

The Use of a Safety Platform at an Intersection to Align Approach Speeds with Safe System-an Australian-first Innovative Trial

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Abstract

An innovative trial was introduced at a signalised intersection in Victoria with the intention of aligning approach speeds to Safe System speeds. Trial results from the combined treatment of signals, reduced speed limits and a Safety Platform indicate lower speeds at the trial site when compared to control intersections. Due to the combination of treatment, the direct effect of the Safety Platform on the lowered speed is not as clear, and will need to be investigated at the next stage of trial.

Introduction

VicRoads introduced an Australian-first innovative treatment at the signalised intersection of Surf Coast Hw/Kidman Avenue, Belmont to contain vehicle speeds to Safe System speeds (Tingvall and Haworth 1999, Candappa, Logan et al. 2015). This T-intersection has a higher than average crash rate due to high traffic volume on Surf Coast Highway and its 70km/h speed limit. Key crash types involved right-turning vehicles from Kidman Ave and through vehicles travelling on Surf Coast Highway. The treatment, known as a “Safety Platform (SP) or Raised Stop Bar - a gradual crest just after the stopline - was introduced in October 2015. SPs, were first trialled in the Netherlands. The final trial design, designed to maximise likelihood of reduced approach speed while minimising undue occupant discomfort, and risk of heavy braking - comprised a combined treatment of traffic signals, speed limit reduction and the Safety Platform.

Methods

Pneumatic tubes were used to measure speeds on approach to the intersection, and video footage of the intersection taken over a 2-week period. Three control locations were used in the study. Stopping locations and location of brake initiation were noted using video footage. The trial was evaluated by MUARC.

Results and Discussion

Results indicate reduced travel speeds through the intersection, with mean and 85% travel speeds at Kidman Av/Surf Coast Hwy 12.3 km/h and 12.6 km/h less than those measured at the signalised intersection at control 1, and 20.5 km/h and 15.2 km/h less than the non-signalised intersection of Control 2. Study findings suggest that as a result of the reduced speeds, crash kinetic energy (KE) levels are far more aligned with Safe System ideals; instead of KE levels of around 190 KJ, KE levels were estimated to be just above Safe System recommendations of 96.5 kJ. In contrast, when considering the 85% speeds, KE levels at both the Control 1 and 2, in the post-treatment period were closer to double (189 kJ) the tolerable levels, (Tingvall and Haworth 1999, Candappa, Logan et al. 2015). This implies reductions in serious injury crashes at Kidman Av/Surf Coast Hwy intersection post treatment.

About 20% of the drivers encroached the stop line when stop at red signals, suggesting some driver confusion and uncertainty as to where they are required to stop. It is possible that a mixed message is being provided to the driver, the expectation of needing to stop at the signal pedestals conflicting with the requirement to stop prior to the SP. While this needs to be considered further, particularly if the design will be introduced at locations where pedestrian crossings can be incorporated on the

SP, there were no notable conflict with pedestrian at the present site. Some drivers braked well before necessary, suggesting some uncertainty and hesitation.

Due to the combination of treatment, the direct effect of the Safety Platform on the lowered speed is not as clear, and will need to be investigated at the next stage of trial.

References

Tingvall and Haworth, *Visions Zero – An Ethical Approach to Safety and Mobility*, Paper presented at the 6th ITE international Conference Road Safety and Traffic Enforcement, 1999

Candappa, N, Logan, D, Van Nes, N and Corben, B – *An Exploration of Alternative Intersection Designs in the Context of Safe System*, *Accident Analysis and Prevention*, 74;314-23