

Accuracy of Speed Zone Recorded in the Victorian Police-Reported Crash Database Differs by Speed Zone in Metropolitan Areas

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Abstract

We aimed to investigate the accuracy of the speed zone recorded for crashes in Victorian police-reported crash data. Data on crashes that occurred on 111 road segments (where the true speed limit was known) in the Melbourne metropolitan area were obtained. The speed zone recorded for each crash was compared to the true speed limit. Speed zone was recorded incorrectly for one-third of crashes. The positive predictive value was low; for example, almost 90% of crashes recorded as occurring in 50 km/h zones did not occur in 50 km/h zones. Implications and recommendations for rectifying the problem are discussed.

Background

Administrative crash databases held by road authorities are an important data source. Such data are used to measure the size of the road safety problem, identify risk factors and evaluate countermeasures with the goal of informing evidence-based policy to reduce crashes and injuries.

Much of the data on crashes is sourced from reports completed by police and thus subject to human error in recording the circumstances. There is potential in future, however, to relieve police of the need to collect data that are available from other sources, for example, geo-spatial databases of speed zones.

The aim of this study was to investigate how accurately the speed zone in which crashes occur is recorded in Victorian police-reported crash data.

Method

Data was collected on the characteristics of 142 urban road segments in the Melbourne metropolitan area as part of a larger research project (Stephan, 2015). The speed zone of each road segment was obtained from VicRoads. For the purposes of this investigation, road segments with variable speed limits (either for schools (n=17) or for strip shopping (n=14)) were excluded. Therefore, 111 road segments were included in this study.

Crashes occurring on the road segments between 2005 and 2009 were identified using the publicly accessible Victorian CrashStats (VicRoads 2008). Crash data were downloaded including information on the police-reported speed zone of the crash location.

Crashes that occurred on midblock road segments (not at an intersection) were identified. For each road segment, the number of crashes that were recorded in each speed zone was counted and compared to the true speed zone for that road segment. Data were collated across speed zones and the sensitivity (% of crashes in each speed zone that were recorded correctly) and the positive predictive value (PPV: % of crashes recorded as being in a particular speed zone, that were actually in that speed zone) were calculated for each speed zone.

Results

Table 1 displays the number of crashes in each speed zone (columns) and how they were recorded in the Victorian crash data (rows). One-third of the crashes did not have the correct speed zone

assigned to them. The sensitivity of the speed zone recording varied by speed zone. Sensitivity was lowest for 70 km/h zones (21.8%) and highest for 50 km/h and 60 km/h zones (77.8% and 74.3% respectively).

PPV was highest for crashes recorded as occurring in 60 km/h zones (85.9%) but relatively poor for other speed zones; from 10.4% for 50 km/h zones to 60% for 80 km/h zones.

Conclusions

The speed zone was recorded incorrectly for almost one-third of the crashes occurring on these midblock road segments. The low PPV for most speed zones is concerning. For example, almost 90% of crashes that were recorded as occurring in 50 km/h zones did not, in fact, occur in 50 km/h zones. The implications for researchers and practitioners planning to use the Victorian crash data to conduct analyses by speed zone will be discussed. Recommendations for rectifying the problem will be made.

Table 1. The number of crashes in each speed zone against the speed zone they are recorded as

Speed zone recorded in crash data	Actual speed zone					Total	Positive predictive value
	40 km/h	50 km/h	60 km/h	70 km/h	80 km/h		
40 km/h	13	0	12	1	5	31	41.9%
50 km/h	2	7	46	6	6	67	10.4%
60 km/h	4	1	421	49	15	490	85.9%
70 km/h	0	0	51	17	0	68	25.0%
80 km/h	0	0	17	3	30	50	60.0%
Missing	2	1	20	2	1	26	0%
Total	21	9	567	78	57	732	
Sensitivity (% recorded correctly)	61.9%	77.8%	74.3%	21.8%	52.6%	66.7%	

Key: cells shaded in grey indicate crashes where speed zone was correctly recorded

References

- Stephan, K.L. (2015). *A Multidisciplinary Investigation of the Influence of the Built Urban Environment on Driver Behaviour and Traffic Crash Risk*. Monash University thesis, available from <http://arrow.monash.edu.au/vital/access/manager/Repository/monash:168211>
- VicRoads (2008). *CrashStats User Guide Road Crash Statistics*. Kew, Victoria, Australia: VicRoads