

Serious Road Injury: define, measure, report

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Response to terms of reference

My focus is on (b) and (c); also briefly on (a).

In relation to the nature & extent of serious road injury:

(a) ...methodology to identify the cost...

- Depends on (c) and (b) ...

(b) Processes to facilitate reporting

- Attributes mentioned: accurate, consistent, timely

(c) Definitions and measures; how to identify & report

- These are two rather different matters

Sequence of my comments

- Briefly on term (a); term (c), then term (b)
- Term (c) addressed in two parts
 - Definitions and measures (my main focus)
 - How to identify & report (a little)

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The inquiry has much potential for useful outcomes,
but specific advice is not likely to be ‘fixed for all time’:

This is a time of much change in relevant matters, notably case follow-up; knowledge of injury outcomes; some concepts & definitions; data linkage; information technology and regulation.

(a) Methods to identify cost

...methodology to identify the cost...

- I am not an economist
- Necessary (though not sufficient) for a costing method are
 - Numbers of cases
 - Seriousness of cases
- Numbers of cases
 - Considered in relation to terms (b) and (c).
- Seriousness of cases:
 - Considered in relation to term (c), which mentions severity.
- Consider 'cost' in terms of health burden as well as \$
 - DALY: composite of untimely death and period lived with disability

(c) 1. Definitions and measures

Preliminaries

Purpose(s)

- Reporting and other purposes in Victoria
- National reporting (and other purposes?)
- International reporting

Context

- Concepts & definitions are changing: e.g. IRTAD
- Methodological developments: data linkage; large-scale followup.
- Emerging knowledge: n.b. persisting ↓ health & well-being

Reality check

- Road safety sector in Australia expects exact counts of deaths
- “Serious injury”:
 - Less clear-cut; many more cases; some valuable methods are probabilistic
 - To require counts as exact as for deaths will have more costs than benefits

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Use what you have. Seek fitness-for-purpose(s), not perfection.

(c) 1. Definitions and measures

Purposes

Reporting in Victoria

- Routine indicator: serious injury cases & rates (n.b. CHANGE)
- Other (e.g. death vs survival with severe disability; ‘burden’)

Other purposes in Victoria

- Describe outcomes (input to cost-models; other uses)
- Predict outcomes from injury (timely monitoring; other uses)
- Analyse cause-effect (to guide & evaluate interventions)
 - effectiveness of retrieval and treatment
 - crash characteristics and type & severity of harm

National reporting (and comparison)

- Indicators related to National Road Safety Strategy
 - ‘confirmed admitted to a hospital’
- Other? (BITRE; AIHW)

International reporting (or comparison)

- IRTAD (road injuries: fatal; serious); WHO (causes of death); other?

(c) 1. Definitions and measures

Context

Concepts & definitions are changing

- IRTAD (MAIS 3+)
- WHO / ICD-11
- Global Burden of Disease and Injury (GBD; DALYs)

Methodological developments

- Large-scale follow-up of injury cases (outcomes & prediction)
- Data linkage (internal of health data and: with deaths, crash data, etc.)
 - n.b. initiatives in WA, NSW (CHeReL), SA & NT (DataLink)

Emerging knowledge:

- n.b. Growing understanding of persisting effects of injury
 - VSTR/VOTOR are globally significant data sources for this

(c) 1. Definitions and measures

“Serious” injury

Terms

- ‘Serious’, ‘severe’, ‘catastrophic’, etc.
- Largely qualitative
- Can be given quantitative meaning in particular contexts...
- ... if relationship is established between case characteristics (mainly trauma, +/- external causes) and consequences that matter, notably (non-)survival, disability, dollar cost.

Methodological status

- p(survival): two approaches with several variations; validated.
- p(disability): goal; not yet well established, though getting close.

(c) 1. Definitions and measures

“Serious” injury

p(survival) methods

- AIS-based measures (ISS, NISS, MAIS and others)
- ICD-based measures (ICISS and variants)

Have both options in Victoria

- AIS-based measures: VSTR (c. AIS 3+)
- ICD-based measures: VAED (subsets of all admitted)

Both have pros and cons

- AIS-based: familiar to trauma systems; IRTAD definition
- ICD-based: aligns with health sector information (n.b. disability)
- Neither method (yet) well-validated for p(disability)

(c) 2. How to identify & report

Depends on choice of measure(s)

Now, given Victoria's diverse and good quality data sources

- AIS-based p(survival) – from VSTR and
- ICD-based p(survival) – from VAED

When possible

- p(disability)
 - Likely to depend on analysis based on VSTR/VOTOR
 - Reporting method(s) might include
 - Rapid: based on modeled injury-outcome relationships
 - Definitive: based on direct assessment of outcomes
- Encourage development of p(disability) methods

Linked data systems

- Encourage development (look to WA, NSW, SA/NT models)
- Recognise difficulties & costs (nb ethics/privacy > technical)

(b) Processes to facilitate reporting

Indicator attributes

“... accurate, consistent *and* timely...”

- Multiple attributes: much more easily stated than achieved
- Almost always a need to prioritise attributes
- ‘Accurate’ is ambiguous; I take it to mean “includes all the cases meeting a definition and only those cases”.
- Different sources and methods are better for different attributes

Proposition

- For an indicator of serious road injury, consistency and timeliness are more important than complete ascertainment.

E.g. Rapid and consistent monitoring of most “serious injury” cases vs:
Slow and consistent monitoring of all “serious injury” cases; or
Rapid and inconsistent monitoring of all “serious injury” cases.

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Examples

- Degree of disability may not be resolved for many months
 - Most accurate way to obtain a count number of cases meeting a specified definition of disability (e.g. persisting GOSE <6) is to follow each potential case until stable or for a period by which most will be fairly stable (i.e. wait)
 - A more timely way to estimate that number is to apply a model that predicts state at, say 12 months to diagnoses as assessed much earlier.
- Varying ascertainment is a threat to comparability over time
 - Example: efforts to improve Indigenous identification in hospital and deaths data resulted in upward trends in case numbers
 - ‘Adequate’ ascertainment and consistency of effort and method may produce more useful data than varying effort and ascertainment.

Summary

Now

- Monitoring:
 - Measure based on a p(survival) suitable for comparisons (national, international). No option perfect. Consider VAED-based ICISS.
 - Other(s), making use of special data resources in Victoria. NB AIS-based method (e.g. MAIS 3+) based on VSTR
- Other:
 - Follow-up registers (VSTR; VOTOR): outcome measurement (n.b. as input to cost models); development of p(disability) models.
 - Population data linkage, to:
 - better combine data on crashes with data on outcomes;
 - refine indicators (e.g. to minimise under- and over-counting)
 - improve understanding of the extent to which post-injury disability reflects pre-injury state rather than effects of injury;
 - (though not the subject of this Inquiry) improve data on road deaths.

Later (a few years?)

- Monitoring:
 - Measure(s) based on p(disability) methods
 - Include model-based measures if rapid reporting is required