

**Motorcycle Case-Control Study ('MICIMS' - ARC-Linkage Project)
Study Update for Rider Community – March 2016**

Background

- This research project is aimed at better understanding the factors that contribute to motorcycle crashes. The study will provide evidence-based information to riders and the wider community and also better inform road safety organisations in their future decision-making. It is supported by the Australian Research Council, VicRoads, Victoria Police, the TAC, the Department of Justice and the Victorian Automobile Chamber of Commerce.
- It is known that speed is a factor that determines the severity of injury in the event of a crash, but there is less information about the role that travel speed plays in causing a crash, and whether there is any interaction between travel speed and other factors, like rider experience. The potential contribution of the physical environment is also not well understood, such as road geometry, intersection type, and condition of the road surface. The study uses a similar methodology to that of the 1981 Hurt Report, often considered to be the first comprehensive investigation of motorcycle crash causes. In addition, information about the role of the physical environment will be gathered by comparing features of the crash site with other sites that rider rode through without incident.
- The study involves two participant groups – riders who have been recently injured in a crash (cases) and riders who pass through recent crash sites without incident (controls). By comparing the “cases” with the “controls” groups, the research aims to investigate whether there are relationships between successfully avoiding a crash and characteristics such as travel speed, the riders’ level of training and experience, and the type of bike. Similarly, by comparing features of the crash site with another site the motorcyclist rides through, information can be gathered about the role of the physical environment. A detailed crash investigation will also be completed for each case, to assess the full range of possible contributing factors, including those involving other road users.
- MUARC is recruiting case participants by directly approaching those riders injured in crashes and who are admitted to participating hospitals across Melbourne and surrounding areas. Control participants are being recruited by photographing number plates as riders pass through recent crash locations. VicRoads is writing to these riders, on behalf of MUARC, inviting them to participate in the study. Participation is voluntary.

Progress – as at Mar 2016

Data analysis & Results

- The main case-control analysis is now well underway and close to complete. This was delayed in 2015 due to availability of personnel with the expertise to carry out the statistical modelling.
- A second case-control analysis on road environment factors is expected to commence in the next 2 months.

Summary of results so far :

Case-series data and crash investigation (safe systems approach):

- Two thirds of investigated crashes involved another vehicle.
- For multi-vehicle crashes, a traffic scan error on the part of the other road user was the most common primary contributing factor (as judged from the crash investigation).
- For single-vehicle crashes, a rider misjudgement or control error was the most common primary contributing factor (as judged from the crash investigation).
- The road environment was judged as a definite or probable secondary factor in over three quarters of crashes.
- For over 90% of crashes 2 or more secondary contributing factors were identified, highlighting the complex interaction between road users and the road environment in crash events.
- These results have been submitted for publication, so we expect a peer-reviewed version to be available if accepted.

Control (exposure) data – observations of motorcycles at crash sites:

- Motorcycles represented < 1% of all traffic sampled (compared with 4% of registrations)
- Motorcycles were more likely to have larger time gaps in-front and behind when compared to other vehicles.
- A small but significantly larger % of motorcyclists were exceeding the speed limit (cf. other vehicles).
- An apparent shift towards older age of the active rider population may be contributing to a reduced injury crash risk (relative to exposure time)
- There is scope to improve the physical conspicuity of motorcyclists and frequency of protective clothing use.
- This paper has been accepted for publication in Traffic Injury prevention.

Feasibility study on other road user perspective - for multi-vehicle crashes

- We conducted a 'piggyback study' to MICIMS to investigate the feasibility of gaining information from the other road users for multi-vehicle crashes with assistance from Victoria Police. An invitation letter and questionnaire was sent out to other road user for MICIMS cases where another road user was involved and contact details were available.
- Of those cases where the other road user was invited, the final response rate was 13%.
- Those drivers that responded were not representative of all multi-vehicle crashes. Responding drivers were less likely to be those from crashes where they were judged as the primary contributing factor.
- We concluded that it was not feasible to obtain sufficient or representative information from the other road user using the methods employed.
- A draft paper has now been prepared, which includes suggested strategies to overcome these challenges for future motorcycle safety research.

Publications, Submissions and Conference presentations

Title	Type	Status
The feasibility of gaining the other road user perspective in multi-vehicle motorcycle crashes	Journal paper	To submit within 2 weeks
Contributing factors to motorcycle injury crashes in Victoria, Australia	Journal paper	Submitted (Dec '15)
Exposure factors of Victoria's active motorcycle fleet related to serious injury crash risk	Journal paper	Accepted (proof) - available
Do motorcyclists have greater exposure to situations in which another driver fails to give way?	Conference ext. abstract	Submitted (Feb '16)
Contributing factors to serious injury crashes in Victoria	Conference poster	Presented (Nov '15) - available
A practical methodology using in-depth crash data to support the assessment of new motorcycle safety technologies	Conference ext. abstract	Presented (Oct '15) - available
Victoria's active motorcycle fleet: traffic density, speeds, and age distributions of motorcycles and riders	Conference abstract	Presented (Nov '14) - available
Finding evidence-based strategies to improve motorcycle safety: A case-control study on serious injury crashes in Victoria http://arsrpe.acrs.org.au/index.cfm?action=main.paper&id=2751	Conference ext. abstract	Presented (Oct '13) - available
Population based case-control study of serious non-fatal motorcycle crashes http://www.ncbi.nlm.nih.gov/pubmed/23351603	Journal paper	Published - available

If you would like a copy of available papers or abstracts, please contact Trevor (details below)

If you would like to be included in our email list for notification of study updates, or have any questions about the study, please contact:

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