The potential of the European Injury Database (IDB) for traffic accident research

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Abstract - Police records about traffic accidents like used by IRTAD (International Road Traffic and Accident Database) and CARE (Community Road Accident Database) do not represent all road injuries. For instance, road accidents of bicyclists without a counterpart are usually not reported. Furthermore, IRTAD-like data contains hardly any information on injury outcome and accident circumstances. This information gap leads to an under-representation of the safety concerns of the most vulnerable road users like children and the elderly both in accident research and safety promotion. Injury registration for the European Injury Database (IDB), in turn, combines details of accident causation with diagnostic information that can be used to assess injury severity and long term consequences. The IDB is collecting data from hospital emergency department patients and is being implemented in a growing number of countries. In this article IDB results on mode of transport and injury outcome are presented from a sample of nine EU member states.

NOTATION

IDB European Injury Database (IDB)

Introduction on EU injury data sources

Injury data can be obtained from a wide range of sources such as police and ambulance reports, national insurance schemes, and hospital registration. In the perspective of a comprehensive view on injuries, the EU Council issued a Recommendation that urges member states to use synergies between existing data sources and to develop national injury surveillance, preferably based on hospital records [1]. More specifically, such an EU-wide injury surveillance should cover all member states and collect minimum level injury data in all hospitals in these countries (for admitted patients as well as out-patients), include in each country reference hospitals for the routine collection of more detailed data on external causes and the circumstances of the injury event.

Such an injury surveillance system - although not yet a routine one - is the European Injury Data Base (IDB). IDB data is collected in a sample of hospitals (Accident & Emergency departments) in the participating countries and provides unique information on a number of external cause categories according to the IDB Coding Manual. At present, thirteen member states are routinely collecting IDB data and are delivering these data to the Commission [2].

Within the IDB "transport module" injuries due to road accidents are recorded by "mode of transport", "role of injured person" and "counterpart" (Figure 1). These variables can serve as information complementary to police records, in particular for injury patterns and the assessment of injury severity, e. g. through indicators like the percentage of hospital admissions, length of stay, nature and type of body part injured, and potentially also long term consequences.

In this article, IDB estimates on the scope of hospital treated traffic injuries in the EU are given and IDB results on injury outcome by mode of transport are presented.

[1] OJ C 164/1, 18.7.2007
[2] https://webgate.ec.europa.eu/sanco/heidi/index.php/IDB

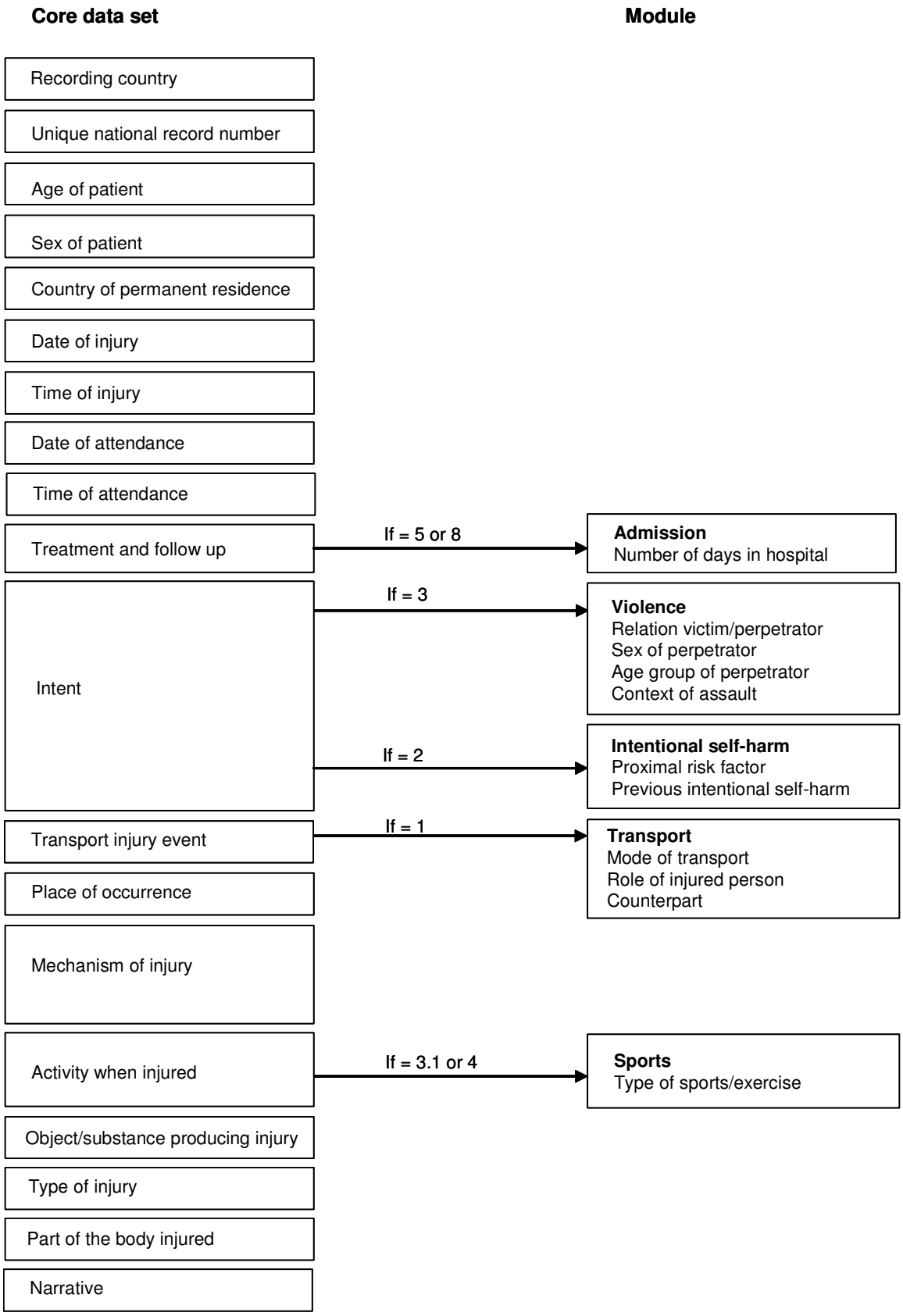

Figure 1: Elements included in the core set of the IDB coding manual and modules

Results from the IDB

According to police records about 1.7 million road traffic users are injured in the EU each year, 1.4 million of which are slightly injured and 300 000 seriously injured [3]. According to IDB based estimates there are more than 4 million road traffic injuries annually, 1 million of which have to be admitted to hospital [3].

Based on IDB data from nine countries, about two-thirds of admitted road injury victims are vulnerable road users: 9% pedestrians, 16% motorized two-wheelers, 30% pedal cyclists. Among all hospital treated road injuries the biggest share is held by bicyclists (41%; Figure 2), indicating a considerable under-reporting of these road users in police accident records.

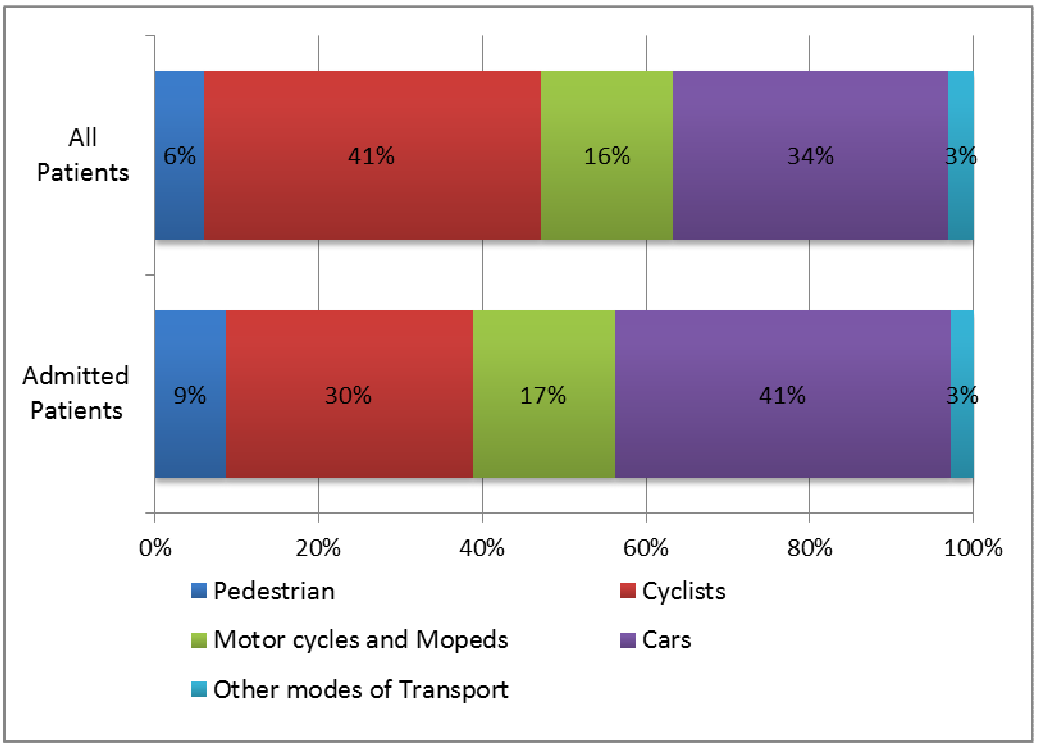

Figure 2: Non-fatal road injuries by mode of transport

EU Injury Database (EU IDB AI) - hospital treated patients. IDB AI Transport module and place of occurrence (code 6.n [public road]); n-all = 73 600: n-admitted = 23 568 (DE, DK, LV, MT, AT, NL, SE, SI, CY).

The "length of stay" of admitted patients in hospital is longest in pedestrians (10 days) and "only" six days for victims that were inside the car during the accident (Figure 3).

Obviously, hospital data can provide information on the injury patterns sustained by the accident victims, e.g. the share of head injuries, which is least in motorized-two wheelers, or injuries to the neck, that are dominant in cars, indicating whip-lash syndromes (Figure 4).

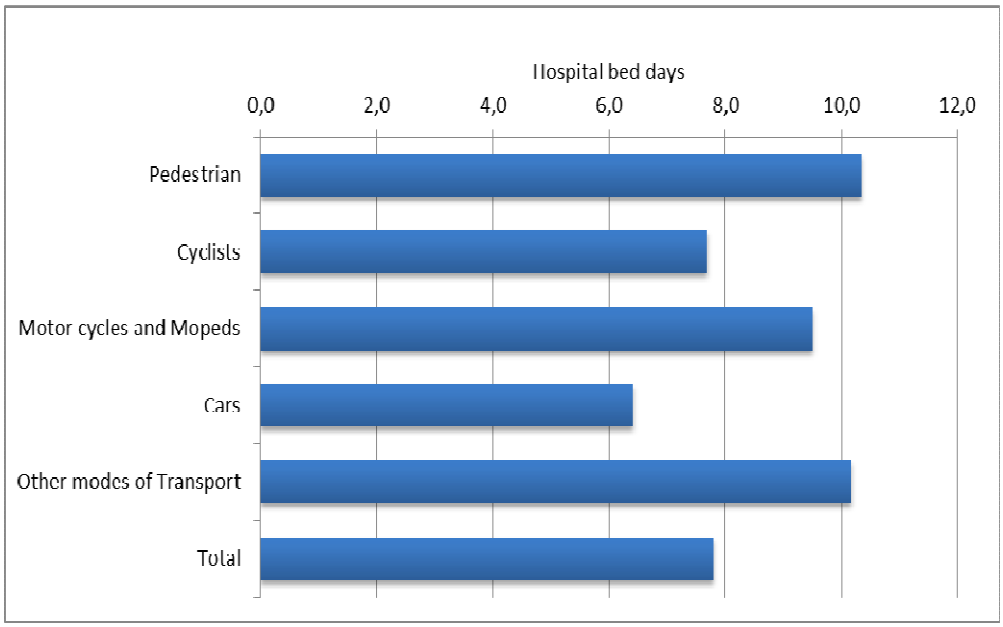

Figure 3: Average length of stay (hospital bed days) by mode of transport

EU Injury Database (EU IDB) - hospital treated patients. IDB AI Transport module and place of occurrence (code 6.n [public road]); n = 23 568 (DE, DK, LV, MT, AT, NL, SE, SI, CY).

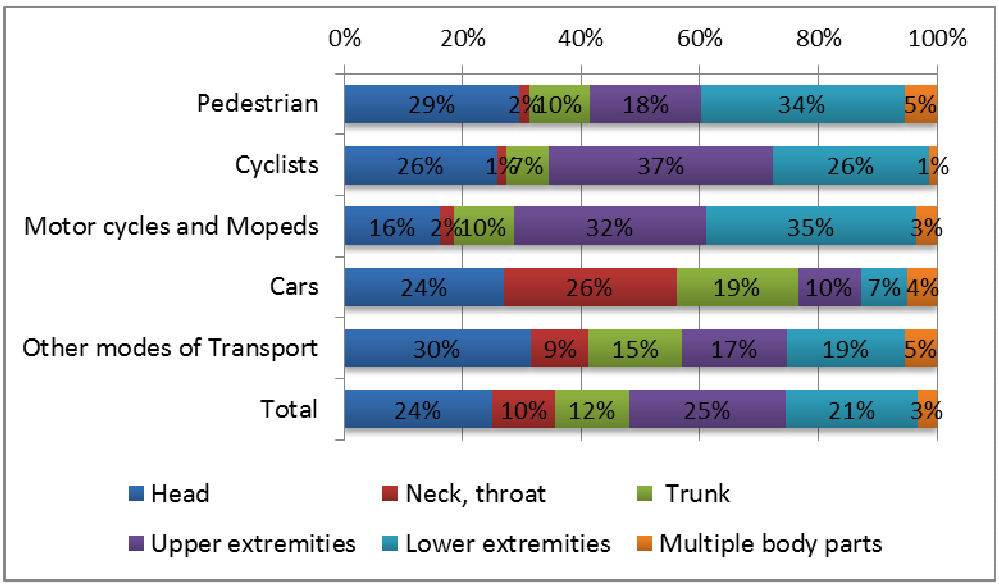

Figure 4: Body part injured by mode of transport

EU Injury Database (EU IDB) - hospital treated patients. IDB AI Transport module and place of occurrence (code 6.n [public road]); n=71 460 (DE, DK, LV, MT, AT, NL, SE, SI, CY).

In Figure 5 the full range of available types of injuries within the EU IDB is illustrated along with the share of "vulnerable road users" (pedestrians, pedal cyclists) versus "motorized road users". Contusions, fractures, open wounds, distortion and concussions are the top five diagnoses and account for almost 90% of all injuries.

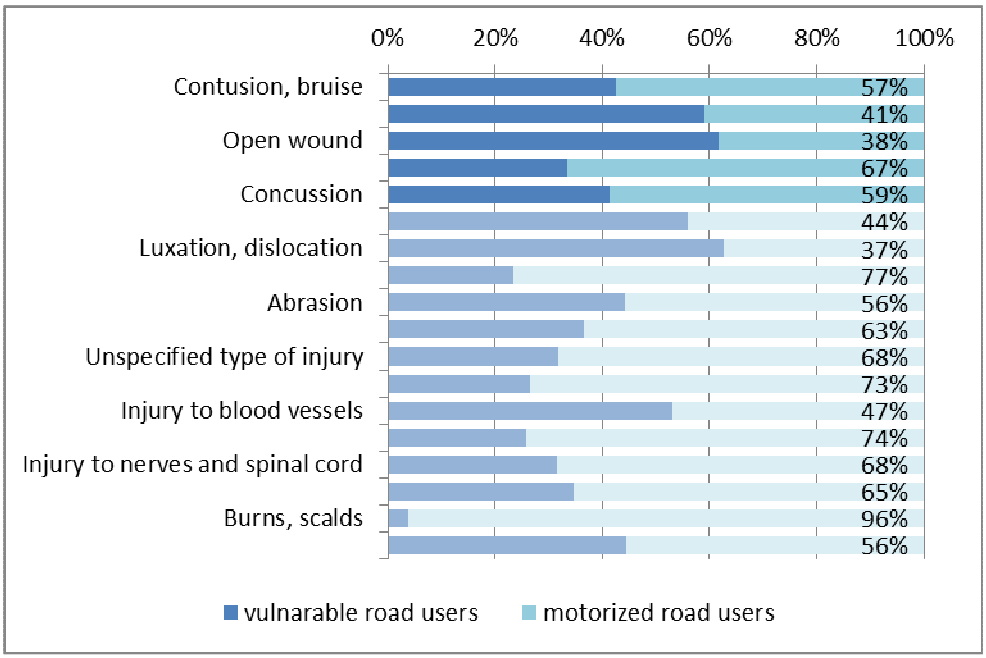

Figure 5: Type of injury by mode of transport

EU Injury Database (EU IDB) - hospital treated patients. IDB AI Transport module and place of occurrence (code 6.n [public road]); n=71 460 (DE, DK, LV, MT, AT, NL, SE, SI, CY).

Conclusions

The data and information gap between “crash oriented” and ”diagnoses oriented” data systems leads to an under-representation of the safety concerns of the most vulnerable road users like children and the elderly both in accident research and safety promotion: Police based data on road crashes contain hardly any information on injury outcome and routine hospital records about traffic accident on the other hand are focussed on the injury outcome but contain very little information about the accident causes (aetiology) [4].

The European Injury Data Base (IDB), collecting data on a sample basis from Accident & Emergency departments in hospitals, may at least partly close this gap: medical information can be linked to accident causes within the IDB data set and IDB injury patterns can be correlated to mode of transport figures and other variables of the police data.

The IDB results provided in this article - type of treatment, average length of stay (hospital bed days), injured body part and type of injury (diagnoses) by mode of transport - are just a few examples of indicators that can be used in order to add value to the police data. Although, due to data protection legislation, a direct linkage between IDB (or other hospital data) and the police data is not possible in most EU countries, a comparative analysis of both data sources by common variables like mode of transport and role of injured person is highly informative. Recent projects like INTEGRIS [5] that are closely related to the IDB, have also demonstrated the feasibility of deriving indicators for short and long term disability from the IDB medical information by procedure similar to the AIS (Abbreviated Injury Scale) calculation [6].

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