preceding paragraphs highlight the fact that *"It's Not All Black and White"* (used as the subtitle for the thesis) when it comes to understanding the unique and shared characteristics of Indigenous and non-Indigenous road trauma in remote areas. Behaviours and consequences are influenced by a complex array of individual characteristics, as well as geographic location, community-held attitudes and access to knowledge and services. The remainder of this chapter outlines the objectives, research design, scope and structure of the program of research conducted to explore these influences as a means of informing culturally-relevant road safety policy and initiatives targeting these populations.

1.3 Research Objectives and Design

The research program was funded through a National Health & Medical Research Council (NHMRC) Postgraduate Scholarship, with additional support from the Queensland Government's Growing the Smart State PhD Funding Program *(see Attachment A)*. It was also guided by an Indigenous Reference Group to ensure that the research was "value-adding" for those involved and conducted in a culturally-sensitive manner (Dunne, 2000; Edmonston et al., 2003; Henderson et al., 2002; Humphrey, 2001; Miller & Rainow, 1997).

Given the paucity of research in the Indigenous and rural road safety domains, the research design was predominantly exploratory, seeking to grow the body of knowledge as a precursor to policy and intervention development. While there are no specific or detailed hypotheses per se, *the general hypothesis was that the crash characteristics and influences at play in Indigenous road trauma would be different to those underpinning non-Indigenous road trauma in rural and remote areas*. To test this hypothesis, the candidate undertook three complementary studies drawing on a variety of primary, secondary and tertiary data sources.

Following a broader literature review of the rural and remote road crash profile and promising countermeasures, the first study focussed on what makes Indigenous

communities and individuals a high-risk road user group in this context. It involved an examination of available data and literature on Indigenous road trauma and an analysis of relevant research, policy and countermeasures, as well as consultations with key researchers, practitioners and policy-makers in the area, as part of the *National Review of Indigenous Road Safety* (Styles & Edmonston, 2006) funded by the Australian Transport Safety Bureau (ATSB). *Study 1* specifically identified risk factors for Indigenous road trauma, provided commentary on the effectiveness of current policy and programs, and offered theoretical perspectives on ways to improve Indigenous road safety in rural and remote communities.

The second study was prospective in nature – examining crashes from the patient's perspective. It builds on the *Rural and Remote Road Safety Study* conducted by the Centre for Accident Research & Road Safety – Queensland (CARRS-Q) and the James Cook University (JCU) School of Medicine. The *Rural and Remote Road Safety Study* (RRRSS) involved an in-depth analysis of 732 serious casualty and 119 fatality crashes (both on and off-road) in the ABS divisions of Northern Queensland, Far North Queensland and North West Queensland, excluding the urban areas of Cairns, Townsville and Thuringowa, between March 2004 and June 2007 inclusive (Sheehan et al., 2008). Central to the analysis were interviews with 391 crash patients (plus 13 pilot interviews) admitted to larger health facilities in the region - Cairns, Townsville, Mt Isa and Atherton hospitals - for a length of stay > 24 hours. Very few Indigenous patients were available for interview.

Given the purpose of the research was to make comparisons between the experiences of Indigenous and non-Indigenous crash victims in both remote and rural (ie. non-remote) areas, a new methodology and recruitment strategy was undertaken. Over a 20-month period, an additional 229 crash patients (80 Indigenous and 149 non-Indigenous) were recruited through the involvement of more remote clinics. A detailed description of this methodology is provided in *Chapter 4*.

Based on the Accessibility/Remoteness Index of Australia (ARIA+) classification system (AIHW, 2004), comparisons were made between four groups: Indigenous (remote/very remote); non-Indigenous (remote/very remote); Indigenous (rural); and non-Indigenous (rural) to identify between-group similarities and differences. The 'crash site' (and its ARIA+ classification) or 'residence' (and its ARIA+ classification) were the geographic variable for all comparisons, depending on nature of the outcome variable. The difficulty in defining 'rural' and the potential of

current classification systems to inform road safety research and policy is further discussed in *Chapter 2*.

The importance of meeting immediate Indigenous community needs while trying to identify long-term solutions to systemic problems cannot be overstated and is a feature of the current body of work. In the words of Miller and Rainow (1997):

> *"If you are doing a survey on old people's needs, be prepared to collect firewood. If you are conducting a survey of toilets, take a plumber with you to fix the broken ones, and if you are doing a knowledge-attitude-practice survey on human immunodeficiency virus, take some educational videos and condoms with you"(p.96).*

Strongly committed to what Miller and Rainow (1997) refer to as 'ethical surveys', *Study 3* was applied in nature. It documents a partnership between the candidate (representing CARRS-Q), Transport and Main Roads (TMR), Queensland Police Service (QPS) and other government agencies to develop the first *Queensland Indigenous Driver Licensing Program* (IDLP). *Chapter 7* of the thesis highlights the importance of obtaining a driver's licence from a social welfare perspective and presents the findings of the initial process and outcome evaluation of the program.

This evaluation was designed to: (i) gauge the impact of the program on a number of key social justice metrics (licensing, offence and incarceration rates); (ii) examine the influence of policies with potential to increase disparity, most notably the introduction of Graduated Driver Licensing (GDL); and (iii) identify opportunities to improve road safety through the licensing process and/or other related policy agendas (eg. community development/employment creation).

Figure 1.1 overleaf provides a conceptual model of the overall research aims and how the three studies provide a collective understanding of the proximal and distal causation of Indigenous road trauma, as distinct from other road users, in rural and remote areas. Based on this knowledge, recommendations in *Chapter 8* outline opportunities to improve both policy and delivery in this domain through 'Safe System' solutions (Bliss & Breen, 2009).

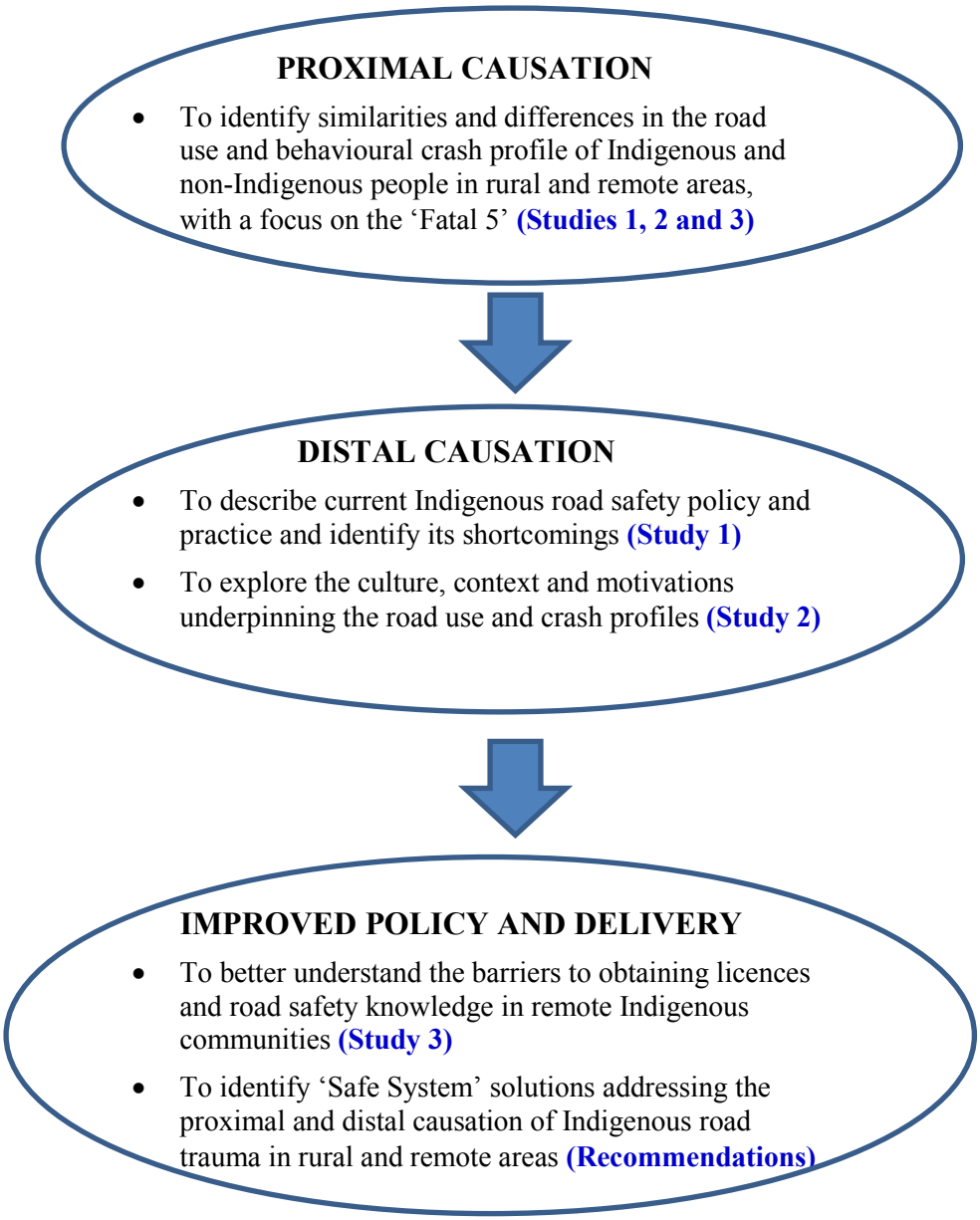

Figure 1.1 Conceptual model of the research aims

1.4 Theoretical Framework for the Research

A common criticism of road safety research and delivery over time has been its reliance on 'common sense or intuition' rather than sound behavioural principles grounded in theory (Watson, 1997). In many cases there is an understanding of the magnitude and characteristics of a road safety problem. However, the challenge is to better understand the myriad of psychological and sociological factors influencing behaviour, thus providing insight into opportunities to shape positive behaviour.

Theory is used in a dual capacity in the research program, both as an explanatory tool to draw the link between socio-cultural factors and road user

behaviours and attitudes, as well as a framework for the delivery of culturally-appropriate road safety policy and initiatives in rural and Indigenous settings.

1.4.1 Examining the role of 'culture' and 'context'

Internationally, there is a growing body of literature to suggest that 'culture' and 'context' are major influences on road user behaviour and may, in part, explain why mainstream road safety strategies from developed countries and urban environments have failed to achieve the same results in remote and disadvantaged areas (Mohan & Roberts, 2001; Ward, 2007). Gruen & Yee (2005) highlighted that Indigenous health and injury are typically a product of 'hardship' they face (eg. increased remoteness, lower levels of vehicle ownership, reduced access to services, higher unemployment, lower education levels, etc.) and behavioural problems or symptoms often stemming from hardship (eg. excessive alcohol consumption, legal infringements, etc.). The importance of ensuring that Indigenous and rural and remote road safety initiatives acknowledge the added risk factors posed by remoteness and address the context in which behaviour occurs, is a theme echoed throughout the thesis.

From an ecological perspective, Shore and Spicer (2004) proposed a model for understanding alcohol-mediated violence in the Indigenous community context. Based on ethnographic and survey data collected in a Queensland Aboriginal community, they provided evidence for a model that proposes three major components affecting the function of alcohol use and its relationship to violence in the community:

- *Circumstantial factors:* setting and background precursors (eg. location, access to employment/services, local tensions, population density, etc.);
- *Community factors:* community held beliefs and expectations about the behaviour(s) and the social control of emotion that is associated with the behaviour (ie. shame/pride associated with the behaviour, community acceptance of the behaviour and risk perception); and
- *Individual factors:* expectations and beliefs held by the individual about the behaviour(s) and its effect on the individual's emotional state (ie. individual's acceptance of the behaviour and risk perception).

Based on their research, it appears that *circumstantial* and *community* factors play a more prominent role in influencing behaviour in the Indigenous and remote context, suggesting that injury might be better addressed at the community rather than

individual level. These constructs and the concept of 'transport disadvantage' (Currie & Senbergs, 2007; Nutley, 2003) are examined in the thesis using a combination of agency datasets, literature and practitioner consultation *(Study 1)* and patient experiences *(Study 2)*. *Study 2*, in particular, embraces McPhail-Bell and Bond's (2013) notion of empowering the experiences of the 'culturally othered'. By providing crash victims with the opportunity to "share their story" about the crash and life more generally, the research was able to identify meaningful influences and "strengths" or opportunities for change.

1.4.2 Applying 'Safe System' thinking

From a policy and delivery perspective, the dominant philosophy underpinning road safety strategies and action plans in Australian jurisdictions – the 'Safe System' approach – is used as a framework to propose strategies to improve Indigenous and remote road safety. Australia's Safe System model has grown out of 'Vision Zero' in the Nordic countries, 'Sustainable Safety' in the Netherlands and 'Via Secura' in Switzerland, all of which have been linked to sustainable road trauma reductions (Bliss & Breen, 2009). Safe System thinking is based on the premise that: (i) road death and long-term injury is largely predictable and preventable if the transport system acknowledges that human error is inevitable and makes allowance for this error; and (ii) safety is the "shared responsibility" of both system designers and operators (Newton, 2008). The four key elements of the Safe System model are: (i) safe speeds; (ii) safe roads and roadsides; (iii) safe vehicles; and (iv) safe road users. As the Safe System model forms the basis of the recommendations provided in *Chapter 8*, it is described in more detail in the upcoming literature review.

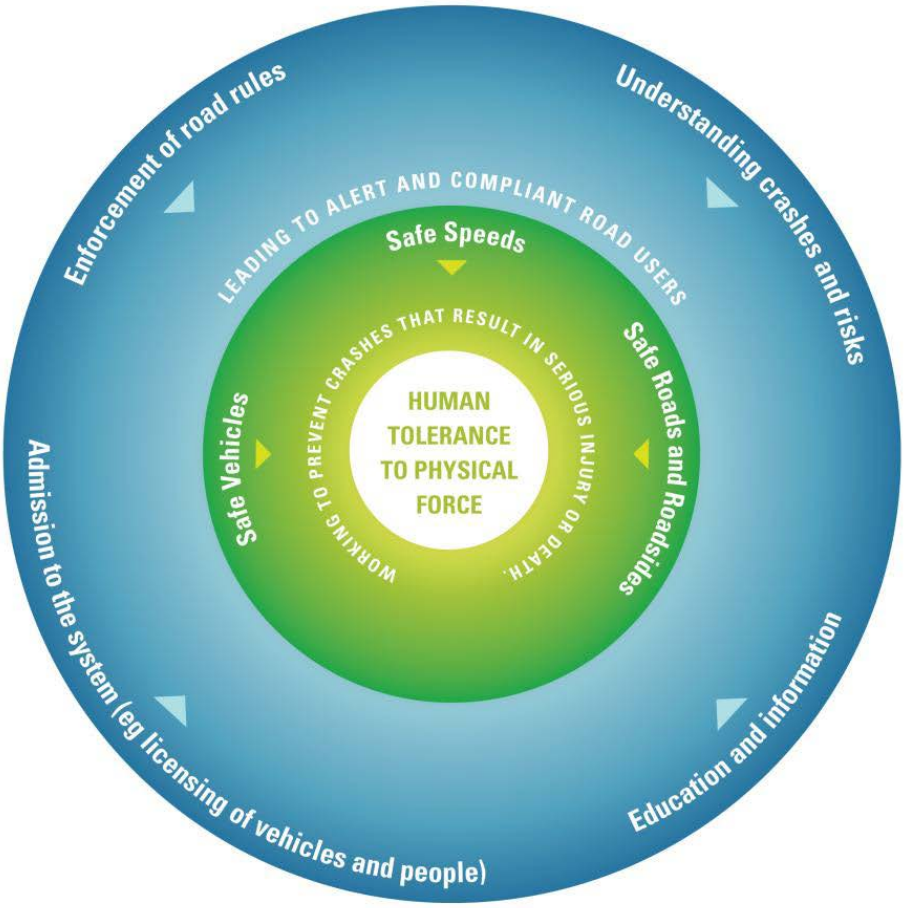

Figure 1.2 Pictorial of the 'Safe System' model (Newton, 2008, p2)

Until recently, the utility of the Safe System model with Indigenous populations had received little to no attention. However, projects with the Bidyadanga community in Western Australia (Senserrick et al., 2011) and the Woorabinda community in Queensland (Edmonston et al., 2011) suggest that the philosophy *"sits well"* with the target population because it is a holistic model (circular) which aligns with the Indigenous worldview. It places increased emphasis on *"partnerships and "joint responsibility"* and acknowledges that there are *"inequities"* and *"many spheres of influence"* (Senserrick et al., 2011). Additionally, it plays down the importance of punitive approaches which have been shown to further marginalise disadvantaged populations (Edmonston et al., 2011). As such, recommendations to improve road safety in the rural and remote and Indigenous context based on this body of work are aligned with this framework.

Finally, the thesis recognises that effective local partnerships and sound governance are critical to the strategic delivery of road safety, particularly in rural and remote areas, where resources are scarce. In doing so, the candidate cites the potential of the newly developed *International Standard for Road Traffic Safety Management Systems* (ISO, 2011) to better coordinate and mobilise resources in the non-urban setting. This standard has been successfully operationalised in rural and remote areas of Central Queensland under the stewardship of the candidate.

1.5 Demarcation of Scope

This thesis involves a project nested within a larger program of research - *The Rural and Remote Road Safety Study* (RRRSS). *Study 2,* described in detail in *Chapters 4, 5 and 6,* is an extension of the 'Interviewed Casualty Study' component of the RRRSS (see *Figure 4.3* in the *Study 2 Methods Chapter*). *Section 1.3* briefly described how additional health facilities throughout North Queensland were engaged through this project to increase the remote and Indigenous samples for comparison purposes. As such, the 'Interviewed Casualty Study' is the only component of the RRRSS discussed in the thesis. A comprehensive discussion of all other studies and findings generated through the RRRSS can be found at (Sheehan et al., 2008): http://www.carrsq.qut.edu.au/rural_remote_study.jsp

It was realised from the outset that the study methodology would not allow crash incidence to be estimated and thus was not within the scope of the research. Through an examination of a series of cases (interviewed patients), *Study 2* simply aimed to identify common and unique characteristics of Indigenous and non-Indigenous crashes in the rural and remote setting which are potentially amenable to change. Similarly, accurate injury profiling was beyond the scope of this project.

1.6 Structure of the Dissertation

The structure of the thesis reflects the specific tasks undertaken as part of the research program. *Figure 1.3* displays all individual research tasks, both exploratory and applied, leading to a series of recommendations to improve road safety for Indigenous populations, specifically in rural and remote areas.

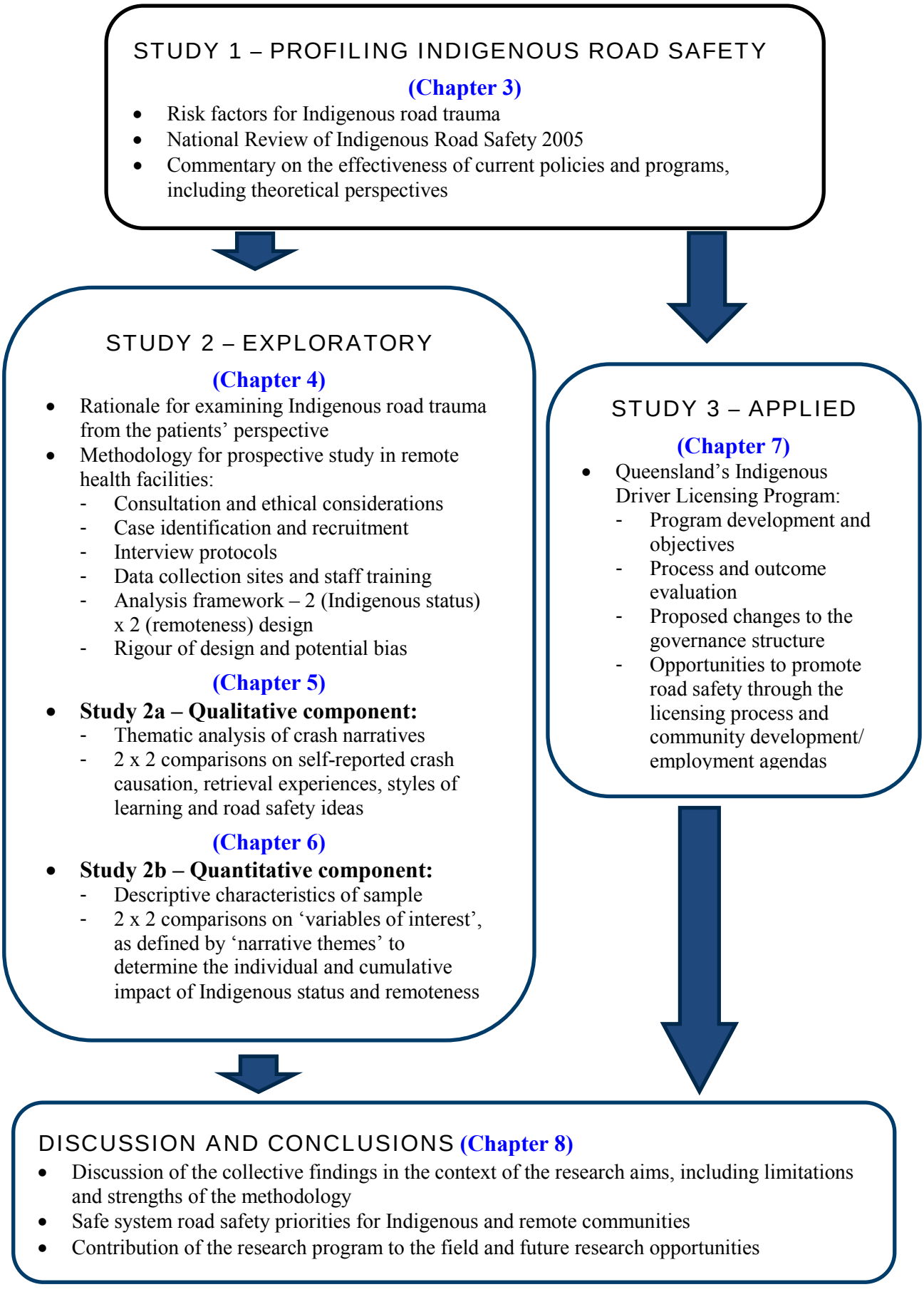

Figure 1.3 Overview of the doctoral research program

1.7 Candidate Contribution to Research Components

Given the diversity of exploratory and applied research outlined in thesis, it is important to clearly define the role of the candidate in each research component. His individual contribution to each of the projects described in this thesis is tabled below.

Table 1.1 Contribution of the candidate to research components

Research component	*Role of the candidate*
Rural and Remote Road Safety Study *(Chapter 2)*	Original Research Assistant on this project- primary responsibility for the Austroads (2005) literature review and integral in the stakeholder consultation underpinning the development of the methodology.
Study 1 - National Review of Indigenous Road Safety *(Chapter 3)*	Candidate contracted by ARRB to complete all components of the research including literature review, analysis of agency datasets, stakeholder consultations, program identification and critique, and write-up.
Study 2 – Prospective Study in Rural and Remote Health Facilities *(Chapters 4 – 6)*	Sole responsibility for all aspects of the research. The Supervisors assisted with ethical approvals and provided data analysis advice and support. A Research Assistant based in Cairns Base Hospital was employed for a 14-month period to conduct interviews at that facility.
Study 3 – Applied Projects *(Chapter 7)*	(1) Contracted by Transport & Main Roads (TMR) to do all community and agency consultation underpinning the development of Queensland's Driver Licensing Program and develop a blueprint for delivery. Subsequently engaged by TMR to conduct process and outcome evaluations. (2) Contracted by the Australian Transport Safety Bureau (ATSB) to develop guidelines for the delivery of road safety programs in remote

	Indigenous communities. Led all aspects of this project including a stakeholder workshop, background research (stemming from *Study 1*), community discussions and reflection, write-up and pilot delivery with Woorabinda community (discussed in *Chapter 8*).

1.8 Chapter Summary

This chapter briefly highlighted disparities in both the scope and nature of Indigenous versus non-Indigenous crash profiles in rural and remote settings. To better understand these disparities, a multi-faceted methodology was described to examine the role that the 'context' and 'culture' of remote and Indigenous community life, as well as the environment, play in influencing road user behaviour, attitudes and injury outcomes. The end goal was to identify strategies to address these factors at the community level.

In addition to the research design and objectives, this chapter outlined the scope and structure of the research program. It also discussed the way in which theory is used to explain the link between socio-cultural factors and road user behaviour, as well as a framework for the delivery of culturally-appropriate road safety policy and initiatives in rural and Indigenous settings. The next chapter of the thesis presents a snapshot of rural and remote road safety, in terms of risk factors, policy and intervention priorities and research gaps (the story so far ...). In doing so, strong rationale was provided for the exploratory methodology underpinning *Study 2* of the current research program.

Chapter 2: The Story So Far – What We Know About Rural Road Safety

2.1 Introductory Comments

Along with suicide, road trauma is the major cause of death in rural and remote Australia and the risk of sustaining injury increases with remoteness (AIHW, 1998). Despite the risk of being killed on rural roads per kilometre driven being four to six times higher than on motorways (OECD, 1999), the rural and remote road safety problem received limited attention in comparison to the urban efforts until the mid-1990s. In 1996, the Australian Transport Council (ATC) and the Federal Government recognised the lack of road safety policies and interventions for these areas and championed the development of a separate rural and remote road safety action plan (National Road Safety Strategy Implementation Task Force, 1996). Australia's Rural Road Safety Action Plan was designed to reduce the incidence and severity of road crashes in country areas by:

- increasing public awareness of the economic costs of rural crashes;
- addressing known deficiencies in identified crash areas; and
- improving driver behaviour and attitudes toward alcohol, excessive speed, seatbelt compliance and driving while fatigued.

Nearly twenty years on, and rural and remote populations continue to be significantly overrepresented in fatality and serious injury crashes both nationally and overseas. While two thirds of the Australian population live in capital cities and metropolitan areas (AIHW, 2004), more than half of the road fatalities occur on rural and remote roads (BITRE, 2013). The relative ineffectiveness of traditional road safety countermeasures in rural and remote areas is, in part, due to a lack of community relevance and involvement in their design (Sheehan et al., 2008). In response, over the last decade, CARRS-Q has undertaken a large body of work to provide insight into the unique characteristics of rural and remote road use and crashes as a precursor to improved policy and delivery in this domain. The two most notable projects were a comprehensive literature review of rural and remote road safety for Austroads (Tziotis et al., 2005) and the five-year *Rural and Remote Road Safety Study* (RRRSS) described in *Chapter 1*.

This chapter presents the findings of these two projects, as well as related academic and professional literature, to establish risk factors for rural and remote crashes, identify at-risk road user groups and tease out promising countermeasures under the 'Safe System' model (the story so far). In doing so, it recognises that Indigenous road users, particularly those living in remote communities, are an at-risk population. However, the work to date provides minimal insight into how their risk profile differs to non-Indigenous road users and what influences these differences, thus providing rationale for the three studies (the journey ahead).

As such, the next chapter of the thesis (documenting the *National Review of Indigenous Road Safety 2005 – Study 1*) focuses specifically on Indigenous road users as sub-population of the broader rural and remote cohort. Through an analysis of available crash data, a literature review, extensive stakeholder consultation and an audit of relevant road safety programs/initiatives, *Study 1* brought together what is known about Indigenous road trauma causation and prevention. It also provided a knowledge base for asking the 'why' questions of patients about crash causation and socio-cultural influences *(Study 2)* and examining the potential of improved licensing protocols as a means of improving both safety and employment outcomes *(Study 3)*.

2.2 Defining 'Rural' in the Context of Road Safety

The lack of a standard definition of what constitutes a 'rural' or 'remote' area, both within and across jurisdictions, makes it difficult to accurately ascertain crash risk and evaluate program effectiveness. While AIHW (1994), have historically defined 'rural' based on population density and restricted access to medical services, transport authorities have typically used prevailing speed limit (≥ 100km/h) as a proxy indicator. Like Steinhardt et al. (2009), the candidate contends that 'rural' is a continuous variable influenced by access and distance to services and reflects factors like educational attainment and socioeconomic status, rather than a binary construct or categorical variable. Analyses of serious injury crashes in Queensland between July 2001 and June 2006 showed that an application of ARIA+ provided further delineation than 'speed limit' as a classification tool, highlighting a greater representation of 'alcohol' and 'excessive speed for circumstances' as causal factors in remote crashes (Steinhardt et al., 2009).

Similarly, Kondisenko & Monypenny (2007) successfully used the ARIA+ classification system to examine the extent to which regional remoteness and location

impacts on non-acute emergency department (ED) presentation rates across Queensland. Interestingly, 'location' or 'remoteness' was a significant predictor on non-acute ED presentations, but 'Indigenous status' was not. This finding built on previous research (Sadkowksy et al., 2001) suggesting that Indigenous Australians are more reluctant to use mainstream medical services. Based on these applications, ARIA+ classifications have been used as the basis for all rural and remote comparisons in the thesis. Dependent on the nature of the variable being examined, comparisons of remoteness are based on either crash location or place of residency.

2.3 Risk Factors for Rural and Remote Road Crashes

Irrespective of the rural classification system used, the increased road crash risk compared to urban areas is undeniable. The *Parliamentary Travelsafe Inquiry into Rural Road Safety in Queensland* (2001) revealed that the per capita risk of dying or being hospitalised in a rural crash was 4.2 and 2.3 times higher than that for urban crashes in the year 2000. In that same year, the comparative risk of dying in rural crashes, compared to urban crashes, was:

- 13.5 times higher for fatigue-related crashes;
- 6.4 times higher for single vehicle crashes;
- 5.2 times higher for crashes where restraints weren't worn;
- 4.7 times higher for speed-related crashes; and
- 4.3 times higher for alcohol-related crashes.

Moreover, there is longstanding evidence confirming that crash risk exponentially increases with remoteness (Haworth et al., 1997) and is a product of the role that transport plays in non-urban areas (Henderson, 2010). The remainder of this section briefly outlines the risk factors for rural and remote road crashes, using the 'journalistic approach' to crash profiling adopted in TMR's Central Region by local Traffic Advisory and Road Safety Committees. In short, annual profiles are developed by TMR for each local government area providing a snapshot of the 'Who', 'What', 'Where', 'When' and 'Why' of crashes within their jurisdiction to guide strategic delivery (Edmonston & Oliver, 2013). This reporting style seemed appropriate to capture "what we know so far" about rural and remote road safety based on the literature and CARRS-Q's project work to date.

2.3.1 Who? – At-risk road users

The Austroads review (Tziotis et al., 2005) revealed a number of at-risk populations for road trauma in rural and remote areas. Firstly, contrary to the myth that *"tourists are the ones crashing"*, locals are more likely to be involved in rural crashes with 80 percent of victims crashing within 100 kilometres of their home. Secondly, the risk of being killed or seriously injured in a rural road crash is greatest for young road users, typically males (similar to urban trends), often unfamiliar with the vehicle and having a previous crash history. Other at-risk groups include pedestrians, truck drivers (Federal Office of Road Safety, 1997), motorcyclists (both on and off-road) and Indigenous Australians – the focus of this thesis and profiled thoroughly in *Chapter 3*.

Motorcyclists, in particular, are an extremely high-risk group that is severely underreported in transport crash data. Health data indicates that motorcycle crashes account for between 30 and 40 percent of all road trauma admissions, with a considerable proportion occurring off-road (Sheehan et al., 2008). Based on analysis of cases from the RRRSS, a targeted survey of off-road riders (n = 235), as well as a series of qualitative studies, Steinhardt (2014) profiled this at-risk group, their behaviours and, more importantly, contextual influences. His research revealed two specific sub-groups (clusters) of riders. Riders who had been 'injured' in an off-road riding crash in the previous 12 months were: more likely to be male; younger; rode more often for recreational and or competitive purposes; and more likely to be wearing personal protective equipment (PPE). While they also had a higher mean risk propensity, they did not differ on self-reported risk-taking, compared to their 'non-injured' counterparts. These results suggest that the recently 'injured' group may be more aware of the potential risks of off-road riding and more willing to ride in a riskier manner. Steinhardt (2014) went on to recommend that behavioural interventions need to target males, highlight both the positive and negative behaviours of off-road riders, and use family/significant others as means of influence. The potential benefits of improved data collection (both on injury and exposure) and minimising risk by encouraging off-riding in a controlled environment and enforcing basic safety measures was discussed.

2.3.2 What and where? – Crash nature and locations

Given the 'Safe System' model focuses on both crash prevention and consequence reduction, the 'what' and 'where' of rural and remote crashes provides valuable intelligence into where engineering investment will achieve the best returns. Based on analysis of 7,965 severe (fatality or hospitalisation) crashes in rural and remote Victoria between 2006 and 2010, Jurewicz (2011) showed that the most prominent 'crash nature', as defined by the Definition for Coding Accidents (DCA) housed in the *Manual of Uniform Traffic Control Devices* (MUTCD, 2003), was 'run-off-road' (50% of all crashes), followed by 'intersection crashes' (19%), 'head-on' (11%) and 'other' (10%). This breakdown is consistent with a DCA analysis conducted for rural Central Queensland (Edmonston & Oliver, 2013).

A closer investigation of 'crash nature' in the rural and remote context reveals two predominant crash scenarios based on prevailing speed. Crashes in low speed environments are typically multi-vehicle and stem from a 'failure to give way' at an intersection, while crashes in high speed environments are typically a single vehicle leaving the carriageway on a curve or straight, often resulting in 'hit object' or rollover (Jurewicz, 2011; Edmonston & Oliver, 2013). The significant proportion off-road and head-on crashes in rural areas compared to urban areas is illustrated in *Table 2.1* below.

Table 2.1 Serious casualties[1] from Queensland road crashes by crash type and location, 1 January 2003 to 31 December 2007

Crash type	Greater [2] Brisbane area	Provincial [3]	Rural [4]	Total serious casualties
Intersection crashes	5781 43.6%	4744 42.3%	1232 16.5%	11757 36.8%
Off-road crashes	2418 18.2%	2286 20.4%	3236 43.4%	7940 24.9%
Head-on crashes	763 5.8%	833 7.4%	762 10.2%	2358 7.4%
Other	4299 32.4%	3352 29.9%	2218 29.8%	9869 30.9%
Total serious casualties	13261 41.5%	11215 35.1%	7448 23.3%	31924 100%

Source: *Road Crash database, Data Analysis, Department of Transport & Main Roads*

[1] Serious casualties include fatalities and hospitalised casualties

[2] The Greater Brisbane area is defined as the Brisbane Statistical Division (BSD)

[3] The urban areas of Queensland excluding the Greater Brisbane Area. The provincial cities are: Bundaberg, Cairns, Caloundra, Charters Towers, Cooloola, Gladstone, Gold Coast, Hervey Bay, Mackay, Maroochy, Maryborough, Mount Isa, Noosa, Rockhampton, Thuringowa, Toowoomba and Townsville

[4] The remainder of Queensland excluding the Greater Brisbane area and provincial cities

2.3.3 When? – Temporal characteristics

The temporal characteristics of rural and remote crashes typically mirror exposure patterns. An analysis of official road crash data (fatalities and serious injuries) for three year period coinciding with the RRRSS, showed slightly higher crash numbers in July, September and October which aligns with school holidays, favourable weather and increased vehicle movements (Sheehan et al., 2008). In terms of day of week, slightly higher crash rates were registered on weekends. Previous research has shown weekend travel to be characterised by increased levels of unlicensed driving (Watson, 1997) and alcohol consumption by young drivers, particularly young males (Coulon et al., 1992). This trend is not unique to rural and remote areas and is consistent across Australian jurisdictions (ATSB, 2007).

Time of day analyses disclosed a spike in crash numbers in the afternoon period (12pm – 6pm) for rural and remote crashes in North Queensland (Sheehan et al., 2008). Once again, this is consistent with national trends (Tziotis, 2005) and coincides with the peak time for vehicle movements.

2.3.4 Why? – Causal factors

The behavioural, environmental and vehicle-related factors contributing to rural and remote road crashes are many and varied. Despite a widely held belief that *"it's the bad roads"* which lead to higher crash rates in rural areas (Blackman et al., 2006), it appears to be a reflection of the 'rural way of life'. Henderson (2010) points out that, in rural towns, the pub is an important social centre (frequently sponsoring local sporting teams), and often the only way to get there and, in particular, back is to drive due to a lack of public transport or alternatives. Similarly, long distance travel to access basic services or employment heightens exposure to risk and potential for fatigue. Due to the vast network, traffic policing is difficult in rural and remote areas, leading to increased levels of drink/drug driving (Armstrong et al., 2013; Haworth et al., 1997), and non-compliance with seatbelt and speed limit requirements (Tziotis et al., 2005; Henderson, 2010). In a comparison of fatal versus non-fatal crashes as part of the RRRSS, Siskind et al. (2011) showed that fatal crashes were more likely to involve speed, alcohol and violations of road rules and fatal crash victims were 2.5 times more likely to be unrestrained than non-fatal casualties.

Above and beyond other factors, the RRRSS confirmed that inappropriately high travelling speeds, in older (possibly less crashworthy) vehicles, coupled with unforgiving roads and roadsides, contribute to both the incidence and severity of rural and remote crashes (Henderson, 2010; Sheehan et al., 2008). Furthermore, the trigger for leaving the carriageway is often distraction/inattention, with 34.8 percent of patients in the RRRSS reporting being distracted leading up to their crash (Sheehan et al., 2008). Finally, individual factors, such as marital status, level of education, employment status, socioeconomic standing and personality have been shown to contribute to increased crash risk in single vehicle crashes in rural areas (Tziotis et al., 2005; Haworth et al., 1997), as well as attitudes of 'fatalism' (Sticher, 2009).

Snapshot – Summary findings of the *Rural and Remote Road Safety Study*:

- Single vehicle crashes accounted for more than 75 percent of all serious crashes.
- Males accounted for the majority of the injury burden (82.4 percent of the 'interviewed casualty' sample), with those aged 30 to 50 years contributing as much as young males.

- Contrary to community belief, 80 percent of interviewed casualties were North Queensland residents, with over half having completed secondary school and over 80 percent in employment.
- Of the 'interviewed casualty sample', more than 60 percent identified as harmful drinkers (based on the AUDIT-C) and more than 20 percent had been involved in a crash within the previous five years.
- Motorcyclists were overrepresented in the sample (one third of all serious casualties), with approximately half of these occurring off-road – not captured in current crash reporting systems.
- Motorcyclists often had significantly less riding experience than driving experience – 'recently returned to riding and on a weekend ride for leisure' was a common scenario.
- Key causal factors included: driving too fast for the conditions (not necessarily the posted or default speed limit); distraction; alcohol (30 percent of all fatal crashes); and not wearing a seatbelt.
- The relationship between 'familiarity with the route' was bimodal, such that those 'very familiar' or 'not familiar at all' were most likely to crash.
- In terms of emergency retrieval, 85 percent of 'interviewed casualties' received 'help' (defined as assistance provided by anyone) within 30 minutes and only three percent of the sample took themselves to hospital.

2.4 A 'Safe System' Approach to Rural and Remote Road Safety

The Austroads review (Tziotis et al., 2005) and the RRRSS (Sheehan et al., 2008) identified a number of policy and intervention suggestions to address the various causal factors described above. Using the previously described 'Safe System' approach, this section draws attention to the most promising of these. Then, based on the collective findings of *Studies 1, 2 and 3*, the final chapter of thesis outlines a suite of educational, engineering and enforcement priorities to strategically improve rural and remote safety, with particular focus on Indigenous communities.

2.4.1 Safe speeds, roads and roadsides

Given that speed contributes to both the incidence and severity of road trauma, safe speeds are the cornerstone of the Safe System model and must be a highest

engineering priority when it comes to rural and remote road safety. Research reported by the Global Road Safety Partnership (2008), showed that a one percent increase in average speed resulted in a three time higher risk of being involved in an injury crash and a four to five percent increase for crashes resulting in a fatality.

2.4.1.1 Safe speed limits

The primary means of achieving safe speeds is through the application of appropriate and enforceable speed limits based on a number of factors including function of the road, adjoining accesses, visibility, vehicle movements, and crash history. While there are technical guidelines for setting speed limits in the *Manual of Uniform Traffic Control Devices (MUTCD, 2003)*, of equal importance is an understanding of 'survivability' for different collision types at various impact speeds for all road users involved. Based on the work of Wramborg (2005), *Figure 2.1* below shows the thresholds for fatality risk for different types of collisions.

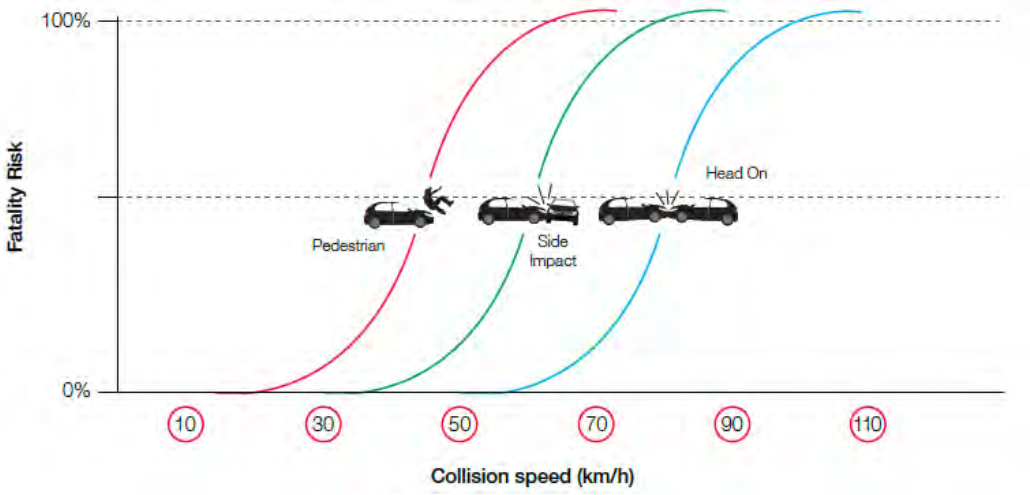

Figure 2.1 Speed thresholds for fatality risk by collision type

Importantly, these findings suggest that current speed limits in Australia, particularly the 'rural default' limit and those in areas with a high exposure for vulnerable road users, may be too high. In an international review, Lahausse et al. (2010) found that Australia's speed limits tended to be higher than those found elsewhere, despite having less grade separation. McLean (2012) reports that large sections of Australia's rural network are now posted at 110km/h which is 29km/h faster than the safe design speed for most of the roads. An audit of 110km/h sections

of Central Queensland's network as part of the Statewide Speed Limit Review Project in 2014 found similar results with very few sections meeting the criteria outlined in the MUTCD (TMR, 2003) for a 110km/h limit due to substandard horizontal and vertical alignment, lack of shoulders, steep batters, unsealed sections, roadside hazards in the clear zones and culverts.

In addition to international research (Finch et al., 1994; Nilsson, 1990), there is strong evidence in the Australian context to support lowering speed limits on rural roads. For example, Sliogeris (1992; cited in Stuster et al., 1998) found that reducing limits from 110km/h to 100km/h resulted in a 19 percent reduction in injury crashes, while Newstead and Narayan (1998) discovered a 46 percent reduction in casualty crashes following a 100km/h to 80km/h reduction.

Despite longstanding evidence to support rural speed limit reductions, the political appetite for change is not there. McLean (2012) points out that the evolution from 'acceptable' to 'socially unacceptable' that both drink driving and restraint use have gone through with the broader community remains a challenge in the speed domain. This was particularly evident when the Tasmanian Government pulled out of their *Kingborough Safer Speeds Demonstration*. Commencing in September 2007, this project involved lowering the speed limit on most sealed rural roads from 100km/h to 90km/h and from 100km/h to 80km/h on gravel roads in the municipality of Kingborough. Despite positive preliminary findings, including a 4km/h reduction in free travel speeds on gravel roads (Langford, 2009), the demonstration project was ceased in 2013 in response to a small but vocal pocket of the community.

2.4.1.2 Low-cost perceptual treatments

While open road speed management appears to have the greatest potential to reduce serious road trauma in rural and remote areas (McLean, 2012), there are a number of other innovative engineering treatments which could offer significant safety benefits including low-cost perceptual treatments to improve delineation and reduce 'run-off-road' and 'head-on' crashes (Austroads, 2012; Charlton, 2007; Macaulay et al., 2004; Turner & Makwasha, 2012). Perceptual countermeasures refer to minor changes/additions to the road and surrounds to alter the environmental cues drivers/riders receive and, in turn, influence behaviour. Based on a series of trials conducted by ARRB in rural Victoria, Jurewicz and Hall (2009) and Turner and Makwasha (2012) demonstrated some very positive results showing the impact of

infrastructure treatments on speed reduction at both intersections (see *Table 2.2*) and curves (see *Table 2.3*).

Table 2.2 Impact of Infrastructure Treatments on Speed and Crash Profile at Intersections

Treatment Type	*Crash / Mean Speed Reductions*	*Usage*
Advanced warning signs	30% CR / Unknown SR	Established
Roundabouts - less conflict points	70% CR / 4km/h SR @ 30m prior	Established
Vehicle-activated signage	70% CR / 5km/h SR	Emerging
Perceptual treatments - herringbone	60% CR / 8km/h SR	Promising
Transverse rumble strips	20% CR / 5km/h SR	Promising
Narrowing carriageway	30% CR / 5km/h SR	Promising
Reductions in sight distance	40% CR / 18km/h SR	Untested
Variable speed limits	Unknown CR / 10km/h SR	Untested

Note - CR = crash reduction / SR = speed reduction

Table 2.3 Impact of Infrastructure Treatments on Speed and Crash Profile on Curves

Treatment Type	*Crash / Mean Speed Reductions*	*Usage*
Advanced warning signs	25% CR / Unknown SR	Established
Chevron alignment markers	30% CR / 3.5km/h SR	Established
Speed advisory + sharp curve signs	40% CR / Unknown SR	Established
Improved delineation	5-20% CR / Unknown SR	Established
Transverse rumble strips	Unknown SR / 5km/h SR	Promising
Perceptual countermeasures	Unknown CR / 10km/h	Promising

Note - CR = crash reduction / SR = speed reduction

Identified as promising by Turner and Makwasha (2012), the use of perceptual countermeasures to increase safety on curves appears to have merit in the rural Queensland context where a significant proportion of curves do not meet minimum radii requirements. In particular, Charlton (2007) has demonstrated the effectiveness of 'herringbone' treatments (like that shown in *Figure 2.2*) in reducing speed and improving lane position (drive paths) at very low cost.

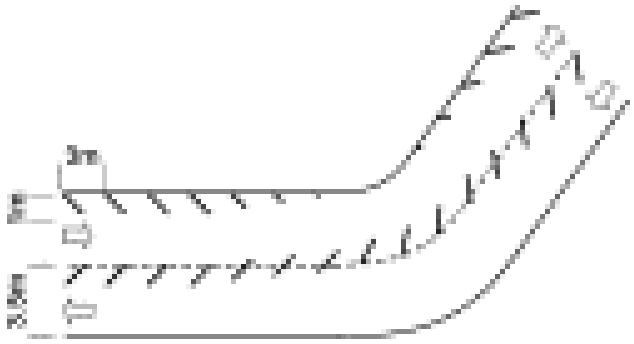

Figure 2.2 Example of Herringbone Treatment

2.4.1.3 Hazard management and clear zones

In the event a vehicle leaves the carriageway, there are two primary treatment types available. Firstly, the provision of appropriately-wide clear zones (> 13m on 100km/h+ roads) has been shown as effective harm minimisation measure (Jurewicz et al., 2010). Taking this approach a step further, several Western Councils in Central Queensland are providing clear zones for a higher design speed (120km/h) on stretches where local police have identified non-compliance with the posted or default limit (Outback Regional Roads Group, 2014). In areas where roadside hazard management is not possible due to cost or environmental issues, installation of protective barriers is the most feasible solution. However, paramount to the installation of this treatment is the need consider the impact of different road user types (motorcycles versus cars) and ensuring 'end treatments' do not create an additional hazard (ARRB, 2011).

Figure 2.3 Photo of a Clear Zone Project in Western Queensland

2.4.1.4 Wide Centreline Treatment

Backed by solid evaluation, the most encouraging engineering treatment in reducing rural road trauma appears to be the installation of the wide centreline (WCL) treatment on high-speed roads with a history of 'head-on' crashes (see pictures overleaf). Widespread rollout of this treatment on the Bruce Highway – which runs the length of Queensland - is the highest priority in the 'roads and roadsides' component of the *Queensland Road Safety Strategy 2015 – 2021* (TMR, 2015), based on evaluations showing a 55 percent reduction in 'head-on' crashes and 15 percent reduction in total crashes on sections treated in other jurisdictions (Levett et al., 2009). With more than 25 percent of the National Highway now treated, TMR's Safer Roads team is accessing pre and post-implementation data from the regions as part of a comprehensive evaluation.

Figure 2.4 Photos of WCL treatments - Miram Vale to Rockhampton

One of the additional positives associated with WCL, is its popularity with motorists. Not only does it provide known safety benefits (ie. low-cost grade separation, reduced speeds due to a perception that the carriageway is narrowed), but it also provides increased visibility when making overtaking decisions. This treatment has been praised unanimously at recent "Truckie Toolbox Talks" (roadside safety

barbeques with heavy vehicle drivers) and "Nomad Afternoon Teas" (information sessions with caravan travellers) hosted by the candidate in his role as Regional Road Safety Manager for TMR in Central region (Edmonston, 2015).

2.4.1.5 Improved intersection design and Local Area Traffic Management

To date, this section has focused on treatments for high-speed roads. There are a number of innovative treatments available to rural towns addressing the typical crash scenario – *'fail to give way at intersection resulting in rear-end of hit vehicle collision'*. While the primary objective of intersection upgrades in rural areas is to increase efficiency, safety benefits are typically realised through increased traffic control. Based on crash and vehicle movement data from 238 signalised intersections in New Zealand and Australia, Turner (2013) was able to develop crash prediction models based on features of the intersection and surrounding environment. The modelling demonstrated that the safety of intersections can be improved by longer cycle times (especially all-red time), providing fully protected right turns and increasing the storage capacity of right turn lanes. The exception is at intersections with high pedestrian volumes where pedestrian crashes increase with longer wait times. Several factors were also shown to have a negative impact on safety including free (uncontrolled) left turns, more approach lanes, intersection legs operating on or over capacity at peak times and higher speed limits on approaches. Installation of roundabouts (particularly with reverse curves on approaches) has also shown to be effective (Bergh et al., 2005). Together, these findings have important design implications for both state and local government road authorities.

Additionally, rural Queensland towns typically have a grid pattern layout with wide carriageways (> 27m across both lanes) and wide intersections. This configuration encourages increased speed on approaches to intersections and failure to give way. In response, Local Governments, through the 'Complete Streets' program, are successfully trialling street-scaping (usually in the form of vegetation) and narrowing the throat of intersections with a crash history as a means of reducing approach speeds and increasing give way compliance *(see Figure 2.5)* (Edmonston & Oliver, 2013).

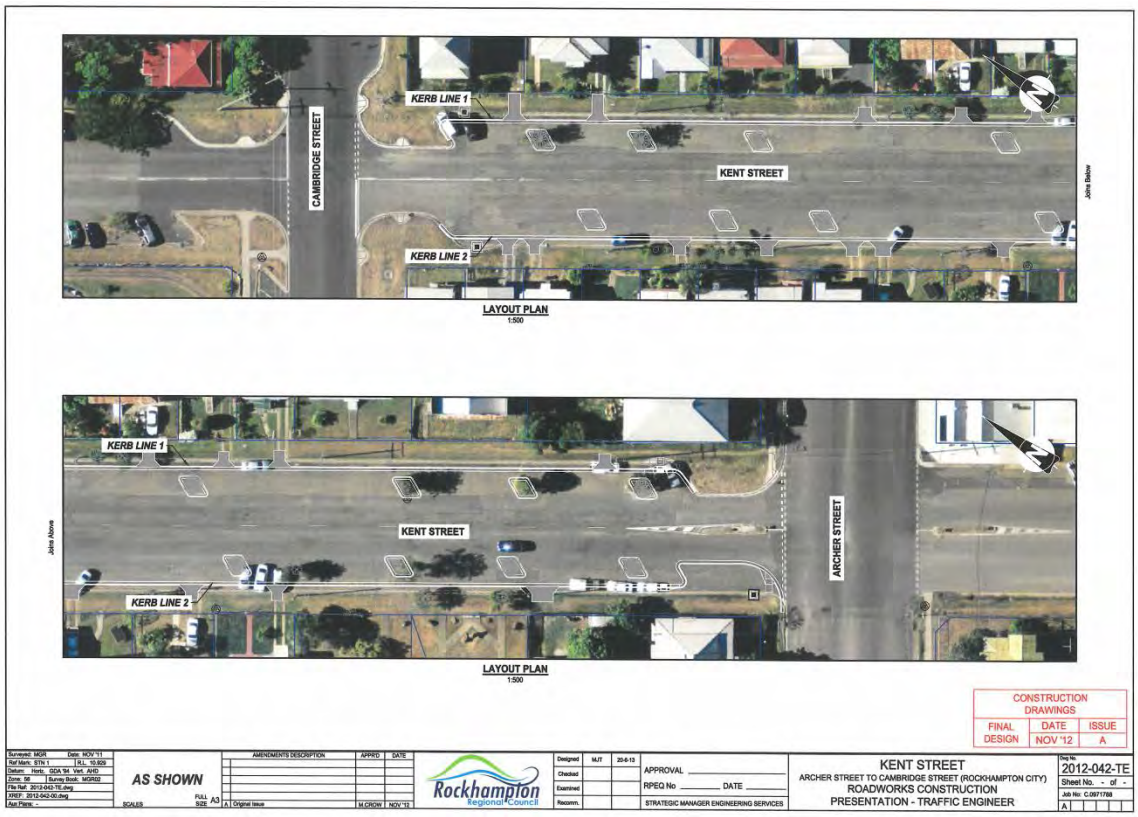

Figure 2.5 Photo of a concept design for a 'Complete Streets' Project

Based on international research (Parker, 1997; cited in Corben, 1998) and, more recently Australia (Jurewicz & Hall, 2009) suggesting that Local Area Traffic Management (LATM) schemes can reduce 85th percentile speeds by 15 to 30 percent, Rockhampton and Livingstone Councils have implemented a LATM scheme in the towns of Rockhampton, Yeppoon and Emu Park. Following extensive community consultation, area-wide speed limits have been changed to reflect risk to vulnerable road users. This resulted in CBD areas posted at 30km/h, moving out to 40km/h limit capturing school and business areas, moving out to 50km/h for residential streets, then finally to 60km/h on community exits and approaches. This essentially provides changes the 'road user hierarchy', thus providing a safer 'pedestrian precinct' *(see Figure 2.6)*.

Figure 2.6 Picture of Yeppoon LATM design – 30km/h area

Interestingly, there is evidence emerging to suggest that the political perception that communities do not support lower speed limits may not be entirely correct. Through an online survey of 4,100 Australian residents, Lahausse et al. (2010) found that most respondents support lower speed limits on 100km/h two-lane undivided rural roads (preferred option of 90km/h) and on rural gravel roads (preferred option of 80km/h). Similarly, an analysis of speed limit review requests for TMR's Central Region for the three year period 2012 – 2014, showed that approximately 85 percent of submissions were requesting a reduction. The need to progress the issue of inappropriate speed along McLean's (2012) 'evolution to positive behaviour change' through brave policy decisions re: lower speed limits on rural and remote roads is revisited in the recommendations section of the thesis. At the very minimum, local road authorities need to be identifying high crash zones for speed-related crashes using established 'critical crash rate' comparisons and adopting a "proactive application of speed zoning", prior to a road safety audit and subsequent remedial actions if feasible (Austroads, 2014; MUTCD, 2003).

2.4.1.6 Road safety audits and blackspot treatments

The value of road safety auditing cannot be denied when it comes to providing safer roads and roadsides. In particular, benefit-cost ratios for design audits (ie. getting safety features right before delivery) range between 74 and 342:1 (Lee, 2010). That being said, safety benefits are achieved through road safety audit at any phase in an infrastructure project. For example, in response to a spate of serious injury motorcycle crashes on high speed roads (not unlike the situation in Queensland), the Victorian Government has implemented a comprehensive blackspot program treating 130 locations between 2003 and 2010. The program targeted locations with a history of run off road crashes, problem intersections and popular motorcycling routes for leisure riders. Site selection and prioritisation was undertaken by VicRoads, in partnership with the Victorian Motorcycle Advisory Council, and funded through a Motorcycle Safety Levy (a one off $55 payment from all motorcycle owners with a bike > 125cc = $35 million in total). The fit-for-purpose treatments comprised improvements to enhance sight lines and delineation, control vehicle speed, removal for roadside objects/clear zone treatments and effective signage/traffic controls (Brennan & Beer, 2007; cited in APEC, 2011). An evaluation in 2008, showed a 24% reduction in all motorcycle crashes at the 87 sites treated to date and a 16% reduction in serious injury crashes which equates to a BCR of 15:1.

2.4.1.7 Vehicle activated signage

Unfortunately, speed limits are by nature inflexible and can't provide warning to motorists to modify their behaviour due to a change in the environment or hazard ahead. In response, the past decade has seen the emergence of vehicle activated signage (VAS) as a means of providing this feedback. The effectiveness of VAS has been well researched in other jurisdictions, particularly the United Kingdom, and has been shown to have a significant impact on driver behaviour, traffic safety and efficiency, as measured by a reduction in mean speeds, a reduction in speed variation, increased headways and crash reductions (TMR, 2009). In addition, they have been shown to be extremely cost-effective have good 'face validity' with the community (TMR, 2015). In short, VAS are triggered by a vehicle's approach speed such that, vehicles approaching faster than a set threshold, cause the sign to flash a "Give Way" or "Slow Down" LED display. Research indicates that this personalised message, or the fact that the sign is behaviour-triggered, increases credibility which results in better

performance than traditional static signage (TMR, 2009). VAS has potential to manage open road speeds on road sections with upcoming hazards/changed conditions, as well as increase give way compliance at high-speed rural intersections. In accordance with the TMR's (2015) recently released *Technical Note 160 – Vehicle Activated Signs (VAS)*, a trial of this treatment is being undertaken at a rural intersection on the Rockhampton-Yeppoon Road with a significant crash history *(see Figure 2.7)*.

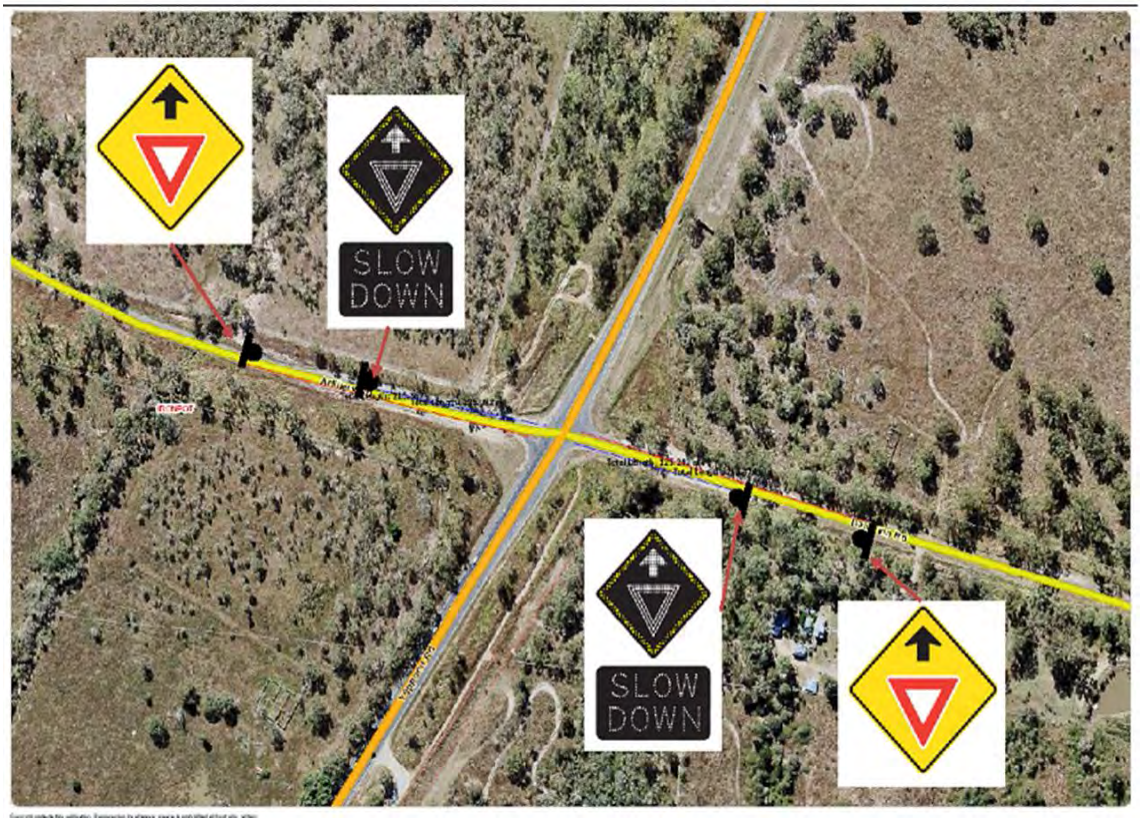

Figure 2.7 VAS installation design for a rural intersection

2.4.2 Safe road users

With the exception of aspects of Graduated Driver Licensing (Bates, 2012), there is little evidence to suggest that mainstream efforts to achieve behaviour change in the rural and remote context are achieving optimal outcomes (Sheehan et al., 2008). However, more recent literature provides valuable insights into ways in which policy-makers and practitioners could better promote 'social change' through different approaches to education and enforcement.

2.4.2.1 Public education campaigns – Promoting 'social change'

Lewis et al. (2013) points out the shortcomings of road safety campaigns in Australia, which have typically used fear-based tactics in an effort to increase compliance. Lewis et al. (2013) demonstrated that high-risk populations (young males) tend to *"disassociate"* with fear-based messages, believing that *"it won't happen to them"*. Recent research (Lewis et al., 2013; Rowlands Consulting, 2013) shows that the best results in public education are achieved through campaigns that provide 'coping strategies' to avoid risky behaviour and/or use appropriate humour. With this knowledge, there is a push nationally for public education campaigns to adopt a 'social change' philosophy by engaging road users to positively influence their peers through a variety of media, including emerging social media (Rowlands Consulting, 2013). This *"mates helping mates"* approach to behaviour change appears to have good face validity with the rural audience who have, according to the literature, a stronger sense of community (Ziersch et al., 2009).

A recent example of a 'social change' approach to road safety marketing is Queensland's 'Mates Motel' campaign *(see Figure 2.8)*. Drawing on humour, this campaign encourages people (particularly young males) who are having a few drinks to stay at their mate's motel as an alternative to drink driving and share their experiences on social media. It has been immensely popular with the target audience and recently won the Award for Marketing Excellence at the AMI Social Marketing and Social Change Awards. Along similar lines, TMR recently conducted its first Co-LAB youth road safety challenge which brought together 100 young people (17-20 year olds) from across Queensland to brainstorm road safety ideas. It resulted in the development of the "Settle Down Stallion" social media campaign targeting risk-taking among young males. Within the first few months, the campaign has reached 4.7 million viewers.

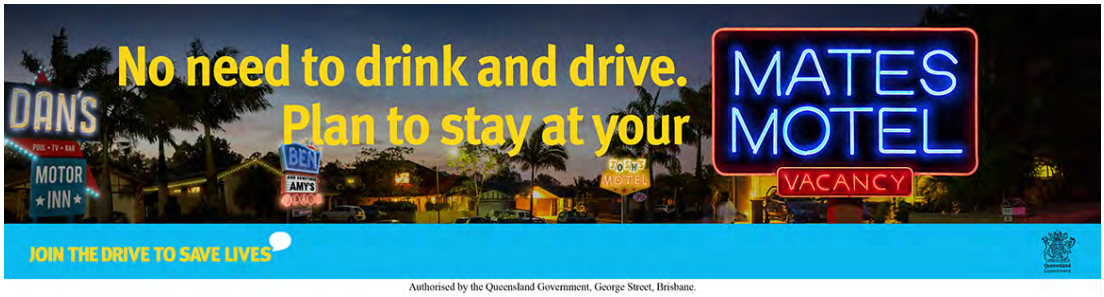

Figure 2.8 Social media banner for the Mates Motel campaign

Using a 'social change' approach, and based on the rural crash profile presented in this chapter, priority messages for road safety campaigns in this context should be:

- Promoting the fact that it's local people dying on local roads;
- Reinforcing the safety benefits of personal protective equipment (restraints and helmets);
- Championing the use of personal protective equipment in the off-road environment and associated legislative changes;
- Highlighting the risks associated with use of technology (mobile phones) while driving;
- Challenging the 'rural way of life' and social norms re: speeding, alcohol and drug use;
- Acknowledging the importance of sharing the road safely, particularly with the diverse road user and vehicle mix; and
- Presenting fatigue management strategies through industry and tourism networks.

While the literature provides some insight into the future focus of road safety messages targeting rural and remote populations, there is less evidence to suggest what mediums and delivery styles work best with Indigenous and non-Indigenous people. *Study 2* of this project addresses this research gap. It specifically asks crash patients about the value they place on road safety in comparison to other social issues and how road safety information would be best disseminated at the individual and community levels. Linkenbach (2009) and Bozeman (2014) argue that focusing on growing positive and healthy attitudes is integral to improving safety and wellbeing (cultural transformation). To that end, Bozeman's (2014) Positive Community Norms Framework (PCNF) recognises the power of communities and the ability of people within communities to act as 'cultural change agents' through proactive leadership, targeted and tailored communication styles (knowing who can influence and engaging them), and the integration of safety in broader social policy *(see Figure 2.9)*

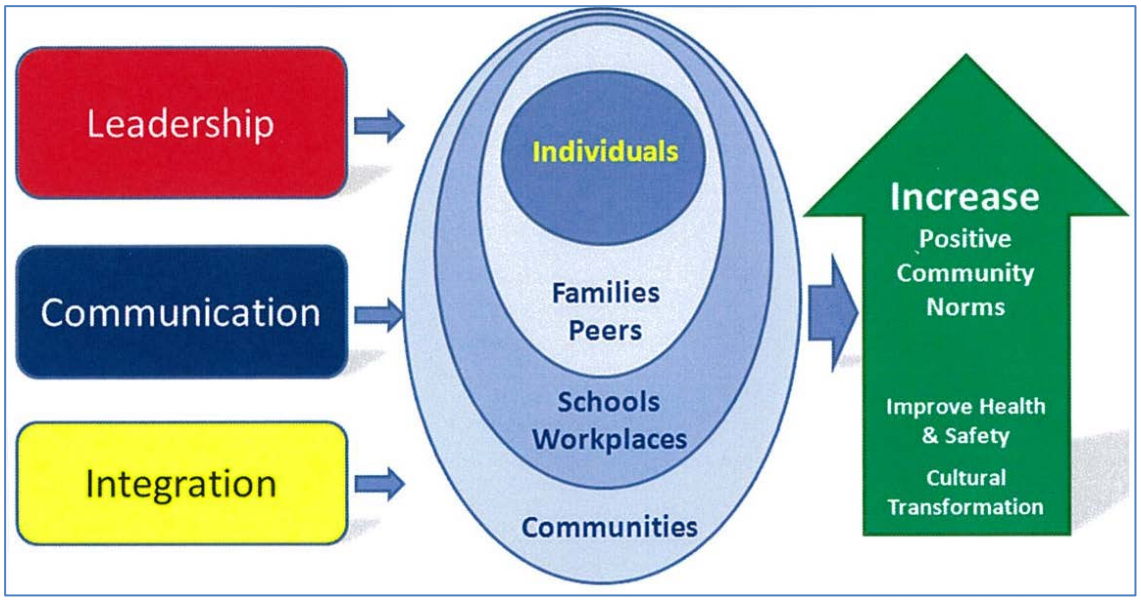

Figure 2.9 Positive Community Norms Framework (Bozeman, 2014, p1)

Along similar lines, Lowe et al. (2011) contends that improved road safety outcomes are a product of a number of traditional methods including developing and managing the physical environment, managing traffic and enforcement activity and changing behaviours and attitudes through education. However, above and beyond these mechanisms, they argue that sustainable road safety benefits are only realised through coordinating partnerships across agencies and integrating road safety into other policy agendas, particularly when working with disadvantaged communities. This ensures that road safety becomes entrenched into strategic planning at the regional level and facilitates increased commitment of resources. The results of the three studies in this program of research provide strong rationale for operationalising the PCNF and cross-agency road safety partnerships as catalysts to improve road safety outcomes in the rural and remote context. The discussion and safety recommendations tabled in *Chapter 8* unpack how this could be possibly achieved.

The link between the 'rural way of life' (Henderson, 2010) and sport also provides an opportunity to positively influence behaviour and road safety. The *Good Sports Program* is an initiative developed by the Australian Drug Foundation. Running since 2008, the *Good Sports Program* assists sporting clubs across Australia to promote responsible alcohol use, with a focus on reducing harmful alcohol consumption and alcohol-related incidents. Key facets of the program include responsible service of alcohol, parent education and positive role-modelling from elite senior players. Of a possible 30,000 clubs across Australia, nearly 8,000 are already

members. A recent evaluation of the program (Australian Drug Foundation, 2013, p2-4), through a randomised control trial, showed meaningful relative reductions among participant clubs on key performance indicators including:

- At-risk alcohol consumption at club events (37% reduction, $p < .05$);
- Total AUDIT scores (42% reduction, $p < .01$);
- Alcohol-related problems (33% reduction, approaching significance).

Once again, these findings suggest that addressing road safety through popular rural activities and linkages with other social agendas has merit and is revisited in *Chapter 8*.

2.4.2.2 Enforcement strategies

To complement media and advertising, Sheehan et al. (2008) reported that rural enforcement programs need to utilise randomised or innovative scheduling to enable low levels of police presence to achieve more widespread coverage of the vast road network. For example, using data from a recent Queensland Community Engagement Trial, Mazerolle et al. (2015) showed that the optimal length of time for police presence in "hot spots" is between 14 and 15 minutes, with diminishing returns thereafter. Additionally, the optimal length of time for traffic stops is less than two minutes. These timings would minimise the opportunity for the 'rural grapevine' to take effect resulting in widespread knowledge of interception locations. Finally, acknowledging the body of research indicating that *"people drive as they live"* (Fleiter et al., 2015; Shinar, 1978) and that risky behaviours are often 'clustered', there would appear to be potential in targeting areas with high levels of other crime for traffic offences.

2.4.3 Safe vehicles

Typically, the vehicle plays a minor role (< 10%) in crash causation (Shinar, 1978). However, due to the older passenger fleet and diverse vehicle mix sharing the road (increased heavy vehicle/over-dimensional movements) in rural and remote areas it warrants attention. The greatest gains in the 'safe vehicles' domain will be through a newer fleet with added safety features, in particular, speed control and occupant protection technologies. Scales (2015) points out that only 10 percent of cars made in 2003 had a five star ANCAP rating, compared to 60 percent of all new cars in 2009.

Over time, these vehicles will filter into the rural fleet providing obvious safety benefits.

An evaluation by Elvik (2009) suggested that the vehicle features with the most potential to increase safety include 'enhanced neck protection' through improved design (BCR of 20:1), seatbelt reminder systems (BCR of 16:1), alcohol ignition interlock devices for convicted drink drivers (BCR of 9:1) and 'improved vehicle design to protect pedestrians' (BCR of 5:1).

A key finding of the RRRSS was the high level of community support for increased courtesy buses and/or public transport options, above and beyond all other countermeasures (Sheehan et al., 2008). The potential of measures which reduce risk exposure like this sits well with a key theme of the thesis – exploring ways to change the context in which the risky behaviour occurs.

2.5 Chapter Summary

This chapter outlined "what we know about rural road safety" based on the literature and collective research components of the RRRSS, in terms of comparative risk, causal and temporal factors, at-risk populations and so on. Using the 'Safe System' model, it also highlighted countermeasures best placed to reduce the injury burden based on predominant crash nature.

However, in order to truly address the 'social determinants of health', in this case road safety attitudes and behaviours, Marmot and Wilkinson (1999) argue that one must fully understand the economic, social and cultural factors that influence both the individual and community, directly and indirectly. In the words of Dixon and Welch (2000, p.254), there is a need to understand *"the context in which individuals live, work and play"*. As such, factors like socio-economic and employment status, understanding and acceptance of risk, access to services and family support structures can provide valuable insight into what drives a particular behaviour pattern and, in turn, might positively influence it. Similarly, Ward (2007) points out that an understanding of the psychological and social factors that define 'rural safety culture' is needed to develop human-centred and culturally sensitive programs to improve traffic safety.

Increased understanding of the intricate relationship between the mindset of individuals and the role transport plays in community life could provide the key to improved road safety outcomes. As such, the studies described in the remainder of the

thesis look beyond the descriptive characteristics of Indigenous and rural and remote road trauma to better understand how *"individuals live, work and play"*.

Chapter 3: Profiling Indigenous Road Safety (Study 1)

3.1 Introductory Comments

Based largely on a national review of *Road Safety in Rural and Remote Areas of Australia* (Tziotis et al., 2005) and findings from the RRRSS (Sheehan et al., 2008), the literature review in *Chapter 2* identified known risk factors for rural and remote road trauma and intervention priorities under the 'Safe System' model. In doing so, Indigenous Australians were identified as a high-risk population. The health status of Indigenous Australians is significantly worse than that of the non-Indigenous population on virtually every health and wellbeing indicator, with land transport injury being no exception (ABS, 2002; Vos et al., 2007).

This chapter documents *Study 1* of the research program which was the second *National Indigenous Road Safety Review* conducted on behalf of the Australian Transport Safety Bureau. Without going into the same detail as the official publication (Styles & Edmonston, 2006), it identifies risk factors for Indigenous road trauma based on available literature and crash data and an analysis of the North Queensland experience. However, the primary discussion in this chapter focuses on the shortcomings of current policy and programs, offering theoretical perspectives on ways to improve Indigenous road safety delivery in rural and remote communities. In doing so, it provides rationale for empowering the 'cultural othered' through the *Study 2* methodology.

3.2 National Review of Indigenous Road Safety

At the conclusion of the third biannual National Aboriginal and Torres Strait Road Safety Forum held in the Northern Territory in 2004, the Aboriginal and Torres Strait Islander Road Safety Working Group (ATSIRSWG), of which the candidate was the Queensland delegate, identified eleven actions to move the Indigenous road safety agenda forward. As a priority, the ATSIRSWG commissioned the candidate to work with ARRB Transport Research Ltd to conduct the second review to identify recent initiatives throughout Australia and overseas.

3.2.1 Methodology

The 2005/06 review adopted the same methodology as the initial review in 2002/03, also co-authored by the candidate, comprising: (i) a literature review and analysis of available crash data from Queensland and other jurisdictions to profile Indigenous road user behaviour; and (ii) consultations with key researchers and practitioners in the area to facilitate the sharing of knowledge, research, programs and valuable lessons across jurisdictions.

The consultation process included road safety, law enforcement, health and Indigenous authorities from each Australian jurisdiction and overseas (New Zealand, America and Canada). A brief online survey *(see Appendix B)* was sent to all attendees of the 2004 National Forum, plus a number of other people/organisations identified by the candidate as key stakeholders. Where possible, the 37 individuals/organisations participated in one hour phone interviews with the candidate to elaborate on their responses. Stakeholders consulted as part of *Study 1* are listed in *Table 3.1*. Information generated through the available crash data, the literature review process and stakeholder consultations was brought together to provide a holistic picture of what is known about Indigenous road trauma and gaps in knowledge. In line with *Appendix B*, the analysis focused on:

- Indigenous crash data recording processes and risk factors;
- Focus of current programs and evaluation results (when available);
- Research undertaken and known gaps; and
- Strategic approaches to Indigenous road safety by jurisdiction, including action plans (when available).

Conducted in the early stages of the doctoral research, the consultation process ran from April 2005 through to October 2005, followed by several months of analysis and write-up. This involved circulating comments back to interviewees to ensure accuracy. In terms of data recording, consultations were not taped but thorough notes were taken. Additional written information on action plans and programs was sought from participants for completeness where required.

Table 3.1 Consultation matrix for Study 1

Stakeholder name	*Position title and agency*	*Participation status*
QUEENSLAND		
Mr Noel Rumble	Regional Manager (Northern Region), Queensland Transport (QT)	Online survey and phone consultation
Mr Bruce Robertson	Assistant Manager (Northern Region), QT	Online survey and phone consultation
Ms Deborah Avery	Senior Advisor, Indigenous Communities (Northern Region), QT	Online survey and phone consultation
Inspector John Fox	Officer in Charge, Cultural Advisory Unit, Queensland Police Service (QPS)	Online survey and phone consultation
Senior Sergeant Allan Pryde	Coordinator of Remote Licensing Program, Cultural Advisory Unit, QPS	Online survey and phone consultation
Mr Norm Clarke	Indigenous Liaison Officer (Kanolu), Queensland Fire & Rescue Service	Online survey and phone consultation
NEW SOUTH WALES		
Ms Annamarie Reisch	Manager, Population Health Division, Department of Health & Aging	Online survey
Mr George Shearer	Aboriginal Programs & Road Safety Manager, Roads & Traffic Authority (RTA)	Online survey and phone consultation
Ms Lee Towney	Project Officer, Crime Prevention Division, Attorney General's Department	Online survey and phone consultation

Mr Ian Faulks	Committee Manager, STAYSAFE Committee	Online survey and phone consultation
Dr Kathleen Clapham	Senior Research Fellow, Injury Prevention and Trauma Care Division, The George Institute	Online survey and phone consultation
SOUTH AUSTRALIA		
Dr Trevor Bailey	Senior Project Officer (Safety Strategy), Department of Transport & Urban Planning	Online survey and phone consultation
Inspector John Venditto	Traffic Support Branch, SA Police	Phone consultation
Ms Rita Excell	Project Manager (Traffic & Safety), Royal Automobile Association of SA Inc.	Online survey
NORTHERN TERRITORY		
Ms Eve Somssich	Manager, Driver Education & Training Unit, Chares Darwin University	Online survey and phone consultation
Ms Pam Palmer	Manager, Department of Infrastructure, Planning & Environment	Online survey and phone consultation
Mr Michael Mills	Aboriginal Road Safety Officer, Department of Infrastructure, Planning & Environment	Online survey and phone consultation
Mr John Bennett	Chief Executive Officer, Willowra Community	Online survey
WESTERN AUSTRALIA		
Dr Emma Hawkes	Manager, Office of Road Safety, Department of Premier & Cabinet	Online survey and phone consultation

Mr Kevin Pettingill	Executive Manager, Technical & Development Services, Shire of Derby	Online survey and phone consultation
Ms Tracey Heimberger	Operations Manager, Mawarnkarra Health Service Aboriginal Corporation	Online survey
Mr Tuesday Lockyer	Aboriginal Liaison Officer, Roebourne Police Station	Online survey
Sergeant Laurie Stubbs	District Traffic Coordinator, Kimberley Region, WA Police	Online survey and phone consultation
Senior Constable Hughie Tollan	Police Safety Section, WA Police	Phone consultation
Dr Rina Cercarelli	Injury Research Centre, School of Population Health, University of WA	Online survey – consulted with WA transport authority
Professor Neil Thomson	Director, Aboriginal and Torres Strait Islander Health*InfoNet*, Edith Cowan University	Online survey and phone consultation
VICTORIA		
Mr Peter Frauenfelder	Road Safety Department, VICROADS	Phone consultation
Ms Karen Milward	Director, Planning & Development, Aboriginal Affairs Victoria	Phone consultation
Senior Sergeant Nick Finnegan	Road Safety & Awareness Section, Aboriginal Advisory Unit, Victoria Police	Phone consultation
TASMANIA		
Ms Fiona Cleary	Road Safety Advisor, Land Transport & Safety,	Phone consultation

	Department of Infrastructure, Energy & Resources	
Constable Russell Barrett	Aboriginal Liaison Officer, Community Policing Section, Tasmania Police	Phone consultation
Ms Sandra Lovell	Crime Prevention & Community Safety Council	Phone consultation
INTERNATIONAL		
Mr Roger Maxwell	Community Programme Manager, Māori & Pacific Peoples Safety, Land Transport New Zealand	Online survey and phone consultation
Professor Richard Tay	Professor in Road Safety, Department of Civil Engineering, University of Calgary, Canada	Phone consultation
Dr Wadieh Yacoub	First Nation People Programme Officer, Health Canada	Online survey
Ms Louise Hayes	Manager, Alberta Aboriginal Affairs and Northern Development, Canada	Online survey
Dr Jay Shore	Manager, American Indian and Alaska Native Programs	Phone consultation

The reminder of this chapter draws on information generated from the stakeholder consultations, the limited literature on the topic area and a review of available crash data both locally and interstate to provide insights into the contributing factors in Indigenous road trauma and what efforts are being undertaken to prevent them.

3.2.2 Data limitations

While considerable efforts have been made to increase the completeness and accuracy of capturing Indigenous road trauma in health datasets (Thomson et al., 2011), similar focus has not occurred in the transport domain. Siskind and Steinhardt (2008) provided interesting insights into these limitations when reviewing data availability by injury severity for the RRRSS. In terms of fatalities, accurate information could be obtained through the *National Coronial Information System* which records Indigenous status, place of residence and place of crash. With regard to serious injuries, data collection occurs through both health and transport authorities and is significantly less reliable. While Indigenous status is recorded in health based on self-report, transport uses a proxy indicator of 'racial appearance'. Then, when it comes to data on less serious injury, there is little confidence whatsoever. In Queensland for example, basic injury data is collected in about 10 percent of facilities only through the EDIS system (Horth, 2008) and both Indigenous status and place of residence are recorded inconsistently. Based on an examination of available crash data and consultations at the time of *Study 1*, the following conclusions were drawn:

- Indigenous road crash data collected through police and transport authorities is less reliable than health information, with ethnicity often not recorded and base populations difficult to estimate;
- Indigenous status is only recorded in the Western Australia, Northern Territory and Queensland transport authorities (with Queensland ceasing to record in 2006); and
- Injury classification systems do not align with common Indigenous crash types (for example, open load-space crashes).

3.2.3 Overview of risk factors

Precise quantification of the Indigenous road safety problem is difficult due to the data limitations presented previously. That being said, there is general agreement in the literature that Indigenous Australians are approximately three times more likely to be killed in a road crash and 1.4 times more likely to be seriously injured than their non-Indigenous counterparts (Harrison & Berry, 2008; Thomson et al., 2011). Of concern, is the fact that this disparity has remained relatively constant for almost two decades (Cercarelli 1997; Stevenson et al., 1998).

All jurisdictions reported similar crash and risk factor profiles for Indigenous populations. In terms of crash profile, Indigenous people are more likely to be killed or injured in single vehicle crashes as passengers or as pedestrians, while non-Indigenous people are more likely to be injured as drivers or riders (Harrison & Berry, 2008; Legge et al., 2004). Based on stakeholder consultations and recent relevant literature (Boufous et al., 2010; Clapham et al., 2008; Falster et al., 2013; Fuller, 2011; Palamara et al., 2009), the following risk factors remain the primary contributors to the overrepresentation of Indigenous people in rural and remote road trauma:

- Increased levels of alcohol consumption, above and beyond other rural and remote populations, both as pedestrians and vehicle occupants;
- Overloading of vehicles and non-compliance with restraint legislation, including riding in the back of utes;
- Increased levels of unlicensed driving, often associated with other illegal road use behaviours, and associated criminal sanctions;
- Other unsafe pedestrian behaviours;
- Reduced access to vehicles; and
- Increased exposure to environmental factors associated with remote areas (for example, poor road conditions and presence of livestock).

To determine if risk factors identified in the literature were consistent with the local situation, the candidate analysed Queensland unit record data from TMR's Road Crash system for the period 2001/02 to 2005/06 (after which Indigenous status ceased to be recorded). Two way comparisons (Indigenous/non-Indigenous by remote/other using the ARIA+ classification) were conducted on behaviours shown in the literature to impact on crash risk:

- Unlicensed operation of the vehicle;
- Over the speed limit or inappropriate speed for the conditions;
- Restraint use (when known);
- Vehicle occupancy/overloading (five or more occupants); and
- Alcohol use by controller – 'under the influence' or 'over prescribed BAC'.

Table 3.2 Contribution of risk factors by Indigenous status and remoteness

Contributing Factor	Indigenous (Remote)	Indigenous (Other)	Non-Indig. (Remote)	Non-Indig. (Other)
Unlicensed	38.5%	23.6%	4.6%	3.2%
Speed	23.6%	11.2%	6.9%	4.3%
No restraint	60.4%	16.7%	14.0%	6.6%
Overloading	22..8%	13.8%	3.6%	2.2%
Alcohol present	40.8%	21.8%	10.0%	6.0%
Illegal BAC	31.5%	17.5%	7.4%	3.8%

The prominent role that alcohol plays in rural and remote crashes, particularly those involving Indigenous people, was further highlighted through an analysis of pedestrian crashes for the same five year period. Of the 175 Indigenous people killed or hospitalised as a pedestrian, 94 (53.7%) were under the influence of alcohol. Of the 2,176 non-Indigenous people killed or hospitalised as a pedestrian, 440 (20.2%) were under the influence of alcohol.

In line with recent literature (Falster et al., 2013), these comparisons illustrate that both Indigenous status and remoteness impact on crash risk and the behaviours and attitudes underpinning crash risk. Remoteness essentially multiplies the effect of disadvantage and, in turn, crash risk (Pyta & Cairney, 2013). However, the presence of unsafe behaviours in the crash profile is considerably higher for Indigenous people. *Study 2*, described in *Chapters 4, 5 and 6*, examines these relationships through a mixed-methods design and explores some of the factors influencing propensity to engage in unsafe and illegal behaviours.

3.2.4 Audit of research, policy and programs

Central to the consultation process was a request to stakeholders through the online survey and phone interview to share information on any applied research, policies or programs which they were involved in, or knew of, in their respective jurisdictions directly targeting Indigenous road trauma. Each of the programs or initiatives identified in the consultation process was critiqued in terms of: (i) program aims; (ii) components and delivery style; (iii) program status; (iv) barriers to implementation; and (v) evaluation results, if any.

Table 3.3 lists initiatives identified, with inclusion of others shared through the Australian Indigenous *HealthInfoNet* website subsequent to the review. Initiatives addressing general road safety, community development, licensing, alcohol misuse, restraint wearing, and engineering were all identified. Given the national emphasis on reducing Indigenous incarcerations, driver licensing programs incorporating a road safety component were the prominent focus in most jurisdictions. Of concern, no programs specifically addressing pedestrian issues were identified through the consultation process. However, some aspects of pedestrian safety are incorporated into other programs. Despite the focus on licensing programs, there does seem to be a wide variety of road safety programs being delivered, aimed at several different aspects of road safety and a range of population groups.

The consultation revealed the need for more thorough evaluations of programs and initiatives, which can be difficult with the limited resources available to many of the program teams. Despite the lack of formal evaluation, the consultation appeared to reveal that there were best practice examples of road safety programs for Indigenous Australians. These initiatives: (i) had high involvement from locals in development and implementation; (ii) recognised the role that alcohol plays and its relationship to other risk-taking; (iii) adopted a group work or interactive learning approach (learning by doing); and (iv) were linked to other local social agendas, typically employment or broader community health and wellbeing (Edmonston et al., 2011; Senserrick et al., 2010). More promising initiatives which have been subject to at least some form of evaluation are printed in red in *Table 3.3*. This table is modified from the Australian Indigenous *HealthInfoNet* site. In terms of target audience, the legend is as follows: ● Indigenous / ● Mainstream with Indigenous content.

Table 3.3 Indigenous road safety programs, policies and research

Program Title	*Reach*	*Focus*
Focus – Personal Protective Equipment		
'The road, my mob and me' preschool road safety program	NSW	●
Aboriginal child car restraint information workshop WALGA Road Wise program	**WA**	●
Buckle up safely for Indigenous children: development and evaluation of a preschool based education program to increase correct use of appropriate child restraints	NSW	●

Program Title	*Reach*	*Focus*
Buckle up safely: safe travel for Aboriginal children	NSW	●
Deadly treadlies	NT	●
Kids and traffic: Early childhood road safety education program	**NSW**	●
Kids protect your lid	NSW	●
NAHRI road trauma review – school-based program	QLD	●
Roadwise – Derby/West Kimberley initiatives targeting restraint use and pedestrian visibility	**WA**	●
Safe Koori kids: community based approaches to Indigenous injury prevention	**NSW**	●
Focus – Licensing and Road Safety Education		
Aboriginal community police workshops	**NT**	●
Aboriginal driver licensing program with Indigenous driving instructors	**SA**	●
Aboriginal driver training	**WA**	●
Aboriginal driving stories	NSW	●
Aboriginal people travelling well	**SA**	●
Aboriginal road safety - a health lens project	SA	●
Aboriginal road safety awareness and licensing program	NSW	●
Aboriginal seatbelt campaign	**SA**	●
Adult Community Education (ACE) Community Colleges Aboriginal driving programme (previously called 'On the Road' Lismore driver education project)	**NSW**	●
AstraZeneca young health programme – Community-based Aboriginal driver licensing service	**NSW**	●
The Australian Indigenous *HealthInfoNet* Road Safety Clearinghouse	**National**	●
Bring the mob home safely	**NSW**	●
Centacare driver licensing program	NSW	●
Cherbourg injury prevention and safety promotion project	QLD	●
Clontarf Aboriginal College (WA) safe driver education	WA	●
College-based knowledge testing licensing program for TAFE colleges and correctional centres	**NSW**	●

Program Title	*Reach*	*Focus*
Community road safety partnership	TAS	●
'Corrugations to Highways': National Aboriginal road safety video	**National**	●
Driver support program	WA	●
Drivesafe NT remote licensing program	**NT**	●
Driving change licensing program	**NSW**	●
Driving for employment program	**NSW**	●
Driving simulator for APY lands	SA	●
Development of a national Indigenous licensing resource	**National**	●
Development of a protocol for the development and delivery of road safety programs in Indigenous communities ***(completed by the candidate)***	**National**	●
Getting about Aboriginal bus licensing program	**NSW**	●
Gippsland East Aboriginal driver education project (GEADEP)	VIC	●
Guidelines for conducting road safety research in Indigenous communities	**National**	●
Healthy lifestyle carnival road safety sessions	NT	●
In-language road safety campaign	NT	●
Indigenous driver training course	**WA**	●
Indigenous health outcomes patient evaluation (IHOPE)	NSW	●
Indigenous licensing program initiatives: collection of licence transactions by sherrif's office	WA	●
Indigenous licensing program initiatives: community based driver training programs	WA	●
Indigenous licensing program initiatives: education	WA	●
Indigenous licensing program initiatives: stakeholder vehicle inspections	WA	●
Indigenous licensing program initiatives: theory testing	WA	●
Indigenous road safety - working group	WA	●
Indigenous road safety advertisements	WA	●
Indigenous road safety days	NT	●
Indigenous road safety program	NT	●

Program Title	*Reach*	*Focus*
Indigenous safe system demonstration project 2010	**National/WA**	●
Indigenous storybook	WA	●
Indigenous unlicensed/drink driving project	WA	●
Kooris and cars program	**NSW**	●
L2P learner driver/mentor program	VIC	●
Learner Licence Assistance Program (LLAP)	TAS	●
Linked skilling for Indigenous communities in Queensland	QLD	●
Muttacar sorry business	**WA**	●
Mutuka project	SA	●
New England North West license training project	NSW	●
Ngarada road safety artwork project	WA	●
Northern Territory Transport Group community visits	NT	●
On the right track	SA	●
Aboriginal and Torres Strait Islander drivers licensing project ***(focus of Chapter 7 of the thesis)***	**QLD**	●
Rare view program	SA	●
Regrets short film project	WA	●
Remote areas driver education and training	**NT**	●
Remote areas licensing program initiatives: stakeholder theory testing	WA	●
Road safety and Aboriginal people	SA	●
Road safety education in remote South Australian Indigenous communities	SA	●
Road safety in Bidyadanga	**WA**	●
Road safety song competition	NT	●
Roads and Traffic Authority - Aboriginal programs team	NSW	●
Rural and remote road safety collaborative study: research and intervention to reduce economic, medical and social costs of road crashes in North Queensland	QLD	●
Stop Territory Aboriginal road sadness campaign (STARS)	**NT**	●
Transport project	SA	●
Troy Cook health and leadership program	WA	●

Program Title	*Reach*	*Focus*
Western Cape College driver education program	QLD	●
Woorabinda road safety trial	**QLD**	●
Young driver cohort study - the DRIVE study: Indigenous component	**NSW**	●
Focus – Drink Driving		
Back on track drink driver program	NT	●
Drink driver education	NT	●
Indigenous alcohol interlock demonstration project	WA	●
Indigenous drink driving and licensing resource	WA	●
Offence targeting project and Traffic Offender Programs	**NSW**	●
Sober driver program	NSW	●
Stayin' strong	QLD	●
Under the limit drink driving rehabilitation program	QLD	●
Focus – Engineering / Infrastructure		
Road safety infrastructure assessments of 66 Aboriginal communities	**NSW**	●
Building better roads	WA	●

Although Indigenous road safety is now recognised as a national priority, the consensus among stakeholders is that *"Indigenous road safety needs to be addressed at a local level through local action plans and initiatives, as opposed to national approach … The onus is on transport and police authorities to work in partnership with Indigenous agencies and communities to develop state and regional action plans with local working groups to address both immediate and long-term needs"*. The Aboriginal and Torres Strait Islander Road Safety Working Group oversees this process. More information on the shortcomings of current approaches to Indigenous road safety and a possible way forward are discussed in *Sections 3.3 and 3.4*.

3.2.5 Lessons from international approaches

While Canadian efforts to reduce the Indigenous road toll were just starting to gain momentum at the time of *Study 1*, the emphasis in New Zealand and the United States is on community ownership of road safety initiatives. Given that Māori and

Pacific peoples comprise over 21% of the total population in New Zealand, it is not surprising that Indigenous road safety is a priority. Land Transport New Zealand is the agency responsible for Indigenous road safety. It is a new government agency formed in December 2004 from the merger of *Transfund New Zealand and the Land Transport Safety Authority (LTSA)* under the *Land Transport Management Amendment Act 2004.*

According to Mr Roger Maxwell (Community Programmes Manager, Land Transport New Zealand), the inception of Land Transport New Zealand *"has broadened the ethos of the department to not only include access and sustainability, but to give more prominence to safety … There is now a dedicated fund for cultural strategies – responses and programs – targeting Māori and Pacific peoples … Our* [Community Programs] *goal is to inform communities in the areas of transport regulation, compliance, safety and licensing".* Despite structural changes, there remains a strong emphasis on the importance of families, professional development, and active participation to encourage community ownership of road safety programs. The core goals of the LTSA community road safety program are shown in *Figure 3.1*.

Figure 3.1 Guiding principles for the delivery of Indigenous road safety in New Zealand (LTSA, 2003)

These goals are being achieved through *"improved relationships with communities developed through the establishment of Road Safety Councils at local*

authorities". Without any deliberate recruitment policy, Roger Maxwell reported that the Land Transport Safety Authority has also become a very multi-cultural organisation with strong Indigenous representation. *"The ethnic breakdown of staff now reflects the broader population ... In 2000, three of 74 staff were Māori, yet now 20 of 74 staff are Māori ... These staff are spread throughout the department and have key roles in community-based service delivery and the evaluation of program ... The Community Road Safety Programme (CRSP) has been in operation for 15 years and its continued success is a product of inclusiveness, community involvement and increased cultural understanding, backed by government support"*.

Nearly all programs targeting road safety for Māori and Pacific peoples are funded and supported by the Community Road Safety Programme (CRSP) which is administered by Land Transport New Zealand. Some of the projects offered under the CRSP umbrella (with some funding support from external agencies) include:

- Several programs (coordinated by local Road Safety Councils) assisting Māori and Pacific peoples to obtain a drivers licence in a comfortable environment (ie. local trainers with cultural-sensitivity and experience in teaching people with low literacy, use of local language, held in community settings other than police stations etc.). Land Transport New Zealand provides guidance to course providers on road rules, licensing requirements and safety issues.
- Annual Youth Road Safety/Road Trauma Hui (gathering) aimed at educating young Māori and Pacific peoples on the dangers of drink driving and inappropriate speed.
- *'Street Talk'* courses delivered to Māori learner drivers by the Manukau Urban Māori Authority (MUMA). The course consists of a series of six sessions, each of which focuses on changing driver attitudes through critical self-reflection. Learner drivers compile a logbook of their driving and discuss their experiences with trainers and other course participants. Successful completion of a course allows drivers to reduce their time on a restricted licence by six months. MUMA employs Māori trainers to deliver the course to Māori students.
- Newly introduced *'Drive Time'* seminars for novice drivers and their trainers. The two-hour seminars (accompanied by a comprehensive

resource kit) are designed to encourage novice drivers to increase their number of supervised driving hours and improve the quality of training given by parents and other supervisors. Trialled in Wellington, Nelson and Wairarapa and later rolled out nationally.

- The running of a first time minor driving offence program targeting at-risk Māori and Pacific youth.
- An on-line chat facility and regular forums with Māori Road Safety Coordinators to provide them with resources and training to deliver road safety interventions to their local Māori community. The interactive site is housed at www.crsp.net.nz/groups/coordinators/index.php
- Activities to assist older Māori and Pacific drivers with the licence renewal process and when surrendering their licence to maintain independence.
- The provision of 1000 child car seats to high-risk Māori and Pacific families in 2003 at reduced rent to increase usage rates (sponsored by the Accident Compensation Corporation, MUMA and Family Start).

The Community Road Safety Programme was independently evaluated by McDonald Management Contracting (2002) - http://www.ltsa.govt.nz/crsp/final-review-report.pdf. The evaluation deemed the program to be highly regarded by stakeholders and aligned with the core community development philosophy.

The Te Wananga o Aotearoa's Rotorua police service's national certificate in police and security duties has also led to a substantial increase in the number of Māori and Pacific people joining the police force. The development of this course was guided by the notion that Māori and Pacific people are in the best position to inform crime prevention and road safety directions among their people. This program has been linked to a significant reduction in Indigenous road trauma and crime and provides strong precedence for a greater involvement of Australia's Indigenous community police in road safety initiatives (ARRB Transport Research Ltd & CARRS-Q, 2004).

Arguably the most innovative initiative undertaken by the Land Transport Safety Authority, has been the active involvement of local Māori people in the on-road enforcement function. In short, there are times when local road safety teams attend enforcement checkpoints with police to shift the focus from punitive to encouragement. For example, *Operation Last Chance* in South Auckland is a program

aimed at reducing unlicensed driving and/or not driving to the conditions. If a driver is detected by police for either of these behaviours, he is spoken to by police and the road safety team who urge him/her to do the safe thing for themselves, their family and community. In turn, they are given a 'last chance' card, symbolising they have been given a chance to improve their behaviour. If unlicensed, this requires getting a licence within 28 days in lieu of the fine which could have been imposed. Similar education checkpoints at enforcement sites have been run for speeding and restraint use in other parts of New Zealand. Similarly, public education campaigns are localised and made relevant to communities, usually drawing on life stories and experiences of people similar to, and typically known by, the target audience. Sport is also linked to road safety where possible, recognising the association between responsible drinking choices and transport.

A recent meta-analysis of Indigenous road safety programs in Australia, New Zealand, United States and Canada (Short et al., 2014) provided strong support for the type of approach that New Zealand has adopted in improving road safety outcomes for Māori people. Characteristics of successful intervention programs included: Indigenous involvement in program development (through focus groups); training community members to be actively involved in program delivery; reduced reliance on enforcement as opposed to education and encouragement; a driver licensing focus; provision of safety devices and incentives for safe behaviour. The most cited barrier to successful implementation was the failure to incorporate cultural and contextual factors into program design. The New Zealand experience and these principles have potential to inform the way Indigenous road safety is delivered in Australia.

3.2.6 Recommendations

Based on the review, there were a number of recommendations made re: improved data quality and sharing of information, policy gaps and research and intervention priorities. The following points provide a summary:

- Improve the quality of indigenous road safety data by developing nationally consistent and valid practices for identifying Indigenous status and establish accurate estimates of Indigenous populations;
- Use recently available geo-coded crash data to identify high-risk crash locations and interrogate the National Coronial Information System to provide new information on the characteristics of Indigenous crashes;

- Evaluate programs targeting known risky practices such as unlicensed driving, non-restraint use, drink driving and unsafe pedestrian behaviour and share findings across jurisdictions through the Australian Indigenous *HealthInfoNet* Road Safety Clearinghouse to develop a 'community of practice';
- Develop links between Indigenous road safety practitioners and researchers and those from other areas such as health promotion and disciplines within Indigenous health to facilitate a strategic approach to address the 'social determinants' underpinning risk;
- Develop tailored road safety education and community engagement strategies through the employment of Indigenous people with appropriate road safety training and government support;
- Introduce and enforce legislation to address riding in the open load space of vehicles and provide feasible community-based transport alternatives;
- Continue to provide accessible licensing systems for offenders and remote communities with a focus addressing multiple community needs – safety and employment;
- Examine seatbelt wearing rates and attitudes towards restraints among Indigenous communities to identify strategies to increase compliance; and
- Facilitate research to qualify and quantify the cultural and environmental contributors to Indigenous crash involvement (the focus of the doctoral research).

3.3 Shortcomings of Current Approaches to Indigenous Road Safety

The relative ineffectiveness of current approaches to Indigenous road safety are a product of a number of systemic factors. Firstly, from a population perspective, it is well established that risk of injury increases with remoteness (AIHW, 1998). So, given that 26.5% of Indigenous Australians live in 'remote' or 'very remote' areas, compared to 2.0% of non-Indigenous Australians (Currie & Senbergs, 2007), it is not surprising that they are over-represented in serious road trauma. This suggests that, to be effective, countermeasures must address the previously mentioned concept of 'transport disadvantage' or 'transport geography'. Rosier and McDonald (2011, p.2) define 'transport disadvantage' as *"a factor that restricts Australian families' capacity*

to access services and participate in activities", which, in turn can lead to other forms of disadvantage including social and financial. Currie and Senbergs (2007) identified 'transport disadvantage' as major barrier for Indigenous Australians who typically live in rural and remote settings with limited access to public transport. This is compounded by lower levels of vehicle ownership (Brice, 2000). Gerrard (1989; cited in Currie & Senbergs, 2007) noted that vehicles are scarce in Aboriginal communities, used often, and since maintenance is costly, their lifespan is short.

Of greater concern are the flow-on effects of 'transport disadvantage'. In a study of the Kuranda Aboriginal community (near Cairns), Finlayson and Auld (1999) reported that members' lack of transport options greatly impacted on their ability to access services, facilities and employment, leading to feelings of isolation, marginality and hopelessness, perpetuating the familiar cycle of 'loss of control'.

Secondly, the different crash patterns for Aboriginal and Torres Strait Islander peoples partly reflects the 'context' of Indigenous community life. Gruen & Yee (2005) and Factor et al. (2008) highlighted that Indigenous health problems (including road trauma) are typically a product of the 'hardship' they face (eg.. increased remoteness, lower levels of vehicle ownership, reduced access to services, higher unemployment, lower education levels, etc.) and behavioural problems often stemming from the 'hardship' (eg. excessive alcohol consumption, legal infringements, etc.). This suggests that the traditional approach of trying to "fix" the symptoms rather than the cause might be what is leading to poorer outcomes (McPhail-Bell & Bond, 2013).

Thirdly, from a policy perspective, Indigenous injury and its prevention receive minimal attention in national Indigenous health reform (eg. 'Closing the Gap') compared to the multitude of well-known chronic and systemic diseases (Moller et al., 2003). Clapham (unpublished) argues that advocacy of Indigenous injury as a priority has been historically slowed by a lack of knowledge and research in this area and failure to implement existing recommendations, reports and strategies.

Fourthly, from a program development perspective, road safety is not a priority area for Indigenous injury prevention. Moller et al. (2003) and Clapham (2004) attempted to identify 'Australian Aboriginal and Torres Strait Islander injury-related' projects. Of the 314 projects identified, only 25 (8%) focussed on transport issues, yet nearly 30% of deaths due to injury among Indigenous populations are transport-related. In contrast, 119 (38%) of the identified programs were focussed on substance

abuse of some kind. Of equal concern, virtually none of the 25 projects with a transport focus addressed pedestrian or passenger safety which are the road user groups most at-risk. It is safe to conclude that program focus and evaluation are very lacking in the Indigenous road safety domain.

Finally, from a program delivery perspective, Panaretto and Wenitong (2006) advocate that increased cultural competency among those working with Indigenous communities could go a long way to improving injury prevention outcomes. They contend that 'real change' will only occur through grassroots staff getting out in the community and proactively promoting health and injury prevention. To facilitate this, Government must recognise that social problems are linked and, as such, must be addressed in a 'big picture' or holistic way, which can only be achieved through coordinated local delivery in a locally approved way of doing business.

3.4 Building on Strengths: Empowering the 'Culturally Othered'

Like Panaretto and Wenitong (2006), McPhail-Bell and Bond (2013) challenge practitioners, researchers and policy-makers to question their own role and assumptions in Indigenous health promotion. Rather than viewing Indigenous lifestyle and culture as something contributing to poorer health outcomes which needs to be "fixed", they see the core objective of health promotion as empowering the experiences of those who are 'culturally othered'. The methodology used in *Study 2* of the current research program aims to provide crash victims with a voice to "share their story" about the crash and life more generally. It aims to provide increased understanding of the 'structural factors' or 'hardship' underpinning behaviours (Eckerman, 1998; Gruen & Yee, 2005), but also identify meaningful influences or "strengths" for change. For example, in reference 'Aboriginal blood talk', Bond et al. (2014) suggest that 'blood' refers to more than shared biology or ancestry (ie. 'blood relative'), acting as a *"binding agent for intimate social relationships"* and a *"powerful prescriptor of Aboriginal social behaviours and interactions"* (p.7). This suggests that, if behaviours impacting on road trauma are shared within an Indigenous community, the concept of 'our blood' and the collective pride and unity associated with this conviction, could provide a valuable tool for promoting positive safety behaviours community-wide. As such, the respective role that 'community', 'circumstantial' and 'individual' factors (Shore & Spicer, 2004) play is critical to analyses in *Study 2*.

Like those above, Dockery (2010) provides a scathing report on Australia's policy efforts in 'closing the gap' and challenges the well held assertion that Indigenous culture (including lifestyles) act as barrier to achieving improved socio-economic outcomes and 'mainstream' economic independence (Johns, 2008). In fact, using data from recent National Aboriginal & Torres Strait Islander Surveys, Dockery (2010) demonstrated a positive association between Indigenous culture and socio-economic outcomes, heralding cultural attachment as *"part of the solution to Indigenous disadvantage in Australia, and not as part of the problem"* (p.315). Strong cultural attachment (including recent participation in festivals, writing or story-telling, sports, music or dance events, etc) was statistically associated with better self-assessed health and lower likelihood of engaging in risky alcohol consumption, independent of remoteness. The potential to build road safety education into events associated with strong cultural attachment is discussed further in *Chapter 8* of the thesis.

Dockery (2010) also found that educational attainment and employment outcomes were related to increased cultural attachment in all geographic areas, except remote communities. Hudson (2008) would argue that this anomaly relates directly to the failure of the Community Development Employment Projects (CDEP) program, basically like *"work for the dole"*, to achieve its objectives. The CDEP program was established in 1977 to replace unemployment benefits for Aboriginal and Torres Strait Islanders living in remote areas but, despite its good intentions, thirty years of CDEP hindered rather than helped develop remote Indigenous communities. Hudson (2008, p.4) labelled the program *"an abysmal failure in moving people off benefits and into mainstream work"* through its inability to promote educational and skills attainment and develop pathways from passive employment (reliance) to active employment (independence). Of greater concern, CDEP may also have indirectly eroded cultural attachment in remote areas through its attempts to build 'culture maintenance' into the suite of available projects. From the participant perspective, CDEP is viewed as 'sit down money' for little work and even less accountability, obviously detracting from the value of work being undertaken.

In a similar vein, Hazlehurst (1990) contends that behaviour reflects what is going on inside an individual and "good behaviour" requires a healthy balance of the physical, emotional, mental and spiritual being. Central to this, is paying equal attention to economic, social, cultural and political aspects of community life. In contrast, "bad behaviour", such as illegal risk-taking (eg driving under the influence

of alcohol or drugs), reflects confusion inside and a lack of direction. To that end, her thesis is that healthy attitudes and behaviours and, in turn, improved outcomes for Indigenous people rely on a positive "vision" for the future. The challenge is to allow people to see what is possible, then use their desire to become what they see. The other key additives to realising vision are drawing on people's strengths and support networks to develop the ability to achieve and providing the opportunity to attain a positive outcome. In terms of a formula: **Desire + Ability + Opportunity = Realising Vision**. This formula could be operationalised through community-based licensing programs, thus leading to real employment prospects and improved outcomes across a number of health and wellbeing indicators, including road safety. The potential to link licensing and road safety to other social agendas is discussed in subsequent chapters.

3.5 Chapter Summary

This chapter described the results of the *National Review of Indigenous Road Safety* (2005) conducted by the candidate on behalf of ARRB Transport Research Ltd. As *Study 1* of the thesis, it profiled the comparative crash risk of Indigenous Australians, as well as identifying risk factors. In addition, based on 37 stakeholder consultations across a number of jurisdictions, the chapter described current programs addressing Indigenous road safety, highlighting several concerns re: long term effectiveness. Finally, the chapter acknowledged the importance of viewing Indigenous culture positively – seeing the opportunities to build on meaningful aspects of culture to improve outcomes, rather than a problem to "fix". These concepts are all developed in subsequent chapters of the thesis as the focus now moves to the prospective study of crash characteristics from the patient's perspective.

Chapter 4: Protocol for a Prospective Study of Rural and Remote Road Trauma in North Queensland (Study 2 Methods)

4.1 Introductory Comments

This chapter provides a rationale for examining road trauma in rural and remote areas from the patients' perspective. It describes a prospective study designed to profile the unique and shared characteristics of crashes involving Indigenous people compared to other rural and remote road users through an analysis of patients' crash experiences. It outlines in detail the data collection processes adopted to achieve this aim and the extensive consultation involved in gaining approval for the study from multiple ethics committees, management at participating health facilities and key community and government agencies. It clearly defines the study parameters, outlines the training (in-services) provided to nursing staff to facilitate the identification of cases and subsequent recruitment, and cites methodological limitations.

4.2 Rationale for Examining Rural and Remote Road Trauma from the Patients' Perspective

The preceding chapters highlight the complex array of reporting, recording and classification issues impacting on the quality of information on rural and remote road trauma housed in existing databases. While injury data collected through health authorities provides indicative estimates of transport-related trauma, including injury mechanics through ICD-10 classifications, there is virtually no information collected on less serious injury (non-admissions or Emergency Department presentations only). Therefore, at smaller rural health facilities, where the majority of Indigenous and rural residents initially present for treatment, very little information is recorded. This inevitably makes injury prevalence comparisons and crash profiling of Indigenous and other rural road users virtually impossible. The health facility setting does, however, provide a unique opportunity to collect case-specific information from persons directly involved in road trauma and forms the primary source of data collection for this study.

Ackoff (1989) would argue that drawing on the "patients' perspective" is the next logical step in the progression towards "wisdom" and evidence-based rural and remote road safety policy and practice *(see Figure 4.1)*. Unlike routinely-collected "data" and "information" which provide an appreciation of the "who", "what",

"where" and "when" of rural road trauma, real-life crash experiences provide insight into the "how" and "why" of road user behaviours, thus identifying opportunities for intervention. The importance of understanding the circumstances and context in which road user behaviour occurs is a common theme in this thesis.

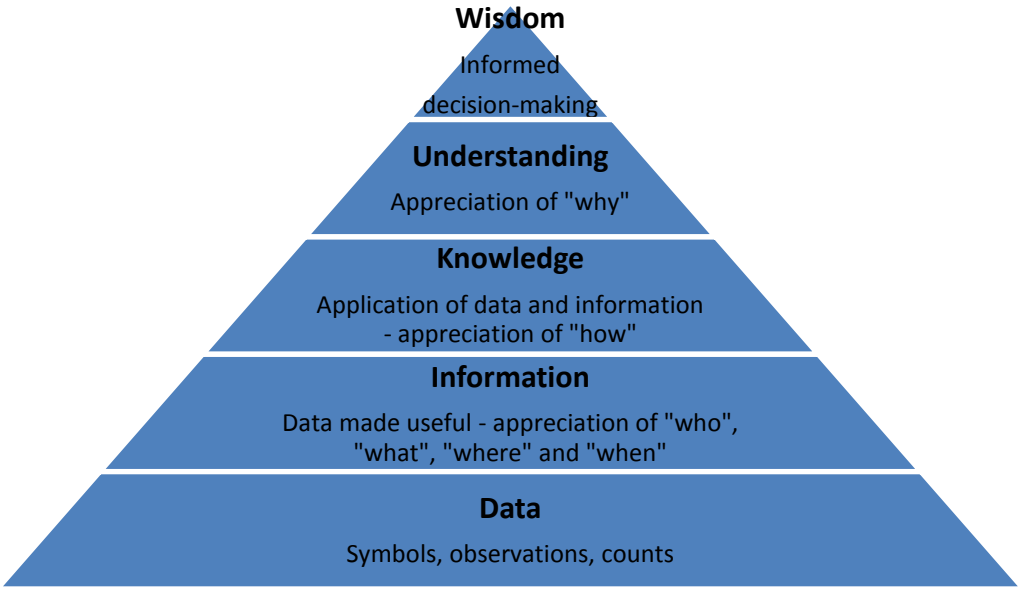

Figure 4.1 'Data-Information-Knowledge-Wisdom' hierarchy

Similarly, from a cultural perspective, Heil (2006) has argued that patients have typically been examined as 'individuals in society', rather than 'social people'. In order to address any health problem in remote and Indigenous communities, Heil (2006) maintains that practitioners must first ascertain the role that community relationships play in contributing to a specific health problem. This requires clearly defining shared understandings of that problem and shared behaviours/practices that contribute to that problem in the community. In the road safety domain, Ward (2007) concurs that the human factors contributing to rural crashes are embodied in the social forces and culture of rural communities. As such, the methodology adopted in *Study 2* of this research program was developed to better understand the *socio-cultural context* in which rural and remote road trauma occurs.

4.3 Consultation, Approval and Monitoring Processes

Given that the project specifically targets Indigenous people as a major group of interest, cultural sensitivity and local support was paramount. Consequently,

substantial effort and time was devoted to ongoing consultation and ensuring appropriate approval processes and Indigenous research protocols were followed.

4.3.1 Indigenous Reference Group

As a priority, the candidate established an Indigenous Reference Group through his network in the area of Indigenous road safety and community-based service delivery. This is a vital process in all projects involving Indigenous people to ensure that research is "value-adding" for those involved and conducted in a culturally-sensitive manner (Dunne, 2000; Henderson et al., 2002; Humphrey, 2001; Miller & Rainow, 1997).

The Indigenous Reference Group had broad representation, comprising local community members and Elders, nurses involved in the data collection process, leading Indigenous road safety researchers and practitioners from throughout Australia, and representatives from the Department of Aboriginal and Torres Strait Islander Policy and the Torres Strait Regional Authority. The involvement of local people in the steering of the project and data collection processes additionally developed much-needed community capacity and recognition of the importance of collecting injury information at a local level. The importance of fostering research, negotiation and advocacy skills in communities cannot be overstated and can only improve research outcomes. Core membership of the Indigenous Reference Group was as follows:

- Beryl Meiklejohn (Indigenous Health Education & Research, QUT);
- Helen Akee (Indigenous Policy Officer, Queensland Transport);
- Deb Avery (Manager, Aboriginal and Torres Strait Islander Health Directorate, Queensland Health);
- John Toshi Kris (Chair, Torres Strait Regional Authority);
- Horace Nona (Training Coordinator, Office of the Registrar of Indigenous Corporations);
- Norm Clarke (Aboriginal Liaison Officer, Queensland Fire & Rescue);
- Colin Biaira (Field Officer, Tharpuntoo Aboriginal Legal Service);
- George Shearer (Aboriginal Programs Manager, Roads & Traffic Authority of New South Wales);

- David Wragge (Indigenous Corporate Policy, Department of Communities).

This group was briefed six-monthly on the progress of the project (usually via phone or email) and given the opportunity to provide feedback on data collection processes, survey design and content, and other cultural issues.

4.3.2 Ethics approvals and considerations

The collection of post-crash interview data on-site in the larger hospitals (Cairns, Townsville, Mareeba, Atherton, Charters Towers and Mt Isa) received ethics approval from Cairns Health Service District Ethics Committee, QUT Human Research Ethics Committee and Townsville Health Service District Ethics Committee through the *Rural and Remote Road Safety Study*.

However, given that the data collection for *Study 2* of the PhD involved a number of smaller health facilities, a second Level 3 application for this specific project was submitted to the QUT Human Research Ethics Committee and a full ethics application was submitted to the multi-site Queensland Health Research Ethics Committee (QHREC), as well as the Townsville Health Service District and Cairns Health Service District Ethics Committees. In addition to written applications, the candidate gave oral presentations to all three Queensland Health Committees to clarify all processes and interview protocols.

Approval was given by all Ethics Committees, requiring only minor wording and procedural changes to the patient information and consent process. That is, counselling services, if required, were to be organised by the candidate or QUT. QHREC did, however, express concern about participants incriminating themselves in the interview and the potential for this information to be used in criminal actions. As such, QHREC requested *"A mechanism to provide suitable warning to participants that they may be at risk of incriminating themselves by leakage of information from the study"*. In response, the candidate, supervisory team and Indigenous Reference Group considered two issues: (i) the likelihood of sensitive information being used by a third-party in criminal proceedings; and (ii) the impact of such a warning on participation rates. The formal response to QHREC was as follows:

(i) Likelihood of sensitive information being used by a third-party in criminal proceedings: The research team recognises that if there was any possibility that the information given by participants could be used in evidence against them in a court of law, the researcher may be compelled to provide such a warning. However, professional legal advice (described in detail below) indicated that any information provided by participants would constitute hearsay and would not be admissible in court and therefore would never be sought.

(ii) Impact of such a warning on participation rates: With regard to point 4.6.1 of the *National Statement on Ethical Conduct in Research Involving Humans (Research merit and integrity)*, Indigenous Reference Group members agreed that *"the risks to participants of research that may involve discovery of illegal activity by them are justified by the benefits of the research"*. As such, the researcher and members of the Indigenous Reference Group stress that any such caveat is not required and would lead to unacceptably low participation rates among potential respondents.

Legal advice: The researcher sought professional advice from the Queensland Police Service Prosecutions Unit (Sergeant Ken Schofield), the Queensland Police Service Ethical Standards Unit (Inspector Phil Barrett) and a Barrister experienced in both civil and criminal matters. All parties referred to appropriate legislation and case law. All parties were in agreement that the information collected from interviews with persons involved in a road crash in the manner proposed in this study would never be sought because it could not add weight to any criminal prosecution for the following reasons:

1. All advisers indicated that it would be highly unlikely that persons wishing to prosecute would be aware of the research (ie. no interested parties).

2. All advisers indicated that illegal admissions are only admissible as evidence in certain circumstances, such as when the information is a guaranteed accurate account of all circumstances of the event that took place and that the recording is legally verifiable. The unanimous decision was that this could not be guaranteed in the proposed study. They noted that to determine the admissibility of evidence the magistrate/judge would make a determination regarding the reliability and probative value of the information. In this particular study, the information collected does not meet the exceptions to the hearsay rule offered under the *Queensland Evidence Act 1997* based on the following grounds:

a. No identifying details of the person involved in the crash are collected (ie. name, date of birth, residential address, etc.). This safeguard addresses point 4.6.4 of the *National Statement on Ethical Conduct in Research Involving Humans (Beneficence)*, which requires *"the risks to those whose illegal activity may be revealed can and should be minimised by using pseudonyms, or removing links between names and data"*;

b. The interviewer (third-party) cannot know that any road crash actually occurred prior to the interview;

c. If a crash is known to have occurred, the interviewer (third-party) cannot know if anyone was interviewed regarding that particular crash (ie. the crash and the interview can be two mutually exclusive events);

d. When an interview takes place regarding a known crash, the interviewer (third-party) cannot be sure that the person who is interviewed was actually involved in the crash or who they claim to be. The interview will have taken place over the phone. The interviewer will have had no prior contact with the interviewee. Note, interviews will not be taped and voice recognition technologies could not be used making identification of individuals impossible in the legal context; and

e. The third-party cannot guarantee that the interviewee has given a truthful and accurate account of events.

Of note, the ethical safeguards developed for this research were found to be highly robust when a legal representative's request to obtain a copy of an interview transcript (questionnaire) for potential litigation of a motorcycle hire company failed. In the last decade, subpoena protection and the issue of self-incrimination through disclosure of information in research has received much attention from the NHMRC and research committees throughout Australia. The resolution put forward in this instance was accepted by QHREC (Approval number 2006/005, *see Appendix C*) and provides a feasible solution to a longstanding ethical question, at least with similar data collection methods.

In consultation with senior health facility staff in the study area, the candidate was also required to develop a strategy to manage any distress/anxiety that might have been caused by the research. The strategy was as follows: *"In the unlikely event that a person becomes emotional or upset during the interview process, the interview will be immediately terminated. He/she will then be referred to counselling or support services at the local health facility if they are available. If counselling or support services are not available at the local health facility, he/she will be given the option of accessing counselling or support through visiting allied or specialist services provided by a larger health facility in the Health Service District. Institutions providing counselling or support services to participants will be reimbursed for these services at an appropriate rate. Alternatively, participants who become emotional or upset will be given the option of talking directly with a qualified counselor employed by the Counselling Clinic at the School of Psychology and Counselling at Queensland University of Technology"*. This option was not taken up by any patients. In fact, several participants cited the therapeutic value in discussing their crash *(see Section 5.3)*.

4.3.3 Consultation with key health and community agencies

Prior to commencing the doctoral project, the candidate had extensive experience in working with remote communities and councils throughout Queensland. In late 2005, he facilitated a large workshop in Cairns to develop guidelines for engaging with remote Indigenous communities in the road safety domain (Edmonston et al., 2011). The 'Mob Rules' guidelines (Edmonston et al., 2011) are housed at: http://www.healthinfonet.ecu.edu.au/key-resources/bibliography/?lid=22671. Also, to ensure 'ethical relationships' in process, all aspects of this research were conducted in accordance with the six core principles underpinning *'Values and Ethics: Guidelines for Ethical Conduct in Aboriginal and Torres Strait Islander Research'* (NHMRC, 2003) *(see Figure 4.2)*.

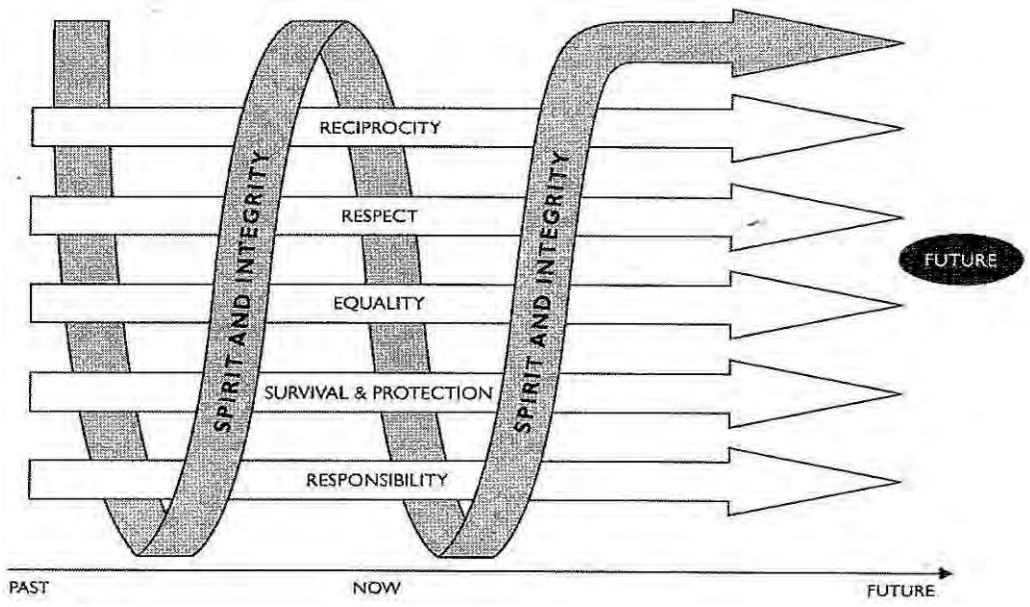

Figure 4.2 Core principles of Indigenous health research ethics

Acknowledging the importance of 'openness' and 'inclusiveness' to ensure the project's sustainability throughout the life of the project, the candidate devoted considerable time to developing rapport and partnerships with communities in the early stages. Over an intensive six-month period (February to July 2006), the candidate secured support for the project from:

(i) senior staff from nearly all health facilities in the Cairns, Cape York, Charters Towers, Innisfail, Mt Isa, Tablelands, Torres Strait and Northern Peninsula Area and Townsville Health Service Districts;

(ii) local councils representing all shires in the study area (including former community councils made up of local Elders in the Deed of Grant in Trust communities, now under the LGAQ structure); and

(iii) key agencies with an interest in remote road safety: Department of Transport & Main Roads (Northern Region); Queensland Police Service (Cultural Advisory Unit); Department of Aboriginal and Torres Strait Islander Policy; Torres Strait Regional Authority; Balkanu Cape York Development Corporation; Tharpuntoo Legal Service Aboriginal Corporation; Department of Corrections; and the Far North Tropical Public Health Unit.

Additional briefing meetings were held with the Far North Tropical Public Health Unit (Dr Ross Spark), Islander Coordinating Council (John Toshi Kris), Torres Strait Regional Authority (Fred Gela), Apunipima Cape York Health Council (David Sharkey) and Department of Communities (Assistant Commissioner Michael Hogan and David Wragge). A list of agencies/organisations consulted in developing *Study 2* and establishing local recruitment methods is tabled in *Appendix D*.

Finally, letters of support for the project were secured from the two peak bodies that represent Indigenous communities in North Queensland in the health and transport domains, Apunipima Cape York Health Council *(see Appendix E)* and the Aboriginal and Torres Strait Islander Road Safety Network *(see Appendix F).*

4.4 Data Collection through North Queensland Health Facilities

From the 'Interviewed Casualty Study' of the *Rural and Remote Road Safety Study*, described below, a sample of 391 individuals was available. However, as previously reported, Indigenous cases were not prevalent in which the RRRSS was carried out. To gain a larger sample of Indigenous participants, a new recruitment strategy was needed (see below). Thus, the study of the experiences of patients involved in rural and remote crashes (*Study 2* of the thesis) draws on two complementary samples recruited through: (i) the RRRSS; and (ii) an extension of that study, also involving smaller health facilities throughout North Queensland. The remainder of this chapter discusses, in detail, the logistics associated with the collection of these two samples.

4.4.1 Data sources and study region

While 21 percent of Queensland's population reside in rural areas, 39 percent of the state's serious road injuries occur in these areas (Tziotis et al., 2005). In response, the Centre for Accident Research & Road Safety – Queensland (CARRS-Q) and the James Cook University (JCU) School of Medicine embarked on a whole-of-government applied research project to better understand and address the behavioural, environmental, vehicular and cultural factors contributing to road crashes in rural and remote areas. The *Rural and Remote Road Safety Study* involved an in-depth analysis of 732 serious casualty crashes and 119 fatality crashes (both on and off-road) in the ABS statistical divisions of Northern Queensland, Far North Queensland and North

West Queensland, excluding the urban areas of Cairns, Townsville and Thuringowa, between March 2004 and June 2007 inclusive (Sheehan et al., 2008).

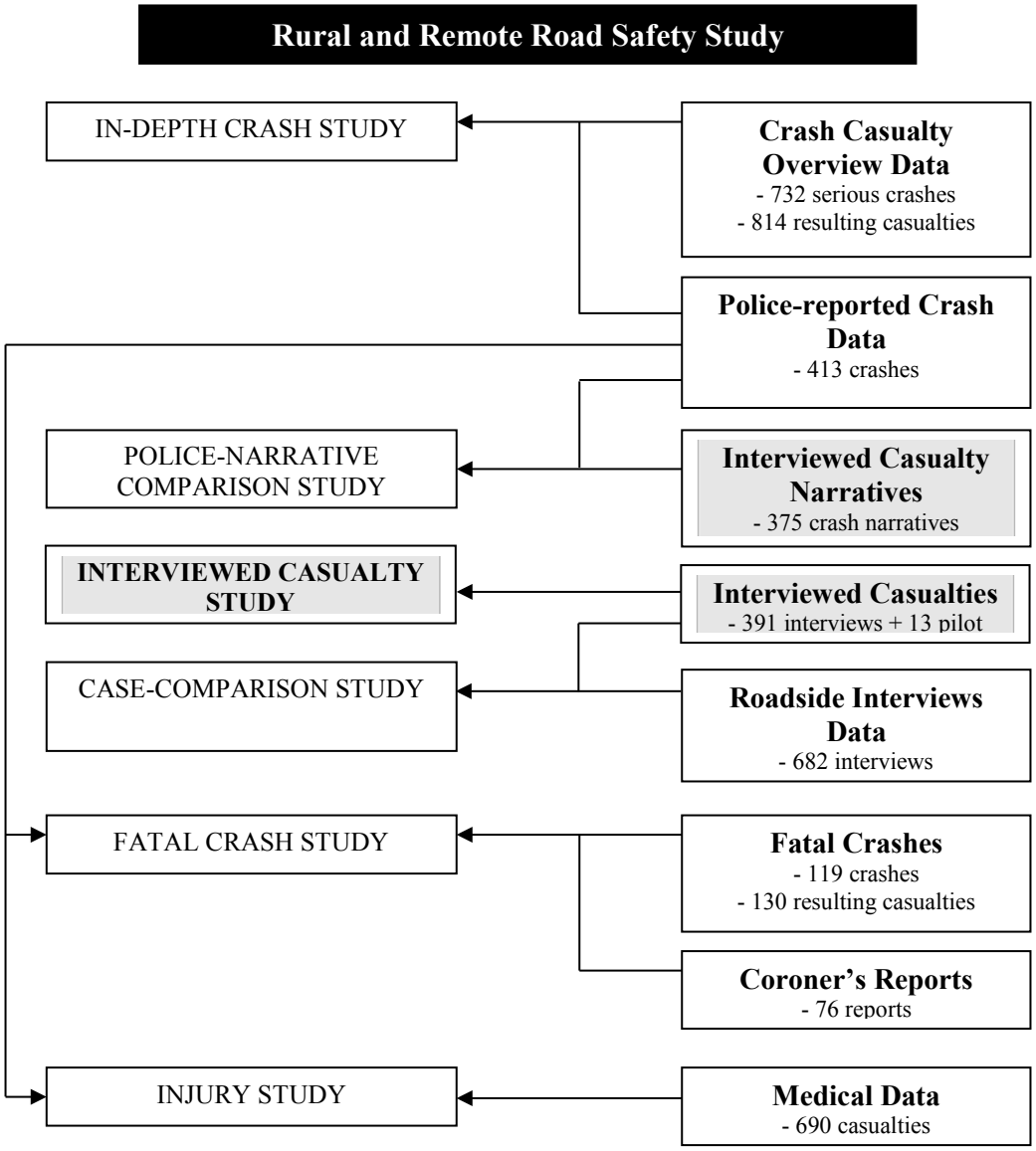

Figure 4.3 Rural and Remote Road Safety Research Program

Central to the research program was the 'Interviewed Casualty Study' *(see Figure 4.3)* - an analysis of interviews with 391 crash patients admitted to larger health facilities within the region (ie. Cairns, Townsville, Mt Isa and Atherton hospitals) for a length of stay (LOS) > 24 hours ('injury severity inclusion criteria'). As such, Indigenous cases recruited through the 'Interviewed Casualty Study' formed part of the *Study 2* sample.

Given that access to medical treatment varies from place to place and Indigenous people are more comfortable using local services due to negative perceptions of larger hospitals – *"a place to go and die"* (McClure, 1995; Moller et al., 2003), the candidate enrolled additional recruitment facilities.

Figure 4.4 Queensland Health Service Districts and Facilities

To increase the number of Indigenous cases in the sample, an additional 229 crash patients were recruited through 33 health facilities/hospitals in the Cape York, Cairns and Hinterland (includes Innisfail and Tablelands), Mount Isa, Townsville (includes Charters Towers) and Torres Strait and Northern Peninsula Health Service Districts over an 18-month period ending August 2008 *(see Figure 4.4)*. 102 additional cases were recruited through a 13-month extension of the data collection period at Cairns Base Hospital – the largest catchment hospital in the region. The Research Assistant position at Cairns Base Hospital was continued for the extended data collection period (funded through the Smart State Scholarship) to ensure continuity in the recruitment process. Note - additional cases collected as part of *Study 2* of the research were not required to meet 'injury severity inclusion criteria' (with the exception of Cairns Base Hospital – *see Section 4.2.8*). However, the restriction to non-urban areas remained.

As outlined in the 'Demarcation of Scope', it is important to note that the 'Interviewed Casualty Study' is the only study in the *Rural and Remote Road Safety Research Program* that is utilised in the research. A comprehensive discussion of all other studies and findings generated through the larger research program can be found at (Sheehan et al, 2008): http://www.carrsq.qut.edu.au/rural_remote_study.jsp

4.4.2 Study aims

Study 2 of the research was predominantly exploratory and designed to draw information on rural and remote road trauma from a series of case interviews recruited through North Queensland health facilities. Together, Indigenous cases recruited through the 'Interviewed Casualty Study' *(see Figure 4.3)* and subsequently at smaller facilities were collected to compare the unique and shared characteristics of crashes involving Indigenous and non-Indigenous people in rural and remote areas of North Queensland. While there were no specific or detailed hypotheses per se, *the general hypothesis was that the crash characteristics of Indigenous road trauma would be different to the crash characteristics of non-Indigenous road trauma in rural and remote areas*. Any meaningful findings and differences identified in the research would ultimately inform rural road safety policy and intervention development. To this end, *Study 2* of the research had five related aims:

1. *To identify behavioural, environmental and vehicular factors contributing to the overrepresentation of Indigenous people compared to other non-Indigenous people living in rural and remote Queensland;*

2. *To determine what trauma-related factors are Indigenous-specific and what factors are a product of remoteness;*

3. *To identify circumstantial factors, community factors and individual factors impacting on crash involvement of both Indigenous and non-Indigenous patients;*

4. *To identify specific, meaningful and modifiable aspects of the Indigenous and non-Indigenous life and travel experience in rural and remote communities that can be used in road safety education and prevention interventions (discussed in the context of the 'Safe System' model); and*

5. *To understand the processes of post-traumatic retrieval and treatment in rural and remote communities in order to identify barriers to effectiveness.*

The extent to which *Study 2* and, to a lesser degree *Study 1* and broader findings of the *Rural and Remote Road Safety Study*, address the abovementioned aims is discussed in subsequent chapters.

4.4.3 Case identification and recruitment

The process of identifying potential cases and subsequent recruitment to the study was different for the two samples. In the 'Interviewed Casualty Study' (recruitment facilities for the larger *Rural and Remote Road Safety Study*), cases were primarily identified through daily scans of de-identified Emergency Department Information System (EDIS) records, sweeps of appropriate hospital wards, and/or communication from nursing staff regarding recent traffic crash presentations. *Table 4.1* lists the selected parameters used to generate daily reports from live patient data contained in the EDIS database to streamline the case identification process. An example daily EDIS list is shown in *Appendix G*.

Once identified as a possible case, patients were screened to ensure that: (i) their crash was in the study area and outside the urban areas of Cairns, Townsville and Thuringowa; and (ii) they spoke English, were at least 16 years of age and had not

been discharged or transferred for other reasons within 24 hours of admission (Sheehan et al., 2008).

Eligible participants (meeting these criteria) were originally approached by a health professional, advised and given information about the study, and asked if they were willing to be approached by a project Research Assistant. Designated Research Assistants were based at each of the major facilities (Cairns, Townsville, Atherton and Mt Isa). Interested patients were not approached by a Research Assistant until a clinician had deemed them to be non-critical (stabilised) and emotionally able to give consent. Written consent was required and all interviews were conducted in the hospital setting.

Table 4.1 EDIS parameters selected to assist in the identification of cases at Cairns Base Hospital

EDIS Parameter	*Description*
Arrival Date	*Date patient arrived at facility*
Patient	*Patient's name (blocked out for privacy reasons)*
Present Date	*Current date (if not date of arrival)*
URN	*Unit record number / Patient reference number*
Present Pos	*Resident postcode of patient (or overseas)*
Mode of Arrival	*Transportation method to facility - walked in; private or public transport; ambulance (road); ambulance (air)*
Presenting Problem	*Free text notes or comments field – can contain information on nature and cause of injuries (MVA); patient complaints; immediate treatments; etc.*
Departure	*Current status/location of the case – ED service event completed – discharged; Left after treatment commenced; Did not wait; Admitted – ED bed; Admitted – ward*

In the smaller health facilities where there are fewer cases, all persons presenting following a road crash were eligible to participate, regardless of LOS. Once again, patients were approached by nursing staff about possible participation and given the opportunity to contact the candidate via phone on the free-call 1800 number if

interested. These procedures applied equally to Indigenous and non-Indigenous participants.

It was recognised that non-Indigenous and non-remote participants may have had greater access to a phone and be able to take part in the interview from home. However, acknowledging the low levels of phone ownership in Indigenous and remote communities, flexibility was required to enable interviews to be conducted when the participant had access to a communal phone in a private room. As such, some interviews occurred in the early morning or evening, with the participant being called on a private phone or at the council chambers/health facility. The detailed recruitment protocol for smaller facilities was as follows:

- Patient advised of the study by the community clinic nurse and asked if they would agree to talk to the candidate about the details of their crash. At this time, the patient was advised that all information they provided would remain confidential (ie. no names will be recorded anywhere) to make the identification of individual cases virtually impossible.
- If the patient agreed, they were given a copy of the patient information sheet *(see Appendix H)*, a consent form *(see Appendix I)*, a copy of the relevant questionnaire and the abovementioned 1800 number to contact the candidate *(see Figure 4.5)*. The patient was advised that the candidate was reachable at any hour to accommodate the flexibility issues discussed above.

Figure 4.5 Pocket-sized card with 1800 number given to patients

- In cases where English was not the person's preferred language, patients were given the opportunity to have the study and consent process explained in local language, with an option to sign or not. However, the local

interpreter (community clinic nurse or support person of their choice) needed to be satisfied that the participant was fully aware of all aspects of the study and wanted to take part, before consent was deemed to be achieved. The interpreter's satisfaction that this has been achieved and the respondent's subsequent participation constituted implied consent. This is a process that the candidate had successfully operationalised in other applied Indigenous road safety projects but was taken up in very few cases.

- Note - virtually all interviews were conducted over the phone by the PhD candidate.
- Upon contacting the candidate, the patient was asked: (i) if he/she has read and understood the patient information sheet; (ii) if he/she is willing to participate and if the consent form has been completed; (iii) if he/she would like to complete the interview then or at a later date.
- If the patient wanted to complete the interview at another time (a date and approximate time was recorded) and the patient was given the option of: (i) ringing the 1800 free-call number at that time to complete the interview; or (ii) being contacted by the interviewer at that time to complete the interview. Note – there were two cases where the patient expressed an intention to call back at a later time and failed to do so.
- The interview was conducted at the time suitable to the patient. At this time the patient was reassured that all information they provided would remain confidential (ie. no names will be recorded anywhere) to make the identification of individual cases virtually impossible.
- At the completion of the interview, the patient was given an ID number and advised that upon quoting this ID number to the local health facility they would receive a $20 payment to compensate them for their time. In a few cases, the payment was sent directly to the participant, with the postal details disposed of immediately.
- In the interim, the candidate contacted the local health facility to inform them that an interview had been conducted and provided them with the ID number for the patient to be paid.
- The completed consent form was to be forwarded back to the candidate in a self-addressed envelope by a health facility staff member. It was to be

posted separately to any part of the survey that may be self-administered (ie. items regarding possible risky or illegal behaviour) to minimise the potential for linking names and responses.

- In the case of fatalities, no survivor was approached to participate.

Given the infrequency and unpredictability of potential cases across the vast study region, a multi-faceted process was adopted to ensure that as many cases were identified as possible. Firstly, glossy A3 posters *(see Appendix J)* providing basic information about the study (ie. who is eligible to participate, how to participate, etc.) were displayed in all participating health facilities and at 'places of significance' within remote communities (eg. local shop, CDEP office, etc.). The research was also promoted on two occasions through articles in Queensland Health's 'Health Matters' magazine which is distributed to health professionals and displayed in facilities. Secondly, daily checks of the Queensland Police Service media release website - http://www.police.qld.gov.au/News+and+Alerts/Media+Releases/ - were conducted. Thirdly, the following local newspapers were scanned on a weekly basis for reports on road crashes within the study area:

- *Ayr Advocate*
- *Cairns Bulletin*
- *Cairns Northern News*
- *Cairns Post*
- *Cairns Sun*
- *Cooktown Local News*
- *Herbert River Express*
- *Innisfail Advocate*
- *Kuranda News*
- *Magnetic Times*
- *Port Douglas & Mossman Gazette*
- *North West Country (Mt Isa)*
- *North West Star (Mt Isa)*
- *Northern Miner (Charters Towers)*
- *Southern Herald (Cairns)*
- *Tablelander (Atherton)*
- *Tablelands Advertiser*
- *Torres News*
- *Townsville Bulletin*
- *Townsville Sun*
- *Tully Times*
- *Wik Inana (Aurukun)*

Finally, participating health facilities were contacted on a fortnightly basis (as best as possible) as an ongoing reminder of the study or when a potential case was identified through the above search methods.

4.4.4 Sample size determination

Given that road crashes are somewhat rare events, subject to fluctuation from year to year, predicting the number of presentations at each of the smaller health facilities was virtually impossible. However, based on a preliminary examination of road crash admissions data for all health facilities in the participating Health Service Districts 2002/03 – 2003/04 *(see Table 4.2)*, the candidate and supervisors aimed for a minimal sample size of approximately: Indigenous (rural) – n = 50; Indigenous (remote) – n = 50; Non-Indigenous (rural) – n = 100; Non-Indigenous (remote) – n = 50. It was envisaged that these cell sizes would enable the detection of meaningful differences. The original aim was to utilise at least 150 cases recruited through the *Rural and Remote Road Safety Study*, while recruiting the other 100 cases from the remainder of the smaller facilities listed below, subject to their participation, over the 18-20 month period. The sample size projection for remote areas was based on the assumption of an identification and participation rate (conversion rate) of approximately 25%. It was acknowledged that many smaller facilities would have only a couple of potential participants, possibly none, over the study period.

Table 4.2 Admissions# to North Queensland health facilities for vehicle or pedestrian crashes in 2002/03 and 2003/04 by Indigenous status

Health facility	*Indigenous status*			*Total*
	Non-Indig.	*Indigenous*	*Not stated*	
Atherton	*116*	*3*	*8*	*127*
Ayr	*68*	*2*	*4*	*74*
Babinda	*25*	*1*	*0*	*26*
Bamaga	*4*	*2*	*3*	*9*
Bowen	*25*	*1*	*0*	*26*
Burketown	*8*	*1*	*1*	*10*
Cairns Base	*508*	*78*	*8*	*594*
Camooweal	*16*	*1*	*1*	*18*
Charters Towers	*30*	*1*	*4*	*35*
Chillagoe	*2*	*2*	*0*	*4*
Cloncurry	*59*	*2*	*2*	*63*
Coen	*5*	*3*	*0*	*8*

Health facility	*Indigenous status*			*Total*
	Non-Indig.	*Indigenous*	*Not stated*	
Collinsville	*28*	*0*	*0*	*28*
Cooktown	*49*	*14*	*3*	*66*
Croydon	*6*	*0*	*0*	*6*
Dajarra Outpatients	*3*	*1*	*0*	*4*
Dimbulah Outpatients	*1*	*0*	*0*	*1*
Doomadgee	*2*	*6*	*0*	*8*
Dysart (no longer in region)	*49*	*3*	*13*	*65*
Georgetown	*6*	*0*	*1*	*7*
Hopevale	*2*	*4*	*0*	*6*
Hughenden	*22*	*2*	*1*	*25*
Ingham	*45*	*3*	*0*	*48*
Innisfail	*93*	*8*	*4*	*105*
Julia Creek	*28*	*1*	*4*	*33*
Karumba Outpatients	*1*	*0*	*2*	*3*
Laura Outpatients	*7*	*0*	*0*	*7*
Mareeba	*79*	*9*	*5*	*93*
Mossman	*76*	*3*	*0*	*79*
Mount Isa	*167*	*31*	*10*	*208*
Normanton	*15*	*9*	*7*	*31*
Pormpuraaw	*0*	*4*	*0*	*4*
Proserpine	*103*	*1*	*4*	*108*
Richmond	*25*	*0*	*0*	*25*
Sarina	*74*	*2*	*3*	*79*
Thursday Island	*4*	*5*	*0*	*9*
Townsville	*554*	*49*	*12*	*615*
Tully	*36*	*2*	*6*	*44*
Weipa	*15*	*7*	*9*	*31*
Wujal Wujal	*5*	*0*	*1*	*6*
Yarrabah	*0*	*5*	*1*	*6*
TOTAL	*2363*	*286*	*121*	*2770*

[#] Transfers in, persons < 18 years and admissions to private hospitals excluded

Note – Remote/very remote areas in this analysis were defined by RRaMA (shaded)

4.4.5 Interview protocols

The *Rural and Remote Road Safety Study* identified self-reported trip characteristics, injury relevant behaviours and attitudes, and crash and retrieval experiences through structured interviews with patients admitted to Cairns, Townsville, Mt Isa and Atherton hospitals. Copies of the four versions of the questionnaire (Driver/Rider, Passenger, Pedestrian, Cyclist) used in the 'Interviewed Casualty Study' are housed at: http://www.carrsq.qut.edu.au/rural_remote_study.jsp

The interview protocol used in the 'Interviewed Casualty Study' was modified for Indigenous and non-Indigenous participants to increase understanding in the remote context. For example, as Aboriginal languages rarely have numbers above three (one, two, three, many or *"big mob"*…), questionnaire items requiring numerical responses (eg. Likert scales) are commonly misunderstood and answered incorrectly. Hence, the revised survey instruments used pictorial items (eg. circles of different sizes to indicate different levels of agreement). The utility and validity of the *Needs Assessment Questionnaire* administered as part of the Kimberley Aboriginal Health Promotion Project (Donovan & Spark, 1997) provided support for using 'geographic concepts' to measure specificity.

Copies of the four versions of the questionnaire (Driver/Rider, Passenger, Pedestrian, Cyclist) used with participants recruited through smaller health facilities are provided in *Appendices K, L, M and N* respectively. Also, given the strong 'oral tradition' associated with Indigenous culture, additional prompts were added to the narrative component of the questionnaire to capitalise on this aspect of the research.

Once again, four versions of the questionnaire were used to correspond to the different road user types listed above. The questionnaires developed for smaller facilities covered similar content to those used in the 'Interviewed Casualty Study' as they were designed to examine between-group differences on a number of known risk factors for people living in rural and remote areas, such as alcohol impairment and misuse, unlicensed driving, single-vehicle roll-over crashes, overloading, riding in the back of utes, older vehicles, pedestrian crashes (often at night, involving alcohol), and non-compliance with seatbelt and restraint legislation (ARRB Transport Research Ltd & CARRS-Q, 2004; Brice, 2000).

The interview protocols/questionnaires used with both samples collected a combination of qualitative and quantitative data. The specific content was as follows:

- Crash experience in narrative form, including retrieval and a series of prompts for patients recruited through smaller facilities;
- Background and demographics, including driving experience;
- Possible risky/illegal behaviour prior to the crash (eg. unlicensed, alcohol/drug use, speeding, etc.);
- Use of protective equipment (eg. seatbelts, helmets);
- Trip characteristics (eg. purpose and duration of journey, periods of fatigue, monotony, distractions, etc.);
- Vehicle characteristics and maintenance;
- Self-reported crashes and traffic offences;
- Individual and community road safety attitudes and practices, including those around enforcement and specific countermeasures; and
- Attitudes to road safety and enforcement.

As previously stated, the interview protocol (questionnaires) used for patients recruited through the smaller health facilities was tailored to increase understanding. However, all efforts were made to ensure data/information collected from the additional cases recruited through the study was comparable to data/information collected through the 'Interviewed Casualty Study'. As such, all questionnaires were developed using a number of validated tools designed to collect information on the abovementioned variables. These validated tools are listed in the references section of the thesis.

A series of new questions were introduced in the questionnaires to ascertain how frequently the Indigenous and non-Indigenous sub-samples engage in risky behaviours linked to the 'Fatal 5'. These included:

- Drive/ride after drinking grog/alcohol;
- Walk home after drinking grog/alcohol;
- Drive/ride faster than the speed limit;
- Drive/ride too fast for the sort of road you are on;
- Keep driving/riding when you are feeling tired;

- Not wear a seatbelt when you should be;
- Pile into the back of a truck or ute to get around;
- Squash more people into a car than is allowed;
- Ride as a passenger of somebody who has been drinking;
- Drive/ride unlicensed or without the right licence;
- Make sure little kids are in capsules on trips; and
- Make sure older kids wear seatbelts on trips.

Given the wealth of behavioural information obtained through crash narratives and other survey items, these variables were not analysed for the purpose of the thesis. In addition, cases were asked to rate how safe they are (compared to other road users) and the extent to which they *"do the same things as on the road most people in their community"*. Responses to these questions provide guidance as to whether interventions should target change at the individual or community level.

Both Indigenous and non-Indigenous participants were given the option to complete items re: possible risky or illegal behaviour prior to the crash independently (self-administered and placed in a sealed reply-paid envelope and mailed in from remote facilities). In the few cases when this option was taken, the local facility sent this section back to CARRS-Q in a reply-paid envelope, with an ID number given to the patient during the phone interview. Interview length with patients recruited through smaller health facilities ranged from 35 minutes to approximately two hours, depending on the participant, with several patients acknowledging the therapeutic benefits of the process. The value of verbalising crash experiences from a therapeutic perspective is discussed in subsequent chapters. In a few cases, interviews were conducted over a couple of sessions at the patient's request.

4.4.6 Data collection sites and staff training

Using Queensland Health terminology, motor vehicle accidents (MVAs) were deemed a major cause of injury presentation by health facility staff in early consultations. As such, there was strong support for the research project with 33 out of 36 health facilities approached agreeing to participate and provide support to the data collection process. The reasons for non-participation by three facilities are provided in *Table 4.3*.

Given that *Study 2* was heavily reliant on health facility staff to identify cases, the candidate invested considerable time into the development and delivery of in-service training to staff at all participating clinics. The in-service was a 30 minute presentation (followed by a question and answer session) that focused on: (i) the aims of the research; (ii) inclusion criteria and case identification; (iii) recruitment and consent processes; (iv) payment of cases; (v) availability of counselling services; and (vi) ongoing monitoring. Where possible, in-services were conducted onsite at the health facility *(see Table 4.3)*. However, for geographic and budgetary reasons, some in-services were conducted via teleconference. Catering was provided out of the project budget for all in-services, including those delivered remotely (via teleconference). The in-services were viewed favourably by health facility administrators and, in some cases, contributed to staff professional development requirements.

To maximise the number of health facility staff exposed to in-services, several in-services were conducted at each facility to coincide with shift changes over a one or two-day cycle. However, recognising that not all health facility staff would be exposed to an in-service, health facility managers (Directors of Nursing) were provided with a copy of the in-service presentation and encouraged to promote the project through internal networks/communication strategies.

Theoretically, the data collection period for Study 2 ran from January 2007 to August 2008. However, health facilities came online at different times dependent upon the scheduling of the in-service training. Implications of the staggered start approach to the data collection are further discussed in *Section 4.4.8*. Upon completion of the data collection phase, participating health facilities were sent a *Certificate of Appreciation (see Appendix O)*. To fully appreciate the logistics associated with engaging smaller health facilities in the data collection exercise, *Table 4.3* lists the facilities approached to participate in the research, the training provided, the recruitment period and the number of interviewed cases by Indigenous status.

Table 4.3 Participation status, training provided and recruitment methods of facilities by Health Service District

Health Facility	*Training Provided*	*Recruitment Period*	*Interviewed Cases*	
			Indigenous	*Other*
Cairns Heath Service District				
Cairns Base Hospital	▪ Onsite in-service – March 2007	▪ June 2007 – August 2008	3	36
Cooktown Hospital	▪ Onsite in-service – May 2007	▪ May 2007 – August 2008	3	3
Gordonvale Memorial Hospital	▪ Not applicable	▪ DNP – Pallative care only	__	__
Mossman Hospital	▪ Onsite in-service – April 2007	▪ April 2007 – August 2008	3	12
Wujal Wujal PHC Centre	▪ Onsite in-service – May 2007	▪ May 2007 – August 2008	2	1
Yarrabah Hospital	▪ Onsite in-service – April 2007	▪ April 2007 – August 2008	0	0
Cape York Health Service District				
Aurukun Hospital	▪ Onsite in-service – June 2007	▪ June 2007 – August 2008	5	1
Coen PHC Centre	▪ Phone in-service – Jan 2008	▪ January 2008 – August 2008	0	2
Hopevale PHC Centre	▪ Onsite in-service – Jan 2008	▪ January 2008 – August 2008	3	0
Kowanyama PHC Centre	▪ Phone in-service – July 2007	▪ July 2007 – August 2008	2	0
Lockhardt River PHC Centre	▪ Phone in-service – June 2007	▪ June 2007 – August 2008	3	2
Mapoon PHC Centre	▪ Onsite in-service – May 2007	▪ May 2007 – August 2008	0	1

Health Facility	*Training Provided*	*Recruitment Period*	*Interviewed Cases*	
			Indigenous	*Other*
Napranum PHC Centre	▪ Onsite in-service – May 2007	▪ May 2007 – August 2008	1	0
Pormpuraaw PHC Centre	▪ Phone in-service - May 2007	▪ May 2007 – August 2008	2	0
Weipa Hospital	▪ Onsite in-service – May 2007	▪ May 2007 – August 2008	5	4
Charters Towers Heath Service District				
Charters Towers Health Centre	▪ Onsite in-service – June 2007	▪ June 2007 – August 2008	1	3
Hughendon Health Centre	▪ Phone in-service – May 2007	▪ May 2007 – August 2008	0	0
Richmond Health Centre	▪ Phone in-service – May 2007	▪ May 2007 – August 2008	2	1
Innisfail Heath Service District				
Innisfail Hospital	▪ Onsite in-service – March 2007	▪ March 2007 – August 2008	2	13
Babinda Hospital	▪ Onsite in-service – April 2007	▪ April 2007 – August 2008	0	2
Tully Hospital	▪ Onsite in-service – April 2007	▪ April 2007 – August 2008	3	6
Mt Isa Heath Service District				
Mt Isa Hospital	▪ Onsite in-service – Nov 2007	▪ November 2007 – August 2008	8	3
Burketown Health Centre	▪ Phone in-service – Nov 2007	▪ November 2007 – August 2008	2	0

Health Facility	*Training Provided*	*Recruitment Period*	*Interviewed Cases*	
			Indigenous	*Other*
Boulia Health Centre	▪ Phone in-service – Nov 2007	▪ November 2007 – August 2008	1	2
Camooweal Health Centre	▪ Phone in-service – Nov 2007	▪ November 2007 – August 2008	0	0
Cloncurry Hospital	▪ Phone in-service – Nov 2007	▪ November 2007 – August 2008	1	1
Dajarra Health Centre	▪ Not applicable	▪ DNP – All MVAs sent to Mt Isa	__	__
Doomadgee Hospital	▪ Phone in-service – May 2007	▪ May 2007 – August 2008	4	0
Julia Creek Hospital	▪ Phone in-service – May 2007	▪ May 2007 – August 2008	0	0
Karumba Health Centre	▪ Not applicable	▪ DNP – Did not reply to corres	__	__
Mornington Island PHC Centre	▪ Phone in-service – May 2007	▪ May 2007 – August 2008	2	0
Normanton Hospital	▪ Phone in-service – May 2007	▪ May 2007 – August 2008	0	6
Tablelands Health Service District				
Atherton Hospital	▪ Onsite in-service – Feb 2007	▪ February 2007 – August 2008	1	22
Mareeba Hospital	▪ Onsite in-service – Feb 2007	▪ February 2007 – August 2008	7	20
Torres Strait and Northern Peninsula Area Health Service District				
Thursday Island Hospital	▪ Onsite in-service – March 2007	▪ March 2007 – August 2008	7	2
Bamaga Hospital	▪ Onsite in-service – March 2007	▪ March 2007 – August 2008	4	1

Health Facility	*Training Provided*	*Recruitment Period*	*Interviewed Cases*	
			Indigenous	*Other*
Townsville Health Service District				
The Townsville Hospital	▪ Onsite in-service – March 2007	▪ Did not continue after RRRSS	__	__
Ingham Health Services	▪ Onsite in-service – May 2007	▪ May 2007 – August 2008	3	4

Figure 4.6 Photographs of some remote health facilities involved in the study: Thursday Island Hospital (top left); Hopevale Primary Health Care Centre (top right); Wujal Wujal Primary Health Care Centre (bottom left); and Cooktown Hospital (bottom right).

Note – The Joyce Palmer Health Service (Palm Island) was strategically not invited to participate in the research because, at the time of study, there was significant political unrest in the community due to a death in police custody.

Given the tyranny of distance and the immense cost of visiting remote health facilities, where possible the candidate piggy-backed on a number of planned trips to communities with government agencies. The Queensland Indigenous Driver Licensing Unit, in particular, provided immense support to the program of research. The conscious effort to work across agencies and coordinate facility in-services with related road safety business occurring in communities is a definite strength of the research.

Figure 4.7 Photograph taken on a visit to Hopevale with the Indigenous Licensing Unit

Having conducted the community-based research underpinning the development of the Indigenous Licensing Unit, the candidate had established a large network of contacts in rural and remote areas throughout North Queensland. To further promote the study, the candidate utilised this network and took every opportunity to hold *"yarning sessions"* with community groups and Councils when visiting local health facilities. The

candidate also relocated to North Queensland (based in Cairns) for a three month period (February to May 2007) to maximise engagement opportunities.

Figure 4.8 Photograph taken at a yarning session with the Kowanyama CDEP crew about the research project and road safety in their community

Figure 4.9 Photograph taken at Darnley Island Council Chambers with the Mayor and Community Police after a community meeting re: the research

4.4.7 Qualitative and quantitative data analyses

The importance and complexity of defining 'rural and remote' contexts was discussed in detail in *Chapter 2* of the thesis. Given that a key aim of the research is to determine the impact of 'remoteness' (if any) on the characteristics of rural and remote road trauma, a clear definition of 'rurality' was paramount. The candidate explored several frameworks for defining 'rurality' based on posted speed limit, population distribution, distance to major centres, and access to services. Originally, comparisons were to be made using the RRaMA classification system (Cowan, 1997) which defines 'rurality' almost exclusively on population distribution. More recently, the literature cites the validity and potential of the Accessibility/Remoteness Index of Australia (ARIA+) to determine regional differences in health research (Kondisenko & Monypenny, 2007; Steinhardt et al., 2009). In short, ARIA+ is a multi-dimensional index of the accessibility of places to service centres. As such, an informed decision was made to use ARIA+ as a classification tool for between-group comparisons based on 'rurality'. Comparisons were made between four groups: Indigenous (remote/very remote); Non-Indigenous (remote/very remote); Indigenous (rural); and Non-Indigenous (rural) to identify between-group differences. The 'crash site' or 'place of residency' (and the ARIA+ score for its LGA) acted as the geographic variable for comparisons dependent on the nature of each variable. The 2 x 2 design provided insight into what trauma-related factors are Indigenous-specific and what factors appear to be a product of remoteness.

Data analysis of the patient interviews involved both a qualitative *(Study 2a)* and quantitative *(Study 2b)* component. *Study 2a* involved an analysis of the 'crash narrative' component of the questionnaire, as well as other items requiring a qualitative response. A qualitative approach was taken to examining qualitative data (Pope et al., 2000), whereby patient narratives underwent a thematic analysis and *"indexed to generate or develop analytical categories and theoretical explanations"* (Pope et al., 2000, p. 114). The candidate adopted a grounded theory approach to this analysis. Grounded theory is used to describe the inductive process of identifying analytical categories or themes as they emerge from the data (ie. developing hypotheses from the ground or research field upwards rather than defining them a priori) (Glasser & Strauss, 1967; cited in Pope et al.,

2000). Once all themes were identified, a 'constant comparison method' was used to identify similarities and differences across units of data/groups (Ryan & Barnard, 2003).

In *Study 2b*, Indigenous and non-Indigenous participants were compared on those survey items which related to themes emerging from *Study 2a.* This provided insight into the complex array of human, vehicular, environmental and cultural factors contributing to the increased crash risk experienced by the four groups mentioned above. Once again, between-group comparisons were made with the ARIA+ score for the 'crash site' or 'place of residency' acting as the geographic variables for comparisons. Where appropriate, statistical tests to determine significant differences were conducted under the supervision of Professor Siskind, using methods determined by the data characteristics, primarily logistic regression.

4.4.8 Study limitations and potential bias

Unfortunately, the nature of real world or non-laboratory research means that a number of potential biases can be introduced, some of which are beyond the control of the investigator. For example, in the current study the intention was to estimate ascertainment or refusal rates but, due to the shortcomings of EDIS discussed previously, this was not possible. Therefore, without a proxy measure of exposure, it was impossible to quantitatively assess the performance of the recruitment strategy.

There were several methodological limitations with *Study 2*, primarily related to inconsistencies in the way in which cases were recruited. Firstly, feedback from the nursing staff suggested that there may have been a selection bias in some facilities based on 'assumed responsibility'. That is, in some facilities, it appears that staff were more likely to refer (or at least be more persistent with) patients that were clearly responsible for their crash involvement. For example, when asked in the regular catch-up *"if they had any cases in the past fortnight"*, a ###### nurse replied: *"I didn't get* [name omitted] *on to your study because she's a good driver … I did get* [name omitted] *to ring you though 'cause he's always doing stupid stuff. He needs a good talkin' to"*. Similarly, an ###### nurse reported in a catch-up that she *"made young* [name omitted] *have a yarn about what he did … He'll go to jail the way he's going"*. This tends to indicate that the referral process in remote clinics may have been, in some circumstances, influenced by the nurse's judgement re: the patient's culpability, such that those perceived to be less culpable crash

victims were not encouraged with the same vigour. Charmaz (1989) reported that studies involving the health facility setting can be subject to referral bias. In her qualitative study of chronic illness, she claimed that practitioners *"selected respondents they thought I ought to see"* with an intervention focus (p.271).

While not a research study per se, feedback provided by nursing staff both through a debrief post-study, and throughout the study period, was documented. It is discussed in final chapter of the thesis to illustrate qualitative themes related to the data collection process – *"what worked"* and *"what didn't"*. One of the major contributions of this study to the field are lessons on research design and data collection in the remote Indigenous context.

Secondly, the issue of inconsistent referrals may have been compounded by the transient nature of staff in the rural health setting. Throughout the data collection phase of the study, virtually all of the health facilities experienced high staff turn-over rates, with many hospital administrators and Directors of Nursing (DON) changing posts. It is fair to assume that this impacted on the collective knowledge of the case identification and recruitment process in affected facilities and would have, in turn, had a bearing on conversion rates.

Thirdly, it was intended for the data collection periods to run simultaneously across all sites. However, as start dates were reliant on prior in-service training, health facilities came online at staggered intervals. In part, this meant that certain recruitment sites may have been influenced by the wet season and associated travel patterns (exposure) more than others. While this would have reduced the overall sample size, it should not have introduced any additional bias above and beyond that stemming from place of usual residence.

Fourthly, by nature of the research design, there is a possible severity bias. In smaller facilities enrolled specifically to the current research, cases were notified of the study/recruited at the point of presentation to the Emergency Department (ED) or equivalent, thus removing the LOS (proxy severity) inclusion criteria used in the 'Interviewed Casualty Study'. It was originally intended to relax the LOS criteria for the larger hospitals continuing beyond the life of the 'Interviewed Casualty Study'. However, after a brief trial period, it was not deemed logistically possible or ethically appropriate to

recruit patients through the busy ED in larger hospitals. Upon presentation, patients were noticeably traumatised and in shock. The candidate and Research Assistant did not want to add to this trauma through a premature research approach. Consequently, persons recruited through Cairns, Atherton and Mt Isa hospitals in the PhD data collection period continued to be approached post-admission using the pre-established methods. Given that the more severe cases in remote areas are typically transported to larger hospitals in North Queensland, the impact of severity is less important in this case. Nevertheless, it is acknowledged that the sample for the *Study 2* is a case series only that provides insight into the causal factors contributing to Indigenous versus non-Indigenous crashes, without providing an accurate indication of prevalence.

The type of data collected in *Study 2* (self-report information) also inherently provides an opportunity for bias. Arnoff (1977, cited in Shinar, 1978) suggested that *"drivers tend to explain their traffic accidents by reporting circumstances of lowest culpability compatible with credibility"*. That is, where possible, people try to externalise blame. However, the results of the 'Police-Narrative Comparison Study' (conducted as part of the larger *Rural and Remote Road Safety Study*) which compared patient and police descriptions of events demonstrated relatively high levels of agreement regarding most causal factors (Sheehan et al., 2008). The apparent openness in disclosure may, in part, be a reflection of the assurance that incriminating information could not be used for criminal purposes or in litigation. The utility of using self-report patient narratives as a tool to better understand rural and remote road trauma is discussed later in the thesis. This qualitative method (narrative with appropriate prompts) worked extremely well with the target population and arguably provided more insight than the remainder of the survey.

4.5 Chapter Summary

This chapter outlined in detail the methodology used to profile the unique and shared characteristics of crashes involving Indigenous people compared to other rural and remote road users through an analysis of patients' crash experiences.

In addition to the vast consultation process of engaging cross-agency and community stakeholders, this chapter: (i) clearly defined the study parameters; (ii) outlined the training (in-services) provided to nursing staff; (iii) provided rationale for the interview content and protocols used with the two samples; and (iv) provided a detailed

account of the requirements for ethical approval for the study. Strengths and weaknesses of the research design and data collection process are discussed with a view to further comment in the final chapter of the thesis.

The following two Chapters present the results of the qualitative analysis of patient narratives *(Study 2a)* and a quantitative analysis of patient responses to other survey items of interest *(Study 2b)*. Together, these results will inform recommendations to improve road safety at both the community and individual level in rural and remote areas.

Chapter 5: A Qualitative Analysis of Crash, Emergency Response and Road Safety Experiences (Study 2a Results)

5.1 Introductory Comments

To date, the thesis has provided the background to rural and remote road safety, in terms of crash profile and promising road safety initiatives. Through the *National Review of Indigenous Road Safety (Study 1)*, it also identified risk factors for Indigenous crashes based on available agency-collected data, and critiqued the effectiveness of current road safety programs in this domain. *Study 1* revealed that Indigenous road safety is a relatively new issue on the Aboriginal and Torres Strait Islander health agenda and has received minimal attention in comparison to chronic disease management. Additionally, the review of existing Indigenous road safety programs indicated that they almost exclusively focus on wider health and wellbeing concerns like alcohol misuse and unlicensed driving, rather than the 'social determinants' underpinning these behaviours (Dixon & Welch, 2000; Harvey, 2006). These authors argue that understanding the social determinants of causal factors is a necessary step in effective countermeasure development.

In an attempt to address this research void, *Chapter 4* described the methodology adopted in *Study 2* of the research. The findings will be reported in this chapter which is designed to provide data on the social determinants of rural and remote road trauma, while trying to gauge the relative contributions of Indigenous status and remoteness. This chapter presents the results of *Study 2a* which is the qualitative analysis of patients' reports of crash experiences. It provides a breakdown of the sample by Indigenous status, remoteness of residency and road user type *(Section 5.2)* and identifies both contributing factors *(Section 5.3)* and social determinants *(Section 5.4)* underpinning the index crash. This information is complemented by examining the learning opportunity used by the sample *(Section 5.5)*, personal suggestions to improve road safety *(Section 5.6)* and perceptions of enforcement *(Section 5.7)*. The final sections of this chapter capture patients' emergency response and retrieval experience of the index crash *(Section 5.8)* and discuss the relevance of the findings to the research aims for *Study 2 (Section 5.9)*.

5.2 Overview of the Sample

Before presenting the qualitative findings, the Indigenous status, remoteness of residency (ARIA+) and the road user types in the sample are shown below in *Table 5.1*. Consistent with previous research (Brice, 2000; Styles & Edmonston, 2006; Harrison & Berry, 2008), Indigenous casualties were more likely to be a passenger or pedestrian, while non-Indigenous casualties were more likely to be riders or drivers.

Table 5.1 Sample by Indigenous status, remoteness and road user type

Indigenous – Remote (*n* = 58)	**Non-Indigenous – Remote (*n* = 47)**
• Driver (*n* = 20) • Rider (*n* = 1) • Passenger (*n* = 26) • Pedestrian (*n* = 7) • Cyclist (*n* = 4)	• Driver (*n* = 10) • Rider (*n* = 18) • Passenger (*n* = 14) • Pedestrian (*n* = 2) • Cyclist (*n* = 3)
Indigenous – Rural (*n* = 22)	**Non-Indigenous – Rural (*n* = 102)**
• Driver (*n* = 11) • Rider (*n* = 1) • Passenger (*n* = 7) • Pedestrian (*n* = 2) • Cyclist (*n* = 1)	• Driver (*n* = 39) • Rider (*n* = 39) • Passenger (*n* = 14) • Pedestrian (*n* = 3) • Cyclist (*n* = 7)

These differences in crash profile reflect exposure, travel patterns and vehicle access. They also reflect the 'transport disadvantage' (Currie & Senbergs, 2007) and 'hardship' (Gruen & Yee, 2005) experienced by remote Indigenous communities (ie. lower levels of vehicle/licence ownership, increased unemployment, reduced access to public transport). More detailed information on the sample is presented in *Chapter 6*.

5.3 Thematic Analysis of Contributing Factors

The core thematic analysis focused on identifying contributing factors to the index crash, not unlike that undertaken as part of the RRRSS (Blackman et al., 2006).

Interestingly, the current analysis yielded significantly more contributing factors per case (2.07) compared to the Blackman et al. (2006) analysis (0.83). Furthermore, the proportion of patients who had *"no memory"* of their crash was much lower in this study (2.6% of cases) compared to the RRRSS (16.9% of cases). Patients with limited or no recall were almost exclusively intoxicated at the time of the crash. It is hypothesised the change to the interview format (i.e. increased emphasis on *"telling their story"* with behavioural prompts) and the relaxed injury severity criteria for inclusion in the study may have contributed to this finding. Methodological lessons from this program of research are a key discussion point in the final chapter of thesis.

In order to make between-group comparisons, the contributing factors identified by patients were ranked by Indigenous status and remoteness, in this case ARIA+ classification of crash location. The top five factors in rank order for each of the four groups of interest are shown in *Table 5.2*. Quantitative comparisons between groups of interest on these key themes are tabled in *Chapter 6*.

Table 5.2 Rank order of contributing factors by Indigenous status and remoteness of crash location

Indigenous – Remote	**Non-Indigenous – Remote**
1 Alcohol	1 Distraction
2 Inappropriate speed	2 Road conditions
3 Failure to use / lack of PPE	3 Inappropriate speed
4.5 Unlicensed	4.5 Inexperience
4.5 Distraction	4.5 Alcohol
6 Tired or fatigued	6 Failure to use / lack of PPE
Indigenous – Rural	**Non-Indigenous – Rural**
1 Distraction	1 Distraction
2 Alcohol	2 Road conditions
3 Inappropriate speed	3 Inappropriate speed
4 Failure to use / lack of PPE	4 Alcohol
5 Tired or fatigued	5 Vehicle

As expected, the 'Fatal 5' core behaviours were heavily cited with at least one of these identified as a contributing factor by more than 90 percent of patients. When patients could vividly recall their crash, it was evident that several of the 'Fatal 5' behaviours were often at play, particularly in remote settings. The most common combination of behavioural factors was 'alcohol coupled with inappropriate speed', often with an external or internal distraction triggering loss of control.

> *"We'd been in town waiting for some money to come through, but it hadn't come through, so we thought we'll go back home and wait. There were a lot of horses on the road that night – wild ones and it was wet. We hit a big puddle and the driver lost control … He was drunk and I told him to slow down. He was so sorry and I told him 'you done the wrong thing'. He wasn't even hurt. I was lying on the road and someone came along from the community … They sent the ambulance from town … It says 60km/h and he was going 160 or 130km/h. I was thrown out of the car" (Remote, Indigenous, Passenger).*

> *"Just been on the lunchtime beers and decided to hit the road … I'm a very experienced rider. Feeling good – going about 170km/h … It's really straight there and just lost it – don't know why" (Rural, Non-Indigenous, Rider).*

> *"We were heading back to ###### – hooting along more than 100km/h and lost it on a bend. We were arguing a bit … The car skidded and spun around a lot before we smashed into a tree. We were all real pissed – We'd been on a bender for days … My mate [the driver] wanted to leg it but the other bloke in the car said 'Don't leave your mates here you dog'! He stayed then. None of us were wearing seatbelts – I think that's why I got so hurt. I'll wear my seatbelt next time" (Remote, Indigenous, Passenger).*

5.3.1 Externalisation of blame: Alcohol or the road?

The major point of difference between Indigenous and non-Indigenous patients was willingness to externalise blame for the crash. Indigenous patients were far more

likely to acknowledge their role in the crash causation. Alcohol impairment figured prominently in accounts, particularly from Indigenous pedestrians.

> *"We'd been at a party. I was running across the road to cross to the other side and got hit. I saw the car but he seemed a long way away ... I don't remember getting hit but I just remember waking up in a pool of blood. I was drunk, that's why it happened. My boyfriend grabbed me and pulled me off the road" (Rural, Indigenous, Pedestrian).*

> *"I don't remember much – I was real pissed. I'd been drinking grog all day – 'goon' (wine). I drink it most days. I was heading back into #####, towards home and drifted off the road. I think I was passing out from all the grog. I hit some of the posts marking the roads and hit the brakes pretty hard. Next thing I hit a tree. Blacked out after this. The community police woke me up ... They took me to ###### Hospital to get checked out – I was out of it – Everything was blurry ... They made me blow into the bag. I knew I was over. I will probably lose my licence for more time now but I'll learn my lesson one day" (Rural, Indigenous, Driver).*

To this end, Indigenous narratives (like the one below) often indicated resignation to the fact that alcohol is central to 'community life' and activities like driving. From these participants' perspective, modifying drinking behaviour is not an option – *"it's what we do"*. It's about minimising other risky behaviours (for example, speeding) to compensate for intoxication. This mindset provides further rationale for drawing out the social determinants underpinning drink driving in communities as a precursor to addressing social norms. This critical challenge is further explored in later sections of the thesis.

> *"Was a real bad smash mate – real bad. We'd been at the pub all morning. Run out of money so decided to get back to ######. There were six of us and we were drunk on grog. Drunk the night before too – it's what we do. About half way home the driver lost it on a bend. We were flying – maybe going 150km/h, maybe quicker. He turned sharp but it was too late – the car flipped*

and rolled. We were thrown around but stayed inside the car. The driver said "which way you" [checking if we were ok]. *We crawled out of the car and pushed it back on its wheels. Nothing was broken* [bones]. *It took ages for the ambulance to come … The speed is what caused us to crash. If you've been on the grog you need to slow right down" (Indigenous Passenger).*

In contrast to the Indigenous sample, non-Indigenous patients were more likely to ascribe the cause of the crash to distractions or the condition of the road. Even when describing risky behaviour in the narrative, non-Indigenous participants often suggested that the primary cause of the crash was an external factor, for example, poor roads/road maintenance or uncontrolled animals.

"This crash wasn't my fault. I'm a truckie, so the highway is my office. I'm always safe and wear all the safety gear on my bike as I did Sunday. I was heading to ######. I went to go around a bend … and lost control because there was gravel left on the road. They [Main Roads] *didn't clean up after roadworks. It was a right hand turn and maybe I was going a bit fast for the corner" (Rural, Non-Indigenous, Rider).*

"It was right on dusk … I saw a roo on the road and swerved slightly. I caught the loose gravel on the edge of the curve and slid into a tree … I had a few drinks earlier which may have affected my reflexes but the roo really caused me to crash. I was only going about 70km/h but that is as fast as you can go on the track, it's pretty slippery" (Rural Non-Indigenous Driver).

"I was leaning out of the car with the door open – putting down some markers for the Royal Flying Doctor Service. My mate was driving – only going slow. He was distracted by a roo and swerved sharp … Bugger the roos, they're everywhere out here and caused our crash" (Remote, Non-Indigenous, Passenger).

"Another example of car drivers not seeing motorbikes. I was heading down Victoria Street – going to lunch … This car just pulled out in front of me. He

didn't even look. … I was going fairly quick, not expecting him to pull out. I saw him and tried to stop but it was too late … I laid the bike down and skidded … My leathers got cut up and I grazed my arms and legs … The bike's a mess – my pride and joy" (Rural, Non-Indigenous, Rider).

5.3.2 Distraction: "I only looked away for a split second"

Distraction emerged as a theme for all four groups and was the most frequently cited contributing factor among Indigenous (Rural), Non-Indigenous (Rural) and Non-Indigenous (Remote) patients. Put in perspective, distraction leading up to the crash was cited as a contributing factor by 34.8 percent of interviewed casualties in the RRRSS (Sheehan et al., 2008). Similarly, 35.4 percent of cases in *Study 2* noted distraction in the causal chain with its identification being more prevalent in remote (53.8%), as opposed to rural (25.5%), crashes. Of note, the nature of the distraction appeared related to the setting in which the crash occurred. In rural environments, distraction typically took the form of mobile phone use or other occupants in the vehicle such as children.

"Just as I was turning into ###### Street, I heard my phone. I looked down to see who text me and missed the bend. The car rolled into a gully – my life flashing before my eyes. I think I had shock or concussion because I don't remember much after the crash … I shouldn't have played with my phone and got a cab home" (Rural, Non-Indigenous, Driver).

"Bloody rear-ender at the lights. I was checking my phone and didn't stop in time. It happens" (Rural, Non-Indigenous, Driver).

"Heading home from shopping in ######. Just bought the kids Maccas and they were fighting in the back. I turned around to sort it out and run off road. I was distracted by the kids and struggling with the car … I don't usually drive hubby's 4WD" (Rural, Non-Indigenous, Driver).

In contrast, in the remote setting, the common types of distraction were external to the vehicle (animals, looking at friends, scenery). The other frequently mentioned

theme was inattention due to a recent or current emotional event (for example, family argument), often coupled with alcohol use. The complex dynamic between alcohol use, interpersonal relationships and 'hardship' is highlighted in the *Section 5.5.3*.

> *"I was just riding down to the shops. I looked away for a second or two at the water. It was a nice day – the water was flat. When I looked up I saw a car coming and swerved. I must have hit a pothole or something because the next thing I knew I went straight over the handlebars – my stomach hit the handlebars hard and then I fell on the ground … I wasn't wearing a helmet but I didn't hit my head" (Remote, Indigenous, Cyclist).*

> *"I'd finished work, done some shopping and was on my way home … It's very dark on that road and more than half way home I saw a cow in the middle of the road. He wasn't going anywhere and I knew I couldn't stop. I was taught not to swerve to miss animals so I hit it. My car was write off but I'll live … I can't say the same for the cow" (Rural, Non-Indigenous, Driver).*

> *"Family problems and been drinking the night before … I was driving to work – almost there. I was thinking about the fight I had the night before … Ran off the road and hit a tree … I travel that road every day and was on automatic pilot" (Rural, Indigenous, Driver).*

5.3.3 Not wearing personal protective equipment: "Not going far"

While not technically a causal factor, the reluctance to use personal protective equipment (PPE), like restraints or helmets, particularly in remote settings, was another common theme to emerge from the crash descriptions. Despite recognising the safety benefits of PPE during and post-crash, it wasn't used for a variety of reasons ranging from lack of enforcement to not available to poor decision-making due to intoxication. Once again, there appeared to be some value judgments around compensation of risk, much like Wilde's (1982) risk homeostasis theory. That is, if patients were engaging in one risky behaviour, they felt that they should balance it by complying with another safe practice.

"If we're not going far we don't worry … You usually won't get caught and you're going slow – it's safe. I suppose if the driver's drunk you should wear your seatbelt to balance it out" (Remote, Indigenous, Passenger).

"We'd been drinking most of the day at the footy and were on our way home. We probably should have just walked – taken the foot falcon - because we only had a little way to go. We didn't have our belts on either – seemed silly to put them on for a couple of streets. You just don't know when you'll need them I guess" (Remote, Indigenous, Passenger).

"I wasn't wearing a helmet and only had one shoe on – the one I need to start the bike. I know you should wear it, but it's not illegal [off road] … I was having a crack at a 12 foot jump and got it all wrong. Not experienced enough … I'll get it right next time" (Rural, Non-Indigenous, Rider).

Of concern, there were a handful of cases where inappropriate PPE was given out by registered providers of trailbike adventures. This was coupled with a lack of training/supervision and little evidence of emergency first aid procedures being in place.

"We were given a horse riding helmet to wear and asked if we were a good rider … If you'd ridden before, the instructor zoomed off and didn't worry about us … We weren't shown anything about the quad and no one was around if you fell off … I did and, as a result, lost a toe. They just dumped me on a table at a nearby pub to be collected by an ambulance and left me … There needs to be rules around these places" (Rural, Non-Indigenous, Rider).

"Wearing runners and a horse riding helmet … The quad landed on my toes … Lots of inexperienced riders and no training … Quite a few potential accidents – one guy ran into a barbed wire fence; one guy went over the handlebars; one guy ran into a shed; the axle broke on one bike; others were stalling all the time … We couldn't keep up [with the instructor] … When he finally came back, wasn't really able to deal with the situation" (Rural, Non-Indigenous, Rider).

The unsafe practice of 'riding in the back of utes' has been long acknowledged as a major 'Indigenous road safety problem' (Brice, 2000; Styles & Edmonston, 2006). Patient narratives provided in this research suggested that the practice may in fact be a product of remoteness and the associated lack of enforcement. The crash descriptions below suggest that the practice is common for both Indigenous and non-Indigenous people living in remote North Queensland, despite the knowledge of illegality and risk.

> *"A whole crew of us were piled into the work ute heading back to ###### ... I felt the ute slip and slide around underneath me. I had hit some loose gravel. I should have tried to steer out of it but I panicked and hit the brakes. A couple of boys in the tray were thrown out. One flew through the air like a rag doll. I felt real bad, because I should have handled it better. I know to slow down a bit there – I drive it all the time with the guys ... You never see any cops" (Remote, Non-Indigenous, Driver).*

> *"I was running the council ute over to the workshop – it was smoko time. A dog ran out and I had to jump on the brakes pretty hard. One fella in the back of the ute fell out. He was a bit binged up but they fixed him up. He had cuts on his legs and couldn't walk real good ... I wasn't going faster than the speed limit – dogs run out on the road all the time. People have lots of dogs in ######. I don't have no licence but I'm going to get one. I hope the cops go easy on me" (Remote, Indigenous, Driver).*

> *"We were walking back from the pub. There were about six of us. Our mate pulled up in his ute and we all jumped in the tray-back and he rolled it on the next corner ... He may have taken the corner a bit fast ... I know it's illegal but we were weren't going far" (Remote, Non-Indigenous, Passenger).*

5.3.4 Inappropriate speed: "You can go quick out here"

Speed featured prominently in crash descriptions by both Indigenous and non-Indigenous patients, independent of crash location. In rural areas, speed was typically

cited as *"approaching an intersection too fast"*, often leading to give way issues, or exceeding the posted limit. In remote areas, the explanation was often linked to environment with patients either *"flying"* (dramatically exceeding the rural default of 100km/h) or *"going too fast for the conditions"*.

> *"Speeding brother caused our crash. We were driving over to ###### for a footy carnival. The road was not too good 'cause of the wet season. The driver lost control on a corner. He was going too fast for them roads … There was six of us in the car. We left the car there. There's wrecks all along that road. Lots of fellas have crashed along there before. We won't be playing footy now. Hope the rest of the mob play good" (Remote, Indigenous, Passenger)*

> *"I remember the whole thing like slow motion. Badly running late for work … I was flying along – maybe 130km/h or so. I felt the car start to slide and couldn't get it right. The car hit a cement drain and flipped … I never told the cops just how fast I was going. I drive along that road every day. I should know that bend like the back of my hand" (Remote, Non-Indigenous, Driver).*

> *"It was Sunday arvo and I was heading out to ###### for a ride. I do that most Sundays. I saw some cars coming up behind me so I decided to give it some. I couldn't hold it together going around a bend and crossed the centre lines. There was a car coming the other way so I had to head bush to miss him. I fell off down a gully and landed on my left arm … I tried to pick the bike up but realised my arm was broke. All I could think was, I'll be on compo for a while. But I was speeding like a dickhead so shit happens. I should have just chilled" (Rural, Non-Indigenous, Rider)*

References to exceeding the rural default limit were often qualified by comments regarding the lack of safe speed cues/signage - *"You can go quick out here – nothing tells you otherwise"* or the unlikelihood of detection – *"There's never any cops on that road" … "Who's going to catch me?"*

5.3.5 Fatigue: "Tired from all the drinking"

Like the RRRSS narrative analysis (Blackman et al., 2006), fatigue was not reported as often as other 'Fatal 5' behaviours. In this study, fatigue was more prevalent among Indigenous patients and, in nearly all cases, identified as a by-product of excessive drinking either the night or day before.

> *"It was early in the morning ... He was half asleep because we'd been drinking the night before and going too fast for the corner – you need to slow right down there ... I was just happy to live. The cops are going to throw the book at my mate – they know him" (Remote, Indigenous, Passenger).*

> *"I'd been up all night. I don't know how many fourex heavies* [a full strength local beer] *I had – more than a carton maybe. It was morning and I was driving home ... I must have gone to sleep – real tired from all the drinking – because when I woke up I'd smashed into a power pole and the car was on its side. You shouldn't drive after that much grog. I got thrown into the backseat somehow. Once I start the grog, I can't stop" (Remote, Indigenous, Driver).*

Prior to this research, fatigue had not been identified as a significant risk factor for Indigenous Australians in either the literature or crash data. To explore this finding further, the candidate contacted his local Forensic Crash Unit to gain a better understanding of how causation is apportioned to remote crashes. Their response suggested that this may be a product of the investigation process. Pimm (2015, personal communication) indicated that alcohol is often deemed the primary causal factor through a quantifiable measure (breath or blood sample) in remote Indigenous crashes and, as such, very few follow-up questions would be asked. Hence, fatigue would go unreported in the majority of cases. The cumulative impact of alcohol and fatigue in the remote setting might warrant further investigation.

While rare, a couple of narratives provided support for circadian rhythms impacting on alertness levels. The following interview captured this experience.

> *"I was feeling tired. Black fellas get tired after a feed. It's like 'goanna syndrome' – you have lunch and you want to have a camp in the sun [patient laughed]. I parked on top of a hill. I thought I put the car in park but maybe not …" (Remote, Indigenous, Driver).*

5.3.6 Unlicensed: "Nobody to teach me the rules"

A large focus of the candidate's academic life has centred on understanding and improving licensing outcomes for Indigenous people (Edmonston et al., 2003). The narratives below articulate the many challenges and consequences that remain.

> *"I didn't do much school, so I can't read and write good and don't have a licence but I still need to get around. There's lots of fellas like me" (Remote, Indigenous, Driver).*

> *"The 'bolliman'* [policeman] *came to the clinic not long after* [my crash] *and knew that I'd been drinking and didn't have a licence. They said that I could deal with it later* [when] *I was fixed up. They* [clinic staff] *flew me to Cairns to get my head checked out later that arvo" (Remote, Indigenous, Driver).*

> *"I'd love to get a licence but what hope have I got – there's nobody to teach me the rules. The coppers don't want to know … We need help. You end up driving and getting caught" (Remote, Indigenous, Driver).*

Very few non-Indigenous patients reported being unlicensed. Those that did were *"once a week riders"*, holding car licences only, and occasionally rode on gazetted roads to access off-road locations.

5.3.7 Crash prone: "Talk about bad luck"

The final theme emerging from the analysis of contributing factors highlights a major attitudinal challenge for rural road safety practitioners. A small but vocal group were convinced that they were *"just unlucky"* reassuring the candidate that they're *"really careful"*. It was hard to comprehend these accounts from patients as they lay seriously

injured in hospital beds describing a continuing pattern of risk-taking. Closer analysis of their narratives provided support for the aphorism that 'people drive as they live' (Shinar, 1978) and, not surprisingly, alcohol was a common theme in their misfortune.

> *"I'm having a bad run. Hit my head in a pool accident on Thursday and got king hit at the pub on Friday ... Drank all over the weekend and crashed Monday ... I was over the limit and going about 30k over ... But I'm more careful than most around here" (Rural, Non-Indigenous, Driver).*

> *"Smoked pot the night before and only had four hours sleep ... Never wanted to ride bikes but here I am ... I've written off five cars and four bikes in my life and lost my leg in my early 20s ... I crashed again and was here three weeks ago ... As a rule, I'm fairly careful and much safer now that I have kids" (Rural, Non-Indigenous, Rider).*

> *"I crashed twice in two days. I'm riding up to the tip ... The first day I lost control in a washout and fell off because the bike was overloaded with stuff ... I decided not to do your study then ... The next day I felt good enough to ride on and hit a cow ... Talk about bad luck ... Anyway, I thought I'd better tell you my story now ... I was going about 80km/h – probably a bit quick both times" (Remote, Non-Indigenous, Rider).*

5.4 Thematic Analysis of Social Determinants

As discussed previously, it is argued that the cornerstone of successful behaviour change in the injury prevention field hinges on an understanding of the social determinants or motivations underlying risky behaviours (Dixon & Welch, 2000). To this end, the enhanced crash narrative interview process was designed to tease out the mindset and motivations underpinning behaviour. In line with Heil's (2006) challenge to research Indigenous people in their social context, patients were asked to elaborate on the decision-making processes surrounding their behaviour both prior and during the crash.

Essentially, three broad themes emerged from the narratives providing insights into "why" common crash profiles occur. Each is described in turn below. Evidence of the

first two themes/motivations – here termed 'rural rituals' and 'being a hero' – was provided by both Indigenous and non-Indigenous patients. However, the third theme – labelled 'hopelessness' – specifically relates to Indigenous culture and the link between road safety outcomes, life circumstances and perceived 'locus of control' (Finlayson & Auld, 1999).

5.4.1 Rural rituals: "Do it all the time and nothing bad happens"

Collectively, the narratives illustrated what Henderson (2010) describes as the 'rural way of life', in which the pub is an important social centre. The rural way of life is also characterised by a lack of public transport options, higher travelling speeds and decreased seatbelt compliance, due to reduced exposure to enforcement and a shared acceptance of risk (Sticher, 2009). In addition to these behaviours being cited regularly, patients' accounts imply they are ritualistic. That is, people engage in risky behaviours on a daily/weekly basis and, because crashes are a relatively rare event, concerns for safety are low. Indigenous and non-Indigenous examples are provided below to emphasise the strength of the attitude that you can regularly undertake risky behaviours without fear of negative consequences. This, coupled with the fact that some patients do not modify their behaviour even after multiple crashes *(see Section 5.4.7)*, means that addressing the 'rural way of life' is a road safety policy priority.

> *"Heading home from the pub after happy hour on Friday. Only had to go a few blocks. My mate tried to turn into ###### Drive and stuffed up. Instead we ended up hitting a concrete sign … We were having a good night. We do the same thing every week" (Rural, Non-Indigenous, Passenger).*

> *"It's just the way it is out here … We all do the same things. We risk it with drink driving, speeding and overloading because we're not likely to get caught and don't have much choice. You have to get around and we have less options … If the roads were better though, there wouldn't be as many crashes" (Remote, Non-Indigenous, Rider).*

"It wouldn't have been so bad if they weren't piled in the back of the tray but that's what happens out here. You all pile in. It's no big deal – everybody does it and the cops don't worry. Nothing ever goes wrong – except for the other day [patient laughed a little]" (Remote, Indigenous, Passenger).

"I travel this road all the time … on automatic pilot … You don't think you'll be the one in an accident" (Rural, Indigenous, Driver).

"I'd got on the drink with the boys after work. We always have Friday arvo drinks. I was feeling a bit pissed so I thought I'd better go home and drop the bike off before going back out to the ###### Hotel. I usually ride home after a few and nothing happens. I take it easy. You don't think you'll crash and I don't know how it happened – I just lost it. I'm only on my Learners so I'll probably have to go to court (Rural, Non-Indigenous, Rider).

"It happened during my weekly Sunday ride. The bike got caught in a gravel dip and I fell off … It was my favourite time of the week and I was starting to be a pretty good rider I think. I haven't been riding that long – only a couple of years" (Rural, Non-Indigenous, Rider).

"We'd just been down to the river to check my partner's yabby traps. On the way back he was fiddling with the radio. I said 'leave it' and we had a bit of a spat – next thing we were heading off the road. … We were going too fast for the unexpected. We slammed into the tree pretty hard … I was lucky I had my seatbelt on or it could have been a different story. We'd been on the rumbos so I knew the cops would get ###### for drink driving. He was drunker than me. We were just unlucky – this is part of our ritual and usually nothing goes wrong" (Remote, Non-Indigenous, Passenger).

"It was a typical Thursday night. I'd been at the pub for 'Tradie's Night' and was on my way home. I cut the corner a bit sharp and went into the other lane … A car coming the other way smacked into me. It made a hell of a bang. The ambos and cops got there quick and took me off to hospital. The other bloke

was ok. They took some blood to see how drunk I was – not sure if I'm going to be charged yet" (Rural Non-Indigenous Driver).

"It was pay day the day before so we went to the ###### to grog up. They knew us there. A swag of us got there – we had six in our car this time. We do it lots of pay days. We don't drink drive though. We stay over and come back the next day. This time we didn't get much sleep … We were on our way back to ###### the next day … I think he might have fallen asleep just for a minute that fella. I sure felt it because I didn't have a seatbelt on – nobody did (Remote, Indigenous, Passenger).

5.4.2 Being a 'hero': "Showing off in front of my mates"

The second theme mirrors that recently reported by Fitts and Palk (2015) through interviews with 73 Indigenous drink drivers from Queensland and northern New South Wales. Several patients in the current sample attributed their behaviour to a bravado mentality, whereby they were 'being a hero' in front of their mates to seek approval. In one case, this even meant, taking the wrap for a mate.

"We smashed into a tree when we were doing 'burn outs' at ######. We go there a fair bit to get away from the cops. They took my mate's driver's licence off him and me too. It's part of becoming a man around here … We had a fair bit of grog and some gunga but we can handle it. It didn't make us crash. It's the dirt road we were doing 'burn outs' on" (Remote, Indigenous, Passenger).

"I was trying to be a hero … Showing off is part of ###### life. We were taken turns at strapping [speeding and fishtailing] *in this car we stole … The cops came when we crashed it. My mate was driving then but I said I was … He's got more to lose. He would have gone to jail" (Remote, Indigenous, Passenger).*

Interestingly, this theme was also present among the non-Indigenous sample, indicating that intentional risk-taking, or as one patient put it, *"pushing boundaries"* is probably part of the young rural male rite of passage.

> *"There were five of us and we were just doing some rough trail riding for fun ... We were racing – trying to outdo each other. I looked back to check on the bloke behind me and when I turned back towards the front I didn't have time to avoid this branch" (Rural, Non-Indigenous, Rider).*

> *"It's about who can do the biggest jump – being a hero ... I've done it lots of times before and familiar with the track but I just didn't give it enough revs ... I'll get it right next time" (Rural, Non-Indigenous, Rider).*

5.4.3 Hopelessness: "I don't care what happens to me"

The third motivational theme characterised a number of Indigenous narratives and infers a crucial discussion point in the final thesis chapter when recommending ways to improve Indigenous road safety. In line with the theoretical framework presented earlier (Shore & Spicer, 2004), it is clear that the behaviours and attitudes of Indigenous crash victims are influenced by life circumstances (notably employment status, hardship and transport disadvantage) and community-held beliefs regarding lack of control over one's fate. The following narratives elucidate this relationship and reinforce the significant role of excessive alcohol use as a symptom.

> *"I don't remember it real well ... I was drunk and passed out. Apparently I drove for a bit and stopped in someone's driveway. They* [the police] *had a witness and she said I was asleep and my head set the horn off in the car. I didn't even wake up then. I must have been really pissed! She woke me up – she was screaming. I tried to drive off ... I hit everything – their fence, their letterbox. I really messed up and then the car rolled over. I tried to get away but thought "what's the point". I'll just get in trouble for that too ... I banged my head, probably because I didn't have a seatbelt on. My girlfriend left me*

a while back and I can't get over it. No job, no money … I've been depressed and drinking all the time" (Rural, Indigenous, Driver).

"A fight broke out and I jumped out of the car to break it up. It got out of control. I fell on the footpath because I was drunk. We were all drunk. As my friend tried to drive away in a rush, she ran over my foot. It's just a way of life at ###### – people drink and fight and people get hurt. We have nothing else" (Remote, Indigenous, Pedestrian).

"You've got to get your family places and there's not many cars … We were piled in [overloaded and unrestrained] *like usual … What other option do we have" (Remote, Indigenous, Passenger).*

"My mate [the driver] *was drunk and has no licence … He might go to jail this time which will be real bad for his kids … It's just what happens when you don't have a job and nothing to do" (Remote, Indigenous, Passenger)*

Alcohol consumption patterns in Indigenous communities are typically bimodal, whereby people either drink at harmful levels or abstain in response to having seen its detrimental impact on health and wellbeing (ABS, 2013). Of great concern, patient narratives suggested that, even when people who were sober and in control (typically women) want to drive, there is resistance due to cultural reasons. Strategies to capitalise on these polarised views of alcohol use to influence behaviour are recommended in the final chapter of the thesis.

"I was walking down ###### Street just after dark and a 4WD hit me. Lucky he was going slow. The mirror on the car hit me and I got a sore shoulder. I know the driver and he was sorry but I was pissed off. He shouldn't be driving – he doesn't have a licence and was drunk. I don't like drinking – some people don't at all and others drink way too much. That's communities – there's no in between … He should have got his missus to drive, she doesn't drink … Fellas don't like women driving – it's a power thing" (Remote, Indigenous, Pedestrian).

"I was in labour and my husband was driving me to the hospital. I didn't want him to drive me because he was drunk and he doesn't have a licence but he just took the keys off his uncle … He had options but he has to drive. We were nearly there when we went over a hill and saw a car coming the other way. I'm not sure what happened but we hit it. We were going too fast for that road and I think they were too … My boyfriend broke his arm but I was more worried about the baby. I thought she would die before she was even born. It was a miracle that she was born ok. I would never have forgiven my boyfriend if our baby died" (Indigenous Passenger).

Figure 5.1 Photo taken at the crash site of a remote Indigenous patient

Together, these narratives support the assertions of Dockery (2010) and McPhail-Bell and Bond (2013). That is, road safety, like other health and injury outcomes, can only be improved by addressing the social disadvantage that underpins the "symptoms" (excessive alcohol use and risk-taking). The logical way forward is developing people –

increasing skills and employment prospects as a precursor to positive attitudinal change and safer behaviour on the road.

5.5 Insight into Road Safety Learning Opportunities

Given that the overarching goal of the research is to identify strategies to improve road safety outcomes for Indigenous and non-Indigenous people living in rural and remote areas, participants were asked *"How do you learn about road safety?"* This question was not asked in the RRRSS but was deemed necessary to identify possible 'change agents' and educational opportunities with the potential to positively influence behaviour. Being qualitative in nature, this question enabled the candidate to gauge the relative importance of influences/learning styles, as well as develop the meaning of concepts described by individuals. The responses were then classified to enable comparison. For example, through follow-up discussion, things like "*Who is the community in this context?"* and *"What type of media?"* were able to be clarified, facilitating an accurate interpretation of the results. *Table 5.3* below provides a breakdown of responses to this question by Indigenous status in order of frequency. Respondents could provide more than one response.

Table 5.3 – Road safety learning modes by Indigenous status

Indigenous (*n* = 80)	**Non-Indigenous (*n* = 149)**
• Community (*n* = 26)	• Personal experience/obs (*n* = 70)
• Media – radio and television (*n* = 25)	• Media – newspapers and television (*n* = 39)
• Family (*n* = 14)	• Family (*n* = 39)
• Licensing process (*n* = 11)	• Licensing process (*n* = 28)
• School (*n* = 10)	• Community (*n* = 22)
• Exposure to police/law (*n* = 6)	• Training programs (*n* = 17)
• Personal experience/obs (*n* = 5)	• School (*n* = 15)
• Roadside furniture (*n* = 4)	• Other written materials (*n* = 15)
• Training programs (*n* = 4)	• Roadside furniture (*n* = 4)
• Written materials (*n* = 0)	

• Nil or no comment (*n* = 22)	• Exposure to police/law (*n* = 3) • Nil or no comment (*n* = 7)

Among Indigenous patients, learning about road safety typically occurred through 'community' networks, media (typically local radio) and family. The 'community' networks described by Indigenous patients involved yarning at the local clinic or shop, sharing experiences with Elders and participation in cultural festivals and sporting events.

While family and media (mostly newspapers and television) were also important learning tools for non-Indigenous patients, 'community' networks were much less of an influence (15% compared to 33%) and took on a very different meaning. In this context, 'community' was typically road user specific (a community of practice). Communications were usually a fellow rider sharing stories re: innovations in personal protective equipment, *"the thrill of riding"* (risky situations) and *"war stories"* (previous crash history). This supports the work of Steinhardt (2014) which identified a 'cluster' of recently injured riders who are strongly committed to wearing safety gear, but engage in risks and recognise that *"crashes are inevitable and part of off-road riding"*.

The predominant learning mechanism for non-Indigenous participants (47%) was personal experience or observation, compared to six percent for their Indigenous counterparts. This supports Shore and Spicer's (2003) contention that non-Indigenous people are more likely to be influenced by 'individual' factors (what they know or believe), rather than 'community' or 'circumstantial' factors. When reporting a reliance on self, a number of qualifiers followed, often distancing themselves from their 'community' in the global sense:

- *"Most of us have had a bingle in the last 10 years – you learn from that."*
- *"I don't need any slogans."*
- *"I've been driving a tractor since I was six – I've had lots of practice."*
- *"I've spent most of my life driving in remote communities – I've taught myself."*
- *"I've watched lots of friends wreck their cars due to speed – I'm not like them. I'm better than that."*

- *"I've watched others crash and I think 'I'd never do that'. I'm a good driver."*
- *"My father was a driving instructor and I'm in emergency rescue. I've seen it all and know what I'm doing."*
- *"I've learnt from my experiences – that's the most important thing."*

Indigenous patients were much more likely than their non-Indigenous counterparts to report a lack of learning/training opportunities (28% compared to 5%). This finding was typically linked to comments like *"there's no training around here – no fellas to teach us mob"*, *"it's difficult to change the way things are – lots of other things come before road safety"*, or *"we learn by going to court, there's nothing else"*. Strategies to integrate road safety training with other health and wellbeing priorities is a theme revisited in the final chapter of the thesis. Both school and the licensing process appear to be underutilised opportunities to provide attitudinal road safety training, above and beyond road rules knowledge.

While written materials such as posters and flyers were a learning tool identified by 10 percent of the non-Indigenous sample, not one Indigenous participant acknowledged them as the way they learn about road safety. This finding supports a growing body of literature suggesting that conventional learning methods, reliant on literacy and comprehension skills, are not suitable for the Indigenous context. For example, Andrews and Hughes (1993; cited in Toby, 2001) suggested that Indigenous learning outcomes are more dependent on the strength of the relationship between the message deliverer and recipient than the content. Indigenous people learn by discussing and doing, not reading!

The contrasting learning styles and attitudes to learning of the Indigenous and non-Indigenous samples identified through this component of the research provide valuable insight into how behaviour change messages could be delivered to each group in the road safety domain.

5.6 Suggestions to Improve Road Safety

The RRRSS (Sheehan et al., 2008) gave both the hospital and a comparative roadside sample the opportunity to provide suggestions on what initiatives had the most

potential to reduce the road toll. Acknowledging that these samples comprised predominantly non-Indigenous respondents, the prominent themes were as follows:

- Improvements to road infrastructure – increased signage, provision of more clear zones, overtaking lanes and rest areas, widening, sealing and resurfacing, routine maintenance (fixing potholes), grade separation;
- Increased driver management, education and training – particularly defensive driving, additional restrictions and requirements for novice drivers, school-based road safety education, targeted media campaigns; and
- Greater access to courtesy buses and/or public transport options as a means of reducing drink driving.

Through an open-ended question, *Study 2* of this research also sought to identify patients' ideas on the most effective way to reduce the road toll. Like the RRRSS (Sheehan et al., 2008), the most common suggestion was to *"fix the roads"* (sealing, widening, grading) or improve infrastructure, primarily through the provision of more signage, rest areas, clear zones and overtaking lanes. Despite an established relationship between design factors like improved alignment and increased curve radii and positive road safety outcomes (Turner & Makwasha, 2012), only a couple of respondents in either the RRRSS sample or *Study 2* cited these as road safety priorities.

Despite a continued lack of evidence (Beanland et al., 2011; Lund & Williams, 1985), there was a strong perception among the current sample that *"defensive driving works"* and has significant potential, particularly for novice drivers. Like the RRRSS, the provision of *"alternative transport"* (courtesy bus services) as a means of reducing the temptation to drive or walk after drinking was commonly cited as the preferred strategy to reduce the road toll, across all four groups of interest.

The major difference between the Indigenous and non-Indigenous samples centred on capacity development. Unlike non-Indigenous patients who predominantly recommended environmental changes or increased drink driving enforcement, the most frequently mentioned road safety priority for Indigenous patients was the need for increased support to become licensed drivers. Sample responses included:

- *"Help us to get licences and teach us to be safe at the same time".*
- *"I want a licence, but I'll never get one – Who's going to help me?"*
- *"Licensing and road safety for remote communities. It'll help us to stay safe and get real jobs. The cops could help with this".*
- *"Training so we can get a licence and get a job. We'll be less bored and it'll give us something to do other than drinking".*

In terms of educational priorities, both Indigenous and non-Indigenous patients thought the focus should be on wearing seatbelts and challenging drink driving. Very few patients thought the focus should be on safe speeds or not using mobile phones. This supports recent research by McLean (2012) which suggests that, unlike drink driving, speeding and mobile phone use are socially desirable behaviours. Many people engage in them and they are associated with reward and low perceived risk. Challenging this mindset constitutes a significant road challenge.

5.7 The Role of Enforcement and Policing

Historically, the relationship between police and Indigenous communities has been volatile, largely stemming from the legacy of colonisation (Eckerman, 1998). However, Indigenous perceptions of police are improving as a product of more Indigenous officers in the service, the introduction of the *Queensland Aboriginal and Torres Strait Islander Policing* (QATSIP) program and the establishment of the Cross-Cultural Advisory Unit. These changes have resulted in increased cultural awareness training for mainstream officers and greater involvement of Indigenous Community Police in the delivery of policing services (Fox, 2010, personal communication).

Study 2 provided evidence to support this. When asked if they thought *"police should spend more or less time on road safety and traffic issues"*, the proportion of Indigenous patients responding 'same' or 'more' (84%) was comparable to their non-Indigenous counterparts (87%). The follow-up question asking patients to specify *"what traffic or road safety issues should police focus on"* revealed some interesting differences between groups. Non-Indigenous patients thought police should focus on *"catching the bad guys"* (young hoons and repeat drink driving offenders) that is other drivers.

Indigenous patients also saw a need for increased targeting of drink drivers, but also in an increased *"supportive role"* providing more licensing and road safety training. There was significantly less interest by either group in increased speed enforcement.

5.8 Emergency Response and Retrieval Experiences

The following chapter will make metric comparisons of response times and treatment pathways for rural and remote patients. However, as a prelude, the candidate deemed it important to identify two qualitative themes regarding the retrieval process and perceptions of treatment clinics.

5.8.1 Locals as first responders: "Lucky my mate was there"

Given the vast and informal road network in rural and remote areas of Queensland, it's not surprising that access to emergency services is not always timely or even possible. Notification in many instances is difficult due to inadequate mobile phone coverage. So, in the event of a crash, there is often a reliance on locals or people passing by as first responders. The retrieval descriptions provided by patients highlighted the importance of this support network:

- *"Some guys we'd passed not long before … put me in their 4WD, splinted my leg and drive me to ###### clinic four and half hours away".*
- *"Lucky my mates came along or I'd be cactus".*
- *"I'm thankful for these strangers, they drove me nearly two hours to the clinic … Wonderful people".*
- *"Mates stop and help – that's what we do out here".*
- *"People I don't know came along and kept me calm".*
- *"You can't just ring an ambulance and they turn up, you need to wait until someone comes along".*

5.8.2 'Did not wait' for treatment cases: "They're not friendly places"

In Australasia, the term 'did not wait' (DNW) describes instances where patients leave a health facility before receiving medical treatment (Hall & Jelinek, 2007). Medical

literature on DNW cases shows that Indigenous people are 1.5 times more likely to leave prior to seeing a medical practitioner and 2.5 times more likely to discharge themselves against medical advice than non- Indigenous people (Wright, 2009). This study provided evidence of the DNW phenomenon for the following reasons:

- *"I felt ok, so why hang around".*
- *"I wasn't too banged up so I left".*
- *"They're not friendly places".*
- *"It's shame – you get asked lots of questions and get judged".*
- *"Let the heat die down before I got checked out properly".*
- *"I didn't wait for treatment – I panicked. I wanted to get my story straight before my bosses caught up with me. I had some more drinks which was stupid. … I went back to the clinic in the morning because I started to feel worse. Please keep what I tell you quiet. I'm going to lose my job – the grog has cost me".*

To a lesser degree, the post-crash descriptions highlighted some resourcing and skillset deficiencies (be it real or perceived) associated with smaller health facilities. With no criticism intended, the following case highlighted the inability of smaller facilities to diagnose and treat symptoms under some circumstances.

> *"I went to ###### hospital … My stomach was bruised from where it hit the handlebars. They said I'd be ok and gave me some painkillers. Six days later the pain was too much. I went back and was flown to Brisbane straightaway … My liver was very badly hurt* [lacerated]. *They reckon I'll be in here for weeks" (Remote, Indigenous, Cyclist).*

5.09 Chapter Summary

Through a thematic analysis of crash narratives and responses to other qualitative questions contained in the health facility surveys *(see Appendices K, L, M and N)*, the study reported in this chapter has provided an improved understanding of Indigenous road

safety from the patients' perspective. A summary of key findings against the aims for *Study 2* follow.

Firstly, the road user profile was similar to that shown in the literature (Falster et al. 2013; Harrison & Berry, 2010), in that Indigenous patients were more likely to passengers or pedestrians, while non-Indigenous patients were more likely to be drivers or riders. In terms of crash causation *(Research Aim 1)*, behavioural factors figured prominently in both Indigenous and non-Indigenous crash narratives with alcohol, distraction and inappropriate speed featuring. Often the crash involved a combination of these. With regard to culpability, Indigenous patients were more likely to assume responsibility for their crash than their non-Indigenous counterparts who typically ascribed blame to an external factor – a distraction or the road. Closer examination of the contributing circumstances to determine the impact of Indigenous status and remoteness *(Research Aim 2)* is explored in the following chapter.

Secondly, to better understand crashes in their social context (Heil, 2006), the study explored the motivations underpinning risky road safety behaviours and decisions leading to crashes *(Research Aim 3)* and opportunities for change *(Research Aim 4)*. To this end, the crash narratives highlighted two consistent motivations for both Indigenous and non-Indigenous patients: (i) social acceptance of risk as part of the 'rural way of life'; and (ii) rural bravado through "being a hero" as a young male rite of passage. A third theme, described by Indigenous patients only, related to feelings of hopelessness due to poor life circumstances (poor, bored, not having a job) which manifest in excessive alcohol and risky behaviour, thus elevating crash risk. There was evidence from the interviews that those involved found the re-telling of the experience to be therapeutic. This finding is discussed as a strength of the research in Chapter 8.

The prominent themes identified in *Study 2a* were subsequently used to inform the quantitative survey analysis component of the research *(Study 2b)* designed to gauge the relative influence of Indigenous status and remoteness on key behaviours and attitudes that forms the basis of *Chapter 6*. Additional cases from the *Rural and Remote Road Safety Study* (RRRSS) were included in these study analyses to increase statistical power.

In terms of emergency response and retrieval *(Research Aim 5)*, patients' descriptions highlighted the importance of locals and passers-by in the emergency

response and provided evidence of the 'did not wait' for treatment phenomenon related to Indigenous patients in the literature (Wright, 2009). This finding provides rationale for and support Road Trauma Support Services.

The findings presented in this chapter provide strong support for a confidential process whereby crash patients can "tell their story" as a precursor to improved health promotion strategies that may "work for them". Existing trust and the fact that the candidate was already known by participating communities (in a program delivery capacity) also undoubtedly aided the sharing process and willingness to admit culpability.

There are definite policy implications of the differences in the experience (as reported) of Indigenous and non-Indigenous respondents. These are examined in more detail in the final chapter of this thesis. A key challenge that is clearly demonstrated in the comments given by both the Indigenous and non-Indigenous respondents is that education in road safety basics is insufficient for safe driving. Time and again respondents commented on their failure to observe drink driving controls, speeding too fast for the road conditions and failure to use personal protective equipment. None of these was identified as innovative, but as behaviour that they later regretted, it is clear that better decisions on their part could have improved the outcome. The challenge for safety is to move this knowledge into positive behaviour change. In rural and remote settings, this is made even more difficult by the limited use of enforcement, a point also made in the interview materials. Other priorities for intervention based on the findings of *Study 2a* include: (i) challenging the socially desirable but risky behaviours of speeding and using a mobile phone while driving; (ii) improving safety audit controls for providers of off-road riding; and (iii) examining ways to address perceived 'hopelessness' among Indigenous people through improvements to the licensing process, leading to better life circumstances.

Using key themes identified through the qualitative analyses discussed here, the next chapter (describing the results of *Study 2b*) examines the individual and collective impact of Indigenous status and remoteness on a series of behavioural, circumstantial and attitudinal variables. Patient experiences of emergency response and retrieval, as well as the relationship between road function, speed environment and crash nature, are also lines of inquiry. The findings from both the qualitative *(Chapter 5)* and quantitative analyses

(Chapter 6) against the five aims of the *Study 2* are brought together in *Chapter 8* through the conceptual model for the whole research program to draw conclusions about the proximal and distal causation of rural and remote road trauma in North Queensland.

Chapter 6: Quantitative Comparisons on Key Behaviours, Circumstances and Attitudes by Indigenous Status and Remoteness (Study 2b Results)

6.1 Introductory Comments

The previous chapter presented the results of *Study 2a* – a qualitative examination of 229 crash narratives from patients recruited through rural and remote facilities over an 18-month period. Using a modified recruitment protocol, survey instruments and an enhanced narrative process, Indigenous participation increased and these interviews were able to determine significantly more behavioural contributing factors per crash, than a previous study examining 307 narratives (matched to police records) collected through the larger Rural and Remote Road Safety Study (Blackman et al., 2006).

More so than previous research, the thematic analysis suggested that rural and remote crashes involving injury are typically the product of a 'cluster' of risky behaviours, rather than a single cause. For example, excessive alcohol use was often linked to inappropriate speed for conditions, fatigue and/or not using personal protective equipment. In addition, the qualitative aspects of the research elicited valuable insights into the motivations underlying risky behaviours and indirectly some possible protective factors. Together, these observations provide strong support for a confidential methodological process, whereby crash patients can "tell their story" as a precursor to improved health promotion strategies that may "work for them". Existing trust and the fact that the candidate was already known by participating communities (in a program delivery capacity) also undoubtedly aided the sharing process and willingness to admit culpability.

Study 2b – described in this chapter – utilises themes identified through the qualitative analysis to focus on variables of interest for statistical comparison on the basis of Indigenous status and remoteness. This, coupled with the knowledge elicited on motivational influences, learning styles and crash nature, provides a comprehensive and in-depth platform for identifying potential 'change agents' within communities and ways to minimise risk by reducing exposure. Recommendations to improve rural and remote road safety for both Indigenous and non-Indigenous populations based on these findings, is the focal point of the discussion component in the final chapter of the thesis.

After briefly describing characteristics of the sample *(Section 6.2)*, this chapter specifies the variables of interest and outlines the quantitative analysis framework to examine the individual and cumulative impact of Indigenous status and remoteness of residency or crash location *(Section 6.3)*. Findings from statistical analyses are grouped based on their nature, starting with comparisons on behavioural variables *(Section 6.4)*, followed by life circumstances *(Section 6.5)* and relevant attitudes *(Section 6.6)*. The chapter concludes with basic information on emergency response and retrieval *(Section 6.7)* to complement narrative descriptions in the previous chapter, an overview of crash nature *(Section 6.8)* and key findings related to the research aims *(Section 6.9)*.

6.2 Descriptive Characteristics of the Sample

To increase the sample size and statistical power for the quantitative analysis, the 229 cases recruited through the PhD health facility data collection were supplemented with those from the 'Interviewed Casualty Study' in the RRRSS, providing a total sample of 620 cases. Given that the primary focus of the research is to examine socio-cultural factors influencing behaviour and crash involvement, rather than injury prevalence, only basic demographic information is presented below. To that end, sex and age are not used as independent variables in any subsequent analyses.

Table 6.1 Characteristics of the quantitative sample by Indigenous status

Sample characteristic	***Indigenous (n = 114)***	***Non-Indigenous (n = 506)***
Sex	Male = 81 (71%) Female = 33 (29%)	Male = 390 (77%) Female = 116 (23%)
Age (mean)	35 years	39 years
Road User Type	Driver = 42 (37%) Rider = 7 (6%) Passenger = 45 (40%) Pedestrian = 14 (12%) Cyclist = 6 (5%)	Driver = 167 (33%) Rider = 220 (43%) Passenger = 89 (18%) Pedestrian = 11 (2%) Cyclist = 19 (4%)
ARIA+ Crash	72% remote	34% remote
ARIA+ Residency	70% remote	22% remote

6.3 Variables of Interest and Analysis Framework

Study 2b constitutes the second stage in a mixed methods design. The first stage *(Study 2a)* allowed patients through a crash narrative to articulate a number of behavioural, circumstantial and attitudinal precursors to the index crash. This chapter statistically compares these precursors to identify the differences based on Indigenous status and/or remoteness of residence or crash location. Prior to any analyses, the candidate had to recode a number of items on the four RRRSS datasets (Driver/Rider, Passenger, Cyclist and Pedestrian) to facilitate the successful merging of files into a combined dataset containing all 620 cases.

Table 6.2 provides the framework for all quantitative comparisons described in this chapter. Through a cross tabulation, each dependent 'variable of interest' is compared by both Indigenous status and remoteness. The remoteness comparison was based on either residency or crash location, dependent on what factor was deemed more likely to influence the 'variable of interest'. For example, behaviours like engaging in drink driving episodes and alcohol use are more likely to be influenced by a person's residency, while speed compliance and distraction can be related to the crash location.

Table 6.2 Framework for quantitative comparisons

Variable of interest	***Remoteness comparison***
Behavioural Precursors	
• Alcohol use and dependency	Residency
• Drink driving episode in the last month	Residency
• Passenger of drink driver in the last month	Residency
• Drug use in 24 hours prior to crash	Residency
• Crash history	Residency
• Distracted prior to crash	Crash location
• Use of PPE at time of crash	Crash location
• Speed compliance at time of crash	Crash location
• Fatigued at time of crash	Crash location

Circumstantial Precursors	
• Licence status	Residency
• Employment status	Residency
• General health	Residency
Attitudinal Precursors	
• Perceived locus of control	Residency
• Concern for road safety	Residency
• Concern for employment	Residency
• Concern for family	Residency
• Similarity to community	Residency

Given that the dependent variables for comparison were mostly categorical (yes/present or no/absent) or recoded as such, the majority of analyses were logistic regressions to determine the individual impact of Indigenous status and remoteness as well any interaction effects. Frequency analyses were restricted to the additional sample (n = 229) when comparable information through the RRRSS was not available. Statistical analyses were conducted using Statistical Package for Social Sciences (SPSS) software.

6.4 Behavioural Precursors

The results of the quantitative analyses for each of the behavioural precursors are described in this section. For the purposes of comparing rural versus remote only, tourists and persons identifying as residing in urban/metropolitan areas have been omitted from analyses. The number of valid cases in each analysis also differs due to missing cases and the applicability of some items to various road user groups. For example, pedestrian cases were omitted from the analysis examining the use of personal protective equipment at the time of the crash.

6.4.1 Alcohol use and dependency

The original intention was to develop an algorithm to estimate the blood alcohol concentration (BAC) of patients at time of crash based on their recollection of alcohol drinks consumed in the 24 hours preceding the crash and time of last drink. Unfortunately, the quality of the self-reported information collected on this item was incomplete for many cases. In the absence of accurate consumption information, patients' AUDIT-C scores were used to provide insight into the role alcohol plays for Indigenous and non-Indigenous people in rural and remote areas. AUDIT-C has been shown to be a reliable predictor of regular alcohol use and the involvement of alcohol in crashes (Marques et al., 2009; Steinhardt et al., 2006). *Table 6.3* compares mean AUDIT-C scores by Indigenous status and remoteness of residency.

Table 6.3 Comparison of AUDIT-C means by Indigenous status and remoteness of residency

			95% Confidence Interval	
	Mean	*Std. Error*	*Lower Bound*	*Upper Bound*
Remote				
Indigenous	6.91	0.38	6.16	7.67
Non-Indigenous	5.92	0.37	5.20	6.64
Rural				
Indigenous	6.27	0.59	5.11	7.42
Non-Indigenous	5.00	0.20	4.58	5.34

AUDIT C scores were compared by analysis of variance (ANOVA) across the two variables of remoteness of residency and Indigenous status. As shown in *Table 6.4*, the AUDIT-C mean was significantly higher in remote areas compared to rural areas ($F(3,511) = 3.90$, $p < .05$). Similarly, the AUDIT-C mean was significantly higher for Indigenous patients than non-Indigenous patients ($F(3,511) = 7.96$, $p < .01$).

Table 6.4 ANOVA of AUDIT-C means by Indigenous status and remoteness

	Type III Sum of Squares	df	Mean Square	F	Signif.
Remoteness	45.91	1	45.91	3.90	0.05
Indigenous Status	93.66	1	93.66	7.96	0.01
Interaction	1.77	1	1.77	0.15	0.70
Error	6014.82	511	11.77		

To gain a greater understanding of the role that alcohol plays in rural and remote communities, an examination of the drinking profile of Indigenous and non-Indigenous patients was conducted. *Figure 6.1* below shows the frequency of Indigenous patients reporting each AUDIT-C score. The bimodal distribution supports national consumption surveys (ABS, 2013; AIHW, 2011) which suggest that Indigenous people either abstain from alcohol or drink at very harmful levels. In essence, there is only a very small 'social drinking class'.

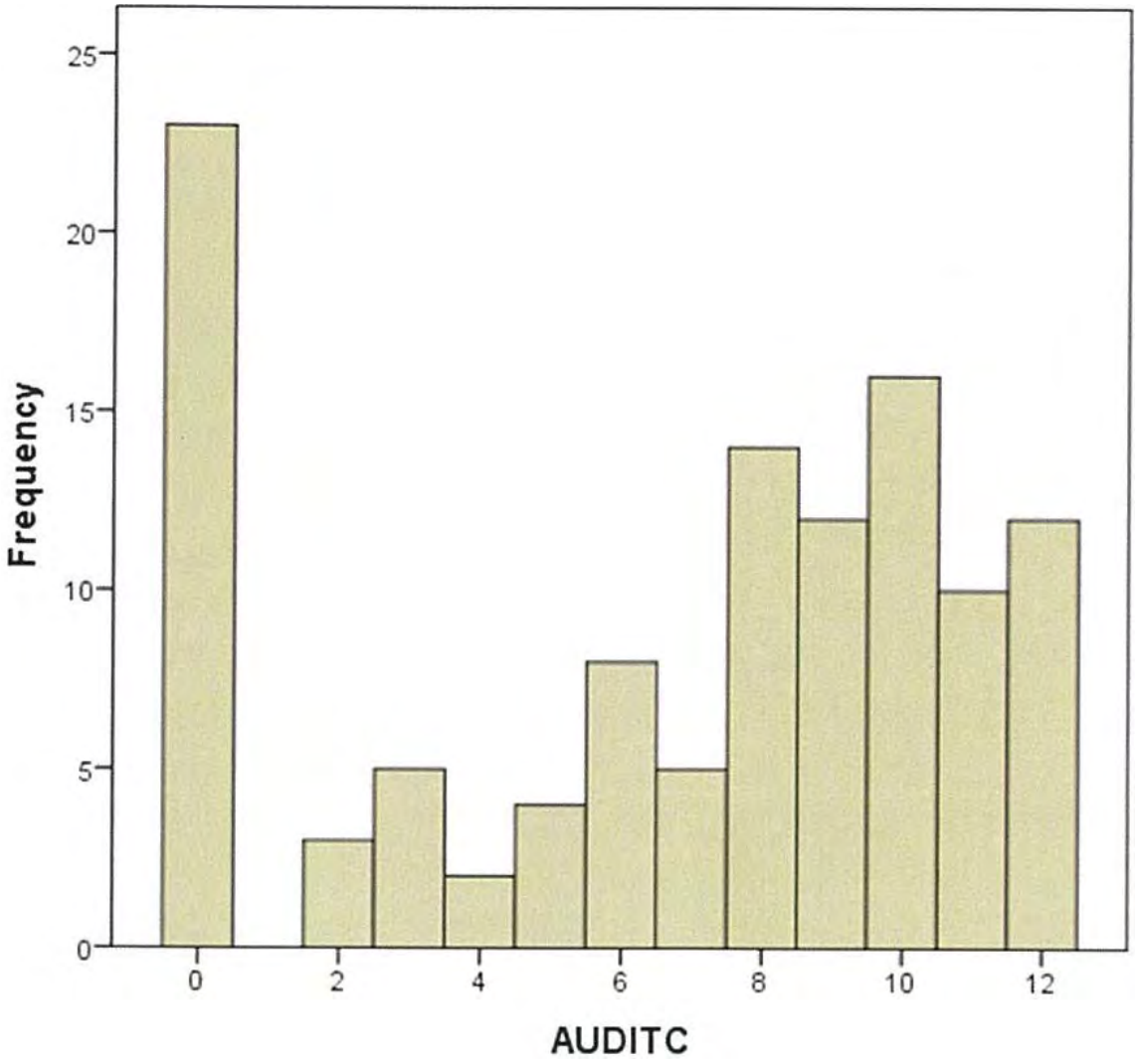

Figure 6.1 Number of Indigenous patients by AUDIT-C score

In contrast, *Figure 6.2* shows that the AUDIT-C distribution for non-Indigenous patients is more evenly spread with majority of patients scoring in the three to eight range. By comparison, 20.2 percent of Indigenous sample abstained from drinking compared to 9.8 percent of the non-Indigenous sample. Similarly, 33.3 percent of the Indigenous sample recorded an AUDIT-C score of 10 or greater, compared to 7.9 percent of the non-Indigenous sample.

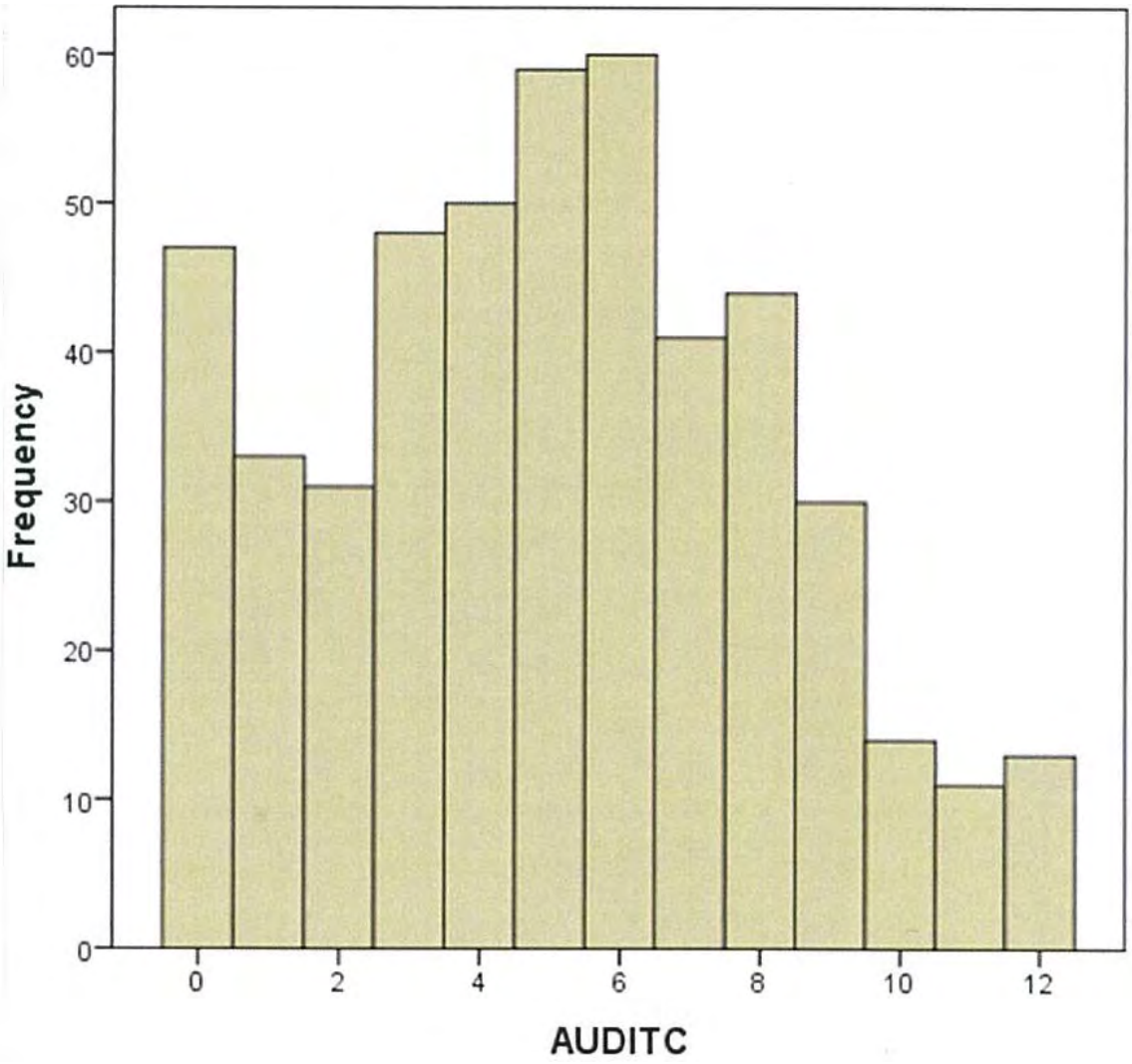

Figure 6.2 Number of non-Indigenous patients by AUDIT-C score

Although the AUDIT-C distributions were quite different for Indigenous and non-Indigenous patients, *Study 2b* provides strong evidence to support Henderson's (2010) assertion that alcohol is central to the 'rural way of life'. Using the AUDIT-C criteria for harmful drinking (score of ≥ 4 for men and ≥ 3 for women) outlined in Bush et al. (1998), *Table 6.5* shows that that all four groups of interest are consuming alcohol at harmful levels which literature has shown to be associated with higher crash risk (Baker et al., 2002).

Table 6.5 Harmful drinking by Indigenous status and remoteness

Valid Cases = 514	Indigenous	Non-Indigenous	Total
Remote			
Harmful	60 (75%)	68 (78%)	128 (77%)
Not harmful	20 (25%)	19 (22%)	39 (23%)
Rural			
Harmful	25 (74%)	211 (67%)	236 (68%)
Not harmful	9 (26%)	102 (33%)	111 (32%)
Total			
Harmful	85 (75%)	279 (70%)	364 (71%)
Not harmful	29 (25%)	121 (30%)	150 (29%)

6.4.2 Drink driving episode in the previous month

Based on the Australian standard (NHMRC, 2003), for the purposes of the research, a drink driving episode was defined as driving after consuming two or more alcoholic drinks in the hour prior. The proportion of Indigenous patients who reported a drink driving episode in the last month was 40.5 percent of those living in a remote area and 38.2 percent living in a rural area. By comparison, the proportion of non-Indigenous patients who reported the behaviour was 29.9 percent of those living in a remote area and 21.4 percent of those living in a rural area. Among all Indigenous patients, 39.8 percent reported drink driving in the previous month compared to 23.2 percent among the non-Indigenous. Overall, 26.8 percent of the sample with eligible residency reported drink driving in the previous month.

NB: The format in the following two tables will be followed for all dichotomous variables of interest.

Table 6.6 Self-reported drink driving in previous month by Indigenous status and remoteness of residency

		Remoteness of residency		
Valid Cases = 523		*Remote*	*Rural*	Total
Indigenous				
	Yes	32 (40.5%)	13 (38.2%)	45 (39.8%)
	No	47 (59.5%)	21 (61.8%)	68 (60.2%)
Non-Indigenous				
	Yes	26 (29.9%)	69 (21.4%)	95 (23.2%)
	No	61 (70.1%)	254 (78.6%)	315 (76.8%)
Total				
	Yes	58 (34.9%)	82 (23.0%)	140 (26.8%)
	No	108 (65.1%)	275 (77.0%)	383 (73.2%)

From the logistic regression there was no significant interaction effect for the two predictor variables. There was, however, a significant main effect for Indigenous status whereby Indigenous patients engaged in the behaviour at higher rate (O.R. = 2.28, *Table 6.7*).

Table 6.7 Logistic regression of drink driving in previous month

	B	S.E.	Wald	df	Signif.	O.R.
Non-Indigenous	_	_	_	_	_	1.00
Indigenous	.824	.378	4.745	1	.029	2.28
Rural	_	_	_	_	_	1.00
Remote	.450	.271	2.769	1	.096	1.57
Interaction	-.355	.500	.504	1	.478	0.70

6.4.3 Passenger of a drink diver in the previous month

The proportion of Indigenous patients who reported being a passenger of a drink driver in the previous month was 75.0 percent of those living in a remote area and 45.5 percent living in a rural area. By comparison, the proportion of non-Indigenous patients who reported the behaviour was 28.7 percent of those living in a remote area and 22.6 percent of those living in a rural area. Among all Indigenous patients, 66.4 percent reported being a passenger of a drink driver in the previous month compared to 23.2 percent among the non-Indigenous. Overall, 33.1 percent of the sample with eligible residency reported being a passenger of drink driver in the month preceding their crash.

Table 6.8 Passenger of a drink driver in previous month by Indigenous status and remoteness of residency

		Remoteness of residency		
Valid Cases = 519		*Remote*	*Rural*	Total
Indigenous				
	Yes	60 (75.0%)	15 (45.5%)	75 (66.4%)
	No	20 (25.0%)	18 (54.5%)	38 (33.6%)
Non-Indigenous				
	Yes	25 (28.7%)	72 (22.6%)	95 (23.2%)
	No	62 (71.3%)	247 (77.4%)	315 (76.8%)
Total				
	Yes	85 (50.9%)	87 (24.7%)	172 (33.1%)
	No	82 (49.1%)	265 (75.3%)	347 (66.9%)

From the logistic regression there was no significant interaction effect for the two predictor variables. There was, however, a significant main effect for Indigenous status whereby Indigenous patients engaged in the behaviour at higher rate (O.R. = 2.86, *Table 6.9*).

Table 6.9 Logistic regression of DD passenger episodes in previous month

	B	S.E.	Wald	df	Signif.	O.R.
Non-Indigenous	_	_	_	_	_	1.00
Indigenous	1.050	.374	7.872	1	.005	2.86
Rural	_	_	_	_	_	1.00
Remote	.324	.272	1.421	1	.233	1.38
Interaction	.956	.513	3.479	1	.062	2.60

6.4.4 Drug use prior to crash

The proportion of Indigenous patients who reported taking illegal drugs in the 24 hours prior to their crash was 14.1 percent of those living in a remote area and 9.1 percent living in a rural area. By comparison, the proportion of non-Indigenous patients who reported the behaviour was 13.5 percent of those living in a remote area and 5.4 percent of those living in a rural area. Among all Indigenous patients, 12.6 percent reported taking illegal drugs in the 24 hours prior to their crash compared to 7.2 percent among the non-Indigenous. Overall, 8.4 percent of the sample with eligible residency reported the behaviour with marijuana the prominent drug used.

Table 6.10 Drug use in the 24 hours prior to crash by Indigenous status and remoteness of residency

		Remoteness of residency		
Valid Cases = 513		*Remote*	*Rural*	Total
Indigenous				
	Yes	11 (14.1%)	3 (9.1%)	14 (12.6%)
	No	67 (85.9%)	30 (90.9%)	97 (87.4%)
Non-Indigenous				
	Yes	12 (13.5%)	17 (5.4%)	29 (7.2%)
	No	77 (86.5%)	296 (94.6%)	373 (92.8%)
Total				
	Yes	23 (13.8%)	20 (5.8%)	43 (8.4%)
	No	144 (86.2%)	326 (94.2%)	470 (91.6%)

From the logistic regression there was no significant interaction effect for the two predictor variables. There was, however, a significant main effect for remoteness of residency whereby remote patients engaged in the behaviour at higher rate (O.R. = 2.71, *Table 6.11*). Increased propensity to engage in the behaviour in remote areas could be the outcome of reduced exposure to enforcement.

Table 6.11 Logistic regression of drug use in 24 hour period prior to crash

	B	S.E.	Wald	df	Signif.	O.R.
Non-Indigenous	_	_	_	_	_	1.00
Indigenous	.555	.655	.717	1	.397	1.74
Rural	_	_	_	_	_	1.00
Remote	.998	.398	6.286	1	.012	2.71
Interaction	-.502	.794	.400	1	.527	0.61

6.4.5 Crash history

The proportion of Indigenous patients who reported being involved in a crash within the previous five years was 32.5 percent of those living in a remote area and 19.8 percent living in a rural area. By comparison, the proportion of non-Indigenous patients who reported the behaviour was 11.8 percent of those living in a remote area and 24.1 percent of those living in a rural area. Among all Indigenous patients, 26.3 percent reported being involved in a crash within the previous five years compared to 23.1 percent among the non-Indigenous. Overall, 23.8 percent of the sample with eligible residency reported being involved in a crash within the previous five years.

Table 6.12 Crash involvement in the previous five years by Indigenous status and remoteness of residency

		Remoteness of residency		
Valid Cases = 529		*Remote*	*Rural*	Total
Indigenous				
	Yes	26 (32.5%)	4 (11.8%)	30 (26.3%)
	No	54 (67.5%)	30 (88.2%)	84 (73.7%)
Non-Indigenous				
	Yes	18 (19.8%)	78 (24.1%)	96 (23.1%)
	No	73 (80.2%)	246 (75.9%)	319 (76.9%)
Total				
	Yes	44 (25.7%)	82 (22.9%)	126 (23.8%)
	No	127 (74.3%)	276 (77.1%)	403 (76.2%)

From the logistic regression there was a significant interaction effect for the two predictor variables (O.R. = 4.64, *Table 6.13*) such that remote Indigenous patients and rural non-Indigenous patients reported crash involvement in the previous five years more than the other two groups. The main effects for both Indigenous status and remoteness of residency were not significant.

Table 6.13 Logistic regression of crash involvement in the previous five years

	B	S.E.	Wald	df	Signif.	O.R.
Non-Indigenous	_	_	_	_	_	1.00
Indigenous	-.866	.548	2.500	1	.114	0.42
Rural	_	_	_	_	_	1.00
Remote	-.251	.293	.734	1	.392	0.78
Interaction	1.535	.653	5.529	1	.019	4.64

6.4.6 Distracted prior to the crash

The proportion of Indigenous patients who reported being distracted prior to the crash was 43.8 percent of those who crashed in a remote area and 64.5 percent for those who crashed in a rural area. By comparison, the proportion of non-Indigenous patients who reported the behaviour was 33.5 percent of those who crashed in a remote area and 39.2 percent of those who crashed in a rural area. Among all Indigenous patients, 49.5 percent reported being distracted prior to the crash compared to 37.2 percent among the non-Indigenous. Overall, 39.6 percent of the sample with eligible crash location reported being distracted prior to the crash. Differences in the type of distractions identified by patients crashing in remote and rural settings were illustrated in the narratives discussed in the previous chapter.

Table 6.14 Distraction prior to crash by Indigenous status and remoteness of crash location

		Remoteness of crash location		
Valid Cases = 584		*Remote*	*Rural*	Total
Indigenous				
	Yes	35 (43.8%)	20 (64.5%)	55 (49.5%)
	No	45 (56.2%)	11 (35.5%)	56 (50.5%)
Non-Indigenous				
	Yes	56 (33.5%)	120 (39.2%)	176 (37.2%)
	No	111 (66.5%)	186 (60.8%)	297 (62.8%)
Total				
	Yes	91 (36.8%)	140 (41.5%)	231 (39.6%)
	No	156 (63.2%)	197 (58.5%)	353 (60.4%)

From the logistic regression there was no significant interaction effect for the two predictor variables. There was, however, a significant main effect for Indigenous status whereby Indigenous patients reported having been distracted at a higher rate (O.R. = 2.81, *Table 6.15*).

Table 6.15 – Logistic regression of distraction prior to the crash

	B	S.E.	Wald	df	Signif.	O.R.
Non-Indigenous	_	_	_	_	_	1.00
Indigenous	1.036	.393	6.943	1	.008	2.81
Rural	_	_	_	_	_	1.00
Remote	-.246	.201	1.491	1	.222	0.78
Interaction	-.603	.482	1.567	1	.211	0.55

6.4.7 Use of personal protective equipment at time of crash

For the purpose of this analysis, use of personal protective equipment (PPE) required motorcyclists, pillions and pedal cyclists to be wearing a helmet and drivers and passengers to be wearing a seatbelt. For a case to be classed as using PPE, all occupants were required to comply. The proportion of Indigenous patients who were not using PPE was 60.6 percent of those who crashed in a remote area and 33.3 percent for those who crashed in a rural area. By comparison, the proportion of non-Indigenous patients who reported the behaviour was 23.6 percent of those who crashed in a remote area and 18.3 percent of those who crashed in a rural area. Among all Indigenous patients, 53.1 percent reported non-compliance with PPE requirements at the time of the crash compared to 20.1 percent among the non-Indigenous. Overall, 25.8 percent of the sample with eligible residency reported non-compliance with PPE requirements at the time of the crash.

Table 6.16 Using PPE at time of crash by Indigenous status and remoteness of crash location

		Remoteness of crash location		
Valid Cases = 566		*Remote*	*Rural*	Total
Indigenous				
	Yes	28 (39.4%)	18 (66.7%)	46 (46.9%)
	No	43 (60.6%)	9 (33.3%)	52 (53.1%)
Non-Indigenous				
	Yes	120 (76.4%)	254 (81.7%)	374 (79.9%)
	No	37 (23.6%)	57 (18.3%)	94 (20.1%)
Total				
	Yes	148 (64.9%)	272 (80.5%)	420 (74.2%)
	No	80 (35.1%)	66 (19.5%)	146 (25.8%)

From the logistic regression there was no significant interaction effect for the two predictor variables or main effects for Indigenous status or remoteness of crash location. However, the main effect for Indigenous status was approaching significance.

Table 6.17 Logistic regression of PPE use at time of crash

	B	S.E.	Wald	df	Signif.	O.R.
Non-Indigenous	_	_	_	_	_	1.00
Indigenous	-.801	.434	3.411	1	.065	0.45
Rural	_	_	_	_	_	1.00
Remote	-.318	.238	1.776	1	.183	0.73
Interaction	-.804	.531	2.291	1	.130	0.45

6.4.8 Speed compliance at time of crash

The proportion of Indigenous patients who reported travelling over the speed limit at the time of the crash was 30.3 percent of those who crashed in a remote area and 18.5 percent of those who crashed in a rural area. By comparison, the proportion of non-Indigenous patients who reported the behaviour was 13.6 percent in remote crash locations and 12.1 percent in rural crash locations. Among all Indigenous patients, 26.9 percent

reported traveling over the posted speed limit compared to 12.6 percent among the non-Indigenous. Overall, 15.2 percent of the sample with eligible crash location reported travelling over the speed limit at the time of crash.

Table 6.18 Compliance with the speed limit at time of crash by Indigenous status and remoteness of crash location

	Remoteness of crash location		
Valid Cases = 513	*Remote*	*Rural*	Total
Indigenous			
Yes	46 (69.7%)	22 (81.5%)	68 (73.1%)
No	20 (30.3%)	5 (18.5%)	25 (26.9%)
Non-Indigenous			
Yes	121 (86.4%)	246 (87.9%)	367 (87.4%)
No	19 (13.6%)	34 (12.1%)	53 (12.6%)
Total			
Yes	167 (81.1%)	268 (87.3%)	435 (84.8%)
No	39 (18.9%)	39 (12.7%)	78 (15.2%)

From the logistic regression there was no significant interaction effect for the two predictor variables or main effects for Indigenous status or remoteness of crash location. Given the prominence of speed as a contributing factor in the crash narratives, this finding could imply that rural speed limits, including the default, are too high for conditions. Speed management in both the rural and remote context is addressed in *Chapter 8*.

Table 6.19 Logistic regression of speed compliance at time of crash

	B	S.E.	Wald	df	Signif.	O.R.
Non-Indigenous	_	_	_	_	_	1.00
Indigenous	.497	.528	.887	1	.346	1.64
Rural	_	_	_	_	_	1.00
Remote	.128	.307	.173	1	.678	1.14
Interaction	.521	.642	.660	1	.417	1.68

6.4.9 Fatigued at time of crash

The proportion of Indigenous patients who reported fatigue as a contributing factor was 30.4 percent of those who crashed in a remote area and 39.3 percent of those who crashed in a rural area. By comparison, the proportion of non-Indigenous patients who reported the behaviour was 11.4 percent in remote crash locations and 15.6 percent in rural crash locations. Among all Indigenous patients, 33.0 percent reported fatigue as a contributing factor compared to 14.1 percent among the non-Indigenous. Overall, 17.7 percent of the sample with eligible crash location reported the operator being fatigued at the time of the crash.

Table 6.20 Fatigued at time of crash by Indigenous status and remoteness of crash location

		Remoteness of crash location		
Valid Cases = 515		*Remote*	*Rural*	Total
Indigenous				
	Yes	21 (30.4%)	11 (39.3%)	32 (33.0%)
	No	48 (69.6%)	17 (60.7%)	65 (67.0%)
Non-Indigenous				
	Yes	17 (11.4%)	42 (15.6%)	59 (14.1%)
	No	132 (88.6%)	227 (84.4%)	359 (85.9%)
Total				
	Yes	38 (17.4%)	53 (17.8%)	91 (17.7%)
	No	180 (82.6%)	244 (82.2%)	424 (82.3%)

From the logistic regression there was no significant interaction effect for the two predictor variables. There was, however, a significant main effect for Indigenous status whereby Indigenous patients reported the presence of fatigue at higher rate (O.R. = 3.50, *Table 6.21*).

Table 6.21 Logistic regression of fatigued at time of crash

	B	S.E.	Wald	df	Signif.	O.R.
Non-Indigenous	_	_	_	_	_	1.00
Indigenous	1.252	.422	8.808	1	.003	3.50
Rural	_	_	_	_	_	1.00
Remote	-.362	.308	1.387	1	.239	0.70
Interaction	-.029	.559	.003	1	.959	0.97

6.5 Circumstantial Precursors

The results of the quantitative analyses for each of the three circumstantial precursors are described in this section. Once again, for the purposes of comparing rural versus remote only, tourists and persons identifying as residing in urban/metropolitan areas have been omitted from analyses. The examination of differences in life circumstances – licence status, employment status and general health – served to provide insight into the levels of 'hardship' experienced by the four groups.

6.5.1 Licence status

The proportion of Indigenous patients who indicated the operator in the crash was appropriately licensed was 44.3 percent of those living in a remote area and 75.0 percent of those living in a rural area. By comparison, the proportion of non-Indigenous patients who reported the behaviour was 75.6 percent of those living in a remote area and 89.8 percent of those living in a rural area. Among all Indigenous patients, 53.1 percent reported the operator was appropriately licensed compared to 86.6 percent among the non-Indigenous. Overall, 79.2 percent of the sample with eligible residency reported that the operator in the crash was appropriately licensed.

Table 6.22 Licence status by Indigenous status and remoteness of residency

	Remoteness of residency		
Valid Cases = 442	*Remote*	*Rural*	Total
Indigenous			
Licensed	31 (44.3%)	21 (75.0%)	52 (53.1%)
Unlicensed	39 (55.7%)	7 (25.0%)	46 (46.9%)
Non-Indigenous			
Licensed	59 (75.6%)	239 (89.8%)	298 (86.6%)
Unlicensed	19 (24.4%)	27 (10.2%)	46 (13.4%)
Total			
Licensed	90 (50.9%)	260 (88.4%)	350 (79.2%)
Unlicensed	58 (39.2%)	34 (11.6%)	92 (20.8%)

From the logistic regression there was no significant interaction effect between the two predictor variables. There was, however, a significant main effect for Indigenous status and remoteness, whereby Indigenous patients and those residing in remote areas reported being unlicensed or inappropriately licensed at a higher rate. The odds ratios are inverse to those in *Table 6.23* and are 2.95 for Indigenous status and 2.85 for remoteness. In an evaluation of the Queensland's Indigenous Driver Licensing Program *(Study 3)*, reported in *Chapter 7*, the ongoing impact of ethnicity and remoteness on licence status is further discussed.

Table 6.23 Logistic regression of licence status

	B	S.E.	Wald	df	Signif.	O.R.
Non-Indigenous	_	_	_	_	_	1.00
Indigenous	-1.082	.481	5.053	1	.025	0.34
Rural	_	_	_	_	_	1.00
Remote	-1.048	.333	9.903	1	.002	0.35
Interaction	-.281	.599	.219	1	.640	0.76

6.5.2 Employment status

For the purpose of analysing differences between groups on employment status, patients were deemed employed if they were in full-time, part-time or casual work. The proportion of Indigenous patients who reported being unemployed was 61.5 percent of those living in a remote area and 30.3 percent of those living in a rural area. By comparison, the proportion of non-Indigenous patients who reported being unemployed was 8.1 percent of those living in a remote area and 11.8 percent of those living in a rural area. Among all Indigenous patients, 52.3 percent reported being unemployed compared to 10.9 percent among the non-Indigenous. Overall, 20.4 percent of the sample with eligible residency reported being unemployed.

Table 6.24 Employment status by Indigenous status and remoteness of residency

	Remoteness of residency		
Valid Cases = 486	*Remote*	*Rural*	Total
Indigenous			
Employed	30 (38.5%)	23 (69.7%)	53 (47.7%)
Unemployed	48 (61.5%)	10 (30.3%)	58 (52.3%)
Non-Indigenous			
Employed	79 (91.9%)	255 (88.2%)	334 (89.1%)
Unemployed	7 (8.1%)	34 (11.8%)	41 (10.9%)
Total			
Employed	109 (66.5%)	278 (86.3%)	387 (79.6%)
Unemployed	55 (33.5%)	44 (13.7%)	99 (20.4%)

From the logistic regression there was a significant interaction effect between the two predictor variables such that Indigenous patients were more likely to be unemployed in remote areas, while it was the opposite for non-Indigenous. The latter finding could possibly be a reflection of lifestyle choice, whereby non-Indigenous people have moved to remote locations to take up contract work resulting in a lower unemployment rate (Edmonston et al., 2003). There was also a significant main effect for Indigenous status whereby Indigenous patients reported being unemployed at a higher rate. The odds ratios

are inverse to those in *Table 6.25* and are 3.23 for Indigenous status and 0.66 for remoteness.

Table 6.25 Logistic regression of employment status

	B	S.E.	Wald	df	Signif.	O.R.
Non-Indigenous	_	_	_	_	_	1.00
Indigenous	-1.182	.420	7.902	1	.005	0.31
Rural	_	_	_	_	_	1.00
Remote	-.409	.435	.884	1	.347	1.505
Interaction	-1.712	.622	7.579	1	.006	0.18

6.5.3 General health

For the purpose of analysing differences between groups on general health, patients were deemed healthy if they self-reported their health was ‘excellent’ or ‘good’ at the time of the crash, as opposed to ‘average’, ‘not so good’ or ‘poor’ (McDowell & Newell, 1996). The proportion of Indigenous patients who reported being healthy at the time of the crash was 54.4 percent of those living in a remote area and 76.5 percent of those living in a rural area. By comparison, the proportion of non-Indigenous patients who reported being healthy was 85.2 percent of those living in a remote area and 84.2 percent of those living in a rural area. Among all Indigenous patients, 61.1 percent reported being healthy compared to 84.4 percent among the non-Indigenous. Overall, 79.3 percent of the sample with eligible residency reported being healthy.

Table 6.26 Health status by Indigenous status and remoteness of residency

	Remoteness of residency		
Valid Cases = 518	*Remote*	*Rural*	Total
Indigenous			
Healthy	43 (54.4%)	26 (76.5%)	69 (61.1%)
Less Healthy	36 (45.6%)	8 (23.5%)	44 (38.9%)
Non-Indigenous			
Healthy	75 (85.2%)	267 (84.2%)	342 (84.4%)
Less Healthy	13 (14.8%)	50 (15.8%)	63 (15.6%)
Total			
Healthy	118 (70.7%)	293 (83.5%)	411 (79.3%)
Less Healthy	49 (29.3%)	58 (16.5%)	107 (20.7%)

From the logistic regression there were no significant main effects for Indigenous status or remoteness of residency. The interaction effect between the two predictor variables was approaching significance *(see Table 6.27)*.

Table 6.27 Logistic regression of health status

	B	S.E.	Wald	df	Signif.	O.R.
Non-Indigenous	_	_	_	_	_	1.00
Indigenous	.497	.433	1.317	1	.251	1.64
Rural	_	_	_	_	_	1.00
Remote	-.077	.338	.052	1	.819	0.92
Interaction	1.078	.573	3.539	1	.060	2.94

6.6 Attitudinal Precursors

The results of the quantitative analyses for key attitudinal precursors are described in this section. Like previous analyses in this chapter, tourists and persons identifying as residing in urban/metropolitan areas have been omitted to facilitate meaningful rural versus remote comparisons.

6.6.1 Perceived locus of control

From a motivational perspective, the major difference between groups borne out of the narratives centred on perceived locus of control or the extent to which patients felt they could personally influence their safety. To operationalise this variable quantitatively, patients were asked how much they thought they could personally stop road crashes from happening. For analysis purposes, those responding 'lots' or a 'fair bit' were deemed to have a high level of perceived locus of control (LOC) compared to those who responded 'some', 'a little bit' or 'not at all'. The proportion of Indigenous patients who reported a high level of LOC was 17.9 percent of those living in a remote area and 26.5 percent of those living in a rural area. By comparison, the proportion of non-Indigenous patients who reported a high level of LOC was 42.2 percent of those living in a remote area and 48.5 percent of those living in a rural area. Among all Indigenous patients, 20.5 percent reported a high level of LOC compared to 47.1 percent among the non-Indigenous. Overall, 41.5 percent of the sample with eligible residency reported a high level of LOC.

Table 6.28 Perceived locus of control by Indigenous status and remoteness of residency

	Remoteness of residency		
Valid Cases = 528	*Remote*	*Rural*	Total
Indigenous			
Control	14 (17.9%)	9 (26.5%)	23 (20.5%)
Less/No Control	64 (82.1%)	25 (73.5%)	89 (79.5%)
Non-Indigenous			
Control	38 (42.2%)	158 (48.5%)	196 (47.1%)
Less/No Control	52 (57.8%)	168 (51.5%)	220 (52.9%)
Total			
Control	52 (31.0%)	167 (46.4%)	219 (41.5%)
Less/No Control	116 (69.0%)	193 (53.6%)	309 (58.5%)

From the logistic regression there was no significant interaction effect between the two predictor variables. There was, however, a significant main effect for Indigenous status, whereby Indigenous patients reported lower levels of LOC. The odds ratios are inverse to those in *Table 6.29* and is 2.63 for Indigenous status.

Table 6.29 Logistic regression of perceived locus of control

	B	S.E.	Wald	df	Signif.	O.R.
Non-Indigenous	_	_	_	_	_	1.00
Indigenous	-.960	.404	5.644	1	.018	0.38
Rural	_	_	_	_	_	1.00
Remote	-.252	.240	1.101	1	.294	0.78
Interaction	-.246	.544	.204	1	.651	0.78

6.6.2 Community similarity and concerns

A few additional attitudinal items were analysed by Indigenous status to provide insights into whether behaviour change should be directed at the community or individual level. These comparisons involved the additional sample only and patients were asked to rank their level of concern/worry/similarity and so on for a number of items. For analysis purposes, those responding 'lots' or a 'fair bit' were deemed to have a high level of agreeance with the item or attitude compared to those who responded 'some', 'a little bit' or 'not at all'. Frequencies are tabled below.

Table 6.30 Attitudinal comparisons by Indigenous status

Attitude	***Indigenous***	***Non-Indigenous***
Concern re: employment	72 of 80 (90%)	50 of 147 (34%)
Concern re: road safety	40 of 80 (50%)	91 of 147 (62%)
Worry re: personal safety	35 of 79 (44%)	104 of 147 (71%)
Worry re: family safety	59 of 79 (75%)	90 of 147 (61%)
Same as my community	58 of 80 (73%)	70 of 147 (48%)

Unlike the non-Indigenous sample, Indigenous patients were considerably more concerned about unemployment rates than road safety which appears to be just another competing social agenda item (Edmonston et al., 2003). In line with LOC differences previously presented, the Indigenous sample were markedly more likely to report behaving the "same as my community" on the road compared to non-Indigenous patients. Finally, Indigenous patients were less concerned with their own safety on the road than that of their family, as opposed to non-Indigenous patients who worried more about personal safety. Once again, this aligns with the work of Shore and Spicer (2003) and, coupled with qualitative comments re: preferred methods of learning presented in *Study 2a*, offers some possible mechanisms to positively influence behaviour change across the two groups.

6.7 Emergency Response and Retrieval

As previously stated, only minimal reliable information was able to be obtained on emergency response and retrieval. An analysis of how patients got help post-crash by Indigenous status and remoteness of crash location highlighted the importance of local networks. First responder in this case is the person who renders some form of remedial treatment and organises transport to a health facility.

Table 6.31 First responder by Indigenous status and remoteness

Indigenous – Remote (*n* = 58) • Family/Friends (*n* = 13) • Self (*n* = 18) • Emergency Services (*n* = 15) • Stranger (*n* = 12)	**Non-Indigenous – Remote (*n* = 47)** • Family/Friends (*n* = 10) • Self (*n* = 5) • Emergency Services (*n* = 15) • Stranger (*n* = 17)
Indigenous – Rural (*n* = 22) • Family/Friends (*n* = 3) • Self (*n* = 4) • Emergency Services (*n* = 10) • Stranger (*n* = 5)	**Non-Indigenous – Rural (*n* = 102)** • Family/Friends (*n* = 24) • Self (*n* = 21) • Emergency Services (*n* = 23) • Stranger (*n* = 34)

In contrast to urban environments where the first responder is typically emergency services, *Table 6.31* shows that initial treatment and transport to formal care is typically undertaken by family/friends or strangers in rural and remote settings. The narratives presented in the previous chapter showed that patients valued the commitment of others, known to them or otherwise, to respond in an emergency. This positive community attitude – *"if you see someone in trouble, stop and help"* – should continue to be promoted.

The fact that the patient themselves had to organise their own pathway to treatment in 23 percent of remote crashes and 20 percent of rural crashes also highlights the importance of training in rural communities around bystander first aid, roadside critical intervention and early resuscitation (Coats & Davies, 2002).

As expected, there were rurality differences in the length of time it took to get help. The proportion of remote crashes receiving help from the first responder in less than 10 minutes (54%) was less than that for rural crashes (71%). More than 90 percent of crashes in both remote and rural locations received help within two hours which is consistent with the RRRSS (Sheehan et al., 2008).

The candidate attempted to collect information on the nature of injuries through an adaptation of the McGill Pain Questionnaire (Melzack, 1975), whereby patients were asked to identify the body part which was injured and then to describe the treatment received. This information was missing in approximately 50 percent of cases and reports from health facility staff questioned its reliability *(see Chapter 8)*. As such, injury and treatment profiles are not provided in the thesis.

6.8 Crash Nature

Similar to previous studies (Ryan et al., 1992; Symmons et al., 2004), the current sample involved a high proportion of single vehicle crashes in both remote areas (84%) and rural areas (79%). While not specifically asked, the nature of the crash in most cases was also able to be deduced from the narrative. This analysis revealed that the predominant crash types for remote areas were run-off-road on straight (53%) or curve (20%), due to a loss of control, followed by head-on crashes (11%). In rural areas, the most common crash scenarios were run-off-road on straight (47%), run-off-road on curve (15%) and head-on

crashes (14%), typically as a result of fail to give way at intersection. This too aligns with previous analyses of large crash datasets (Jurewicz, 2011). Unlike the studies cited prior, the proportion of crashes involving vulnerable road users (pedestrians and cyclists) was higher in remote areas (30%) than rural areas (21%), reflecting the higher rate of Indigenous people residing in these areas and lack of transport alternatives.

6.9 Chapter Summary

Drawing on common themes identified through the qualitative analyses documented in *Chapter 5*, this chapter used quantitative methods to study the individual and cumulative impact of Indigenous status and remoteness of residency/crash location on key behaviours, life circumstances and attitudes. Items omitted from analyses included previous driving experience and offences, trip characteristics (length of trip, purpose of journey), vehicle details (age, model) and condition and recollection of road safety advertising.

Study 2b contributed to the aims shown the conceptual framework for the research (see *Figure 1.1*) in two key ways. Firstly, it identified similarities and differences in the road use and crash profile of Indigenous and non-Indigenous people in rural and remote areas, with a focus on the 'Fatal 5' (proximal causation). Secondly, it explored the culture, context and motivations underpinning the transport and crash profiles (distal causation).

While the Indigenous and non-Indigenous samples were similar in terms of age and sex profile, the distribution of road users types were markedly different. Like previous reviews (Styles & Edmonston, 2006), this study showed that Indigenous people are more likely to be injured in crashes as passengers or pedestrians, while non-Indigenous people are more likely to be injured in crashes as drivers or riders.

Table 6.32 overleaf provides a summary of key quantitative comparisons which are now discussed in brief. As hypothesised, the behavioural pattern for Indigenous patients was significantly different to their non-Indigenous counterparts. Indigenous status was statistically linked to increased alcohol consumption (bimodal distribution), previous self-reported drink driving and passenger of a drink driver episodes, as well as distraction and fatigue prior to the index crash. Illicit drug use prior to the index crash was positively related to remoteness of residency for both groups.

Analysis of key socio-economic indicators (life circumstances) provided further evidence that 'hardship' is a precursor to risky behaviour with Indigenous patients reporting higher levels of unemployment and unlicensed driving. Interestingly, remoteness of residency was also linked to higher levels of unlicensed driving highlighting the barriers posed by the licensing process in remote Queensland. These issues are discussed at length in the following chapter.

Table 6.32 Summary of key quantitative comparisons

	Indigenous	Remote	Interaction
Behavioural Precursors			
Increased alcohol use/dependency	↑↑	↑	_
Drink driving episode in previous month	↑	_	_
Passenger of drink driver in previous month	↑↑	_	_
Illicit drug use in 24 hours prior to crash	_	↑	_
Increased crash history in previous 5 years	_	_	**a**
Distracted prior to crash	↑↑	_	_
Not using PPE at time of crash	_	_	_
Travelling above speed limit at time of crash	_	_	_
Fatigued at time of crash	↑↑	_	_
Circumstantial Precursors			
Unlicensed at time of crash	↑	↑↑	_
Unemployed at time of crash	↑↑	_	**b**
Self-reported general health	_	_	_
Attitudinal Precursors			
Lower perceived locus of control	↑	_	_

↑↑ = $p < .01$ and ↑ = $p < .05$

Note: Remote Indigenous patients and rural non-Indigenous patients were significantly more likely to have been involved in a crash in the previous five years (a) and to be unemployed (b).

Study 2b also teased out attitudinal differences between the Indigenous and non-Indigenous samples, most notably, lower perceived locus of control among Indigenous patients and an acknowledgement that their behaviour is similar to others in their community. The fact that Indigenous respondents were more concerned about

unemployment and the safety of their family members, as opposed to themselves, has important implications for the targeting of road safety messages and provides impetus for exploring ways to integrate road safety more broadly into employment programs.

Finally, the chapter added support to the narrative analysis, recognising the vital role that locals, as opposed to emergency services in many cases, play in the immediate first aid and retrieval process. Increasing the capacity of this network is another recommendation flagged in the final chapter of the thesis.

The next chapter – *Study 3* - documents an evaluation of *Queensland's Indigenous Driver Licensing Program* (IDLP). In doing so, it sadly illustrates the disparity between Queensland Indigenous and non-Indigenous communities on several key social justice indicators and the ongoing impact of Graduated Driver Licensing requirements on licensing rates. Opportunities to improve the effectiveness of the IDLP as a key platform to increase employment, while reducing crash risk, is also discussed in the remaining chapters.

Chapter 7: The Queensland Indigenous Driver Licensing Program (Study 3)

7.1 Introductory Comments

The previous chapters have profiled Indigenous road trauma and highlighted the failure in outreach of programs to Indigenous people, particularly to those living in rural and remote regions of Australia *(Chapter 3)*. The particular difficulties of people living in North Queensland have been analysed and presented using both personal reports of the crash circumstances and road safety experiences *(Chapter 5)* and relevant data from a major study of hospitalised patients *(Chapter 6)*. These findings have provided valuable insight into the distinct crash profile of Indigenous Australians and several key ingredients that would need to be addressed for successful program support to improve the safety of road users in Indigenous communities. One key issue that was identified in the literature (Clapham et al., 2008; Senserrick et al., 2010) and again clarified in the thesis, concerns engagement in the licensing process as a catalyst for positive road safety change.

This chapter documents the statistical research undertaken to evaluate the first *Queensland Indigenous Licensing Driver Program* (IDLP). Prior to commencing these studies the candidate took a lead role in developing the IDLP, in association with the Queensland Police Service (QPS) and TMR *(see Attachment P)*. The candidate was committed to developing culturally-appropriate content and a tailored delivery model to facilitate increased involvement by Indigenous people in the licensing process.

The evaluation of the IDLP described in this chapter was completed by the candidate, under the guidance of supervisor (Professor Siskind), four years post-implementation and constitutes *Study 3* of the doctoral research. In doing so, this chapter presents Indigenous and non-Indigenous comparisons on a number of key transport and safety indicators, clearly documenting disadvantage. Three key observations are:

- There are many barriers that impede Indigenous peoples from obtaining learners' and drivers' licences;
- There is an over-representation of Indigenous people incarcerated for drivers licensing offences; and
- There is an over-representation of Indigenous people involved in road trauma.

7.2 Program Development and Governance

The contribution of unlicensed driving to disproportionate rates of incarceration and road trauma among Indigenous Australians is well established (Naylor, 2010; National Crime Prevention Branch, 2000). The provision of accessible and appropriately-delivered driver education and licensing systems for Indigenous communities was also a priority in the second *National Review of Indigenous Road Safety* (Styles & Edmonston, 2006) – *Study 1* of the thesis.

The audit of Indigenous road safety programs in *Chapter 3* shows strong commitment in Australia from government agencies and communities to develop and implement initiatives to address problems associated with driver licensing and retention of licences in remote areas. While there has been some success in increasing the number of Indigenous persons with learners' licences both in Queensland and other jurisdictions, many of the initiatives have not been sustainable, lacked coordination and relied on 'program champions' without adequate support (Edmonston et al., 2011). Also, much of the data and information collected about driver licensing issues for Indigenous populations is anecdotal and can't be mapped to specific communities or to particular interventions (Styles & Edmonston, 2006).

7.2.1 Stage 1: Problem scoping

In response to an overwhelming need identified by Indigenous communities throughout Queensland and the Torres Strait in 2003, TMR, QPS and CARRS-Q embarked on the Queensland Government Aboriginal and Torres Strait Islander Driver Licensing Project. This community-government-university collaboration was committed to identifying, developing and implementing a number of programs and policies to maximise Indigenous participation in the driver licensing system and reduce the number of Indigenous people incarcerated for licence-related offences.

The four-year applied research project underpinning the development of the program was led by TMR (Northern Region). With nearly 25% of all Indigenous Australians residing in the 'Northern' region of Queensland (Rumble & Fox, 2006), this region provided an ideal environment to trial remote licensing initiatives.

The first phase of the project involved a year-long research and consultation process, to better understand the cultural, access and procedural barriers impacting on the capacity of Indigenous people in Queensland to obtain and retain appropriate drivers licences. TMR engaged the candidate through CARRS-Q to conduct all consultations and analyse the findings from the engagement processes described below. Information was obtained through:

- Focus groups in 13 Deed of Grant in Trust (DOGIT) Indigenous communities throughout Queensland and the Torres Strait, as well as attendance at special cultural events *[community perspective]*;
- Semi-structured interviews with 60 Indigenous persons incarcerated in North Queensland correctional facilities for driver licensing offences *[offenders' perspective]*; and
- A series of interagency forums with government and key Indigenous and non-Indigenous stakeholder groups *[government perspective]*.

Key barriers and problems raised across all perspectives were:

- ***Cultural and historical issues*** including: fear and distrust of police - *"bollimen"* - due to past experiences; lack of Indigenous people employed in transport or police professions; lack of cross-cultural awareness/competency among educators, trainers and testers; lack of women examiners to test female applicants; and that governing bodies (both agency and community) and funding bodies do not see licensing as a priority – rarely identified in regional training plans.
- ***Test content issues*** including: a written test which is mostly "urban" and contains many concepts foreign to remote communities and Indigenous language and does not include issues relevant to remote driving conditions; and a lack of roadworthy vehicles in communities to conduct licensing training or testing.
- ***Information, education and training needs*** including: a lack of 4WD training in communities; lack of information on learners' restrictions, in particular the accompaniment rule; lack of school-based road safety and licensing programs

for young Indigenous students as they often return to communities to be future leaders; lack of promotional material and media campaigns designed to raise community awareness about road safety and the importance of being licensed; and a lack of information available on 'what is a safe and roadworthy vehicle'.

- ***Justice issues*** including: the high incidence of Indigenous people incarcerated for a licensing offence, having never been part of the licensing system; lack of information regarding licensing restrictions, fines, penalties and sanctions and a widespread perception that loss of licence is always indefinite; lack of training opportunities for short-term detention inmates; and revenue generated from fines and fees is lost from the community and not redirected back into programs.
- ***Cost and access issues*** including: a lack of training visits to communities and minimal provision for mobile training centres; and the high cost associated with travelling to be tested for and/or renew licences, as well as the cost of the licence itself.

7.2.2 Stage 2: Intervention development and delivery considerations

The findings from the consulting research phase were endorsed by the Law and Justice Chief Executive Officers' Committee which established a whole-of-government Coordination Committee to oversee the development of an improved licensing protocol for remote populations. The planning and tasks required in the development of the improved licensing protocol are summarised in below:

- Critique of current licensing regimes for Indigenous and remote populations in all Australian jurisdictions;
- Meta-analysis of national and International Indigenous licensing/driver education programs to develop a detailed register (current and ongoing);
- Prioritisation of Indigenous licensing barriers to be addressed;
- Identification of promising strategies to be progressed by five whole-of-government working groups to address the identified barriers; and
- Improved licensing protocol(s) and delivery style(s) developed and presented to communities/agencies to gauge acceptance levels.

Five specific task groups were established with responsibility for different aspects of service delivery improvement. The objectives of the task groups and accountable agencies are listed below:

- Evidence of identity (led by Department of Justice and Attorney General);
- Learners licence educational resources and testing materials (led by TMR);
- Program delivery - instruction and testing (led by QPS);
- Education and training, including court diversion (led by TMR and James Cook University); and
- Program design, governance and evaluation (led by TMR and CARRS-Q).

7.2.3 Stage 3: Implementation and evaluation

Eventual rollout of the IDLP occurred in 2006, following the consultation phase and an 18-month period progressing the tasks assigned to the five work groups. Rumble and Fox (2006) reported that the new IDLP:

- Was grounded in an appreciation of culture;
- Utilised a mobile delivery model, taking the service direct to communities;
- Had a learning and development focus, linking road safety education to the licensing function;
- Used a learning method and materials suited to the target audience – reduced emphasis on reading and comprehension, adopting an interactive 'learning by doing' approach;
- Provided increased support with securing appropriate identification and dealing with the State Penalties and Enforcement Registry (SPER); and
- Had clear objectives with a commitment to ongoing evaluation.

7.3 Evaluation Framework

The candidate and supervisor (Professor Vic Siskind) were commissioned by the Queensland Government to undertake an independent evaluation of the program and its various components. The first step in the evaluation was clarifying the core program objectives. The objectives of the IDLP were to:

- Increase the number of Aboriginal and Torres Strait Islander peoples with appropriate drivers/ riders licences, particularly in remote areas, to a rate comparable with the rest of Queensland;
- Increase licence retention rates among Aboriginal and Torres Strait Islander peoples;
- Foster an increase in the value placed on licence ownership among Indigenous peoples;
- Address community and cultural issues associated with unlicensed driving and road user behaviour;
- Reduce the number and proportion of Aboriginal and Torres Strait Islander persons charged with, or incarcerated for, licence-related offences; and
- Reduce the involvement of Aboriginal and Torres Strait Islander peoples in road trauma.

Guided by these objectives, Edmonston and Siskind (2011) developed an evaluation framework, with both impact (outcome) and process components that draws information from: progress reports/discussions from program deliverers; external crash, injury, and licensing datasets; stakeholder consultations; and observation of process. This thesis reports predominantly on the findings from external relevant government data sources and does not present commentary on the process evaluation. To facilitate time-series monitoring of the program, several government departments were approached to secure licensing, crash, injury, offence and correctional data both pre- and post-implementation. This process involved: (i) identifying appropriate organisations and personnel to be represented on an Evaluation Subcommittee; (ii) interrogating external datasets to determine what data and variables are useful and applicable to future evaluations; and (iii) negotiating periodical ongoing access to appropriate datasets.

7.4 Impact Evaluation

This section examines the progress of the IDLP against Key Performance Measures (KPMs), subject to data availability. While the IDLP was established to address

a number of safety and social justice imperatives, the data collected, analysed and reported in this thesis primarily focus on the two primary objectives:

- To increase the number of Aboriginal and Torres Strait Islander peoples with appropriate drivers licences, particularly in remote areas; and
- To reduce the number and proportion of Aboriginal and Torres Strait Islander persons charged with, or incarcerated for, licence-related offences.

Data analyses linked to other KPMs (for example, road trauma and offences) are also reported, but conclusions must be treated with caution due to difficulty in determining causality of relationships.

7.4.1 Methods and data sources

The impact evaluation uses a time-series methodology whereby Indigenous and non-Indigenous populations are compared on relevant data indicators over time to determine whether or not the intervention (IDLP) has had an effect significantly greater than the underlying trend. Testing for statistical significance (eg. Chi-square) has been undertaken where required to determine meaningful differences. Critiques of each of the KPMs in terms of appropriateness and measurability, as well as datasets used in analyses, are presented in the relevant analysis section, pertaining to licensing outcomes *(Section 7.4.2)*, correctional and infringement outcomes *(Section 7.4.3)* and crash and injury outcomes *(Section 7.4.4)*.

7.4.2 Licensing outcomes

Unlike correctional and injury outcomes, licensing outcomes are a 'mediating variable', whereby you should see a change based on output (i.e. increased service delivery) almost immediately. In terms of outcome sequence, an increase in licence ownership rates in communities (and the road safety training that goes with that) is a precursor to reducing licence-related incarcerations and road trauma in due course. Note - A major change in the licensing regulations to progress from the Learner (L) to Provisional (P) stage of licensing occurred in 2007 (during the period covered by the evaluation) with the introduction of the Graduated Driver Licensing (GDL) legislation.

As of 2007, Queensland's GDL program requires a learner driver to complete 100 hours of supervised driving in specified driving environments and conditions before becoming eligible to take the practical test for their provisional licence. Supervision hours are recorded in a TMR issued logbook.

Parameters for time-series analysis of change in licensing progression were as follows:

Milestone: Increase in the number of Aboriginal and Torres Strait Islander people with appropriate drivers' licences.

Key Performance Measure (KPM): Annual increase in licence holders in remote communities to 90% (parity with mainstream).

Appropriateness as a KPM: Highly appropriate as the primary objective of the program and core business of the Indigenous Driver Licensing Unit based in Cairns (North Queensland).

Measurability and analysis method: Difficult to accurately measure as Indigenous status is not recorded as part of the licensing process. Work-around analysis conducted, whereby comparisons were made between licence ownership in predominantly 'Indigenous LGAs' and predominantly 'non-Indigenous LGAs' in Northern Region over time.

Data sources: DTMR, Data Analysis Unit – TRAILS/TICA database.

The findings of the time-series analysis of licensing outcomes are summarised in *Table 7.1* overleaf.

Table 7.1 Licensed persons in predominantly 'Indigenous LGAs' and 'Other LGAs' in Northern Region by highest level of licence, 2004 - 2010

Predominantly Indigenous LGAs (Target Population)

	2004	2005	2006	2007	2008	2009	2010	% Change
Learner	689	875	662	839	738	1225	1387	(+101.31)
Open	4291	4288	4479	4640	4677	4838	4840	(+12.79)
Provisional	552	694	816	888	595	641	605	(+9.60)
TOTAL	**5532**	**5857**	**5957**	**6367**	**6,010***	**6704**	**6832**	**(+23.50)**

Predominantly Non-Indigenous LGAs (Comparison Group)

	2004	2005	2006	2007	2008	2009	2010	% Change
Learner	9947	9804	9901	11262	11776	17180	19651	(+97.56)
Open	259583	265192	272743	282570	291816	301065	306314	(+18.00)
Provisional	18085	18532	19393	20786	21379	19580	19133	(+5.79)
TOTAL	**287615**	**293528**	**302037**	**314618**	**324,971**	**337825**	**345098**	**(+19.99)**

Note - The data used to calculate the time-series comparisons are 'a count of the people', not the level of licence – a person's highest level of licence is the one counted. Analysis compares predominantly 'Indigenous LGAs' with 'Other LGAs', given that Indigenous status is not routinely recorded as part of the licensing process. Suburb – as opposed to postcode - was verified where possible (prior to LGA classification) to improve accuracy on previous snapshots. It is acknowledged that there will be some inaccuracies due to the transient nature of the population and deficiencies in TRAILS/TICA recording. However, it is expected that the data are indicative of licensing trends.

Table 7.1 shows that the number of persons licensed in predominantly 'Indigenous LGAs' has increased at a rate which is not significantly different to that of 'Other LGAs' in Northern Region from June 2004 [pre-program] to June 2010 [current] (see '% Change All' column). In operational terms, this means that the outreach component of the IDLP is keeping pace with licence delivery through alternative methods (customer service centres) but making minimal ground on the goal to achieve close to parity in licensing rates in Indigenous communities.

A closer interrogation of the licensing trend since 2006, suggests that the logbook and supervision requirements introduced as part of GDL in 2007 posed major hurdles to the IDLP progressing people from Learners to Provisional licence ownership. Of statistical significance, from 2006 to 2010, the number of licensed persons in predominantly 'Indigenous LGAs' at 'P' level dropped from 816 to 605 (-25.9%), while the number of licensed persons in predominantly 'Non-Indigenous LGAs' at 'P' level remained fairly constant ($\chi 2 = 27.25$, $p < .001$). This drop immediately followed the introduction of the GDL scheme in June 2007, indicating that this policy change had a greater impact on Indigenous communities.

In contrast, the trend from 2006 to 2010 in the number of Learner and Open licences held in both predominantly Indigenous and other LGAs tracked similarly over time. So, while there is evidence that the 'Young Driver' requirements have hampered licence progression for both groups, the impact is far more marked in Indigenous communities (specifically in the L to P progression), arguably due to the impact of remoteness (i.e. reduced access to the vehicles, supervisory support and a suitable road network to meet the new 'Young Driver' requirements).

7.4.2.1 Change in licence ownership rates – 2006 to 2010

The 2006 to 2010 trend was also examined using a population denominator to determine any changes/differences in licensing ownership rates between the two groups over time *(see Tables 7.2 and 7.3)*. For the purpose of this evaluation, 'licence eligible population' estimates include persons aged 16.5 to 75 years and were generated via ABS to reflect population growth:

Parameters for time-series analysis of change in licence ownership were as follows:

Milestone: Increase in license retention rates.

Key Performance Measure (KPM): Attain licence renewal and maintenance rates that are reflective of the wider community.

Appropriateness as a KPM: Highly appropriate as core business of the Indigenous Driver Licensing Unit.

Measurability and analysis method: Measurement of licence retention and maintenance requires individuals to be tracked through the licensing system via an identifier (Customer Reference Number) with comparisons being made between those licensed through the IDLP and those licensed through alternative means. Therefore, an examination of this Performance Measure was not possible. A case-comparison cohort study could provide additional insight into this KPM. Difficult to accurately measure as Indigenous status is not recorded as part of the licensing process. Work-around analysis conducted, whereby comparisons were made between licence ownership in predominantly 'Indigenous LGAs' and predominantly 'non-Indigenous LGAs' in Northern Region over time.

Data sources: Data on licence upgrades (L to P) by Local Government Area provided by the Data Analysis Reporting Centre (DARC) within TMR to determine what impact (if any) the young driver policies have had on progression to provisional licences.

Table 7.2 Pre-program licence ownership in Northern Region at June 2006 (Time 1)

	L/Eligible Pop^n	Licence Holders - June 2006				Licence Ownership Rate	
LGA Group	16.5-75 yrs	Open	Provisional	Learners	Total Licensed	Open/Prov. (%)	All Levels (%)
Indigenous Communities	13,756	4,479	816	662	5,957	38.5%	43.3%
Other LGAs	322,155	272,743	19,393	9,901	302,037	90.7%	93.7%
Total Northern Region	335,911	277,222	20,209	10,563	307,994	88.5%	91.7%

Note – Licence eligible population at t_1 is based on 2006 Census data.

Table 7.3 Licence ownership in Northern Region at June 2010 (Time 2)

	L/Eligible Pop^n	Licence Holders - June 2010				Licence Ownership Rate	
LGA Group	16.5-75 yrs	Open	Provisional	Learners	Total Licensed	Open/Prov. (%)	All Levels (%)
Indigenous Communities	15,676	4,840	605	1,387	6,832	34.7%	43.6%
Other LGAs	363,763	306,314	19,133	19,651	345,098	89.5%	94.9%
Total Northern Region	379,439	311,154	19,738	21,038	351,930	87.2%	92.8%

Note – Licence eligible population at t_2 is based on an ABS straight-line population growth projection

To summarise, total licence ownership rates (all levels) in Northern region rose from 91.7% in 2006 to 92.8% in 2010. This trend reflected slight increases in licence ownership rates (all levels) in both predominantly Indigenous (43.3% to 43.6%) and predominantly non-Indigenous LGAs (93.7% to 94.9%). In contrast, combined Provisional and Open licence ownership rates in Northern region dropped from 88.5% in 2006 to 87.2% in 2010. Decreases in combined Provisional and Open licence ownership rates were experienced in both predominantly Indigenous (38.5% to 34.7%) and predominantly non-Indigenous LGAs (90.7% to 89.5%). Once again, this highlights the difficulties posed by the 'Young Driver' package implemented in 2007 on moving people through the system.

It is important to qualify that these findings presented above are not directly linked to IDLP activities. It was noted from a breakdown of transactions provided by the Indigenous Driver Licensing Unit that some of the unit's efforts have focused on regional centres with large Indigenous populations and, as such, might be captured in the licensing data for the comparison group. Nonetheless, it provides indicative evidence that inroads are not being made in increasing licence ownership for Aboriginal and Torres Strait Islander peoples in remote communities at the anticipated rate.

7.4.2.2 Examination of Learner to Provisional licence upgrades

Given that the primary objective of the IDLP is to progress Indigenous people through the licensing levels, from Learner to Provisional to Open licence holder, it was deemed important to also examine Learner to Provisional (P1) upgrades post the introduction of the novice driver requirements. The data showed an increase in L to P1 upgrades increased in the 2009/10 year (58 for Indigenous and 46,045 for non-Indigenous) following reduced upgrades in 2008/09 (22 for Indigenous and 32,463 for non-Indigenous) due to the suite of new young driver requirements. Despite an increase there are still very few licence upgrades occurring for persons currently living in designated Indigenous communities. This provides further evidence of the barriers that the logbook, supervisory requirements (100 hours), access to vehicles and a suitable road network play in remote areas, subsequently impacting on the IDLP's ability to move candidates through the licensing system.

7.4.3 Correctional and infringement outcomes

Given that the *Queensland Aboriginal & Torres Strait Islander Justice Agreement 2001* was a driving force behind the development of the IDLP, the monitoring of infringements, charges, and more importantly, correctional outcomes is vital to this impact evaluation. A large 'unit record' dataset was provided by the Department of Justice & Attorney-General (Courts Performance and Reporting Unit). This dataset housed all convictions in Queensland Magistrates Courts for offences pursuant to *Section 78* (unlicensed and disqualified driving) of the *TORUM Act 1995* by court location, Indigenous status, gender, age, order type and financial year 2005/06 to 2008/09.

Parameters for analyses of correctional and infringement outcomes were as follows:

Milestone: Reduction in the number and proportion of Aboriginal and Torres Strait Islander persons charged with, or incarcerated for, licence-related offences at a much reduced social and financial cost to society.

Key Performance Measure (KPM): Annual reductions in licensing related incarcerations and offences.

Appropriateness as a KPM: Highly appropriate as directly addresses a core goal of the *Queensland Aboriginal and Torres Strait Islander Justice Agreement 2001*.

Measurability and analysis method: Licence-related detentions and other sentences imposed can be accurately measured as Indigenous status is routinely collected in courts and correctional datasets. Indigenous status is not linked to offence/infringement data, so minimal discussion is presented on this aspect of the Performance Measure. Also, infringements/offences are a direct product of enforcement activity/ focus in any LGA or police division.

Data sources: Department of Justice & Attorney –General (Courts Performance and Reporting Unit)-Convictions in Magistrates Court for offences pursuant to Section 78 of the *TORUM Act 1995* by court location, Indigenous status, gender, age range, order

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type and financial year. DTMR, Data Analysis Unit-Transport- related infringements by police division by category code (nature of offence) by financial year for the Northern Region.

The convictions data received provided the full gambit of sentencing options handed down for unlicensed and disqualified driving. Given the end goal is to reduce incarcerations, for analysis purposes, sentencing options have been collapsed into 'detention' or 'other sentence' categories *(see Table 7.4)*.

Table 7.4 Convictions for offences pursuant to s78 of TORUM Act 1995 by Indigenous status by sentencing option, Queensland 2005/06 – 2008/09

Indigenous							
		2005/06	**2006/07**	**2007/08**	**2008/09**	**TOTAL**	
Female	**Detention**	17	39	43	39	138	
	Other Sent	758	655	807	1090	3310	
	Total	775	694	850	1129	3448	
Male	**Detention**	299	345	338	387	1369	
	Other Sent	1965	1750	2035	2505	8255	
	Total	2264	2095	2373	2892	9624	
Unknown	**Detention**	2	0	3	5	10	
	Other Sent	5	4	20	11	40	
	Total	7	4	23	16	50	
							% Change
	ALL	**3046**	**2793**	**3246**	**4037**	**13122**	**(+32.5%)**
	(Detention)	**318**	**384**	**384**	**431**	**1517**	**(+35.5%)**
Non - Indigenous							
		2005/06	**2006/07**	**2007/08**	**2008/09**	**TOTAL**	
Female	**Detention**	125	153	215	155	648	
	Other Sent	3956	3885	4780	5340	17961	
	Total	4081	4038	4995	5495	18609	
Male	**Detention**	1255	1543	1653	1426	5877	
	Other Sent	18237	16401	18676	19519	72833	
	Total	19492	17944	20329	20945	78710	
Unknown	**Detention**	3	5	24	9	41	
	Other Sent	82	52	143	52	329	
	Total	85	57	167	61	370	
							% Change
	ALL	**23658**	**22039**	**25491**	**26501**	**97689**	**(+12.0%)**
	(Detention)	**1383**	**1701**	**1892**	**1590**	**6566**	**(+15.0%)**

The number of all sentencing and detention orders handed down under s78 are increasing over time for both Indigenous and non-Indigenous defendants (see '% Change' column). However, further analysis showed that rates of increase in all sentences ($\chi 2 = 43.02$, $p < .001$) and detention only ($\chi 2 = 3.82$, $p < .05$) handed down to Indigenous defendants are significantly higher.

Once again, annual snapshots of this nature are subject to fluctuation based on changes in enforcement activity, available sentencing options, etc. It is also important to recognise that this outcome measure is by nature reliant on licence ownership rates. Despite small increases in licence ownership over time, the majority of Indigenous people in Queensland still do not have licences. So, with such a high proportion of the eligible Indigenous driving population unlicensed (i.e. plenty of people who could potentially be caught), it is not surprising that custodial and other sentencing counts are not decreasing. The fact that Indigenous people are more likely to live in remote areas (where there are less available sentencing options) also provides some explanation for increases in detention above and beyond their non-Indigenous counterparts. This finding further highlights the need for diversionary options for licensing offences to be rolled out across Queensland.

Given that Indigenous status was not linked to infringement data which is a direct product of enforcement activity anyway (fluctuates greatly), minimal attention was given to this data source. However, there appeared to be an increase in the offence type 'unaccompanied Learner' in police divisions with a large Indigenous population, clearly highlighting an educational need and/or the lack of supervisory options in remote areas.

7.4.4 Crash and injury outcomes

Change in behavioural outcome measures (like crash involvement and injury rates) typically take many years after a program's introduction and are somewhat dependent on 'mediating variables', in this case licence ownership levels and the associated road safety education. At the commencement of the IDLP, the Evaluation Subcommittee wanted to compare and profile Indigenous and non-Indigenous crash trends using TMR's Webcrash tool. However, advice from both police and transport authorities suggested that this data

greatly underestimates the involvement of Indigenous people in serious casualty crashes for the following reasons: (i) police do not attend all crashes in rural and remote Queensland; (ii) police are reluctant to ascribe Indigenous status unless the person involved self-identifies; and (iii) Indigenous people are less likely to report a crash and more likely to avoid police detection following a road crash (particularly in rural areas) due to poor historical relationships with police (ARRB Transport Research Ltd & CARRS-Q, 2006). Also, in mid-2006 the QPS moved to a new crash reporting regime (Q-Prime). As part of this process, 'racial appearance' (the proxy measure of Indigenous status) was no longer recorded.

Parameters for analyses of crash and injury data were as follows:

Milestone: Reduction in the road trauma.

Key Performance Measure (KPM): Annual reductions in serious injury reported to health agencies.

Appropriateness as a KPM: Moderately appropriate performance measure. Safety outcomes should always be a paramount factor in the delivery of transport services, however, given the failure of the supporting educational domain of IDLP to become fully functional, it is highly unlikely that change (if any) in road trauma outcomes could be linked to the program. Additionally, there are a number of social factors and competing programs/policies (eg. Alcohol Management) within communities that have a direct impact on trauma outcomes. As such, causality can't be inferred.

Measurability and analysis method: Patient episodes and associated patient days were deemed robust Performance Measures to be tracked over time.

Data sources: Queensland Health, Queensland Hospital Admitted Patient Data Collection – Transport-related patient episodes and patient days by: financial year and month of admission; health facility ID; residency details, age and gender of the patient; Indigenous status; source of admission; discharge status; transfer details; principal external cause code (ICD-10AM).

Health records provide the only source of information on crash outcomes. This review examines transport-related 'discrete patient episodes' *(see Table 7.5)* and 'patient days spent in health facilities' *(see Table 7.6)* to monitor trends in Indigenous road trauma throughout the life of the program. Once again, it is important to recognise that relationship between the program and any change in Indigenous road trauma rates cannot be deemed causal due to the myriad of social factors and programs at play.

Table 7.5 Discrete patient episodes* (incidence data) admitted to health facilities following a road crash (ICD-10AM classification) by Indigenous status, Queensland 2001/02 – 2009/10

Ethnicity	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7	2007/8	2008/9	2009/10
Indigenous	292	243	227	303	268	301	322	359	363
Other	7,558	7,114	7,600	8,263	8,388	8,784	9,051	9,735	9,158
Not Stated	378	423	425	495	405	429	424	517	551

** Note – When generating this data, the following cases were dropped: 'admitted patient transferred from another hospital'; 'episode change'; and 'routine readmission not requiring referral' to eliminate double counting.*

Health admissions invariably fluctuate from year to year based on availability of services and changing health priorities. However, with regard to the pre and post trend in transport-related patient episodes, there was no statistically significant difference between the Indigenous and non-Indigenous counts. Episodes involving Indigenous crash victims rose from 292 in 2001/2 to 363 in 2009/10, representing a 24% increase over time. Similarly, episodes involving non-Indigenous crash victims rose from 7,558 in 2001/2 to 9,735 in 2009/10, representing a 21% increase over time.

Table 7.6 Patient days spent in health facilities* following a road crash injury (ICD-10AM classification) by Indigenous status, Qld 2001/02 – 2008/09

Status	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7	2007/8	2008/9
ATSI	1,053	780	807	915	963	1,202	975	1,249
Other	29,593	28,536	30,464	33,917	34,218	36,909	37,121	37,072
Unknown	2,097	2,047	1,581	2,314	1,558	1,411	1,415	1,477

** Note – When generating this data, the following cases were dropped: 'episode change'; and 'routine readmission not requiring referral' to eliminate double counting.*

As expected, this same trend held true for associated patient days. With regard to the pre and post-trend in transport-related patient days spent in health facilities, there was no statistically significant difference between the Indigenous and non-Indigenous counts. Episodes involving Indigenous crash victims rose from 1,053 in 2001/2 to 1,249 in 2009/10, representing a 19% increase over time. Similarly, episodes involving non-Indigenous crash victims rose from 29,593 in 2001/2 to 37,072 in 2008/9, representing a 25% increase over time. These findings suggest the program has not influenced Indigenous road trauma. Nor would they be expected to, given the core focus has been on delivery of the licensing product as opposed to road safety education.

Although 'racial appearance' is no longer recorded in Webcrash, a historical analysis of licence status of vehicle controllers in Northern Region and All of Queensland to determine if similar issues were experienced state-wide *(see Table 7.7)*.

Table 7.7 Licence status of unit controllers in serious crashes (crashes involving a fatality and/or hospitalisation) by racial appearance, Queensland 2001/02 – 2006/07

QT Northern Region

	Serious Crash Units						
	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	Total
Indigenous	73	89	66	74	81	37	420
Driver/Rider	**52**	**61**	**48**	**49**	**65**	**21**	**296**
Licenced	32	37	28	35	41	10	183
Unlicenced	**18**	**23**	**19**	**14**	**22**	**10**	**106**
Not known	2	1	1	0	2	1	7
Not applicable	0	0	0	0	0	0	0
Non-Indigenous	906	975	946	1149	1038	121	5135
Driver/Rider	**811**	**888**	**875**	**1038**	**922**	**112**	**4646**
Licenced	767	833	821	975	858	90	4344
Unlicenced	**38**	**47**	**44**	**51**	**48**	**14**	**242**
Not known	6	8	8	12	16	8	58
Not applicable	0	0	2	0	0	0	2
Unknown	41	39	31	52	129	1014	1306
Driver/Rider	26	24	19	40	108	917	1134
Licenced	7	2	1	5	72	819	906
Unlicenced	0	0	1	2	4	38	45
Not known	5	8	8	16	13	42	92
Not applicable	14	14	9	17	19	18	91

All Queensland	Serious Crash Units						
	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	Total
Indigenous	131	157	133	156	150	65	792
Driver/Rider	**90**	**107**	**92**	**103**	**115**	**38**	**545**
Licenced	57	66	56	64	73	20	336
Unlicenced	**29**	**39**	**34**	**38**	**38**	**16**	**194**
Not known	4	2	2	1	4	2	15
Not applicable	0	0	0	0	0	0	0
Non-Indigenous	7713	7890	8587	8972	8209	1057	42428
Driver/Rider	**6972**	**7164**	**7868**	**8232**	**7518**	**935**	**38689**
Licenced	6587	6755	7438	7753	7073	784	36390
Unlicenced	**287**	**325**	**366**	**402**	**368**	**80**	**1828**
Not known	95	83	56	68	76	71	449
Not applicable	3	1	8	9	1	0	22
Unknown	320	333	328	401	1180	7310	9872
Driver/Rider	244	263	262	336	1044	6737	8886
Licenced	44	44	27	40	704	5956	6815
Unlicenced	3	1	7	4	38	238	291
Not known	71	66	94	94	112	349	786
Not applicable	126	152	134	198	190	194	994

Once again, there were strong similarities between crash profiles in Northern Region and All of Queensland with regard to licence status of controller. In Northern region, 61.8% of the vehicle controllers in serious crashes involving Indigenous people were licensed. In contrast, 92.5% of the controllers in serious crashes involving non-Indigenous people were licensed. Across Queensland, 61.7% of vehicle controllers in serious crashes involving Indigenous people were licensed. And again, 94.1% of the drivers in crashes involving non-Indigenous people were licensed. This provides further rationale for exploring a delivery model that can service Indigenous people throughout Queensland.

7.6 Chapter Summary

In previous chapters [5 and 6] the experiences of Indigenous and non-Indigenous people who have been involved in road crashes in rural and remote Far North Queensland have been explored. This has included qualitative accounts of their personal experiences and the factors that may have led to the crash. Core concepts arising from these accounts were followed-up through quantitative analysis of findings of a formal and structured survey conducted in health facilities throughout North Queensland. This material has provided an in-depth understanding of the experiences of Indigenous people and the factors leading to their involvement in road crashes from their perspective.

This chapter reports on the state Health, Transport, Police and Justice Departments' statistical information in the region. It involves relevant time-series analyses of these official statistics which were undertaken by the candidate in collaboration with the thesis supervisor, Professor Vic Siskind. The direction of these analyses was related to the evaluation of the impact of a specially developed driver licensing program for Indigenous people living in remote communities. The candidate was involved in the development of this program prior to this program of research. The evaluation analyses, however, were undertaken as part of the thesis and are reported to provide a formal overview of the differences in Indigenous and non-Indigenous experiences in relation to licensing outcomes. It documents the potential life experience improvement that could be developed if comprehensive driver/rider licensing interventions were initiated.

The Indigenous Driver Licensing Program (IDLP) was designed by an interdepartmental group to address the cultural and access difficulties experienced by Indigenous people in obtaining licenses. The background research and liaison with relevant parties that was undertaken in the design of the intervention was briefly described in the chapter. The comprehensive impact evaluation undertaken to develop time-series data to inform evaluation of the intervention was reported in detail. The primary focus was concerned with examining and quantifying the potential impact of a well-designed and implemented Indigenous Driver Licensing Program in improving licence access and the associated indicators and experiences including incarceration rates which reflect unlicensed driving.

The IDLP was initiated in 2006 with a comprehensive range of delivery and performance measures to enable an integrated outreach to community development based upon licence delivery. In the main, the evaluation indicators were future directed and were unlikely to show a measurable impact in the shorter term. Consequently, the analyses undertaken and reported here involved using the official statistics to establish time-series data for baseline purposes and follow up as the program [or similar] became fully established. As such, this base line data provides disturbing evidence of the degree of disadvantage experienced by Indigenous people in remote regions as an outcome of, among other factors, their lack of access to licensing.

A challenge experienced during the data collection time period was the introduction of a major state-wide licence intervention by TMR in June 2007. To address the overrepresentation of young drivers in road trauma, TMR introduced a Graduated Driver Licensing scheme for learner drivers which required the acquisition of 100 hours of supervised driving under different conditions to be recorded in a logbook prior to moving from Learner to Provisional status. Another serious concern impacting on the evaluation was the fact that the proxy indicator for Indigenous status (racial appearance) was no longer recorded by QPS after 2006. To overcome this issue, most analyses compared Local Government Areas with a ‘predominantly Indigenous’ population against those with a ‘predominantly non-Indigenous’ population based on Census information. Health data captures Indigenous status and was used directly in the analyses examining road crash related outcomes.

The data analysed in this chapter indicates that the introduction of GDL had a measurable impact, reducing licence acquisition for both Indigenous and non-Indigenous drivers post-introduction. This impact built on the already differential rates of licence ownership and progression for Indigenous and non-Indigenous populations. The trend from 2006 to 2010 in the number of Learner and Open licenses held in both 'predominantly Indigenous' and other LGA's tracked similarly over time. That is, while Indigenous people were significantly less likely to hold licences at baseline, this differential did not change [or improve] over the time period. There was evidence that the new Young Driver requirements slowed licence progression for both groups, but in this case, the impact is far more marked in Indigenous communities (specifically in the L to P progression). Arguably, this reflects remoteness and lack of access to vehicles and supervisory support in these communities with significantly lower licensing rates. The licence ownership rate for Indigenous people in these communities was 43.6% compared with 94.9% in non-Indigenous communities. Geographical isolation also means that there a lack of a suitable road network as required by the Learner Driver licensing provisions to meet the new Young Driver requirements.

Despite these barriers, follow-up data provided by TMR at the request of the candidate indicated that meaningfully fewer people living in 'predominantly Indigenous' Local Government Areas were lodging exemption applications from GDL requirements based on the grounds of limited access to a vehicle and/or supervisor or an unsuitable road network *(see Table7.8)*. Note – Local Government Areas with significant proportion of Indigenous residents are written in red. While this data did not form part of *Study 3*, it is reported here to highlight the importance of taking steps moving forward to ensure that Indigenous and remote populations are not further disadvantaged by licensing policy and delivery in Queensland.

Table 7.8 Learner licence logbook exemptions lodged and approved by LGA, Queensland 01 January – 31 December, 2010

Local Government Area	*Lodged*	*Approved - Reason*		
		Vehicle	*Supervisor*	*Network*
Burdekin Shire Council	6	0	4	0
Roma Regional Council	3	1	1	1
Dalby Regional Council	3	1	1	0
Brisbane City (North)	164	28	123	1
Bundaberg Regional Council	50	5	44	1
Whitsunday Regional Council	5	0	2	1
Brisbane City (South)	211	36	141	0
Sunshine Coast Regional Council	59	4	45	0
Townsville City Council	60	11	42	0
Scenic Rim Regional Council	19	4	12	0
Gold Coast City Council	98	10	68	0
Moreton Bay Regional Council	82	8	62	1
Toowoomba Regional Council	47	5	31	2
Fraser Regional Council	8	2	4	0
Cairns Regional Council	25	2	23	0
North Burnett Regional Council	4	0	3	0
Balonne Shire Council	3	0	3	0
Ipswich City Council	66	9	56	0
Mornington Shire Council	1	0	0	0
Gympie Regional Council	7	0	6	0
Hinchinbrook Shire Council	3	1	2	0
Rockhampton Regional Council	23	3	17	0
Somerset Regional Council	6	1	5	0
South Burnett Regional Council	10	0	8	0
Mackay Regional Council	16	2	12	0
Gladstone Regional Council	12	1	10	0
Banana Shire Council	1	0	1	0
Cloncurry Shire Council	1	0	1	0
Logan City Council	186	22	135	0
Tablelands Regional Council	12	0	5	2
Mount Isa City Council	8	1	5	0
Southern Downs Regional Council	10	1	9	0
Redland City Council	35	2	28	2
Cook Shire Council	2	0	1	1
Isaac Regional Council	1	0	2	0
Charters Towers Regional Council	6	0	6	0
Cassowary Coast Regional Council	3	0	1	0
Burke Shire Council	6	0	3	3
Central Highlands Regional Council	1	1	0	0
Carpentaria Shire Council	1	0	1	0
Murweh Shire Council	1	0	0	0

Local Government Area	*Lodged*	*Approved - Reason*		
		Vehicle	*Supervisor*	*Network*
Weipa Town Council	2	0	2	0
Torres Shire Council	9	1	2	5
Total	**1283**	**162**	**934**	**21**

An examination of crash profiles indicated that 61.8% of the vehicle controllers in serious crashes involving Indigenous people were licensed as compared with 92.5% of the non-Indigenous controllers. In summary, the analyses in this chapter reveal clearly that Indigenous people in rural and remote regions experience disadvantage in accessing the licensing system which, in turn, leads to increased rates of convictions and incarceration for unlicensed driving and other traffic related offences. An analysis of accessible detention data over the period 2005/6 to 2008/9 showed that all sentences and detention orders increased over the period for both Indigenous and non-Indigenous defendants. However, the rate of increase in all sentences and 'detention only' sentences handed down to Indigenous defendants is significantly higher in all time periods. From a legal perspective, Naylor (2010, p94) argued that the introduction of Graduated Driver Licensing across all Australian jurisdictions *"may be creating a new class of criminals from marginalised communities"*.

As expected, the examination of the health data did not indicate any statistically significant difference between the Indigenous and non-Indigenous counts of discrete patient episodes over the period examined. Patient days spent in health facilities also did not change over the period examined. Overall, the review of official statistics related to licensing conducted in this chapter gives further support to the serious concerns raised through the findings of the previous studies reported in this thesis. There is clearly a differential and important negative impact of road safety challenges facing Indigenous people in remote and rural regions. The findings did not show an impact of the specially designed program on key indicators which was undeniably influenced by the introduction of GDL. More importantly, they highlight the need for cross-agency and cross-jurisdictional partnerships to further improve licensing protocols in the remote Indigenous community context. Finally, in the interests of further long- and short-term evaluations, participation in the IDLP should be indicated on transport authority databases, which would obviate the need to record indigenous status.

Chapter 8: Discussion and Future Directions

8.1 Introductory Comments

The overarching objective of this research was to identify strategies to improve road safety outcomes for Indigenous and rural and remote populations through an increased understanding of crash causation and the role that ethnicity and remoteness play. Building on knowledge gained through the RRRSS (Sheehan et al., 2008), chapters one through seven presented a diverse but complementary program of research to better understand why crash risk is elevated for people living in remote areas, particularly in Indigenous communities. *Study 1* (described in *Chapter 3*) was a *National Review of Indigenous Road Safety* conducted for the ATSB (Styles and Edmonston, 2006). It involved a literature review, an interrogation of external datasets, a detailed audit of programs/projects and semi-structured interviews with relevant stakeholders within Australia and overseas.

Study 2 was prospective in nature. Using a similar methodology to the Interviewed Casualty Study within the RRRSS (described in *Chapter 4*), it was designed to recruit more Indigenous cases through the involvement of two major hospitals (Cairns and Mt Isa) and a number of smaller facilities throughout North Queensland. Over an 18-month data collection period, an additional 80 Indigenous and 149 non-Indigenous patients were interviewed resulting in a total sample of 114 Indigenous and 506 non-Indigenous respondents.

Recognising the value of story-telling as a powerful data collection tool in Indigenous research (Chilisa, 2012; Bishop, 1996), *Study 2a* encouraged patients through a crash narrative (with prompts) and a number of qualitative questions to articulate the details of the crash including social determinants and motivational factors underpinning risky behaviours. It also captured patients' emergency response and retrieval experiences, perceptions of enforcement, suggestions to improve road safety and preferred learning methods. These insights generated from *Study 2a* were described in *Chapter 5* and are integral to road safety program and strategy development.

The thematic analysis of patients' qualitative accounts enabled a number of 'variables of interest' to be identified. *Study 2b* (described in *Chapter 6*) examined these

variables of interest quantitatively through a series of statistical comparisons on the basis of Indigenous status and remoteness of residency or crash location, dependent on the nature of the variable. Using a 2 x 2 design and logistic regression analyses, the objective was to determine the individual and cumulative impact of Indigenous status and remoteness on key behaviours, life circumstances and relevant attitudes, once again, with a view to informing interventions. Note – tourists and persons residing in urban/metropolitan areas were excluded from all quantitative analyses involving residence.

Finally, *Chapter 7* of thesis described the applied component of the research – *Study 3*. Running parallel to the health facility data collection process, *Study 3* described the development and preliminary evaluation of *Queensland's Indigenous Driver Licensing Program*. In doing so, it showed major disparities between Indigenous and non-Indigenous people on a number of transport-related measures including crash involvement, unlicensed driving, as well as related offence and incarceration rates. While recognising the potential of the licensing process to engage Indigenous people in the employment and safety domains, *Study 3* highlighted the detrimental impact of the introduction of Graduated Driver Licensing on those living in remote areas, particularly discrete Indigenous communities. For a pictorial overview of the PhD research program, see *Figure 1.3* on page 12 of thesis.

Collectively, the findings from the three studies not only profiled Indigenous and non-Indigenous road trauma in rural and remote areas of North Queensland, but also pointed to several key priority areas for action. In terms of flow, the remainder of this chapter provides a summary of the research findings from all studies and their collective contribution to the overall conceptual model for the research. More specifically, it outlines what has been learned about the proximal and distal causation of Indigenous road trauma, as distinct from other road users, in the rural and remote context *(Section 8.2)*. This discussion is followed by broad recommendations to improve safety for these populations based on 'Safe System' thinking, with particular focus on remote Indigenous communities *(Section 8.3)*. Finally, the chapter discusses the contribution of the research to the field of study from a methodological perspective, citing strengths and limitations *(Section 8.4)* and identifies future research opportunities *(Section 8.5)*.

8.2 Summary of the Research Findings – Contribution to the Conceptual Model

The introductory chapter of the thesis provided a conceptual model of the overall research aims *(see Figure 8.1)*. In short, the three studies were designed to provide a collective understanding of the 'proximal' and 'distal' causation of Indigenous road trauma, as distinct from other road users in the rural and remote context. The collective findings of the studies and their contribution to the conceptual model are described here.

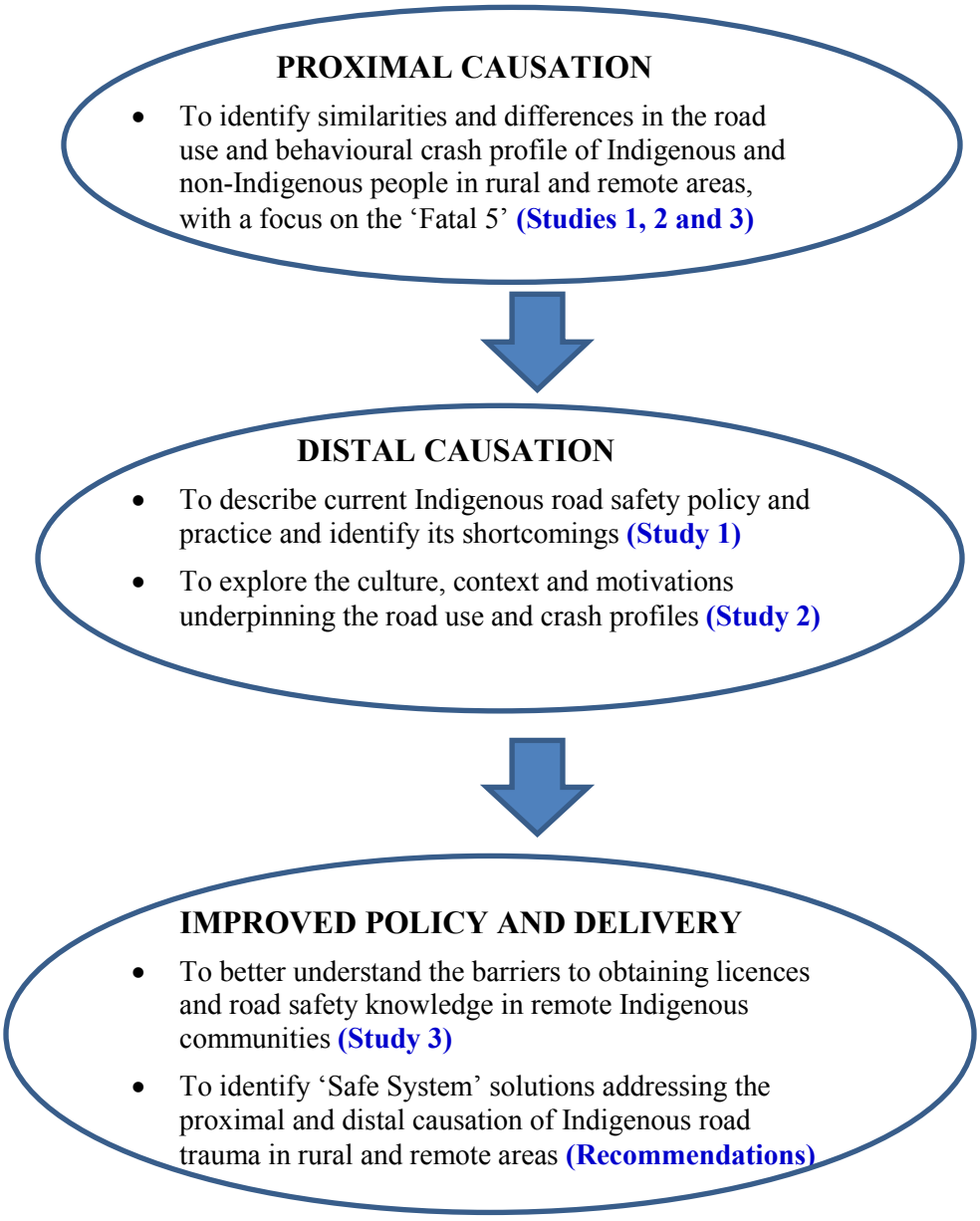

Figure 8.1 Conceptual model of the research aims

8.2.1 Understanding of 'proximal causation' based on the research findings

The literature cited in *Chapters 2 and 3* demonstrated the elevated crash risk for rural and remote populations, with risk increasing as a product of remoteness (AIHW, 1998). Above and beyond other rural populations, Indigenous people were identified as particularly high-risk being 2.8 times more likely to be killed and 1.4 times more likely to be injured in a crash than their non-Indigenous counterparts (Harrison & Berry, 2008). Both the *National Review of Indigenous Road Safety (Study 1)* and the prospective interviews of crash victims *(Study 2)* provided a distinct profile of the relative types of crashes and causative factors for Indigenous and non-Indigenous populations. Comparisons between the two groups in terms of behavioural, environmental and vehicular characteristics are described below.

8.2.1.1 Behavioural characteristics

Consistent with the literature cited in *Chapters 2 and 3*, the profiles differed in terms of road user type, such that Indigenous respondents were more likely to be injured as passengers or pedestrians, while non-Indigenous respondents were more likely to be injured as drivers or riders. The differences in crash profile reflect exposure, travel patterns and vehicle access, referred to in the literature as 'transport disadvantage' (Currie & Senbergs, 2007) and 'hardship' (Gruen & Yee, 2005) experienced by Indigenous communities (i.e. lower levels of vehicle and licence ownership, reduced education and higher unemployment rates). This association was supported by *Study 2b*. In terms of socio-economic characteristics, the age and gender profile, as well as health self-assessment were comparable. However, Indigenous respondents were less likely to be employed (47%) than non-Indigenous respondents (89%). The importance of employment as a tool for motivating community-wide behaviour change is discussed later in the chapter.

Through a probing narrative process *(Study 2a)*, important information regarding the behavioural contributors to crashes involving both populations by remoteness was obtained. In line with previous literature (Brice, 2000; Styles & Edmonston, 2006), the 'Fatal 5' (speed, alcohol, fatigue, no restraints and distraction) figured prominently for both groups with at least one of these core behaviours identified by more than 90 percent of patients. The mean number of contributing factors identified per case in the additional

sample of 229 was greater than that in a similar analysis conducted as part of the RRRSS (Blackman et al., 2006). While this could potentially reflect changes to the severity inclusion criteria (unable to be explored in thesis due to a lack of reliable injury severity data), it could also suggest the benefits associated with a 'prompted storytelling' approach with appropriate interviewer-interviewee rapport.

When patients could vividly recall their crash experience, in many cases, there were several of the 'Fatal 5' factors at play. The combination of alcohol with a distraction and/or inappropriate speed for conditions was particularly common. Failure to use or lack of personal protective equipment (PPE), such as helmets or seatbelts, and unlicensed driving were also regularly mentioned in the crash narratives of Indigenous patients. The major point of difference between Indigenous and non-Indigenous patients was willingness to externalise blame for the crash. Indigenous patients were far more likely to assume responsibility for the crash acknowledging at-risk behaviours (typically alcohol impairment), while non-Indigenous patients were more likely to ascribe the cause of the crash to external distractions or the condition of the road. Of real concern, was a small subset of patients who had been involved in numerous crashes previously, yet believed they were safe drivers and *"just unlucky"*. Alcohol was the central factor in these crashes which supported the aphorism that *"people drive as they live"* (Shinar, 1978).

Based on themes identified through qualitative analyses *(Study 2a)*, responses to a number of questionnaire items were chosen for quantitative comparison via statistical analysis to determine the relative impact of Indigenous status and remoteness. As hypothesised, the behavioural pattern for Indigenous patients was markedly different to their non-Indigenous counterparts. Indigenous status was significantly associated with increased alcohol consumption (as measured by AUDIT-C), previous self-reported drink driving and passenger of a drink driver episodes, as well as distraction and fatigue prior to the index crash. Illicit drug use prior to the index crash was positively related to remoteness of residency for both groups which, based on the narratives, reflected perceptions of the low chance of being detected.

8.2.1.2 Environmental characteristics

In terms of residency, 70 percent of the Indigenous patients lived in remote areas (using the ARIA+ classification system), compared to 22 percent of non-Indigenous patients. With many patients crashing close to home, the proportion of Indigenous (72%) and non-Indigenous patients (34%) crashing in a remote area was reflected in this difference.

Like previous examinations of rural crash patterns (Ryan et al., 1992; Symmons et al., 2004), *Study 2b* demonstrated a high proportion of single vehicle crashes in both remote (84%) and rural areas (79%). Independent of ethnicity, the 'crash nature' for both populations was similar and mirrors other jurisdictional analyses (Jurewicz, 2011) comparing rural crashes occurring 'in town' (lower speed roads) and 'out of town' (higher speed roads). In short, 'out of town' crashes were typically 'run-off-road on straight or curve' due to inappropriate speed, distraction, intoxication, and to a lesser degree fatigue. Head-on crashes were also common on high speed roads. Crashes occurring 'in town' typically occurred as result of fail to give way at intersection due to distraction, intoxication or inappropriate approach speed. The higher proportion of crashes involving vulnerable road users (pedestrians and cyclists) in remote areas reflected higher Indigenous residency rates and the lack of transport alternatives. Low-cost engineering solutions to address these common crash types are recommended in *Section 8.3.1*.

8.2.1.3 Vehicular characteristics

The vehicle itself did not figure greatly in patients' crash accounts, hence, vehicle characteristics were not examined in *Study 2b*. In cases when the vehicle was mentioned, the reference was typically about overloading or occupants not wearing the required PPE. Vehicle maintenance issues were cited by a few off-road riders but were always accompanied by a behavioural contribution. That being said, it is recognised that promoting safety features and reducing the age of the vehicles in rural areas (Sheehan et al., 2008) has road safety merit.

8.2.2 Understanding of 'distal causation' based on the research findings

A core aim of the doctoral research was to better understand the social determinants and motivational influences underpinning behavioural differences between Indigenous and non-Indigenous populations. This aspect of the research was arguably the most innovative component and provides a new contribution to the body of knowledge on road safety in the rural and Indigenous context. It aims to meet the challenge put forward by Gruen (2007) in his keynote address at the Royal Australasian College of Surgeons' Conference - *Indigenous Illness and Injury*, by establishing *"evidence showing the association of illness/injury with cultural, behavioural, social and environmental factors, such as alcohol abuse, unemployment and poverty"* (p.930).

To that end, *Study 2a* identified three broad themes providing insights into the decision-making underpinning common crash profiles and risky behaviours. Two of the themes – termed 'rural rituals' and 'being a hero' – were espoused by both Indigenous and non-Indigenous patients. The first theme supported Henderson's (2010) notion of a 'rural way of life' in which patients' regularly engaged in risky behaviour because of a lack of transport options, reduced exposure to enforcement and a shared acceptance of risk (Sticher, 2009). The strength of this theme was illustrated through many narratives and often highlighted the central role that alcohol and the local pub or licensed drinking establishment plays in rural areas. The second theme showed both Indigenous and non-Indigenous patients engaging in intentional risk-taking to impress their peers or significant others. As one patient described it, *"pushing boundaries"* is part of the young rural male rite of passage.

The third theme – labelled 'hopelessness' – was only identified by Indigenous patients and is not unlike that reported by Finlayson and Auld (1999). In discussing the motivations underpinning risky behaviour, several Indigenous patients suggested that they had *"given up"* - like many in their community - and weren't worried about safety because their life was hopeless, often linking excessive alcohol use with unemployment and being unlicensed. This theme was verified through the analysis of several attitudinal items in *Study 2b* which showed that Indigenous patients were: (i) far more concerned about unemployment than their non-Indigenous counterparts; (ii) less interested with their personal safety than that of their family (opposite relationship for non-Indigenous); and

(iii) less concerned about road safety than non-Indigenous patients. Perhaps the most telling confirmation of this theme was significant relationship between Indigenous status and lower perceptions of 'locus of control' with regard to reducing crash risk.

These findings provide support to Shore and Spicer's (2004) assertion that Indigenous people are more likely to be influenced by circumstantial and community factors, while non-Indigenous people are more likely to be influenced by individual factors or personal views. Further evidence for this model was revealed through an analysis of how patients learn about road safety. Indigenous patients reported learning primarily through community networks, media (typically local radio) and family. The community networks described by Indigenous patients involved yarning at the local shop, sharing experiences with Elders and participation in cultural or sporting events. In contrast, non-Indigenous patients identified personal experience/observation and print or television media as their primary mode of learning.

Similarly, the road safety suggestions and perceptions of enforcement shared by Indigenous and non-Indigenous patients revealed key differences between the two samples. Non-Indigenous patients, once again, externalised blame suggesting that road safety improvements should focus on infrastructure upgrades or *"fixing the roads"* and enforcement should focus on *"catching the bad guys"* – other people, unlike them, who repeatedly break the law. The primary request from Indigenous patients, on the other hand, was increased support to become licensed and for help to develop road safety knowledge as part of that process. Additionally, they saw local police having an integral role in the process, as opposed to their usual punitive focus. Like the RRRSS (Sheehan et al., 2008), increased alternative transport to reduce drink driving was frequently mentioned.

While the research was unable to add to existing knowledge on injury profiles by crash type or the impact of time to triage on severity outcomes, it did provide some insight into how patients got help post-crash. Rather than emergency services, in the majority of cases initial treatment and transport to formal care was undertaken by family/friends or strangers or, to a lesser degree, themselves. The narratives suggested that there is a rural ethos that *"if you see someone in trouble, stop and help"* and that patients are thankful for this informal rural support network. Strategies to upskill local first responders could

potentially be promoted through local health facilities, with the additional engagement benefits of addressing the 'did not wait' phenomenon uncovered in *Study 2a*.

To better understand the 'distal causation' of Indigenous road trauma, in comparison to other populations, it was also integral to identify the shortcomings of existing policies and programs. *Study 1* revealed that current approaches to the management of Indigenous road trauma are not achieving the desired outcomes based on the following grounds:

- Transport injury receives minimal attention in national Indigenous health reform, compared chronic and systemic diseases;
- Programs typically focus on "fixing" symptoms (risky and illegal behaviours), rather than addressing underlying factors, such as 'transport disadvantage' (Finlayson & Auld, 1999); and
- Initiatives do not align with the crash profile (inappropriate focus) and are rarely evaluated.

Added to this, the New Zealand experience in reducing Māori road trauma demonstrates that Australian approaches are not doing enough to encourage community ownership and engage Indigenous people in all aspects of program development and delivery. Supporting the development of Indigenous people as community road safety professionals and encourage innovative approaches to linking road safety with culture appear to be logical ways forward. This theme is revisited as a key 'Safe System' recommendation.

8.3 Intervention Priority Areas using the 'Safe System' Model

Using this increased understanding of 'proximal' and 'distal' causation, the focus of the thesis now moves to identifying strategies to positively influence safety. Based on the collective findings of the three studies, *Figure 8.2* recognises that Indigenous communities are a subset of the broader rural and remote population in North Queensland and share many common risk factors, attitudes and behavioural patterns. It also highlights some signature differences among the Indigenous sample which could feasibly be addressed, as starting points, to improve safety for that sub-population. To that end, *Figure 8.2* identifies some priority areas for education, enforcement and engineering treatments.

The remainder of this section describes 'Safe System' recommendations to address key findings emerging from the research, with particular focus on remote Indigenous communities.

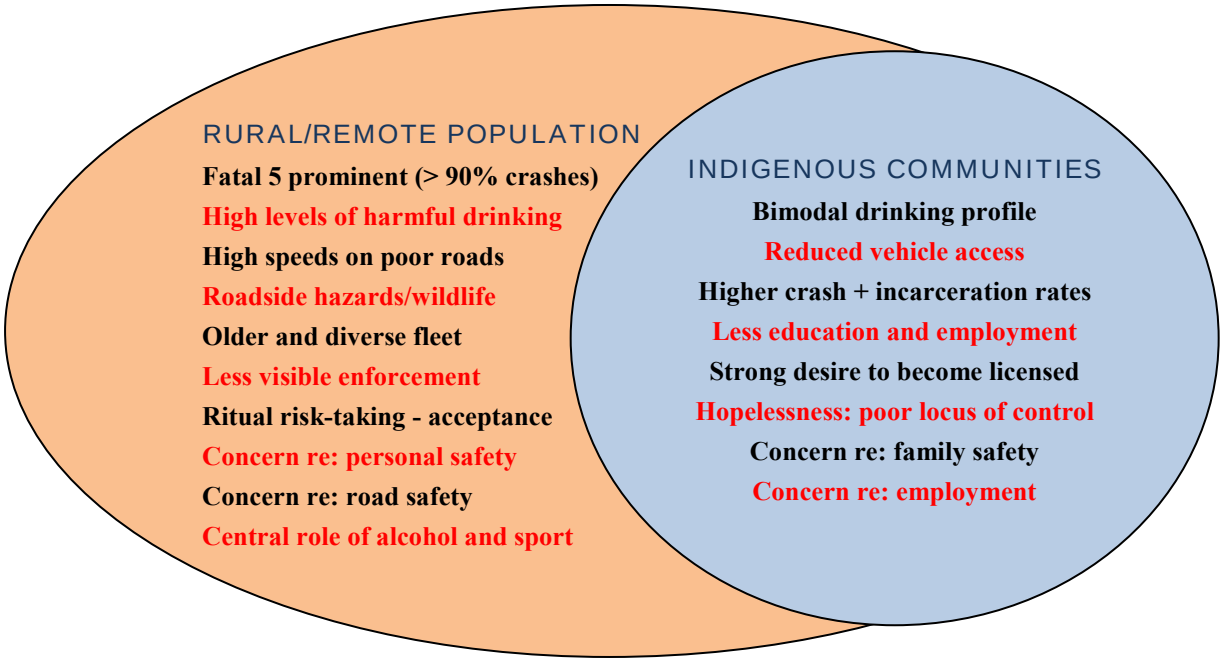

Figure 8.2 Shared and Unique Factors Impacting on Behaviour and Crash Risk: Indigenous Communities as a Subset of the Rural and Remote Population

8.3.1 Safe speeds, roads and roadsides

Chapter 2 of the thesis provided a comprehensive discussion of potential engineering treatments to improve safety in the rural and remote context. Interestingly, the common crash types identified through the PhD program of research mirrored those shown in the literature and large crash dataset analyses (Jurewicz, 2011). The two most common crash types (as defined by DCA code) were 'run-off-road' or 'head-on' on high speed roads and 'intersection crashes' in rural townships, typically resulting from failure to give way. As such, the following treatment types, described at length in *Chapter 2*, have significant potential to reduce rural and remote road trauma:

- Safe speed limits aligned with the function and condition of the road;

- Low-cost perceptual treatments to provide additional delineation, reduce travel speeds and warn motorists of upcoming hazards/condition changes;
- Hazard management and the provision of clear zones to minimise injury severity for errant vehicles;
- Widespread installation of the Wide Centreline Treatment as means of providing increased separation between vehicles on high-speed roads;
- Improved intersection design to increase give way compliance at problems sites and Local Area Traffic Management precincts to protect vulnerable road users;
- Targeted road safety auditing to inform the treatment of blackspots; and
- Trialling Vehicle Activated Signage as a means of providing a personalised message to drivers/riders engaging in risky or illegal behaviour.

8.3.2 Safe road users

The collective findings of the three research studies provide clear direction as to where efforts should be directed from an educational standpoint. More importantly, they offer guidance regarding ways to actively engage Indigenous people in road safety domain and deliver meaningful change by addressing the 'distal causation' factors (underlying motivations) described previously, rather than the risky and behavioural factors (symptoms) per se.

8.3.2.1 Achieving 'social change' through positive community norms

Findings generated from research components focusing on the 'proximal causation' should inform the content of future road safety campaigns targeting Indigenous and non-Indigenous populations. Of greater interest, the examination of 'distal causation' and preferred methods of communicating or learning about road safety (part of *Study 2a*), provides guidance as to how to maximise reach and the benefits of public education. Among Indigenous patients, the preferred method of learning was through community networks (including yarning at the local shop or clinic, sharing experiences with Elders) and local radio. In contrast, non-Indigenous patients were more likely to learn from their own observations/experiences or print or television media. Operationalising the Positive Community Norms Framework (see *Figure 2.9* on page 36), for messages to be effective

in Indigenous settings, leadership needs to be shown by influential people in the community (for example, Elders, sporting identities). Through them, and communication with families and peers, cultural transformation can occur. This supports literature cited earlier (Bozemen, 2014; Toby, 2001) which suggests that the effectiveness of the message and subsequent behaviour change is strongly related to the relationship between the message deliverer and the recipient. It also supports Shore and Spicer's (2004) contention that community change is influenced through families and peers, as opposed to individuals.

8.3.2.2 Encouraging innovation by linking road safety to culture

Some of the success in reducing road trauma among Indigenous people in the New Zealand context can be attributed to encouraging innovation and linking road safety to events and activities of cultural significance. In the Australian context, Dockery (2010) found that strong cultural attachment (including participation in festivals, story-telling, sports, music or dance events) is statistically associated with better self-assessed health and wellbeing and lower likelihood of engaging in risky behaviours, such as excessive alcohol consumption. This finding suggests that, following the New Zealand lead, linking road safety to cultural events could have significant merit. To this end, a number of jurisdictions are moving in this direction. Under the guidance of the candidate, the Woorabinda community developed a road safety mural capturing personal messages (a tile) painted by each school student *(see Figure 8.3)*. This process engaged the entire community. The mural was launched on Fatality Free Friday in 2012, with numerous other road safety events happening on that day including a Road Safety and Learner Licensing Workshop, information sessions on child restraints at the local day care, as well as BBQ at the local health clinic with basic first aid training. Of note, these activities are now held annually, indicating that, through a cultural attachment, the profile of road safety has been raised.

The positive evaluations of the *Good Sports Program* (Australian Drug Foundation, 2013) also suggest that sporting clubs – which are central to the 'rural way of life' (Henderson, 2010) – might be a suitable framework to start influencing the drinking culture and related behaviours/outcomes in both Indigenous settings.

Figure 8.3 Photo of the Road Safety Mural in the Woorabinda PCYC Hall

8.3.2.3 Improved licensing protocols to address 'transport disadvantage'

Study 3 of the thesis highlighted the need for jurisdictions across Australia to work better together to develop improved licensing protocols for Indigenous communities. The obvious benefits of being licensed are increased employment opportunities and reduced exposure to legal sanctions and, in many cases detention. Based on the literature presented in this thesis and the findings of *Study 2*, being unlicensed is a contributor to lower levels of locus of control and feelings of hopelessness (motivations) which underpin the risky behaviours contributing to crashes – the 'Fatal 5' (symptoms). Given that reasoning, establishing processes to increase licence ownership among Indigenous people has immense potential to reduce road trauma. If delivered correctly, using an interactive 'learning by doing' process to demonstrate key concepts *(see Figure 8.4)*, licensing initiatives also provide an ideal forum for communicating key road safety messages.

Figure 8.4 Photo at Woorabinda demonstrating give way rules through role playing

Improving the end-to-end licensing process for Indigenous communities is currently a priority for Austroads (2013) but, as a starting point, the candidate recommends operationalising the Hazelhurst (1990) model discussed earlier in the thesis. In order, to realise the 'VISION' of improved licensing and safety outcomes, the focus must be on:

- Increasing the 'DESIRE' or community perceptions of the importance of licensing by highlighting the direct and indirect benefits;
- Increasing the 'ABILITY' or the extent to which communities feel empowered to be able to complete the program (relates to the suitability of the program for the target audience and learning styles); and

- Increasing the 'OPPORTUNITY' or the extent to which the program is accessible to communities (incorporates a variety of cost, access, flexibility, and inclusiveness issues).

The introduction of a few recent licensing programs (post Study 1) suggests that jurisdictions are improving in this area. For example, the *DriveSafe NT Remote* program, set up by the Northern Territory Government, recently won the Australasian Road Safety Award (ACRS, 2016). Since its introduction in 2012, the small team of five have worked in partnership with 23 Indigenous communities to deliver 3433 learner licences, 1086 provisional licences, 1164 birth certificates and 2103 driving lessons. In the last year alone, the service delivery footprint has increased from 42 to 74 remote Indigenous communities. Central to the success of the program has been community buy-in (incorporating road safety into community strategic planning) and minimising barriers throughout the process.

Incorporating licensing and road safety into community action plans is highly important, facilitating both resourcing and sustainability. As suggested by Lowe et al. (2011) and Ivers et al. (2008) long-term improvements to road safety in disadvantaged communities will only occur through a partnership approach. In road safety, like other health domains, government and external agencies need to actively engage Indigenous communities and empower them to become more involved in decision-making and the delivery of programs and services by making it a local priority. Guidance to support this process can be found in the new standard to improve road safety governance developed by the International Organization for Standardization. (2011).

8.3.3 Safe vehicles

Consistent with the literature review, the current research did not identify the vehicle as a major contributor to crash involvement. That being said, there are obviously ways in which vehicle safety can be improved in rural and remote areas. Sheehan et al. (2008) pointed out that as newer vehicles with additional safety features filter down into the rural fleet, safety will improve but, running parallel to this, rural communities need to be encouraged to make consumer choices based on safety. Additionally, the findings of *Study 2* highlighted that overloading and 'riding in the back of utes' remain a major safety

problem in rural and remote areas, independent of ethnicity. As such, trip planning and making safe vehicle choices based on purpose of journey remain educational priorities.

Similarly, *Study 2* provided evidence that messaging around the safety benefits of using appropriate personal protective equipment (helmets and restraints) is not achieving optimal results, most notably among motorcyclists and those travelling on more remote roads. This messaging needs to be ongoing and shared widely at a grass roots level. Given the willingness of crash victims to discuss their experiences in *Study 2*, there might be an opportunity for local communities to harness people's crash experiences as a learning tool for others. Also, widespread promotion of TMR's (2015) new guide to motorcycle safety should occur.

Finally, it was pleasing to see such strong support for courtesy buses as a drink driving countermeasure among both the Indigenous and non-Indigenous samples. Although transport alternatives are often limited in rural and remote areas, there could be an opportunity to utilise community service vehicles (for example, Heath and Community Care buses) at high-risk times for alcohol use to transport people safety within small rural towns and Indigenous communities. This would act as an effective exposure control, particularly for alcohol-related pedestrian crashes, and could be easily coordinated locally through stakeholder partnerships.

8.4 Strengths and Limitations of the Research

Arguably the major strength of the current program of research is its origin. Unlike many doctoral topics which are sparked by a research team's specific interests, this body of work grew out of the community consultation component underpinning the development of the *Queensland Indigenous Driver Licensing Program* (IDLP). In hindsight, the research topic identified by Indigenous communities throughout the Cape and Gulf in North Queensland was a plea to the academic community to identify strategies to address the 'hopelessness' and risk-taking on the road being perpetuated by 'transport disadvantage' (ie. reduced vehicle access and licence ownership). *Studies 2 and 3* also address key recommendations of the *National Review of Indigenous Road Safety* (Styles & Edmonston, 2006) documented in *Study 1*.

The inclusive nature of the research was another strength. All three studies had a consultation component. *Study 2*, in particular, adopted a "collaborative storytelling" methodology (Bishop, 1996; Tsey, 2010) to better understand crash experiences of Indigenous and non-Indigenous patients. The wealth of information provided through this process highlighted the suitability of the methodology for the target population and provided a suitable supplement to knowledge generated from traditional datasets.

A further strength of the research was the rapport developed between the candidate and participating communities and health facilities. These positive relationships stemmed from the candidates' commitment to working with communities to improve licensing outcomes throughout and beyond the life of the PhD, reflecting Miller and Rainow's (1997) concept of 'ethical surveys'. The combination of this trust and strong ethical and legal assurances, discussed at length in *Chapter 4*, resulted in very open responses from patients interviewed in *Study 2*. Several patients directly reported to the candidate that, while they were willing to share with him *"what really happened"* to help others, the police would receive a modified account.

Along similar lines, there was evidence to suggest that the process had therapeutic value and provides a rationale for an expansion of road trauma support services (Breen et al., 2011). While not specifically asked to comment on their experience of the methodology, nearly a quarter of the sample made reference to their rationale for participating as part of their narrative. The most frequently reported motivation for participating was to use their experience – *"living knowledge"* – to educate others. This suggests that patients made an informed decision to participate in the study based on their belief that the topic of the research is valuable. It also showed that the case identification and recruitment process was working, in that nurses were making eligible patients aware of the study.

> *"It's good you're asking us. Only the people in the crash really know what happened ... Hopefully others won't make the same mistakes ..." (Rural, Non-Indigenous, Driver).*

> *"I want to tell my story, it's no good out here and things need to change ..." (Remote, Indigenous, Passenger).*

"The ###### nurses told me that you want to hear about our crash. I think that it's good if others can learn from what happened to us …" (Remote, Non-Indigenous, Passenger).

From a methodological perspective, themes that were identified against each of the identified 'topics of interest' were verified by an independent reviewer who randomly audited 10 percent of cases. It was also important that patients indicated that they were candid in their responses, often admitting to illegal behaviours to which police investigators were not privy. This provided some reassurance that patients had faith in the ethics safeguards and felt the interviewer and research process could be trusted. It could also mean that consent was based on a judgement that the opportunity to positively influence the behaviour of others outweighed the potential risks associated with self-incrimination.

"I'm happy to tell you what happened because I know you're just trying to make sure others don't end up crashes … but the cops outside might get a different story" (Rural, Non-Indigenous, Driver).

"I wasn't going to talk to you about it but I thought that it might help another young fella to do the right thing … I'd been drinking all day with the family. I shouldn't have driven. I just live up the road … I also had a joint earlier but the cops don't know that. People told me later that I had a fight at the party before I drove off but I only remember that a little bit" (Remote, Indigenous, Driver).

"You're not going to talk to the cops are you mate because I don't want to get anyone in trouble – I know you won't … We'd been at ###### all day having some beers before heading back to ######. About 60km out of town we saw the cops doing RBTs and checking for grog. We knew we were gone, so we sped off towards town. The cops chased but not real close … We were flying, probably going 140k or so and it's hard to see … We drove into the scrub. I jumped out of the tray while the car was still moving but we were only going

slow then. I got a bit hurt – cuts on my hands and legs from when I landed. I hid for a couple of hours … I think the cops know who it was but they can't prove it" (Remote, Indigenous, Passenger).

An unexpected revelation from the narratives was that some patients experience psychological difficulties post-crash and need an outlet to process their thoughts. Butler et al. (1999) found that nine percent of patients involved in serious road cashes develop Post-Traumatic Stress Disorder (PTSD) symptoms, having flashbacks of their crash and experiencing difficulty in returning to driving or travelling in vehicles. In terms of treatment, they assert that the best way to return affected patients back to pre-crash functioning is to encourage them to discuss their crash, while offering reassurance that their feelings are normal. The current sample provided evidence that talking about the crash had some therapeutic benefits.

"It brings back some scary thoughts but I wanted to talk to you. Talking about things sometimes helps you to get over the pain …" (Remote, Indigenous, Passenger).

"I'm really struggling with it … I can't get back in a car and I'm seeing flashbacks all the time … Talking to you will help I think …" (Rural, Non-Indigenous, Driver).

"It has shaken me up a lot. You read about accidents but you never think it'll be you … I just need some time to process this. I'm glad you're doing this study. It will help me to move on" (Rural, Non-Indigenous, Driver).

The process at times took an emotional toll on the candidate as well. From an interviewer's perspective, it was easy to empathise with patients who provided vivid details of both their crash and often permanent injuries. The face-to-face interview below brought both the patient and candidate to tears. The full interview was conducted over two days with several breaks, but the patient was determined to *"get it all out"*. He needed to.

"I was going to my other job. I'm a farmhand at a couple of places and drive tractors between jobs. I've been driving cars and tractors for years so I know what I'm doing. My mate was following behind on a tractor too. He only just started – he's new to the game. I looked around to see he was ok - that's when I caught the potholes past the grid and lost control. I've never had any sort of licence. The tractor fell on me – the rollbars saved my life … I won't ever walk again though, so much for playing with my kids … I'm broke – not sure what I'll do" (Rural, Indigenous, Driver).

This case highlighted the fact that the information being shared was more than numbers or data – it was the lives of everyday people struggling with the very real consequences of road trauma. To support this patient, a payment was made enabling his children to catch a bus to the hospital to visit their Dad. There are implications here for possible hospital support services for people in remote areas involved in road crashes.

In terms of research outcomes, the applied examples presented in this chapter show that some of the lessons from this research are influencing delivery on the ground, particularly in the learner driver education space and incorporating road safety into schools and sport. Subsequent to the PhD Final Seminar, at which the results were publicly presented, a commitment was made by the *Land Transport Safety Branch* within TMR to use these findings to inform a cross-agency revision of the way government works with Indigenous communities and delivers road safety and licensing services.

The primary limitation of the research surrounded the quality and consistency of crash data relating to Indigenous populations in both the transport and health domains. This, to a degree, impacted on the ability to draw solid conclusions through the *National Review of Indigenous Road Safety (Study 1)*. Subsequent to this study, the Queensland Police Service and TMR chose to remove the Indigenous identifier further limiting the ability to monitor trends and profiles through official sources. Similarly, due to the shortcomings of the state-wide hospital emergency department information system (EDIS) discussed previously, it was impossible to quantitatively assess the performance of the recruitment strategy in *Study 2*.

Limitations with the recruitment and referral process for *Study 2* based on observations by the candidate and comments from nursing staff during the life of the project were discussed earlier *(see Section 4.4.8)*. However, in order to close the feedback loop on the project, an additional research phase was conducted. This involved a series of brief (10 minute) informal interviews with representatives from participating facilities to seek feedback on the methodology and research in general. It was deemed a logical step in assessing the validity of the results (in terms of representativeness), particularly given the inability to accurately ascertain participation rates.

During the process of officially thanking each facility for their participation in *Study 2* via certificate *(see Appendix O)*, all sites were given the opportunity to provide commentary on their experience of the research. Participation in this process was completely voluntary, with all except two sites participating. In terms of process, representatives from health facilities were simply asked to provide comment on *"what worked"* and *"what didn't work" (see Table 8.1)*. Given the unique nature of the data collection process used in *Study 2*, this process provides valuable methodological lessons for future work in this area.

Table 8.3 – Summary of feedback from health facilities post-Study 2

What worked (strengths)

- Unanimous support for research topic and methodology

  "This type of study was long overdue … I hope it improves things".

  "People want to be heard. They want to help others in the community".

  "It's a great way to get people thinking about road safety".

  "The interview process was so friendly … I listened in on one".

- The free call (1800 number) worked well but having the private number of the researcher helped.
- The $20 reimbursement for participation was *"not as great of an incentive as we thought … participation was based on us selling the study as an opportunity to give back"*.
- The project raised community and staff awareness about road safety … *"It's often forgot about because of all the issues, but it is important and hurts our people"*.

What didn't work (limitations)

- There was evidence of inconsistent referrals from some facilities in Indigenous communities. Through his involvement in the licensing program, the candidate was seen as deliverer, hence, patients presenting without a licence were more likely to be referred.

  "I made sure the bad ones rang you. I told them they had to. Hopefully you can get through to them, we can't ... It's the same ones getting hurt all the time".

  "Some of the ones that are good drivers don't need helping, so I didn't get them to ring".

- The transient nature and high staff turn-over in rural settings, including hospital administrators, impacted on knowledge of the study, case identification and recruitment processes which would have impacted on conversion rates.
- The infrequency of potential cases at smaller facilities meant that some were missed.

  "Some slipped through the cracks. You're just busy getting people in and out. Sometimes they're gone and you think I should have got them to call that bloke but it's too late".

  "We waited to get a case for you and then it slipped off our radar … We missed one which you should have spoken to".

- Possible severity bias – different 'length of stay' criteria for inclusion in larger hospitals compared to smaller facilities.

- There were no participants from one Indigenous community related to political reasons. In a process review of the IDLP, the candidate suggested that this community was being over-serviced in comparison to others.

Based on feedback from the clinic staff, there is evidence to suggest that the referral bias reported by Charmaz (1989) was present in *Study 2*, whereby health workers encouraged patients who they deemed to be more culpable to participate. While this potentially inflates some statistical differences, the fact of the matter is the risk factors reported as still present in the community and warrant attention.

8.5 Future Research Opportunities

Due to the paucity of existing literature in this field, the current research program relied heavily on the RRRSS (Sheehan et al., 2008) and the *National Review of Road Safety* (Styles & Edmonston, 2006) for background. While this program has furthered our understanding of the similarities and differences between crashes involving Indigenous and non-Indigenous road users in rural and remote areas of North Queensland, there is so much more to be explored in this domain, particularly from an intervention perspective.

From a methodological perspective, this research has demonstrated the value of generating road safety "wisdom" (Ackoff, 1989) through consultation with the end user/patient above and beyond what traditional data can provide. This aligns very well with *Queensland's Road Safety Action Plan 2015-17* (TMR, 2015) which calls for greater community involvement in decision-making on complex issues through a 'Citizen's Taskforce' process. In keeping with this theme, the following lines of research are recommended:

- Mixed methods process and outcome evaluations of road safety programs delivered in Indigenous communities (shown to be lacking in *Chapter 3*) to inform resource investment targeting safe road users;
- Qualitative research with remote Indigenous and non-Indigenous communities to explore innovative ways to reduce exposure and increase visibility at high-risk times for crashes involving alcohol and vulnerable road users;

- Qualitative research into critical success factors for Learner Driver Mentor Programs (LDMPs) in rural and remote areas, including making maximum use of existing community trips and skilling potential mentors;
- Qualitative research to identify factors or incentives with the potential to reduce risk-taking on the road among rural, remote and Indigenous populations, increasing the relevance of social and cultural change strategies;
- A structured trial of a 'short injury narrative' data collection process – an abbreviated version of that used in *Study 2* – as an alternative to larger scale data linkage projects which would be difficult to operationalise and unlikely to occur in the near future in smaller facilities; and
- Formal evaluations and comparisons of the varied Alcohol Management Plans (AMPs) implemented in Indigenous communities to determine the impact of different supply models on injury rates and other key health and wellbeing indicators, not unlike the framework proposed by Clough et al. (2014) shown in *Figure 8.5*.

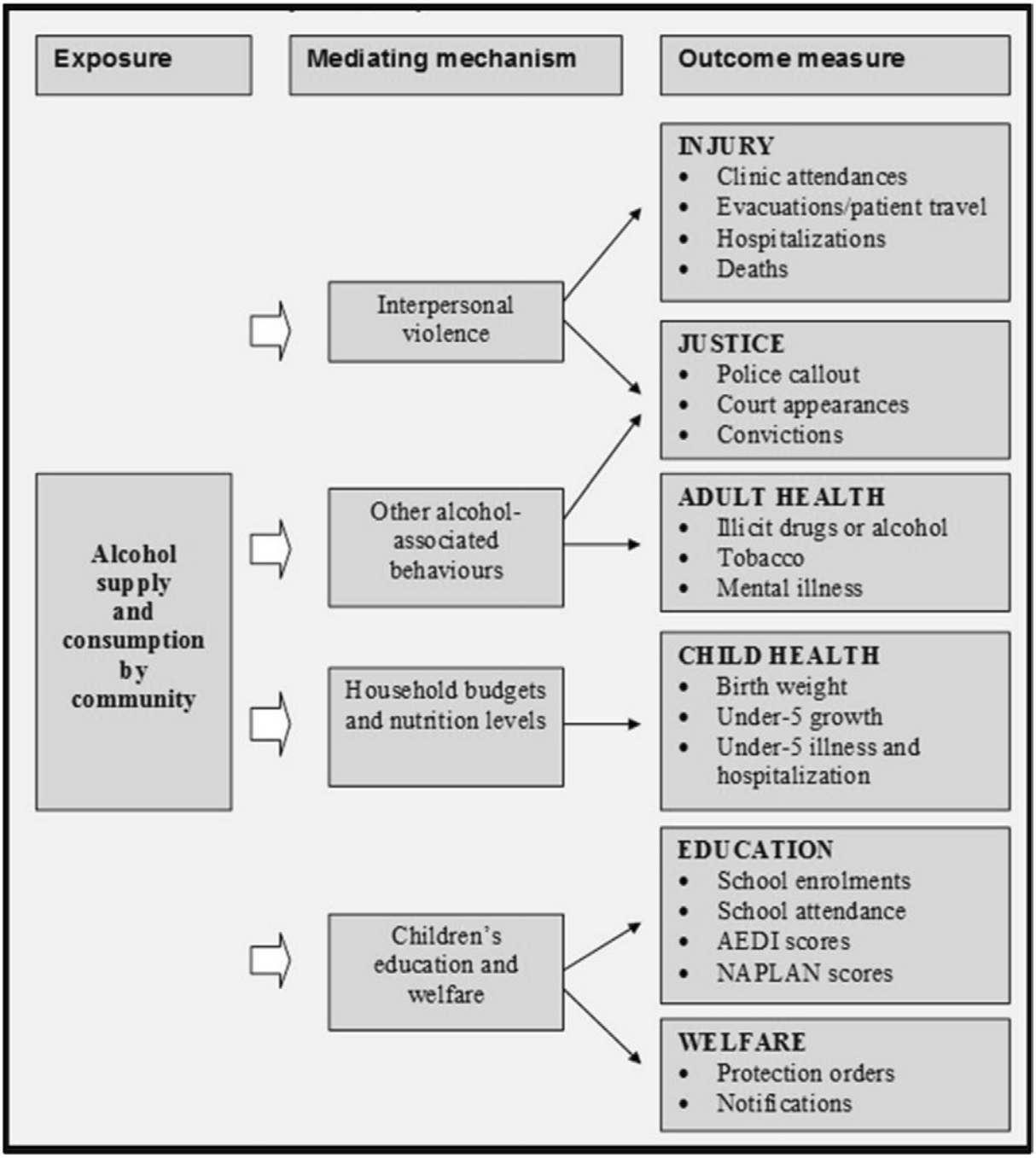

Figure 8.3 Evaluation Framework to Examine the Impact of Alcohol Management Plans in Queensland

8.6 Concluding Comments

Through three complementary studies, this research provided new insights into the individual and collective influence of 'Indigenous status' and 'remoteness' on crash profiles in the rural and remote context. *Study 1*, based on a *National Review of Indigenous Road Safety* (Styles & Edmonston, 2006), identified risk factors for crashes involving Indigenous people compared to those involving non-Indigenous people. While the 'Fatal 5' were common to both groups, they were more prominent in Indigenous crashes and increased with remoteness. It also discussed relative ineffectiveness of current programs and policies designed to improve their safety. Central to this commentary is the incongruence between program focus and crash causation, lack of Indigenous involvement in program development and a misguided focus on "fixing symptoms" rather than "building on strengths" (McPhail-Bell & Bond, 2013; Bond et al., 2012) to address the myriad of 'circumstantial', 'contextual' and 'individual' factors at play (Shore & Spicer, 2004).

The candidate then used a mixed-methods design *(Study 2)* to qualify and quantify these risk factors, as well as better understand the motivations and social determinants underpinning behaviours. Through an innovative recruitment protocol, with robust legal assurances, the candidate bolstered the Indigenous and remote samples previously collected through CARRS-Q's *Rural and Remote Road Safety Study*. The thematic analysis of the 'enhanced crash narratives' *(Study 2a)* suggests that Indigenous and remote crashes are typically the product of a 'cluster' of risky behaviours, rather than a single cause. Like previous research, the 'Fatal 5' figured heavily, particularly alcohol misuse, inappropriate speed for conditions and distraction. In terms of motivation, both Indigenous and non-Indigenous patients reported that the 'rural way of life' (Henderson) and 'showing off in front of mates' were influences. Indigenous patients also ascribed increased risk-taking, in particular harmful drinking, to feelings of 'hopelessness', usually qualified with comments about unemployment or the inability to get a driver's licence.

Key themes identified through the qualitative analysis – 'variables of interest' – were then subject to quantitative comparisons on the basis of Indigenous status and remoteness *(Study 2b)*. These results, coupled with knowledge elicited on attitudes towards safety and enforcement, preferred modes of learning, crash nature and emergency

response experience, inform a.. series of recommendations focusing on using relevant 'change agents' within communities and 'exposure controls' to minimise risk. Integral platforms in achieving positive social change in the rural and remote context identified were: (i) challenging the 'rural way of life' through positive community strengths; (ii) creating employment pathways through licensing as a means of improving road safety and perceived locus of control; (iii) investing in speed management and low-cost engineering; and (iv) coordinating cross-agency decision-making and delivery.

With end goal of improved road safety outcomes for those most disadvantaged – remote Indigenous communities - the opportunities this research offers are exciting. At the request of my late mate Jack Ahmat this program of research picks up a shovel and starts *"digging a hole"*. The next challenge is to *"throw willing partners a shovel"* by sharing the knowledge generated in this research through academic and practitioner channels.

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Appendix A – Growing the Smart State: PhD Funding Acknowledgment

Growing the Smart State
PhD Funding Program

In recognition of the value of research to the Smart State,
the Queensland Government is pleased to award funding to

Colin Edmonston
Queensland University of Technology

For research on the topic
An investigation of the high trauma rates associated with road travel by Indigenous and non-Indigenous people in rural and remote areas.

Peter Beattie MP
Premier of Queensland and Minister for Trade

Queensland **the Smart State**

Queensland Government

Appendix B – Consultation Pro-Forma for Indigenous Road Safety Review

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1. What is the role of your agency with regard to Indigenous affairs and, more specifically, Indigenous road safety issues?

2. How is Indigenous crash data classified and recorded in your jurisdiction?

    a) Is it adequate for your purposes?
    b) Suggested improvements …
    c) Consistency with other jurisdictions …

3. What are the key road safety issues for Indigenous people in your jurisdiction, as you see it?

4. What road safety programs, if any, are in place (past, present and future) to address these and/or other road safety issues?

    a) Program details …
    b) Implementation …
    c) Evaluation …

5. What Indigenous road safety research has been/is being undertaken, or future research planned, by your agency (or other agencies)?

6. Can you identify any gaps in the research that you believe should be addressed in the future?

7. Are you aware of any other promising initiatives to address Indigenous road safety issues?

8. Any further comments?

Appendix C – Queensland Health Research Ethics Committee Approval

Queensland Government

Queensland **Health**

Enquiries to: Jane Jacobs, Research & Ethics, Office of the Chief Health Officer
Telephone: (07) 322 52457
Facsimile: (07) 322 17535
Our Ref: 2006/005

Mr Colin Edmonston
Senior Research Assistant
Centre for Accident Research & Road Safety-Qld
Queensland University of Technology
Beams Rd
CARSELDINE QLD 4032

Dear Mr Colin Edmonston,

2006/005 An Investigation of the High Trauma Rates Associated with Road Travel by Indigenous People in Rural and Remote Areas.

At a meeting of the Queensland Health Research Ethics Committee (QHREC) held on 8 May 2006, the Committee reviewed the above Protocol. The Queensland Health Research Ethics Committee (QHREC) is duly constituted, and operates and complies with the National Health and Medical Research Council's 'National Statement on Ethical Conduct in Research Involving Humans and Supplementary Notes, 1999'.

It is advised that the Committee is satisfied with the ethical aspects of the present proposal. During the conduct of the study you are required to adhere to the following conditions:

- The researcher is to add to the information sheet a consent form that the study has been approved by this HREC.
- The National Statement on Ethical Conduct in Research Involving Humans requires a Human Research Ethics Committee to nominate a person to whom complaints from participants, researchers, or other interested persons can be directed. The QHREC has nominated Chief Health Officer (Phone 323 41137). This information must be included in the Information Sheet provided to participants.
- The clearance number should be quoted on all correspondence relating to ethical clearance.
- All forms required when submitting reports to the QHREC are accessible on the internet site (**www.health.qld.gov.au/ethics**). In the first instance please access the Commencement Form and return to this office when the study commences. Please contact the Coordinator if you do not have access to this site.

- You are required to provide a report on the outcome of the study at the completion of the study or annually if the study continues for more than 12 months.
- You must immediately report to the QHREC any serious or unexpected event involving participants, and any unforseen events that might affect continued ethical acceptability of the project. In addition, the Investigator must provide a summary of the adverse events, in the specified format, including a comment as to suspected causality and whether changes are required to the Patient Information and Consent Form.
- If any subsequent change/amendment is made to the protocol it will be necessary for you to obtain approval from the QHREC. The amended documents must be accompanied by a letter, signed by the Principal Investigator, providing a brief description of the changes, the rationale for them and their implications for the ongoing conduct of the study. All amended documents must contain revised version numbers, version dates and page numbers. Changes must be highlighted using Microsoft Word "Track Changes" or similar.
- Copies of all publications resulting from the study should be submitted to the QHREC. Please also ensure that a copy is also forwarded to the appropriate Hospital Medical Library for future reference.

The Queensland Health Research Ethics Committee provides advice on the ethical acceptability of a research proposal. However, Health Service District Managers have the responsibility to approve research projects being carried out in their district. The District Manager will base his/her decision on institutional ethical, legal and where relevant financial implications, in addition to any local issues.

Therefore, before commencing any research you will need to contact each relevant local HREC, or if none exist, the Health Service District Manager, providing a copy of the research protocol and the QHREC Letter of Acceptance. It is the HREC's responsibility for monitoring your research activities in their district.

The QHREC wishes you every success in undertaking this research project.

Yours sincerely

Professor M J Eadie
Chair, Queensland Health Research Ethics Committee
11 May 2006

Appendix D – Stakeholders Consulted in Research Development

- Aboriginal Local Government Association of Queensland
- Apunipima Cape York Health Council
- Aurukun Shire Council
- Balkanu Cape York Development Corporation
- Bama Ngappi-Ngappi Aboriginal Corporation
- Bumma Bippera Media Association Inc.
- Cairns Base Hospital
- Cape York Land Council
- Cape York Partnerships
- Carpentaria Land Council
- Centre for Appropriate Technology
- Coen Regional Aboriginal Corporation
- Department of Communities Aboriginal & Torres Strait Islander Policy
- Department of Emergency Services
- Department of Employment and Industrial Relations
- Foundation for Aboriginal Islander Research Action (FAIRA)
- FNQ Indigenous Consortium for Social and Emotional Health
- Gindaja Substance Misuse Aboriginal Corporation
- Gungarde Community Centre Aboriginal Corporation
- Hopevale Aboriginal Shire Council
- Indigenous Coordination Centre (Cairns)
- Injinoo Aboriginal Shire Council
- Centre for ATSI Participation Research & Development, James Cook University
- KMKM Aboriginal Corporation
- Kowanyama Aboriginal Shire Council
- Kuku Djungan Aboriginal Corporation (Mareeba)
- Lockhart River Aboriginal Shire Council
- Mamu Health Service Ltd (Innisfail)
- Mapoon Aboriginal Corporation
- Napranum Aboriginal Shire Council
- New Mapoon Aboriginal Shire Council
- North Queensland Land Council (Cairns)
- Pormpuraaw Aboriginal Shire Council
- Queensland Health – various districts throughout North Queensland
- Queensland ATSI Health Worker Education Program Aboriginal Corporation (Cairns)
- TAFE Queensland (Cairns and Weipa)
- Umagico Aboriginal Shire Council
- Wu Chopperen Health Service (Cairns)
- Wujal Wujal Aboriginal Council
- Yarrabah Aboriginal Shire Council

Appendix E – Letter of Support from Apunipima Cape York Health Council

APUNIPIMA
CAPE YORK
HEALTH COUNCIL

Mr Colin Edmonston,
Senior Research Officer
Centre for Accident Research & Road Safety – Queensland
School of Psychology & Counselling
Queensland University of Technology
L Block (Level 3)
Beams Road
Carseldine QLD 4034

Dear Colin,

RE: An examination of the high trauma rates associated with road travel by Indigenous and non-Indigenous people in rural and remote areas

The Apunipima Cape York Health Council is strongly committed to reducing injury associated with road travel in Indigenous communities. We represent and work closely with Indigenous communities throughout the Cape York region and understand that transport and safety are priority issues.

After discussing the project with Colin Edmonston, our network would like to indicate its endorsement and support for the above mentioned project funded through an NHMRC Postgraduate scholarship.
Colin already has extensive involvement with Aboriginal and Torres Strait communities throughout North Queensland through the Whole-of-Government Indigenous Licensing Project. This project has seen an increase in licence ownership among Indigenous people in Queensland by 8.1% in its first 18 months.

We understand that the project will involve:

(i) identifying all individuals that present at any of the participating health facilities in North Queensland following a road crash; and
(ii) (ii) seeking their consent to complete a 20 minute survey to better understand the causes of their crash (either over the phone or in person) for which they will be paid $20.

We look forward to learning of the results of the study and working with Colin in the future to improve road safety outcomes for Indigenous and remote Queenslanders.

Yours sincerely,

Mr David Sharkey
Manager Community Partnerships and Engagement
Apunipima Cape York Health Council
Ph: (07) 4051 7450 / Mob: 0438 177 499

12/02/2007

343 FEARNLEY ST. MANUNDA, P.O.BOX 2797 CAIRNS, 4870. PHONE (07) 4051 7450 FAX (07) 4051 7940

Appendix F – Letter of Support from the North Queensland Aboriginal and Torres Strait Islander Road Safety Network

Queensland Government

Queensland **Transport**

Mr Colin Edmonston,
Senior Research Officer,
Centre for Accident Research & Road Safety – Queensland,
School of Psychology & Counselling,
Queensland University of Technology,
L Block (Level 3),
Beams Road,
Carseldine QLD 4034

12/02/2007

Dear Colin,

RE: An examination of the high trauma rates associated with road travel by Indigenous and non-Indigenous people in rural and remote areas

The North Queensland Aboriginal and Torres Strait Islander Road Safety Network are strongly committed to reducing trauma associated with road travel in Indigenous communities. We represent and work closely with Indigenous communities throughout the Cape, Gulf and Torres Strait regions to address local transport and safety priorities.

After discussing the project with the PhD Scholar (Colin Edmonston), our network would like to indicate its endorsement and support for the above mentioned project funded through an NHMRC Postgraduate scholarship. Colin already has extensive involvement with our network and Aboriginal and Torres Strait communities throughout North Queensland through the Whole-of-Government Indigenous Licensing Project. This project has seen an increase in licence ownership among Indigenous people in Queensland by 8.1% in its first 18 months.

We understand that the project will involve: (i) identifying all individuals that present at any of the participating health facilities in North Queensland following a road crash; and (ii) seeking their consent to complete a 20 minute survey to better understand the causes of their crash (either over the phone or in person).

We look forward to learning of the results of the study and working with Colin in the future to improve road safety outcomes for Indigenous and remote Queenslanders.

Yours sincerely,

for

Ms Deborah Avery
Coordinator North Queensland Aboriginal and Torres Strait Islander Road Safety Network
Senior Advisor – Aboriginal & Torres Strait Islander Communities (Queensland Transport, Northern Region)
Ph: (07) 4040 6379 / Mob: 0417 761 078

Appendix G – Example EDIS Records for Cairns Base Hospital

Arrival Date	UR Number	Patient	DOB	Postcode	Mode of Arrival	Presen	Problem	Departure
Sep-2007	[redacted]	[redacted]	[redacted]1986	4871	WALKED IN / PUBLIC OR PRIVATE TRANSPORT	MBA AT 1100HRS TODAY, LOC FOR A FEW MINUTES. SEEN AT MOSSMAN HOSPITAL. NECK CLEARED ON PLAIN FILMS. ? # TO NECK OF L. HUMERUS. PT. PRESENTS HERE DUE TO ABDO PAIN AND DISTENSION. NAUSEATED.	ADMITTED (EXCL. ED BED)
Sep-2007	[redacted]	[redacted]	[redacted]-1967	4870	AMBULANCE (ROAD)	MULTI-TRAUMA (Patient Expect: MULTI-TRAUMA - MBA AT 1530HRS. COMPOUND 4TH AND 5TH FINGERS + CLOSED FRACTURES RIGHT FOOT. EXPECT BY ORTHO - CALL ON ARRIVAL)		ADMITTED (EXCL. ED BED)
Sep-2007	[redacted]	[redacted]	[redacted]-1937	4880	AMBULANCE (ROAD)	MVA- PARTIAL DEGLOVING OF RIGHT FOREARM AND PARTIAL AMPUTATION OF THUMB AND LITTLE FINGER		ADMITTED (EXCL. ED BED)
Sep-2007	[redacted]	[redacted]	[redacted]-1982	4880	AMBULANCE (ROAD)	MVA FRONTAL COLLISION		ED SERVICE EVENT COMPLETED - DISCHARGED
Sep-2007	[redacted]	[redacted]	[redacted]-2000	4878	AMBULANCE (ROAD)	PAIN TO R) WRIST POST MBA		ED SERVICE EVENT COMPLETED - DISCHARGED
Sep-2007	[redacted]	[redacted]	[redacted]-1969	4879	AMBULANCE (ROAD)	MBA L) ARM PAIN		ED SERVICE EVENT COMPLETED - DISCHARGED
Sep-2007	[redacted]	[redacted]	[redacted]1980	4870	AMBULANCE (ROAD)	MOTORCYCLIST V CAR APPROX 40KM/HR		ED SERVICE EVENT COMPLETED - DISCHARGED
Sep-2007	[redacted]	[redacted]	[redacted]1964	4870	AMBULANCE (ROAD)	PT STATES SHE WAS INVOLVED IN MVA, HIT TO PASSENGER SIDE, HIT R) SIDE OF HEAD ON WINDOW, NOW HAS L) SIDED NECK PAIN		ED SERVICE EVENT COMPLETED - DISCHARGED
Sep-2007	[redacted]	[redacted]	[redacted]-1998	4870	AMBULANCE (ROAD)	PT INVOLVED IN MVA, PT PASSENGER, HIT TO HIS SIDE BY ANOTHER CAR, NOW HAS NECK PAIN, R) ARM PAIN		ED SERVICE EVENT COMPLETED - DISCHARGED
Sep-2007	[redacted]	[redacted]	[redacted]1952	4152	AMBULANCE (ROAD)	DRIVER OF CAR AT 20KM/HR THAT TBONED 4WD, CO PAINFUL R)ARM		ED SERVICE EVENT COMPLETED - DISCHARGED
Sep-2007	[redacted]	[redacted]	[redacted]-1936	4878	AMBULANCE (ROAD)	ROAD TRAFFIC ACCIDENT		ED SERVICE EVENT COMPLETED - DISCHARGED
Sep-2007	[redacted]	[redacted]	[redacted]1935	4868	AMBULANCE (ROAD)	PUSH BIKE VS CAR		ADMITTED (EXCL. ED BED)
Sep-2007	[redacted]	[redacted]	[redacted]1970	4870	AMBULANCE (HELICOPTER)	{Patient Expect: INJURY - MBA; FRACTURED RIBS, CLAVICLE, L3-4 TRANSVERSE PROCESS, SURGICAL EMPHYSEMA;}		ADMITTED (EXCL. ED BED)
Sep-2007	[redacted]	[redacted]	[redacted]1980	4870	AMBULANCE (ROAD)	POST MVA		ED SERVICE EVENT COMPLETED - DISCHARGED
Sep-2007	[redacted]	[redacted]	[redacted]1985	2602	AMBULANCE (ROAD)	PAIN IN (R) SHOULDER AFTER FALL OF TRAILBIKE YESTERDAY AT 1000. NIL LOC.		ED SERVICE EVENT COMPLETED - DISCHARGED

Data Accessed On: 12-Oct-2007 11:27 am by User: fetchard

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Appendix H – Patient Information Sheet for Study 2

CARRS Centre for Accident Research & Road Safety - Queensland (CARRS-Q)

ABN: 83 791 724 622

Rural Road Crash Study - Patient Information Sheet

What are the aims of the study?

- The study aims to better understand the causes of road crashes in country areas and develop strategies to reduce road deaths in rural and remote Australia.
- People who are involved in a road crash and present at any of the hospitals and community clinics throughout North Queensland are being asked to complete a 20-minute interview to learn more about their crash.
- The study has the support of your local community and the National Health & Medical Research Council.
- The research has been approved by the Queensland Health Research Ethics Committee (Approval Number 005/2006).

Why study road crashes in rural and remote areas?

- Almost 1,800 people die on Australian roads every year, with countless more seriously injured.
- Research shows that more than half of Australia's road fatalities occur on rural roads, with country people three times more likely to be seriously injured in a crash.
- People living in remote communities are most at risk.

How can you help?

We would like to talk to you about the road crash which brought you to the hospital/health clinic today.

- The nurse has already given you this patient information sheet, a personal consent form, a copy of the questionnaire and the free-call 1800 number **(1800 682 022)** to contact me (Colin Edmonston) if you would like to be in the study.
- Your participation in this study is voluntary and, if you agree to take part, you will not miss your place in the queue for treatment. If you do not participate, it will not effect the treatment you receive.

QUT CARRS-Q is a joint venture initiative of the Motor Accident Insurance Commission and Queensland University of Technology
QUT Carseldine Campus, Beams Road, Carseldine Q 4034, Australia
Tel +61 7 3864 4589, Fax +61 7 3864 4640, Email carrsq@qut.edu.au, Web www.carrsq.qut.edu.au CRICOS No.00213J

CARRS Centre for Accident Research & Road Safety - Queensland (CARRS-Q)

ABN: 83 791 724 622

- If you would like to be part of the study, please ring the free-call 1800 number provided, so that I can answer any questions you may have about the study and tee up a time for an interview that is convenient for you.
- It is also fine to get help with the consent form and/or the interview questions from a friend if you would like.
- If you have trouble with writing, you don't have to sign the consent form, but you do need the friend/nurse to sign for you to say that you fully understand what the study involves and want to be in it.
- All the interviews will be conducted over the phone by me (except in Cairns). When you ring me, I will ask you if: (a) you have read and understood the patient information sheet; (b) if you want to participate and the consent form has been completed; and (c) if you would like to complete then or at a later date.
- If you would like to complete the interview at another time, I will write down that date and time and ask you to ring the 1800 number then to complete the interview. Remember, we pay for all the calls to the 1800 number, so it won't cost you any money.
- I know that it is sometimes hard to get to a phone, so I will fit in with whatever time suits you. You can ring any time of the day.
- All information you give will remain confidential. Your name will not be kept after the interview and information you give will be grouped together with information from other interviews, so that individuals will not be identified.
- The interview will be at your convenience. You do not have to answer all questions and can stop for a break at any time.
- When you have finished the interview, arrangements will be made to pay you $20 for your time.

What will happen to the information you give?

- The information you provide will be used by researchers and other agencies to improve road safety for country people.
- No identifying or database linking information will appear on the investigators' record of the subjects' data at any time, so that outside authorities cannot use the information even if they try to claim it.

QUT CARRS-Q is a joint venture initiative of the Motor Accident Insurance Commission and Queensland University of Technology
QUT Carseldine Campus, Beams Road, Carseldine Q 4034, Australia
Tel +61 7 3864 4589, Fax +61 7 3864 4640, Email carrsq@qut.edu.au, Web www.carrsq.qut.edu.au CRICOS No.00213J

CARRS Centre for Accident Research & Road Safety - Queensland (CARRS-Q)

ABN: 83 791 724 622

What support is available to you?

- Some people find talking about the crash helps them. However, if the interview causes you any distress, it can be stopped. Accessible counselling services can also be organised by ringing 1800 682 022. A friend/relative can be present at the interview if you would like.

Who can you contact to get further information about the study?

- If you have any questions or would like further information about the study at any stage, please feel free to contact myself – Colin Edmonston – on (07) 3138 4775 (office hours) or via email to c.edmonston@qut.edu.au

Who can you contact with any concerns or complaints?

- If you have any concerns or complaints about the ethical conduct of this study, you can contact the secretariat of the QUT Human Research Ethics Committee in Brisbane on (07) 3138 2902 or the Chief Health Officer on (07) 3234 1137. All complaints will be treated in confidence, investigated fully and you will be informed of the outcome.

Will you receive any feedback?

- Six-monthly reports which summarise the progress and findings of the research will be provided to all participating health facilities for your interest. For further information about the results of the study, you may contact Colin Edmonston (contact details above).

Thank you for your time.

QUT CARRS-Q is a joint venture initiative of the Motor Accident Insurance Commission and Queensland University of Technology
QUT Carseldine Campus, Beams Road, Carseldine Q 4034, Australia
Tel +61 7 3864 4589, Fax +61 7 3864 4640, Email carrsq@qut.edu.au, Web www.carrsq.qut.edu.au CRICOS No.00213J

RURAL ROAD CRASH STUDY - PERSONAL CONSENT FORM

I understand that this study has the support of my local council, staff from the local hospital/clinic and the Queensland Health Research Ethics Committee. It aims to find out what causes road crashes in North Queensland.

I understand that participation is voluntary and if I do not take part it will not effect my treatment.

I understand that I will be asked some questions about a recent road crash I was in. This interview will be done over the phone – **1800 682 022 (free call)** - at a time that suits me and takes about 20 minutes. I will be given $20 for my time when the interview is finished. I know that I do not have to answer any questions that I do not want to and can stop at any time.

I have had a chance to ask the interviewer any questions I have about the study. I understand that I can get help with the consent form and/or the interview questions from a friend or a nurse.

I understand that my name will not be kept after the interview and information I give will be grouped together with information from other interviews, so that my identity and other individuals cannot be identified.

I understand that the information I give will be used by the researchers to improve road safety for country people.

I agree to take part in this study.

Signed _____

Date _____

Friend / local interpreter *(if required)* * _____

** I am satisfied that the participant is fully aware of all aspects of the study and wants to take part. I understand that my satisfaction that this has been achieved and subsequent participation will constitute implied consent.*

Appendix J – Promotional A3 Poster for Study 2

Appendix K - Driver/Rider Questionnaire for Study 2

RURAL & REMOTE

ROAD SAFETY STUDY

CONFIDENTIAL

RURAL ROAD CRASH SURVEY

DRIVER/RIDER

1800 682 022

(FREE CALL)

QUT CARRS Australian Government National Health and Medical Research Council Queensland Government MAIC

CONFIDENTIAL

Health Service Dist. ... ☐
Facility ID..... ☐☐
Crash ..... ☐☐☐
Vehicle..... ☐☐
Type..... D / R
Occupant ..... ☐☐
Excluded..... ☐

Hello *(mitikid)* ... My name is Colin and I'm working on a study of road crashes in rural and remote areas. I am interested in hearing about the recent road crash you were in and what you usually do on the road.

The study has the support of your local council, staff from the local hospital/clinic and the Northern Area Health Service. Participation is voluntary and you may stop any time. This interview could take about 20-30 minutes and you will be paid $20 for your time.

Let me assure you that all your comments are strictly confidential and anonymous. Your name will not be kept after the interview and information you give will be grouped together with information from other interviews, so that your identity and other individuals cannot be identified. The information you give will help us to improve roads and road safety education for country and remote Queenslanders.

Would you like to take part (have a yarn)? ... (If *"yes"*, proceed with the interview, if *"no"* record this as a refusal).

Thank you *(esso)*

✍ Commence the interview ✍

Consent form signed *OR* Interpreter satisfied that participant fully understands the study and is willing to participate YES *(please circle)*

Interviewer's signature.....

Interview start and completion times .....

Date of interview .....

Comments .....
.....
.....

NOTE - Record if another person is present at interview (family, friend, interpreter, etc).

The first questions are about you, the crash, and any other cars, trucks or bikes involved.

QUESTION	*CODE/NOTES*
Q1 **(a) Were any cars, trucks or other people involved?** *Please specify*	YES = 1 NO = 2
(b) Was anyone else hurt or taken to hospital or the local clinic? *Please specify*	YES = 1 NO = 2 Note other potential participants from the index crash
(c) Please can you tell me where the crash happened? *Please specify*	YES = 1 NO = 2
(d) Can you tell me the day *(date)* you had the crash and roughly what time it happened? *Please specify*	YES = 1 NO = 2
(e) Can you tell me how many people were in the car *(on the bike)* when the crash happened? *Please specify (in cases where there are many occupants, it may be easier to work through who was in the car to determine the number of occupants)*	YES = 1 NO = 2

NARRATIVE

(f) I realise that this might bring back some memories, but I was wondering if you could tell me a little about what happened before, during, and after your crash and what you think may have caused it?

Use prompts to explore issues raised by interviewees

Notes

Type of road (dirt, bitumen and paved shoulders)? *Weather conditions?* *Visibility (dust)?* *Animal on the road (cow, kangaroo)?*	☜ *Environment*
Mechanical fault (something went wrong with the car/bike)? *Tyre blew?*	☜ *Vehicle*
Alcohol (grog) and/or drugs? *Seatbelt use and/or overloading (too many in the car)?* *Speed (too fast for the conditions)?* *Tired or sleepy?* *Bored (lost concentration, switched off)?* *Distracted (by something inside or outside the car/bike)?* *Not used to the car/bike?* *Anything else?*	☜ *Behaviour*

(g) How did you get help after the crash (friend, family, ambulance, police)?

Please specify

.....
.....
.....

(h) How long did it take to get help?

Please specify (hours and/or minutes)

.....
.....
.....

(i) Were you taken straight to the hospital/clinic?

Please specify

.....
.....
.....

YES = 1

NO = 2

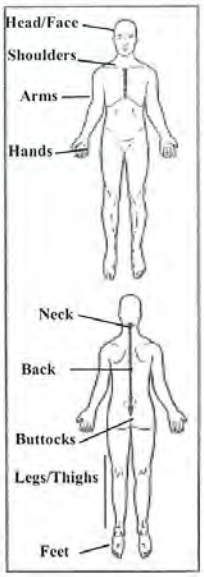
Note if the facility was chosen by the patient or others

Q2

(a) Where did you get hurt, and what treatment did you get?

Tick all the boxes that apply (body region by treatment type) and record any comments

	X-Ray	Bandaged for bleeds	Stitches	Plaster/ cast/brace	Drugs / painkillers	Surgery
Head/Face						
Neck						
Shoulders						
Back						
Arms						
Hands						
Buttocks						
Legs/Thighs						
Feet						
Internal						



Notes (narrative).....
.....
.....
.....
.....

(b) Were you kept in overnight?	YES = 1 NO = 2
(c) Were you transferred to or from another hospital/ clinic? *Notes*	YES = 1 NO = 2
Q3 (a) What is the model, type, make and year of the vehicle you were driving/riding at the time of the crash? Model ..... Type ..... Make ..... Year..... ***For motorcycle riders:*** Engine size:..... (b) How long have you been driving/riding this type of vehicle? *Please specify (years and months if possible)*	Example *Model* (Commodore) *Type* (Stat. Wagon) *Make* (Holden) *Year* (1989) SKIP = 0 '*This type of vehicle*' refers to type (eg. car, motorbike) and engine size. Vehicle type does not refer to model or make.
Q4 (a) How many years have you been driving/riding (in Australia)? *Please specify (years and months)*..... ***For motorcycle riders:*** (b) Have you recently started riding again after a break of five years or more?	Non resident = 77 YES = 1 NO = 2 SKIP = 0

Q5 **(a) Do you own a car or motorbike?** **(b) Who owns the vehicle you were driving/riding at the time of the crash?** 1. Self/Partner ☐ 2. Friend/Another member of your family ☐ 3. Employer ☐ 4. Hire or leasing company ☐ 5. Other (*please specify*) ☐ 6. Council or community vehicle ☐ 88. Don't know ☐	**YES = 1** **NO = 2** Tick the box that applies
Q6 **Respondent's sex?** **MALE / FEMALE**	**DO NOT ASK THE PARTICIPANT** (Circle which applies)
Q7 **Can you tell me your age in years?** Age.....	Record age in years or indicate "don't know" below **Don't know = 88**
Q8 **(a) Do you identify yourself as any of the following?** 1. Aboriginal ☐ 2. Torres Strait Islander ☐ 3. Aboriginal & Torres Strait Islander ☐ 4. None of these ☐ **(b) If Aboriginal and/or Torres Strait Islander, which language do you <u>mainly</u> speak at home *(first language)*?** 1. English ☐ 2. An Aboriginal language ☐ 3. A Torres Strait Islander language ☐ 4. Other *(specify)* ☐	Tick the box that applies **YES = 1** **NO = 2** **SKIP = 0** Tick the box that applies

Q9 **(a) Do you have a full-time job right now?** **If *YES*, what is it?** *(Write in)*..... **If *NO*, are you ...** 1. Part-time/casual worker ☐ 2. Unemployed/welfare recipient ☐ 3. CDEP/Work for the dole participant ☐ 4. Homemaker ☐ 5. Retired ☐ ***For those employed only (including part-time):*** **(b) Do you do shift work?**	**YES = 1** **NO = 2** Tick the box that applies **SKIP = 0** **YES = 1** **NO = 2** **SKIP = 0**
Q10 **What is the highest schooling or education you have completed?** 1. No schooling ☐ 2. Primary school ☐ 3. Completed Year 8 ☐ 4. Completed Year 10 ☐ 5. Completed Year 12 ☐ 6. Trade/Apprenticeship ☐ 7. Certificate/Diploma ☐ 8. Bachelor's Degree or higher ☐ 9. Other *(please specify)* ☐	Tick the box that applies

The next group of questions is about the way you usually drive/ride and about what you did on the trip before the crash. You can do these ones on your own and mail them back, or I can ask them now and write down your answers.

QC1

(a) On average, how fast were you going in the ten minutes before the crash?

Tick the box that applies

1. Below the speed limit ..... ☐
2. On the speed limit ..... ☐
3. Just over the limit (less than 15kph over) ..... ☐
4. A bit over the speed limit (15 – 30kph over) .... ☐
5. A lot over the limit (more than 30kph over) ..... ☐

QC2 - Questions about drinking - *(Write number in box/circle your answer)*

The guide above contains examples of ***one standard drink.*** A full strength can or stubbie contains ***one and a half standard drinks***

Select from the answers below and place the number that corresponds with your answer in the box on the right side of the question. Try to answer the questions in terms of "standard drinks".

1. **How often do you have a drink containing alcohol?**
   0 Never *(go to Qs. 9 & 10)* | 1 Monthly or less | 2 Two to four times a month | 3 Two to three times a week | 4 Four or more times a week | ☐
2. **How many standard drinks do you have on a typical day when you are drinking?**
   0 One or two | 1 Three to four | 2 Five or six | 3 Seven, eight or nine | 4 Ten or more | ☐
3. **How often do you have six or more standard drinks on one occasion?**
   0 Never | 1 Less than monthly | 2 Monthly | 3 Weekly | 4 Daily or almost daily | ☐
4. **How often during the last year have you found that you were not able to stop drinking once you had started?**
   0 Never | 1 Less than monthly | 2 Monthly | 3 Weekly | 4 Daily or almost daily | ☐
5. **How often during the last year have you failed to do what was normally expected from you because of drinking?**
   0 Never | 1 Less than monthly | 2 Monthly | 3 Weekly | 4 Daily or almost daily | ☐
6. **How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session**
   0 Never | 1 Less than monthly | 2 Monthly | 3 Weekly | 4 Daily or almost daily | ☐
7. **How often during the last year have you had a feeling of guilt or remorse after drinking?**
   0 Never | 1 Less than monthly | 2 Monthly | 3 Weekly | 4 Daily or almost daily | ☐
8. **How often during the last year have you been unable to remember what happened the night before because you had been drinking**
   0 Never | 1 Less than monthly | 2 Monthly | 3 Weekly | 4 Daily or almost daily | ☐

More questions about grog and drinking ...

9. Have you or someone else been injured as a result of your drinking?

0 No	2 Yes but not in the last year	4 Yes, during the last year	

10. Has a relative, a friend, a doctor or another health worker been concerned about your drinking or suggested you cut down?

0 No	2 Yes but not in the last year	4 Yes, during the last year	

QC3 **(a) In the 24 hours before the crash did you drink any alcohol/grog?** **(b) If *YES*, what did you have?** *Please specify*..... .... **(c) What time did you start drinking?** [:] *am* OR [:] *pm* **(d) What time did you have your last drink?** [:] *am* OR [:] *pm* *Notes (prompt for more than one drinking session in the 24 hours)*.....	YES = 1 NO = 2 Please specify number, types and strength of drinks consumed (Need to stress that this is amount drunk by the individual only) SKIP = 0 SKIP = 0 SKIP = 0
QC4 **(a) In the 24 hours before the crash did you take any illegal drugs?** **(b) If *YES*, what did you take?** *Please specify (eg. yandi/marijuana, sniffing petrol, amphetamines etc.)*	YES = 1 NO = 2 SKIP = 0

(c) How long before the crash did you take drugs? *Please specify (eg. just before, hours/minutes)*.....	SKIP = 0 Don't know = 88
QC5 **(a) Have you ever held any type of driver's licence (passed the driving test)?**	YES = 1 NO = 2 If 'NO' to QC5(a), go to QC6 or QC7
(b) Have you had a licence taken off you in the last five years?	YES = 1 NO = 2 SKIP = 0
(c) Were you licensed to drive/ride the vehicle in the crash?	YES = 1 NO = 2 SKIP = 0
(d) If *YES*, how long have you held this type of licence? *Please specify (years)*.....	SKIP = 0
QC6 - *MOTORCYCLISTS ONLY* **Did you (and any passengers) wear a helmet for the whole trip?** 1. Rider only wore helmet.....☐ 2. Both rider and passenger wore helmets .....☐ 3. Passenger only wore helmet .....☐ 4. No one wore helmets .....☐	SKIP = 0 Tick the box that applies

QC7 - *DRIVERS ONLY* (a) Did you (and any passengers) wear a seatbelt for the whole trip? 1. Driver only wore seatbelt ☐ 2. Both driver and passenger(s) wore seatbelts ☐ 3. Passenger(s) only wore seatbelts ☐ 4. No one wore seatbelts ☐ (b) Were there enough seatbelts for everyone on the trip?	SKIP = 0 Tick the box that applies YES = 1 NO = 2
QC8 Was the vehicle registered?	YES = 1 NO = 2 Don't know = 88
QC9 (a) Have you been booked for any traffic offences in the last five years? (b) If *YES*, what were they? 1. Speeding ☐ 2. Drink driving ☐ 3. Driving without a licence/wrong licence ☐ 4. Other *(specify)* ☐	YES = 1 NO = 2 SKIP = 0 Tick all boxes that apply
QC10 (a) In the last month, have you driven a car or ridden a motorbike after drinking two or more alcoholic drinks/ grogs in the hour before? (b) In the last month, have you been a passenger of somebody who had drunk two or more alcoholic drinks/ grogs in the hour before?	YES = 1 NO = 2 YES = 1 NO = 2

The next few questions are about the trip before the crash.

Q11

(a) How long were you driving/riding without stopping before the crash?

Tick the box that applies

Note: Only count stops where the person got out of the vehicle

1. Less than 1 hour (short trip) ☐
2. More than 1 and less than 2 hours ☐
3. More than 2 and less than 3 hours ☐
4. More than 3 and less than 4 hours ☐
5. More than 4 hours ☐

(b) How long did you stop for at the last place you got out of the car/off the bike before the crash?

SKIP = 0

Please specify (hours and/or minutes).....

.....

(c) Was the drive/ride part of a longer trip? (eg. Cairns to Townsville, Cairns to Bamaga, Mackay to Mt Isa)

YES = 1

NO = 2

SKIP = 0

Narrative (collect details of the trip).....

.....

.....

.....

.....

Q12

What was the reason for the trip?

Tick the box that applies

1. Part of your job (includes farming tasks) ☐
2. To or from work ☐
3. To or from another activity (specify) ☐
4. For leisure / holiday ☐
5. Other (specify) ☐

Notes.....

.....

.....

Q13 **How often do you drive/ride along the route/stretch of road where the crash occurred?** 1. At least daily ☐ 2. At least weekly ☐ 3. At least monthly ☐ 4. At least yearly ☐ 5. Less than once a year (but not first time) ☐ 6. First time ☐	Tick the box that applies
Q14 **(a) Did any of the following distract you or affect your driving/riding before the crash?**	Circle 'Yes' or 'No' for each potential distraction
(a) Outside person, object or event (eg. other traffic, police, sunlight/sunset, animals on the road, crash scene, road construction, etc.) *Please specify*.....	**YES / NO**
(b) Using other equipment in the vehicle (eg. lights, wipers, adjusting mirrors or climate controls, etc.) *Please specify*.....	**YES / NO**
(c) Other person in the car	**YES / NO**
(d) Moving object in vehicle (eg. pet, insect, object falling off seat, etc.) *Please specify*.....	**YES / NO**
(e) Adjusting radio, cassette or CD	**YES / NO**
(f) Emotionally upset/relationship problem	**YES / NO**
(g) Mobile phone or CB radio	**YES / NO**
(h) Eating/drinking	**YES / NO**

(i) Lighting a cigarette	YES / NO
(j) Other distractions (eg. medical problems, sneezing, other devices brought into vehicle etc.) *Please specify*.....	YES / NO
(k) Inattention/daydreaming	YES / NO
(b) Was the distraction just before the crash?	YES = 1 NO = 2 SKIP = 0
Q15 **(a) Did you feel tired on the trip?**	YES = 1 NO = 2 SKIP = 0
(b) Were you tired when you started the trip?	YES = 1 NO = 2 SKIP = 0
(c) Did you do anything about it? *Please specify*.....	YES = 1 NO = 2 SKIP = 0
Q16 **(a) Was the car/bike in good condition before the crash?**	*Probe/prompt - "any problems with it?"* YES = 1 NO = 2
(b) If *NO*, what sort of problems did it have? (What was wrong with it?) *Please specify*.....	SKIP = 0

Now I would like to ask about your health.

Q17 **(a) Did you have any health problems that may have affected your driving/riding?** *Please specify*.....	YES = 1 NO = 2 PROMPTS (Conditions): 1. Eyesight 2. Hearing 3. Flu/drowsiness from medication 4. Injury or lack of mobility 5. Balance/ neurological problems 6. Asthma 7. Epilepsy 8. Sleep Apnoea 9. Snoring 10. Diabetes
(b) Were you taking any prescribed medication? *Please specify*.....	YES = 1 NO = 2
(c) Were you taking any non-prescription (over the counter) medication? *Please specify*.....	Ask about non-prescription medications also (e.g. pain killers and antihistamines)
Q18 **How was your general health at the time of the crash?** 1. Excellent ☐ 2. Good ☐ 3. Average ☐ 4. Not so good ☐ 5. Poor ☐	Tick the box that applies

The next two questions are about your driving experience prior to the crash.

Q19 **About how many hours do you usually spend driving/ riding in an average week, in this type of vehicle?** 1. 0 – 5 hours ☐ 2. 6 – 10 hours ☐ 3. 11 – 15 hours ☐ 4. 16 – 20 hours ☐ 5. More than 20 hours ☐	Tick the box that applies Offer to assist in adding up the hours if needed
Q20 **(a) In the last 5 years, have you been in another road crash (could be a driver/rider, passenger, pedestrian, cyclist etc.)?**	YES = 1 NO = 2
(b) In that crash, was anyone (including yourself) seriously injured or in hospital/clinic for more than a day?	YES = 1 NO = 2 SKIP = 0
(c) Were you driving/riding in that crash?	YES = 1 NO = 2 SKIP = 0

The next group of questions is about how safe you feel on the road, your behaviour on the road and the behaviour of other people in your community/town.

Q21
How much do you agree with the following ideas?

For Q21 tick the circle that applies

(a) Compared to other drivers/riders, I think I am safe

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(b) I do the same things on the road as most people in my community/region (eg. a lot of my community drink drives, so I do too)

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(c) I worry about my safety on the road

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(d) I worry about the safety of my family on the road

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(e) I worry about the safety of others in my community/ region on the road

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(f) Road crashes just happen, there is little one can do to avoid them

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(g) You can't stop road crashes because you can't do anything about other people on the road

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(h) Road crashes will always happen no matter what the government does to try to stop them

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

Q22

How often do you do the following things?

For Q22 tick the circle that applies

(a) Drive/ride after drinking grog/alcohol

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(b) Walk home after drinking grog/alcohol

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(c) Drive/ride faster than the speed limit

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

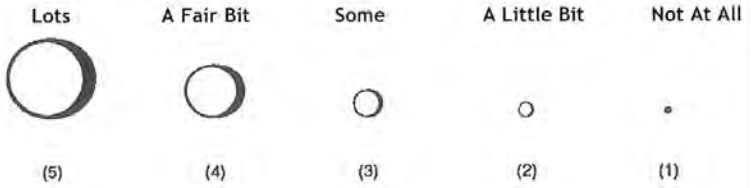
(d) Drive/ride too fast for the sort of road you are on

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

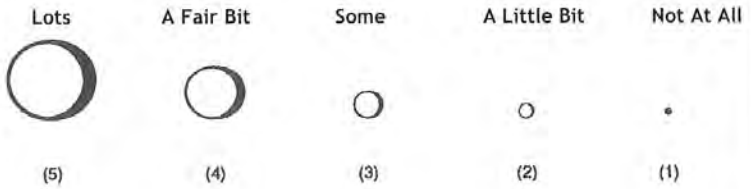
(e) Keep driving/riding when you are feeling tired

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

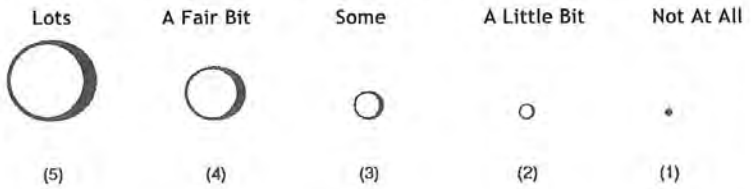
(f) Not wear a seatbelt when you should be



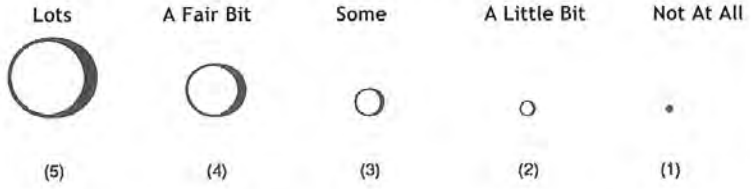
(g) Pile into the back of a truck or ute to get around



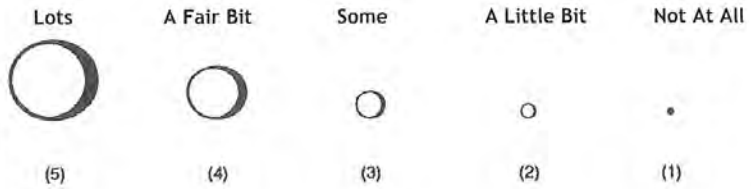
(h) Squash more people into a car than is allowed



(i) Ride as a passenger of somebody who has been drinking



(j) Drive/ride unlicensed or without the right licence



(k) Make sure little kids are in capsules on trips

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(l) Make sure older kids wear seatbelts on trips

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

Q23

(a) How much do you think that you personally can stop road crashes from happening?

For Q23 tick the circle that applies

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(b) How much do you think that people in your town/ community can stop road crashes from happening?

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

The next set of questions is about your attitudes to policing the road rules and social issues.

Q24

(a) Do you think police should spend more or less time on road safety and traffic issues?

Tick the box that applies

1. Less time ☐
2. More time ☐
3. About the same as now ☐

(b) What traffic or road safety issues should police focus on?

Please specify.....

.....

.....

.....

.....

.....

.....

.....

.....

Q25

How concerned are you about each of the following issues?

For Q25 tick the circle that applies

(a) Crime rates

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(b) Pollution and environmental issues

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(c) Road accidents/crashes

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(d) Standard of health care

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(e) Unemployment

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

The next two questions are about road safety advertising and public education.

Q26

(a) Tell me about the last road safety message or advertisement you remember (if any)?

Don't remember any = 88

Please specify.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Q27 **(a) Tell me a little about how you learn about road safety?** *Notes*.....	

Just a couple of questions about yourself to finish.

Q28 **(a) Where do you usually live?** *Please specify (town and postcode)*..... **(b) If you don't live in a town, what is the nearest town to you and how close is it?** *Please specify*.....	SKIP = 0
Q29 **Have you got or renewed a first aid certificate in the last 12 months?**	YES = 1 NO = 2
Q30 **(a) If you could do one thing to reduce the road toll in North Queensland, what would it be?** *Notes*.....	

THANK YOU FOR YOUR PARTICIPATION

I really appreciate the time you've given me. If you would like to speak to someone else about the project you are welcome to contact anyone on your information sheet. At the end of the project, a summary of the results will be sent to your local council and health facility. If you would like to get your own copy of the results, please ring the 1800 number and provide a postal or email address so that I can send it to you.

Appendix L – Passenger Questionnaire for Study 2

RURAL & REMOTE

ROAD SAFETY STUDY

CONFIDENTIAL

RURAL ROAD CRASH SURVEY

PASSENGER

1800 682 022

(FREE CALL)

QUT CARRS Australian Government National Health and Medical Research Council Queensland Government MAIC

CONFIDENTIAL

Health Service Dist. ... ☐
Facility ID ..... ☐☐
Crash ..... ☐☐☐
Vehicle ..... ☐☐
Type ..... **PAS**
Occupant ..... ☐☐
Excluded ..... ☐

Hello *(mitikid)* ... My name is Colin and I'm working on a study of road crashes in rural and remote areas. I am interested in hearing about the recent road crash you were in and what you usually do on the road.

The study has the support of your local council, staff from the local hospital/clinic and the Northern Area Health Service. Participation is voluntary and you may stop any time. This interview could take about 20-30 minutes and you will be paid $20 for your time.

Let me assure you that all your comments are strictly confidential and anonymous. Your name will not be kept after the interview and information you give will be grouped together with information from other interviews, so that your identity and other individuals cannot be identified. The information you give will help us to improve roads and road safety education for country and remote Queenslanders.

Would you like to take part (have a yarn)? ... (If *"yes"*, proceed with the interview, if *"no"* record this as a refusal).

Thank you *(esso)*

✍ Commence the interview ✍

Consent form signed *OR* Interpreter satisfied that participant fully understands the study and is willing to participate YES *(please circle)*

Interviewer's signature .....

Interview start and completion times .....

Date of interview .....

Comments .....
.....
.....

NOTE - Record if another person is present at interview (family, friend, interpreter, etc).

The first questions are about you, the crash, the driver/rider and any other cars, trucks or bikes involved.

QUESTION	*CODE/NOTES*
Q1 **(a) Were any cars, trucks or other people involved?** *Please specify*	YES = 1 NO = 2
(b) Was anyone else hurt or taken to hospital or the local clinic? *Please specify*	YES = 1 NO = 2 Note other potential participants from the index crash
(c) Please can you tell me where the crash happened? *Please specify*	YES = 1 NO = 2
(d) Can you tell me the day *(date)* you had the crash and roughly what time it happened? *Please specify*	YES = 1 NO = 2
(e) Can you tell me how many people were in the car *(on the bike)* when the crash happened? *Please specify (in cases where there are many occupants, it may be easier to work through who was in the car to determine the number of occupants)*	YES = 1 NO = 2

NARRATIVE

(f) I realise that this might bring back some memories, but I was wondering if you could tell me a little about what happened before, during, and after your crash and what you think may have caused it?

Notes

Use prompts to explore issues raised by interviewees

Stress that the passenger needs to think about the behaviour of the driver/rider

Type of road (dirt, bitumen and paved shoulders)? *Weather conditions?* *Visibility (dust)?* *Animal on the road (cow, kangaroo)?*	Environment
Mechanical fault (something went wrong with the car/bike)? *Tyre blew?*	Vehicle
Alcohol (grog) and/or drugs? *Seatbelt use and/or overloading (too many in the car)?* *Speed (too fast for the conditions)?* *Tired or sleepy?* *Bored (lost concentration, switched off)?* *Distracted (by something inside or outside the car/bike)?* *Not used to the car/bike?* *Anything else?*	Behaviour

(g) How did you get help after the crash (friend, family, ambulance, police)?

Please specify

.....
.....
.....

(h) How long did it take to get help?

Please specify (hours and/or minutes)

.....
.....
.....

(i) Were you taken straight to the hospital/clinic?

Please specify

.....
.....
.....

YES = 1

NO = 2

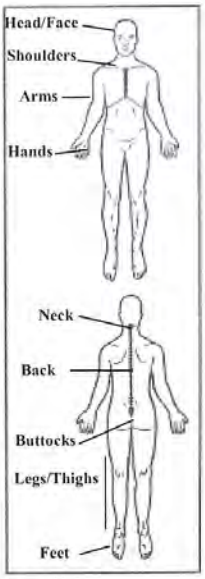
Note if the facility was chosen by the patient or others

Q2

(a) Where did you get hurt, and what treatment did you get?

Tick all the boxes that apply (body region by treatment type) and record any comments

	X-Ray	Bandaged for bleeds	Stitches	Plaster/ cast/brace	Drugs / painkillers	Surgery
Head/Face						
Neck						
Shoulders						
Back						
Arms						
Hands						
Buttocks						
Legs/Thighs						
Feet						
Internal						



Notes (narrative).....
.....
.....
.....
.....
.....

(b) Were you kept in overnight? **(c) Were you transferred to or from another hospital/ clinic?** *Notes*	**YES = 1** **NO = 2** **YES = 1** **NO = 2**
Q3 **What is the model, type, make and year of the vehicle you were in/on at the time of the crash?** Model ..... Type ..... Make ..... Year..... ***For motorcycles:*** Engine size:.....	<u>Example</u> *Model* (Commodore) *Type* (Stat. Wagon) *Make* (Holden) *Year* (1989) **SKIP = 0**
Q4 **(a) Do you own a car or motorbike?** **(b) Who owns the vehicle you were in/on at the time of the crash?** 1. Self/Partner .....☐ 2. Friend/Another member of your family.....☐ 3. Employer.....☐ 4. Hire or leasing company.....☐ 5. Other (*please specify*) .....☐ 6. Council or community vehicle.....☐ 88. Don't know .....☐	**YES = 1** **NO = 2** Tick the box that applies

Q5 **Respondent's sex?** MALE / FEMALE	DO NOT ASK THE PARTICIPANT (Circle which applies)
Q6 **Can you tell me your age in years?** Age.....	Record age in years or indicate "don't know" below **Don't know = 88**
Q7 **(a) Do you identify yourself as any of the following?** 1. Aboriginal ☐ 2. Torres Strait Islander ☐ 3. Aboriginal & Torres Strait Islander ☐ 4. None of these ☐ **(b) If Aboriginal and/or Torres Strait Islander, which language do you <u>mainly</u> speak at home *(first language)*?** 1. English ☐ 2. An Aboriginal language ☐ 3. A Torres Strait Islander language ☐ 4. Other *(specify)* ☐	Tick the box that applies **YES = 1** **NO = 2** **SKIP = 0** Tick the box that applies
Q8 **(a) Do you have a full-time job right now?** **If *YES*, what is it?** *(Write in)*..... **If *NO*, are you ...** 1. Part-time/casual worker ☐ 2. Unemployed/welfare recipient ☐ 3. CDEP/Work for the dole participant ☐ 4. Homemaker ☐ 5. Retired ☐	**YES = 1** **NO = 2** Tick the box that applies **SKIP = 0**

For those employed only (including part-time): **(b) Do you do shift work?**	YES = 1 NO = 2 SKIP = 0
Q9 **What is the highest schooling or education you have completed?** 1. No schooling ☐ 2. Primary school ☐ 3. Completed Year 8 ☐ 4. Completed Year 10 ☐ 5. Completed Year 12 ☐ 6. Trade/Apprenticeship ☐ 7. Certificate/Diploma ☐ 8. Bachelor's Degree or higher ☐ 9. Other *(please specify)* ☐	Tick the box that applies

The next group of questions is about alcohol and what the driver/rider did on the trip before the crash. You can do these ones on your own and mail them back, or I can ask them now and write down your answers.

QC1

(a) On average, how fast were you going in the ten minutes before the crash?

Tick the box that applies

1. Below the speed limit ..... ☐
2. On the speed limit ..... ☐
3. Just over the limit (less than 15kph over) ..... ☐
4. A bit over the speed limit (15 – 30kph over) .... ☐
5. A lot over the limit (more than 30kph over) ..... ☐

QC2 - Questions about drinking - *(Write number in box/circle your answer)*

The guide above contains examples of ***one standard drink.*** A full strength can or stubbie contains ***one and a half standard drinks***

Select from the answers below and place the number that corresponds with your answer in the box on the right side of the question. Try to answer the questions in terms of "standard drinks".

1. **How often do you have a drink containing alcohol?**
   0 Never *(go to Qs. 9 & 10)* | 1 Monthly or less | 2 Two to four times a month | 3 Two to three times a week | 4 Four or more times a week | ☐
2. **How many standard drinks do you have on a typical day when you are drinking?**
   0 One or two | 1 Three to four | 2 Five or six | 3 Seven, eight or nine | 4 Ten or more | ☐
3. **How often do you have six or more standard drinks on one occasion?**
   0 Never | 1 Less than monthly | 2 Monthly | 3 Weekly | 4 Daily or almost daily | ☐
4. **How often during the last year have you found that you were not able to stop drinking once you had started?**
   0 Never | 1 Less than monthly | 2 Monthly | 3 Weekly | 4 Daily or almost daily | ☐
5. **How often during the last year have you failed to do what was normally expected from you because of drinking?**
   0 Never | 1 Less than monthly | 2 Monthly | 3 Weekly | 4 Daily or almost daily | ☐
6. **How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session**
   0 Never | 1 Less than monthly | 2 Monthly | 3 Weekly | 4 Daily or almost daily | ☐
7. **How often during the last year have you had a feeling of guilt or remorse after drinking?**
   0 Never | 1 Less than monthly | 2 Monthly | 3 Weekly | 4 Daily or almost daily | ☐
8. **How often during the last year have you been unable to remember what happened the night before because you had been drinking**
   0 Never | 1 Less than monthly | 2 Monthly | 3 Weekly | 4 Daily or almost daily | ☐

More questions about grog and drinking ...

9. Have you or someone else been injured as a result of your drinking?

0 No	2 Yes but not in the last year	4 Yes, during the last year	

10. Has a relative, a friend, a doctor or another health worker been concerned about your drinking or suggested you cut down?

0 No	2 Yes but not in the last year	4 Yes, during the last year	

QC3 (a) Do you think the driver/rider had been drinking alcohol/grog in the 24 hours before the crash? (b) If *YES*, do you think the driver/rider was over the limit? *Notes*.....	YES = 1 NO = 2 YES = 1 NO = 2 SKIP = 0
QC4 (a) Do you think the driver/rider had taken illegal or recreational drugs in the 24 hours before the crash? (b) If *YES*, what did they take? *Please specify (eg. yandi/marijuana, sniffing petrol, amphetamines etc.)*	YES = 1 NO = 2 SKIP = 0
QC5 (a) Have you ever held any type of drivers' licence (passed the driving test)?	YES = 1 NO = 2

(b) If *YES*, have you had a licence taken off you in the last five years?	YES = 1 NO = 2 SKIP = 0
(c) Was the driver/rider licensed to operate the vehicle you were travelling in/on at the time of the crash?	YES = 1 NO = 2 Don't know = 88
QC6 - *MOTORCYCLISTS ONLY* Did you (and any passengers) wear a helmet for the whole trip? 1. Rider only wore helmet ☐ 2. Both rider and passenger wore helmets ☐ 3. Passenger only wore helmet ☐ 4. No one wore helmets ☐	SKIP = 0 Tick the box that applies
QC7 - *DRIVERS ONLY* (a) Did you (and any passengers) wear a seatbelt for the whole trip? 1. Driver only wore seatbelt ☐ 2. Both driver and passenger(s) wore seatbelts ☐ 3. Passenger(s) only wore seatbelts ☐ 4. No one wore seatbelts ☐	SKIP = 0 Tick the box that applies
(b) Were there enough seatbelts for everyone on the trip?	YES = 1 NO = 2
QC8 Was the vehicle registered?	YES = 1 NO = 2 Don't know = 88

QC9 (a) Have you been booked for any traffic offences in the last five years? (b) If *YES*, what were they? 1. Speeding.....☐ 2. Drink driving.....☐ 3. Driving without a licence/wrong licence.....☐ 4. Other *(specify)*.....☐	YES = 1 NO = 2 SKIP = 0 Tick all boxes that apply
QC10 (a) In the last month, have you driven a car or ridden a motorbike after drinking two or more alcoholic drinks/ grogs in the hour before? (b) In the last month, have you been a passenger of somebody who had drunk two or more alcoholic drinks/ grogs in the hour before?	YES = 1 NO = 2 YES = 1 NO = 2

The next few questions are about the trip before the crash.

Q10

(a) How long were you travelling without stopping before the crash?

Tick the box that applies

Note: Only count stops where the person got out of the vehicle

1. Less than 1 hour (short trip) ☐
2. More than 1 and less than 2 hours ☐
3. More than 2 and less than 3 hours ☐
4. More than 3 and less than 4 hours ☐
5. More than 4 hours ☐

(b) How long did you stop for at the last place you got out of the car/off the bike before the crash?

SKIP = 0

Please specify (hours and/or minutes).....

.....

(c) Was the drive/ride part of a longer trip? (eg. Cairns to Townsville, Cairns to Bamaga, Mackay to Mt Isa)

YES = 1

NO = 2

SKIP = 0

Narrative (collect details of the trip).....

.....

.....

.....

.....

Q11

What was the reason for the trip?

Tick the box that applies

1. Part of your job (includes farming tasks) ☐
2. To or from work ☐
3. To or from another activity (specify) ☐
4. For leisure / holiday ☐
5. Other (specify) ☐

Notes.....

.....

.....

Q12 **(a) Was the driver/rider distracted or affected by anything leading up to the crash? ... I'll run through some things ...**	Circle 'Yes' or 'No' for each potential distraction
(a) Outside person, object or event (eg. other traffic, police, sunlight/sunset, animals on the road, crash scene, road construction, etc.) *Please specify*.....	YES / NO
(b) Using other equipment in the vehicle (eg. lights, wipers, adjusting mirrors or climate controls, etc.) *Please specify*.....	YES / NO
(c) Other person in the car	YES / NO
(d) Moving object in vehicle (eg. pet, insect, object falling off seat, etc.) *Please specify*.....	YES / NO
(e) Adjusting radio, cassette or CD	YES / NO
(f) Emotionally upset/relationship problem	YES / NO
(g) Mobile phone or CB radio	YES / NO
(h) Eating/drinking	YES / NO
(i) Lighting a cigarette	YES / NO
(j) Other distractions (eg. medical problems, sneezing, other devices brought into vehicle etc.) *Please specify*.....	YES / NO
(k) Inattention/daydreaming	YES / NO

(b) Was the distraction just before the crash?	YES = 1 NO = 2 SKIP = 0
Q13 (a) Was the car/bike in good condition before the crash? (b) If *NO*, what sort of problems did it have? (What was wrong with it?) *Please specify*.....	*Probe/prompt - "any problems with it?"* YES = 1 NO = 2 SKIP = 0

Now I would like to ask about your health.

Q14 How was your general health at the time of the crash? 1. Excellent ☐ 2. Good ☐ 3. Average ☐ 4. Not so good ☐ 5. Poor ☐	Tick the box that applies

The next question is about other crashes you may have been in.

Q15 (a) In the last 5 years, have you been in another road crash (could be a driver/rider, passenger, pedestrian, cyclist etc.)?	YES = 1 NO = 2
(b) In that crash, was anyone (including yourself) seriously injured or in hospital/clinic for more than a day?	YES = 1 NO = 2 SKIP = 0
(c) Were you driving/riding in that crash?	YES = 1 NO = 2 SKIP = 0

The next group of questions is about how safe you feel on the road, your behaviour on the road and the behaviour of other people in your community/town.

Q16
How much do you agree with the following ideas?

For Q16 tick the circle that applies

(a) Compared to other drivers/riders, I think I am safe

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(b) I do the same things on the road as most people in my community/region (eg. a lot of my community drink drives, so I do too)

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(c) I worry about my safety on the road

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(d) I worry about the safety of my family on the road

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(e) I worry about the safety of others in my community/ region on the road

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(f) Road crashes just happen, there is little one can do to avoid them

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(g) You can't stop road crashes because you can't do anything about other people on the road

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(h) Road crashes will always happen no matter what the government does to try to stop them

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

Q17

How often do you do the following things?

For Q17 tick the circle that applies

(a) Drive/ride after drinking grog/alcohol

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(b) Walk home after drinking grog/alcohol

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(c) Drive/ride faster than the speed limit

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(d) Drive/ride too fast for the sort of road you are on

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(e) Keep driving/riding when you are feeling tired

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(f) Not wear a seatbelt when you should be

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(g) Pile into the back of a truck or ute to get around

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(h) Squash more people into a car than is allowed

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(i) Ride as a passenger of somebody who has been drinking

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(j) Drive/ride unlicensed or without the right licence

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(k) Make sure little kids are in capsules on trips

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(l) Make sure older kids wear seatbelts on trips

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

Q18

(a) How much do you think that you personally can stop road crashes from happening?

For Q18 tick the circle that applies

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(b) How much do you think that people in your town/ community can stop road crashes from happening?

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

The next set of questions is about your attitudes to policing the road rules and social issues.

Q19

(a) Do you think police should spend more or less time on road safety and traffic issues?

Tick the box that applies

1. Less time ☐
2. More time ☐
3. About the same as now ☐

(b) What traffic or road safety issues should police focus on?

Please specify.....

.....

.....

.....

.....

.....

.....

.....

.....

Q20

How concerned are you about each of the following issues?

For Q20 tick the circle that applies

(a) Crime rates

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(b) Pollution and environmental issues

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(c) Road accidents/crashes

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(d) Standard of health care

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(e) Unemployment

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

The next two questions are about road safety advertising and public education.

Q21

(a) Tell me about the last road safety message or advertisement you remember (if any)?

Please specify.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Don't remember any = 88

Q22 **(a) Tell me a little about how you learn about road safety?** *Notes*.....	

Just a couple of questions about yourself to finish.

Q23 **(a) Where do you usually live?** *Please specify (town and postcode)*..... **(b) If you don't live in a town, what is the nearest town to you and how close is it?** *Please specify*.....	SKIP = 0
Q24 **Have you got or renewed a first aid certificate in the last 12 months?**	YES = 1 NO = 2
Q25 **(a) If you could do one thing to reduce the road toll in North Queensland, what would it be?** *Notes*.....	

THANK YOU FOR YOUR PARTICIPATION

I really appreciate the time you've given me. If you would like to speak to someone else about the project you are welcome to contact anyone on your information sheet. At the end of the project, a summary of the results will be sent to your local council and health facility. If you would like to get your own copy of the results, please ring the 1800 number and provide a postal or email address so that I can send it to you.

Appendix M - Pedestrian Questionnaire for Study 2

RURAL & REMOTE
ROAD SAFETY STUDY

CONFIDENTIAL

RURAL ROAD CRASH SURVEY

PEDESTRIAN

1800 682 022
(FREE CALL)

QUT CARRS Australian Government National Health and Medical Research Council Queensland Government MAVC

CONFIDENTIAL

Health Service Dist. ... ☐
Facility ID..... ☐☐
Crash ..... ☐☐☐
Vehicle..... ☐☐
Type..... **PED**
Occupant ..... ☐☐
Excluded..... ☐

Hello *(mitikid)* ... My name is Colin and I'm working on a study of road crashes in rural and remote areas. I am interested in hearing about the recent road crash you were in and what you usually do on the road.

The study has the support of your local council, staff from the local hospital/clinic and the Northern Area Health Service. Participation is voluntary and you may stop any time. This interview could take about 20-30 minutes and you will be paid $20 for your time.

Let me assure you that all your comments are strictly confidential and anonymous. Your name will not be kept after the interview and information you give will be grouped together with information from other interviews, so that your identity and other individuals cannot be identified. The information you give will help us to improve roads and road safety education for country and remote Queenslanders.

Would you like to take part (have a yarn)? ... (If *"yes"*, proceed with the interview, if *"no"* record this as a refusal).

Thank you *(esso)*

✍ Commence the interview ✍

Consent form signed *OR* Interpreter satisfied that participant fully understands the study and is willing to participate YES *(please circle)*

Interviewer's signature.....

Interview start and completion times .....

Date of interview .....

Comments .....
.....
.....

NOTE - Record if another person is present at interview (family, friend, interpreter, etc).

The first questions are about you, the crash, and any other cars, trucks or bikes involved.

QUESTION	*CODE/NOTES*
Q1 **(a) Were any cars, trucks or other people involved?** *Please specify*	YES = 1 NO = 2
(b) Was anyone else hurt or taken to hospital or the local clinic? *Please specify*	YES = 1 NO = 2 Note other potential participants from the index crash
(c) Please can you tell me where the crash happened? *Please specify*	YES = 1 NO = 2
(d) Can you tell me the day *(date)* you had the crash and roughly what time it happened? *Please specify*	YES = 1 NO = 2

NARRATIVE

(e) I realise that this might bring back some memories, but I was wondering if you could tell me a little about what happened before, during, and after your crash and what you think may have caused it?

Notes

Use prompts to explore issues raised by interviewees

Other traffic and where you were walking (dirt/bitumen road, pedestrian walkway, edge of the road, intersection or not, etc.)? *Weather conditions?* *Visibility (could you see alright and could others see you easily)?* *Traffic volume (busy or quiet road)?* *Other vehicles (what were they doing)?* *Alcohol (grog) and/or drugs?* *Breaking the road rules (walking on the wrong side of the road, crossing illegally/jaywalking/crossing against the lights, etc.)?* *Tired or sleepy?* *Bored (lost concentration, switched off)?* *Distracted (by other people, the traffic, road works, animals)?* *Anything else?*	*Environment* *Vehicles* *Behaviour*

(f) How did you get help after the crash (friend, family, ambulance, police)?

Please specify

.....
.....
.....

(g) How long did it take to get help?

Please specify (hours and/or minutes)

.....
.....
.....

(h) Were you taken straight to the hospital/clinic?

Please specify

.....
.....
.....

YES = 1

NO = 2

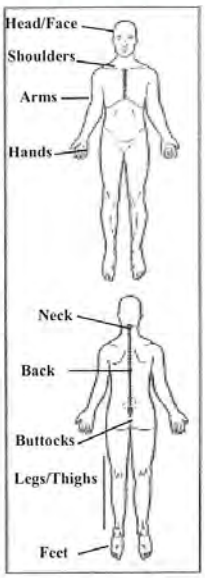
Note if the facility was chosen by the patient or others

Q2

(a) Where did you get hurt, and what treatment did you get?

Tick all the boxes that apply (body region by treatment type) and record any comments

	X-Ray	Bandaged for bleeds	Stitches	Plaster/ cast/brace	Drugs / painkillers	Surgery
Head/Face						
Neck						
Shoulders						
Back						
Arms						
Hands						
Buttocks						
Legs/Thighs						
Feet						
Internal						



Notes (narrative).....
.....
.....
.....
.....

(b) Were you kept in overnight? **(c) Were you transferred to or from another hospital/ clinic?** *Notes*	YES = 1 NO = 2 YES = 1 NO = 2
Q3 **(a) Do you own a car or motorbike?** **(b) How do you usually get around?** 1. Car ☐ 2. Bicycle ☐ 3. Bus/Public Tansport ☐ 4. Motorbike ☐ 5. Walk ☐	YES = 1 NO = 2 Tick the box that applies
Q4 **Respondent's sex?** MALE / FEMALE	DO NOT ASK THE PARTICIPANT (Circle which applies)
Q5 **Can you tell me your age in years?** Age.....	Record age in years or indicate "don't know" below **Don't know = 88**
Q6 **(a) Do you identify yourself as any of the following?** 1. Aboriginal ☐ 2. Torres Strait Islander ☐ 3. Aboriginal & Torres Strait Islander ☐ 4. None of these ☐	Tick the box that applies

(b) If Aboriginal and/or Torres Strait Islander, which language do you <u>mainly</u> speak at home *(first language)*? 1. English ☐ 2. An Aboriginal language ☐ 3. A Torres Strait Islander language ☐ 4. Other *(specify)* ☐	**YES = 1** **NO = 2** **SKIP = 0** Tick the box that applies
Q7 **(a) Do you have a full-time job right now?** **If *YES*, what is it?** *(Write in)*..... **If *NO*, are you ...** 1. Part-time/casual worker ☐ 2. Unemployed/welfare recipient ☐ 3. CDEP/Work for the dole participant ☐ 4. Homemaker ☐ 5. Retired ☐ ***For those employed only (including part-time):*** **(b) Do you do shift work?**	**YES = 1** **NO = 2** Tick the box that applies **SKIP = 0** **YES = 1** **NO = 2** **SKIP = 0**

Q8 **What is the highest schooling or education you have completed?**	Tick the box that applies
1. No schooling ☐	
2. Primary school ☐	
3. Completed Year 8 ☐	
4. Completed Year 10 ☐	
5. Completed Year 12 ☐	
6. Trade/Apprenticeship ☐	
7. Certificate/Diploma ☐	
8. Bachelor's Degree or higher ☐	
9. Other *(please specify)* ☐	

The next group of questions is about what you did on the trip before the crash. You can do these ones on your own and mail them back, or I can ask them now and write down your answers.

QC1 - Questions about drinking - *(Write number in box/circle your answer)*

The guide above contains examples of ***one standard drink.*** A full strength can or stubbie contains ***one and a half standard drinks***

Select from the answers below and place the number that corresponds with your answer in the box on the right side of the question. Try to answer the questions in terms of "standard drinks".

1. **How often do you have a drink containing alcohol?**

0	Never *(go to Qs. 9 & 10)*	1	Monthly or less	2	Two to four times a month	3	Two to three times a week	4	Four or more times a week

2. **How many standard drinks do you have on a typical day when you are drinking?**

0	One or two	1	Three to four	2	Five or six	3	Seven, eight or nine	4	Ten or more

3. **How often do you have six or more standard drinks on one occasion?**

0	Never	1	Less than monthly	2	Monthly	3	Weekly	4	Daily or almost daily

4. **How often during the last year have you found that you were not able to stop drinking once you had started?**

0	Never	1	Less than monthly	2	Monthly	3	Weekly	4	Daily or almost daily

5. **How often during the last year have you failed to do what was normally expected from you because of drinking?**

0	Never	1	Less than monthly	2	Monthly	3	Weekly	4	Daily or almost daily

6. **How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session**

0	Never	1	Less than monthly	2	Monthly	3	Weekly	4	Daily or almost daily

7. **How often during the last year have you had a feeling of guilt or remorse after drinking?**

0	Never	1	Less than monthly	2	Monthly	3	Weekly	4	Daily or almost daily

8. **How often during the last year have you been unable to remember what happened the night before because you had been drinking**

0	Never	1	Less than monthly	2	Monthly	3	Weekly	4	Daily or almost daily

More questions about grog and drinking ...

9. **Have you or someone else been injured as a result of your drinking?**

0	No	2	Yes but not in the last year	4	Yes, during the last year

10. **Has a relative, a friend, a doctor or another health worker been concerned about your drinking or suggested you cut down?**

0	No	2	Yes but not in the last year	4	Yes, during the last year

QC2 **(a) In the 24 hours before the crash did you drink any alcohol/grog?** **(b) If *YES*, what did you have?** *Please specify*..... .... **(c) What time did you start drinking?** [:] *am* OR [:] *pm* **(d) What time did you have your last drink?** [:] *am* OR [:] *pm* *Notes (prompt for more than one drinking session in the 24 hours)*.....	YES = 1 NO = 2 Please specify number, types and strength of drinks consumed (Need to stress that this is amount drunk by the individual only) SKIP = 0 SKIP = 0 SKIP = 0
QC3 **(a) In the 24 hours before the crash did you take any illegal drugs?** **(b) If *YES*, what did you take?** *Please specify (eg. yandi/marijuana, sniffing petrol, amphetamines etc.)* .... **(c) How long before the crash did you take drugs?** *Please specify (eg. just before, hours/minutes)*.....	YES = 1 NO = 2 SKIP = 0 SKIP = 0 Don't know = 88

QC4

(a) Have you ever held any type of driver's licence (passed the driving test)?

YES = 1
NO = 2
If 'NO' to QC4(a), go to QC5

(b) Have you had a licence taken off you in the last five years?

YES = 1
NO = 2
SKIP = 0

QC5

(a) When you walk at night, do you wear reflective clothing? ...

1. On every trip ☐
2. On most trips ☐
3. On some trips ☐
4. I never wear reflective clothing ☐

Tick the box that applies

(b) *(If the crash was at night)* were you wearing reflective clothing?

YES = 1
NO = 2
SKIP = 0

(c) How often do you "jaywalk"/cross the road illegally?

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

Tick the circle that applies

QC6 (a) Have you been booked for any traffic offences in the last five years?	YES = 1 NO = 2
(b) If *YES*, what were they? 1. Speeding.....☐ 2. Drink driving.....☐ 3. Driving without a licence/wrong licence.....☐ 4. Other *(specify)*.....☐	SKIP = 0 Tick all boxes that apply
QC7 (a) In the last month, have you driven a car or ridden a motorbike after drinking two or more alcoholic drinks/ grogs in the hour before?	YES = 1 NO = 2
(b) In the last month, have you been a passenger of somebody who had drunk two or more alcoholic drinks/ grogs in the hour before?	YES = 1 NO = 2

The next few questions are about the trip before the crash.

Q9

(a) What was the reason for the trip?

Tick the box that applies

1. Part of your job (includes farming tasks) ☐
2. To or from work ☐
3. To or from another activity (specify) ☐
4. For leisure / fitness ☐
5. Other (specify) ☐

Notes.....

(b) Could you have used a vehicle for the trip?

Tick the box that applies

1. Yes ☐
2. No, don't have a licence ☐
3. No, don't have use of one ☐

Notes.....

(c) If *YES*, why did you decide to walk?

Tick the box that applies

SKIP = 0

1. Healthier/exercise ☐
2. Quicker than driving (not far) ☐
3. Not easy to find parking ☐
4. Cost ☐
5. Walking to or from car/bike ☐
6. Been drinking/using drugs ☐

Notes.....

Q10 **Were you walking alone?**	**YES = 1** **NO = 2**

Now I would like to ask about your health.

Q11 **(a) Did you have any health problems that may have affected your walking?** *Please specify*.....	**YES = 1** **NO = 2** PROMPTS (Conditions): 1. Eyesight 2. Hearing 3. Flu/drowsiness from medication 4. Injury or lack of mobility 5. Balance/ neurological problems 6. Asthma 7. Epilepsy 8. Sleep Apnoea 9. Snoring 10. Diabetes
(b) Were you taking any prescribed medication? *Please specify*.....	**YES = 1** **NO = 2**
(c) Were you taking any non-prescription (over the counter) medication? *Please specify*.....	Ask about non-prescription medications also (e.g. pain killers and antihistamines)

Q12 How was your general health at the time of the crash?	Tick the box that applies
1. Excellent ☐ 2. Good ☐ 3. Average ☐ 4. Not so good ☐ 5. Poor ☐	

The next question is about other crashes you may have been in.

Q13	
(a) In the last 5 years, have you been in another road crash (could be a driver/rider, passenger, pedestrian, cyclist etc.)?	YES = 1 NO = 2
(b) In that crash, was anyone (including yourself) seriously injured or in hospital/clinic for more than a day?	YES = 1 NO = 2 SKIP = 0
(c) Were you driving/riding in that crash?	YES = 1 NO = 2 SKIP = 0

The next group of questions is about how safe you feel on the road, your behaviour on the road and the behaviour of other people in your community/town.

Q14
How much do you agree with the following ideas?

For Q14 tick the circle that applies

(a) Compared to other pedestrians, I think I am safe

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(b) I do the same things on the road as most people in my community/region (eg. a lot of my community drink drives/walks around after drinking, so I do too)

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

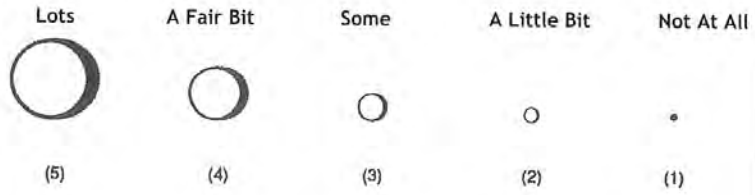
(c) I worry about my safety on the road

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

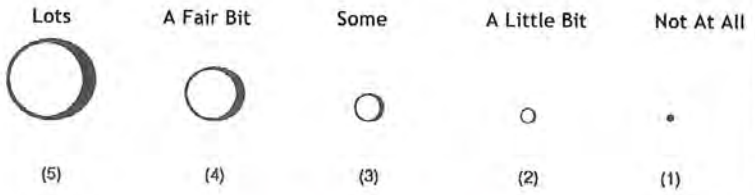
(d) I worry about the safety of my family on the road

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

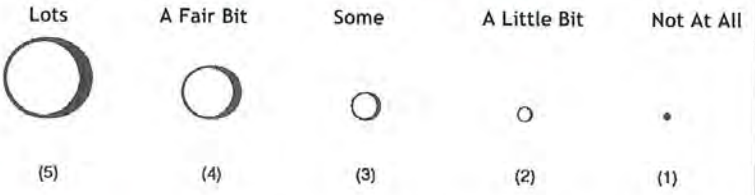
(e) I worry about the safety of others in my community/ region on the road



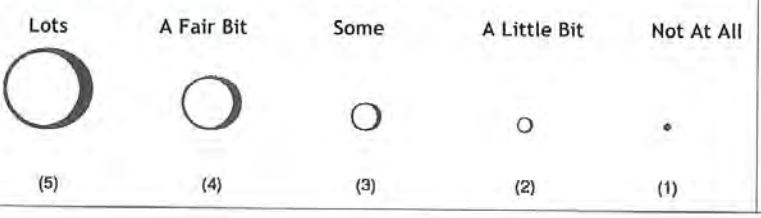
(f) Road crashes just happen, there is little one can do to avoid them



(g) You can't stop road crashes because you can't do anything about other people on the road



(h) Road crashes will always happen no matter what the government does to try to stop them



Q15
How often do you do the following things?

For Q15 tick the circle that applies

(a) Drive/ride after drinking grog/alcohol

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(b) Walk home after drinking grog/alcohol

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(c) Drive/ride faster than the speed limit

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

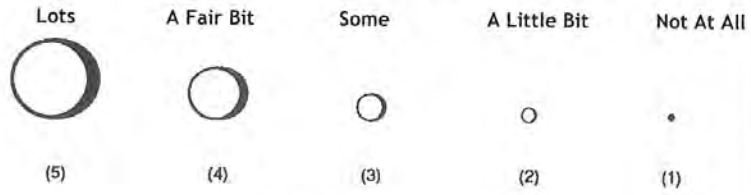
(d) Drive/ride too fast for the sort of road you are on

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

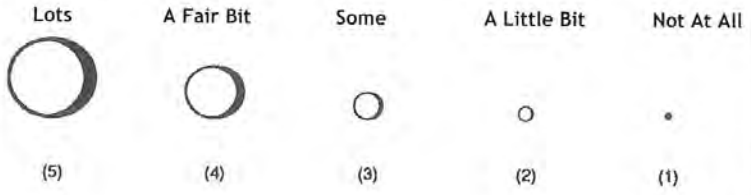
(e) Keep driving/riding when you are feeling tired

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

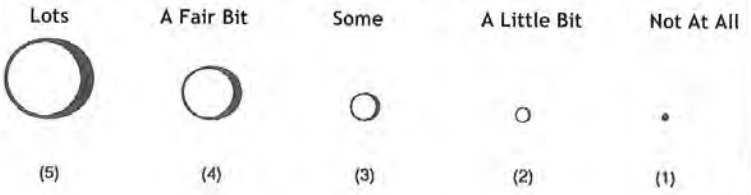
(f) Not wear a seatbelt when you should be



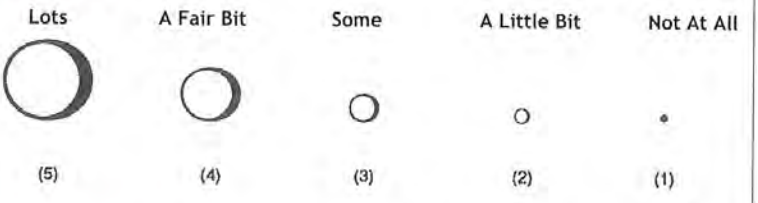
(g) Pile into the back of a truck or ute to get around



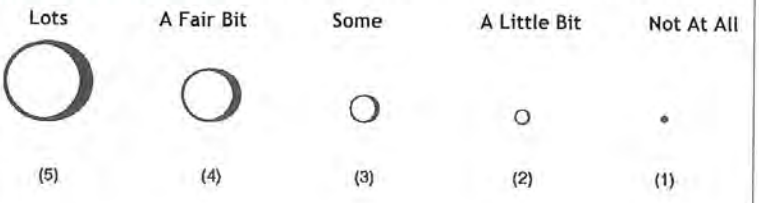
(h) Squash more people into a car than is allowed



(i) Ride as a passenger of somebody who has been drinking



(j) Drive/ride unlicensed or without the right licence



(k) Make sure little kids are in capsules on trips

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(l) Make sure older kids wear seatbelts on trips

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

Q16

(a) How much do you think that you personally can stop road crashes from happening?

For Q16 tick the circle that applies

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(b) How much do you think that people in your town/ community can stop road crashes from happening?

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

The next set of questions is about your attitudes to policing the road rules and social issues.

Q17

(a) Do you think police should spend more or less time on road safety and traffic issues?

Tick the box that applies

1. Less time ☐
2. More time ☐
3. About the same as now ☐

(b) What traffic or road safety issues should police focus on?

Please specify.....

.....

.....

.....

.....

.....

.....

.....

.....

Q18

How concerned are you about each of the following issues?

For Q18 tick the circle that applies

(a) Crime rates

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(b) Pollution and environmental issues

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(c) Road accidents/crashes

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(d) Standard of health care

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(e) Unemployment

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

The next two questions are about road safety advertising and public education.

Q19

(a) Tell me about the last road safety message or advertisement you remember (if any)?

Please specify.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Don't remember any = 88

Q20 **(a) Tell me a little about how you learn about road safety?** *Notes*.....	

Just a couple of questions about yourself to finish.

Q21 **(a) Where do you usually live?** *Please specify (town and postcode)*..... **(b) If you don't live in a town, what is the nearest town to you and how close is it?** *Please specify*.....	SKIP = 0
Q22 **Have you got or renewed a first aid certificate in the last 12 months?**	YES = 1 NO = 2
Q23 **(a) What is the biggest safety problem for pedestrians?** *Notes*.....	PROMPTS: • Other people/ vehicles on the road and their behaviour • Road conditions • Visibility/weather • Space for pedestrians • Vehicle mix/traffic • Alcohol/drugs • Intersections

(b) If you could do one thing to reduce the road toll in North Queensland, what would it be? *Notes*.....	

THANK YOU FOR YOUR PARTICIPATION

I really appreciate the time you've given me. If you would like to speak to someone else about the project you are welcome to contact anyone on your information sheet. At the end of the project, a summary of the results will be sent to your local council and health facility. If you would like to get your own copy of the results, please ring the 1800 number and provide a postal or email address so that I can send it to you.

Appendix N - Cyclist Questionnaire for Study 2

RURAL & REMOTE
ROAD SAFETY STUDY

CONFIDENTIAL

RURAL ROAD CRASH SURVEY

CYCLIST

1800 682 022
(FREE CALL)

QUT CARRS Australian Government National Health and Medical Research Council Queensland Government MAIC

CONFIDENTIAL

Health Service Dist. ... ☐
Facility ID..... ☐☐
Crash ..... ☐☐☐
Vehicle..... ☐☐
Type..... CYC
Occupant ..... ☐☐
Excluded..... ☐

Hello *(mitikid)* ... My name is Colin and I'm working on a study of road crashes in rural and remote areas. I am interested in hearing about the recent road crash you were in and what you usually do on the road.

The study has the support of your local council, staff from the local hospital/clinic and the Northern Area Health Service. Participation is voluntary and you may stop any time. This interview could take about 20-30 minutes and you will be paid $20 for your time.

Let me assure you that all your comments are strictly confidential and anonymous. Your name will not be kept after the interview and information you give will be grouped together with information from other interviews, so that your identity and other individuals cannot be identified. The information you give will help us to improve roads and road safety education for country and remote Queenslanders.

Would you like to take part (have a yarn)? ... (If *"yes"*, proceed with the interview, if *"no"* record this as a refusal).

Thank you *(esso)*

✍ Commence the interview ✍

Consent form signed *OR* Interpreter satisfied that participant fully understands the study and is willing to participate YES *(please circle)*

Interviewer's signature.....

Interview start and completion times .....

Date of interview .....

Comments .....
.....
.....

NOTE - Record if another person is present at interview (family, friend, interpreter, etc).

The first questions are about you, the crash, and any other cars, trucks or bikes involved.

QUESTION	*CODE/NOTES*
Q1 **(a) Were any cars, trucks or other people involved?** *Please specify*	**YES = 1** **NO = 2**
(b) Was anyone else hurt or taken to hospital or the local clinic? *Please specify*	**YES = 1** **NO = 2** Note other potential participants from the index crash
(c) Please can you tell me where the crash happened? *Please specify*	**YES = 1** **NO = 2**
(d) Can you tell me the day *(date)* you had the crash and roughly what time it happened? *Please specify*	**YES = 1** **NO = 2**
(e) How many people *(including yourself)* where on the bike when the crash happened? *Please specify*	

NARRATIVE

(f) I realise that this might bring back some memories, but I was wondering if you could tell me a little about what happened before, during, and after your crash and what you think may have caused it?

Notes

Use prompts to explore issues raised by interviewees

Type of road (dirt, bitumen, paved shoulders and/or cycle path)? *Weather conditions?* *Visibility (could you see alright and could others see you easily)?* *Animal on the road (cow, kangaroo)?*	Environment
Mechanical fault (something went wrong with the bicycle)? *Tyre blew?*	Vehicle
Alcohol (grog) and/or drugs? *Breaking the road rules (riding against the traffic/wrong side of the road, crossing illegally, etc.)?* *Tired or sleepy?* *Bored (lost concentration, switched off)?* *Distracted (by something inside or outside the bike)?* *Not used to the bike?* *Anything else?*	Behaviour

(g) How did you get help after the crash (friend, family, ambulance, police)?

Please specify

.....
.....
.....

(h) How long did it take to get help?

Please specify (hours and/or minutes)

.....
.....
.....

(i) Were you taken straight to the hospital/clinic?

Please specify

.....
.....
.....

YES = 1

NO = 2

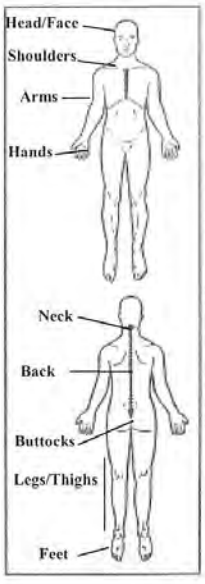
Note if the facility was chosen by the patient or others

Q2

(a) Where did you get hurt, and what treatment did you get?

Tick all the boxes that apply (body region by treatment type) and record any comments

	X-Ray	Bandaged for bleeds	Stitches	Plaster/ cast/brace	Drugs / painkillers	Surgery
Head/Face						
Neck						
Shoulders						
Back						
Arms						
Hands						
Buttocks						
Legs/Thighs						
Feet						
Internal						



Notes (narrative).....
.....
.....
.....
.....
.....

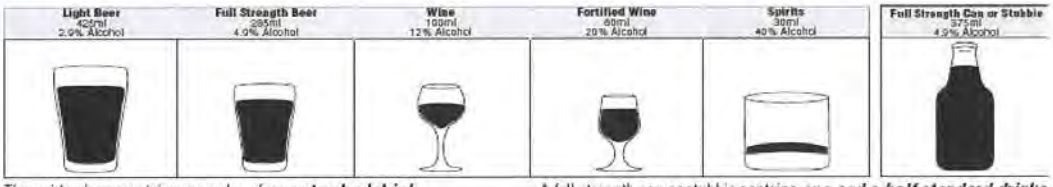
(b) Were you kept in overnight? **(c) Were you transferred to or from another hospital/ clinic?** *Notes*	**YES = 1** **NO = 2** **YES = 1** **NO = 2**
Q3 **(a) Do you own a car or motorbike?** **(b) How do you usually get around?** 1. Car ☐ 2. Bicycle ☐ 3. Bus/Public Tansport ☐ 4. Motorbike ☐ 5. Walk ☐ **(c) How would you describe your cycling skills/ability?** 1. Beginner/Novice ☐ 2. Occasional Cyclist ☐ 3. Regular Cyclist ☐	**YES = 1** **NO = 2** Tick the box that applies Tick the box that applies
Q4 **Respondent's sex?** **MALE / FEMALE**	**DO NOT ASK THE PARTICIPANT** (Circle which applies)
Q5 **Can you tell me your age in years?** Age.....	Record age in years or indicate "don't know" below **Don't know = 88**

Q6 **(a) Do you identify yourself as any of the following?** 1. Aboriginal ☐ 2. Torres Strait Islander ☐ 3. Aboriginal & Torres Strait Islander ☐ 4. None of these ☐	Tick the box that applies
(b) If Aboriginal and/or Torres Strait Islander, which language do you <u>mainly</u> speak at home *(first language)*? 1. English ☐ 2. An Aboriginal language ☐ 3. A Torres Strait Islander language ☐ 4. Other *(specify)* ☐	**YES = 1** **NO = 2** **SKIP = 0** Tick the box that applies
Q7 **(a) Do you have a full-time job right now?** **If *YES*, what is it?** *(Write in)*..... **If *NO*, are you ...** 1. Part-time/casual worker ☐ 2. Unemployed/welfare recipient ☐ 3. CDEP/Work for the dole participant ☐ 4. Homemaker ☐ 5. Retired ☐	**YES = 1** **NO = 2** Tick the box that applies **SKIP = 0**
For those employed only (including part-time): **(b) Do you do shift work?**	**YES = 1** **NO = 2** **SKIP = 0**

Q8 **What is the highest schooling or education you have completed?**	Tick the box that applies
1. No schooling ☐ 2. Primary school ☐ 3. Completed Year 8 ☐ 4. Completed Year 10 ☐ 5. Completed Year 12 ☐ 6. Trade/Apprenticeship ☐ 7. Certificate/Diploma ☐ 8. Bachelor's Degree or higher ☐ 9. Other *(please specify)* ☐	

The next group of questions is about the way you usually cycle and about what you did on the trip before the crash. You can do these ones on your own and mail them back, or I can ask them now and write down your answers.

QC1 - Questions about drinking - *(Write number in box/circle your answer)*



The guide above contains examples of ***one standard drink***. A full strength can or stubbie contains ***one and a half standard drinks***

Select from the answers below and place the number that corresponds with your answer in the box on the right side of the question. Try to answer the questions in terms of "standard drinks".

1. **How often do you have a drink containing alcohol?**

0 Never *(go to Qs. 9 & 10)*	1 Monthly or less	2 Two to four times a month	3 Two to three times a week	4 Four or more times a week	

2. **How many standard drinks do you have on a typical day when you are drinking?**

0 One or two	1 Three to four	2 Five or six	3 Seven, eight or nine	4 Ten or more	

3. **How often do you have six or more standard drinks on one occasion?**

0 Never	1 Less than monthly	2 Monthly	3 Weekly	4 Daily or almost daily	

4. **How often during the last year have you found that you were not able to stop drinking once you had started?**

0 Never	1 Less than monthly	2 Monthly	3 Weekly	4 Daily or almost daily	

5. **How often during the last year have you failed to do what was normally expected from you because of drinking?**

0 Never	1 Less than monthly	2 Monthly	3 Weekly	4 Daily or almost daily	

6. **How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session**

0 Never	1 Less than monthly	2 Monthly	3 Weekly	4 Daily or almost daily	

7. **How often during the last year have you had a feeling of guilt or remorse after drinking?**

0 Never	1 Less than monthly	2 Monthly	3 Weekly	4 Daily or almost daily	

8. **How often during the last year have you been unable to remember what happened the night before because you had been drinking**

0 Never	1 Less than monthly	2 Monthly	3 Weekly	4 Daily or almost daily	

More questions about grog and drinking ...

9. **Have you or someone else been injured as a result of your drinking?**

0 No	2 Yes but not in the last year	4 Yes, during the last year	

10. **Has a relative, a friend, a doctor or another health worker been concerned about your drinking or suggested you cut down?**

0 No	2 Yes but not in the last year	4 Yes, during the last year	

QC2 **(a) In the 24 hours before the crash did you drink any alcohol/grog?** **(b) If *YES*, what did you have?** *Please specify*..... .... **(c) What time did you start drinking?** [:] *am* OR [:] *pm* **(d) What time did you have your last drink?** [:] *am* OR [:] *pm* *Notes (prompt for more than one drinking session in the 24 hours)*.....	YES = 1 NO = 2 Please specify number, types and strength of drinks consumed (Need to stress that this is amount drunk by the individual only) SKIP = 0 SKIP = 0 SKIP = 0
QC3 **(a) In the 24 hours before the crash did you take any illegal drugs?** **(b) If *YES*, what did you take?** *Please specify (eg. yandi/marijuana, sniffing petrol, amphetamines etc.)* .... **(c) How long before the crash did you take drugs?** *Please specify (eg. just before, hours/minutes)*.....	YES = 1 NO = 2 SKIP = 0 SKIP = 0 Don't know = 88

QC4 (a) Have you ever held any type of driver's licence (passed the driving test)?	YES = 1 NO = 2 If 'NO' to QC4(a), go to QC5
(b) Have you had a licence taken off you in the last five years?	YES = 1 NO = 2 SKIP = 0
QC5 (a) When you ride, do you wear a helmet? ... 1. On every trip ☐ 2. On most trips ☐ 3. On some trips ☐ 4. I never wear a helmet ☐	Tick the box that applies
(b) Were you wearing a helmet at the time of the crash?	YES = 1 NO = 2
(c) When you ride at night, do you wear reflective clothing? ... 1. On every trip ☐ 2. On most trips ☐ 3. On some trips ☐ 4. I never wear reflective clothing ☐	Tick the box that applies
(d) Have you ever crossed against the lights on your bike?	YES / NO
(e) Have you ever ridden against the traffic/on the wrong side of the road?	YES / NO

(f) Have you ever ridden on paths set aside for pedestrians?	YES / NO
(g) Have you ever hitched a ride on your bike by hanging onto another vehicle?	YES / NO
(h) Do you ever illegally "double" people when cycling?	YES / NO
QC6 (a) Have you been booked for any traffic offences in the last five years?	YES = 1 NO = 2
(b) If *YES*, what were they? 1. Speeding.....☐ 2. Drink driving.....☐ 3. Driving without a licence/wrong licence.....☐ 4. Other *(specify)*.....☐	SKIP = 0 Tick all boxes that apply
QC7 (a) In the last month, have you driven a car or ridden a motorbike after drinking two or more alcoholic drinks/ grogs in the hour before?	YES = 1 NO = 2
(b) In the last month, have you been a passenger of somebody who had drunk two or more alcoholic drinks/ grogs in the hour before?	YES = 1 NO = 2

The next few questions are about the trip before the crash.

Q9 **How physically fatigued did you feel at the time of the crash?** 1. Not fatigued at all ☐ 2. Slightly fatigued ☐ 3. Fairly drained of energy ☐ 4. Absolutely physically exhausted ☐	Tick the box that applies
Q10 **What was the reason for the trip?** 1. Part of your job (includes farming tasks) ☐ 2. To or from work ☐ 3. To or from another activity (specify) ☐ 4. For leisure / holiday ☐ 5. Other (specify) ☐ *Notes*.....	Tick the box that applies
Q11 **(a) Were you riding with anyone else on that trip?** 1. No, riding alone ☐ 2. Yes, with a passenger ☐ 3. Yes, with other cyclists ☐ **(b) What type of surface were you riding on?** *Notes (open highway, main roads, local streets or in the bush, in cycle lanes or on the footpath)*.....	Tick the box that applies

Q12 **(a) Did any of the following distract you or affect your driving/riding before the crash?**	Circle 'Yes' or 'No' for each potential distraction
(a) Outside person, object or event (eg. other traffic, police, sunlight/sunset, animals on the road, crash scene, road works, etc.) *Please specify*.....	**YES / NO**
(b) Swooping birds	**YES / NO**
(c) Open car doors	**YES / NO**
(d) Objects thrown from vehicles	**YES / NO**
(e) Emotionally upset/relationship problem	**YES / NO**
(f) Mobile phone	**YES / NO**
(g) Eating/drinking	**YES / NO**
(h) Lighting a cigarette/smoking	**YES / NO**
(i) Other distractions (eg. medical problems, sneezing, etc.) *Please specify*.....	**YES / NO**
(j) Inattention/daydreaming	**YES / NO**
(b) Was the distraction just before the crash?	**YES = 1** **NO = 2** **SKIP = 0**
Q13 **(a) What type of bike were you riding at the time of the crash?** *Notes*.....	Examples: road racer; mountain bike; hybrid; scooter (unmotorised); recumbent

(b) Was the bike in good condition before the crash?	*Probe/prompt - "any problems with it?"* YES = 1 NO = 2
(c) If ***NO***, what sort of problems did it have? (What was wrong with it?) *Please specify*.....	SKIP = 0
(d) Were the brakes working?	YES = 1 NO = 2

Now I would like to ask about your health.

Q14 (a) Did you have any health problems that may have affected your riding? *Please specify*.....	YES = 1 NO = 2 PROMPTS (Conditions): 1. Eyesight 2. Hearing 3. Flu/drowsiness from medication 4. Injury or lack of mobility 5. Balance/ neurological problems 6. Asthma 7. Epilepsy 8. Sleep Apnoea 9. Snoring 10. Diabetes
(b) Were you taking any prescribed medication? *Please specify*.....	YES = 1 NO = 2

(c) Were you taking any non-prescription (over the counter) medication? *Please specify*.....	Ask about non-prescription medications also (e.g. pain killers and antihistamines)
Q15 **How was your general health at the time of the crash?** 1. Excellent ☐ 2. Good ☐ 3. Average ☐ 4. Not so good ☐ 5. Poor ☐	Tick the box that applies

The next two questions are about your cycling and crash experience prior to the crash.

Q16 **(a) Before the crash, how often would you go for a ride?** 1. Everyday ☐ 2. 4 - 6 days per week ☐ 3. 1 – 3 days per week ☐ 4. Monthly ☐ 5. Yearly ☐ 6. First time ☐ 7. Yearly ☐ 8. Other *(specify)* ☐	Tick the box that applies
(b) Do you normally cycle alone?	**YES = 1** **NO = 2** **SKIP = 0**

Q17 (a) In the last 5 years, have you been in another road crash (could be a driver/rider, passenger, pedestrian, cyclist etc.)?	YES = 1 NO = 2
(b) In that crash, was anyone (including yourself) seriously injured or in hospital/clinic for more than a day?	YES = 1 NO = 2 SKIP = 0
(c) Were you driving/riding in that crash?	YES = 1 NO = 2 SKIP = 0

The next group of questions is about how safe you feel on the road, your behaviour on the road and the behaviour of other people in your community/town.

Q18
How much do you agree with the following ideas?

For Q18 tick the circle that applies

(a) Compared to other cyclists, I think I am safe

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(b) I do the same things on the road as most people in my community/region (eg. a lot of my community drink drives, so I do too)

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(c) I worry about my safety on the road

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(d) I worry about the safety of my family on the road

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(e) I worry about the safety of others in my community/ region on the road

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(f) Road crashes just happen, there is little one can do to avoid them

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(g) You can't stop road crashes because you can't do anything about other people on the road

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(h) Road crashes will always happen no matter what the government does to try to stop them

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

Q19

How often do you do the following things?

For Q19 tick the circle that applies

(a) Drive/ride after drinking grog/alcohol

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(b) Walk home after drinking grog/alcohol

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(c) Drive/ride faster than the speed limit

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(d) Drive/ride too fast for the sort of road you are on

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(e) Keep driving/riding when you are feeling tired

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(f) Not wear a seatbelt when you should be

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(g) Pile into the back of a truck or ute to get around

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(h) Squash more people into a car than is allowed

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(i) Ride as a passenger of somebody who has been drinking

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(j) Drive/ride unlicensed or without the right licence

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(k) Make sure little kids are in capsules on trips

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(l) Make sure older kids wear seatbelts on trips

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

Q20

(a) How much do you think that you personally can stop road crashes from happening?

For Q20 tick the circle that applies

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(b) How much do you think that people in your town/ community can stop road crashes from happening?

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

The next set of questions is about your attitudes to policing the road rules and social issues.

Q21

(a) Do you think police should spend more or less time on road safety and traffic issues?

Tick the box that applies

1. Less time ☐
2. More time ☐
3. About the same as now ☐

(b) What traffic or road safety issues should police focus on?

Please specify.....

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Q22

How concerned are you about each of the following issues?

For Q22 tick the circle that applies

(a) Crime rates

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(b) Pollution and environmental issues

Lots	A Fair Bit	Some	A Little Bit	Not At All
(5)	(4)	(3)	(2)	(1)

(c) Road accidents/crashes

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(d) Standard of health care

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

(e) Unemployment

Lots	A Fair Bit	Some	A Little Bit	Not At All
				
(5)	(4)	(3)	(2)	(1)

The next two questions are about road safety advertising and public education.

Q23

(a) Tell me about the last road safety message or advertisement you remember (if any)?

Please specify.....

.....

.....

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.....

Don't remember any = 88

Q24 **(a) Tell me a little about how you learn about road safety?** *Notes*.....	

Just a couple of questions about yourself to finish.

Q25 **(a) Where do you usually live?** *Please specify (town and postcode)*..... **(b) If you don't live in a town, what is the nearest town to you and how close is it?** *Please specify*.....	SKIP = 0
Q26 **Have you got or renewed a first aid certificate in the last 12 months?**	YES = 1 NO = 2
Q27 **(a) What is the biggest safety problem for cyclists?** *Notes*.....	PROMPTS: • Other people/ vehicles on the road and their behaviour • Road conditions • Visibility/weather • Animals • Space for cyclists • Vehicle mix/traffic • Alcohol/drugs • Roundabouts/ intersections

(b) If you could do one thing to reduce the road toll in North Queensland, what would it be? *Notes*.....	

THANK YOU FOR YOUR PARTICIPATION

I really appreciate the time you've given me. If you would like to speak to someone else about the project you are welcome to contact anyone on your information sheet. At the end of the project, a summary of the results will be sent to your local council and health facility. If you would like to get your own copy of the results, please ring the 1800 number and provide a postal or email address so that I can send it to you.

Appendix O - Certificate of Appreciation for Health Facilities

QUT

Certificate of Appreciation

This is to express our sincere thanks to:

Wujal Wujal Primary Health Centre

For ongoing involvement in and support to:

Queensland's Rural and Remote Road Safety Study

CARRS

Colin Edmonston
Senior Research Officer, CARRS-Q

Deb Avery
A/Director, Aboriginal & Torres Strait Islander Health Directorate

Queensland University of Technology

Appendix P – Acknowledgement of Support to the IDLP