



Injuries in the European Union 2013-2015

**Supplementary report to the 6th edition of “Injuries in the EU” -
Report on trends in IDB data flow, country comparison and
ECHI-injury indicators 2013-2015.**

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This report is produced under the BRIDGE-Health project (Work package 9 “Platform for injury surveillance), which aims to prepare the basis for a comprehensive EU health information system and which received co-funding from the EU Health Programme.

*Published by European Association for Injury Prevention and Safety Promotion (EuroSafe)
www.eurosafe.eu.com.*

11 August 2017

Table of content

1. Introduction
2. Trends in IDB data flow and quality
3. Summary of IDB-MDS data
4. Country comparison by ECHI indicators
5. Discussion and conclusions
6. References
7. Annex

1. Introduction and background

The EU IDB is a unique data source that contains standardized cross-national data on the external causes and circumstances of injuries examined and treated in emergency department of hospitals. Its main purpose is to facilitate the development and evaluation of injury prevention policies and programmes, which aim to control external risks.

IDB data are collected by dedicated national agencies and provided to the EU IDB data base, which is hosted by the DG SANTE (Health and Food Safety), to provide central access for various stakeholders as governments, researchers, safety promotion agencies and businesses. At EU level, the system is legally based on the Council Recommendation on the Prevention of Injury and the Promotion of Safety 2007 [1] and the EU Regulation on Community Statistics on Public Health and Health and Safety at Work 2008 [2] and other decisions. For more details on background and methodology see the IDB Operating Manual [3] and the IDB metadata [4]. IDB data can be publicly accessed at the EU IDB web-gate [5]. For the functioning of the web-gate see the brochure [6].

The IDB surveillance system uses two data sets of different complexity. The Full Data Set (IDB-FDS) depicts quite many details of an injury event, particularly external circumstances of the incidence as place of occurrence, mechanism of injury, activity carried out by the patient when injured and on involved substances, products or counterparts [7]. As the completion of such a comprehensive data set requires dedicated and trained staff and assigned financial resources, most countries which collect IDB-FDS data do this only in one or a few hospitals.

The Minimum Dataset (IDB-MDS) is much simpler and the information needed for its completion is usually already covered by the patient's history as recorded in the standard patient information system. IDB-MDS can be completely extracted from IDB-FDS data, but also from data using ICD-10 or NOMESCO classification. The collection of IDB-MDS data is possible for large samples without noteworthy additional burden to staff and patients and without noteworthy additional resources of hospitals, apart from the resources needed for implementation and maintenance of data flow [8].

While IDB-FDS data provides the basis for qualitative analyses of external circumstances and injury patterns, the main purpose of IDB-MDS is to provide public health indicators as incidence rates of road, work-place or home accidents, injuries due to assaults or deliberate self-harm. IDB-MDS data are publicly accessible at the EU IDB web-gate [5], while IDB-FDS data can be analysed only by eligible persons due to data protection regulations.

While the previous report on "Injuries in the EU", published in September 2016 [9] provided comprehensive statistical analyses of the health burden of injuries due to fatalities, hospital admissions and ambulatory treatments in emergency departments, including first estimates for all European Core Health indicators (ECHIs) on injuries, this report has a complementary function. It focusses on the quality of data and on the data flow from countries over 2010-2016. It provides information e.g. about the number of reporting countries, type of national agencies, size of the samples and scope of the data collection. The metadata files, which accompany the national IDB data files, are the main information source for these (see Annex). In addition, the report presents a summary analysis of MDS-level data related to the years 2013-2015.

This report serves as a supplement to the sixth edition of the report on "Injuries in the EU" [9] and its main purpose is to inform the European Commission, IDB-Network members and other stakeholders in EU health information system and to facilitate informed decision making about the future of the EU injury surveillance system.

2. Trends in IDB data flow and data quality

Participating countries

Eligible for participation in the IDB data exchange are the 28 EU member states, the three EEC countries Iceland, Norway and Liechtenstein and the five EU candidate countries Albania, Macedonia, Montenegro, Serbia, and Turkey, all together 36 countries.

Table 1 shows the membership status of the eligible countries and to what extent these countries have been able to deliver data. Full members collect data according to the IDB standards, e.g. regarding content and methodology and deliver these data to the joint data base. Member of the IDB network can become a national agency which handle injury data, when it applies for membership and when its application gets approved by the Network's general assembly. As long as a network member does not deliver data, it can participate in the exchange of experiences, but do not have decisions rights and do not get access to IDB micro data. Full members collect data according to the IDB standards, e.g. regarding content and methodology and deliver these data to the joint data base [10]. A green tick in Table 1 means that the country participated as a full member in the IDB-network and has supplied data related to respective year(s) for upload into the EU-Injury Database.

	Country	Upload during JAMIE project				Upload during BRIDGE Health		
		2010	2011	2012	2013	2014	2015	2016
1	Albania	Not eligible yet				No competent authority identified		
2	Austria	✓	✓	✓	✓	✓	✓	Expected
3	Belgium	Not possible to identify a competent and interested authority						
4	Bulgaria	Not possible to identify a competent and interested authority						
5	Croatia	Member, no data yet						
6	Cyprus	✓	✓	✓	✓	✓	✓	✓
7	Czech Republic	✓	✓	✓	✓	Unclear situation		
8	Denmark	✓	✓	✓	✓	✓	✓	Expected
9	Estonia	Member, no data yet		✓	✓	✓	✓	Expected
10	Finland	✓	✓	✓	✓	✓	✓	Expected
11	France	Data available, but no member of the IDB network						
12	Germany	✓	✓	✓	✓	✓	✓	Expected
13	Greece	Member, no data yet		✓	Data collection & membership discontinued			
14	Hungary	Member, no data yet			✓	Still member, but data collection discontinued		
15	Iceland	✓	✓	✓	✓	Data available & membership discontinued		
16	Ireland	Member, no data yet			✓	✓	Expected	Expected
17	Italy	✓	✓	✓	✓	Unclear situation		
18	Latvia	✓	✓	✓	✓	✓	✓	Expected
19	Liechtenstein	Not possible to identify a competent and interested authority						
20	Lithuania	Member, no data yet	✓	✓	✓	✓	✓	✓
21	Luxembourg	Member, no data yet		✓	✓	✓	✓	Expected
22	Macedonia	Member, no data yet						
23	Malta	✓	✓	✓	✓	✓	Expected	Expected
24	Montenegro	Not eligible	Member, no data yet					
25	Netherlands	✓	✓	✓	✓	✓	✓	✓

26	Norway	Member, no data yet	✓	✓	✓	✓	Expected
27	Poland	Member, no data yet		✓	Data collection & membership discontinued		
28	Portugal	✓	✓	✓	✓	✓	✓
29	Romania	Member, no data yet		✓	Still member, but data collection discontinued		
30	Serbia	Not eligible		Member, no data yet			
31	Slovakia	Member, no data yet					
32	Slovenia	✓	✓	✓	✓	✓	✓
33	Spain	Member, no data yet		✓	Still member, but data collection discontinued		
34	Sweden	✓	✓	✓	✓	✓	Expected
35	Turkey	Member, no data yet		✓	✓	✓	Expected
36	United Kingdom	✓	✓	✓	✓	✓	Expected
No. of data suppliers		15	16	20	25	18	18
No. of observers		14	13	10	5	8	8
No collaboration		7	7	6	6	9	8

From Table 1 it can be concluded that the number of data suppliers and collaborators increased from 2010 to 2013, i.e. during the JAMIE project [11], but dropped in 2014 after the termination of that project. In contrast to the JAMIE project, the current BRIDGE-Health project [12] provides co-funding only for the central services of the Network-coordinator, but no financial support for data suppliers.

Six countries stopped the data collection and for two more countries the status is unclear: Greece dropped out already in 2012 as consequence of austerity measures, and five countries were not able to sustain the IDB data collection without co-funding from the EU health programme (Hungary, Iceland, Romania, Spain and Poland). Some of these countries stayed connected with the Network indicating that they are working toward a legal basis for the relaunch of the data collection (e.g. Hungary). In Spain, the regional partner in Navarra dropped out, but Catalonia stepped and promised to provide data from 2017 onwards. In Greece and Poland, the contact to the collaborating partners got lost, and no other competent and interested agency could be identified so far. Iceland continued to maintain a national injury monitoring system, but decided not to share their data with the EU network without EU co-funding. Despite of many attempts over the past years, no competent authority could be identified for Albania, Belgium and Bulgaria. Other countries participate in the network as observers, but could for the time being not deliver any IDB data (Croatia, Macedonia, Montenegro, Serbia, Slovakia).

For the year 2016, not all data sets have been delivered yet, but for most of these 18 countries it is confirmed that their data collection is ongoing and that they will continue to share the data with the IDB-network members. For these countries, it can be expected that they will deliver the data related to the year 2016 in the second half of 2017. As for Ireland and Malta, data delivery for 2015 has been delayed, but these countries are working to catch up and will supply data for the years 2015 and 2016 before end of the year 2017. Unclear is the situation for Italy and Czech Republic, where the data supply for more than one year is overdue.

National IDB data administrators

For their participation in the IDB-Network, countries have to designate a National IDB data administrator. This can be a competent national authority (governmental bodies) or a national expert agency. In 2014, the IDB-Network had 26 full members, i.e. data suppliers. Today, 18 countries are supplying data in a more or less regular manner. Most of them are national agencies, subsidiary to the Ministry of Health, e.g. national public health institutes or national agency for disease control

(see Table 2). A green tick indicates that this partner has continued with the IDB data collection and its participation in the EU injury data exchange after the end of the JAMIE project, i.e. during the BRIDGE-Health project.

	Country	Type of organisation	Status after 2013
1	Austria	NGO, charity	✓
2	Cyprus	Ministry of Health	✓
3	Czech Republic	University hospital	unclear
4	Denmark	National public health institute	✓
5	Estonia	Ministry for Social Affairs	✓
6	Finland	National agency for health and welfare	✓
7	Germany	Regional Ministry of Health and welfare	✓
8	Greece	National school for public health	Drop out
9	Hungary	National public health institute	Drop out
10	Iceland	Ministry of Health	Drop out
11	Ireland	NGO, charity	✓
12	Italy	National public health institute	unclear
13	Latvia	National centre for disease prevention	✓
14	Lithuania	National Public Health institute	✓
15	Luxembourg	National Public Health Institute	✓
16	Malta	Ministry of Health	✓
17	Netherlands	NGO, charity	✓
18	Norway	University institute	✓
19	Poland	University hospital	Drop out
20	Portugal	Ministry of Health	✓
21	Romania	University institute	Drop out
22	Slovenia	National Health agency	✓
23	Spain	University hospital	Drop out
24	Sweden	National board for health and welfare	✓
25	Turkey	National public health Agency	✓
26	United Kingdom	University institute	✓
Ministry		6	5
Subsidiary national agency		11	8
University		6	2
Charity		3	0
Drop outs or unclear status			-8
No. of IDB data suppliers		26	18

In particular academic institutes seem to have difficulties in finding more sustainable funding for injury data collection, as these are fully dependent on external financing. Ministries, national agencies or charities may be more successful in allocating own resources for data gathering and

processing and probably have an immediate benefit by using the data for own policy purposes and prevention programming.

Data sources

The IDB-MDS data set has been developed with a view to maximise a flexible and easy implementation in busy emergency departments, and with due consideration of the great variation in existing patient registration practices in hospitals. For the MDS data elements and codes see its data dictionary [8]. MDS can be extracted from different coding systems such as ICD-9, ICD-10, NOMESCO classification of external causes of injuries and, of course, IDB-FDS. Transcoding routines can be downloaded from data tool-box at the EuroSafe web-gate [13].

In most countries only IDB-FDS data is collected in a sample of hospitals and MDS records are extracted from these FDS data. In Table 3 this is indicated as “FDS>MDS”. The advantage of this approach is that a relatively large number of FDS records is available; a disadvantage is that the resulting MDS sample relatively small in a number of countries. Some countries collect FDS as well as MDS data in two different samples of hospitals. This is symbolized by “FDS+MDS”. Advantage is that large and representative MDS-data sets can be collected at relatively low costs, while a smaller, perhaps less representative, set of FDS records is additionally made available. A third group of countries deliver only MDS data.

	Country	Upload during JAMIE project				Upload during BRIDGE Health		
		2010	2011	2012	2013	2014	2015	2016
1	Austria	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS
2	Cyprus	FDS>MDS	FDS>MDS	FDS>MDS	FDS+MDS	MDS	MDS	MDS
3	Czech Republic	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS	Unclear		
4	Denmark	FDS>MDS	FDS>MDS	FDS+MDS	FDS+MDS	FDS+MDS	FDS+MDS	FDS+MDS
5	Estonia	No data		MDS	MDS	MDS	MDS	MDS
6	Finland	MDS	MDS	MDS	MDS	MDS	MDS	MDS
7	Germany (Brandenburg)	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS
8	Greece	No data		FDS>MDS	No data			
9	Hungary	No data			FDS+MDS	No data		
10	Iceland	MDS	MDS	MDS	MDS	No data		
11	Ireland	No data			MDS	MDS	MDS	MDS
12	Italy	FDS>MDS	FDS+MDS	FDS+MDS	FDS>MDS	Unclear		
13	Latvia	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS
14	Lithuania	No data	MDS	MDS	MDS	MDS	MDS	MDS
15	Luxembourg	No data		MDS	FDS+MDS	FDS+MDS	FDS+MDS	FDS+MDS
16	Malta	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS
17	Netherlands	FDS+MDS	FDS+MDS	FDS+MDS	FDS+MDS	FDS+MDS	FDS+MDS	FDS+MDS
18	Norway	No data		MDS	MDS	MDS	MDS	MDS
19	Poland	No data			FDS+MDS	No data		
20	Portugal	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS
21	Romania	No data			FDS+MDS	No data		
22	Slovenia	FDS>MDS	FDS+MDS	FDS+MDS	FDS+MDS	FDS+MDS	FDS+MDS	FDS+MDS
23	Spain (Navarra)	No data			FDS>MDS	No data		
24	Sweden	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS
25	Turkey	No data			FDS>MDS	FDS>MDS	FDS>MDS	FDS>MDS
26	United Kingdom (Wales)	MDS	MDS	MDS	MDS	MDS	MDS	MDS
Just MDS data		3	4	7	7	7	7	7

FDS and MDS data	12	12	13	18	11	11	11
No. of data suppliers	15	16	20	25	18	18	18

Some countries produce FDS data from injury patient registers, which use other classification systems than IDB. These systems have a longer history than EU-IDB and its FDS-classification and actually contributed to the development of the EU-level injury classification. Their data can be easily transcoded into IDB-FDS, which is the case in Italy (Sistema Informativo Nazionale sugli Incidenti in Ambiente di Civile Abitazione SINIACA), Netherlands (Dutch injury Surveillance System DISS), and in Denmark and Sweden (NOMESCO Classification of external causes of injuries).

As said, MDS data can be also extracted from a variety of national patient registries such as national health insurance data bases or national patient registers. The MDS core elements type of injury, part of body injured and mechanism of injury can be derived through transcoding routines from ICD-9 (Italy) and ICD-10 (Cyprus, Denmark, Estonia, Finland, Iceland, Ireland, Lithuania, Slovenia, UK).

From Table 3 it can be seen, that the introduction of IDB-MDS in 2010 obviously has helped to bring seven countries on board, which are not able to collect IDB-FDS data: Estonia, Finland, Iceland, Ireland, Lithuania, Norway, and the UK, while two countries were able to implement IDB-FDS data collections: Luxembourg and Turkey.

Sample size

Table 4 shows that, with the increasing number of IDB data suppliers, also the number of reference hospitals increased substantially and actually almost tripled from 2010 to 2014, while the number of data delivering countries raised just from 15 to 18 over the same period. As mentioned above, the reason for this is the introduction of IDB-MDS, which can be collected in large numbers, and most of the new IDB-countries collect just IDB-MDS.

The size and quality of national IDB samples vary considerably (see Table 4). Most important for the accuracy of national estimates is the quality of the sample of reference hospitals and the completeness of covering injury related ED attendances in these hospitals (or at least by using large enough random samples of patients). In theory, the number of cases treated in one emergency department may be large enough for a statistically sufficient accurate estimate, under the condition, that this hospital is fully representative for the entire country. Crucial for the validity of estimates (e.g. national incidence rates) is a balanced and representative sample of reference hospitals. If the sample of hospitals is skewed, even a huge number of records cannot iron out the bias [3].

A rough indicator is the simple number of hospitals, which produce the IDB-MDS data. The IDB Manual recommends a minimum of 9 hospitals for countries with a population of over 40 million inhabitants, 7 hospitals for populations between 12-49 million, 5 hospitals for 3-12 million, 3 hospitals for 1-3 million. The different sample size should take account of the greater geographic, sociologic and cultural diversity of bigger countries. Only Ireland (4,6 million inhabitants) and Germany (i.e. the state of Brandenburg with about 2,7 million inhabitants) do not meet this minimum requirement.

	Country	Upload during JAMIE project				Upload during BRIDGE Health		
		2010	2011	2012	2013	2014	2015	2016
1	Austria	10	11	9	5	5	5	5
2	Cyprus	2	2	1	4	5	5	5
3	Czech Republic	8	8	31	31	Unclear		
4	Denmark	4	40	34	31	25	30	30

5	Estonia	No data			27	32	22	19	19
6	Finland	22	21	20	19	19	19	19	
7	Germany (Brandenburg)	1	1	1	1	1	1	1	
8	Greece	No data			1	No data			
9	Hungary	No data			1	No data			
10	Iceland	1	1	1	1	No data			
11	Ireland	No data			1	1	1?	1	
12	Italy	4	91	95	9	Unclear			
13	Latvia	21	21	21	20	22	23	23	
14	Lithuania		71	69	103	91	87	89	
15	Luxembourg	No data			5	5	3	3	3
16	Malta	1	1	1	2	2	2?	2	
17	Netherlands	13	14	14	13	14	14	14	
18	Norway	No data			15	16	17	17	17
19	Poland	No data			1	No data			
20	Portugal	4	4	4	4	4	4	4	
21	Romania	No data			3	No data			
22	Slovenia	15	4	4	4	4	4	4	
23	Spain (Navarra)	No data			1	No data			
24	Sweden	8	6	6	6	5	5	5	
25	Turkey	No data			15	15	15	15	
26	United Kingdom (Wales)	4	5	5	5	5	5	5	
No. of MDS hospitals		118	301	364	333	350	349	349	
No. of data suppliers		15	16	20	25	18	18	18	

Moreover, the IDB Manual requests that the sample of is balanced with respect to size and type of hospitals and sociological characteristics of their catchment areas. Again, the distributions of age and type of injury in the sample compared to that in all national injury cases, can be used as an indicator for representativeness of the sample of hospitals in this respect. According to the metadata of the national IDB samples, most of the countries did not validate their samples of hospitals, but comply with the minimum demand for a rational and controlled selection of hospitals, where size (small, middle, large), type of hospitals (general hospital, child hospital, trauma centre, university hospital) and their location in urban and rural area were considered, so that the samples can be assumed as representative. In small countries, even very few hospitals can cover the majorities of all ED attendances as in Cyprus, Iceland, Luxembourg or Malta. Other countries cover very large proportion of their hospitals as Czech Republic, Denmark, Estonia, Finland, Latvia or Lithuania. Finland deliver a random sample of 10% of all its recorded ED attendances; the actual number of involved hospitals is ten times higher than shown in Table 4.

Usually, reference hospitals report all their ED attendances, on a basis of 24 hours per day, 7 days per week, all year round. Sampling within hospitals take place only in few countries, i.e. Austria and Germany. Both countries have taken measures to correct consequent biases before calculating national estimates.

Scope

The IDB standards demand, that the IDB data collection covers all types of injuries, all age-groups, and admissions as well as ambulatory treatments. Not all countries meet these requirements: in some countries data collection covers only certain “domains of prevention” or certain age-groups, or only admissions or take place just in one smaller part of the country (see Table 5). A green tick in Table 5 indicates a full scope of the data collection.

	Country	Upload during JAMIE project				Upload during BRIDGE Health		
		2010	2011	2012	2013	2014	2015	2016
1	Austria	✓	✓	✓	✓	✓	✓	✓
2	Cyprus	✓	✓	✓	✓	✓	✓	✓
3	Czech Republic	Just children 0-18 / Bias toward admissions				Unclear		
4	Denmark	✓	✓	✓	✓	✓	✓	✓
5	Estonia	No data		✓	✓	✓	✓	✓
6	Finland	✓	✓	✓	✓	✓	✓	✓
7	Germany	Just state of Brandenburg / Bias toward admissions						
8	Greece	No data		✓	No data			
9	Hungary	No data			✓	No data		
10	Iceland	No road injuries				No data		
11	Ireland	No data			No children 0-15			
12	Italy	No workplace, self-harm, assault	✓	✓	✓	Unclear		
13	Latvia	Bias toward admissions						
14	Lithuania	No data	Bias toward admissions		✓	✓	✓	✓
15	Luxembourg	No data		✓	✓	✓	✓	✓
16	Malta	✓	✓	✓	✓	✓	✓	✓
17	Netherlands	✓	✓	✓	✓	✓	✓	✓
18	Norway	No data		✓	✓	✓	✓	✓
19	Poland	No data			Just children 0-18	No data		
20	Portugal	No road, workplace, self-harm, assault						
21	Romania	No data			✓	No data		
22	Slovenia	✓	✓	✓	✓	✓	✓	✓
23	Spain	No data			Just Navarra region	No data		
24	Sweden	✓	✓	✓	✓	✓	✓	✓
25	Turkey	No data			✓	✓	✓	✓
26	United Kingdom	Just Wales						
	Countries with complete scope	8	9	13	16	13	13	13
	Valid only for a region	2	2	2	3	2	2	2
	Incomplete "domains"	2	1	1	1	1	1	1
	Bias toward admissions	3	4	4	3	2	2	2
	Restriction regarding age	1	1	1	3	1	1	1
	No. of data suppliers	15	16	20	25	18	18	18

The Czech Republic registers exclusively child injuries, and only children that are admitted for hospital care for at least one day. Ireland does not include children younger than 16 years. The data from Iceland includes the total number of road traffic injuries, although without explicitly identifying the injury mechanism of these road traffic injuries. Portugal does not collect data on road traffic and work-place injuries nor on violence (self-harm and assault).

Three of the larger countries are only represented by one of their regions: Germany by State of Brandenburg, Spain by Region of Navarra, United Kingdom by Wales. In countries that have devolved

their health policy and health services, data collection at national level can be a challenge, as it seems to be the case in these three countries.

Table 5 also demonstrates, that actually little progress has been made in eliminating restrictions of the scope of established IDB data collection. Italy has implemented a separate MDS data collection in several provinces in 2011 and has overcome the restriction to home and leisure accidents of its FDS data collection, and Lithuania has been able to include also ambulatory treatments in 2013. But, since 2013 no further progress has been made regarding scope-limitations in countries. Over the years 2010-2017, the number of countries with a full scope has mainly increased through newcomers with IDB-MDS data systems.

Incidence rates

Main purpose of the IDB-MDS system is to establish comparable indicators on the health burden of non-fatal injuries, i.e. incidence rates by country, year, gender, age-group, mechanism of injury or type of injury etc. Particularly IDB-MDS data should deliver the injury related European Core Health indicators (ECHIs) for home, leisure and school injuries (ECHI-29b), road traffic injuries (ECHI-30) and work-place injuries (ECHI-31) [14].

Table 6 shows that not all countries which collect IDB data, are able to calculate valid national (or regional) estimates. This can be due to the fact that the sample of hospitals and/or cases is biased, that the sample is too small or that there is no useful reference statistic (e.g. hospital discharge statistic) available. A green tick in Table 6 indicates that incidence rates are available and that also reference population data have been provided, for estimating rates at EU-level.

While calculating national rates the countries have to meet the minimum requirements regarding sample-size, correctness of codes and the reference population data file. As to securing correctness of codes, the Swansea University has developed a IDB data validation and upload tool. This tool allows only to enter data in a uniform format and only with valid codes. The national metadata files provide further information as to the quality of the samples and the reference population used for the extrapolation of the data. Table 6 informs also about shortcomings of delivered data sets, which prevent from calculating national estimates.

	Country	Upload during JAMIE project				Upload during BRIDGE Health		
		2010	2011	2012	2013	2014	2015	2016
1	Austria	✓	✓	✓	✓	✓	✓	expected
2	Cyprus	✓	Small sample		Biased sample			
3	Czech Republic	Only children / only admissions				unclear		
4	Denmark	✓	✓	✓	✓	✓	✓	expected
5	Estonia	No data		✓	✓	✓	✓	expected
6	Finland	✓	✓	✓	✓	✓	expected	expected
7	Germany*	✓	✓	✓	✓	✓	✓	expected
8	Greece	No data		Small and biased sample	No data			
9	Hungary	No data			Biased sample	No data		
10	Iceland	✓	✓	✓	✓	No data		
11	Ireland	No data			✓	expected	expected	expected
12	Italy	✓	✓	Issue with calculation		unclear		
13	Latvia	✓	✓	✓	✓	✓	✓	expected

14	Lithuania		✓	✓	✓	✓	✓	✓
15	Luxembourg	No data		✓	✓	✓	✓	expected
16	Malta	✓	✓	✓	✓	Issue with calculation		
17	Netherlands	✓	✓	✓	✓	✓	✓	✓
18	Norway			✓	✓	✓	✓	expected
19	Poland	No data			Only children	No data		
20	Portugal	✓	✓	✓	✓	✓	✓	✓
21	Romania	No data			✓	No data		
22	Slovenia	✓	✓	✓	✓	✓	✓	✓
23	Spain	No data			✓	No data		
24	Sweden	✓	✓	✓	✓	✓	✓	expected
25	Turkey	No data			✓	Issue with calculation		
26	United Kingdom	✓	✓	✓	✓	✓	✓	expected
Countries without rates		1	2	4	5	5	6	6
Countries with incidence rates		14	14	16	20	14	13	13
No. of data suppliers		15	16	20	25	18	18	18

The number of countries with national incidence rates (as ECHI-29b, ECHI-30 and ECHI 31) has increased during the JAMIE project, but dropped in 2013 and 2014, after the termination of the EU co-funding for national data handling. Partly, this is caused by the entire drop out of countries (Iceland, Romania, Spain), but also due to other challenges (Finland, Malta, Turkey). As mentioned before, two countries seem to have substantial capacity problems which makes delivery of data and related reporting files uncertain, if not impossible, since 2014: Czech Republic and Italy.

Timeliness of delivery and upload

The IDB Manual foresees that, in autumn every year, national data administrators are invited to deliver data for the previous year. This with a view to ensure that data can be published before the end of the year following the year of data collection. However, it turned out that for various reasons it is impossible to achieve a complete delivery within just three months. Therefore, for the years 2013-2016, the “call for data” has been issued already before summer, in order to get a maximum of country data on board before the end of the consequent year. E.g. the call for the data of 2016 has been issued in May 2017 with a deadline by 30 June. However, by end of June, just five data suppliers did actually deliver.

After data clearing, the files are forwarded to the IT services of DG SANTE for the actual upload to the EU IDB database. This last step of making IDB-MDS data publicly accessible, is another source of delays and errors. The public access at EU IDB web-gate [5] makes IDB-MDS data files available for analyses. Unfortunately, the web-gate is not fully up to date and contain also a number of errors. Discrepancies between the delivered and accessible data files are shown in Table 12. A green tick indicates that a data file has been delivered and is also accessible at the IDB web-gate.

	Country	Upload during JAMIE project				Upload during BRIDGE Health		
		2010	2011	2012	2013	2014	2015	2016
1	Austria	✓	✓	✓	✓	Upload pending	Upload pending	Delivery pending
2	Cyprus	✓	✓	✓	Wrong	✓	Upload pending	Upload pending

					rate			
3	Czech Republic	✓	Upload pending	Upload pending	Clearance pending	unclear		
4	Denmark	✓	✓	✓	✓	Wrong estimate	Upload pending	Delivery pending
5	Estonia	No data		✓	✓	Wrong estimate	Upload pending	Delivery pending
6	Finland	✓	✓	✓	✓	Wrong estimate	Upload pending	Delivery pending
7	Germany*	✓	✓	✓	✓	✓	Upload pending	Delivery pending
8	Greece	No data		✓	No data			
9	Hungary	No data			✓	No data		
10	Iceland	✓	✓	✓	✓	No data		
11	Ireland	No data			✓	Upload pending	Data expected	Delivery pending
12	Italy	✓	✓	✓	✓	unclear		
13	Latvia	✓	✓	✓	Upload pending	Upload pending	Upload pending	Delivery pending
14	Lithuania	No data	✓	✓	✓	✓	Upload pending	Upload pending
15	Luxembourg	No data		✓	✓	Wrong estimate	Upload pending	Delivery pending
16	Malta	✓	✓	✓	✓	Upload pending	Data expected	Delivery pending
17	Netherlands	✓	✓	✓	✓	✓	Upload pending	Upload pending
18	Norway			✓	✓	✓	Upload pending	Delivery pending
19	Poland	No data			✓	No data		
20	Portugal	Upload pending	Upload pending	Upload pending	Wrong estimate	✓	Upload pending	Upload pending
21	Romania	No data			✓	No data		
22	Slovenia	✓	✓	✓	✓	✓	Upload pending	Upload pending
23	Spain	No data			✓	No data		
24	Sweden	✓	✓	✓	✓	Wrong estimate	Upload pending	Delivery pending
25	Turkey	No data			✓	✓	Upload pending	Delivery pending
26	United Kingdom	✓	✓	✓	Upload pending	Upload pending	Upload pending	Delivery pending
Accessible		14	14	18	22	13	0	0
Upload errors		0	0	0	2	5	-	-
Upload pending		1	2	2	2	5	16	5
Delivery pending		0	0	0	1	0	2	13
No. of data suppliers		15	16	20	25	18	18	18

Table 7 demonstrates that even for the years 2010-2013 a few national data files are waiting for being uploaded in the EU IDB web-gate, and for 2014 even five files are still waiting to be uploaded.

For the year 2015 not a single data file has been uploaded yet, although 16 files have been forwarded to the Commission services by March 2017. For the year 2016 no data have yet been sent to the Commission services.

A specific problem is with the Czech data of 2011-2013, which have not been delivered in the requested form and still are waiting for being transcoded and cleared by the Network coordinator. Another particularity is with the Italian data, which, due to restrictions set by Italian laws, need to be submitted directly to the Commission services.

The EU IDB web-gate contains also a few errors. In one case, a wrong incidence rate should be deleted (Cyprus 2013), in all other cases of errors the rates are presented correctly, but the displayed number of injuries read zero (e.g. Denmark, Estonia, Finland 2014). The reasons for these shortcomings are unclear; however, the errors have been notified to the Commission services in March 2017.

Aside from delays and errors, it shall be also recognised that the tools of the EU IDB web-gate are not very practical for analysing IDB data. E.g. for every two-dimensional table (e.g. type of injury by age-group or gender) it is necessary to perform numerous error-prone queries to complete columns and lines. Therefore, most of the stakeholders have asked the IDB Network coordinators, i.e. Austrian Road Safety Board (2010-2013) and Swansea University (2014-2017), for assistance with desired analyses, while the official EU IDB web-gate query-function being left unused. The analyses for the previous EU injury report [9] as well as for the following chapter used the interim IDB database at Swansea University and would hardly be possible by using the EU IDB web-gate.

Data protection concerns

There are increasing data protection concerns among stakeholders. National regulations regarding the handling and submission of individual level health data, even when data are strictly anonymous, are far from harmonised in Europe.

Italian law requires individual level data to be submitted directly to the Commission services, not through intermediaries. While in previous years DG Sante trusted the Network coordinator with the necessary data clearing, this practice had to be terminated since 2013 as demanded by the Italian data owner. Since that time, no direct communication between the Italian competent authority and DG Sante has taken place and no more recent data could be uploaded.

Sweden has recently tightened its regulations, so that since 2013 no third party (no other IDB data provider, no researcher and also not even an EU agency responsible for consumer product safety) is allowed to access IDB-FDS micro-data from Sweden.

Recently, the Netherlands has announced that it will not be able to submit any case descriptions (narratives) neither for IDB-MDS nor IDB-FDS in the future. It shall be noticed that the narratives are extremely informative when detailed analyses of incidences with certain circumstances, e.g. child injuries which involve certain consumer products are requested.

Very recently, UK have announced that it is not anymore allowed to deliver individual health data to third parties abroad, due to new legislation.

3. Summary of IDB MDS data

Introduction

The analyses presented in the following are based on data from those IDB-countries that provided data in full compliance with the requirements as specified in the IDB-Manual. Used were the available data of the most recent three years, which are the years 2013-2015 for most of the countries.

While the previous sixth edition [9] mainly dealt with data from 2012-2014, this report deals with the data 2013-2015. As the shift of just one year does not result in significant changes in the injury figures, just basic analyses of the previous report have been repeated and just the main tables have been updated.

For an overview over the used data files and years covered, see Table 8. Details of data flow and data quality have been discussed in the previous chapter.

No.	Country	Years	Remarks
1	Austria	2013-2015	
2	Cyprus	2009-2010	No incidence rates available for recent years
3	Germany	2013-2015	Incidence rates reported in metadata, but not available at the IDB web-gate
4	Denmark	2013-2015	
5	Estonia	2013-2015	
6	Spain	2013	Data collection interrupted after 2013 (end of the JAMIE-project)
7	Finland	2012-2014	Data delivery 2015 delayed due to technical problem
8	Iceland	2011-2013	Data delivery interrupted after 2013 (end of the JAMIE-project)
9	Ireland	2013	Data delivery delayed due to capacity problem
10	Italy	2011	Data delivery delayed due to capacity problem
11	Lithuania	2013-2015	
12	Luxembourg	2013-2015	
13	Latvia	2013-2015	
14	Malta	2011-2013	Data delivery delayed due to technical problem
15	Netherlands	2013-2015	
16	Norway	2013-2015	
17	Portugal	2013-2015	
18	Romania	2013	Data collection interrupted after 2013 (end of the JAMIE-project)
19	Slovenia	2013-2015	
20	Sweden	2013-2015	
21	Turkey	2013-2014	Data delivery delayed due to capacity problem
22	United Kingdom	2013-2015	

The European Commission together with the EU member states has identified 88 European Core Health Indicators (ECHI) [14]. Among these ECHIs, four are related to injuries: Unintentional home, leisure and school accidents (ECHI-29b), road traffic accidents (ECHI-30b), work-place accidents (ECHI-31) and suicide attempts (ECHI-32). These categories have been included in the analysis of the IDB-data as reported in the following sections of this report.

The arithmetic average of rates of EU member states is considered as the best estimate for the EU-28. Depending on the domain, the rates of 18-19 countries could be used for this calculation, from which Iceland, Norway and Turkey as non-members of EU have been excluded.

Injuries in the EU by severity of outcome

Applied to the average population 2013-2015 of the EU-28, an estimated 38 million injury patients are being treated every year in emergency departments, whereof 52% suffer from an injury at home and during leisure activities (Table 9).

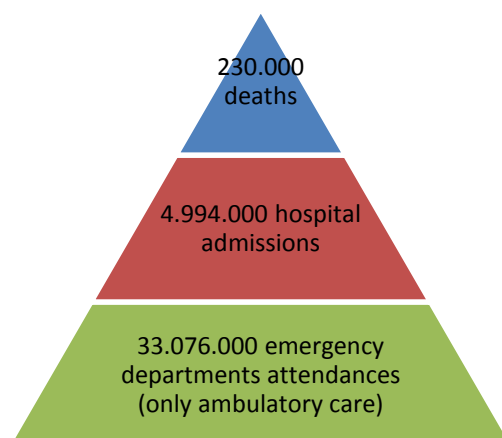
Domain	Home	Sport	Institutions	Home, leisure and school	Road traffic	Work-place	Self-harm	Assault	All ED attendances
ECHI number				29(b)	30(b)	31	[32]		
Definition by IDB-MDS data elements	Intent = 1 and Location = 3	Intent = 1 and Activity = 2	Intent = 1 and Location = 2 or 8	Intent = 1 and Activity = 2 or 8 and Mechanism = 2-8	Intent = 1 and Mechanism = 1	Intent = 1 and Activity = 1	Intent = 2	Intent = 3	All valid IDB-MDS cases
Average rate of EU countries	22,09	7,12	21,73	38,93	6,62	7,05	1,08	2,61	74,87
Estimated number of cases in the EU-28	11.231.892	3.622.544	11.051.156	19.798.080	3.366.109	3.585.879	547.890	1.326.837	38.069.418
%	29,50%	9,52%	29,03%	52,01%	8,84%	9,42%	3,49%	1,44%	100,00%

A rough indicator for the average severity of injuries is the percentage of admissions. Almost 5 million hospital admissions are caused by injuries annually in the EU-28, and 33 million needs to be treated ambulatory in emergency departments.

DG Sante's ECHI web-gate reports for 2013 (most recent available year) a standardised death rate due to external causes of 46 per 100000 inhabitants, which equals about 230.000 fatalities [14]. Eurostat reports for 2014 (most recent available year) 229.736 fatalities due to external causes.

Together with the IDB estimates this completes the "injury pyramid for the EU-28" (figure 1). For more information see the previous report [9], where also fatalities have been analysed into more details. Compared to the previous report, no significant changes in key figures have taken place.

Figure 1: The injury pyramid for the European Union



The percentage of admissions is highest for acts of self-harm with 38.3%, and lowest for work-related injuries with 8.7%, and 13.1% for all injuries together (Table 10). Hospital admissions and ambulatory ED treatments are basic, but valuable cost drivers. The average costs for one day of inpatient hospital care and for an ED attendance seem to be known in most European countries. By using additional information sources on lost years of life, average number of days in hospital care and the risk of long-term disability related to specified injury diagnoses, also more comprehensive burden of injury indicator can be established like Years Lived with Disability YLD and Disability Adjusted Life Years DALYs [13].

Table 10: Crude incidence rates for ED attendances in the EU-28 per 1000 persons by treatment (admitted or not admitted) and domain of prevention

	Home	Sport	Institutions	Home, leisure and school	Road	Work	Self-harm	Assault	ED attendances
ECHI Nr.				29 (b)	30 (b)	31	32		
Admissions	1.829.419	349.059	1.170.896	2.649.655	572.881	310.307	209.841	246.792	4.993.847
Admission rate	3,60	0,69	2,30	5,21	1,13	0,61	0,41	0,49	9,82
%	16,29%	9,64%	10,60%	13,38%	17,02%	8,65%	38,30%	18,60%	13,12%
ED cases	9.402.473	3.273.485	9.880.260	17.148.424	2.793.229	3.275.573	338.049	1.080.045	33.075.571
ED case rate	18,49	6,44	19,43	33,72	5,49	6,44	0,66	2,12	65,04
%	83,71%	90,36%	89,40%	86,62%	82,98%	91,35%	61,70%	81,40%	86,88%
All ED attendances	11.231.892	3.622.544	11.051.156	19.798.080	3.366.109	3.585.879	547.890	1.326.837	38.069.418
All ED attendance rate	22,09	7,12	21,73	38,93	6,62	7,05	1,08	2,61	74,87
%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Injuries in the EU by age and gender

Injury risk varies considerably with age. It is lowest for children under one year of age and adults in the age-group 60-69 years, while three age-groups bear a higher injury risk compared to others:

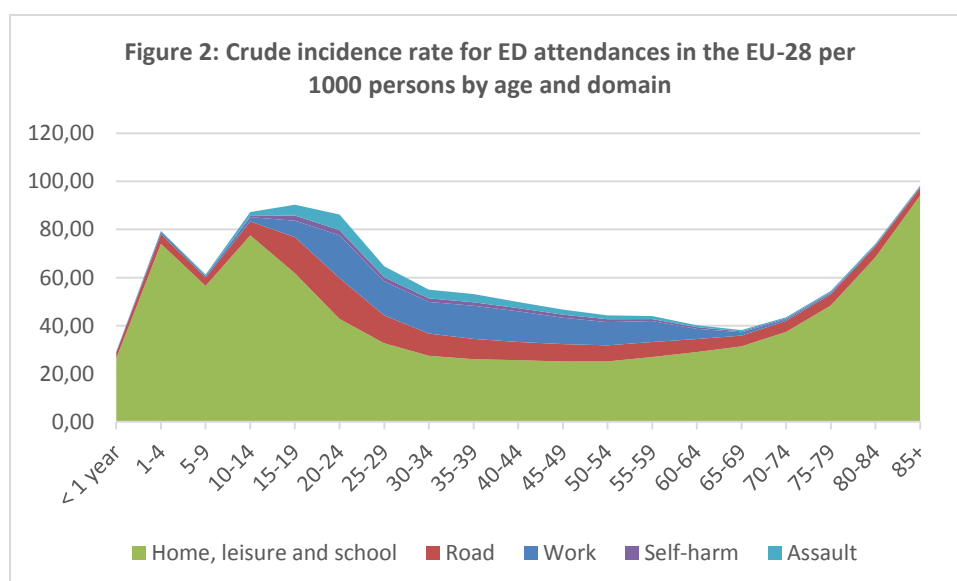
small children (1-4 years of age); older children, adolescents and young adults (10-24 years); and very old persons (aged 80+) (Table 11 and Figure 2).

Table 11: Crude incidence rate for injury related ED attendances in the EU-28 by age and domain (ECHI)

Age	Home	Sport	Institutions	Home, leisure and school	Road	Work	Self-harm	Assault	ED attendances
ECHI Nr.				29 (b)	30 (b)	31	32		
< 1 year	25,48	1,53	3,25	26,38	2,43	0,11	0,14	0,26	38,61
1-4	54,78	4,84	20,79	74,02	4,04	1,07	0,09	0,20	110,58
5-9	21,05	10,97	34,25	56,55	3,48	0,67	0,05	0,54	84,36
10-14	18,76	32,52	59,76	77,56	5,79	1,81	0,50	1,60	120,17
15-19	17,47	26,54	46,94	61,82	15,01	6,82	2,16	4,50	106,84
20-24	18,73	13,90	35,64	42,79	16,97	17,82	2,17	6,47	99,09
25-29	15,69	9,90	26,56	32,69	11,58	14,14	1,75	4,53	79,88
30-34	15,15	6,50	21,06	27,48	9,24	13,14	1,50	3,62	67,54
35-39	15,66	5,60	20,16	26,07	8,44	13,78	1,45	3,42	66,38
40-44	15,96	4,60	18,76	25,65	7,56	12,75	1,33	2,53	61,18
45-49	15,69	3,91	16,68	25,10	7,24	10,95	1,30	2,11	58,45
50-54	16,42	3,02	14,87	25,12	6,70	9,66	1,21	1,61	61,41
55-59	17,91	2,34	14,33	26,96	6,25	8,72	0,81	1,27	57,35
60-64	19,23	2,52	10,67	29,04	5,41	4,22	0,72	0,79	53,36
65-69	21,33	2,10	9,24	31,39	4,49	1,37	0,39	0,54	50,69
70-74	25,82	1,89	9,56	37,43	4,56	0,62	0,44	0,47	56,47
75-79	34,26	1,58	11,75	48,40	4,65	0,60	0,29	0,51	68,57
80-84	49,73	2,15	16,29	68,46	4,64	0,36	0,29	0,37	94,00
85+	68,05	2,75	27,22	94,09	3,14	0,23	0,47	0,33	119,18
All ages	21,70	7,57	22,89	39,48	7,45	7,97	0,99	2,30	74,87

Injury risk is also influenced by length of time spent in different settings, which varies throughout the life course (Table 11 and Figure 2). For example, children (0-14 years) and older adults (75 years +) spend much more time at home, in institutions like schools and nursing homes or during leisure activities than in other settings. Therefore, it is no surprise to see increased rates of home, leisure and school injuries (ECHI-29b) in these age groups.

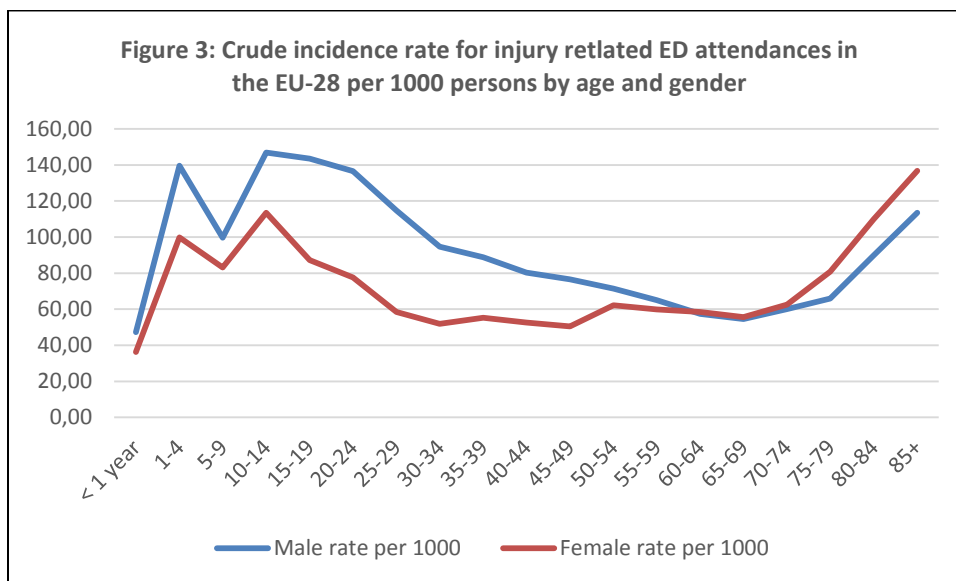
The risk of sports injuries substantially increases when children enter school, with a peak in the 15-19 years age group. Road traffic injuries peak in the 15-24 years age group, indicating that younger, more inexperienced drivers are at a greater risk of injury than older drivers. As expected, work-place injuries contribute the highest risk during the working years (between 20 – 65 years of age). Finally, self-harm and assault related injuries peak among adolescents (15-19 years) and young adults (20-24 years), decreasing throughout the remainder of the life course.



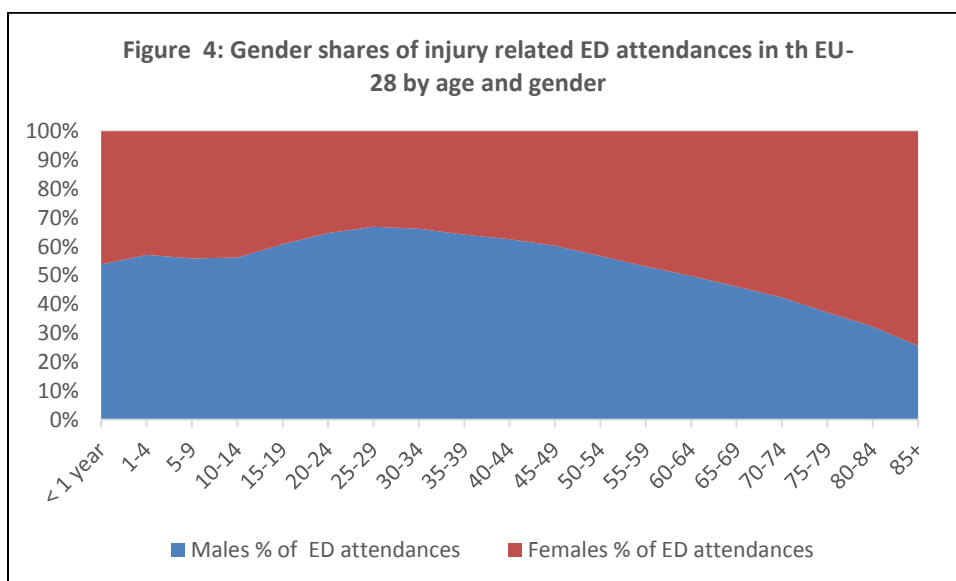
The injury risk differs considerably between males and females. Generally, the rate of an injury related ED attendance for males is 91.21 and noteworthy higher for females with 67.62. However, the risk of males is higher only in younger ages up to 59 years, while from 60 years onward, the risk for females exceeds those of males (Table 12 and Figure 3).

Table 12: Crude incidence rate for injury related ED attendances in the EU-28 per 1000 persons by age and gender; gender share by age

Age	Male rate per 1000	Female rate per 1000	Males % of ED attendances	Females % of ED attendances	Estimated number of ED attendances (males & females)
< 1 year	47,27	36,36	53,82	46,18	196.851
1-4	139,51	99,82	57,14	42,86	2.357.925
5-9	99,73	83,21	55,92	44,08	2.255.394
10-14	146,89	113,44	56,21	43,79	3.160.430
15-19	143,53	87,22	60,88	39,12	2.916.745
20-24	136,64	77,58	64,70	35,30	3.006.949
25-29	114,66	58,40	66,89	33,11	2.576.099
30-34	94,71	51,86	66,20	33,80	2.301.248
35-39	88,86	55,23	64,15	35,85	2.334.940
40-44	80,34	52,55	62,58	37,42	2.251.534
45-49	76,63	50,43	60,31	39,69	2.213.639
50-54	71,35	62,21	56,75	43,25	2.227.066
55-59	64,97	59,81	53,13	46,87	1.932.556
60-64	57,43	58,50	49,83	50,17	1.656.250
65-69	54,52	55,59	46,15	53,85	1.357.705
70-74	60,03	62,48	42,35	57,65	1.261.397
75-79	66,00	80,87	37,19	62,81	1.302.269
80-84	89,85	109,97	32,27	67,73	1.310.082
85+	113,51	136,67	25,61	74,39	1.450.339
All ages	91,21	67,62	56,25	43,75	38.069.418



Due to the higher life expectancy of women, the share (percentage) of all ED attendances which are injuries, is even greater for females in the older age groups, then depicted by the rate (Figure 4).



4. Country comparison by ECHI-indicators

The concept of European Core Health Indicators (ECHI) presupposes that these indicators should be comparable within the EU in order to make country differences visible. As to the latter, developments are still in the stage of infancy due to the huge variations on health service systems in countries and in data collection methodologies applied.

It is therefore important to remind that Commission and member states acknowledge that international comparability is the main purpose of producing national injury statistics as ECHIs, and to provide data to support the evaluation of national level health actions [15], while taking into account divergences between health service systems in countries and resulting limitations in comparability of data reported.

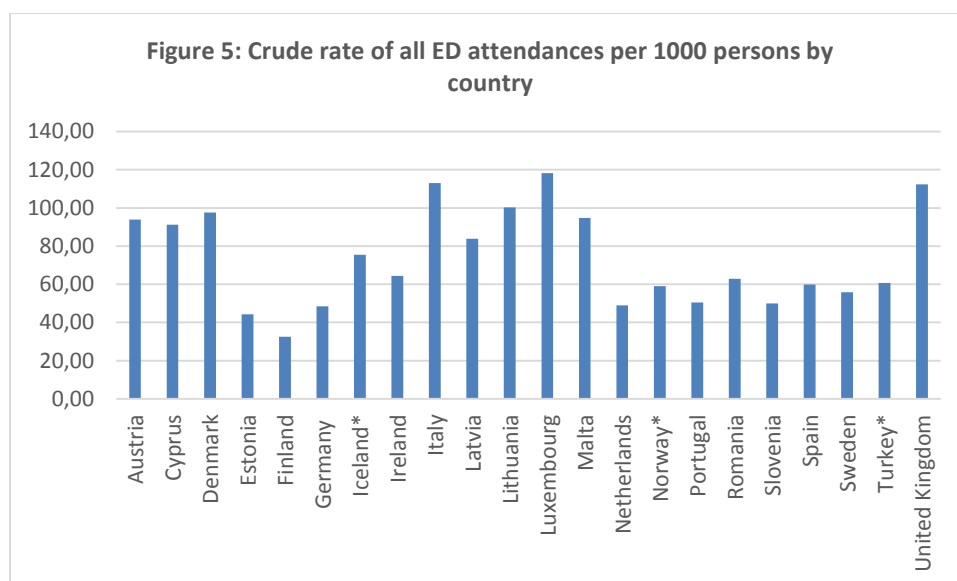
As said, the ECHI short list [14] recommends at least four indicators for the health burden of injuries – aside from injury mortality: (Unintentional) Injuries at home and during leisure activities (ECHI-29b), (unintentional) injuries due to road traffic (ECHI-30b), injuries at the workplace (ECHI-31) and suicide attempts (ECHI-32). However, a comprehensive and efficient injury surveillance system can of course produce many more parameters for more specific aspects – e.g. incidence rates of certain types of injuries, certain mechanisms of injury, certain age-groups and settings etc.

Table 13 contains preliminary IDB estimates for the ECHI injury indicators 29-32, in addition to estimates for unintentional injuries at home, sport injuries, injuries in schools and other institutions, injuries due to interpersonal violence and for all injuries (accidents and acts of violence) combined.

Domain of prevention	Home	Sport	Institutions	Home, leisure, and school	Road	Work	Self-harm	Assault	ED attendances
ECHI number				29(b)	30(b)	31	[32]		
Austria	30,86	25,11	44,79	71,09	8,82	14,49	0,13	0,74	93,89
Cyprus	26,08	3,17	42,85	43,34	14,53	36,33	0,08	4,11	91,14
Denmark	30,00	10,27	30,76	49,65	4,97	7,20	0,48	1,88	97,56
Estonia	16,54	4,24	13,61	27,82	1,00	1,76	0,64	1,65	44,29
Finland	6,88	1,86	2,58	14,71	3,15	1,62	0,64	0,48	32,60
Germany				36,66	4,50	6,09	0,61	5,59	48,53
Iceland*	30,73	9,06	29,77	54,80	-	10,20	1,21	3,09	75,38
Ireland	26,30	5,60	17,20	31,21	5,31	5,87	2,82	5,81	64,32
Italy	31,32	3,05	31,42	47,94	30,52	4,63	0,30	1,73	113,08
Latvia	35,34	3,37	12,78	47,08	5,11	2,20	3,77	6,34	83,85
Lithuania	19,72	1,25	5,98	22,81	0,99	0,92	1,54	1,63	100,22
Luxembourg	31,22	17,33	46,12	68,32	8,78	19,77	1,48	4,13	118,28
Malta	8,69	2,12	8,04	21,00	4,96	2,23	0,37	2,20	94,67
Netherlands	11,62	9,69	13,74	34,11	7,89	3,51	0,97	1,22	49,02
Norway*	15,25	13,71	27,94	41,51	2,52	5,52	0,75	0,80	59,02
Portugal	21,64	3,68	20,24	27,73	-	-	-	-	50,47

Romania	23,87	1,98	7,52	22,13	4,04	6,63	0,88	4,55	62,83
Slovenia	12,19	13,93	16,84	27,70	4,04	2,55	0,08	0,79	49,88
Spain	10,82	2,91	19,50	36,50	3,26	1,14	0,67	1,18	59,78
Sweden	19,51	9,14	21,68	40,93	4,25	4,81	2,00	1,25	55,76
Turkey*				40,03	6,35	10,29	1,57	4,33	60,72
United Kingdom	34,97	9,53	35,55	69,01	5,41	7,42	2,30	2,47	112,30
Number of EU countries	18	18	18	19	18	18	18	18	19
Average rate of EU countries	22,09	7,12	21,73	38,93	6,62	7,05	1,08	2,61	74,87
Estimated number of cases in the EU-28	11.231.892	3.622.544	11.051.156	19.798.080	3.366.109	3.585.879	547.890	1.326.837	38.069.418
%	29,50%	9,52%	29,03%	52,01%	8,84%	9,42%	3,49%	1,44%	100,00%

The rate for all injury related ED attendances per 1000 persons, ranges from 32,6 in Finland (lowest rate) to 118,3 in Luxembourg, with an EU average of 74.87 (7.5% of the population). The wide range of national rates suggests that other factors may have a part to play besides differences in injury morbidity. For example, differences in national health care systems, accessibility and utilisation of emergency departments, differences in data sampling methods and sample sizes, and other data quality issues are likely to affect the national estimates generated through the IDB. For instance, in Luxembourg, it is well known that many non-residents live and work in this relatively small country. As the denominator for IDB incidence rates is based on the national population, it is likely these additional non-residents increase the injury rate in Luxembourg. In Finland, primary health care centres which are not captured in the IDB, are frequently the first point of contact for minor injuries, instead of EDs, which explains to a certain extent the low incidence rates observed in Finland (Table 13, Figure 5)

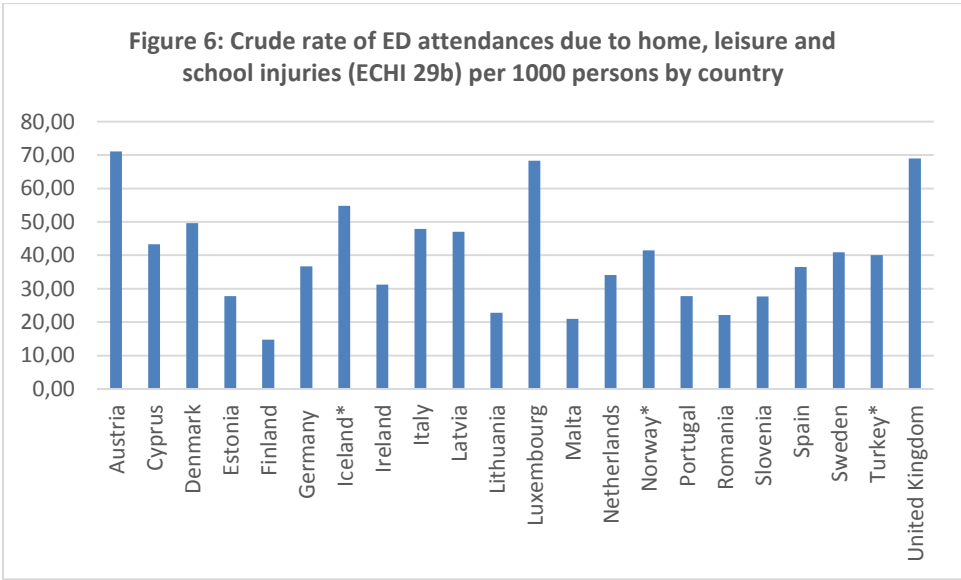


Regarding ECHI 29b (“home and leisure accidents”) (Figure 6), the EU average rate is 38.93 per 1000 inhabitants (or 3.89%). The IDB rate per 1000 population ranges from 14,71 in Finland to 71,09 in

Austria; a range factor of 4,8. However, a range factor of this size is not unusual when comparing national health statistics. The range in ECHI injury mortality rates is also unexpectedly high. In 2012, ECHI 13 (injury death rate per 100.000 population) ranged from a minimum of 14,9 in Portugal to a maximum of 74,1 in Lithuania, a factor of 5.0, which is slightly higher than IDB’s factor of 4.8 [14].

Many more details on home, leisure and school injuries are presented at the EuroSafe web-gate, in the chapter “Look at the figures” [19]. These analyses are not repeated here.

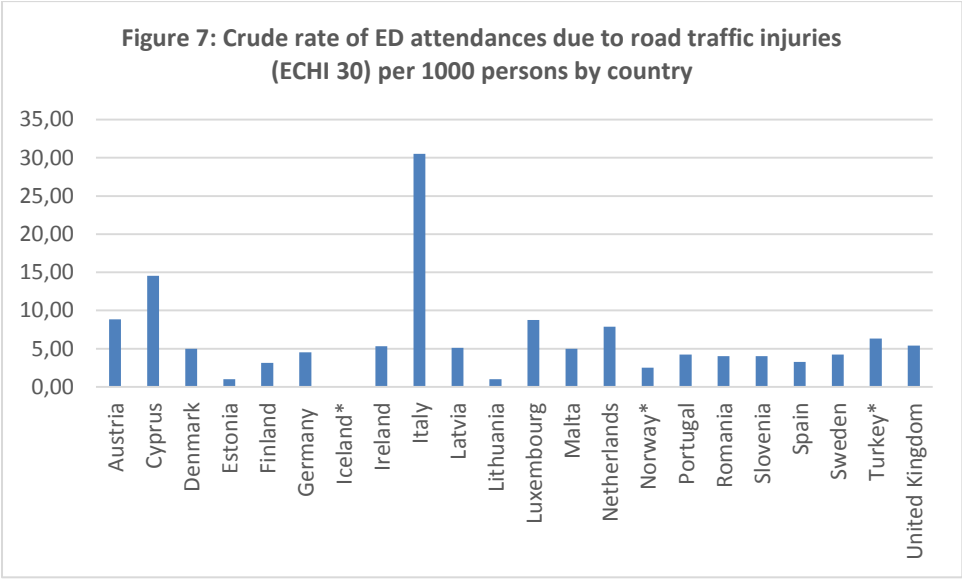
A related indicator is 29a “Home, leisure, school injuries: self-reported incidence”, which gets established through the European Health Interview Survey EHIS [17]. The most recent data stem from 2014 and are published by Eurostat [20]. The EU average of ECHI-29a is 8.2% and considerably higher than ECHI-29b. However, the survey covers also minor injuries, which did not require any medical treatment or which have been treated only by primary health care services, while ECHI-29b is based on secondary health care (ED attendances). How far these two related indicators are comparable, needs to be investigated.



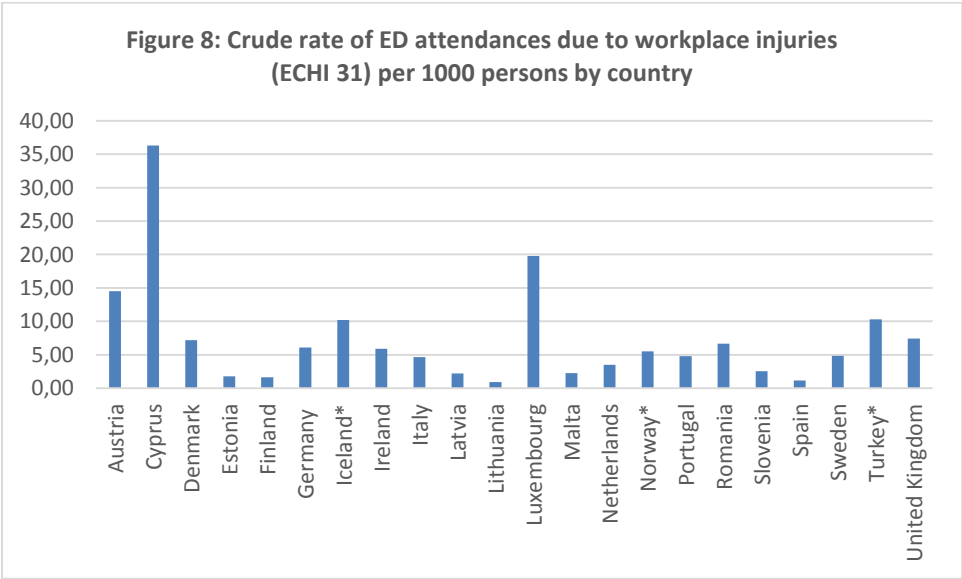
In relation to the other ECHI indicators (e.g. ECHI 30b, ECHI 31 and ECHI 32) (Figure 7, 8 and 9) the IDB results should only be interpreted as preliminary results, highlighting potential issues in countries and directions for further improvement. The ECHIM project [16] did not mention yet IDB as the preferred data source for ECHI 30b (injuries due to road traffic: register based incidence), ECHI 31 (injuries at work-place) and ECHI 32 (suicide attempts). Nevertheless, it shall be noticed that the system in principle is able to provide estimates for 30b and 31 and offers a meaningful alternative to ECHI 32.

The EU average of the IDB based ECHI-30b (“road traffic accidents”) is 6.62 per 1000 persons (0.66% of the population), and the national estimates range from 0,99 in Lithuania to 30,52 in Italy. The IDB based ECHI-30b (Figure 7) shows a remarkable high rate for Italy, but also noticeable low rates for Estonia and Lithuania. It is extremely unlikely that these figures depict the true morbidity. It was not possible to investigate what the causes are. The ECHIM project [16] originally mentioned police reports as the preferred data source for non-fatal injuries, however it seems that these data are not available anymore; the annual ERSO report for 2016 analyses just fatalities and refers to the IDB estimates for non-fatal road traffic injuries [17].

The alternative ECHI 30a “Road traffic injuries: Self-reported incidence”, based on EHIS 2014 [20] is also considerably higher, with an EU average of 1.7%. It can be assumed, that the main cause for this difference is that EHIS covers also minor injuries.

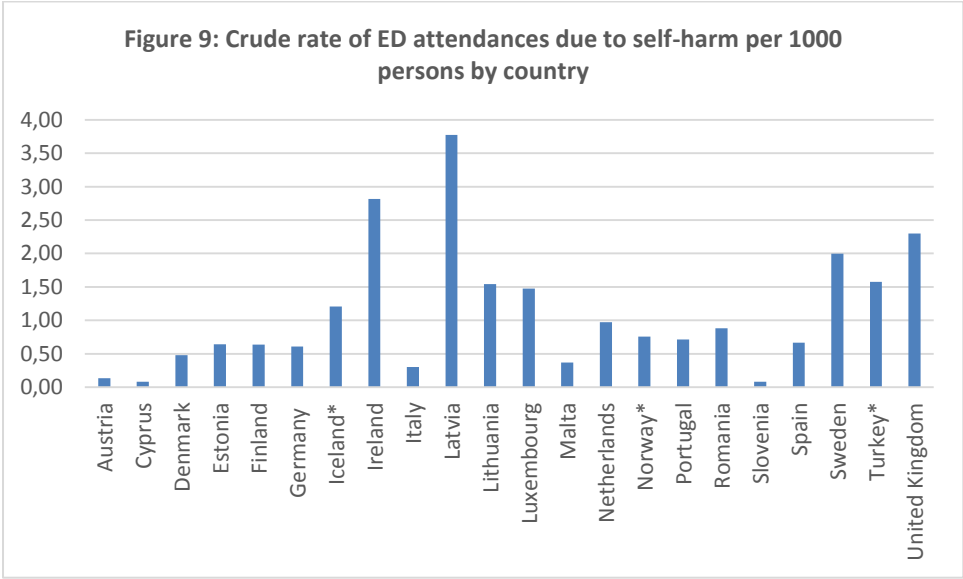


The IDB based estimates for ECHI 31 (work-place accidents) (Figure 8) show also considerable differences between countries, which cannot be caused only by different morbidity. The lowest rate shows Lithuania (0.92 per 1000 inhabitants), and the highest rate Cyprus (36.33), which leads to a range rate of 39.5. It needs to be further investigated what the causes are. However, it should be noticed that ESAW (European Statistics on Accidents at Work) [18], which as the preferred data source for ECHI 31 according to the ECHIM project [16], reports incidences for work-place accidents which range from 61.9 in Romania to 3570.8 in Portugal per 100.000 workers – a range factor of even 57.7.

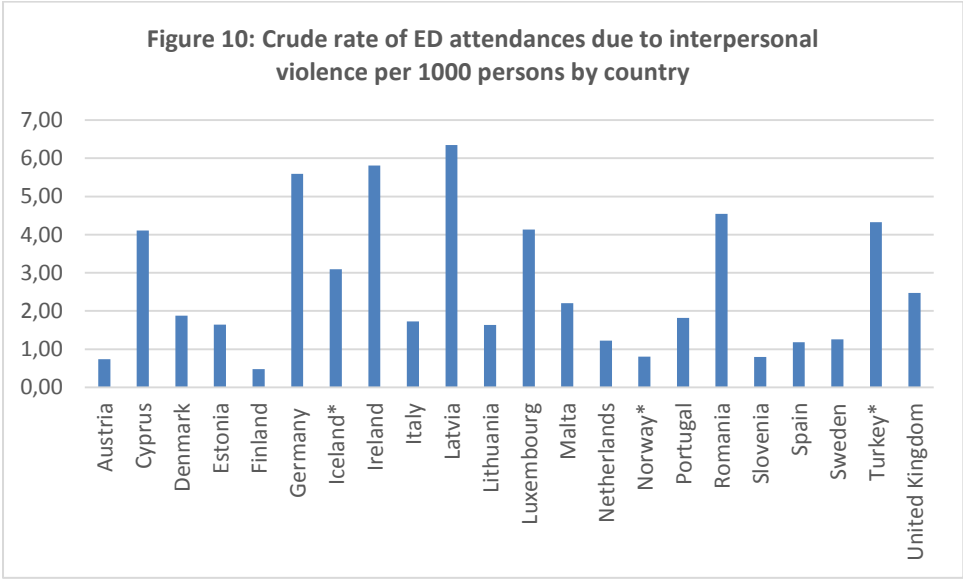


Suicide attempts cannot be identified in IDB, as there is no information available, how serious the intention of a patient was to kill him/herself. However, it may turn out that there is no other data source available at all for this purpose, and in this case, “Injuries due to deliberate self-harm, treated in emergency departments” could be considered as alternative indicator. The estimated rates for

self-harm (ECHI 32) range from 0,08 per 1000 population in Cyprus and Slovenia to 3,77 in Latvia (Figure 9).



Finally, IDB rates for assault related injuries range from 0,48 in Finland to 6,34 for Latvia (Figure 10). Such wide ranges between national estimates indicate that the extreme rates at least, are the result of sampling biases. Further studies will be needed in order to assess, how ED based data can provide additional valuable information on the health burden of assaults.



5. Discussion and conclusions

Injury data from emergency departments of hospitals (secondary health care system) are a valuable source of information on the health burden of non-fatal injuries and complementary to mortality data and population survey data. While deaths represent the “tip of the iceberg”, i.e. the most severe injuries, emergency attendances represent the huge volume of injuries, which cause most of the health care costs due to injuries. Population surveys cover the entire spectrum of non-fatal injuries, but suffer inherent limitations in gathering information on medical and technical aspects related to injury events reported by respondents. By definition, hospital data contain more information on external circumstances of injury events and the resulting injuries.

The methodology of the European Injury Database (EU-IDB) provides a well elaborated standard for collecting injury data in emergency departments, which fulfils the EuroStat-methodological requirements for European health statistics. According to these standards, data are currently collected by 18 countries. These countries share their data through the joint EU IDB, which is hosted by the European Commission, DG SANTE. The main purpose of this undertaking is to provide the data source for comparable European Core Health Indicators on injuries as ECHI-29b (home and leisure injuries: register based incidence), ECHI-30b (road traffic injuries: register based incidence) and ECHI 31 (workplace injuries).

Based on IDB data, estimated 5 million patients get admitted to hospitals in the EU annually, and further 33 million get ambulatory treatment in emergency departments of hospitals. IDB data make it possible to estimate the health burden of injuries at EU-level for various population groups and various settings as home, leisure activities, sport, road traffic, work-place, deliberate self-harm and interpersonal violence. Further indicators as costs of hospital services or disability adjusted life years can be derived by combing IDB data with additional data.

In 2016, 15 of 28 EU member states are still participating in the IDB injury data exchange; another three non-EU member states are sharing their data in the IDB. The number of data supplying countries has reached a peak in 2013 (25), dropped in 2014 (18) and is stable since that time.

The quality of data delivered by countries is satisfactory, but, as always, open for improvement. There are shortcomings regarding the content-related scope of the data collection in one country, the geographic scope in two countries, the full spectrum of severity of injuries recorded in two other countries, the age-group excluded in one country, the size of the sample in at least two countries. All together just 13 of 28 EU member states fully meet all the requirements. This picture has not improved since 2014.

In particular the larger EU-member states seem to have problems in providing national coordination to local injury surveillance efforts. Germany participates, but just with a skewed sample from one single reference hospital representing just one region; France collects emergency department data, but does not wish to share these data in the IDB-system; Italy collects data but was not able to submit data since 2014; in Poland, Spain and Romania no competent authority at national level could be identified; and UK is relying on data provided by the All Wales Injury Surveillance System (AWISS).

The international comparability of national incidence rates, e.g. of the ECHI indicators (29b, 30b, 31) may be impaired by these shortcomings, leading to sampling biases (e.g. toward road traffic injuries or acts of violence) and issues related to inclusion/exclusion criteria for case selection. But it is the purpose of international comparisons to make these inconsistencies visible and amendable.

IDB is based on micro-data records in order to provide a maximum flexibility for queries, but there are increasing data protection concerns among stakeholders. National regulations regarding the handling and submission of individual level health data, even when data are strictly anonymous, are also far from harmonised in Europe. This affects the usefulness of EU level health data bases like the EU IDB.

As a solution it could be considered to request countries to deliver aggregated data, for instance by exchanging multidimensional tables of national incidence rates. However, such a procedure would require member states to process their information according to jointly agreed data presentation standards and to ensure harmonised quality control on the resulting aggregated data sets.

To conclude: it is clear that emergency departments in hospitals provide the best setting for collecting information on more serious cases of injury which require expert medical assistance. Further, information on a large number of injury cases can be obtained easily in hospital records at low costs.

Technological developments in medical administration and data linkage, also offer new opportunities for recording additional information which is relevant for injury prevention.

The IDB-methodology allows countries to collect accident and injury data from a representative sample of emergency departments using a standardized coding system on the circumstances of an injury-event and its outcome. It complements existing data sources such as the routine causes of death statistics, hospital discharge registers and data sources specific to injury areas, including road accidents and work place accidents.

The simple IDB-Minimum Data Set (MDS) for Europe supports the development of EU level and member state injury indicators, and can be easily implemented into wide variety of practices across Member States through a simple check-box system.

However, the continuation and wider implementation of the IDB across Europe requires a stronger political commitment from EU-institutions and Member State governments. A binding arrangement for all countries to provide ED-based injury data would be extremely helpful in ensuring continued EU-level exchange of vital injury data in the forthcoming years.

Taking into account the variety of health issues that require appropriate monitoring in Member States and at the EU-level, the European Union is currently considering to create a common health information infrastructure to support research and evidence-based policy-making across the European Union.

Such a system should include knowledge and information generated by past health and research projects, and should include injury monitoring as a key component.

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7. Annex: Template for IDB-MDS Metadata

IDB-MDS Metadata (National IDB data file information form)			
Country		nnn	
Year		nnn	
<i>Question</i>	<i>Specification</i>	<i>Answer</i>	<i>Comments (additional information in case of No)</i>
Scope			
<i>All age groups?</i>	<i>All age-groups covered</i>	Y/N	
<i>All injury categories (home, leisure, sport, school, road, paid work, self-harm, assault)?</i>	<i>All MDS options for intent, setting and activity covered</i>	Y/N	
<i>All injury mechanisms?</i>	<i>All MDS options for injury mechanism covered and coded</i>	Y/N	
<i>All injury types and all body parts?</i>	<i>All MDS options for injury types and body parts covered and coded</i>	Y/N	
<i>Admissions and ambulatory treatments?</i>	<i>All MDS options for treatment and follow-up covered</i>	Y/N	
Inclusion / exclusion of cases			
<i>Only patients diagnosed as suffering from injury?</i>	<i>Equivalent to ICD-10 S00-T98 (chapter XIX)</i>	Y/N	
<i>Consequences of medical interventions excluded?</i>	<i>Equivalent to ICD-10 codes T80-T88 and T98.3 excluded</i>	Y/N	
<i>Follow-up treatments excluded?</i>	<i>No double counting of cases</i>	Y/N	
<i>Non-residents included?</i>		Y/N	
Representativeness of the sample			
<i>Recommended number of cases?</i>	<i>More than 10.000 cases</i>	Y/N	
<i>Number of hospitals in the sample?</i>		nnn	
<i>Recommended number of hospitals?</i>	<i>All hospitals (nat. pop <1m); minimum 3 hospitals (nat. pop. 1-3m), 5 (nat. pop 3-12m), 7 (nat. pop. 12-40m), 9 (nat. pop. >40m)</i>	Y/N	
<i>Sample of hospitals balanced by hospital size?</i>	<i>Small, middle-size, large hospitals included</i>	Y/N	
<i>Sample of hospitals balanced by geo-coverage?</i>	<i>Hospitals with urban & rural catchment areas included</i>	Y/N	
<i>Sample of hospitals balanced by hospital type?</i>	<i>General hospitals, trauma centre or university hospital, child clinic included; Primary health care and day-care centres excluded</i>	Y/N	
<i>Validation checks?</i>	<i>Representativeness of current sample of hospitals has been controlled at least by age-group, mechanism of injury, intent</i>	Y/N	
Quality of recording			
<i>Rate of admissions?</i>	<i>Percentage of treatment code 1</i>	nn.n%	
<i>Average rate of "unknown"?</i>	<i>Average percentage of codes 9 or 99 of the following 10 MDS data elements: age, sex, month, treatment, nature of injury1, part of body1, intent, location, mechanism, activity (mandatory data elements where "unknown" is allowed).</i>	nn.n%	
<i>Rate of children?</i>	<i>Percentage of children 0-14a</i>	nn.n%	
Quality of estimated rate			
<i>Incidence (ED presentation) rate available?</i>	<i>Crude rate, standardised for age and sex, using Eurostat population projection by 1 January</i>	Y/N	
<i>Valid at national level?</i>	<i>Tick no, if rate is valid at regional level and add name of the region</i>	Y/N	
<i>Recommended method of projection used (or no projection needed)?</i>	<i>HDR-method or EDR-method is used for projection (or IDB-MDS file contains all national cases)</i>	Y/N	
<i>Medical interventions consistently excluded for projection?</i>	<i>If HDR or EDR method is applied: medical interventions excluded in both, IDB and HDR (or EDR)</i>	Y/N	
<i>Follow-up treatments consistently excluded for projection?</i>	<i>If HDR or EDR method is applied: follow-up treatments excluded in both, IDB and HDR (or EDR)</i>	Y/N	
<i>Day-care patients consistently excluded for projection?</i>	<i>If HDR or EDR method is applied: day care patients excluded in both, IDB and HDR (or EDR)</i>	Y/N	
<i>Non-residents consistently included for projection?</i>	<i>If HDR or EDR method is applied: non-residents included in both, IDB and HDR (or EDR)</i>	Y/N	
<i>Random sampling in hospitals?</i>	<i>If sampling within one or several hospitals occurs: Sampling scheme</i>	Y/N	

	<i>prevents from biases</i>		
<i>Known bias (e.g. regarding admissions) corrected?</i>	<i>No bias is known or bias has been corrected by means of external statistics before calculating rates</i>	<i>Y/N</i>	
<i>Data delivery</i>			
<i>MDS data successfully uploaded?</i>		<i>Y/N</i>	
<i>FDS data successfully uploaded?</i>		<i>Y/N</i>	
<i>Reference population data file provided?</i>	<i>Automatic calculation of IR at IDB web-gate will be enabled</i>	<i>Y/N</i>	
<i>List of FDS reference hospitals provided?</i>		<i>Y/N</i>	
<i>National data provider</i>			
<i>National register name (and eventual abbreviation)</i>		<i>nnn</i>	
<i>Name of organization</i>	<i>In national language and English</i>	<i>nnn</i>	
<i>Name of respondent (contact person)</i>		<i>nnn</i>	
<i>E-mail address of contact person</i>		<i>nnn</i>	
<i>Date of completion of this form</i>		<i>DD-MM-YYYY</i>	

Our Partners in IDB

The national IDB-partners that contributed to the “Second technical report on trends in IDB data flow, country comparison and ECHI-injury indicators, 2013-2015” by collecting injury data in accordance with the IDB-methodology and provided their data for analysis at EU-level, are:

- *Austria* *Austrian Road Safety Board*
- *Cyprus* *Ministry of Health*
- *Denmark* *National Institute of Public Health*
- *Estonia* *Ministry of Social Affairs*
- *Finland* *National Institute for Health and Welfare*
- *Germany* *Brandenburg State Dept. for Health and Consumer protection*
- *Iceland* *Ministry of Health*
- *Ireland* *National Suicide Research Foundation*
- *Italy* *National Institute of Health*
- *Latvia* *National Center for Disease Prevention & Control*
- *Lithuania* *National Institute of Hygiene*
- *Luxembourg* *Luxembourg Institute of Health*
- *Malta* *Ministry of Health*
- *Netherlands* *Consumer Safety Institute*
- *Norway* *Norwegian Safety Forum*
- *Portugal* *National Institute of Public Health*
- *Romania* *Babes-Bolyai University*
- *Slovenia* *National Institute of Public Health*
- *Spain* *Health Agency of the Region of Navarra*
- *Sweden* *National Board of Health*
- *Turkey* *Turkish National Public Health Agency*
- *United Kingdom* *Swansea University, College of Medicine*