Victorian Road Safety Pilot Data Linkage: Match Rates and Serious Injury Metrics sustained in on road transport crashes

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Abstract

A Victorian pilot project merging hospital, police and TAC data for one year was established. The dataset includes 68,639 cases of transport/road-related injury; 62% of which were from an on-road crash. Dataset linkage rates of cases showed 33% were police-reported crashes with no hospital data link; 10% were police-reported with a hospital admission; 10% were police-reported linked to an emergency only presentation and 45% had hospital data with no link to a police report. 14% of cases had MAIS2+ injury levels accounting for more than 81% of the total burden of injury.

Background

Following the Victorian Parliamentary Road Safety Committee Inquiry into Serious Injury, a Technical Working Group was established to investigate how injuries can be better understood and injury data can be better used in Victoria.

A part of this work was to pilot the creation of a data file that merged hospital, police and Transport Accident Commission (TAC) data. One main aim of the linkage project was to understand what hospital data can add to the picture of road trauma in Victoria.

Linkage rates and injury metrics were investigated. Linkage rates are vital to identify gaps in the scope of current road safety data used for policy setting and crash prevention measures. The linkage rate section focuses on police-reported records.

Method

The Victorian Data Linkages Unit linked a file of police-reported crash data (already linked where possible to TAC claims) for 2014/2015 to hospital admission and emergency presentation cases identified as transport or road-related[1]. In total 68,639 cases were found where a person was injured in a transport or road-related incident. Of these, 42,588 were classified as emerging from an on-road crash.

Monash University Accident Research Centre calculated injury metrics for hospital admissions:
- MAIS (Maximum Abbreviated Injury Score) - calculated by mapping ICD-10-AM
- ICISS (International Classification of Disease Injury Severity Score) - calculated from ICD-10-AM codes
- YLD (Years Lived with a Disability) - a burden of injury measure

Results

There were 34,858 police-reported cases, 5,141 were by police definition, serious (reported by police to be admitted to hospital), 12,701 as other injury and 16,756 as non-injury (Table 1).

Of the police-reported serious injury cases, 75.7% were linked to a hospital admission. Of the 24% police-reported serious injury cases, 10.7% were linked to an emergency only presentation and 13.6%

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[1] The specific datasets linked were the DHHS Victorian Admitted Episodes Dataset and Victorian Emergency Minimum Dataset; Victoria Police Traffic Incident System data and the Transport Accident Commission claims data.

not linking to an admission or emergency presentation. Also, an additional 2,579 admissions were linked to police cases reported as not admitted (other or non-injury) [2]. By police definition, the number of serious injuries was therefore under reported by 1,330 serious injuries and was actually 6,471 for this period. The linked dataset showed that cyclists and motorcyclists were the road users most under-reported in police data.

Table 1. Relationship between Police-reported hospital admissions and DHHS admissions

Police Injury	On VAED	Not on VAED, On VEMD	Not on VEAD or VEMD	Total
Serious	3,892	698*	551*	5,141
Other	2,172	4,663	5,866	12,701
Non-injury	407	1,338	15,011	16,756
Grand Total	**6,519**	**6,725**	**21,614**	**34,858**

* Misclassified by Police as serious, as not admitted to hospital, *n=1,249*.

Analysis based on Dutch (Polinder et al. 2015) research investigated the influence of different severity cut off points on the proportion and numbers of corresponding YLD's. Figure 1 shows the proportions of various MAIS cut off points per YLD for admitted cases. Admitted cases with a MAIS2+ injury made up 14% of the dataset and more than 81% of the total YLD. Admitted cases with a MAIS3+ injury made up 3% of the dataset and over 43% of the total YLD.
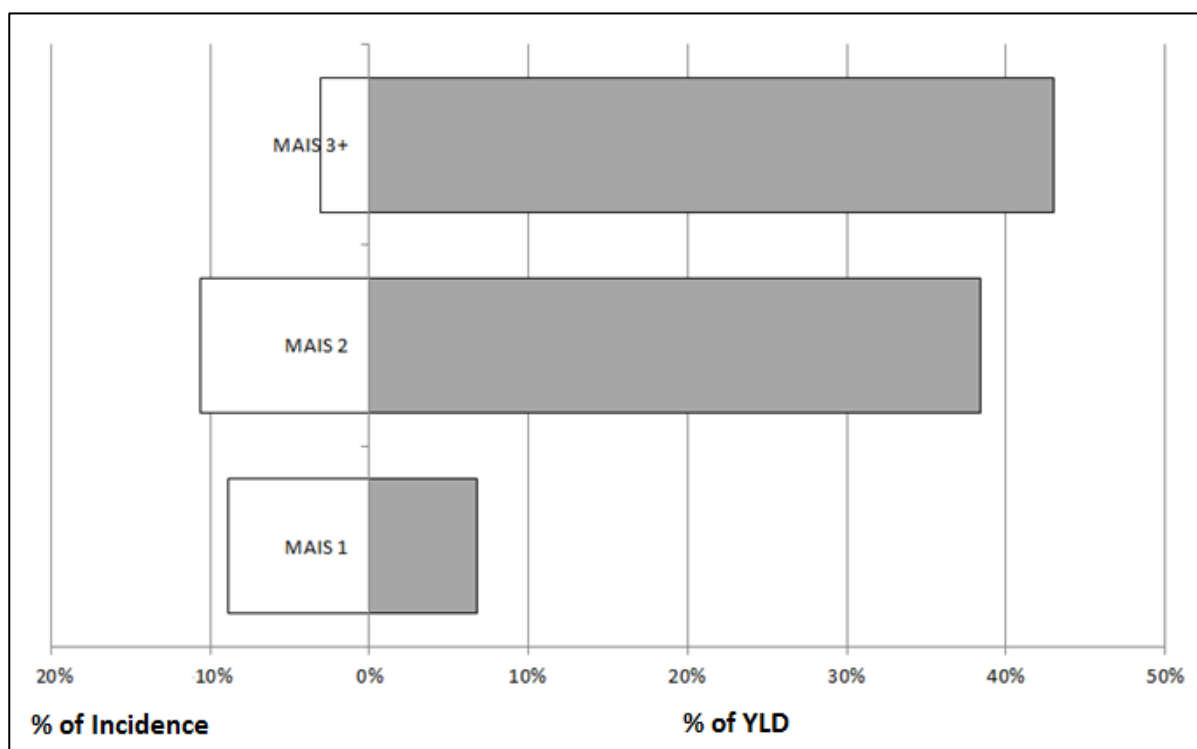
Figure 1. Incidence and YLD of admitted cases

Conclusions

The linked dataset provided valuable insights into current under-reporting. The linked dataset has enabled the development of an alternative definition of serious injury for road accidents in Victoria. This highlights the importance of producing an ongoing linked dataset containing additional injury measures.

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[2] These records were misclassified by Police as other or non-injury.

References

Polinder, S., Haagsma, J., Niels, B., Panneman, M., Klein Wolt, K., Brugmans, M., Weijermars, W., van Beeck, E., 2015. Burden of road traffic injuries: Disability-adjusted life years in relation to hospitalization and the maximum abbrevieated injury scale. Accident Analysis and Prevention 80, 193–200.

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