

## **What drivers do while speeding: Examining the associations between speeding and driver distraction through the Enhanced Crash Investigation Study protocol**

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### **Abstract**

This paper represents an exploratory analysis to assess the feasibility of assessing the relationship between driver speed and engagement in potentially distracting behaviours. Control data from the ECIS project are examined. These data 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. Exploratory analysis suggests that the activities reported by drivers with recorded speeds above the limit may differ from the activities reported by those recorded on or below the limit.

### **Background**

Violations of the posted speed limit contribute to the number and severity of road crashes (Elvik, 2012). While a direct relationship between speed and crashes is undisputed, there may be indirect relationships arising from associations between driver speed and other activities that compete for the driver's attention. The ECIS allows this relationship to be explored by capturing observed speed data and subsequent self-reported behaviours from drivers about what they were doing at the time their speed was measured. This paper presents an exploratory analysis of potential relationships between observed speeds and activities reported by drivers at the time of speed capture.

### **Methods**

The ECIS is a case-control study that will collect and analyse data from 400 serious road crashes in Victoria occurring across a three-year period (see Fitzharris et al., 2015 for a full description of the study protocol). Control participants are those who, within a few weeks of a case-vehicle crash, have safely driven through a crash-site, and had their 'free speed' and vehicle details covertly recorded by a laser speed camera. Recordings are taken within a 30-minute window each side of the crash time. A retro-reflective sign (60cm x 60cm) is placed after the crash-site and down-stream from the speed measurement point advising drivers they had passed through a Monash University study site; this serves as a later memory cue and is assessed in a questionnaire subsequently sent to drivers. For privacy reasons, the Transport Accident Commission sends the questionnaire on behalf of the ECIS researchers. The response rate is 34%.

Included in the control questionnaire are details of the location and the date and time of when the driver was recorded, as well as a photograph of the location. A number of questions seek information relating directly to the trip in question, including presence of passengers and activities undertaken by drivers at the time their speed was recorded. Drivers are not informed of their recorded speed. Less than 1% did not remember driving through the specified location on the day their trip was recorded.

### **Results**

Control data were available for 233 drivers (Male: 50%), which relates to 19 different sites where a crash had occurred. Analysis of 'free speed' showed that 81% complied with the posted speed limit and 19% exceeded the speed limit. Of those above the speed limit, 61% (12% overall) exceeded the speed limit by up to 5km/h over, 33% (4% overall) were 6-10 km/h over the speed limit and 16% (3% overall) by 11 km/h or more. Table 1 shows the frequency of potential distracting activities compared for drivers on or below the speed limit and those above. Whilst there are indications that some distraction-type behaviors occur more frequently among those exceeding the posted speed limit, none of the differences were statistically significant. The data also show the type and range of distractions that drivers engage in. These may be through external events, driver tiredness or a result of passengers in the vehicle.

**Table 1. Activities reported by drivers who were exceeding the speed limit, compared with drivers who were not**

	<b>On or below the speed limit (n =189)</b>	<b>Above the speed limit (n = 44)</b>	<b>OR<sub>MH</sub> (95% CI)</b>
<b>I was distracted by something outside of the vehicle</b>	3.70%	9.09%	2.6 (0.7-9.3)
<b>I felt tired from a lack of sleep</b>	2.65%	6.82%	2.7 (0.6-11.7)
<b>I was smoking a cigarette or pipe</b>	1.06%	4.55%	4.4 (0.6-32.5)
<b>I was talking to a passenger</b>	19.58%	22.73%	1.2 (0.5-2.6)
<b>My vision was affected or obstructed whilst driving by a parked vehicle</b>	3.70%	6.82%	1.9 (0.4-7.7)
<b>My attention was caught by a disturbance in my vehicle (passengers, child, animal)</b>	2.12%	4.55%	2.2 (0.4-12.4)
<b>I was talking on hands-free phone (Bluetooth)</b>	2.12%	4.55%	2.2 (0.4-12.4)
<b>I was coughing / sneezing / blowing nose</b>	0.00%	2.27%	NA
<b>I was using hand-held phone on speaker or headphones</b>	0.00%	2.27%	NA
<b>I was looking at AND talking to a passenger</b>	1.06%	2.27%	2.1 (0.2-24.5)
<b>I changed a CD / DVD</b>	1.06%	2.27%	2.1 (0.2-24.5)
<b>My vision was affected or obstructed by road-works</b>	1.06%	2.27%	2.2 (0.2-24.5)
<b>I felt stressed or worried about something</b>	7.94%	9.09%	1.2 (0.4-3.7)
<b>I was running late for something</b>	5.82%	6.82%	1.2 (0.3-4.4)
<b>A driver pulled out and turned across my path</b>	1.59%	2.27%	1.4 (0.2-14.2)

## Conclusions

The analysis presented here demonstrates the value of the approach used in the ECIS control arm. The method is robust as it uses objective speed measures that were recorded covertly, and driver responses were independent of this measured speed. Issues of recollection bias are recognised and discussed fully in Fitzharris et al. (2015). Nonetheless, this exploratory analysis shows the types of activities and behaviours that drivers engage in whilst driving. While the future ECIS dataset will permit a more comprehensive analysis, the results here provide some evidence for an indicative relationship between driver distraction and exceeding the speed limit.

## References

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## ECIS Study team

In addition to those named in the author by-line, the ECIS team consists of: Research Nurses: Sarah Bullen, Marnie Reilly, Emily Robertson, Karen Vlok; Technical Officers: Rai Curry, Robin Jackel, Lindsay Lorrain, Tandy Pok Arundell, Geoff Rayner; Data Coordinators: Debra Judd; Project Support Officer: Caitlin Bishop, Hayley McDonald; Data Entry: Daniel Machell.