SUBMISSION TO THE PARLIAMENT OF VICTORIA
ROAD SAFETY COMMITTEE
INQUIRY INTO SERIOUS INJURY

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The Centre for Accident Research & Road Safety - Queensland
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Introduction

This submission has been prepared in response to the Victorian Road Safety Committee's (RSC) Inquiry into Serious Injury. The document is structured to outline research undertaken by the Centre for Accident Research and Road Safety – Queensland (CARRS-Q) where relevant to certain terms of reference of the inquiry and to highlight the issues with regards to understanding the nature and extent of serious injury in motor vehicle accidents in Victoria. Only the terms of reference for which CARRS-Q has directly undertaken research are addressed in this submission, with the following three terms of reference of the inquiry included:

(b) Identify processes, including the exchange of data and information between agencies, that will facilitate accurate, consistent and timely reporting of road related serious injuries;
(c) Consider best practice definitions and measures of road related serious injury and injury severity, and recommend how road related serious injuries and their severity should be identified and reported in Victoria;
(e) Identify cost effective countermeasures to reduce serious injury occurrence and severity.

As a leading and internationally recognised research institution in the road safety field, the Centre for Accident Research and Road Safety (CARRS-Q) is committed to contributing to the reduction and prevention of transport-related injury and trauma. CARRS-Q was established in 1996 as a joint initiative of Queensland University of Technology (QUT) and the Motor Accident Insurance Commission (MAIC). The primary role of the Centre is to undertake research and training in the areas of road safety, workplace injury prevention, and school and community injury prevention.

CARRS-Q conducts and assists with extensive research in the areas of serious injury. Specific projects undertaken by the Centre in relation to these areas are listed below.

- Data linkage study exploring costs/benefits/barriers/facilitators to linkage of transport data and health data (Ambulance attendances, emergency department presentations, hospital admissions, and coronial data) (Qld)
- Data scoping study identifying additional data sources that can complement the Queensland Road Crash Database (Qld)
- The suitability of current crash databases for analysis of motorcycle crashes (Vic)
- Comparison of motorcycle, scooter and moped crashes (Qld)
- Injuries to off-road motorcycle and ATV riders (national)
- In-depth comparison of rural on-road and off-road injuries resulting from motorcycles and ATVs (Qld)
- Investigation of fatigue-related motorcycle crashes (Vic)
- Identifying programs to reduce road trauma to ACT motorcyclists (ACT)
- Delineating injury patterns and safety behaviours among cyclist groups (Qld)
- Identification of road environment and vehicle factors which contribute to trauma in older vehicle occupants (Qld)
Discussion in response to Terms of Reference

Given that CARRS-Q research spans a few of the Terms of Reference of the Inquiry, the approach that is taken in this submission is to identify the research projects and publications of CARRS-Q that are relevant to each of these Terms of Reference. Instead of providing a lengthy submission that details the findings of each of these research projects, the Committee can access the relevant reports. If the Committee wishes, CARRS-Q is happy to meet with them to present or discuss findings.

(b) Identify processes, including the exchange of data and information between agencies, that will facilitate accurate, consistent and timely reporting of road related serious injuries

In order to reduce the burden of road-related serious injuries, there is a need to fully understand the nature and contributing circumstances of crashes and the resulting injuries. A key aspect to understanding the problem is the availability of comprehensive timely data on the issue to facilitate accurate, consistent reporting. There are a variety of data sources in which transport-related incidents and resulting injuries are recorded. These include police reports, transport safety databases, emergency department data, hospital morbidity data, and mortality data to name a few. However, as these data are collected for specific purposes, each of these data sources suffers from some limitations when seeking to gain a complete picture of the problem. It is generally considered that no single data source is sufficient to examine the issue effectively and as a result, there is increasing interest in data linkage as a possible solution to enable a more complete understanding of the issues surrounding transport incidents and the injuries resulting from them. However, each agency and jurisdiction has different data systems with unique considerations for linkage and use which are a critical consideration before data linkage and subsequent data analysis of linked datasets can occur. It is also necessary to establish whether the benefits that could be derived from linked data would be sufficient to offset the likely costs.

A report by Austroads (2005) suggests that investment in linked data systems for road safety would greatly increase the value of data sets by allowing the use of data for a wider range of purposes. It is also suggested that data linkage will lead to more efficient day-to-day operations, easier access to data, and a greater ability to effectively evaluate road safety policy. Data linkage can result in improvements to data quality by including more cases, including more variables, and increasing accuracy through the detection and correction of errors. It is possible that linking police-reported crash data with health related data may provide a more accurate measure of severity of injury and a more accurate estimate of the cost of crashes.

A PhD project is currently being undertaken within CARRS-Q by Ms Angela Watson to assess the quality of current sources of transport-related injury data and to assess the linkage opportunities that exist within Queensland in order to provide a more comprehensive picture of transport-related incidents and the resulting injuries. The project also aims to establish whether road safety data linkage is feasible and whether linked data provide advantage over non-linked data, both qualitatively and quantitatively. This project will inform national initiatives in the transport-health data linkage area. More information on this project is available by contacting Angela Watson on angela.watson@qut.edu.au.
Relevant publications authored by CARRS-Q researchers include:


(c) Consider best practice definitions and measures of road related serious injury and injury severity, and recommend how road related serious injuries and their severity should be identified and reported in Victoria

Research undertaken at CARRS-Q into serious injury and road crashes currently uses the definition of a serious injury employed by the Department of Transport and Main Roads’ Queensland Road Crash Database, i.e. a serious injury is any injury coded as hospitalised or fatal (TMR, 2012). While the definition of a fatality is clear, the application of “hospitalised” as an inclusion criterion for “serious injury” is less clear. Historically, an injured party was coded as being hospitalised if they were admitted to hospital for 24 hours or more (a definition established by the International Traffic Safety Data Analysis Group (IRTAD)). However, in practice, the Queensland Police Service were coding an injury as hospitalised when an injured person was simply taken to hospital, as there is limited capacity to follow up injured patients once transported to hospital (and this is true for most jurisdictions throughout Australia). Within the last couple of years, the definition of a hospitalised case has been updated to reflect the police practice so that a hospitalised injury is now when an injured person is taken to hospital. It would be advisable to review current Victorian practice to determine whether there are similar issues, since most road safety research relies on police reported crash data rather than hospital data. The use of this revised definition by the Queensland Police Service has shortcomings, and the PhD study undertaken at CARRS-Q outlined earlier has been assessing its validity as a measure of the incidence of serious injury in road safety. It has been found that the definition is quite broad and does not provide a true measure of seriousness in terms of threat
to life or permanent disability. It is likely that an injury requiring only stitches would be equally as likely to result in transport to hospital as an injury involving extensive head or neck injuries. Hence, these injuries would be coded as equally ‘serious’ using the current data and definitions, despite being quite different in terms of their threat to life or permanent disability. This disparity is important to capture in terms of assessing the impact and cost of injuries resulting from road crashes.

There are a number of suggested alternative measures for severity that may be a better reflection of the true seriousness of a road crash injury. Two that are being evaluated as part of the PhD project are the Abbreviated Injury Scale (AIS) and Survival Risk Ratios (SRR). The Abbreviated Injury Scale (AIS) is a body-region based coding system developed by the Association for the Advancement of Automotive Medicine. A single injury is classified on a scale from 1-6 (1 = minor; 2 = moderate; 3 = serious; 4 = severe; 5 = critical; and 6 = maximum). If there is not enough information to assign a value, a code of 9 (not specified) is applied. A Survival Risk Ratio (SRR), assigned to a single injury, provides an estimate of the probability of death and is based on ICD-10-AM coding, ranging from 0 (no chance of survival) to 1 (100% chance of survival). A serious injury would be defined as a score of 3 or more on AIS or a SRR equal to or less than 0.941. While it may be shown that either or both of these measures are a better indication of serious injury, the issue then becomes whether or not the necessary information is available to enable their application. Detailed descriptions of injuries or ICD-10AM coding are required in order to assign AIS or SRRs. In the Queensland Road Crash Database, the police record the nature of the injury in a text description, however the completeness and validity of this information has not been established.

There are other data sources that include detailed and/or coded information on injury that could be used to better establish the seriousness of an injury, such as admitted patient and/or emergency department databases. However, using these data collections in isolation would result in having little information on the circumstances or nature of crashes, which is vital for road safety research. Furthermore, if hospital data are used to track trends in serious transport-related injury, there is a need to account for differences and changes (across jurisdictions and over time) in hospital admission policies which affect whether patients are admitted to hospital or not for equivalent injuries. The concept of linking the police reported data (with substantial information on the nature and circumstances of crashes) with health data (with substantial information on the nature and severity of injuries) has become increasingly popular. As outlined above the current PhD project aims to determine the feasibility and value of linking data, particularly in terms of the determination of the impact of serious injuries resulting from road crashes.

(e) Identify cost effective countermeasures to reduce serious injury occurrence and severity

Road related serious injury can be attributed to an array of primary and contributing factors. Using the Safe System Approach, preventing a crash or reducing its severity, while minimising the possible role of human error, should be achieved by considering countermeasures across four key principles: safe vehicles, safe speeds, safe roads and safe road use (behaviour). The interactions between these principles are also important when considering issues such as road type and the number of hazards involved and driver age and level of vulnerability. The multi-faceted nature of road related serious injury and prevention measures requires the implementation of a range of targeted and specific countermeasures. These include but are not limited to: random breath testing, random drug testing, lowering the BAC limit and the management of recidivist drink drivers (safe road use), lowering speed limits, speed enforcement measures and road design features such as the introduction of roundabouts to reduce speeds on certain road types (safe speeds), flexible wire barriers to prevent
head on collisions (safe roads) and in-vehicle crash avoidance technologies, use of alcohol ignition interlock devices and improvements to seat belts and air bags (safe vehicles). Countermeasure identification and cost effective implementation is informed by empirically driven research findings, cost-benefit analysis and emerging priorities.

CARRS-Q researchers have conducted numerous projects that have informed or evaluated a range of road safety countermeasures. Recent research has focused on the effectiveness of point-to-point speed enforcement, anti-speeding messages to target high risk road users, the impact of penalties and sanctions on speeding recidivism, the combined effect of speed and headway monitoring, a motorcycle training program, off road all-terrain vehicle safety countermeasures, prevention of low speed vehicle runovers of young children, fleet safety countermeasures, use of conspicuity markings for heavy vehicles, in-vehicle and road based level crossing safety interventions, a repeat drink driving brief intervention, fatigue detection methods and the impact of different rest break types using the advanced driving simulator. A number of CARRS-Q researchers also have experience conducting cost benefit analyses applied to behavioural and engineering safety countermeasures. A PhD project is currently being undertaken by Ms Cassandra Gauld to develop and evaluate advertising countermeasures to address driver distraction and mobile phone use in young people.

It should be acknowledged that the development of road safety countermeasures has been historically driven by a strong focus on reducing fatalities. While this focus recognises the serious community consequences of road deaths, it is important that our future efforts also focus strongly on reducing serious injuries (particularly as fatality numbers continue to fall). Consequently, further research is required to identify serious injury priorities that may not have received adequate attention in the past. As an example, whiplash injuries continue to represent major costs for compulsory third party injury insurers, as well as having major implications on the lifestyle of victims. However, the types of crashes leading to whiplash injuries, such as rear-end crashes, have historically received less attention in mainstream road safety – possibly because they tend to result in less damage to motor vehicles than other types of crashes.

Relevant publications authored by CARRS-Q researchers (selected for their contribution to knowledge about countermeasures) include the following (ordered in reverse chronological order):


