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Reporting road traffic serious injuries in Europe. Guidelines

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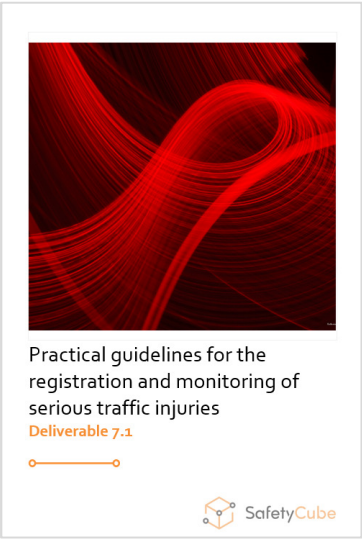
Background

- Reducing the number of serious traffic injuries is one of the key priorities in the road safety programme 2011-2020 of the European Commission (EC, 2010).
- In January 2013, the High Level Group on Road Safety, representing all EU Member States, established the definition of serious traffic injuries as road casualties with an injury level of MAIS ≥ 3.
- The High Level Group identified three main ways Member States can collect data on serious traffic injuries (MAIS ≥ 3):
  1. *by applying a correction on police data,*
  2. *by using hospital data and*
  3. *by using linked police and hospital data.*

- Currently, EU member states use different procedures to determine the number of MAIS ≥ 3 traffic injuries, dependent on the available data.
- The impact of this heterogeneity on final estimations is unknown.

Objectives

- Describe the current state of collection of data on serious traffic injuries across Europe
- Provide practical guidelines for the estimation of the number of serious traffic injuries for each of the three ways identified by the High Level Group
- Examine how the estimated number of serious traffic injuries is affected by differences in methodology.



Methods I

The practical guidelines for the determination of the number of serious traffic injuries were developed using:

A survey carried out to experts in EU Member States

Current practices and experiences from a number of countries

Specific analysis to the same data for different procedures were applied

Methods II

Current practices and experiences from a number of countries

Methods to apply **correction factors** using data from Belgium, France and Austria

Inclusion and exclusion criteria using Hospital data & sensitivity analysis

Methods **to derive MAIS**, using data from Spain, Belgium, the Netherlands and Germany.

Record linkage with data from France, the Netherlands and Slovenia

Results

State of data collection on serious traffic injuries across Europe (June 2016)

- Only 17 of the 26: MAIS ≥ 3 estimates to DG-MOVE

- Difficulties to get access to hospital discharge data

- 9 hospital data, 2 corrections to police data, and 4 record linkage of police and hospital data. France and Germany apply a combination

- The ratio of MAIS ≥ 3 casualties / fatalities differs considerably between these countries, from **0.6** MAIS ≥ 3 in Poland to **13.2** MAIS ≥ 3 in the Netherlands

Results
Applying correction on police data

WHEN:

- In case you there is no hospital data for the entire country and/or every year
- In case hospital data becomes available at a too late stage

HOW

- Use a sample of hospital data (previous years and/or part of the country)
- Derive and apply multiple correction factors
- Update correction factors on a regular basis.

Results
Using of hospital data (I)

WHEN:

In case hospital data of good enough quality is available and record linkage with police data is not available

HOW

Select patients with **external causes for road traffic injuries** (public road): ICD9CM: E810-E819, E826, E827, E829, E988.5; ICD10: V01-89 for those codes for traffic injuries and/or weighting -correcting for non-public road- for non-traffic injury codes

Exclude hospitalized fatalities within 30 days

Exclude readmissions (as well as scheduled admissions when they are a second episode of a previous emergency injury)

Select all cases with any **injury diagnosis** (ICD9CM: 800-999; ICD10: S00-T88; AIS injury)

In case of ICD coded injuries**, assess the severity (AIS)** of each injury using a ICD to AIS recoding tool (e.g. ICDpic, AAAM, ECIP/Navarra)

Results
Using of hospital data (II)

Other issues to consider with hospital data

- **External causes** (E/V-codes) may be **missing or misspecified** for many casualties. Compensate for these missing E-codes by using information from additional sources.
- Traffic Crashes happening on **public roads** should be selected (country specific weighting factor).
- **Different versions of AIS:** multiplied by a factor 0.89 when injuries are coded in AIS1990 or AIS1998 instead of AIS2005 or AIS2008
- **ICD to AIS recoding tool** applied. Current version of the AAAM10 (2016) tool results in a clear underestimation of the number of MAIS3+ casualties and the tool is not able to deal with truncated codes
- **Limited number of injuries:** can result in an underestimation. Weighting factors: 1.28 in case of 1 injury, 1.11 in case of 2 injuries, 1.05 in case of 3 injuries
- **ICD codes** are **truncated** leads to a less reliable selection of MAIS3+ casualties. Not use ICDpic and AAAM10 tools. Weighting: 1.06 in case of ICDmap90 or DGT, 1.03 in case of ECIP,1.11 in case of AAAM9

Results
Applying record linkage

WHEN:

In case the selection of MAIS3+ road traffic casualties is problematic (missing Ecodes)

HOW

Link hospital and police (and possibly other sources) on the basis of variables that are common to in both data sources

Ideally, linkage is based on a unique personal identification number (**deterministic linkage**), but this is rarely available for privacy reasons

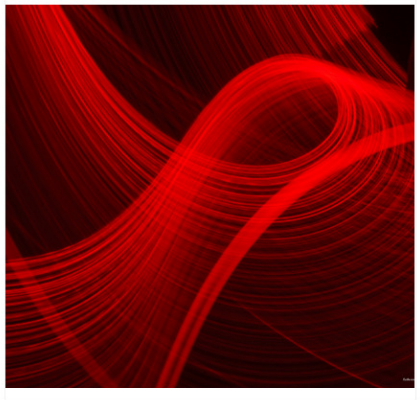
When deterministic linkage is not possible, **probabilistic or distance based** linkage is recommend.

Once the linkage is completed, the number of serious traffic casualties recorded in hospital data but not identified as such can be estimated using the **capture-recapture method**.

Conclusions

All three methods for estimating the number of serious traffic injuries – (1) applying correction factors to police data; (2) use of hospital data; (3) linking police and hospital data – have both advantages and limitations. Which method(s) to choose will depend on the context and constraints of each individual country.

Further harmonisation of methods over the next years is desirable in order to ensure that the estimated numbers of MAIS ≥ 3 road traffic injuries are comparable across Europe.



Practical guidelines for the registration and monitoring of serious traffic injuries

Deliverable 7.1

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Thank you