

The Feasibility of Gaining the other Road User Perspective in Multi-Vehicle Motorcycle Crashes

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Abstract

The purpose of this study was to investigate gaining the the other road user perspective in motorcycle crashes involving another vehicle. Cases were 158 crashes involving an injured motorcyclist and another road user(s) on public roads within Victoria. Traffic incident report numbers from cases were provided to Victoria Police, who contacted other road users by mail on behalf of the researchers, inviting them to complete a questionnaire. The response rate was 13% overall, and 10% for cases where other road user error was the primary contributor. This highlights the challenges of understanding human error related factors using real-world crash data..

Background

Reducing serious injury motorcycle crashes is a high priority in current road safety strategies throughout the world (Haworth 2012). Approximately 60% of serious or fatal injury motorcycle crashes in Australia involve another vehicle or road user (Haworth et al. 1997, Allen et al. 2013, Brown et al. 2015). A common scenario for this type of crash is when the other road user fails to give way to the motorcyclist (Allen et al. 2013, Brown et al. 2015). This highlights the need to understand the interaction between road users, motorcyclists and other elements of the road system.

Motorcycle safety research using real-world cases typically focusses on the rider, with little or no information available about the other road user. This approach limits the interpretability of the results and reduces confidence in the applicability and potential of any road safety intervention based on them. The purpose of this study was therefore to investigate the feasibility of gaining the perspective of the other road user in motorcycle crashes involving another vehicle.

Methods

Recruitment of cases (motorcyclists)

Cases were recruited from a case-control study investigating risk factors for serious injury motorcycle crashes (Day et al., 2013). Riders were aged 18 years or over and injured in a crash on a public road within Victoria, Australia between January 2012 to August 2014. Consenting riders completed an interview-based questionnaire. This was followed by a detailed crash investigation. For the current study a subset of the case riders were selected – those who had been involved in a crash with another vehicle (n=145).

Recruitment of other road users

Eligible cases involving another vehicle were matched to de-identified traffic incident reports provided by Victoria Police. For eligible cases where contact details were available, the registered keeper of the other vehicle involved in the crash was posted an invitation to participate by Victoria Police using the details held in their traffic incident database. The researchers did not make direct contact with the other road users. The invitation included a letter from Victoria Police, an ethics explanatory statement, and a paper copy of the questionnaire (with an option to complete an online version). The letter stated that participation was voluntary, was for research purposes, and an option was provided so that participant responses were not linked to the specific crash. The questionnaire

asked for their recollection of the crash event, and their perspective of the relative contribution of factors involved.

All procedures were approved by the ethics committees of Monash University and Victoria Police.

Results

A matching traffic incident report was identified for 115 cases (81% of eligible cases), of which current contact details for another road user was available for 102 cases (70% of eligible cases). Of the other road users invited to participate, 13% responded by returning a completed questionnaire (23% completing it online). Those cases where the other road user responded were those where a significantly greater relative contribution had been assigned to the rider (based on the crash investigation) when compared to cases where no response was received (mean 54% vs. 28% respectively, $P < 0.05$). Conversely, the contribution assigned to the other road user (based on the crash investigation) was significantly lower for cases where the other road user responded compared to cases where they did not respond (mean 39% vs. 64% respectively, $p < 0.05$).

Conclusions

An invitation by police (on behalf of researchers) to drivers for their perspective in crashes involving a motorcyclist resulted in a lower than acceptable response rate. A response bias also existed, leading to an under-representation of those crashes where the other driver error was judged (by the crash investigation) as the primary contributing factor. This also meant that those cases where the other road user perspective was of greatest value in understanding the crash were the same cases where the other road user did not choose to provide information. Alternative strategies are therefore needed to improve our understanding of human error in real-world motorcycle crashes involving another road user. This includes validating findings from simulator-based driving studies. One strategy would be to establish a closer collaboration between researchers and crash responders (ambulance, police) so that a higher quality of information is collected from the crash site and road users involved. As vehicle and infrastructure technology advance, another strategy would be to use available objective sources of information, such as from vehicle event data recorders.

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