Serious injuries research through data linkage

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Background

- NSW Road Safety Strategy 2012-21 targets a 30% reduction in serious injuries

- Evidence on injury severity from road crashes not available since 1997

- Commissioned research in 2012 to workout the methodology and feasibility, conducted by TARS at UNSW

- NSW Centre for Road Safety commenced a major data linkage study in 2013
Where and how we started

• In 2013 we approached NSW Health to seek support for a regular data linkage of crash data with hospital records
• Needed approval for our project from data custodians and ethics committees
• Approvals obtained for regular quarterly data linkage until Oct 2018
• First set of serious injuries data released in 2015.
Issues with a healthcare utilisation based approach to serious injuries

• Hospital admission policies
  – Preference to admit or not admit (ED and discharge)
  – Admission for observation only
  – Admission for compulsory blood tests

• Quality of hospital data varies between hospitals

• Different IDC coding versions used

• Major data enhancements in hospital data collection systems which are not known to researchers

• Admission to hospital is not necessarily an indication of injury severity
Data Flow

Quarterly process

Notes
* ABS mortality data has been approved but not yet supplied. This is now the Cause of Death Unit Record File (COD URF).
** COD URF and ACT data collections are only updated annually.
How we classify our casualty and crash severity now

Total Casualties

- Fatalities
- Serious injuries (all hospitalised injuries)
  - Serious injuries matched to police reports
  - Serious injuries not matched to police reports
- Moderate injuries (all emergency department attendances only)
  - Moderate injuries matched to police reports
  - Moderate injuries not matched to police reports (Yet to commence)
- Minor/Other injuries
Serious Injury Definitions

Serious Injuries (all hospitalised injuries)

**Serious Injuries Matched to a Police Report**
Definition: a person identified in the Police crash data (casualty or traffic unit controller) who is matched to a hospital admission record on the same day or the day after a crash and did not die within 30 days of the crash.

- Full dataset containing Police crash data and Admitted Patient Data Collection data elements
- Ability to analyse at a person, crash and traffic unit level

**Serious Injuries Not Matched to a Police Report**
Definition: A person not matched to a police report who has been identified as having a land transport accident on a public road in their hospital record.

- Dataset contains only Admitted Patient Data Collection records not matched to a person record in the Police crash data
- Limited non-medical related data variables: age, gender, road user type and crash counterpart
- Ability to analyse at a person level only
Enhancements to the linkage

• Other data sources targeted to be included in the linkage

• Opportunities for methodology and data refinements were identified and applied

• New 4 way data linkage started in Feb 2015 and new set of serious injuries data for 2005 to 2015 soon will be released
Methodology enhancements 2015

- **Periods of Stay**
  - Previously, only episodes of care which started on the day of or after the crash were linked to CrashLink
  - APDC episodes of care are now grouped by periods of stay prior to linkage and as a result, all APDC records which are in the continuous admission period following the crash are now included in the dataset
  - This improves Length of Stay, Hours in ICU, and provides a more diagnosis codes from which ICISS can be calculated for Serious Injuries (matched and unmatched)

- **Injury diagnoses**
  - APDC records without injury diagnoses were excluded from Serious Injuries (matched and unmatched)