Submission

No 15

INQUIRY INTO SCHOOL ZONE SAFETY

Organisation: University of New South Wales

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Submission to Staysafe Committee on Research Relating to School Zone Safety

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Overview

This submission to the Staysafe (Road Safety) Committee is in regards to research undertaken at the NSW Injury Risk Management Research Centre (UNSW). In 2010, research[1] was published that assessed, among other analyses, whether the *Safety Around Schools Program* was effective in reducing child pedestrian casualties. As one of the paper's aims is directly related the Terms of Reference for the inquiry into School Zone Safety, we are prepared to offer expert opinion regarding our findings and any questions the committee may want to ask in regards to this issue.

The key findings of this study included:

- Data collected through Traffic Accident Database System (Roads and Traffic Authority) and Admitted Patients Data Collection System (NSW Department of Health),
- Child pedestrian injuries declined steadily in NSW for the ten year period 1997-2006 at about the same rate for both data sources (see Figure 1),
- Data on location or time of day was unavailable,
- Casualties occurring on school days used as a proxy for school zone casualties,
- Child pedestrian injuries declined steadily for both school and non-school days, and
- The decline was not more pronounced for schools days versus non-school days (see Figure 2).

[1] Doukas G, Olivier J, Poulos R and Grzebieta R. (2010) "Exploring differential trends in severe and fatal child pedestrian injury in New South Wales, Australia (1997-2006)," Accident Analysis and Prevention, 42(6): 1705-1711.

The committee should also be made aware of a previous submission to the Staysafe Inquiry Into Pedestrian Safety (submission 30, dated 7/08/2009) by Prof Grzebieta on behalf of the IRMRC researchers (now TARS). In that submission it was stated that "*Our analysis of Traffic Accident Data System (Roads and Traffic Authority) and Admitted Patients Data Collection System (NSW Health) data provided no direct evidence for a benefit of introducing school zones or reducing residential speed limits from 60kmph to 50kmph. However, the lack of information about the exact location and time of the incident, the small counts and low statistical power are likely to hide the contribution being made by such measures to the overall injury reductions produced by a suite of road safety measures ("halo" effect).*" However, it needs to be pointed out that unclassified roads were used as a proxy to identify 50 km/h roads.

Speed limits in high pedestrian active areas such as school zones, should be set at 40 km/hr or even less. Figure 3 shows that pedestrians struck at the current urban speed limit of 50 km/hr have around an 85% chance of being killed or injured – according to research published by OECD and World Health Organisation (WHO).[2,3,4] At 40 km/hr the probability is 38% whereas at 30 km/h the probability of being killed or injured when struck by a vehicle drops to 10%. It is for this reason the speed limit in high pedestrian active areas in Europe's road safety best-practice countries has been set to 30 km/h.

For example, a vehicle travelling at 40 km/hr requires around between 15 to 20 metres for the driver to perceive a hazard (child darting out) and then slow down to 30 km/h impact speed. To completely stop from 40 km/h requires a distance of around 21 to 27 metres. This includes a perception reaction time of between 1 to 1.5 seconds and braking occurs in dry weather and a vehicle without ABS braking. Hence, it is unlikely a driver would not be able to perceive and react in sufficient time and slow the vehicle down to 30 km/h if a child darted out in a school zone even when the school zone is active. It is also for this reason that incidents at school crossings continue to occur despite the introduction of 40 km/h limits and flashing sign lights.[5]

The authors are aware of a 2010 publication by Graham and Sparkes from the NSW Centre for Road Safety on "Casualty reductions in NSW associated with the 40 km/h school zone initiative".[5] The overall trends for NSW child pedestrian casualties in Graham and Sparkes' paper (their Figure 2) compare closely to Figure 1 below. The following comments regarding the Graham and Sparkes analysis using the data available to the authors are also made:

[2] OECD/ECMT Transport Research Centre: *Speed Management report*, Paris 2006, http://www.internationaltransportforum.org/Pub/pdf/06Speed.pdf

[3] Organisation for Economic Co-Operation and development (OECD), Towards Zero, Ambitious Road Safety Targets and the Safe Systems Approach, International Transport Forum, Paris, France, 2008.

[4] World Health Organisation (WHO), Speed Management, A Road Safety Manual for Decision Makers and Practitioners, Global Road Safety Partnership, ISBN 978-2-940395-04-0, Geneva, Switzerland, 2008.

[5] Graham A. and Sparkes P., (2010) Casualty reductions in NSW associated with the 40 km/h school zone initiative, Proc. Australasian Road Safety, Research, Policing and Education Conference, Canberra, ACT, Australia.

- Using Graham and Sparkes' years (1998-2000 for pre-SZ, 2001-2003 for transition period, 2004-2006 for post SZ), we could not attribute any benefit to school zones using the data presented in the Doukas et al IRMRC paper. Note that hospital separation data from the NSW Admitted Patients Data Collection (APDC) was used in our study to compliment the RTA TADS data. The APDC is a census of all hospital separations for inpatients treated in NSW public and private hospitals.
- An attempt to recreate the data presented in the Graham and Sparkes' Figure 7 for 5-16 year olds was made. The analysis on that data does demonstrate a benefit from pre-SZ to the transition and post-SZ periods.
- The quality of the Graham and Sparkes' data is clearly more accurate than our sources since they were able to identify casualties that occurred in a school zone during school zone hours. Our study was limited in that we had to use proxy measures.
- The significance using Graham and Sparkes' data clearly rests on the 2000 count in their Figure 7 (it appears to be around 29 casualties). Removing that count or making it smaller so that the value is smaller but the trend is still increasing leads to insignificant results, i.e., there is no proof school zones work if 2000 was not such a bad year. Also, there would potentially be no school zone policy without such a bad year as public outcry led to the policy (at least that's our understanding as none of the authors lived in Sydney at the time).

Although our analysis could not attribute the decline in child pedestrian casualties to the *Safety Around Schools Program*, we believe **any decision to repeal school zones should be taken with considerable caution. It is our combined opinion that any disruption in the current safe system approach to school crossings may result in an increase in not only child pedestrian casualties but also pedestrian injuries in general as well as other crash modes (drivers, occupants, etc) for all age groups and locations**. It is also our opinion that school crossings has had an overall calming effect on urban traffic by reducing average speeds and, as a result, road casualties overall. The relationship between speed reduction and reduced casualties (Figure 4) was established by Nilsson and acknowledged internationally by the OECD and WHO.[3,4]

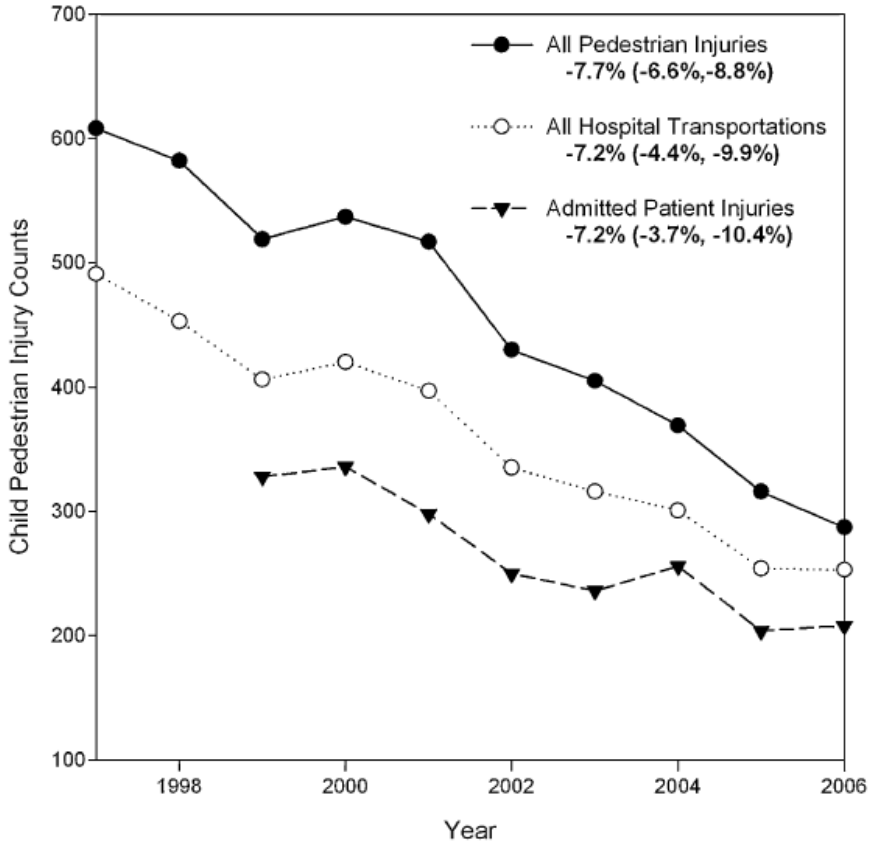

Figure 1: Child pedestrian injuries in NSW as measured by different data sources by year. Source: Admitted Patients Data Collection (HOIST), NSW Health Department and Traffic Accident Database System, NSW RTA.

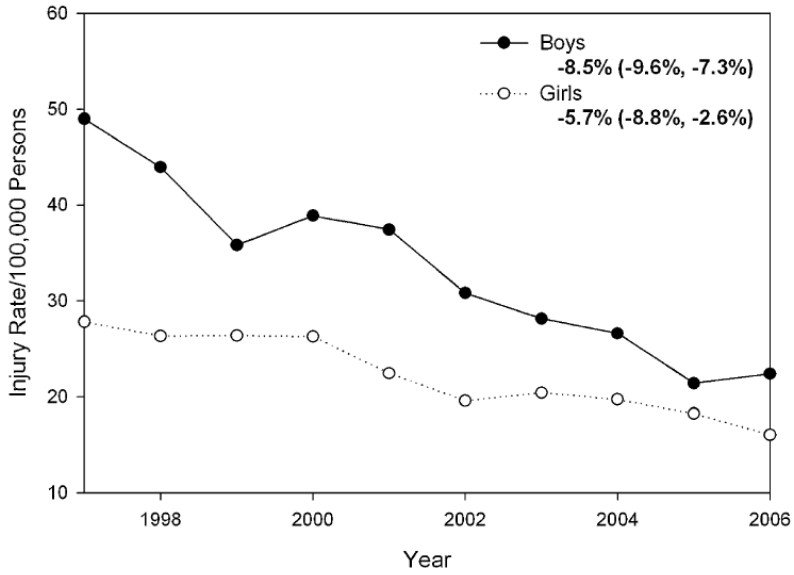

Figure 2: Serious or fatal pedestrian injury incidence rates for children aged 5–14 years on school and non-school days, NSW 1997–2006. Source: Traffic Accident Database System, NSW RTA.

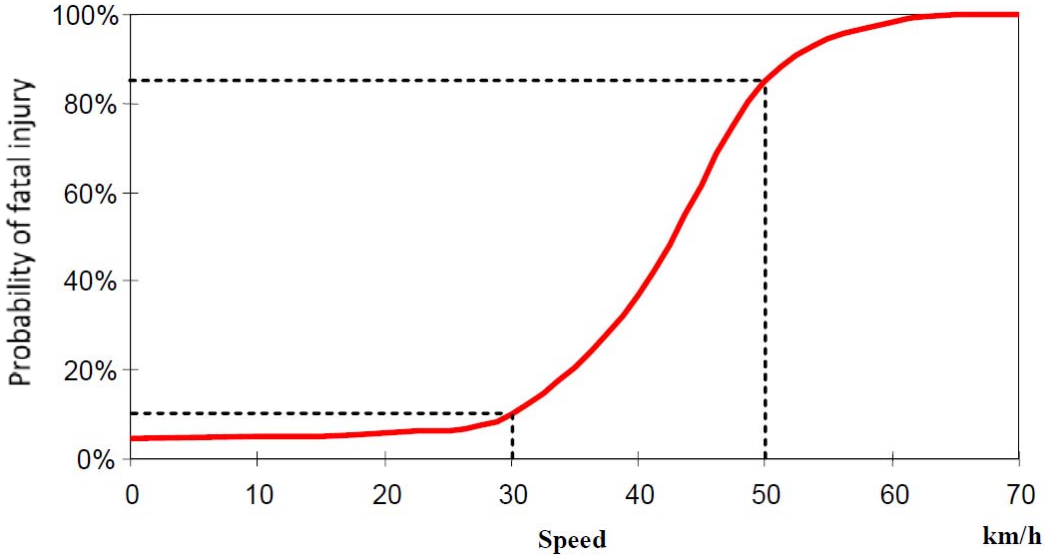

Figure 3: Probability of fatal injury for a pedestrian colliding with a vehicle[2]

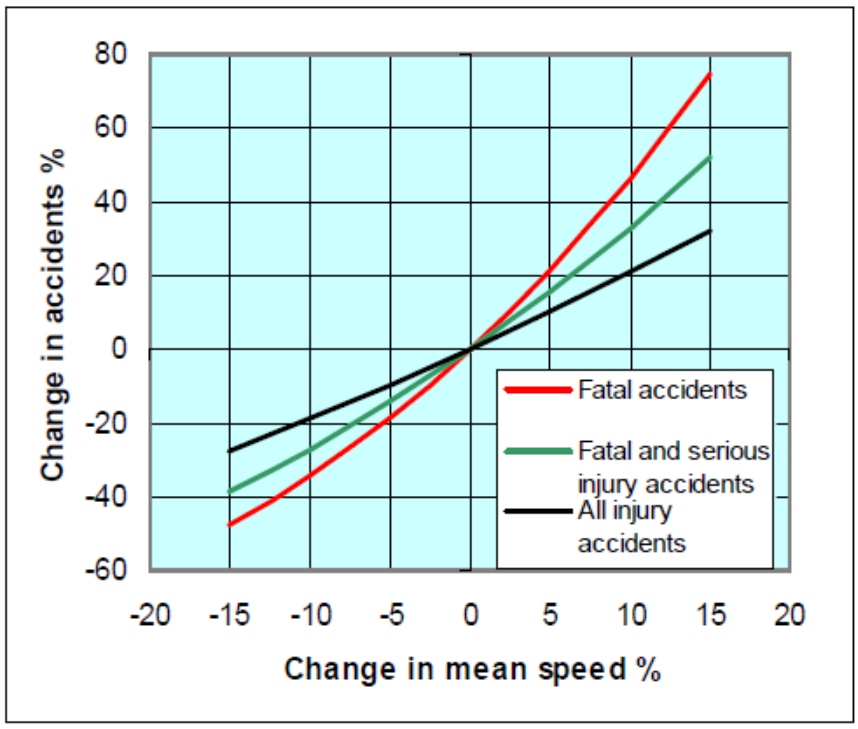

Figure 4: Nilsson speed versus fatalities/injury relationship.