Submission No 14

INQUIRY INTO PEDESTRIAN SAFETY (MINISTERIAL REFERENCE)

Organisation: Institute of Public Works Engineering Australia (IPWEA)

Name: Mr Paul Riley

Position: Road Safety Manager

Telephone: (02) 8267 3012

Date Received: 19/06/2009

THIS PAGE INTENTIONALLY BLANK

Submission to the Parliamentary Joint Standing Committee on Road Safety (Staysafe) regarding Pedestrian Safety

Prepared by Paul Riley, Road Safety Manager, Institute of Public Works Engineering Australia, (NSW Division)

Date 18 June 2009

Introduction

Because evidence of the effectiveness of any road safety related treatment is necessary to justify expenditure, it seems logical that one could expect the data gathered for this purpose would be reliable, accurate and applicable.

The data which is currently used to gather information on crash statistics by NSW Police, on behalf of the RTA, is lacking some specific information and methods which mean all pertinent information relating to issues such as pedestrian safety are not available.

This is not a slight against the NSW Police Force. Members of the Police Force use what is provided them for this purpose to the best of their ability.

The problem relates more to the depth of what their data can reveal.

This paper is submitted with the intention of raising awareness of the need to improve the data collected in order to fully understand the exact situation with pedestrians and how best to rectify identifiable problems. This will make it easier to see exactly how significant pedestrian injuries are (leading to an accurate establishment of community costs for rehabilitation/treatment), and exactly where they occur leading to the ability to effectively design treatments.

By knowing the above, it will be possible to create a prioritised list of where the most significant problems areas are and address community issues such as 'willingness to pay.' When accurate data shows the level of a problem and how much it has cost the community, it will be easier for the community to see why treatments are or are not implemented in areas of known pedestrian vulnerability.

Apart from merely justifying the use of treatments for known problem areas, this improvement in data will enable the specific application of treatments through a greater awareness of all factors affecting a location and the specific injuries sustained.

The IPWEA, together with the Ambulance Service of NSW, would like to be instrumental in leading a change in the methods of data collection. Over 80% of the state's roads are controlled by councils. Working together with councils will enable the material noted in this submission to be implemented and tested on a large scale.

A joint project, currently underway, between these 2 agencies will hopefully yield dramatic results to verify claims noted within this submission.

Current use of data

Pedestrian injuries and deaths have risen this year. This point is not in dispute. What cannot often be garnered from current data is the level of injury sustained or the exact location (to within a few metres of where the injury took place).

An example of the problem of data inaccuracy is best demonstrated through the explanation of a term which all roads authorities around the world wrestle- serious injury.

Information on the severity of injuries is frequently provided in terms of minor, serious and fatal. It is therefore imperative that this information accurately portrays its intention and everyone involved understands what is being referred to.

Is a serious injury one where someone is hospitalised for several weeks and is then unable to work without rehabilitation? Or is it someone who was taken to hospital with no apparent injury, for 'clearance' by doctors, to ensure they were ok? Obviously the community costs for rehabilitation of both these people would be significantly different.

Serious injury will have a significantly higher community cost. The Bureau of Transport Economics (BTE) Report (*Road Crash Costs in Australia*, 2000) indicates that during the 1990s there were in excess of 20 000 serious injury crashes in Australia each year. The NSW RTA Accident Statistics *(Roads and Traffic Authority, 2006)* for 1997-2006 indicates there was an average of approximately 25 000 injury crashes each year in NSW alone, with a peak of almost 30 000 in 2000. The RTA *imputes* the number of *serious* crashes from this yearly total to be over 8000. The RTA data cannot extract whether or not the injury was actually serious or not.

The definition for serious injury, used by many statisticians in Australia, is from the IRTAD (International Road Traffic and Accident Database). This database compiles definitions of serious injury from many countries. For Australia, a serious injury is defined as someone *"Admitted to hospital as a result of injuries from a road crash (IRTAD Special Report, 1998)".*

An Australian College of Road Safety (ACRS) report on Injury Statistics *(Australian College of Road Safety, 2009)* stated that *"there is no common definition across Australian jurisdictions of a 'serious injury crash.'"* This report also states that *"these problems become significant because they mask the true extent of road trauma."*

The Australian Transport Safety Bureau (ATSB) *(Australian Transport Safety Bureau. 2004)* also use the IRTAD system of identifying serious injury so this again may not be providing an accurate picture of serious injury throughout Australia.

For the last 5 years, the average total number of serious injury patients treated in trauma hospitals, in NSW, due to road trauma, was 970 *(NSW Institute of Trauma and Injury Management. 2009)*.

The disparity of this data (shown in the chart below) shows the desperate need for accurate information which can guide application of remedial measures.

SOURCE	NUMBER OF SERIOUS INJURIES PER YEAR	TIME FRAME	DEFINITION OF SERIOUS INJURY	ALLOTTED COST PER PERSON
RTA	8874 (NSW)	2003	Data imputed from all injury categories.	$397 000
BTE	5967 (NSW)	1990-1999	An injury which resulted in a person being admitted to hospital for at least 24 hours and survived (ATSB database used)	$325 000
ATSB*	Approx. 21 000 (Australia)	1989-2001	An injury which resulted in a person being admitted to hospital for at least 24 hours and survived.	
NSW IRMRC**	Approx. 17 380 (NSW)	1998-1999	Admitted to hospital.	$32 000p.a. Lifetime Costs
ITIM***	970 (NSW)	2002-2006	Injury Severity Score > 16 (based on Abbreviated Injury Score- AIS)	

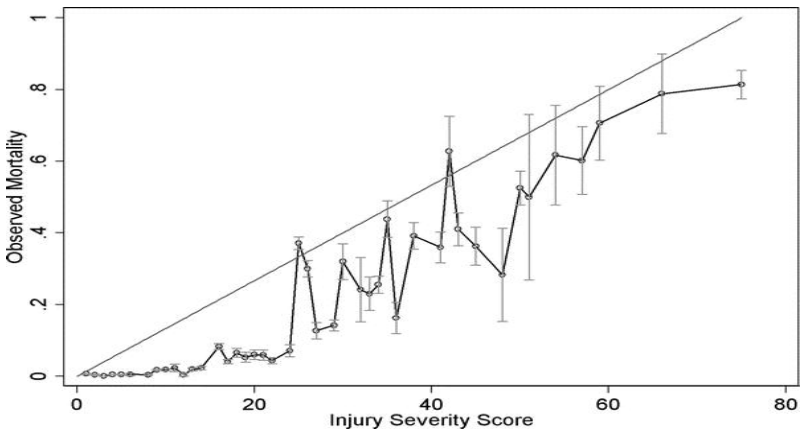
What standard can be used to determine serious injury?

The Abbreviated Injury Score (AIS) was developed in 1971 *(Songer T. PhD, 2000)* with the specific intention of assessing motor vehicle injuries and giving them some point of direct comparison and subsequent cost implications. The AIS is primarily an anatomical measure of injury severity. It classifies severity based on body region injured and the magnitude of the injury to that region.

The advantage to this system is that it can be used to further develop the Injury Severity Score (ISS) which can be a predictor of potential for injuries to be life threatening.

The graph below shows that at an ISS of approximately 15 the risk of death from injuries sustained increases considerably.

Osler: Ann Surg, Volume 247(6).June 2008.1041-1048



This is what the Health industry would nominate as a *serious injury*.

The use of an ambulance trip to hospital is in no way indicative of severity of injury and thus can give false and misleading data on pedestrian injury.

Availability of current data

1. Police are not mandated to attend every crash and frequently are unable to do this due to limits of resource allocation. If the Police are unable to attend a reported crash, they 'sublet' the incident to the Ambulance Service. The Ambulance Service *is* mandated to attend urgently so the Police fulfil their 'duty of care' by ensuring the appropriate resources attend.

   This occurs up to 4000 times a month in NSW, resulting in approximately 1000 transports to hospital. As only 3-4% of all reported motor vehicle crashes result in a serious injury (*by the definition provided above*), this equates to 30-40 serious injuries (not all pedestrian related) per month not reported completely accurately due to the Police arriving either late to the scene or after the incident is over. This significantly affects the accuracy of data available to the RTA and Police.

   The Ambulance Service is, however, almost always in attendance at crashes. Only a small number of serious injury incidents would not involve an ambulance transport (most often in regional areas where someone is transported to hospital in the nearest vehicle due to remoteness of the location where they sustain an injury).

2. The exact location of incidents is also not always captured in the current data making it difficult to use the data to accurately locate serious injuries. If a Police Officer enters the incident onto their database from the Police station and not the crash site, this is what is used as the crash location. Paramedic ambulances all utilise GPS facility to identify the exact location of incidents.

3. Many people do not want the Police involved in what they consider minor incidents and thus will avoid calling for assistance (situations where they have been knocked over by a vehicle). The Ambulance Service is still called to these incidents (often by someone from the general public) thus even a situation where a pedestrian is knocked down and subsequently examined by Paramedics, then refuses to go to hospital (this situation does occur frequently) the data of this incident will be available.

What data could accurately indicate the number and severity of pedestrian injuries?

Through an association between the IPWEA and the Ambulance Service of NSW, the IPWEA is currently working on a project which will provide information noted above to local government areas in order to allow for the timely dissemination of data which will aid councils in determining their treatment priorities, and costs attributed to crashes, to aid in the reduction of all road crashes.

Ambulance and Trauma Service data could be used to provide much needed accuracy to the pedestrian injury data set.

Because the Ambulance Service of NSW uses GPS within their vehicle radios, for Paramedics arriving on scene, the latitude and longitude of an injury location is captured.

Sufficient information can be gathered to identify an incident to an exact location and the severity of injury sustained by the pedestrian.

The marrying of Ambulance and Trauma Service data is reasonably simple in order to reveal the necessary injury locations and levels.

Current modelling of costs from this data has been used to accurately apportion costs based on the AIS which then allows the data to be used to demonstrate exactly where injuries are occurring, how badly injured the person was, and how much the cost to the community was for this incident.

The model below indicates the costs associated with specific levels of injury. The highlighted areas indicate the costs associated with *serious* injuries as discussed above.

Average Cost of Road Crash Casualties with Single and Multiple Injuries by Injury Severity Level
Average Cost by Level of Injury Severity ($000)

Number of Injuries	Minor (AIS 1)	Moderate (AIS 2)	Serious (AIS 3)	Severe (AIS 4)	Critical (AIS 5)	All (AIS 6)
Single	11.7	28.7	61.0	243.6	860.4	17.3
Multiple	21.4	44.9	107.6	189.3	616.8	42.7
All Cases (average)	17.4	41.7	101.2	192.6	646.0	34.2

Average cost of single and multiple injury crashes by injury severity level (*The Cost of Trauma: Single and Multiple Injury Cases, Measuring the Burden of Injury: The 3rd International Conference Proceedings, The 3rd International Conference Proceedings Baltimore, Maryland - May 15th and 16th, 2000 DOT HS 809 225April 2001)*

What difference can this make?

More accurate data will not of itself immediately reduce the incidence of pedestrian injuries and deaths.

What it can do is accurately show where serious injuries occur without incorporating spurious information into the data and thus allow for more specific application of suitable treatments to be implemented.

The other pressing issue is that of timeliness of information. Frequently, councils are asked to provide information regarding specific incidents where pedestrians and other road users have

been seriously injured or killed. The information provided them by the RTA is always 18 months to 2 years old when it is presented.

This situation does not reflect the community need for more expeditious data to be available thus allowing councils to react to perceived and known problem areas in a suitable manner. It is ludicrous to expect to have to use data which is this old in some situations. Trends need to be addressed in a manner fitting the gravity of the situation. Life threatening injuries and deaths should be monitored and reacted to more expeditiously.

The data currently being investigated by the Ambulance Service and the IPWEA will have potential to generate updated information on serious injuries in terms of monthly input rather than yearly.

Summary

This brief submission is to highlight a different perspective on pedestrian safety.

Exactly what is happening, how badly people are being injured, what this is costing the community, and the most appropriate methods of treating these known problem areas will be the result of greater accuracy of data.

By utilising more accurate data, and specifically applying treatments for known pedestrian issues, research on the improvements made will also be easier.

The Road Safety Manager for the IPWEA was formerly a Paramedic Educator with the Ambulance Service of NSW.

During 19 years of service he worked on projects which investigated how best to aid in the treatment of trauma from the ambulance perspective. Some aspects of the information provide within this submission are based on this experience.

The above mentioned cooperation between the IPWEA and the Ambulance Service of NSW is intended to aid in the dissemination of accurate data to local government in order to provide councils with an ability to prioritise treatment of known problem locations through the use of accurate data.

To put the issue of data accuracy in a nutshell: '*garbage in, garbage out.'*

Detailed knowledge of actual pedestrian injuries and deaths can be achieved and should be a priority in determining the real size and nature of the problem.

The key advantage will be the ability to direct road safety funding in a more relevant manner through greater knowledge of the specific nature of where injuries and deaths are occurring, how much these are costing the community, and identifying these problems more expeditiously. Treatment will not require a 'one size fits all' approach but will enable more focussed analysis and application.

REFERENCES

1. *Road Crash Costs in Australia, BTREr102, Bureau of Transport Economics, 2000.*
2. *http://www.rta.nsw.gov.au/roadsafety/downloads/accident_statistics_dl4.html*
3. http://www.oecd.org/dataoecd/24/1/2103123.pdf
4. *Injury Statistics, Collection of injury statistics on road crashes, http://www.acrs.org.au/collegepolicies/people/injurystatistics.html , 2004*
5. *ATSB Road Safety Statistics Report, Serious injury due to road crashes, 2004, http://www.infrastructure.gov.au/roads/safety/publications/2004/pdf/Injury_Crash.pdf*
6. http://www.itim.nsw.gov.au/index.cfm?objectid=75B87016-99C0-03CB-10DD36B85976B9E3&category=75B2855D-CC94-489C-F00F65C7DCD4531C
7. *Measuring Injury Severity, 2000, A Brief Introduction, Thomas Songer, PhD, University of Pittsburgh, tjs@pitt.edu*