European Transport Safety Council 6th PIN Conference 2012 Time to get serious about injuries Brussels, 20 June 2012

Time for a new European road injury data system



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Road Accident Injuries

Non-fatal road accidents and related casualties impose a burden on society that is at least as great as fatal accidents and fatalities.

In most European countries:

- the **Police** is responsible for determining the injury severity of road accident casualties within the road accident data collection process,
- injury severity scores are also assigned by the Hospitals accommodating road accident casualties,
- another assessment of the severity of an injury may also take place within the juridical process following a road accident with casualties.



Road injury data are not comparable

Road accident injury data are currently not directly comparable among countries, because:

- the definition of injury severity differs among countries
- the degree of injury underreporting or misreporting by the Police in each country also varies.
- Underreporting refers to the fact that only a limited proportion of non-fatal hospitalised injuries are recorded by the Police, while even less is known about the reporting of less severe (e.g. non-hospitalised) injuries.
- **Misreporting** refers to the cases where injury severity is under- or overestimated by the Police (e.g. serious casualties that are reported as slight or vice-versa).



Results from record linkage between Police and Hospital data files

- Only 37% of non-fatal hospitalised injuries were recorded by the Police (France, 1999).
- About 20% of injuries classified as serious by the Police were treated and discharged by the hospital (i.e. slight injuries), while those treated by the hospital as serious but appearing in the police record as slight accounts for about 8% in that country (UK, 2006).
- About 40-45% of hospital records for road crash injuries did not have a corresponding police record (Australia, 2001).
- About 40% of child road accident injuries did not have a corresponding police record (Japan, 2001).



Important differences in the degree of injury underreporting/misreporting per road user type

- In San Fransisco, USA, the number of injured pedestrians is under-reported by approximately 20% (Sciortino et al. 2005).
- In France (Amoros et al. 2006) Police under-reporting of road accident injuries is higher among the younger (0-17) age and lower among the older (55+ years) age groups.
- Increased underreporting of bicyclists and motorcyclists injuries is observed in the UK (Cryer et al 2001).



Meta-analysis of 49 studies (1999)

In a meta-analysis of 49 studies in 13 countries (Elvik & Mysen 1999) it was found that reporting of injuries in official accident statistics is incomplete at all levels of injury severity.

The mean reporting level in the countries included was found to be:

- 95% for fatal injuries according to the 30-days definition,
- 70% for serious injuries (admitted to hospital),
- 25% for slight injuries (treated as outpatients),
- 10% for very slight injuries (treated outside hospitals).

Injury reporting levels varied substantially among countries, ranging from 21 to 88% for hospital-treated injuries.



SafetyNet - Pilot European Study (2007)

Estimation of the real number of road accident casualties

8 national studies took place in respective European countries, on the basis of a **common methodology** of linking and matching Police and Hospital records.

Correction coefficients were then developed, expressing the real number of injuries of a given severity, corresponding to each injury recorded by the Police.

Moreover, a **common definition** of serious injury was proposed, namely 'a non-fatal casualty with MAIS from 3 to 6 (inclusive)'.





SafetyNet - Pilot European Study (2007)

		CZ	FR	EL	HU	NL	ES	UK
Fatalities CARE*		1,372	5,794	1,644	1,300	861	4,861	3454
Serious	CARE*	4,716	18321	2,338	8,381	9828	23,945	32,478
injuries	factor 1	0.21	0.68	0.60	0.48	0.37	0.26	0.20
	N1	990	12,458	1,403	4,023	3,636	6,226	6,496
Slight	CARE*	29,252	94,007	18,650	19,015	24,541	117,286	254,253
injuries	factor 2	0.02	0.06	0.17	0.04	0.02	0.02	0.01
	N2	527	5,734	3,227	761	393	2,111	2,288
Real serious (N1 + N2)		1,517	18,193	4,629	4,783	4,029	8,337	8,784
Serious / Fatalities		3.44	3.16	1.42	6.45	11.42	4.93	9.40
Real Serious / Fatalities		1.11	3.14	2.82	3.68	4.68	1.72	2.54

Before the application of the **correction coefficients**, the rate of the serious injuries to fatalities ranged from 1.42 in Greece to 11.41 in the Netherlands; while after the calculation of the actual number of serious casualties according to the proposed common definition, the rate ranges from 1.11 in Czech Republic to 4.68 in the Netherlands.

IRTAD - Reporting on serious road traffic casualties (2011)

The Report of IRTAD (International Road Traffic Accident Database) of the International Transport Forum was based on:

- previous work at national and international level
- IRTAD Workshop in London
- a survey among all IRTAD Members on:
 - availability of information sources,
 - definitions of serious injuries,
 - methodologies used to link different sources of data.

A set of 10 recommendations is proposed.





Reporting on Serious Road Traffic Casualties

Combining and using different data sources to improve understanding of non-fatal road traffic crashes





IRTAD - Reporting on serious road traffic casualties (2011)

Recommendation 3

Police data should remain the main source for road crash statistics, but they should be **complemented by hospital data**, which are the next most useful source.

Recommendation 5

The assessment of the severity of injuries should preferably be carried out by specially trained **medical professionals** and not by the police officer at the scene of the crash.

Recommendation 10

An **internationally agreed definition** of "seriously injured road casualty" is proposed, as a person with injuries assessed at level 3 or more on the Maximum Abbreviated Injury Scale (MAIS3+).



In-depth Accident Studies

An alternative approach is to make in-depth road accident studies using **specialist investigation** teams to understand vehicle, road, human and injury factors (DaCoTA, 2012).

Such studies **link into hospital records** for nonfatal casualties and post-mortem reports for fatalities.

The problem of **injury classification** is overcome by directly coding to the AIS system for scientific evaluation of injuries. Some studies also collect data on the wider health outcomes following injuries.

Statistical sample plans should ensure that the types and numbers of accidents are accurately counted.





A new European road injury data system

Considering that:

- a) an exhaustive linkage of police and hospital data could be very expensive
- b) statistically significant results can be very well drawn from a representative sample of data
- A new policy for the recording of road injury data could be adopted in the EU countries, according which, closer cooperation between police and hospitals is ensured for establishing:
 - an exhaustive data set for fatal accidents,
 - a **representative sample** data set for injury accidents through in-depth investigation.

Both road fatality and injury data recorded can follow the EU common data structure (**CADaS**).

The purpose to carry out appropriate analyses in order to support decision making is fulfilled, with a significantly lower cost.



A new European road injury data system

The new European road accident data system will allow:

Prevalence (size of thr problem)

- to identify the real number of serious (and slight) injuries in road accidents
- to have an injuries data set comparable across the European countries

Detailed information (characteristics of the problem)

- to dispose sufficient and comparable details for all these road injuries
- to dispose very detailed information for the analysis of accident and injury causation



The Next Steps

- Establish a common definition of injury severity based on appropriate medical variables [a non-fatal casualty is the one with MAIS level 3 or more (MAIS3+)].
- 2. Establish a frequent **Pan-European survey** linking police and hospital data, using a common methodology and definitions, in order to estimate the real number of serious (and slight) road injuries.
- 3. **Re-visit** the national police accident data **recording systems**:
 - exhaustive data collection for fatal accidents,
 - sample data collection for injury accidents.
- 4. Establish a Pan-European **in-depth accident investigation network** (e.g. based on the DaCoTA recommendations).



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