POST-EVENT SUMMARY OF SYMPOSIA AND WORKSHOPS AT ARSC2016

(As at 18 September 2016)

Thursday 7 September: 11:30am

Room: Bradman

Symposium

The MUARC-TAC Enhanced Crash Investigation Study: Early findings from the case and control data

Key Organiser:

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Overview:

The MUARC-TAC Enhanced Crash Investigation Study (ECIS) is a multidisciplinary case-control in-depth crash investigation study that seeks to understand the factors associated with serious injury crashes in Victoria. ECIS was purposefully designed to inform the Victorian road safety strategy as it strives Towards Zero people killed and injured. By investigating 400 serious injury crashes and obtaining data from 4,000 drivers observed driving through these known crash locations, insights into why serious injury crashes occur will be achieved. This includes valuable information about contributing factors, common crash types as well as self-reported behaviours drivers engage in while driving. The symposium offered the opportunity to share the study and disseminate a number of the early findings to a broad range of road safety professionals.

Summary/Outcome:

Early findings from the ECIS case and control data were presented. In particular, the findings from the first 300 serious injury cases were summarised, focusing on crash types and contributing factors. The value of the ECIS method in using real-world crash and speed data to evaluate the safety performance of roundabout design was highlighted. In addition, data from the ECIS Control Arm were presented, and this highlighted the range of activities drivers report while driving; the key question here was to explore the relationships of these behaviors with driver fatigue and observed free travel speed.

The speakers were all from Monash University Accident Research Centre (MUARC) where the ECIS study is currently being conducted. In presentation order, the speakers included:

- Associate Professor Michael Fitzharris, Associate Director MUARC and the lead Chief Investigator on the ECIS study.
- Ms Sujanie Peiris, Research Fellow in road safety engineering
- Dr Amanda Stephens, Research Fellow in Psychology and driver behaviour

The first presentation provided an overview of the TAC-MUARC ECIS program, with emphasis on placed on the need for this type of research. The structure of ECIS and its goals were outlined.

Preliminary analysis of early findings from the first 300 serious injury cases were presented. This focused on key crash types and contributing factors for the occurrence of those crashes. Data showed that the age and gender profile of the ECIS cases is representative of the admitted population. The majority of the crashes have occurred in urban environments during the daytime. Fatigue, failure to see other road users, and medical blackouts were key contributing factors across all crash types. The importance of the data in directing policy and ultimately helping achieve zero deaths or serious injuries on the roads was also discussed.

In the second presentation, a real-world example of speed and crash data collected through the ECIS protocol was used to highlight the safety performance of an existing roundabout design. To do so, a real-world crash occurring at a typical conventional roundabout in Victoria with 100km/h signed approach speeds was reconstructed using simulation software. This enabled entry speeds and impact speeds for the crashed vehicles to be estimated. Reinforced using control speed measurements, the findings demonstrated that vehicles traveling through the exemplar roundabout entered at speeds typically lower then 50km/h (particularly on the minor approach), and passed the impact point at speeds below 50km/h in line with safe system performance. The findings demonstrated that the ability for roundabout geometry to reduce travel speeds by up to 45%. Overall, the ECIS data was used to demonstrate that the roundabout investigated operated within Safe System design considerations and provided lower impact speeds and favourable geometry for vehicle occupants. This was reflected in the relatively low injury severity for the drivers involved.

In the third and fourth presentations, an overview of the ECIS control-arm protocol was provided. Control data from the ECIS study include both objective speed measurements recorded via laser camera positioned at ECIS case-vehicle crash locations as well as retrospective self-reported driving behaviours from drivers recorded at these sites. Through this method, the prevalence of self-reported engagement in potentially distracting behaviours can be understood, and following this relationships between these activities and driver speed and fatigue can be examined. A preliminary analysis of the first 1,000 control cases showed that the most commonly reported activities while driving were interacting with passengers, adjusting the radio/volume and a perception that the traffic flow was too fast. The initial analysis found no relationships between driver speed and engagement in potentially distracting activities, suggesting drivers may not regulate their speed to accommodate for these secondary tasks. When fatigue was examined, relationships emerged between poor sleep quality and increased interactions with passengers, radio and climate controls.

The preliminary results demonstrate the value of the approach used in the ECIS control arm. The method is robust as it uses objective speed measures that were recoded covertly, and driver responses were independent of this measured speed. Further, a number of other relationships are able to explored between driver factors and their self-reported engagement in secondary tasks while driving.

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