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The application of a naturalistic driving method to investigate on-road cyclist behaviour

Marilyn Johnson¹, Judith Charlton¹ and Jennie Oxley¹

¹ Monash University Accident Research Centre

Marilyn Johnson
Monash University Accident Research Centre
marilyn.johnson@muarc.monash.edu.au

Abstract

Objective: This paper describes the application of a naturalistic driving method to investigate the behaviour of on-road commuter cyclists in metropolitan Melbourne.

Rationale: The number of cyclists is continuing to increase in Australia. Previous research into risk factors associated with collisions between cyclists and drivers relied on post-event data. Absent from this approach is an understanding of what contributed to collisions and near-collisions, in particular the behaviours of cyclists and drivers.

Method: Based on the 100-Car Naturalistic Driving Study, this study focused on commuter cyclists' experiences using a helmet mounted camera to capture a perspective close to the cyclists' view, each participant recorded 12 hours of footage. Data was collected between January and April 2009. Participants also completed a pre-study questionnaire, weekly updates and a semi-structured exit interview.

Data: The footage was reviewed and low light footage and time spent riding off road was excluded, resulting in 46 hours and 15 minutes. No crashes were recorded and 36 other event types were identified for further analysis. The 100-car data dictionary of variables was modified for this study. Modifications included changing the referent from driver to cyclist, two cycling specific variables were developed (head checks and cycling infrastructure) and excluded were descriptors related to driving behaviours and internal vehicle cameras. In addition, the VicRoads Definitions for Classifying Accidents was used to classify events.

Conclusion: With modification, the naturalistic driving method was successfully adapted to investigate the behaviour of on-road cyclists. The principle strength is that continuous recording allows detailed review and analysis of events over the entire trip including pre near-collision risk factors. A large scale study using this method is likely to provide insights into the major causal factors involved in near-collisions and potentially collisions between cyclists and drivers.