Developing indicators of injury incidence that can be used to monitor global, regional and local trends

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Foreword

This report is based on an earlier draft that was prepared for the World Health Organization. That report was commissioned by the Department of Violence & Injury Prevention & Disability (VIP), WHO as a background paper to help inform and direct WHO's efforts on injury data and estimates. The report was presented and discussed at the WHO Consultation Meeting on Injury and Violence Data and Estimates, held in Geneva, Switzerland on 4-5 December 2007. This report is a revision to the earlier report based on discussions at and subsequent to that meeting.

1. Background

Why do we need injury indicators?

National indicators are used to:

- identify emerging problems
- monitor and assess trends
- monitor injury prevention performance, eg. when a new national prevention policy / strategy is introduced
- compare injury incidence between countries, which can suggest priorities for research and prevention.

McClure and colleagues described why we need indicators thus: “Quantifying the nature and extent of the population burden due to injury and monitoring improvements that can be ascribed to government initiatives requires that indicators of the injury burden be measured on a routine basis and that they be sensitive to change.” [1] (p252)

What might be measured?

Indicators are used for surveillance purposes and to measure all aspects of preventive performance, including:

- process (eg. the development of a national injury prevention policy action plan for application at local level)
- impact (eg. the degree of coverage in screening older people for falls and fracture risk)
- behaviours (eg. cycle helmet use, alcohol consumption)
- exposures (eg. numbers of road vehicles without airbags)
- incidence (eg. the rates of fatal and serious non-fatal injury)
- long-term outcome (eg. failure to return to work within 6 months following a work-related injury, disability-adjusted life-years)
- cost (eg. direct and indirect costs associated with injury)

This report focuses on indicators of injury incidence.

How will indicators of injury incidence advance the global injury prevention agenda?

We need to measure / monitor how effective we are in regard to our injury prevention performance. If we do not have the tools to do so, how are we to know whether our interventions are having any tangible effects? Using England as one example, it was stated in 1999 [15]:

> "In England, there is no reliable indicator for measuring the occurrence of non-fatal injury. As a consequence, we do not know whether the rates of non-fatal injury are increasing or decreasing." (p184)

There have been two public health strategies in England during the last 15 years, each of which included injury as a priority [2] [3] and it is still not known whether these strategy had any affect on outcomes – whether the rates of non-fatal injury have increased or decreased.

Some might argue that it is enough to monitor fatal injury. The main arguments against this are:

1. fatal injury events represent a small minority of injury incidents and of the burden of injury,
2. trends in fatal injury appear to be coming down, in developed countries, and this appears less to do with injury prevention performance, and more to do with medical intervention post-injury. There is evidence that case-fatality rates have improved as medical treatment and care has improved.

So the focus of this report is both fatal and non-fatal injury incidence.

How will indicators provide all countries (including low and middle income countries) with clear objectives in developing their data capacity?

Indicators are an important cornerstone of surveillance. Without valid indicators, a country is poorly place to describe the size, nature and trends in the injury problems that affect their population.

If one has a clear goal in regard to the development of valid indicators, this will give direction to the nature of the information that needs to be collected as part of this surveillance function.

The word "**valid**" above is key. For example, a fundamental criterion for developing indicators is the availability of data that achieves a certain level of accuracy in regard to important fields – to enable the reliable identification of cases of injury. Accurate diagnostic coding is required to enable appropriate case ascertainment. Furthermore, the reliable identification of the circumstances of injury is required to facilitate the monitoring of key types of injury (eg. motor vehicle traffic crashes (MVTCs), Falls, work-related). In developing new data systems, these are priority considerations. In evaluating existing data systems, audit information is required in order that the quality of data can be assessed – along with its fitness for purpose for surveillance and for indicator production.

How will the process proposed below consolidate the various injury indicators being used for monitoring injury prevention?

This work takes a necessary fresh look at indicators of injury incidence. As we wrote in 2000 [4]:

> "As injury has increasingly become a focus of public health attention, so too have calls for better data to monitor trends, identify emerging problems, and evaluate interventions. Regrettably, insufficient thought has been given to the shortcomings of many indicators for these tasks." (p5)

Our perception is that it is the norm for government departments to propose and introduce indicators with little or no formal assessment of their validity. For example, there are a number of national indicators that are based on hospital in-patient data. These include:

- Number of road users killed and seriously injured in motor vehicle traffic crashes (Canada) – where serious is defined in terms of hospitalisation for at least 24 hours [5]
- Unintentional injury admissions resulting in four or more days stay (England) [3]
- Number of MVTC-related hospitalisations with 1 or more days stay (New Zealand) [6]

Each of these is flawed, in the sense that trends in these indicators may reflect trends in health service utilisation rather than trends in injury incidence. Their potential to mislead has been illustrated elsewhere. [6] [7]

Consequently, this work looks beyond usual practice with the aim of identifying valid indicators; indicators for which countries can produce at least one, depending on the availability and quality of their national data.

Proposed way forward

This work aims to identify valid indicators of injury incidence based on the following data sources:

- Mortality
- Hospital inpatient (IP)
- Hospital Emergency Department (ED)[a]
- Survey

This work is aimed at indicators for which countries can produce some, but not necessarily all. It is recognised that for most countries, they will not have the data to support all of the proposed indicators. For example, some low and middle income countries may only have survey data available and of sufficient quality to derive valid indicators. Consequently the report considers indicators that are based on a variety of data sources.

The report firstly considers definitions, severity measures and validation methods, which provide the theoretical underpinnings for valid indicator development. This is followed by a selected review of the literature aimed at identifying valid indicators. (Our review has been markedly supplemented by a review carried out as part of the European Apollo WP2's Core Project: The Burden of Injuries in EU, shown in Appendix D.) We then recommend indicators relating to each data source, before discussing implementation issues.

It should be noted that we have not attempted a comprehensive review of injury indicators that exist around the world. Such a review would take many months, and perhaps years, to complete, and is unlikely to be very productive, for the following reasons:

- An enormous number of people and government departments around the world have produced indicators
- These are contained, typically, in documents produced in unpublished reports / grey literature by the government departments within each country.

[a] What is meant by this is the place of first contact within the hospital for emergency treatment rather than the trauma inpatient ward. The ED is a clearing house which provides some on the spot diagnosis and treatment followed by discharge, referral to an outpatient treatment facility, and / or admission for inpatient treatment.

- The volume and the medium used would make the collation of material by a single group on who is doing what almost impossible.
- Very few indicator developers consider validity
- Very little is published on these government indicators in the peer reviewed literature.

Nevertheless, we believe it is important that mechanisms are put in place that will enhance sharing of information, debate and discussion. It will be seen later that we recommend that the WHO move towards the development of a website of national indicators which would: (a) record national indicators and specifications; as well as (b) provide information on the validity of those indicators

Aim

The aim of this report is to propose a set of headline indicators of injury incidence, initially for consideration at an Expert Group meeting, and then for consideration by WHO and for further recommendation to member countries.

One critical requirement for the production of indicators is the availability of suitable data sources. No two countries' data sources are identical. In order to make this problem tractable, it is assumed that member countries will have available one or more of the following sources, of sufficient quality (or can put in place such a data system), to permit the generation of indicators of acceptable validity:

- Mortality data
- Hospital inpatient data
- Hospital (Accident and) Emergency Department data
- Survey data.

Specifically then, the aim of this work is to identify valid indicators that can be derived from each of these four sources – from which countries could adopt one or more, depending on the availability of data that is fit for purpose.

Scope of this report

This work is limited to consideration of indicators of injury incidence. The report uses examples relating to all population indicators of “all injury”; however it is likely that this work could be adapted for the development of indicators relating to specific subgroups (eg. children, MVTCs).

There are other important types of indicators that relate to injury prevention. These include indicators of process, behavioural change, hazard exposures, social environment, cost, and longer term outcomes, such as impairment, functioning, quality of life, and behavioural effects. Although the focus of this work is injury incidence, these other classes of indicator deserve consideration at the earliest possible time.

2. Theoretical underpinnings

Indicator Definition

An ‘injury indicator’ has been defined as [8]:
“. . . a summary measure which denotes or reflects, directly or indirectly, variations and trends in injury, injury-related, or an injury control related phenomenon”. (p220)

Synonymous terms for the word ‘phenomenon’ are ‘concept’ and ‘parameter’ – the latter term being particularly familiar to statisticians and epidemiologists. An example of a parameter relating to injury outcome indicators is ‘injury incidence’ within a defined population.

In crude terms, indicators ‘point’. A good indicator is one that points at the target (parameter); a bad one is one that does not (see figure 1; adapted from the MS PowerPoint image library).

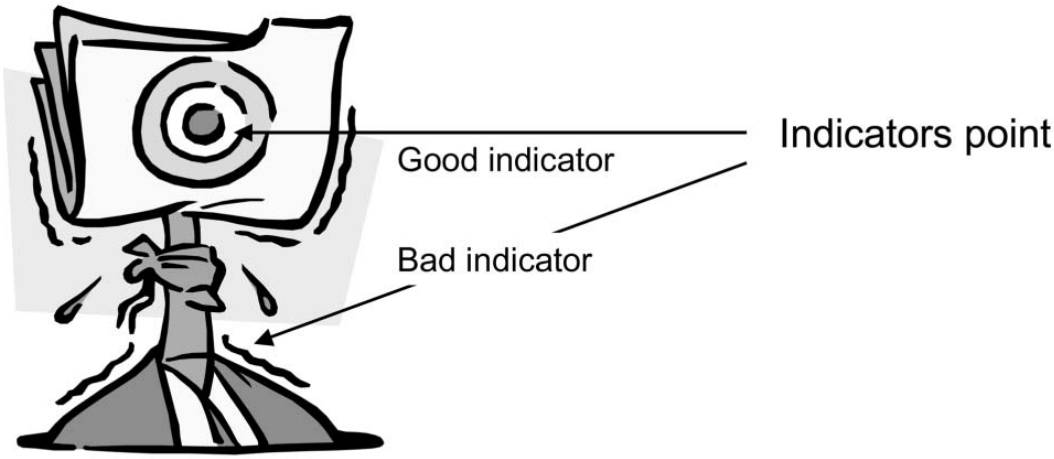

Figure 1

An important first step in indicator development is to specify what it is that is the focus of the indicator, i.e. the parameter. Then the goal is to identify an indicator that “points” at it. This would usually involve proposing and specifying a candidate indicator, and then validating the indicator, i.e. assessing how accurately it points.

Theoretical definition of injury

We take as the theoretical definition of injury that given in the WHO Injury Surveillance Guidelines. [9] That is:

> "An injury is the physical damage that results when a human body is suddenly or briefly subjected to intolerable levels of energy. It can be a bodily lesion resulting from acute exposure to energy in amounts that exceed the threshold of physiological tolerance, or it can be an impairment of function resulting from a lack of one or more vital elements (ie. air, water, warmth), as in drowning strangulation or freezing. The time between exposure to the energy and the appearance of the injury is short". (p5)

There are several variations that have been quoted by other authors; however, they effectively carry the same message.

As has been argued elsewhere, [10] definitions of this nature do not align well with what many in the field consider is the business of injury prevention and control. For example, many consider psychological injury, irrespective of whether there was physical injury, to be a legitimate domain of concern for the field. The difficulty with a definition that includes psychological injury is that no theoretical definition has been proposed and widely accepted which places boundaries on what is to be considered as psychological injury.

The injury definition used in this report is limited to sudden events which result in physical injury, which are manifested very quickly. It excludes psychological injury, as well as musculoskeletal problems due to chronic exposure. The psychological consequences of injury and violence include high risk behaviours, eg.:

- Alcohol and substance misuse
- Unsafe sex
- Eating disorders
- Perpetration of further violence.

These too have not been considered in this report, but are important areas for future research.

Case definition of injury

Mortality

For the fatal injury indicators, the proposed operational definition of an injury is as follows: an underlying cause of death with an external cause code in the International Classification of Diseases 10th revision (ICD-10) code range V01-Y36 (or equivalent for earlier revisions of ICD).

This excludes

- Y40-Y84: “Complications of medical and surgical care”
- Y85-Y89: “Sequelae of external causes of morbidity and mortality”
- Y90-Y98: “Supplementary factors related to causes of morbidity and mortality classified elsewhere”.

Consistent with the International Collaborative Effort on Injury Statistics (ICE) recommendations to tabulate “medical injury” separately from other injuries, we have gone a step further and excluded them from consideration. Also, sequelae of injuries have been excluded, as these relate to the late consequences of an injury, rather than the injury itself.

Obviously, this case definition can only be applied in countries that have national mortality collections, and for which external cause is coded to ICD. If an earlier version of ICD is used (ie. earlier than ICD-10) then we propose the closest fit to the above case definition be used.

Hospital inpatients

Internationally, the most commonly accepted case definition of “injury” is that group of pathologies in the “Injury” chapter of the International Classification of Disease codes (ICD-codes). However, there is some dispute in the international community as to which codes within the ICD injury chapter are in fact injuries.

For the reasons explained in one of our previous publications, [11] it is proposed that cases of hospitalised injury are identified as those that:

- are first admissions,
- have a injury diagnosis recorded in the ICD-10 code range S00-T73, T75, T78 (or the closest fit for earlier ICD revisions)
- satisfies the operational definition of serious injury (see below).

For the reasons given above, the proposed code range excludes:

- Medical injury
- Sequelae
- Psychological injury

The distinction between inpatient and outpatient data (and so between this and the next subsection) does get blurred, for the following reason. There is a grey area represented by hospital cases where admission is classified to 0 days, ie. people who are “admitted” and “discharged” on the same day. The classification of these cases as inpatients or outpatients is not uniform between countries, as well as over time within the same country. It is proposed that hospital inpatient admissions with 0 days stay are excluded.

Hospital Emergency Department (ED) Data

The operational definition of injury for use with ED data needs to be tailored to the data captured and the coding frames used across a wide variety of countries, as well as regions within countries.

If ICD is used for diagnosis and external cause of injury, then in theory, the same operational definition of injury as described for inpatients could be used. However, the use of ICD is unlikely to be common practice. For example, it was used in few of the European systems surveyed by Lyons and colleagues. [12]

This report works from the assumption that a less detailed classification of both diagnosis and external cause are typically used to capture ED data. We are aware of only one “valid” indicator that has been proposed and is based on ED data, and that is the rate of selected radiologically verified fracture (SRVFs - see later). That being the case, our proposed case definition for ED data is limited to the following: fractures of the upper arm; elbow and forearm; wrist including carpal bones, except in age <5 years; pelvis; hip including femoral neck and inter-trochanteric fractures; femoral shaft; knee and lower leg; ankle.

Around 75% of all injury is attributable to mechanical energy, thus fractures have high face validity as an indicator of the underlying pattern in the majority of injury. Nevertheless, there are concerns that this definition excludes some important classes of injury (eg. resulting from violence) including open wounds, penetrating injuries, traumatic brain injuries and concussions, and burns and scalds.

Survey Data

Advantages and disadvantages

In some countries, household surveys may be the only source of injury data. They have the advantage that they can collect detailed information on all types of injury. However, they are costly in time and money, and are prone to bias. [13] Heinen and colleagues also summarise some of the advantages and disadvantages of household surveys as follows [14]:

> 'Household surveys can produce population based estimates of injuries that may stand on their own or may supplement surveillance systems tied to medical care. They are not subject to the same biases as medical records reviews. For example, household surveys can obtain a wealth of detail on the circumstances of the injury, which are often not in the medical record, and they can capture injuries that were not medically treated. They are, however, subject to different types of bias such as non-response and recall bias.' (p327)

The WHO guidelines for conducting community surveys present a table (Table 1, page 7 of the WHO guidelines) that shows the advantages and disadvantages of hospital-based surveillance and community survey. [13]

Given that our proposed focus is on non-trivial injury (ie. not minor cuts, bruises and other superficial injury), one disadvantage of household surveys is that, given injuries other than minor and superficial injuries are relatively rare events, survey sample sizes must be very large in order to be able to count injury events with an acceptable level of precision.

Case definition and severity thresholds

The WHO report on "Guidelines for Conducting Surveys on Injury and Violence" includes a section on case definition for surveys. To quote [13]:

> 'For the purposes of your survey you will need to determine your "case definition", that is to say, decide on what type of injury cases will be included in the survey. This is usually a matter of distinguishing between degrees of severity of injury and is thus sometimes known as a "severity threshold". For example, you may wish to include only those cases in which injury leads to

medical treatment. In this case you will need to include a screening question at the beginning of your survey tool that seeks this information. The table in Appendix 3 illustrates the range of case definitions that have been used for community surveys on injuries by various researchers in the past.' (p28)

The table in Appendix 3 of that report is restricted to the surveys in 9 low and middle income countries, along with a multinational survey. The case definitions for injury, where a severity threshold is used, include injuries that resulted in death (4 countries), or injuries serious enough to warrant medical treatment / use of a health care provider (3 countries), and / or affect normal activities for a specified period (2 countries). A severity threshold was not included for 3 of the 9 countries, as well as in the multinational study tabulated. The WHO document "Guidelines for Conducting Surveys on Injury and Violence" does not include a recommended screening question, and by implication no recommended case definition.

A previous recommended case definition

In their review of 14 household surveys around the world (high middle and low income countries), Heinen and colleagues reported in 2004 that there was no standard or recommended set of injury-related questions for inclusions in household surveys[b]. [14] Nevertheless, some of that team made a presentation to ICE in 2002[c] reviewing selected surveys around the world. They identified a number of crucial issues that affect response to surveys or the reporting of findings. These include:

- recall length (taking into account memory decay, telescoping, heaping and statistical precision),
- choice of severity threshold (for which they focused on the problems of using injury resulting in medical treatment or advice),
- the unit of analysis (eg. person, event, most recent injury),
- survey frequency,
- length, complexity, and use of embedded examples in screener questions,
- placement in a larger survey,
- use of a narrative introduction,
- survey length.

As a result of this work, the US screening questions for injury were modified to:

- During the past 3 months, that is since ##, did you have an injury where any part of your body was hurt, for example, with a broken bone, sprain, burn, wound, cut, bruise, or animal or insect bite?

[b] This review included some of the same countries as in the WHO report Appendix 3.
[c] http://www.cdc.gov/nchs/about/otheract/ice/projects.htm#Household%20Surveys

- During the past 3 months, how many times were you injured?
- Did you talk to or see a medical professional about any of these injuries?
- Of the # times that you were injured, how many of those times was the injury serious enough that you consulted a medical professional?

A similar set of questions were devised for poisonings. For reasons given later, the use of a case definition based on the use of health services is problematic.

Our proposed case definition

Given that the case definitions used in /implied by[d] the surveys of each country are all unique, the best that can be done is to propose a case definition, and seek to move other countries to the same or a similar case definition. As seen in the next section, we propose a case definition based on injury that leads to death or to restricted activity - rather than one based on the use of medical treatment or a health care provider. No definition is free from problems, however.

Severity of injury measures

Hospital inpatients

It has been our experience that large administrative sets of non-fatal injury data (e.g. hospital discharges) cannot be used to produce valid indicators without the careful choice of cases. Typically, biases in these data[e] can be minimised by using a severity threshold for the case definition. A discussion of these issues is provided elsewhere. [4] [15]

An expert group meeting on injury severity measurement, convened by Lois Fingerhut (NCHS, USA), met in 2004. Their focus was the feasibility of adding a measure of injury severity to NCHS national administrative datasets "to help monitor trends in injury incidence, and assess injury differences in population subgroups" – with a primary focus on inpatient data and a secondary focus on ED and mortality data. Some key recommendations from this meeting were:

[d] Implied by the statements in the injury section introduction within the questionnaire, and or by the injury screening questions.
[e] For example, admissions are influenced by socio-demographic, service supply and access factors independent of injury; compensation claims are influenced by personal and health service factors, employment status, and business cycle, independent of injury.

- The software to convert ICD to AIS (ICDMAP) should be updated
- ICISS (see below) is a useful alternative to the current non-updated mapping of ICD to AIS
    - ICISS scores are empirically derived
    - Recent studies have found the ICISS to perform better than its rivals (ISS, NISS, APS derived from the current version of ICDMAP). [16]

For hospitalisations, we have previously derived threat-to-life severity scales from the Australian modification of the ICD-9 injury diagnosis. In that work, we compared four measures based on the Abbreviated Injury Scale (AIS) with the International Classification of Diseases-based Injury Severity Score (ICISS). We found that ICISS was one of the best performing measures. [17] It also has the advantage that ICISS scores can be derived directly from the ICD injury diagnosis codes. [17] [18] This contrast with direct AIS scoring that requires coder training and a review of each file. This would be impractical for most national all cause injury inpatient systems.

The ICISS approach to deriving anatomical severity has been tested in a number of settings [17] [18] [19] [20] [21] [22] [23] Previous research work has tended to be based on patients treated in specialist facilities (e.g. trauma centres) and as such are atypical of all seriously injured persons. The New Zealand work was based on all patients whose inpatient treatment was publicly funded. [17] [18] We believe that hospital in-patient data-based serious non-fatal injury indicators, where “serious” is defined in terms of an ICISS threshold, are the best that can be identified for national use, based on existing research and development. One important limitation of ICISS for the development of global indicators is that they depend on diagnosis specific survival rates (SRRs), and these vary from country to country. One country’s SRRs may not be applicable to another country.

When setting the severity threshold for inpatient data for serious non-fatal injury indicators, the goal is to capture just those injury diagnoses with a high probability of admission. If this were achieved, then we would be confident that any trends that we observed reflected changes in the incidence of serious threat to life injury rather than reflecting changes over time in extraneous factors such as improvements in diagnosis and therapy.

In choosing the threshold for serious non-fatal injury indicators based on hospital admissions, the goal is to capture as many serious injuries as possible, without compromising the requirement that they have a high probability of admission to hospital. In New Zealand, using ICISS scores based on New Zealand hospital discharge data coded to ICD-10-AM, we have used an ICISS threshold of

ICISS≤0.941. This threshold was chosen to include cases of fractured neck of femur, which we know have a very high probability of admission. [24] If the threshold was made more stringent, many of these fracture cases were not included. If it was relaxed, injuries that could have been treated in outpatient clinics were captured. Hence, the chosen threshold was regarded as a reasonable compromise. [25]

This severity threshold includes the majority of the following injuries: fracture of the neck of femur, intracranial injury (excluding concussion only injury), injuries of nerves and spinal cord at neck level, multiple fractures of the ribs, asphyxia, hypothermia, and many other injury diagnoses of similar severity or which are more serious. The full list can be found in an appendix (pages 92-97) to our indicator development report. [26]

Given the caveat above, that one country's SRRs may not be applicable in another country, we propose that the ICD-10 diagnoses associated with an AIS score of 3 or more be classified as having a serious threat to life injury. If someone experiences an injury with an AIS score of 3 or more, then they would be classified as a case of serious threat to life injury. It would be feasible for any country with ICD-10 coded IP data to apply this definition. If earlier revisions of ICD are used, then the diagnoses that provide the closest fit would define a case of serious injury.

Hospital ED data

As mentioned previously, we are aware of only one valid indicator that has been proposed and is based on ED data. That is selected radiologically verified fracture (SRVFs). This was chosen by the EUROCOST group [12] since it was found, in Wales, that the likelihood of ascertaining a case of more minor injury was affected by distance from hospital. That is, there was a significant decline in the rate of childhood injuries attending ED as distance from hospital increased. An exception to this was fracture. [27]

That being the case, and similar to Lyons and colleagues, our proposed case definition for ED data is limited to selected fractures. [12] These include: fractures of the upper arm; elbow and forearm; wrist including carpal bones, except in age <5 years; pelvis; hip including femoral neck and inter-trochanteric fractures; femoral shaft; knee and lower leg; ankle. These can be labelled as moderately severe and serious injuries – consistent with the nomenclature of AIS [28]. The limitations of this definition have already been noted.

Survey data

No severity definitions used in surveys are without problems. Many of the surveys adopt a "severity" threshold for their definition of injury. This is often health service utilisation related: consulting a health professional, seeking medical advice, receiving medical treatment, etc.. This type of "severity" threshold is problematic for the reasons described above and reported previously. We propose a threshold based on limitation of normal activities for one or more days. This is consistent with the Ghanaian survey, part of the definition used in the Bangladeshi and Spanish surveys and is similar to that used by Denmark and England. Additionally, the following countries have a variant of this included at least as part of their severity threshold: Australia, Canada, Germany, and Pakistan (see Table 1 of Heinen 2004 [14]). This represents half the countries surveyed by Heinen and colleagues.

Validity of indicators

Existing and newly proposed indicators should be subject to formal validation. What we mean by validity is: the degree to which the concept under study is accurately represented by the particular measuring device (ie. an indicator is valid when it measures what it is presumed to measure – namely the target parameter). For instance, the intention may be to measure trends in serious motor vehicle traffic crashes (MVTCs). If the indicator selected for this purpose relies on MVTCs reported to the police (i.e. Traffic Crash Reports - TCRs) then we would not consider this to be valid, since there is evidence to demonstrate that such data underestimate the incidence of serious crashes (e.g. as defined by admission to hospital for serious injury) and that this underestimation varies significantly by road user and type of crash. [29] [30] These biases can change significantly over time, so influencing the trends in serious MVTCs and so compromising validity.

Methods of validation are described in the Section 4.

3. Issues related to the development and validity of injury indicators.

Approaches to indicator development

The following method was used for the development of injury outcome indicators in New Zealand to support their injury prevention strategy [25]:

- Identify the parameter or concept that the indicator aims to reflect.

- Review existing indicators
- Assessment of the availability and quality of national data sources
- Taking cognisance of the availability and quality of national data sources, if necessary, propose and specify new indicators.
- Validate the proposed indicators.

Note, an important first step in indicator development, according to Cryer, Langley and colleagues, is to specify what is the focus of the indicator – the parameter or concept that the indicator aims to reflect. [8]

In Australia, Harrison and Steenkamp suggested a number of steps to improve indicator reporting. [31] These included:

- Specification of the indicators according to a set of technical criteria (ie according to the framework for specification);
- Restriction of cases to those with anatomical/physiological damage;
- Omitting 'same day' cases from hospital data (ie cases admitted and discharged on the same day) since there was great variability in the proportion of these cases between states and territories;
- Specifying mortality indicators in terms of date of death and not date of registration.

The New Zealand and Australian approaches complement one another.

Issues regarding non-fatal injury indicator development

Below is a brief synopsis of the issues. A more complete discussion is included in Appendix B.

Agreeing a case definition of injury

The case definition of injury varies from country to country. Lyons and colleagues overcame this problem by identifying common elements to the definitions used, and agreeing definitions that each country could adhere to. [12] The particular indicator that they chose was based on a list of diagnoses. In proposing some of the indicators, we have also adopted this approach.

Availability of comparable data

All health systems are different from one another, so each country's hospital ED and inpatient data will capture a different universe of events. Restricting consideration to specific injuries, most of which are likely to be captured by the chosen data source, provides a potential solution.

Minor versus serious injury

Cryer and colleagues have argued that minor injury do not reflect the main burden of injury and so indicators should not include minor injury. [32] By "minor" was meant injury that carries no or little threat to life, threat of disability or cost. Lyons has argued that injury that is treated at an ED (but not admitted as an inpatient) contribute significantly to the societal burden of injury. [33] However, in a separate publication describing their work on the development of an indicator based on ED data for use across 10 countries in Europe, Lyons and colleagues argued that, for minor injury, care by general practitioners / family physicians or self-care is an option – so the use of ED data would result in incomplete ascertainment of minor injury. [12] They chose an indicator, therefore, that excluded minor injury.

Definition of serious injury based on days stay in hospital

Rates of injury discharges from hospital or rates based on a length of stay in hospital threshold, and indicators based on them, show changes over time and place that may be due solely to service factors.

Definition of “serious” based on serious anatomical damage.

One option in choosing a case definition of “serious” injury is to identify a set of diagnoses that can be regarded as “serious”. One threat-to-life severity scale is the AIS - and diagnoses that carry an AIS score of 3 or above have been described as “serious”. Such injuries have been found to be associated with a high likelihood of admission to hospital. [15] [34]

Cryer and colleagues proposed a set of diagnoses, serious long bone fractures, as the basis for an indicator on the basis that they have an AIS severity score of 3 or more, and so have a high probability of admission to hospital. [15] Lyons challenged this. [35] Along similar lines, Lyons and colleagues proposed an indicator based on selected radiologically verified fractures that, according to Welsh evidence, the likelihood of treatment in ED appears not to be affected by extraneous factors. [12]

Despite the disagreements, an indicator case definition of serious injury based on selected injury diagnoses is a strategy that can be effective in removing the extraneous factors from trends in incidence (rates).

Use of a severity threshold to remove service effects

An alternative approach to using a list of specific injury diagnoses to define an indicator, for which service effects are minimised, is to use a severity threshold based on a severity score such as ICISS. [18] Concern was expressed about the injuries captured by the particular ICISS threshold used for the New Zealand (NZIPS) national indicators [25]; that they do not necessarily represent injury with a high probability of admission – and so indicators based on this threshold may still be subject to service effects. [33] This criticism does not question this approach; rather it questions the threshold chosen. Ideally the choice would be informed by empirical estimates of the probability of admission.

Threat to life versus threat of disability

The use of an ICISS threshold as the case definition of serious injury has been criticised for focussing on only one dimension of "serious", namely threat to life. [35] This should not be seen as a criticism of threat to life measures per se, but rather that developing a suite of indicators based solely on threat to life is suboptimal. The development and adoption of some threat of disability indicators is a priority.

Indicator specification

An important step when proposing a new indicator is the development of the indicator specification. A specification is needed so that the indicator can be replicated consistently across time, and between places and populations. [5] Also, a specification is needed for the next step in the development, validation.

Validation of indicators

The New Zealand group have expressed strong views about the need for validation: "before newly proposed indicators are promulgated, they should be subject to formal validation". [7] [25] Lyons has labelled this approach 'a search for perfect indicators' – and have criticised this approach on the basis that no such thing as a perfect indicator exists. [35] Nevertheless, Lyons and colleagues do use a face validity argument to justify their choice of indicator based on ED data. [12]

4. Validation

Previous work suggests that many indicator developers do not validate their indicators before they are promulgated. [26] [5] The purpose of this validation is to reduce the number of misleading indicators being used by policy makers and practitioners. If we do not get the “indicators right”, then financial incentives to address an important injury problem may be inappropriately reduced or withdrawn, and moved to less deserving areas. [36]

There are several types of validation approaches that can be used. These include [7]:

- Face validity
- Criterion validity
- Consistency
- Completeness and accuracy of source data

Face validity

Face validity can be assessed through consideration of the indicator against formal validation criteria. Face validation criteria were agreed at a meeting of ICE in 2001. [5] Furthermore, it was agreed that it is highly desirable for an indicator to conform to as many as possible of these criteria (the ICE criteria), which are shown in Box 1. These criteria were developed solely in the context of indicators of injury incidence and, within that, on the characteristics of the incident cases.

Since the 2001 ICE meeting, at which these criteria were agreed, other criteria have been suggested. A list of these (including the ones shown in Box 1) is shown in Appendix C.

In the ideal world, scoring methods associated with the validation criteria would be developed, along with strong guidelines for their use by raters. [5] There is a dearth of literature on how one should tackle scoring of the validation criteria. Given that is the case, such a development is a future aspiration.

It is proposed that the criteria shown in Appendix C form the basis for the initial validation of any indicators that are proposed - before implementation.

Box 1. The International Collaborative Effort on Injury Statistics criteria

1. **Case Definition.** The indicator should reflect the occurrence of injury satisfying some case definition of anatomical or physiological damage.
2. **Serious Injury.** The indicator should be based on events that are associated with significantly increased risk of impairment, functional limitation, disability or death, decreased quality of life, or increased cost (i.e. serious injury).
3. **Case Ascertainment.** The probability of a case being ascertained should be independent of social, economic and demographic factors, as well as service supply and access factors.
4. **Representativeness.** The indicator should be derived from data that are inclusive or representative of the target population that the indicator aims to reflect.
5. **Data Availability.** It should be possible to use existing data systems, or it should be practical to develop new systems, to provide data for computing the indicator.
6. **Specification.** The indicator should be fully specified to allow calculation to be consistent at any place and at any time.

Criterion validity

For this approach the indicator is validated against a “gold standard” or some future outcome. The types of measures associated with this approach are the sensitivity, specificity, positive and negative predicted values, and the area under a receiver operator characteristic (ROC) curve. McClure and colleagues validated SLBFs as an indicator of serious injury using this approach - and this work provides one of the only examples that we are aware of that examined the criterion validity of indicators. [1] However, the ‘gold standard’ used was criticised. [7]

Consistency

This involves the investigation of historical trends across a range of indicators based on differing severity thresholds, including the use of a ‘gold standard’ indicator if available. If these show contradictory trends, then this is a cause for concern. [7] The investigations of trends in MVTC crash injury, as well as in head injury, for a variety of severity thresholds, are examples of this approach. [6] [37]

Quality of data

The quality of the data from which an indicator is derived has a major affect on the validity of an indicator. If the data includes inaccuracies in key fields (eg. diagnosis) this will have a major impact on case ascertainment and so potentially compromise the validity of the indicator. Additionally, for indicators derived for certain priority areas, such as falls, MVTCs, etc., poor external cause of injury coding can again affect case ascertainment.

Deaths

Diagnosis

There is the potential for under-ascertainment of injury cases for older people. For example, deaths from falls in people aged 65 and over are often due to complications that result from the falls injury, eg. pneumonia or other infection. Similarly, where an operative procedure is necessary (eg. to repair a hip fracture), and the patient has an underlying heart condition, for example, the death could result from the failure to recover from the operation due to the concomitant pathology. In these instances, the certifying physician may incorrectly list these complications and not the fall or the falls' injury as the underlying cause of death. [38]

Problems of inaccurate diagnosis captured on electronic databases may not be as extreme for other age groups (i.e. children and adults of working age). In a recent report from the US CDC, the authors comment that they expect accuracy of diagnostic coding to be high. [39]

Inaccuracies in diagnosis codes would affect the ascertainment of relevant cases for proposed indicators.

External cause

For people who died in hospital, a Swedish study compared the ICD-9 external cause of injury coding of death certificates against that coded to hospital discharge records. [40] They found that the underlying cause differed at the 3-digit level for more than 50% of the linked records. The suggestion was that the greatest inaccuracies were for the death records.

Work from the USA indicated the following: “lack of specificity with regard to the circumstances of injury and inconsistencies in the definition and specification of the manner or intent of death may contribute to bias for some injury deaths.” (p17) [39]

Hospital inpatients

Diagnosis

Campbell and colleagues (2001) carried out a review of 21 studies in Great Britain that had investigated diagnostic and operative procedure coding accuracy, nine of which investigated the accuracy of ICD-9 coding. [41] Many of these considered all diagnoses (of which injury is a small part) or non-injury diagnoses. Those published prior to 1995 exhibited worse than 75% diagnostic coding accuracy; whereas those published in 1995 and since showed better than 75% accuracy.

In one study, included in the above review, for fracture of the femur the 3-digit level of agreement was better: 84% and 89% in two hospitals. This excluded older people aged 75 and over, who have the highest risk of femoral fracture, but for whom there can be a problem of identifying principal diagnosis due to the high incidence of co-morbidity. [42]

An Australian study investigated the accuracy of ICD-9-CM codes (an extension of ICD-9) for a sample of 480 discharges with a principal diagnosis of injury, and found 81% agreement in a coding audit of principal diagnosis. [43] In New Zealand, for discharges in the period 1996-98 coded to ICD-9-CM-A, 95% of principal diagnosis codes were correct. This reduced to 74% at the 5 character level, and 86% at the 3 character level, for discharges from hospital during the period 2001 to 2004 that were coded to ICD-10-AM. [44] [45]

External cause

Agreement in external cause coding between what was recorded on the hospital record and the code on reassessment by an expert coder (gold standard) was:

- Victoria, Australia – ICD-9-CM - 84% [43]
- USA - ICD-9-CM - 67% of cases there was agreement at the 4-digit level, a further 7% at the 3-digit level, and a further 8% at the section level [46]
- USA - 85% for E-codes, with 95% agreement for intent. [47]
- New Zealand – ICD-9-CM-A (4^{th} digit level) – 82% [44]
- New Zealand – ICD-10-AM (4^{th} digit level) – 71% [45]

Summary

One important message that can be taken from the above is as follows. In the absence of published audit studies to assess the accuracy of diagnostic and external cause, one cannot presume these data are accurate. Inaccuracies in the numerator data could be important threats to the validity of our proposed indicators. At these levels of misclassification, this could result in inaccuracies in case ascertainment, and a threat to the validity of indicators.

5. A selection of indicators

Previous work has argued very strongly that the injury control-related phenomenon that the indicator aims to reflect should be the incidence of serious injury, and not minor injury. [4] [6] [8] [15] [26] [32] What is meant here by 'minor' is injury that represents no or minimal threat to life, threat of disablement or loss of quality of life, and has minimal cost. The indicators described in the selected review below exclude those that reflect the incidence of minor injury.

Below is a selection of indicators of all cause injury incidence organised by outcome (death, hospital inpatient, ED, survey). This is simply a list, with no commentary on the likely validity of the indicators listed. A much more extensive list of indicators has been produced as part of the Apollo WP2's Core Project: The Burden of Injuries in EU. A spreadsheet showing some summary information relating to those indicators is included in Appendix D.

Mortality

- Estimated mortality rate from external causes, adjusted for age (WHO Regional Core Health Data Initiative)[f]
- Estimated mortality from external causes (not standardised) (WHO Regional Core Health Data Initiative)
- Age-standardized mortality rate for age per 100,000 population (WHO Statistical Information System)[g]
- Mortality rate of children aged 0-14 years due to physical injuries (WHO Global Initiative on Children's Environmental Health Indicators)[h]
- The death rate from unintentional injury in children aged 14 and under (similar for people aged 15-4 and older people aged 65 and over) (England - The Health of the Nation) [2]
- Death rate for injury and poisoning in the total population (Australia - National Health Priority Areas) [48]
- Age-standardized injury mortality rate, per person-years at risk (New Zealand Injury Prevention Strategy) [25]
- Number of injury deaths (New Zealand Injury Prevention Strategy) [25]

[f] http://www.paho.org/English/SHA/glossary.htm
[g] http://www.who.int/whosis/whostat2006.pdf
[h] http://www.who.int/ceh/indicators/indicators2003/en/index.html

Hospital inpatient

- Hospital separation rate for injury and poisoning in the total population (Australia - National Health Priority Areas) [48]
- Age-standardised rate of serious long-bone fractures (The pan-European CHILD project) [15]
- The rate of injury resulting in 4 or more days stay in hospital (Saving Lives: Our Healthier Nation) [3]
- Age-standardized serious non-fatal injury rate, per 100 000 person-years at risk (New Zealand Injury Prevention Strategy) [25]
- Number of serious non-fatal injuries (New Zealand Injury Prevention Strategy) [25]

Hospital ED

- Age standardised emergency department-based annual incidence rate of selected radiologically verified fractures (SRVFs), relating to home and leisure incidents (Proposed indicator from the EUROCOST project) [12]
- Emergency department attendances resulting from product-related injury (Australia - National Health Priority Areas) [48]

Survey

- Incidence of physical injuries to children aged 0-14 years requiring treatment (WHO Global Initiative on Children's Environmental Health Indicators)
- Attributable change in incidence of physical injuries to children aged 0-14 years requiring treatment (WHO Global Initiative on Children's Environmental Health Indicators)[i]
- The rate of accidents - defined as those that involve a hospital visit or consultation with a family doctor (England - Our Healthier Nation: A contract for health) [49]

Although there is an indicator group within ICE, it has focussed mainly on tools, concepts and issues; it has not proposed a set of ICE indicators. Tools include the ICE validation criteria described in a previous section.

[i] Attributable change is "the percentage (or number) of fewer or additional accidents to children as a direct or indirect consequence of the intervention". http://www.who.int/ceh/indicators/injuries.pdf

6. Lessons learned from these efforts

The issues identified in Section 4 lead directly to the following lessons learnt:

- Case definitions of injury need to be agreed for each of the data sources from which the proposed indicators will be derived. The case definition should be specified in terms of anatomical and/or physiological damage.
- The scope of the proposed indicators should be determined by the coverage of these data sources.
- The case definition should avoid the inclusion of minor injury. In regard to the use of hospital IP and ED data, there is a practical reason for this, namely to develop a definition that achieves close to complete case ascertainment, thus minimising the effects of extraneous service factors on the indicators.
- Case definitions specified solely in terms of service utilisation (eg. Hospital IP first admission, hospital admissions resulting in a greater than 3 days stay, first attendances at ED) should be avoided.
- When specifying serious non-fatal injury indicators, the meaning of “serious” (eg. threat to life, threat of disability) should be made explicit. Additionally, case definitions that have been found to have some merit include (a) a specification of particular diagnoses that represent serious injury, or (b) those that involve a severity of injury threshold, or both.
- Severity thresholds should be chosen, or diagnoses chosen, such that the effect of extraneous factors (including service utilisation factors) are minimised.
- Serious injury on the threat to life and threat of disability dimensions are complementary, and so ideally indicators should be chosen along both dimensions. Currently, however, we have been unable to identify any published and validated serious threat of disability measures that can be used for indicator development.
- An important step is indicator specification, so that the indicator can be replicated consistently across time, between places and populations.
- It is important to use, where possible, validated indicators to reduce the chances of misleading trends. That validation may be solely face validation, eg. using the methods described in this report. However, the accuracy and limitations of the data base from which the indicator is to be derived, should be known so that an assessment of the validity can be made.

7. Recommendations for the strategy

Proposed indicators

Mortality data-based

- M1: Number of injury deaths.
- M2: Age-standardized injury mortality rate, per person-years at risk.

The proposed source of this data includes survey data, as well as mortality data systems derived from death certificates and coroners' reports.

Hospital inpatient data-based

The proposed inpatient indicators exclude repeat admissions, as well as those cases that are admitted and discharged from hospital on the same day (for reasons discussed earlier in this report).

- IP1: Number of serious non-fatal injuries.
- IP2: Age-standardized serious non-fatal injury rate, per 100 000 person-years at risk.

It is proposed that “serious” be defined in terms of threat to life, for the simple reason that no published, validated, threat of disability injury indicators have been identified. However, we strongly recommend that additional indicators be added to those listed above, once valid indicators are identified.

It is further proposed that serious threat to life injuries be defined in terms of maximum AIS score of 3 or more. That is, the definition of serious be given by a list of diagnoses; these are the diagnoses that have an AIS score of 3 or more.

Hospital ED data-based

The following ED data-based indicators originate from the work of the EUROCOST group.

- ED1: Number of selected fractures
- ED2: Rate of selected fractures, per 100,000 person-years at risk.

Selected fractures include fractures of the upper arm; elbow and forearm; wrist including carpal bones, except in age <5 years; pelvis; hip including femoral neck and inter-trochanteric fractures; femoral shaft; knee and lower leg; ankle.

We also propose that, if at all possible, radiologically verified fractures be used.

We recognise that these proposed indicators exclude some important moderately severe or serious injury diagnoses.

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Survey data-based

One of the limitations of using survey data for indicators, to monitor trends or variations, is that surveys must be carried out regularly, and with almost identical methods. Otherwise, any trends that are observed could be an artefact of changing methods rather than reflecting changing incidence of injury. In this subsection, we assume that these conditions hold.

Many of the surveys adopt a “severity” threshold for their definition of injury. This is often health service utilisation related: consulting a health professional, seeking medical advice, receiving medical treatment, etc.. This type of “severity” threshold is problematic for the reasons described in this report. We propose, therefore, a threshold based on limitation of normal activities for one or more days.

- S1: Number of injuries resulting in limitations of normal activities for one or more days.
- S2: Rate of injuries resulting in limitations of normal activities for one or more days, per 1,000 person-years at risk.

The development and agreement of the specification of all of the above proposed indicators is the next step, followed by validation of each of the proposed indicators.

8. How should we move forward?

Fundamental to moving forward is the extent and quality of data captured by each country. The choice of indicators that a country makes will be strongly influenced by the existence of, as well as completeness and accuracy of, their mortality, hospital inpatient, ED, or survey data. The above indicators were presented for discussion at the WHO Consultation Meeting – with a view to them being recommended to the WHO as well as to member countries.

In this report, we would have liked to have presented a comprehensive list of national injury indicators that are used around the world. This was impossible for the following reasons:

- A large number of people and government departments are producing indicators
- In most cases, information on the completeness and accuracy of the data sources for these indicators is not reported.
- These are contained, typically, in documents produced by the government departments within each country.
- The volume, and the medium (grey or unpublished literature) made the collation of information on who is doing what impracticable for this report.
- Very few indicator developers explicitly consider validity
- Very little is published on these government indicators in the peer reviewed literature

It is thus important that mechanisms be put in place which will enhance the sharing of information, debate and discussion. We propose and recommend the following:

Proposal

That the WHO develops (or supports the development of) a website of indicators which would:

(a) record national indicators and specifications; as well as

(b) information on validity of those indicators.

This will provide the opportunity to identify other, and possibly better, indicators for national and international use in the future.

Recommendation

We recommend additional research in LMICs around what injury severity measures are feasible within these countries, and hence what valid indicators it is feasible to produce.

9. Implementation

Some key issues that will maximise the likelihood of uptake of the proposed indicators are as follows:

- getting “buy-in” from the WHO and member countries,
- the WHO and member countries / departments giving up their traditional approaches to indicators and indicator development,
- the existence of one or more data sources fit for purpose for the generation of the indicators
- financial and person resources to generate the proposed indicators.

Indicators that are finally recommended should be implementation in as uniform a manner as possible across participating countries. A necessary next step in this is the clear specification of the indicator; a specification that makes explicit the scope, case definition and the method of calculation of the indicator. This should be followed by the validation of each of these indicators.

We finish with some final comments on the case definition.

The case definition should be made explicit within the indicator specification and, building upon the lessons learnt, should have the following characteristics:

- cases should be defined in terms of anatomical / physiological damage and / or severity of injury
    - it should be made clear in the definition what dimension of severity is implied by the case definition (eg. threat to life, threat of disability)
    - the case definition can be made explicit through a list or range of diagnoses that can be regarded as (moderately) severe injury or through use of a severity threshold
    - the severity threshold should be chosen such that the effect of extraneous factors (eg. service utilisation factors that are not associated with the severity of injury) are minimised.

An important step before indicators are implemented is their validation (which itself needs an explicit specification of the proposed indicator). This should include an assessment of the database on which the proposed indicator is based – to assess whether it is fit for purpose.

The whole of this report has considered indicators of injury incidence that result from all causes and all intents. Once these are agreed, it is important that indicators relating to aspects of preventive performance (see Background, “What might be measured”) and key priority areas (eg. violence) be considered in a similar manner to the above.

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11. Appendix A: Glossary

ED	Hospital Emergency Department (called in some countries Accident and Emergency)
ICE	International Collaborative Effort on Injury Statistics
IP	Hospital inpatient
LMICs	Low and Middle Income Countries
MVTCs	Motor Vehicle Traffic Crashes
NZIPS	New Zealand Injury Prevention Strategy
SLBFs	Serious long bone fractures
SRRs	Survival Rate Ratios
SRVFs	Selected radiologically verified fractures
TBI	Traumatic Brain Injury
TCRs	Traffic Crash Reports
WHO	World Health Organization

12. Appendix B: Issues related to the development and validity of injury indicators.

Agreeing a case definition of injury

The case definition of injury varies from country to country. Lyons and colleagues overcame this problem by identifying common elements to the definitions used, and agreeing definitions that each country could adhere to. [12] The particular indicator that they chose was based on a list of diagnoses. In proposing selected indicators, we have also adopted this approach.

Availability of comparable data

Within their work carried out across 10 European countries, Lyons and colleagues identified hospital inpatient data and ED data as potential sources. Neither source was completely comparable, since all health systems are different. Each inpatient data system, for example, will capture a different universe of events. Additionally, definitions are likely to be different from country to country, including the definition of a record (which can relate to a person, an injury, a package of care, etc.). [12] In their case,restricting consideration to ED data for selected unintentional injury, and to home and leisure injuries provided a solution. [12]

Minor versus serious injury

Cryer and colleagues have argued that minor injury do not reflect the main burden of injury and so indicators should not include minor injury. [32] Minor injuries have little impact on the individual (little threat to life, minimal disability, low cost), and some evidence suggests that they represent low societal cost. [8] They argue further that the parameter of interest that the indicator aims to reflect should not be the incidence of minor injury. [4] [6] [8] [15] [26] [32]

Previous and ensuing discussions of minor injury have, in some instances, clouded the issue through the use of definitions of minor injury that include injuries with significant outcomes. In his 1996 paper, McClure argues that we should aim for population prevention strategies that all severities of injury; however, His examples of “minor” injury indicate that what he is referring to as “minor” are injuries with a low threat to life but significant (threat of) disability. [50] We would label these injuries

"serious". In a later paper, he argues for the inclusion of minor injury indicators, however minor is defined in terms of ISS<16. This includes many injuries that result in death, intensive care treatment, long hospital stays, etc. [1] Consequently, ISS<16 injury cannot be defined as minor using any reasonable definition.

Lyons has argued that injury that is treated at an ED (but not admitted as an inpatient) contribute significantly to the burden of injury. He further argues that serious injury events are relatively rare, and so can produce statistics whose precision is low. The use of data sources that capture many minor and moderately severe injuries can be the basis of indicators of higher precision. [35] In a separate publication, describing their work on the development of an indicator based on ED data for use across 10 countries in Europe, Lyons and colleagues argued that, for minor injury, care by general practitioners / family physicians or self-care is an option – so the use of ED data would result in incomplete ascertainment of minor injury. [12] They chose an indicator, therefore, that excluded minor injury.

Concern has also been expressed with the use of ED-based indicators that include minor injury. "If one were successful in reducing injuries that require visits to the ED, there is a risk that this might reflect success in reducing minor injury, but not serious injury". [8]

Indicators based on attendance at any medical practitioner

In their paper of 2002, McClure and colleagues support the use of an indicator based on injury that results in attendance at any medical practitioner: They state: "The findings of this study strongly support a return to a measure similar in intent to that encapsulated in the original UK "Green Paper', which defines an important injury as one sufficiently serious to trigger a visit to a medical practitioner". (p256). [1] However, the empirical evidence they quote in their paper to support this statement is based on hospital inpatient data only. Given that the majority of attendances at a medical practitioner will occur outside of hospital, the evidence they present has little relevance. [7]

Definition of serious injury based on days stay in hospital

Rates based on injury discharges from hospital or rates based on a length of stay in hospital threshold, and indicators based on them, show changes over time and place that may be due solely to service factors.

Lyons identified many factors that influence admission to hospital that are not strongly related to the severity of injury. [35] These include bed/theatre availability, distance from home to hospital, patient preference, concern about intentionality (eg. child abuse), etc. “This means that inpatient data are rarely an accurate reflection of the influence of injury, as different hospitals will admit and operate on varying proportions of people with particular injuries”. [35]

Trends in hospital admissions as a result of injury are often used as indicators to reflect trends in the incidence of non-fatal injury events in the population. However, a range of factors other than injury incidence may influence trends in hospitalisations. A demonstration project investigated whether trends in traumatic brain injury (TBI) resulting in hospital admission have been influenced by factors other than changes in population incidence of TBI. It found: “The relative decline in minor to serious TBI is likely to be related to a change in the probability of admission [to hospital] rather than a change in the population TBI incidence. As most TBI hospitalisations are minor this suggests the trend in TBI hospitalisations was significantly influenced by factors other than changes in population incidence. Any analysis of routinely collected secondary injury data needs to consider case selection carefully, especially if trends are being examined. Applying a severity threshold should give more reliable trends”. [37]

Langley, Cryer and colleagues have carried out a number of pieces of work that have shown contradictory trends between the indicators where severity is defined on the basis of service utilisation (eg. admission to hospital, or days stay in hospital of at least 4 days) and those based on anatomical severity definitions (eg. Diagnosis based definitions, ICISS, AIS) [6] [7] For example, the trends found for the MVTC serious injury indicators based on an ICISS threshold showed little change in rates over time, whereas MVTC indicators based on admissions showed a significant decline. [6] [8] The concern was that the latter trends were driven by service utilisation factors.

Definition of “serious” based on serious anatomical damage.

In 1999, Cryer and colleagues proposed the use of serious long-bone fracture (SLBFs) as an indicator of serious injury. SLBFs included fracture of the femur

(including the femoral neck), as well as fracture of other long bones (excluding simple fractures). This was on the basis that these fractures represent approximately 63% of serious (threat to life) non-fatal injury (in New Zealand), they carry an AIS severity score of at least 3. [15] Some previous linkage study work based on MVTCs had identified a high probability of admission for injury with AIS = 3, 4 or 5. [15] [34] Consequently, it was argued that the use of inpatient data to estimate trends in the frequency and rates of these injuries would be minimally influenced by health service effects.

McClure and colleagues carried out some criterion validation work that focussed on this indicator. They did so using a sample of hospital admissions which were directly coded to AIS. They found that this indicator was non-sensitive and non-specific for serious injury. However, they defined a case of serious injury as one with an ISS of 16 or greater (similar to an AIS of 4+). [1] It is not surprising that sensitivities and specificities were low. McClure and colleagues described injury with an ISS<16 as "minor", despite that fact that these injuries show characteristics of serious injuries. They stated: "This study has shown that of all people hospitalised..., the subpopulation of minor injury accounts for as many deaths, 10 times the operations and half the ICU admissions, three times the number of occupied bed-days and three times the number of referrals to further inpatient care as do the major injuries." (p256) Cryer and colleagues criticised them for their choice of threshold for this validation work – since their definition of serious injury was misleading, and was quite different to the one used to develop the SLBF indicator.

Lyons challenged the assumption made about SLBFs being little influenced by service factors as follows [35]: "An example of the magnitude of variability between hospitals is the admission rate for ankle fractures, which varies between 14 and 44% in hospitals in Wales. Eighty percent of admitted patients with an ankle fracture received an operation in all hospitals, which is hardly surprising, as this is the main reason to admit such patients. This example shows the limitations of admissions for fracture or operations for fractures as injury indicators. The data are highly prone to variations in access and professional practice." (p209)

There is evidence to support both arguments. Final judgement awaits further empirical evidence regarding diagnosis-specific probabilities of admission.

Use of a severity threshold to remove service effects

An alternative approach to using a list of specific injury diagnoses to define an indicator, for which service effects are minimised, is to use a severity threshold based

on severity score such as ICISS. The ICISS threat to life severity score has shown good concordance and calibration when validated against death as an outcome. [18] For example, a serious threat-to-life non-fatal injury indicator has been proposed that is based on a case definition of serious injury of (ICD-10-AM) ICISS$\leq$0.941. [25]

Subsequently, a clinician expressed concern about the injuries captured using this New Zealand ICISS threshold; that they do not necessarily represent injury with a high probability of admission – and so indicators based on this threshold may still be subject to service effects. [33] The diagnoses discussed that were the focus of this concern were: intracranial injury (excluding concussion), injury to the nerves and spinal cord at neck level, multiple fracture of the ribs, and asphyxiation. The New Zealand team that developed these indicators based on the ICISS threshold do share some of these concerns and have mounted a project to provide empirical estimates of the probability of admission.

The probability of case ascertainment should be independent of extraneous factors

The probability of case ascertainment is generally independent of extraneous factors for deaths data. “There are however instances where this is not so. One such example relates to an age-related variation in investigating external cause of death. For injury deaths, the underlying cause of death is coded to an ICD external cause code. In cases where there is insufficient information to code the external cause, the Australian Bureau of Statistics normally queries these. However, relatively few queries are made where the person was aged 75+ years. Therefore, in the absence of more specific information, the proportion of cases assigned to residual categories - such as X59 (exposure to unspecified factor) - increased selectively. The proportion of injury cases correctly allocated to indicator specific external cause codes (eg falls) is likely to decrease with age. The impact is greatest for those types of deaths that are more common in old age, such as fall-related injury.” (http://www.cdc.gov/nchs/ppt/ice/harrison_steenkamp.ppt)

We have already discussed that admission to hospital is not only influenced by the severity of injury, but many extraneous factors. These include socio-demographic factors, health service supply, policy, and access – including distance from hospital. So if a case is defined solely as a hospital inpatient, then the probability of case ascertainment will not be independent of extraneous factors.

Threat to life versus threat of disability

The use of an ICISS threshold as the case definition of serious injury has been criticised for focussing on only one dimension of “serious”, namely threat to life. [35] This should not be seen as a criticism of threat to life measures per se, but rather that developing a suite of indicators based solely on threat to life is suboptimal. The development of threat of disability indicators is a major challenge and it is clear “that without resolve such a goal will be unattainable”. [8] In the last year, the New Zealand group have developed threat of impairment indicators. This work is about to be peer reviewed; it is currently unpublished. [51]

Indicator specification

An important step when proposing a new indicator is the development of the indicator specification. A specification is needed so that the indicator can be replicated consistently across time, between places and populations. [5] Also, a specification is needed for the next step in the development, validation.

Validation of indicators

In New Zealand, trends in official indicators (prior to NZIPS) were contrasted with trends in selected threat-to-life indicators. [6] The authors concluded that: “Overall the results illustrate that unvalidated indicators can be misleading and flag the need to identify more valid indicators of non-fatal injury incidence which can be applied to large administrative databases”.

The New Zealand group have expressed strong views about the need for validation: “before newly proposed indicators are promulgated, they should be subject to formal validation”. [7] [25] There are several approaches to validation (see next section). Their work has used face validation, predominantly using the ICE criteria, but has included empirical validation of data sources. [5] [44] [45]

A similar approach was taken in Australia. There they considered face validity criteria to ensure that “we measure what we want to measure”. The three criteria they used were:

- the case definition should be specified in terms of specified anatomical or physiological damage;
- cases included should be all of those that the indicator aims to reflect or a well defined sample of them; and

- probability of case ascertainment should be independent of extraneous factors.

The above is consistent with the view that, if the aim is to develop an indicator that can be used to monitor the incidence of injury, it is important to use validated indicators to reduce the chances of misleading trends. [7] Others have labelled this approach ‘a search for perfect indicators’ – and have criticised this approach on the basis that no such thing as a perfect indicator exists. [35] The argument made was that epidemiology is a mix of art and science, and that the art of epidemiology is to make the best use of imperfect data. [35] Data and indicators are useful if they can help with the goal of prevention; imperfect indicators are still useful. [35]

Nevertheless, Lyons and colleagues do use a face validity argument to justify their choice of an indicator based on ED data. They stated that their chosen indicator should make sense from a combined clinical, data collection and coding perspective. They state that “In Wales, childhood attendances for all injuries at EDs decreased by 50% over a 10-mile distance but with no decline noticeable for fractures”. [27] This led to a consideration of fracture incidence, and finally to the choice of selected radiologically verified fractures (SRVFs) as the basis for an ED-based indicator. Additionally, they did examine the consistency between national SRVF rate based on ED data and hospital admission rate to investigate potential bias.

13. Appendix C: Face validity criteria

Numerator-related

- Case definition based on diagnosis – on anatomical or physiological damage (ICE)
    - Consistent case definition over time or between place
- Focus on serious injury (ICE)
- Unbiased case ascertainment (ICE)
- Derived from data representative of the target population (ICE)

Denominator-related (for risk or rate estimates)

- Reflect the exposure of the population to relevant injury hazards

Overall indicator-related

- Measurement that is practicable
- Reflects a well-defined information objective
- Able to measure change over time or between place
- Be fully specified (ICE)
- Timeliness
- Readily comprehensible

Data-related

- Be based on existing data systems (or it should be practical to develop new data systems) (ICE)
- Robust to potential or known changes/differences in coding frames or coding practice between places or over time.

14. Appendix D: Compilation of injury related indicators present in the literature.

Compilation of Injury Related Indicators Present in the Literature

Health-related indicators compiled in in the context of Apollo WP2´s Core Project: The Burden of Injuries in EU (DG SANCO contract 200419)

Motor vehicle-related indicators compiled in the context of Spanish DGT viability project (contract 0100DGT07970)

Working Document (January 2008)

INDEX

This working document summarizes our literature review on injury-related indicators. This document is an expanded version of one circulated among APOLLO WP2´s core project co-investigators during 2006 and includes additional (informal) notes on the definition of the numerator, countries that have used them, advantages and limitations as stated in the literature, sources used for their computation and coding system. How many indicators there are is a tricky thing since one may define one indicator and then, subgroups of gender and age variations, or additional indicators. Following this latter approach, you will find 264 rows in the first table (Table 1).

These indicators were compiled with the intent to describe the health-related indicator choices available to researchers and practitioners. The primary goal for this search was to assist in the identification of indicators that would be programmed into a routine-planned analysis of hospital discharge datasets from several countries participating in the project. In addition, we were receiving request from a number of interested parties requesting some advice in their choice of "injury indicators".

Some of the listed indicators are meant to be used with specific databases; if so, we have indicated them in the corresponding column. Others are open to different systems.

In the context of our search we came across a few indicators that related to the use of protective factors or risk behaviors (labeled "risk/protective factors under type of indicator). Even though they are not, strictly speaking health-related indicators, we have kept them in Table 1.

Although we have collected all identifiable information on these indicators from the original documents it is important to mention that many of them were very poorly described in such documents. The biggest problem was the lack of operational definitions. For example, indicator number 156 from ECHI-2ML states its interest in specific injuries related to home and leisure activities in children. But no additional detail on who is a child, what injuries are to be "specific" and what codes to include as pertinent to home and/or leisure activities.

In the context of the APOLLO WP2 core project we selected the 116 most fitting indicators from programming the statistical analysis of hospital discharge data (www.unav.es/preventiva/apollo/asistente). Furthermore, we selected 10 of them for inclusion in an Atlas of the Burden of nonfatal injuries in Europe currently under production. It was the choosing of these 10 which prompted the first version of this document.

The document is also an expanded version of a previous one since it presents a second table (Table 2). In this table we summarized a parallel exercise we undertook under a separate project, funded by the Spanish Ministry of Interior (*Dirección General de Tráfico*). The goals of this project included a compilation of motor vehicle related indicators that the Agency is to report to international bodies. Some of them relate to injury severity: in terms of death, hospitalization (*accidentes graves*), or ED or outpatient care only (*accidentes leves*). Even though the table is in Spanish, we have chosen to present it because it helps to contrast the demands around agencies leading with one of the most common and severe mechanisms of injury, motor vehicle injuries, with "health sector" indicators.

Last, please note that the indicator numbers are only an internal reference for us to keep track of things… the numbering does not relate to anything else but the order in which we found them in the literature.

Table 1. Health-related injury indicators													
Category	Indicator	Differentiation	Number	Definition	Observations (Numerator)	Denominator	Countries that have used it	Advantages	Limitations	Source of indicator	Type of indicator	Coding system	Ref.
All external causes	Percentage of Hospital Discharge Data Injury Records with External Cause Coding	By state	56	All hospital discharges with an injury principal diagnosis and an associated E-code / All hospital discharges with an injury principal diagnosis * 100	All hospital discharges with an injury principal diagnosis and an associated E-code	All hospital discharges with an injury principal diagnosis	All US	Very nice indicator to show the availability of external causes	Defined here only for ICD-9 but could easily be adapted to ICD-10.	External cause	Morbidity	ICD-9	SIIR
All external causes	Mortality all external causes	Overall	83	V01-Y89	Number of cases	Crude death rates	NFS	Easy to calculate	External cause is not always coded. Problems because of different age distributions in the population	External cause	Fatality	ICD-10	ECHI-2LL
All external causes	Mortality all external causes	Overall	84	V01-Y89	Number of cases	Standardized death rates 0-64	NFS	Important general indicator	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
All external causes	Mortality all external causes	By region	85	V01-Y89	Number of cases	Standardized death rates 0-64	NFS	Important general indicator	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
All external causes	Mortality all external causes	Overall	86	V01-Y89	Number of cases	Standardized death rates 65+	NFS	Important general indicator	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
All external causes	Mortality all external causes	By region	87	V01-Y89	Number of cases	Standardized death rates 65+	NFS	Important general indicator	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
All external causes	Mortality all external causes	Overall	88	V01-Y89	PYLL calculated on the basis of the remaining life expectancy in the respective country OR life expectancy in to EU member state	None	NFS	Important general indicator	External cause is not always coded. Dependent on number of inhabitants of the country	External cause	Fatality	ICD-10	ECHI-2LL
All external causes	Mortality all external causes	Overall	89	V01-Y89	% PYLL (calculated on the basis of the remaining life expectancy in	Total PYLL	NFS	Very relevant for health policy issues	External cause is not always coded. Decision on calculation of numerator	External cause	Fatality	ICD-10	ECHI-2LL

					the respective country OR life expectancy in to EU member state)								
All external causes	Mortality all external causes	By gender	90	V01-Y89	% PYLL (calculated on the basis of the remaining life expectancy in the respective country OR life expectancy in to EU member state)	Total PYLL	NFS	Very relevant for health policy issues and gender-specific problems	External cause is not always coded. Decision on calculation of numerator	External cause	Fatality	ICD-10	ECHI-2LL
All injuries	Hospitalizations for all injuries	Overall	1	ICD-10: S00.0-T98.3, but excluding T36.0 – T39.9, T41.0 – T50.9, T80 – T88 ICD-9: N-Codes 800-909.2, 909.4, 909.9-994.9, 995.5-995.59, 995.80-995.85	Use estimated population for the year of the data, Include only non-federal, acute care or inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104	Rate per 100,000 population	About half of the American states (participants of SIIR2)	More completely filled out than information on external causes	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence	Injuries	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2, SIIR
All injuries	Hospitalizations for all injuries	By sex	2	ICD-10: S00.0-T98.3, but excluding T36.0 – T39.9, T41.0 – T50.9, T80 – T88 ICD-9: N-Codes 800-909.2, 909.4, 909.9-994.9, 995.5-995.59,	Use estimated population for the year of the data, Include only non-federal, acute care or inpatient facilities, Include readmissions, transfers and	Rate per 100,000 population	About half of the American states (participants of SIIR2)	More completely filled out than information on external causes	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, people may be	Injuries	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2

				995.80-995.85	deaths occurring in the hospital, Additional instructions p. 104				hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence				
All injuries	Hospitalizations for all injuries	By age (Under 1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+)	3	ICD-10: S00.0-T98.3, but excluding T36.0 – T39.9, T41.0 – T50.9, T80 – T88 ICD-9: N-Codes 800-909.2, 909.4, 909.9-994.9, 995.5-995.59, 995.80-995.85	Use estimated population for the year of the data, Include only non-federal, acute care or inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104	Rate per 100,000 population	About half of the American states (participants of SIIR2)	More completely filled out than information on external causes	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence	Injuries	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2
All injuries	Hospital admission > 1 day	Overall (although suggested for MV in SEE review)	166 (variation of 1)	No specific definition of either injury or MV victim	Number of injury hospital admissions excluding those whose admission date = discharge date	None	Netherlands, New Zealand		Can vary according to health system type. Over time one same injury may need shorter hospital stay	Injuries	Fatality and Morbidity	Irrelevant	Polinder
All injuries	Hospital admission > =4 days	Overall (although suggested for MV in SEE review)	167 (variation of 1)	No specific definition of either injury or MV victim	Number of injury hospital admissions lasting longer than 3 days	None	Netherlands, UK, Australia, New Zealand, Eurocost		Can vary according to health system type. Over time one same injury may need	Injuries	Fatality and Morbidity	Irrelevant	Polinder, McClure Cryer

							project		shorter hospital stay				
All injuries	Hospital admission > =7 days	Overall (although suggested for MV in SEE review)	168 (Variation of 1)	No specific definition of either injury or MV victim	Number of injury hospital admissions lasting longer than 6 days	None	Netherlands		Can vary according to health system type. Over time one same injury may need shorter hospital stay	Injuries	Fatality and Morbidity	Irrelevant	Polinder
All injuries	Severe non fatal injuries	Overall (although suggested for MV in SEE review)	173	Hospital admissions who did not die AND had ICISS=<0.941 (if ICD10) or ICISS =<0.96 (if ICD9CM)	Number of hospital admissions meeting criteria who have principal diagnose S00-T78 AND V01-Y36 (if ICD10) or 800-995 AND E800-E869 or E880-E928 or E950-E999	None	New Zealand, Netherlands		Questionable for international comparisons	External cause and injuries	Morbidity	ICD9CM or ICD10	Cryer Polinder Langley
All injuries	Rate of non fatal severe injuries	Overall (although suggested for MV in SEE review)	176 (relates to 175)	Hospital admissions with ICISS =<0.941 (if ICD10) or ICISS =<0.96 (if ICD9CM)	Hospital admissions (excluding readmissions) who did not die because with principal diagnoses 800-995 AND E800-E869 (ICD9CM) OR S00-T78 AND V01-Y36 (ICD10)	NFS	New Zealand			Injuries	Morbidity	ICD9CM or ICD10	Cryer
All injuries	Injuries with high disability according to GBD	Overall (although suggested for MV in SEE review)	177	Relates to cranial injuries-brain, eye injuries, facial bones, spine injuries, complex soft tissue injuries, pelvis fractures, neck of femur fractures	Injuries with burden weight <0.2 according to GBD project	None	Netherlands			Injuries	Morbidity	NFS	Polinder Murray
All injuries	Moderate and high disability injuries IBIS	Overall (although suggested for MV in SEE review)	178	Relates to cranial and brain injuries,	Injuries with burden weight <0.10	None	Netherlands	Good for international comparisons	Almost identical to 174 excluding eye	Injuries	Morbidity	NFS	Polinder

				injuries to the spine, complex soft tissue injuries, pelvis and hop and femur fractures, and hip dislocations	according to IBIS project				injuries, and injuries to facial bones and spine bones				
All injuries	Injuries leading to medical consults	Overall (although suggested for MV in SEE review)	182		Number of injuries leading to medical consultations	None?	UK		Focuses on minor injuries with little impact on medical system or public's health	Injuries	Morbidity	NFS	Secretary of state McClure Cryer
All injuries	Injury mortality rate by injury type	Overall (although suggested for MV in SEE review)	184		NFS	Rate per 100,000 population	Greece			Injuries	Fatality	NFS	Petridou
All injuries	Standardized Hospitalization rates by injury type	Overall (although suggested for MV in SEE review)	186 (=1?) Comment: Probably not the same as 3 because here the word Standardized is mentioned		NFS	Population NFS	Ireland Greece		Boland speaks of admissions and Petridou of discharges	Injuries	Fatality and Morbidity	NFS	Boland Petridou
All injuries	Alcohol related injury deaths	Overall (although suggested for MV in SEE review)	187		Number of alcohol-related injury deaths	Rate per 100,000 population	Greece		Never used, only proposed	Injuries and risk factor	Fatality	NFS	Petridou
All injuries	Disability rate by injury	Overall (although suggested for MV in SEE review)	188	Number of people with injury-related disability per population	NFS	Rate per 100,000 population	Greece			Injuries	Morbidity	NFS	Petridou
All injuries	Non fatal injuries MAIS>=3	Overall (although suggested for MV in SEE review)	189	Hospital discharges with at least one AIS>=3	NFS	None	New Zealand	Allows evaluation of time trends		Injuries	Fatality and Morbidity	AIS	Cryer
All injuries	Non fatal injuries MAIS >=4	Overall (although suggested for MV in SEE review)	190	Hospital discharges with at least one AIS>=4	NFS	None	New Zealand	Allows evaluation of time trends		Injuries	Fatality and Morbidity	AIS	Cryer
All injuries	Non-fatal Injury Frequency by NISS	Overall	193	Distribution of hospital admissions due to MV by NISS category	Hospital admissions with NISS (1+, 4+, 9+, 16+ or 25+)	None	New Zealand			Injuries	Fatality and Morbidity	NFS	Langley
All injuries	Proportion of injury fatalities out of all deaths	Overall	195	DELETE IF DUPLICATE WITH ECHI – I WASN'T SURE	Number of injury fatalities	All deaths	NFS	Important to show relevance of injury prevention		Injuries	Fatality	NFS	ECHI

All injuries	Age-standardized injury mortality rate	Overall	228		Number of injury deaths	Rate per 100,000 person-years at risk	New Zealand	Easily available information on injuries and fatalities		Injuries	Fatality	NFS	NZIPS
All injuries	Age-standardized serious non-fatal injury rate	Overall	230	Serious means an ICISS score of 0.941 or less	Number of serious non-fatal injuries	Rate per 100,000 person-years at risk	New Zealand	Easily available information on injuries	Quality of data for non-fatal cases might be less good	Injuries	Morbidity	NFS	NZIPS
All injuries	Number of cases of serious non-fatal injuries	Overall	231	Serious means an ICISS score of 0.941 or less	Number of serious non-fatal injuries	None	New Zealand	Easily available information on injuries	Quality of data for non-fatal cases might be less good	Injuries	Morbidity	NFS	NZIPS
All injuries	Injury mortality rate	Overall (although suggested for MV in SEE review)	183 (=83?)		Number of deaths with E900-E869 or E880-E928 or E950-E999 (if ICD9) or V01-Y36 if ICD10	Population by age groups (0-14, 15-24, 25-64, 65-79, 80+)	New Zealand, Greece, Ireland	Important for international comparison controlling for age distribution		External cause	Fatality	ICD9 or ICD10	Cryer, Petridou, Boland
All injuries	PYLL by injury type	Overall (although suggested for MV in SEE review)	185 (similar to 88)		Number of deaths and ages of deceased, calculated at life expectancy, 65 and 75	None	Greece			External causes	Fatality	NFS	Petridou
All injuries	Number of injury deaths	Overall	229 (=194)		Number of injury deaths	None	New Zealand	Easily available information on injuries and fatalities		Injuries	Fatality	NFS	NZIPS
All injuries	Frequency fatal injuries	Overall (although suggested for MV in SEE review)	194 (=229)	Delete if duplicate with ECHI – I WASN'T SURE	Number of injury fatalities	None	NFS	Important to show relevance of injury prevention	Absolute number not very useful when comparing countries	Injuries	Fatality	NFS	ECHI
Burns	Morbidity - Burns in Children	Overall	125	NFS	Overnight in-patient admissions	Rate per 100,000 population	NFS	Important for Quality of life	No clear definition	Injuries	Morbidity	Check CHILD project	ECHI-2LL
Burns	Morbidity - Burns in Children	By gender	126	NFS	Overnight in-patient admissions	Rate per 100,000 population	NFS	Important for Quality of life	No clear definition	Injuries	Morbidity	Check CHILD project	ECHI-2LL
Burns	Morbidity - Burns in Children	By age 0-4, 4(?, probably 5) – 9, 10-14, 15-17	127	NFS	Overnight in-patient admissions	Rate per 100,000 population	NFS	Important for Quality of life	No clear definition	Injuries	Morbidity	Check CHILD project	ECHI-2LL
Burns	Morbidity - Burns in Children	By region	128	NFS	Overnight in-patient admissions	Rate per 100,000 population	NFS	Important for Quality of life	No clear definition	Injuries	Morbidity	Check CHILD project	ECHI-2LL
Burns	Morbidity - Burns in Children	By SES	129	NFS	Overnight in-patient admissions	Rate per 100,000 population	NFS	Important for Quality of life	No clear definition	Injuries	Morbidity	Check CHILD project	ECHI-2LL

Drowning	Near drowning hospitalizations	Overall	10	ICD-10: W65-W74, V90, V92 ICD-9: N-Codes 994.1 and/or E-Codes 830, 832, 910, 954, 964, 984	Use estimated population for the year of the data, Include only non-federal, acute care or inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104	Rate per 100,000 population	About half of the American states (participants of SIIR2)	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence	External cause and injuries	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2, SIIR
Drowning	Near drowning hospitalizations	By sex	11	ICD-10: W65-W74, V90, V92 ICD-9: N-Codes 994.1 and/or E-Codes 830, 832, 910, 954, 964, 984	Use estimated population for the year of the data, Include only non-federal, acute care or inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104	Rate per 100,000 population	About half of the American states (participants of SIIR2)	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people	External cause and injuries	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2

									may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence				
Drowning	Near drowning hospitalizations	By age (Under 1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+)	12	ICD-10: W65-W74, V90, V92 ICD-9: N-Codes 994.1 and/or E-Codes 830, 832, 910, 954, 964, 984	Use estimated population for the year of the data, Include only non-federal, acute care or inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104	Rate per 100,000 population	About half of the American states (participants of SIIR2)	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence	External cause and injuries	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2
Drowning	Drowning fatalities	Overall	13	ICD-10: W65-W74, V90, V92 ICD-9: E-codes 830,832, 910,	Age-adjusted to NCHS 2000 population, calculate age-adjusted rates	Age Adjusted Rate per 100,000	25 US-states except Arizona	External causes can give a pretty detailed insight into the intentionality,	Data are generated from forms used for billing (UB-92), quality	External cause	Fatality	ICD-10	SIIR2, SIIR

				954, 964, 984	for both male and female population, calculate indicator on the basis of the underlying cause of death, count deaths of state residents only, overall is weighted average of age-adjusted male and female rates (formula on page 103 of appendix)			mechanisms, causes of injury and place of occurrence	assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence				
Drowning	Drowning fatalities	By sex		W65-W74, V90, V92	Age-adjusted to NCHS 2000 population, calculate age-adjusted rates for both male and female population, calculate indicator on the basis of the underlying cause of death, count deaths of state residents only	Age Adjusted Rate per 100,000	25 US-states except Arizona	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations	External cause	Fatality	ICD-10	SIIR2

									instead of people hospitalized counted), people counted according to hospital location – not place of residence				
Drowning	Drowning fatalities	By age (Under 1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+)	15	W65-W74, V90, V92	Age-adjusted to NCHS 2000 population, calculate age-adjusted rates for both male and female population, calculate indicator on the basis of the underlying cause of death, count deaths of state residents only,	Rate per 100,000 population	25 US-states except Arizona	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence	External cause	Fatality	ICD-10	SIIR2
Drowning	Drowning fatalities	Unintentional	60	ICD-9: E-codes 830,832, 910	Age-adjusted to NCHS 2000 population, calculate age-adjusted rates for both male and female population, calculate indicator on	Age Adjusted Rate per 100,000	25 US-states except Arizona	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Different rates of external cause coding in different states	External cause	Fatality	ICD-10	SIIR

					the basis of the underlying cause of death,								
EMS	Arrival time	Overall	164	%	% meeting targets or regulations/laws more detailed descriptions available on p. 41f	NFS	NFS	Time is an issue for EMS	WHO proposes more differentiation – 4 categories.	NFS	Risk/protective factor	NFS	TSPI
EMS	Quality of medical treatment	Overall	165	%	% meeting targets or regulations/laws more detailed descriptions available on p. 41f	NFS	NFS	Would be nice to have but unrealistic.	BIG issue. Probably depending in type of injury	NFS	Risk/protective factor	NFS	TSPI
Falls	Mortality accidental falls	Overall	99	W00-W19	Number of cases	Crude death rates	NFS	Easy to calculate	External cause is not always coded. Problems because of different age distributions in the population	External cause	Fatality	ICD-10	ECHI-2LL
Falls	Mortality accidental falls	By region	101	W00-W19	Number of cases	Standardized death rates 0-64	NFS	High relevance because of demographic change	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
Falls	Mortality accidental falls	Overall	102	W00-W19	Number of cases	Standardized death rates 65+	NFS	High relevance because of demographic change	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
Falls	Mortality accidental falls	By region	103	W00-W19	Number of cases	Standardized death rates 65+	NFS	High relevance because of demographic change	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
Falls	Mortality accidental falls	Overall	104	W00-W19	PYLL calculated on the basis of the remaining life expectancy in the respective country OR life expectancy in to EU member state	None	NFS	High relevance because of demographic change	External cause is not always coded. Dependent on number of inhabitants of the country	External cause	Fatality	ICD-10	ECHI-2LL
Falls	Mortality accidental falls	Overall	105	W00-W19	% PYLL (calculated on the basis of the	Total PYLL	NFS	Very relevant for health policy issues	External cause is not always coded. Decision	External cause	Fatality	ICD-10	ECHI-2LL

					remaining life expectancy in the respective country OR life expectancy in to EU member state)				on calculation of numerator				
Falls	Mortality accidental falls	By gender	106	W00-W19	% PYLL (calculated on the basis of the remaining life expectancy in the respective country OR life expectancy in to EU member state)	Total PYLL	NFS	Very relevant for health policy issues and gender-specific problems	External cause is not always coded. Decision on calculation of numerator	External cause	Fatality	ICD-10	ECHI-2LL
Falls	Age-standardized fall related injury mortality rate	Overall	246		Number of fall-related injury deaths	Rate per 100,000 person-years	New Zealand	Good information on fatalities	External cause not always available	External cause	Fatality	NFS	NZIPS
Falls	Age-standardized fall-related injury mortality rate	People age 0 – 74	248		Number of fall-related injury deaths	Rate per 100,000 person-years	New Zealand	Good information on fatalities	External cause not always available	External cause	Fatality	NFS	NZIPS
Falls	Number of fall-related injury deaths	People age 0 -74	249		Number of fall-related injury deaths	None	New Zealand	Good information on fatalities	External cause not always available	External cause	Fatality	NFS	NZIPS
Falls	Age-standardized fall-related injury mortality rate	People age 75 and over	250		Number of fall-related injury deaths	Rate per 100,000 person-years	New Zealand	Good information on fatalities	External cause not always available	External cause	Fatality	NFS	NZIPS
Falls	Number of fall-related injury deaths	People age 75 and over	251		Number of fall-related injury deaths	None	New Zealand	Good information on fatalities	External cause not always available	External cause	Fatality	NFS	NZIPS
Falls	Age-standardized fall-related serious non-fatal injury rate	Overall	252	Serious means an ICISS score of 0.941 or less	Number of fall-related serious non-fatal injuries	Rate per 100,000 person-years	New Zealand	Hospital data readily available BUT are only hospital cases included?	External cause not always available, quality of data for non-fatal cases might be less good	External cause	Morbidity	NFS	NZIPS
Falls	Number of fall-related serious non-fatal injuries	Overall	253	Serious means an ICISS score of 0.941 or less	Number of fall-related serious non-fatal injuries	None	New Zealand	Hospital data readily available BUT are only hospital cases included?	External cause not always available, quality of data for non-fatal cases might be less good	External cause	Morbidity	NFS	NZIPS
Falls	Age-	People age 0 – 74	254	Serious means	Number of fall-	Rate per	New	Hospital data	External cause	External	Morbidity	NFS	NZIPS

	standardized fall-related serious non-fatal injury rate	years		an ICISS score of 0.941 or less	related serious non-fatal injuries	100,000 person-years	Zealand	readily available BUT are only hospital cases included?	not always available, quality of data for non-fatal cases might be less good	cause			
Falls	Number of fall-related serious non-fatal injuries	People age 0 -74	255	Serious means an ICISS score of 0.941 or less	Number of fall-related serious non-fatal injuries	None	New Zealand	Hospital data readily available BUT are only hospital cases included?	External cause not always available, quality of data for non-fatal cases might be less good	External cause	Morbidity	NFS	NZIPS
Falls	Age-standardized fall-related serious non-fatal injury rate	People age 75 and over	256	Serious means an ICISS score of 0.941 or less	Number of fall-related serious non-fatal injuries	Rate per 100,000 person-years	New Zealand	Hospital data readily available BUT are only hospital cases included?	External cause not always available, quality of data for non-fatal cases might be less good	External cause	Morbidity	NFS	NZIPS
Falls	Number of fall-related serious non-fatal injuries	People age 75 and over	257	Serious means an ICISS score of 0.941 or less	Number of fall-related serious non-fatal injuries	None	New Zealand	Hospital data readily available BUT are only hospital cases included?	External cause not always available, quality of data for non-fatal cases might be less good	External cause	Morbidity	NFS	NZIPS
Falls	Mortality accidental falls	Overall	100 (=247)	W00-W19	Number of cases	Standardized death rates 0-64	NFS	High relevance because of demographic change	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
Falls	Number of fall-related injury deaths	Overall	247 (=100)		Number of fall-related injury deaths	None	New Zealand	Good information on fatalities	External cause not always available	External cause	Fatality	NFS	NZIPS
Fire	Fire-related hospitalizations	Overall	16	ICD-10: W32-W34, X72-X74, X93-X95, Y22-Y24, Y35.0 ICD-9: E-Codes 890-899	Use estimated population for the year of the data, Include only non-federal, acute care or inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104	Rate per 100,000 population	About half of the American states	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one	External cause	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2, SIIR

									(number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence				
Fire	Fire-related hospitalizations	By sex	17	ICD-10: W32-W34, X72-X74, X93-X95, Y22-Y24, Y35.0 ICD-9: E-Codes 890-899	Use estimated population for the year of the data, Include only non-federal, acute care or inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104	Rate per 100,000 population	About half of the American states	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence	External cause	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2
Fire	Fire-related hospitalizations	By age (Under 1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+)	18	ICD-10: W32-W34, X72-X74, X93-X95, Y22-Y24, Y35.0 ICD-9: E-Codes 890-899	Use estimated population for the year of the data, Include only non-federal, acute care or inpatient	Rate per 100,000 population	About half of the American states	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all	External cause	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2

					facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104			occurrence	states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence				
Fire	Fire-related fatalities	Overall	19	W32-W34, X72-X74, X93-X95, Y22-Y24, Y35.0	Age-adjusted to NCHS 2000 population, calculate age-adjusted rates for both male and female population, calculate indicator on the basis of the underlying cause of death, count deaths of state residents only, overall is weighted average of age-adjusted male and female rates (formula on page 103 of appendix)	Age Adjusted Rate per 100,000	25 US-states except Arizona	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized	External cause	Fatality	ICD-10	SIIR2, SIIR

									counted), people counted according to hospital location – not place of residence				
Fire	Fire-related fatalities	By sex	20	W32-W34, X72-X74, X93-X95, Y22-Y24, Y35.0	Age-adjusted to NCHS 2000 population, calculate age-adjusted rates for both male and female population, calculate indicator on the basis of the underlying cause of death, count deaths of state residents only	Age Adjusted Rate per 100,000	25 US-states except Arizona	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence	External cause	Fatality	ICD-10	SIIR2
Fire	Fire-related fatalities	By age (Under 1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+)	21	W32-W34, X72-X74, X93-X95, Y22-Y24, Y35.0	Age-adjusted to NCHS 2000 population, calculate age-adjusted rates for both male and female population, calculate indicator on the basis of the underlying cause of death,	Rate per 100,000 population	25 US-states except Arizona	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external	External cause	Fatality	ICD-10	SIIR2

					count deaths of state residents only				cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence				
Firearm	Fire-arm related hospitalizations	Overall	39	ICD-10: W32-W34, X72-X74, X93-X95, Y22-Y24, Y35.0 ICD-9: E-Codes 922.0-922.3, 922.9, 955.0-955.4, 965.0-965.4, 985.0-985.4, 970	Use estimated population for the year of the data, Include only non-federal, acute care or inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104	Rate per 100,000 population	About half of the American states	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of	External cause	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2

									residence				
Firearm	Fire-arm related hospitalizations	By sex	40	ICD-10: W32-W34, X72-X74, X93-X95, Y22-Y24, Y35.0 ICD-9: E-Codes 922.0-922.3, 922.9, 955.0-955.4, 965.0-965.4, 985.0-985.4, 970	Use estimated population for the year of the data, Include only non-federal, acute care or inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104	Rate per 100,000 population	About half of the American states	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence	External cause	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2
Firearm	Fire-arm related hospitalizations	By age (Under 1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+)	41	ICD-10: W32-W34, X72-X74, X93-X95, Y22-Y24, Y35.0 ICD-9: E-Codes 922.0-922.3, 922.9, 955.0-955.4, 965.0-965.4, 985.0-985.4, 970	Use estimated population for the year of the data, Include only non-federal, acute care or inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104	Rate per 100,000 population	About half of the American states	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over	External cause	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2

									time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence				
Firearm	Firearm-related fatalities	Overall	42	W32-W34, X72-X74, X93-X95, Y22-Y24, Y35.0	Age-adjusted to NCHS 2000 population, calculate age-adjusted rates for both male and female population, calculate indicator on the basis of the underlying cause of death, count deaths of state residents only, overall is weighted average of age-adjusted male and female rates (formula on page 103 of appendix)	Age Adjusted Rate per 100,000	25 US-states except Arizona	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence	External cause	Fatality	ICD-10	SIIR2
Firearm	Firearm-related fatalities	By sex	43	W32-W34, X72-X74, X93-X95, Y22-Y24, Y35.0	Age-adjusted to NCHS 2000 population, calculate age-	Age Adjusted Rate per 100,000	25 US-states except Arizona	External causes can give a pretty detailed insight into the	Data are generated from forms used for billing (UB-92),	External cause	Fatality	ICD-10	SIIR2

					adjusted rates for both male and female population, calculate indicator on the basis of the underlying cause of death, count deaths of state residents only			intentionality, mechanisms, causes of injury and place of occurrence	quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence				
Firearm	Firearm-related fatalities	By age (Under 1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+)	44	W32-W34, X72-X74, X93-X95, Y22-Y24, Y35.0	Age-adjusted to NCHS 2000 population, calculate age-adjusted rates for both male and female population, calculate indicator on the basis of the underlying cause of death, count deaths of state residents only	Rate per 100,000 population	25 US-states except Arizona	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of	External cause	Fatality	ICD-10	SIIR2

									hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence					
Fractures	Morbidity - Long-bone fractures in children	Overall	120	NFS	Number of cases	Rate per 100,000 population	Check CHILD project	Interesting question but very specialized	NFS	Injuries	Morbidity	Check CHILD project	ECHI-2LL
Fractures	Morbidity - Long-bone fractures in children	By gender	121	NFS	Number of cases	Rate per 100,000 population	Check CHILD project	Interesting question but very specialized	NFS	Injuries	Morbidity	Check CHILD project	ECHI-2LL
Fractures	Morbidity - Long-bone fractures in children	By age 10-14, 15-17	122	NFS	Number of cases	Rate per 100,000 population	Check CHILD project	Interesting question but very specialized	NFS	Injuries	Morbidity	Check CHILD project	ECHI-2LL
Fractures	Morbidity - Long-bone fractures in children	By region	123	NFS	Number of cases	Rate per 100,000 population	Check CHILD project	Interesting question but very specialized	NFS	Injuries	Morbidity	Check CHILD project	ECHI-2LL
Fractures	Morbidity - Long-bone fractures in children	By SES	124	NFS	Number of cases	Rate per 100,000 population	Check CHILD project	Interesting question but very specialized	NFS	Injuries	Morbidity	Check CHILD project	ECHI-2LL
Fractures	Morbidity - Hip fractures	Overall	131	NFS	Incidence	NFS	NFS	Serious and increasing public health problem	No clear definition	Injuries	Morbidity	Not clear (medical registries as source mentioned)	ECHI-2LL
Fractures	Morbidity - Hip fractures	By age	132	NFS	Incidence	NFS	NFS	Serious and increasing public health problem	No clear definition	Injuries	Morbidity	Not clear (medical registries as source mentioned)	ECHI-2LL
Fractures	Morbidity - Hip fractures	By gender	133	NFS	Incidence	NFS	NFS	Serious and increasing public health	No clear definition	Injuries	Morbidity	Not clear (medica	ECHI-2LL

								problem				l registries as source mentioned)	
Fractures	Morbidity - Hip fractures	By region	134	NFS	Incidence	NFS	NFS	Serious and increasing public health problem	No clear definition	Injuries	Morbidity	Not clear (medical registries as source mentioned)	ECHI-2LL
Fractures	Morbidity - Hip fractures	By SES	135	NFS	Incidence	NFS	NFS	Serious and increasing public health problem	No clear definition	Injuries	Morbidity	Not clear (medical registries as source mentioned)	ECHI-2LL
Fractures	Long bone fracture	Overall (although suggested for MV in SEE review)	169 (Relates to 120 but for all ages)	Hospital admissions with first diagnoses being long bone fracture requiring hospital admission	Number of hospital admissions meeting definition	None	Netherlands	Good for international comparisons	Does not take into account other injuries	Injuries	Fatality and Morbidity	NFS	Polinder
Fractures	SRUF	Overall (although suggested for MV in SEE review)	172	Radiologically proven fractures	Number of radiological proven fractures on arm, forearm, writs (excluding peoples <5 years old), pelvis, hip, femur neck, knee, lower extremity (calf) and ankle	None	Netherlands, Eurocost project		Uses Emergency-based data	Injuries	Fatality and Morbidity	irrelevant	Polinder Lyons ECHI
Fractures	Long bone fracture	Overall (although suggested for MV in SEE review)	170 (relates to 169)		Hospital admission with first diagnoses being AIS 8518XX.3 (XX= 00,04,08,14,18	None	Australia	Good for international comparisons	Does not take into account other injuries	Injuries	Fatality and Morbidity	AIS	McClure

					or 22) 8534XX.3 (XX= 08, 18 or 22) 7526XX.3 (XX= 04 or 06) 7528XX.3 (XX=04 or 06) 7532XX.3 (XX=04 or 06)								
Fractures	Severe Long bone fracture	Overall (although suggested for MV in SEE review)	171 (relates to 169)	Hospital admissions with first diagnoses being long bone fracture requiring hospital admission and with hospital admission >9 days	Number of hospital admissions meeting definition	None	Netherlands, New Zealand, Australia	Independent from health system Long bone fracture relates to long-term disability	Does not take into account other injuries	Injuries	Fatality and Morbidity	irrelevant	Polinder McClure Cryer
Home & Leisure	Specific injuries home/leisure	Children NFS	156	NFS	NFS	NFS	NFS	Some injuries are very age-specific, therefore interesting indicators	This includes a combination of injuries, demographic information an external causes. Especially the latter may not always be available	NFS	Fatality and Morbidity	NFS	ECHI-2ML
Home & Leisure	Specific injuries home/leisure,	Elderly NFS	157	NFS	NFS	NFS	NFS	Some injuries are very age-specific, therefore interesting indicators	This includes a combination of injuries, demographic information an external causes. Especially the latter may not always be available	NFS	Fatality and Morbidity	NFS	ECHI-2ML
Home, Leisure & violence	Morbidity - Injuries: home/leisure; violence	Overall	144	NFS	Incidence	NFS	NFS	Three different topics, probably at least three indicators	No clear definition	NFS	Morbidity	Check Eurostat, OECD, Eurocost project	ECHI-2LL, ECHI-2ML
Housing	Percentage of homes with smoke alarms	Overall	22	%	State-based random-digit-dialed	Percent of people answering	US states	Probably only available in few European	Under-representation of low SES,	Survey	Risk/protective factor	BRFSS	SIIR2, SIIR

	tested in the last month				telephone survey, US-population 17 and older	"No smoke detectors in the home"		countries, survey data are in general easy to get	Self-reported data may be biased				
Housing	Percentage of homes without smoke alarms	Overall	23	%	State-based random-digit-dialed telephone survey, US-population 17 and older	NFS	US states	Probably only available in few European countries, survey data are in general easy to get	Under-representation of low SES, Self-reported data may be biased	Survey	Risk/protective factor	BRFSS	SIIR2
MV driver	Percentage of adults reporting driving after perhaps having too much to drink, in the past month	Overall	27	%	State-based random-digit-dialed telephone survey, US-population 17 and older	NFS	US states	Probably only available in few European countries, survey data are in general easy to get	Under-representation of low SES, Self-reported data may be biased	Survey	Risk/protective factor	BRFSS	SIIR2, SIIR
MV driver	Percentage of adults reporting driving after perhaps having too much to drink, in the past month	By sex	28	%	State-based random-digit-dialed telephone survey, US-population 17 and older	NFS	US states	Probably only available in few European countries, survey data are in general easy to get	Under-representation of low SES, Self-reported data may be biased	Survey	Risk/protective factor	BRFSS	SIIR2
MV driver	Percentage of adults reporting driving after perhaps having too much to drink, in the past month	By age (Under 1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+)	29	%	State-based random-digit-dialed telephone survey, US-population 17 and older	NFS	US states	Probably only available in few European countries, survey data are in general easy to get	Under-representation of low SES, Self-reported data may be biased	Survey	Risk/protective factor	BRFSS	SIIR2
MV driver	Parents always using child restraints	Overall	59	How often does the __year old child in your household use a car safety seat when they ride in a car.	% with answer Always	do not include missing responses (adults without children)	US states	Survey answers readily available	The usual problems with surveys, recall bias, social desirability	Survey	Risk/protective factor	BRFSS	SIIR
MV driver	Speed	Overall	158	%	% above legal limit more detailed descriptions available on p. 41f	NFS	NFS		How useful is general indicator on speed?	Observation	Risk/protective factor	NFS	TSPI
MV driver	Alcohol	Overall	159	%	% above limit more detailed descriptions	NFS	NFS	Interesting because alcohol is an	Representativity ?	Observation	Risk/protective factor	NFS	TSPI

					available on p. 41f			important risk factor (not only for MVC)					
MV occupant	Percentage of high school student reporting always using safety belt	Overall	30	%	Self-administered, school based survey of 9th to 12th grade students	Surveyed high school students 9th – 12th grade	11 of the 26 states participating in SIIR2	Probably only available in few European countries, survey data are in general easy to get	Applies only to youth who attend the school, possibility of over- or underreporting of behaviours, methods of data collection may vary over states	Survey	Risk/protective factor	YRBS	SIIR2, SIIR
MV occupant	Percentage of high school student reporting always using safety belt	By sex	31	%	Self-administered, school based survey of 9th to 12th grade students	Surveyed high school students 9th – 12th grade	11 of the 26 states participating in SIIR2	Probably only available in few European countries, survey data are in general easy to get	Applies only to youth who attend the school, possibility of over- or underreporting of behaviours, methods of data collection may vary over states	Survey	Risk/protective factor	YRBS	SIIR2
MV occupant	Seat Belts	Overall	160	%	% car occupants more detailed descriptions available on p. 41f	NFS	NFS	Seat belt use is important. Is already being done for IRTAD	Representativity ?	Observation	Risk/protective factor	NFS	TSPI
MVC	Motor vehicle traffic and non-traffic hospitalizations	Overall	24	ICD-10: V30-V39, V40-V49, V50-V59, V60-V69, V70-V79, V81.1, V82.1, V83-V86, V20-V28, V29, V12-V14, V19, V02-V04, V09.2, V80, V89.2 ICD-9: E-Codes 810-825 (traffic and non-traffic)	Use estimated population for the year of the data, Include only non-federal, acute care or inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104	Rate per 100,000 population	About half of the American states	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized	External cause	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2, SIIR

									more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence				
MVC	Motor vehicle traffic and non-traffic hospitalizations	By sex	25	ICD-10: V30-V39, V40-V49, V50-V59, V60-V69, V70-V79, V81.1, V82.1, V83-V86, V20-V28, V29, V12-V14, V19, V02-V04, V09.2, V80, V89.2 ICD-9: E-Codes 810-825 (traffic and non-traffic)	Use estimated population for the year of the data, Include only non-federal, acute care or inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104	Rate per 100,000 population	About half of the American states	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence	External cause	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2
MVC	Motor vehicle traffic and non-traffic hospitalizations	By age (Under 1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+)	26	ICD-10: V30-V39, V40-V49, V50-V59, V60-V69, V70-V79, V81.1, V82.1, V83-V86, V20-V28, V29, V12-	Use estimated population for the year of the data, Include only non-federal, acute care or	Rate per 100,000 population	About half of the American states	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury	Data are generated from forms used for billing (UB-92), quality assurance may vary between	External cause	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2

				V14, V19, V02-V04, V09.2, V80, V89.2 ICD-9: E-Codes 810-825 (traffic and non-traffic)	inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104			and place of occurrence	states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence				
MVC	Fatal Motor Vehicle Crash Rate: Traffic and Non-Traffic	Overall	57	All fatal MVC injuries disregarding location, ICD-9, E-Codes 810-825	All fatalities in MVCs	Rate per 100,000 population	All US	Easy to use	External causes in some states only coded for about half the cases	External cause	Fatality	Death certificates (ICD-9)	SIIR
MVC	Mortality transport accidents	Overall	107	V01-V99	Number of MVC fatalities	Crude death rates	NFS	Easy to calculate	External cause is not always coded. Problems because of different age distributions in the population	External cause	Fatality	ICD-10	ECHI-2LL
MVC	Mortality transport accidents	Overall	108	V01-V99	Number of cases	Standardized death rates 0-64	NFS	MVC mortality is important to know, standardized death rates make comparability between countries and years easy	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
MVC	Mortality transport	By region	109	V01-V99	Number of cases	Standardized death rates 0-	NFS	MVC mortality is important to	External cause is not always	External cause	Fatality	ICD-10	ECHI-2LL

	accidents					64		know, standardized death rates make comparability between countries and years easy	coded.				
MVC	Mortality transport accidents	Overall	110	V01-V99	Number of cases	Standardized death rates 65+	NFS	MVC mortality is important to know, standardized death rates make comparability between countries and years easy	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
MVC	Mortality transport accidents	By region	111	V01-V99	Number of cases	Standardized death rates 65+	NFS	MVC mortality is important to know, standardized death rates make comparability between countries and years easy	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
MVC	Mortality transport accidents	Overall	112	V01-V99	PYLL calculated on the basis of the remaining life expectancy in the respective country OR life expectancy in to EU member state	None	NFS	Interesting from a total Europe perspective	External cause is not always coded. Dependent on number of inhabitants of the country	External cause	Fatality	ICD-10	ECHI-2LL
MVC	Mortality transport accidents	Overall	113	V01-V99	% PYLL (calculated on the basis of the remaining life expectancy in the respective country OR life expectancy in to EU member state)	Total PYLL	NFS	Very relevant for health policy issues	External cause is not always coded. Decision on calculation of numerator	External cause	Fatality	ICD-10	ECHI-2LL
MVC	Mortality transport accidents	By gender	114	V01-V99	% PYLL (calculated on the basis of the remaining life	Total PYLL	NFS	Very relevant for health policy issues and gender-	External cause is not always coded. Decision on calculation of	External cause	Fatality	ICD-10	ECHI-2LL

					expectancy in the respective country OR life expectancy in to EU member state)			specific problems	numerator				
MVC	Age of vehicle fleet	none	266	% of	vehicle fleet renewal	in a year	NFS			EEA report (#16)	Risk/protective factor	NFS	IWG
MVC	Person time spent on the road	By mode of road use	267	Person time spent on the road	NFS	NFS	10 European countries according to Eurostat			NFS	Exposure	NFS	IWG
MVC	Passenger kilometres	by mode of transport	268	Passenger kilometres	Number of passenger kilometers	Per year	NFS		Bicycles missing	Available in international databases	Exposure	NFS	IWG
MVC	Use of vehicle safety device	none	269	% of	Seat belt use	In population	NFS		Needs further developmental work	NFS	Risk/protective factor	NFS	IWG
MVC	Use of vehicle safety device	none	270	% of	motorcycle helmet use	In population	NFS		Needs further developmental work	NFS	Risk/protective factor	NFS	IWG
MVC	Use of vehicle safety device	none	271	% of	bicycle helmet use	In population	NFS		Authors consider it not to be of public health relevance	NFS	Risk/protective factor	NFS	IWG
MVC	Use of vehicle safety device	none	272	% of	Child restraint use	In population	NFS		Needs further developmental work	NFS	Risk/protective factor	NFS	IWG
MVC	Mortality due to drunk driving	none	273	Mortality due to drunk driving	NFS	NFS	NFS	Is a primary and secondary risk factor	Needs further developmental work	NFS	Fatality	NFS	IWG
MVC	Speed limit excesses	none	274	% of	Vehicles exceeding speed limits	NFS	NFS		Needs further developmental work	NFS	Risk/protective factor	NFS	IWG
MVC	Mortality rate due to road accidents	By age and mode of road use	275	Mortality rate due to road accidents	Total number of death due to traffic accidents * 100,000	Divided by the total population	NFS	Recommended for immediate implementation		Police records and death certificates	Fatality	NFS	IWG
MVC	Injury rate due to road accidents	none	276	Injury rate due to road accidents	Total number of injured due to traffic accidents * 10,000	Divided by the total population	NFS			Available from CARE and IRTAD	Fatality and Morbidity	NFS	IWG
MVC	Potential years of life lost attributable to road accidents	none	277	Potential years of life lost attributable to road accidents	NFS	NFS	NFS		Not feasible for immediate implementation, life expectancy at time of death should be used	NFS	Fatality	NFS	IWG
MVC	DALY lost	none	278	DALY lost	NFS	NFS	NFS	World bank	Not feasible for	NFS	Fatality and	NFS	IWG

	attributable to road accidents			attributable to road accidents				had provided an algorithm to calculate DALYs	immediate implementation, life expectancy at time of death should be used		Morbidity		
MVC	Road accident rate	none	279	Road accident rate	Nr. Of accidents involving injured people	Per population	NFS	Recommended for immediate implementation		Available in CARE	Fatality and Morbidity	NFS	IWG
MVC	Road Accident rate	none	280	Road Accident rate	Nr. Of accidents involving injured people	Per vehicles	NFS	Recommended for immediate implementation		Available in CARE	Fatality and Morbidity	NFS	IWG
MVTC	Alcohol-related crash deaths	Overall	32	If driver or non-occupant has equal to or more than 0.01g/dL	All fatalities in MVCs on public roads	Age Adjusted Rate per 100,000	50 states + DC + Puerto Rico	Very much complete, very well controlled, readily available	Does not include death after more than 30 days, does not include non-traffic crashes (on private property) BAC not always available, estimates via discriminant analysis	Official source	Fatality	Check: Source Traffic Safety Facts	SIIR2, SIIR
MVTC	Morbidity alcohol-related traffic accidents	Overall	130	NFS	Number of cases	Rate per 100,000 population	NFS	Alcohol is a serious MVC problem	How reliable is the alcohol information in MVC?	Official sources	Morbidity	Check WHO	ECHI-2LL
MVTC	Morbidity - Injuries: Road traffic	Overall	155	NFS	Incidence	NFS	NFS	Important information	No clear definition	External cause and injuries	Morbidity	Check Eurostat, OECD, Eurocost project	ECHI-2LL, ECHI-2SL
MVTC	Mortality rate	By age	181	Kilometres travelled rates of fatal cases in MV	Number of dead with cause of death coded E810-E819 (ICD9CM) or V02-V04 (.1,.9), V09.2, V12-V14 (.3, .9), V19 (.4,.6), V20-V28 (.3,.9), V29-V79 (.4, .9), V80 (.3, .5), V81-V82 (.1), V83-V86 (.0,	Total kilometres travelled within one year by age group (0-14, 15-24, 25-64, 65-79, 80+)	New Zealand		Same as above, considers alternative operational definitions with police data on numerators	External causes	Fatality	ICD9 or ICD10 or police data	Langley

					.3), V87 (.0, .8) or V89(.2)								
MVTC	Injured according to police records	Overall	191	Injured in motor vehicle crashes	NFS	None	New Zealand	Uses police records		Official sources	Fatality and Morbidity	NFS	Langley
MVTC	Hospital admissions due to MV	Overall	192	People discharged with E810-E819	NFS	None	New Zealand			External cause	Fatality and Morbidity	ICD-9-CM	Langley
MVTC	Fatal motor vehicle cases	Overall	179 (similar to 58 but now w/o denominator)	Fatal cases in MV	Number of dead with cause of death coded E810-E819 (ICD9CM) or V02-V04 (.1,.9), V09.2, V12-V14 (.3, .9), V19 (.4,.6), V20-V28 (.3,.9), V29-V79 (.4, .9), V80 (.3, .5), V81-V82 (.1), V83-V86 (.0, .3), V87 (.0, .8) or V89(.2)	None	New Zealand Greece		If death certificates are not available, they propose to use police data on deaths within 30 days of crash as alternative definition	External cause	Fatality	ICD9 or ICD10 or police data	Langley
MVTC	Number of MVTC-related injury deaths	Overall	259	Based on NZHIS data	Number of MVTC-related injury deaths	None	New Zealand	Good information on fatalities	External cause not always available	External causes	Fatality	NFS	NZIPS
MVTC	MVTC-related death rate	Overall	262		Number of MVTC-related injury deaths	Per billion vehicle kilometres	New Zealand	Good information on fatalities	External cause not always available	External causes	Fatality	NFS	NZIPS
MVTC	MVTC-related death rate	Overall	263		Number of MVTC-related injury deaths	Per 10,000 vehicles	New Zealand	Good information on fatalities	External cause not always available	External causes	Fatality	NFS	NZIPS
MVTC	Number of MVTC-related injury deaths	Overall	265	Based on TCR data	Number of MVTC-related injury deaths	None	New Zealand	Good information on fatalities	External cause not always available	External causes	Fatality	NFS	NZIPS
MVTC	Severe non fatal motor vehicle injury rate	Overall	175 (=260)	Hospital admissions with ICISS =<0.941 (if ICD10) or ICISS =<0.96 (if ICD9CM) due to MV	Hospital admissions (excluding readmissions) who did not die because with principal diagnoses 800-904 or 910-995 (ICD9CM) AND E810-E819 or V02-V04, V09.2, V12-	Total population mid year It uses the direct standardizatio n method	New Zealand			External cause and injuries	Morbidity	ICD9CM or ICD10	Langley

					V14 (.3, .9), V19 (.4,.6), V20-V28 (.3,.9), V29-V79 (.4, .9), V80 (.3, .5), V81-V82 (.1), V83-V86 (.0, .3), V87 (.0, .8) or V89(.2)								
MVTC	Severe non fatal Motor vehicle injuries	Overall	174 (=261)	Hospital admissions with ICISS =<0.941 (if ICD10) or ICISS =<0.96 (if ICD9CM) due to MV	Hospital admissions who did not die because with principal diagnoses 800-904 (ICD9CM) AND E810-E819 (no codes provided for ICD10)	None	New Zealand			External cause and injuries	Morbidity	ICD9CM or ICD10	Langley
MVTC	Number of MVTC-related serious non-fatal injuries	Overall	261 (=174)	Serious means an ICISS score of 0.941 or less	Number of MVTC-related serious non-fatal injuries	None	New Zealand	Hospital data readily available BUT are only hospital cases included?	External cause not always available, quality of data for non-fatal cases might be less good	External causes	Morbidity	NFS	NZIPS
MVTC	Age-standardized MVTC-related serious non-fatal injury rate	Overall	260 (=175)	Serious means an ICISS score of 0.941 or less	Number of MVTC-related serious non-fatal injuries	Rate per 100,000 person-years	New Zealand	Hospital data readily available BUT are only hospital cases included?	External cause not always available, quality of data for non-fatal cases might be less good	External causes	Morbidity	NFS	NZIPS
MVTC	Age-standardized MVTC-related injury mortality rate	Overall	258 (= 58 & 264)	Based on NZHIS data	Number of MVTC-related injury deaths	Rate per 100,000 person-years	New Zealand	Good information on fatalities	External cause not always available	External causes	Fatality	NFS	NZIPS
MVTC	Fatal Motor Vehicle Crash Rate: Traffic	Overall	58 (=180, 258 & 264)	All fatal MVC injuries on public roads, ICD-9, E-Codes 810-819	All fatalities in MVCs on public roads	Rate per 100,000 population	All US	Easy to use	External causes in some states only coded for about half the cases	External cause	Fatality	Death certificates (ICD-9)	SIIR
MVTC	Fatal motor vehicle injury rates	Overall	180 (= 58, 258 & 264)	Population rates of fatal cases in MV	Number of dead with cause of death coded E810-E819 (ICD9CM) or V02-V04 (.1,.9), V09.2, V12-V14 (.3, .9), V19 (.4,.6),	Population at mid year	New Zealand, Ireland		Same as above	External cause	Fatality	ICD9 or ICD10 or police data	Langley Boland

					V20-V28 (.3,.9), V29-V79 (.4, .9), V80 (.3, .5), V81-V82 (.1), V83-V86 (.0, .3), V87 (.0, .8) or V89(.2)								
MVTC	Age-standardized MVTC-related injury mortality rate	Overall	264 (=58, 180 & 258)	Based on TCR data	Number of MVTC-related injury deaths	Rate per 100,000 person-years	New Zealand	Good information on fatalities	External cause not always available	External causes	Fatality	NFS	NZIPS
Poisoning	Poisoning hospitalizations	Overall	33	ICD-10: X40-X49, X60-X69, X85-X90, Y10-Y19, Y35.2 ICD-9: E-Codes 850-869, 950-952, 962, 972, 980-982	Use estimated population for the year of the data, Include only non-federal, acute care or inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104	Rate per 100,000 population	About half of the American states	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence	External cause	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2
Poisoning	Poisoning hospitalizations	By sex	34	ICD-10: X40-X49, X60-X69, X85-X90, Y10-Y19, Y35.2 ICD-9: E-Codes 850-869, 950-	Use estimated population for the year of the data, Include only non-federal, acute care or	Rate per 100,000 population	About half of the American states	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury	Data are generated from forms used for billing (UB-92), quality assurance may vary between	External cause	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2

				952, 962, 972, 980-982	inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104			and place of occurrence	states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence				
Poisoning	Poisoning hospitalizations	By age (Under 1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+)	35	ICD-10: X40-X49, X60-X69, X85-X90, Y10-Y19, Y35.2 ICD-9: E-Codes 850-869, 950-952, 962, 972, 980-982	Use estimated population for the year of the data, Include only non-federal, acute care or inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104	Rate per 100,000 population	About half of the American states	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people	External cause	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2

									hospitalized counted), people counted according to hospital location – not place of residence				
Poisoning	Poisoning fatalities	Overall	36	X40-X49, X60-X69, X85-X90, Y10-Y19, Y35.2	Age-adjusted to NCHS 2000 population, calculate age-adjusted rates for both male and female population, calculate indicator on the basis of the underlying cause of death, count deaths of state residents only, overall is weighted average of age-adjusted male and female rates (formula on page 103 of appendix)	Age Adjusted Rate per 100,000	25 US-states except Arizona	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence	External cause	Fatality	ICD-10	SIIR2
Poisoning	Poisoning fatalities	By sex	37	X40-X49, X60-X69, X85-X90, Y10-Y19, Y35.2	Age-adjusted to NCHS 2000 population, calculate age-adjusted rates for both male and female population, calculate indicator on the basis of the underlying	Age Adjusted Rate per 100,000	25 US-states except Arizona	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation	External cause	Fatality	ICD-10	SIIR2

					cause of death, count deaths of state residents only				for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence				
Poisoning	Poisoning fatalities	By age (Under 1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+)	38	X40-X49, X60-X69, X85-X90, Y10-Y19, Y35.2	Age-adjusted to NCHS 2000 population, calculate age-adjusted rates for both male and female population, calculate indicator on the basis of the underlying cause of death, count deaths of state residents only	Rate per 100,000 population	25 US-states except Arizona	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location	External cause	Fatality	ICD-10	SIIR2

									– not place of residence				
Poisoning	Mortality accidental poisoning	Overall	91	X40-X49	Number of cases	Crude death rates	NFS	Easy to calculate	External cause is not always coded. Problems because of different age distributions in the population	External cause	Fatality	ICD-10	ECHI-2LL
Poisoning	Mortality accidental poisoning	Overall	92	X40-X49	Number of cases	Standardized death rates 0-64	NFS	Interesting but low prevalence	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
Poisoning	Mortality accidental poisoning	By region	93	X40-X49	Number of cases	Standardized death rates 0-64	NFS	Interesting but low prevalence	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
Poisoning	Mortality accidental poisoning	Overall	94	X40-X49	Number of cases	Standardized death rates 65+	NFS	Interesting but low prevalence	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
Poisoning	Mortality accidental poisoning	By region	95	X40-X49	Number of cases	Standardized death rates 65+	NFS	Interesting but low prevalence	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
Poisoning	Mortality accidental poisoning	Overall	96	X40-X49	PYLL calculated on the basis of the remaining life expectancy in the respective country OR life expectancy in to EU member state	None	NFS	Interesting but low prevalence	External cause is not always coded. Dependent on number of inhabitants of the country	External cause	Fatality	ICD-10	ECHI-2LL
Poisoning	Mortality accidental poisoning	Overall	97	X40-X49	% PYLL (calculated on the basis of the remaining life expectancy in the respective country OR life expectancy in to EU member state)	Total PYLL	NFS	Very relevant for health policy issues	External cause is not always coded. Decision on calculation of numerator	External cause	Fatality	ICD-10	ECHI-2LL
Poisoning	Mortality accidental poisoning	By gender	98	X40-X49	% PYLL (calculated on the basis of the remaining life expectancy in the respective country OR life expectancy in to EU member	Total PYLL	NFS	Very relevant for health policy issues and gender-specific problems	External cause is not always coded. Decision on calculation of numerator	External cause	Fatality	ICD-10	ECHI-2LL

					state)								
Poisoning	Morbidity - Poisoning in children	Overall	115	NFS	Over-night patient admissions	Rate per 100,000 population	Check CHILD project	Interesting but low prevalence	External cause is not always coded.	External cause	Morbidity	Check CHILD project	ECHI-2LL
Poisoning	Morbidity - Poisoning in children	By gender	116	NFS	Over-night patient admissions	Rate per 100,000 population	Check CHILD project	Interesting but low prevalence	External cause is not always coded.	External cause	Morbidity	Check CHILD project	ECHI-2LL
Poisoning	Morbidity - Poisoning in children	By age 0-4, 5-9, 10-14, 15-17	117	NFS	Over-night patient admissions	Rate per 100,000 population	Check CHILD project	Interesting but low prevalence	External cause is not always coded.	External cause	Morbidity	Check CHILD project	ECHI-2LL
Poisoning	Morbidity - Poisoning in children	By region	118	NFS	Over-night patient admissions	Rate per 100,000 population	Check CHILD project	Interesting but low prevalence	External cause is not always coded.	External cause	Morbidity	Check CHILD project	ECHI-2LL
Poisoning	Morbidity - Poisoning in children	By SES	119	NFS	Over-night patient admissions	Rate per 100,000 population	Check CHILD project	Interesting but low prevalence	External cause is not always coded.	External cause	Morbidity	Check CHILD project	ECHI-2LL
Road	Road design quality	Overall	162	%	% of roads meeting design standards more detailed descriptions available on p. 41f	NFS	NFS	Road construction is important	Is there one single indicator for this?	NFS	Risk/protective factor	NFS	TSPI
Road	Road network quality	Overall	163	%	% of roads fitting in road network hierarchy more detailed descriptions available on p. 41f	NFS	NFS	Engineers love this hierarchy	Is it really a risk or protective factor? Validity?	NFS	Risk/protective factor	NFS	TSPI
Self-harm	Suicide attempt hospitalizations	Overall	48	ICD-10: X60-X84, Y87.0 ICD-9: E-Codes 950-959	Use estimated population for the year of the data, Include only non-federal, acute care or inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104	Rate per 100,000 population	About half of the American states	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be	External cause	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2

									hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence				
Self-harm	Suicide attempt hospitalizations	By sex	49	ICD-10: X60-X84, Y87.0 ICD-9: E-Codes 950-959	Use estimated population for the year of the data, Include only non-federal, acute care or inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104	Rate per 100,000 population	About half of the American states	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence	External cause	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2
Self-harm	Suicide attempt hospitalizations	By age (Under 1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+)	50	ICD-10: X60-X84, Y87.0 ICD-9: E-Codes 950-959	Use estimated population for the year of the data, Include only non-federal,	Rate per 100,000 population	About half of the American states	External causes can give a pretty detailed insight into the intentionality, mechanisms,	Data are generated from forms used for billing (UB-92), quality assurance may	External cause	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2

					acute care or inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104			causes of injury and place of occurrence	vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence				
Self-harm	Suicide	Overall	51	X60-X84, Y87.0	Age-adjusted to NCHS 2000 population, calculate age-adjusted rates for both male and female population, calculate indicator on the basis of the underlying cause of death, count deaths of state residents only, overall is weighted average of age-adjusted male and female rates (formula on page 103 of appendix)	Age Adjusted Rate per 100,000	25 US-states except Arizona	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of	External cause	Fatality	ICD-10	SIIR2

									people hospitalized counted), people counted according to hospital location – not place of residence				
Self-harm	Suicide	By sex	52	X60-X84, Y87.0	Age-adjusted to NCHS 2000 population, calculate age-adjusted rates for both male and female population, calculate indicator on the basis of the underlying cause of death, count deaths of state residents only	Age Adjusted Rate per 100,000	25 US-states except Arizona	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence	External cause	Fatality	ICD-10	SIIR2
Self-harm	Suicide	By age (Under 1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+)	53	X60-X84, Y87.0	Age-adjusted to NCHS 2000 population, calculate age-adjusted rates for both male and female population, calculate indicator on the basis of the	Rate per 100,000 population	25 US-states except Arizona	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data,	External cause	Fatality	ICD-10	SIIR2

					underlying cause of death, count deaths of state residents only				wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence				
Self-harm	Percentage of high school students reporting suicide attempt during the past 12 months	Overall	54	%	Self-administered, school based survey of 9th to 12th grade students	Surveyed high school students 9th – 12th grade	11 of the 26 states participating in SIIR2	Probably only available in few European countries, survey data are in general easy to get	Applies only to youth who attend the school, possibility of over- or underreporting of behaviours, methods of data collection may vary over states	Survey	Risk/protective factor	YRBS	SIIR2
Self-harm	Percentage of students reporting suicide attempt during the past 12 months	By sex	55	%	Self-administered, school based survey of 9th to 12th grade students	Surveyed high school students 9th – 12th grade	11 of the 26 states participating in SIIR2	Probably only available in few European countries, survey data are in general easy to get	Applies only to youth who attend the school, possibility of over- or underreporting of behaviours, methods of data collection may vary over states	Survey	Risk/protective factor	YRBS	SIIR2
Self-harm	Mortality suicide & intentional self-harm	Overall	62	X60-X84	Number of cases	Standardized death rates 0-64	NFS	Suicide and self-harm are important issues – especially in Eastern and Northern Europe	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL

Self-harm	Mortality suicide & intentional self-harm	By region	63	X60-X84	Number of cases	Standardized death rates 0-64	NFS	Suicide and self-harm are important issues – especially in Eastern and Northern Europe	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
Self-harm	Mortality suicide & intentional self-harm	Overall	64	X60-X84	Number of cases	Standardized death rates 65+	NFS	Suicide and self-harm are important issues – especially in Eastern and Northern Europe	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
Self-harm	Mortality suicide & intentional self-harm	By region	65	X60-X84	Number of cases	Standardized death rates 65+	NFS	Suicide and self-harm are important issues – especially in Eastern and Northern Europe	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
Self-harm	Mortality suicide & intentional self-harm	Overall	66	X60-X84	PYLL calculated on the basis of the remaining life expectancy in the respective country OR life expectancy in to EU member state	None	NFS	Interesting from a total Europe perspective	External cause is not always coded. Dependent on number of inhabitants of the country	External cause	Fatality	ICD-10	ECHI-2LL
Self-harm	Mortality suicide & intentional self-harm	Overall	67	X60-X84	% PYLL (calculated on the basis of the remaining life expectancy in the respective country OR life expectancy in to EU member state)	Total PYLL	NFS	Very relevant for health policy issues	External cause is not always coded. Decision on calculation of numerator	External cause	Fatality	ICD-10	ECHI-2LL
Self-harm	Mortality suicide & intentional self-harm	By gender	68	X60-X84	% PYLL (calculated on the basis of the remaining life expectancy in the respective country OR life expectancy in	Total PYLL	NFS	Very relevant for health policy issues and gender-specific problems	External cause is not always coded. Decision on calculation of numerator	External cause	Fatality	ICD-10	ECHI-2LL

					to EU member state)								
Self-harm	Mental behavioural: Suicide attempt	Overall	145	NFS	Lifetime prevalence	NFS	NFS	Easy to get survey data	Biases?	Survey	Risk/protective factor	NFS	ECHI-2LL, ECHI-2ML
Self-harm	Mental behavioural: Suicide attempt	By gender	146	NFS	Lifetime prevalence	NFS	NFS	Easy to get survey data	Biases?	Survey	Risk/protective factor	NFS	ECHI-2LL, ECHI-2ML
Self-harm	Mental behavioural: Suicide attempt	By age	147	NFS	Lifetime prevalence	NFS	NFS	Easy to get survey data	Biases?	Survey	Risk/protective factor	NFS	ECHI-2LL, ECHI-2ML
Self-harm	Mental behavioural: Suicide attempt	By region	148	NFS	Lifetime prevalence	NFS	NFS	Easy to get survey data	Biases?	Survey	Risk/protective factor	NFS	ECHI-2LL, ECHI-2ML
Self-harm	Mental behavioural: Suicide attempt	By SES	149	NFS	Lifetime prevalence	NFS	NFS	Easy to get survey data	Biases?	Survey	Risk/protective factor	NFS	ECHI-2LL, ECHI-2ML
Self-harm	Age-adjusted death rate due to suicide per 100,000 population	Overall	196	Deaths certified or determined as intentionally self-inflicted	X60 – X 84, Y97.0	Number of persons in the standard population per age group	NFS	ICD-10 widely used	Data on suicides is suspect especially in catholic countries because of social norms	External cause	Fatality	ICD-10	TMVI
Self-harm	Age-adjusted emergency room visits due to suicide attempts per 100,000 population	Overall	208	Emergency room discharges after suicide attempt	X60 – X84, Y87.0 and ICECI = 2 (why here and not in #207)	Number of persons in the standard population per age group	NFS	Self-harm is an important topic especially in Eastern and Northern European countries	ICECI rarely coded	External cause	Morbidity	ICD-10 / ICECI	TMVI
Self-harm	Rate of suicide ideation per 100,000 population	Overall	223	Survey question	# of persons responding positively to the question "During the last 12 months, did you make plans how you would attempt suicide?"	# of persons in survey	NFS	Self-harm is an important topic especially in Eastern and Northern European countries	Bias?	Survey	Risk/protective factor	NFS	TVMI
Self-harm	Rate of suicide attempts in the past 12 months	Overall	224	Survey question	# of persons responding positively to the question "During the last	# of persons in survey	NFS	Self-harm is an important topic especially in Eastern and Northern	Bias?	Survey	Risk/protective factor	NFS	TVMI

					12 months, did you attempt suicide such that the resulting injury, poisoning or overdose had to be treated by a doctor or nurse?"			European countries					
Self-harm	Number of intentional self-harm injury deaths	Overall	243		Number of intentional self-harm injury deaths	None	New Zealand	Good information on fatalities	External cause not always available	External causes	Fatality	NFS	NZIPS
Self-harm	Number of intentional self-harm serious non-fatal injuries	Overall	245	Serious means an ICISS score of 0.941 or less	Number of intentional self-harm serious non-fatal injuries	None	New Zealand	Hospital data readily available BUT are only hospital cases included?	External cause not always available, quality of data for non-fatal cases might be less good	External causes	Morbidity	NFS	NZIPS
Self-harm	Mortality suicide & intentional self-harm	Overall	61 (=242)	X60-X84	Number of cases	Crude death rates	NFS	Easy to calculate	External cause is not always coded. Problems because of different age distributions in the population	External cause	Fatality	ICD-10	ECHI-2LL
Self-harm	Age-standardized intentional self-harm injury mortality rate	Overall	242 (=61)		Number of intentional self-harm injury deaths	Rate per 100,000 person-years	New Zealand	Good information on fatalities	External cause not always available	External causes	Fatality	NFS	NZIPS
Self-harm	Age-standardized intentional self-harm serious non-fatal injury rate	Overall	244 (=207)	Serious means an ICISS score of 0.941 or less	Number of intentional self-harm serious non-fatal injuries	Rate per 100,000 person-years	New Zealand	Hospital data readily available BUT are only hospital cases included?	External cause not always available, quality of data for non-fatal cases might be less good	External causes	Morbidity	NFS	NZIPS
Self-harm	Age-adjusted hospital discharge rate due to suicide attempts per 100,000 population	Overall	207 (=244)	Hospital discharges after suicide attempt	X60 – X84, Y87.0	Number of persons in the standard population per age group	NFS	Self-harm is an important topic especially in Eastern and Northern European countries		External cause	Morbidity	ICD-10	TMVI
TBI	Traumatic brain injury hospitalizations	Overall	4	ICD-10: S01.0-S01.9, S02.0, S02.1, S02.3, S02.7-S02.9, S06.0-S06.9, S07.0,	Use estimated population for the year of the data, Include only non-federal,	Rate per 100,000 population	About half of the American states (participants of SIIR2)	More completely filled out than information on external causes	Data are generated from forms used for billing (UB-92), quality assurance may	Injuries	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2, SIIR

				S07.1, S07.8, S07.9, S09.7-S09.9, T01.0, T02.0, T04.0, T06.0, T90.1, T90.2, T90.4, T90.5, T90.8, T90.9 ICD-9: N-Codes 800.0-801.9, 803.0-804.9, 850.0-854.1, 959.01	acute care or inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104				vary between states, not all states maintain hospital discharge data, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence				
TBI	Traumatic brain injury hospitalizations	By sex	5	ICD-10: S01.0-S01.9, S02.0, S02.1, S02.3, S02.7-S02.9, S06.0-S06.9, S07.0, S07.1, S07.8, S07.9, S09.7-S09.9, T01.0, T02.0, T04.0, T06.0, T90.1, T90.2, T90.4, T90.5, T90.8, T90.9 ICD-9: N-Codes 800.0-801.9, 803.0-804.9, 850.0-854.1, 959.01	Use estimated population for the year of the data, Include only non-federal, acute care or inpatient facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104	Rate per 100,000 population	About half of the American states (participants of SIIR2)	More completely filled out than information on external causes	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence	Injuries	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2
TBI	Traumatic brain injury hospitalizations	By age (Under 1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+)	6	ICD-10: S01.0-S01.9, S02.0, S02.1, S02.3, S02.7-S02.9, S06.0-S06.9, S07.0, S07.1, S07.8, S07.9, S09.7-	Use estimated population for the year of the data, Include only non-federal, acute care or inpatient	Rate per 100,000 population	About half of the American states (participants of SIIR2)	More completely filled out than information on external causes	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all	Injuries	Fatality and Morbidity	ICD-10 (fatal), ICD-9 non-fatal	SIIR2

				S09.9, T01.0, T02.0, T04.0, T06.0, T90.1, T90.2, T90.4, T90.5, T90.8, T90.9 ICD-9: N-Codes 800.0-801.9, 803.0-804.9, 850.0-854.1, 959.01	facilities, Include readmissions, transfers and deaths occurring in the hospital, Additional instructions p. 104				states maintain hospital discharge data, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence				
TBI	Traumatic brain injury fatalities	Overall	7		Fatal TBI is S01.0-S01.9, S02.0, S02.1, S02.3, S02.7-S02.9, S06.0-S06.9, S07.0, S07.1, S07.8, S07.9, S09.7-S09.9, T01.0, T02.0, T04.0, T06.0, T90.1, T90.2, T90.4, T90.5, T90.8, T90.9	Age Adjusted Rate per 100,000, Age-adjusted to NCHS 2000 population, calculate age-adjusted rates for both male and female population, count deaths of state residents only, overall is weighted average of age-adjusted male and female rates (formula on page 103 of appendix)	25 US-states except Arizona	More completely filled out than information on external causes	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence	Injuries	Fatality	ICD-10	SIIR2, SIIR
TBI	Traumatic brain injury fatalities	By sex	8		Fatal TBI is S01.0-S01.9, S02.0, S02.1, S02.3, S02.7-S02.9, S06.0-S06.9, S07.0, S07.1, S07.8, S07.9, S09.7-S09.9, T01.0, T02.0, T04.0,	Age Adjusted Rate per 100,000, Age-adjusted to NCHS 2000 population, calculate age-adjusted rates for both male and female	25 US-states except Arizona	More completely filled out than information on external causes	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital	Injuries	Fatality	ICD-10	SIIR2

					T06.0, T90.1, T90.2, T90.4, T90.5, T90.8, T90.9	population, count deaths of state residents only			discharge data, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence				
TBI	Traumatic brain injury fatalities	By age (Under 1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+)	9		Fatal TBI is S01.0-S01.9, S02.0, S02.1, S02.3, S02.7-S02.9, S06.0-S06.9, S07.0, S07.1, S07.8, S07.9, S09.7-S09.9, T01.0, T02.0, T04.0, T06.0, T90.1, T90.2, T90.4, T90.5, T90.8, T90.9	Rate per 100,000 population, Age-adjusted to NCHS 2000 population, calculate age-adjusted rates for both male and female population, count deaths of state residents only	25 US-states except Arizona	More completely filled out than information on external causes	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence	Injuries	Fatality	ICD-10	SIIR2
Undetermined intent	Mortality undetermined intent	Overall	136	Y10-Y34	PYLL calculated on the basis of the remaining life expectancy in the respective country OR life expectancy in to EU member state	None	NFS	Interesting from a total Europe perspective	External cause is not always coded. Dependent on number of inhabitants of the country	External cause	Fatality	ICD-10	ECHI-2LL
Undetermined intent	Mortality undetermined	Overall	137	Y10-Y34	% PYLL (calculated on	Total PYLL	NFS	Interesting to see if	External cause is not always	External cause	Fatality	ICD-10	ECHI-2LL

	intent				the basis of the remaining life expectancy in the respective country OR life expectancy in to EU member state)			undetermined intent is an important problem with regard to all fatal health problems	coded. Decision on calculation of numerator Meaning of indicator?				
Undetermined intent	Mortality undetermined intent	By gender	138	Y10-Y34	% PYLL (calculated on the basis of the remaining life expectancy in the respective country OR life expectancy in to EU member state)	Total PYLL	NFS	Interesting to see if undetermined intent is an important problem with regard to all fatal health problems, any gender issues (sexual abuse)?	External cause is not always coded. Decision on calculation of numerator Meaning of indicator?	External cause	Fatality	ICD-10	ECHI-2LL
Undetermined intent	Mortality undetermined intent	Overall	139	Y10-Y34	Number of cases	Crude death rates	NFS	Easy to calculate	External cause is not always coded. Meaning of indicator?	External cause	Fatality	ICD-10	ECHI-2LL
Undetermined intent	Mortality undetermined intent	Overall	140	Y10-Y34	Number of cases	Standardized death rates 0-64	NFS	Might be interesting to see if knowledge about intent is different in different countries	External cause is not always coded. Meaning of indicator?	External cause	Fatality	ICD-10	ECHI-2LL
Undetermined intent	Mortality undetermined intent	By region	141	Y10-Y34	Number of cases	Standardized death rates 0-64	NFS	Might be interesting to see if knowledge about intent is different in different countries	External cause is not always coded. Meaning of indicator?	External cause	Fatality	ICD-10	ECHI-2LL
Undetermined intent	Mortality undetermined intent	Overall	142	Y10-Y34	Number of cases	Standardized death rates 65+	NFS	Might be interesting to see if knowledge about intent is different in different countries	External cause is not always coded. Meaning of indicator?	External cause	Fatality	ICD-10	ECHI-2LL
Undetermined intent	Mortality undetermined intent	By region	143	Y10-Y34	Number of cases	Standardized death rates 65+	NFS	Might be interesting to see if knowledge about intent is	External cause is not always coded. Meaning of indicator?	External cause	Fatality	ICD-10	ECHI-2LL

								different in different countries					
Vehicle	Passive safety	Overall	161	EuroNCAP more detailed descriptions available on p. 41f	%	NFS	NFS	Always a topic	Validity of tests?	Official sources	Risk/protective factor	NFS	TSPI
Violence	Homicide	Overall	45	X85-Y09, Y87.1	Age-adjusted to NCHS 2000 population, calculate age-adjusted rates for both male and female population, calculate indicator on the basis of the underlying cause of death, count deaths of state residents only, overall is weighted average of age-adjusted male and female rates (formula on page 103 of appendix)	Age Adjusted Rate per 100,000	25 US-states except Arizona	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence	External cause	Fatality	ICD-10	SIIR2
Violence	Homicide	By sex	46	X85-Y09, Y87.1	Age-adjusted to NCHS 2000 population, calculate age-adjusted rates for both male and female population, calculate indicator on the basis of the	Age Adjusted Rate per 100,000	25 US-states except Arizona	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data,	External cause	Fatality	ICD-10	SIIR2

					underlying cause of death, count deaths of state residents only				wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to hospital location – not place of residence				
Violence	Homicide	By age (Under 1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+)	47	X85-Y09, Y87.1	Age-adjusted to NCHS 2000 population, calculate age-adjusted rates for both male and female population, calculate indicator on the basis of the underlying cause of death, count deaths of state residents only	Rate per 100,000 population	25 US-states except Arizona	External causes can give a pretty detailed insight into the intentionality, mechanisms, causes of injury and place of occurrence	Data are generated from forms used for billing (UB-92), quality assurance may vary between states, not all states maintain hospital discharge data, wide variation for external cause coding (53-100%), coding of external causes increases over time, people may be hospitalized more than one (number of hospitalizations instead of people hospitalized counted), people counted according to	External cause	Fatality	ICD-10	SIIR2

									hospital location – not place of residence				
Violence	Mortality homicide, assault	Overall	70	X85-Y09	Number of cases	Standardized death rates 0-64	NFS	Probably large differences between countries	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
Violence	Mortality homicide, assault	By region	71	X85-Y09	Number of cases	Standardized death rates 0-64	NFS	Probably large differences between countries	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
Violence	Mortality homicide, assault	Overall	72	X85-Y09	Number of cases	Standardized death rates 65+	NFS	Probably large differences between countries	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
Violence	Mortality homicide, assault	By region	73	X85-Y09	Number of cases	Standardized death rates 65+	NFS	Probably large differences between countries	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL
Violence	Mortality homicide, assault	Overall	74	X85-Y09	PYLL calculated on the basis of the remaining life expectancy in the respective country OR life expectancy in to EU member state	None	NFS	Probably large differences between countries	External cause is not always coded. Dependent on number of inhabitants of the country	External cause	Fatality	ICD-10	ECHI-2LL
Violence	Mortality homicide, assault	Overall	75	X85-Y09	% PYLL (calculated on the basis of the remaining life expectancy in the respective country OR life expectancy in to EU member state)	Total PYLL	NFS	Very relevant for health policy issues	External cause is not always coded. Decision on calculation of numerator	External cause	Fatality	ICD-10	ECHI-2LL
Violence	Mortality homicide, assault	By gender	76	X85-Y09	% PYLL (calculated on the basis of the remaining life expectancy in the respective country OR life expectancy in to EU member state)	Total PYLL	NFS	Very relevant for health policy issues and gender-specific problems	External cause is not always coded. Decision on calculation of numerator	External cause	Fatality	ICD-10	ECHI-2LL
Violence	Age-adjusted homicide rate	Males age 15 – 44	197	Deaths certified as homicide	X85-Y09, Y35 – Y36, Y87.1,	Number of persons in the	NFS	ICD-10 widely used, violence	Violence is not a very important	External cause	Fatality	ICD-10	TMVI

	per 100,000 population				Y89.0	standard population per age group		probably an underestimated cause of injuries	type of injuries in Western Europe				
Violence	Age-adjusted homicide rate per 100,000 population	Females age 15 – 44	198	Deaths certified as homicide	X85-Y09, Y35 – Y36, Y87.1, Y89.0	Number of persons in the standard population per age group	NFS	ICD-10 widely used, violence probably an underestimated cause of injuries	Violence is not a very important type of injuries in Western Europe	External cause	Fatality	ICD-10	TMVI
Violence	Homicide rate per 100,000 population	Children under 5 years	199	Deaths certified as homicide	X85-Y09, Y35 – Y36, Y87.1, Y89.0	Children 0-4 in the population	NFS	ICD-10 widely used, violence probably an underestimated cause of injuries	Violence is not a very important type of injuries in Western Europe	External cause	Fatality	ICD-10	TMVI
Violence	Reports of assault per 1,000 population	Overall	200	Assault as defined by the countries penal code (including physical and sexual assault but excluding verbal assault and emotional abuse)	# of reports of assaults X 1,000	# of persons in the population.	NFS		Sexual assault widely underreported	Official sources	Fatality and Morbidity	NFS	TMVI
Violence	Reports of robbery per 1,000 population	Overall	201	Taking or attempting to take anything of value from another person	# of reports of robbery	# of persons in the population.	NFS		No data that is available from hospital discharge data (no medical data)	Official sources	Risk/protective factor	NFS	TMVI
Violence	Reports of kidnapping per 1,000 population	Overall	202	Forced abduction against one's will	# of reported kidnappings as reported by national statistics or Amnesty International	# of persons in the population.	NFS		No data that is available from hospital discharge data (no medical data)	Official sources	Risk/protective factor	NFS	TMVI
Violence	Age-adjusted death rate due to intimate partner violence per 100,000 population	Overall	203	Homicide were perpetrator / victim relationship is spouse / partner, current or past	X85-Y09, Y35 – Y36, Y87.1, Y89.0 and ICECI information	Number of persons in the standard population per age group	NFS	ICD-10 widely used, violence probably an underestimated cause of injuries	Violence is not a very important type of injuries in Western Europe, ICECI rarely coded	External cause	Fatality	ICD-10 / ICECI	TMVI
Violence	Death rate due to child abuse per 1,000 population	Children	204	Homicide with victim less than 5 years	X85-Y09, Y35 – Y36, Y87.1, Y89.0 and ICECI information	# of persons aged less than 5 in the population	NFS	ICD-10 widely used, violence probably an underestimated cause of injuries	Violence is not a very important type of injuries in Western Europe, ICECI rarely coded	External cause	Fatality	ICD-10 / ICECI	TMVI

Violence	Death rate due to elderly abuse per 100,000 population	Elderly 65+	205	Homicides were victim is aged more than 64 years and victim perpetrator relationship is partner, relative or caregiver	X85-Y09, Y35 – Y36, Y87.1, Y89.0 and ICECI information	# of persons aged 64 years plus in population	NFS	ICD-10 widely used, violence probably an underestimated cause of injuries	Violence is not a very important type of injuries in Western Europe, ICECI rarely coded	External cause	Fatality	ICD-10 / ICECI	TMVI
Violence	Age-adjusted homicides due to robbery per 100,000 population	Overall	206	Homicides that occur in the commission of a robbery	X85-Y09, Y35 – Y36, Y87.1, Y89.0 and ICECI information	Number of persons in the standard population per age group	NFS	ICD-10 widely used, violence probably an underestimated cause of injuries	Violence is not a very important type of injuries in Western Europe, ICECI rarely coded	External cause	Fatality	ICD-10 / ICECI	TMVI
Violence	Age-adjusted hospital discharge rate due to assault per 100,000 population	Males age 15 – 44	209	Less severe outcomes of youth violence	X85-Y09, Y35 – Y36, Y87.1, Y89.0	Number of persons in the standard population per age group	NFS	ICD-10 widely used, violence probably an underestimated cause of injuries	Violence is not a very important type of injuries in Western Europe	External cause	Morbidity	ICD-10	TMVI
Violence	Age-adjusted emergency room visits due to assault per 100,000 population	Males age 15 – 44	210	Less severe outcomes of youth violence	X85-Y09, Y35 – Y36, Y87.1, Y89.0 and ICECI information (why here and not in #209)	Number of persons in the standard population per age group	NFS	ICD-10 widely used, violence probably an underestimated cause of injuries	ICECI rarely coded	External cause	Morbidity	ICD-10 / ICECI	TMVI
Violence	Age-adjusted hospital discharge rate due to assault per 100,000 population	Females age 15 – 44	211	Less severe outcomes of intimate partner violence	X85-Y09, Y87.1	Number of persons in the standard population per age group	NFS	ICD-10 widely used, violence probably an underestimated cause of injuries	Violence is not a very important type of injuries in Western Europe	External cause	Morbidity	ICD-10	TMVI
Violence	Age-adjusted emergency room visit rate due to assaults resulting from IPV per 100,000 population	Overall	213	Emergency room visits with an ICD-10 discharge code for assaults	X85-Y09, Y87.1 and ICECI = 3	Number of persons in the standard population per age group	NFS	ICD-10 widely used, violence probably an underestimated cause of injuries	ICECI rarely coded	External cause	Morbidity	ICD-10 / ICECI	TMVI
Violence	Hospital discharge rate due to assault per 100,000 population	Children under 5 years	214	HDD of children less than 5 years with a code for assault	X85-Y09, Y35 – Y36, Y87.1, Y89.0	Children 0-4 in the population	NFS	ICD-10 widely used, violence probably an underestimated cause of injuries	Violence is not a very important type of injuries in Western Europe	External cause	Morbidity	ICD-10	TMVI
Violence	Hospital discharge rate due to assault resulting from	Children under 5 years	215	HDD of children less than 5 years with a code for	X85-Y09, Y35 – Y36, Y87.1, Y89.0 and ICECI	Children 0-4 in the population	NFS	ICD-10 widely used, violence probably an underestimated	ICECI rarely coded	External cause	Morbidity	ICD-10 / ICECI	TMVI

	child abuse per 100,000 population			assault by care provider	information			cause of injuries					
Violence	Emergency room visits due to assaults resulting from child abuse per 100,000 population	Children under 5 years	216	Emergency room visits of children less than 5 years with a code for assault by care provider	X85-Y09, Y35 – Y36, Y87.1, Y89.0 and ICECI information	Children 0-4 in the population	NFS	ICD-10 widely used, violence probably an underestimated cause of injuries	ICECI rarely coded	External cause	Morbidity	ICD-10 / ICECI	TMVI
Violence	Hospital discharge rate for assaults in the elderly per 100,000 population	Persons aged 65 and older	217	Assaults on persons age 65+	X85-Y09, Y35 – Y36, Y87.1, Y89.0	Persons aged 65 + in the population	NFS	ICD-10 widely used, violence probably an underestimated cause of injuries	Violence is not a very important type of injuries in Western Europe	External cause	Morbidity	ICD-10	TMVI
Violence	Hospital discharge rate for assaults due to elder abuse per 100,000 population	Persons age 65 and older	218	Assaults on persons age 65+ by relative or caregiver	X85-Y09, Y35 – Y36, Y87.1, Y89.0 and ICECI information	Persons aged 65 + in the population	NFS	ICD-10 widely used, violence probably an underestimated cause of injuries	ICECI rarely coded	External cause	Morbidity	ICD-10 / ICECI	TMVI
Violence	Emergency room visit rate for assaults due to elder abuse per 100,000 population	Persons aged 65 and older	219	Assaults on persons age 65+ by relative or caregiver	X85-Y09, Y35 – Y36, Y87.1, Y89.0 and ICECI information	Persons aged 65 + in the population	NFS	ICD-10 widely used, violence probably an underestimated cause of injuries	ICECI rarely coded	External cause	Morbidity	ICD-10 / ICECI	TMVI
Violence	Reported civil rights violations per 1,000 population	Overall	220	Acts leading to or threatening to result in physical injury as reported to national human rights authority	Number of reported civil rights violations	# of persons in the population	NFS	Violence probably an underestimated cause of injuries	Violence is not a very important type of injuries in Western Europe	Official sources	Risk/protective factor	NFS	TMVI
Violence	Reported cases of child maltreatment per 1,000 population aged less than 5 years	Children under 5 years	221	Cases of maltreatment in children aged less than 5 years as defined and reported by welfare agencies	# of reported cases of maltreatment in children 0 – 4 years	Children 0-4 in the population	NFS	Violence probably an underestimated cause of injuries	Violence is not a very important type of injuries in Western Europe	Official sources	Fatality and morbidity	NFS	TVMI
Violence	Reported cases of school fights per 100,000 population of school-aged children per year	School children	222	Incidence of physical violence as reported to school officials	# of reported cases of school fights	# in population aged 12 – 19 years (probably typo, means probably 18)	NFS	Violence probably an underestimated cause of injuries	Violence is not a very important type of injuries in Western Europe	Official sources	Risk/protective factor	NFS	TVMI
Violence	Self-reported	School children	225		# of persons	# of persons	NFS	Violence	Violence is not	Survey	Risk/protec	NFS	TVMI

	weapon-carrying rate among youth at school per 00 school children	12-18 years attending secondary school			responding positively to the question "During the past 30 days, did you carry a weapon such as a gun, knife, club, pipe or stone?"	in survey		probably an underestimated cause of injuries	a very important type of injuries in Western Europe		tive factor		
Violence	Self-reported fighting rate among youth at school per 100 school children	School children age 12 – 18 attending secondary school	226		# of persons responding positively to the question "During the past 30 days, were you in a physical fight in which someone (yourself or another person) was injured and had to be treated by a teacher, nurse or doctor?"	# of persons in survey	NFS	Violence probably an underestimated cause of injuries	Violence is not a very important type of injuries in Western Europe	Survey	Risk/protec tive factor	NFS	TVMI
Violence	Self-reported rate of IPV per 1,000 respondents	Adolescents, adults	227		# of persons responding positively to 4 questions on interpersonal violence (Indicator 3.330)	# of persons in survey	NFS	Violence probably an underestimated cause of injuries	Violence is not a very important type of injuries in Western Europe	Survey	Risk/protec tive factor	NFS	TVMI
Violence	Number of assaultive injury deaths	Overall	233		Number of assaultive injury deaths	None	New Zealand	Good information on fatalities	Not all data sources available in all countries	Official sources	Fatality	NFS	NZIPS
Violence	Number of assaultive serious non-fatal injuries	Overall	235	Serious means an ICISS score of 0.941 or less	Number of assaultive serious non-fatal injuries	None	New Zealand	Hospital data readily available BUT are only hospital cases included?	External cause not always available, quality of data for non-fatal cases might be less good	External causes	Morbidity	NFS	NZIPS
Violence	Age-standardized assaultive injury mortality rate	Overall	232 (=69)		Number of assaultive injury deaths	Rate per 100,000 person-years	New Zealand	Good information on fatalities	External cause not always available	External causes	Fatality	NFS	NZIPS
Violence	Mortality homicide, assault	Overall	69 (=232)	X85-Y09	Number of cases	Crude death rates	NFS	Easy to calculate	External cause is not always coded.	External cause	Fatality	ICD-10	ECHI-2LL

									Problems because of different age distributions in the population				
Violence	Age-standardized assaultive serious non-fatal injury rate	Overall	234 (=212)	Serious means an ICISS score of 0.941 or less	Number of assaultive serious non-fatal injuries	Rate per 100,000 person-years	New Zealand	Hospital data readily available BUT are only hospital cases included?	External cause not always available, quality of data for non-fatal cases might be less good	External causes	Morbidity	NFS	NZIPS
Violence	Age-adjusted hospital discharge rate for assault resulting from IPV per 100,000 population	Overall	212 (=234)	HDD with an ICD-10 discharge code for assaults	X85-Y09, Y87.1 and ICECI = 3	Number of persons in the standard population per age group	NFS	ICD-10 widely used, violence probably an underestimated cause of injuries	ICECI rarely coded	External cause	Morbidity	ICD-10 / ICECI	TMVI
Work	Mortality fatal accidents at work	Overall	77	NFS	Incidence	Rate per 100,000	NFS	Important question although of decreasing importance (at least in the Western European countries), data may be available via registers	Registers may not be available in all countries	NFS	Fatality	Check Eurostat-ESAW, Workhealth project	ECHI-2LL
Work	Mortality fatal accidents at work	By age	78	NFS	Incidence	Rate per 100,000	NFS	Important question although of decreasing importance (at least in the Western European countries), data may be available via registers	Registers may not be available in all countries	NFS	Fatality	Check Eurostat-ESAW, Workhealth project	ECHI-2LL
Work	Mortality fatal accidents at work	By gender	79	NFS	Incidence	Rate per 100,000	NFS	Important question although of decreasing importance (at least in the Western European countries), data	Registers may not be available in all countries	NFS	Fatality	Check Eurostat-ESAW, Workhealth project	ECHI-2LL

								may be available via registers					
Work	Mortality fatal accidents at work	By cause of accident	80	NFS	Incidence	Rate per 100,000	NFS	Important question although of decreasing importance (at least in the Western European countries), data may be available via registers	Registers may not be available in all countries	NFS	Fatality	Check Eurostat-ESAW, Workhealth project	ECHI-2LL
Work	Mortality fatal accidents at work	By branch	81	NFS	Incidence	Rate per 100,000	NFS	Important question although of decreasing importance (at least in the Western European countries), data may be available via registers	Registers may not be available in all countries	NFS	Fatality	Check Eurostat-ESAW, Workhealth project	ECHI-2LL
Work	Mortality fatal accidents at work	By occupation	82	NFS	Incidence	Rate per 100,000	NFS	Important question although of decreasing importance (at least in the Western European countries), data may be available via registers	Registers may not be available in all countries	NFS	Fatality	Check Eurostat-ESAW, Workhealth project	ECHI-2LL
Work	Morbidity - Injuries: Workplace	Overall	150	Eurostat/ESAW: less than 4 days absence from work Labour Force Survey: more than 3 days absence from work	Incidence	NFS	NFS	Important question although of decreasing importance (at least in the Western European countries), unclear definition of the incidence	Different data sources recommended: Eurostat, Workhealth project, Eurocost project, unclear definition of the incidence	Official sources	Morbidity	Check Eurostat, Workhealth project, Eurocost project	ECHI-2LL, ECHI-2SL
Work	Morbidity -	By age	151	Eurostat/ESAW	Incidence	NFS	NFS	Important	Different data	Official	Morbidity	Check	ECHI-

	Injuries: Workplace			: less than 4 days absence from work Labour Force Survey: more than 3 days absence from work				question although of decreasing importance (at least in the Western European countries)	sources recommended: Eurostat, Workhealth project, Eurocost project , unclear definition of the incidence	sources		Eurostat, Workhealth project, Eurocost project	2LL, ECHI-2SL
Work	Morbidity - Injuries: Workplace	By gender	152	Eurostat/ESAW : less than 4 days absence from work Labour Force Survey: more than 3 days absence from work	Incidence	NFS	NFS	Important question although of decreasing importance (at least in the Western European countries)	Different data sources recommended: Eurostat, Workhealth project, Eurocost project , unclear definition of the incidence	Official sources	Morbidity	Check Eurostat, Workhealth project, Eurocost project	ECHI-2LL, ECHI-2SL
Work	Morbidity - Injuries: Workplace	By branch/occupation	153	Eurostat/ESAW : less than 4 days absence from work Labour Force Survey: more than 3 days absence from work	Incidence	NFS	NFS	Important question although of decreasing importance (at least in the Western European countries)	Different data sources recommended: Eurostat, Workhealth project, Eurocost project, unclear definition of the incidence	Official sources	Morbidity	Check Eurostat, Workhealth project, Eurocost project	ECHI-2LL, ECHI-2SL
Work	Morbidity - Injuries: Workplace	By cause of accident	154	Eurostat/ESAW : less than 4 days absence from work Labour Force Survey: more than 3 days absence from work	Incidence	NFS	NFS	Important question although of decreasing importance (at least in the Western European countries)	Different data sources recommended: Eurostat, Workhealth project, Eurocost project, unclear definition of the incidence	Official sources	Morbidity	Check Eurostat, Workhealth project, Eurocost project	ECHI-2LL, ECHI-2SL
Work	Age-standardized work-related injury mortality rate	Overall	236	Based on NZHIS mortality data	Number of work-related injury deaths	Rate per 100,000 population	New Zealand	Good information on fatalities	Not all data sources available in all countries	Official sources	Fatality	NFS	NZIPS
Work	Number of work-related injury deaths	Overall	237	Based on NZHIS mortality data	Number of work-related injury deaths	None	New Zealand	Good information on fatalities	Not all data sources available in all countries	Official sources	Fatality	NFS	NZIPS
Work	Age-standardized work-related injury mortality rate	Overall	238	Based on ACC mortality data	Number of work-related injury deaths	Rate per 100,000 population	New Zealand	Good information on fatalities	Not all data sources available in all countries	Official sources	Fatality	NFS	NZIPS

Work	Number of work-related injury deaths	Overall	239	Based on ACC mortality data	Number of work-related injury deaths	None	New Zealand	Good information on fatalities	Not all data sources available in all countries	Official sources	Fatality	NFS	NZIPS
Work	Age-standardized work-related serious non-fatal injury rate	Overall	240	Serious means an ICISS score of 0.941 or less , based on ACC-NMDS data	Number of work-related serious non-fatal injuries	Rate per 100,000 population	New Zealand	Hospital data readily available BUT are only hospital cases included?	Not all data sources available in all countries	Official sources	Morbidity	NFS	NZIPS
Work	Number of work-related serious non-fatal injuries	Overall	241	Serious means an ICISS score of 0.941 or less , based on ACC-NMDS data	Number of work-related serious non-fatal injuries	None	New Zealand	Hospital data readily available BUT are only hospital cases included?	Not all data sources available in all countries	Official sources	Morbidity	NFS	NZIPS

Acronyms:

NFS: NOT FURTHER SPECIFIED

SEE: *Sociedad Española de Epidemiología* (Spanish Association of Epidemiology)

ECHI-2LL - ECHI-2 – Long list

ECHI-2ML – ECHI2 – Medium List (included in Report ECHI-2 – Short list)

ECHI-2SL - ECHI-2 – Short list

TSPI - Transport Safety Performance Indicators (ETSC)

SIIR2: State Injury Indicators Report – Second edition

SIIR: State Injury Indicators Report

TMVI: Towards Monitoring Violence Indicators

NZIPS: New Zealand Injury Prevention Strategy

IWG: Injury working group –

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TMVI: Towards Monitoring Violence Indicators.

Table 2. Motor Vehicle-related indicators requested by international agencies in 2004			
Category	Number	Indicator	References
MVC	1	Número accidentes	CARE UN_ECE_TD
MVC	2	Número accidentes según tipo vía (autopistas, urbanas, interurbanas)	UN_ECE_TD IRTAD
MVC	3	Numero accidentes y tipo de heridos sabiendo tipo de vía	IRTAD
MVC	4	Número accidentes y tipo de heridos desconociendo tipo de vía	IRTAD
MVC	5	Número accidentes según mes (en, fb, …dic)	UN_ECE_TD
MVC	6	Número accidentes según día semana (lun-juev, viernes, sábado, domingo)	UN_ECE_TD
MVC	7	Número accidentes según luz ambiental (a plena luz, a oscuras, no se sabe)	UN_ECE_TD
MVC	8	Número accidentes según condición vía (seca, mojada)	UN_ECE_TD
MVC	9	Número accidentes entre 1 vehículo y 1 peatón	UN_ECE_TD
MVC	10	Número accidentes entre 1 vehículo y más de 1 peatón	UN_ECE_TD
MVC	11	Número accidentes de 1 sólo vehículo	UN_ECE_TD
MVC	12	Número accidentes entre varios vehículos	UN_ECE_TD
MVC	13	Número accidentes entre varios vehículos según tipo (por detrás, en un cruce, en un paso a nivel, frontal, otros –incluye contra coche aparcado	UN_ECE_TD
MVC	14	Número accidentes en vía urbana	UN_ECE_TD
MVC	15	Número accidentes entre 1 vehículo y 1 peatón en vía urbana	UN_ECE_TD
MVC	16	Número accidentes entre 1 vehículo y más de 1 peatón en vía urbana	UN_ECE_TD
MVC	17	Número accidentes de 1 sólo vehículo en vía urbana	UN_ECE_TD
MVC	18	Número accidentes entre varios vehículos en vía urbana	UN_ECE_TD
MVC	19	Número accidentes entre varios vehículos en vía urbana según tipo (por detrás, en un cruce, en un paso a nivel, frontal, otros –incluye contra coche aparcado	UN_ECE_TD
MVC	20	Número accidentes involucrando vehículos de gran tonelaje	UN_ECE_TD
MVC	21	Número accidentes entre 1 vehículo de gran tonelaje y 1 peatón en vía urbana	UN_ECE_TD
MVC	22	Número accidentes de 1 sólo vehículo de gran tonelaje en vía urbana	UN_ECE_TD
MVC	23	Número accidentes entre varios vehículos en vía urbana (uno de alto tonelaje)	UN_ECE_TD
MVC	24	Número accidentes entre varios vehículos (uno de alto tonelaje) en vía urbana según tipo (por detrás, en un cruce, en un paso a nivel, frontal, otros –incluye contra coche aparcado	UN_ECE_TD
MVC	25	Numero de vehículos involucrados en accidentes	CARE
MVC	26	Numero de accidentes con víctimas según tipo de vehículo (autobús, vehículo pasajeros, vehículo mercancías, camiones <=3.5T, camiones <3.5T) y según tipo vía (urbana, peri urbana, rurales, autorías, "A level roads", otras, desconocida)	IRTAD
MVC	27	Numero de accidentes donde conductor o peatón tenían niveles de alcohol >0%	UN_ECE_TD
MVC	28	Numero de accidentes donde conductor o peatón tenían niveles de alcohol >0% según nivel (0.5, 0.5-0.8, 0.8-1.5, 1.5+)	UN_ECE_TD
MVC	29	Numero de accidentes donde conductor o peatón hombre tenían niveles de alcohol >0%	UN_ECE_TD
MVC	30	Numero de accidentes donde conductor o peatón hombre tenían niveles de alcohol >0% según nivel (0.5, 0.5-0.8, 0.8-1.5, 1.5+)	UN_ECE_TD
MVC	31	Numero de accidentes donde conductor o peatón mujer tenían niveles de alcohol >0%	UN_ECE_TD
MVC	32	Numero de accidentes donde conductor o peatón mujer tenían niveles de alcohol >0% según nivel (0.5, 0.5-0.8, 0.8-1.5, 1.5+)	UN_ECE_TD
MVC	33	Numero de accidentes donde peatón tenían niveles de alcohol >0%	UN_ECE_TD
MVC	34	Numero de accidentes donde peatón tenían niveles de alcohol >0% según nivel (0.5, 0.5-0.8, 0.8-1.5, 1.5+)	UN_ECE_TD
MVC	35	Numero de accidentes donde conductor de bicicleta tenían niveles de alcohol >0%	UN_ECE_TD
MVC	36	Numero de accidentes donde conductor de bicicleta tenían niveles de alcohol >0% según nivel (0.5, 0.5-0.8, 0.8-1.5, 1.5+)	UN_ECE_TD
MVC	37	Numero de accidentes donde conductor de ciclomotor tenían niveles de alcohol >0%	UN_ECE_TD
MVC	38	Numero de accidentes donde conductor de ciclomotor tenían niveles de alcohol >0% según nivel (0.5, 0.5-0.8, 0.8-1.5, 1.5+)	UN_ECE_TD
MVC	39	Numero de accidentes donde conductor de motocicletas tenían niveles de alcohol >0%	UN_ECE_TD
MVC	40	Numero de accidentes donde conductor de motocicleta tenían niveles de alcohol >0% según nivel (0.5, 0.5-0.8, 0.8-1.5, 1.5+)	UN_ECE_TD
MVC	41	Numero de accidentes donde conductor por motivo particular tenían niveles de alcohol >0%	UN_ECE_TD

MVC	42	Numero de accidentes donde conductor por motivo particular tenían niveles de alcohol >0% según nivel (0.5, 0.5-0.8, 0.8-1.5, 1.5+)	UN_ECE_TD
MVC	43	Numero de accidentes donde conductor de otros vehículos tenían niveles de alcohol >0%	UN_ECE_TD
MVC	44	Numero de accidentes donde conductor de otros vehículos tenían niveles de alcohol >0% según nivel (0.5, 0.5-0.8, 0.8-1.5, 1.5+)	UN_ECE_TD
MVC	45	Numero de accidentes donde otros tenían niveles de alcohol >0%	UN_ECE_TD
MVC	46	Numero de accidentes donde otros tenían niveles de alcohol >0% según nivel (0.5, 0.5-0.8, 0.8-1.5, 1.5+)	UN_ECE_TD
MVC	47	Numero de victimas mortales y no mortales	CARE UN_ECE_TD IRTAD CEMT
MVC	48	Numero de víctimas mortales y no mortales según tipo de vehículo (autobús, vehículo pasajeros, vehículo mercancías, camiones <=3.5T, camiones <3.5T) y según tipo vía (urbana, periurbana, rurales, autorías, "A leve orads", otras, desconocida)	IRTAD
MVC	49	Número de víctimas mortales en accidentes entre 1 vehículo y 1 peatón	UN_ECE_TD
MVC	50	Número de víctimas mortales en accidentes entre 1 vehículo y más de 1 peatón	UN_ECE_TD
MVC	51	Número de víctimas mortales en accidentes de 1 sólo vehículo	UN_ECE_TD
MVC	52	Número de víctimas mortales en accidentes entre varios vehículos	UN_ECE_TD
MVC	53	Número de victimas mortales en accidentes entre varios vehículos según tipo (por detrás, en un cruce, en un paso a nivel, frontal, otros –incluye contra coche aparcado	UN_ECE_TD
MVC	54	Número de víctimas no mortales en accidentes entre 1 vehículo y 1 peatón según gravedad (graves y leves)	UN_ECE_TD
MVC	55	Número de víctimas no mortales en accidentes entre 1 vehículo y más de 1 peatón según gravedad (graves y leves)	UN_ECE_TD
MVC	56	Número de víctimas no mortales en accidentes de 1 sólo vehículo según gravedad (graves y leves)	UN_ECE_TD
MVC	57	Número de víctimas no mortales en accidentes entre varios vehículos según gravedad (graves y leves)	UN_ECE_TD
MVC	58	Número de victimas no mortales en accidentes entre varios vehículos según gravedad (graves) y según tipo (por detrás, en un cruce, en un paso a nivel, frontal, otros –incluye contra coche aparcado	UN_ECE_TD
MVC	59	Número de victimas no mortales en accidentes entre varios vehículos según gravedad (leves) y según tipo (por detrás, en un cruce, en un paso a nivel, frontal, otros –incluye contra coche aparcado	UN_ECE_TD
MVC	60	Numero de muertos divido entre numero accidentes	CARE
MVC	61	Numero de muertos	UN_ECE_TD y CEMT
MVC	62	Numero de muertos según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida)	UN_ECE_TD
MVC	63	Numero de muertos conductors	UN_ECE_TD
MVC	64	Numero de muertos conductores según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida)	UN_ECE_TD
MVC	65	Numero de muertos hombres	UN_ECE_TD
MVC	66	Numero de muertos hombres según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida)	UN_ECE_TD
MVC	67	Numero de muertos mujeres (vehículos de mas de 3 ruedas)	UN_ECE_TD
MVC	68	Numero de muertos mujeres (vehículos de mas de 3 ruedas) según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida)	UN_ECE_TD
MVC	69	Numero de muertos conductores hombres (vehículos de mas de 3 ruedas)	UN_ECE_TD
MVC	70	Numero de muertos hombres conductores (vehículos de mas de 3 ruedas) según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida)	UN_ECE_TD
MVC	71	Numero de muertos conductores mujeres (vehículos de mas de 3 ruedas)	UN_ECE_TD
MVC	72	Numero de muertos mujeres conductores (vehículos de mas de 3 ruedas) según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida)	UN_ECE_TD
MVC	73	Numero de muertos peatones	UN_ECE_TD CEMT
MVC	74	Numero de muertos peatones según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida)	UN_ECE_TD
MVC	75	Numero de muertos en bicicletas	UN_ECE_TD CEMT
MVC	76	Numero de muertos en bicicleta según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	77	Numero de muertos conductores de bicicletas	UN_ECE_TD
MVC	78	Numero de muertos conductores de bicicleta según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	79	Numero de muertos en ciclomotores	UN_ECE_TD CEMT
MVC	80	Numero de muertos en ciclomotores según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD

MVC	81	Numero de muertos conductores de ciclomotores	UN_ECE_TD
MVC	82	Numero de muertos conductores de ciclomotores según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	83	Numero de muertos en motocicletas	UN_ECE_TD CEMT
MVC	84	Numero de muertos en motocicletas según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	85	Numero de muertos conductores de motocicletas	UN_ECE_TD
MVC	86	Numero de muertos conductores de motocicletas según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	87	Numero de muertos en vehículos con conductor por motivos particulares	UN_ECE_TD CEMT
MVC	88	Numero de muertos en vehículos con conductor por motivos particulares según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	89	Numero de muertos conductores en vehículos con conductor por motivos particulares	UN_ECE_TD CEMT
MVC	90	Numero de muertos conductores en vehículos con conductor por motivos particulares (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	91	Numero de muertos pasajeros de vehículos conducidos por motivos particulares	CEMT
MVC	92	Numero de muertos pasajeros de vehículos con conductores en vehículos con conductor por motivos particulares (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	93	Numero de muertos en autobuses y trenes	UN_ECE_TD
MVC	94	Numero de muertos en autobuses y trenes según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	95	Numero de muertos conductores de autobuses y trenes	UN_ECE_TD
MVC	96	Numero de muertos conductores de autobuses y trenes según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	97	Numero de muertos en otros vehículos de transporte	UN_ECE_TD
MVC	98	Numero de muertos en otros vehículos de transporte según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	99	Numero de muertos conductores de otros vehículos de transporte	UN_ECE_TD
MVC	100	Numero de muertos conductores de otros vehículos de transporte según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	101	Numero de muertos en desconocido	UN_ECE_TD
MVC	102	Numero de muertos en desconocido según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	103	Numero de muertos conductores de desconocido	UN_ECE_TD
MVC	104	Numero de muertos conductores de desconocido según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	105	Numero heridos graves y leves	CARE y CEMT
MVC	106	Numero de heridos	UN_ECE_TD
MVC	107	Numero de heridos según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida)	UN_ECE_TD
MVC	108	Numero de heridos conductores (vehículos de mas de 3 ruedas)	UN_ECE_TD
MVC	109	Numero de heridos conductores (vehículos de mas de 3 ruedas) según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida)	UN_ECE_TD
MVC	110	Numero de heridos hombres (vehículos de mas de 3 ruedas)	UN_ECE_TD
MVC	111	Numero de heridos hombres (vehículos de mas de 3 ruedas) según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida)	UN_ECE_TD
MVC	112	Numero de heridos mujeres (vehículos de mas de 3 ruedas)	UN_ECE_TD
MVC	113	Numero de heridos mujeres (vehículos de mas de 3 ruedas) según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida)	UN_ECE_TD
MVC	114	Numero de heridos conductores hombres (vehículos de mas de 3 ruedas)	UN_ECE_TD
MVC	115	Numero de heridos hombres conductores (vehículos de mas de 3 ruedas) según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida)	UN_ECE_TD
MVC	116	Numero de heridos conductores mujeres (vehículos de mas de 3 ruedas)	UN_ECE_TD
MVC	117	Numero de heridos mujeres conductores (vehículos de mas de 3 ruedas)según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida)	UN_ECE_TD
MVC	118	Numero de heridos peatones	UN_ECE_TD
MVC	119	Numero de heridos peatones según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida)	UN_ECE_TD
MVC	120	Numero de heridos en bicicletas	UN_ECE_TD
MVC	121	Numero de heridos en bicicleta según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	122	Numero de heridos conductores de bicicletas	UN_ECE_TD
MVC	123	Numero de heridos conductores de bicicleta según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	124	Numero de heridos en ciclomotores	UN_ECE_TD
MVC	125	Numero de heridos en ciclomotores según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD

MVC	126	Numero de heridos conductores de ciclomotores	UN_ECE_TD
MVC	127	Numero de heridos conductores de ciclomotores según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	128	Numero de heridos en motocicletas	UN_ECE_TD
MVC	129	Numero de heridos en motocicletas según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	130	Numero de heridos conductores de motocicletas	UN_ECE_TD
MVC	131	Numero de heridos conductores de motocicletas según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	132	Numero de heridos en vehículos conducido por particulares	UN_ECE_TD
MVC	133	Numero de heridos en vehículos conducidos por particulares según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	134	Numero de heridos conductores de vehículos con motivos particulares	UN_ECE_TD
MVC	135	Numero de heridos conductores de vehículo con motivos particulares según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	136	Numero de heridos en autobuses y trenes	UN_ECE_TD
MVC	137	Numero de heridos en autobuses y trenes según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	138	Numero de heridos conductores de autobuses y trenes	UN_ECE_TD
MVC	139	Numero de heridos conductores de autobuses y trenes según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	140	Numero de heridos en otros vehículos de transporte	UN_ECE_TD
MVC	141	Numero de heridos en otros vehículos de transporte según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	142	Numero de heridos conductores de otros vehículos de transporte	UN_ECE_TD
MVC	143	Numero de heridos conductores de otros vehículos de transporte según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	144	Numero de heridos en desconocido	UN_ECE_TD
MVC	145	Numero de heridos en desconocido según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	146	Numero de heridos conductores de desconocido	UN_ECE_TD
MVC	147	Numero de heridos conductores de desconocido según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	UN_ECE_TD
MVC	148	Numero heridos graves (hospitalizados)	CARE IRTAD
MVC	149	Numero hospitalizaciones según edad (0-5,6-9,10-14,15-17,15,16,17,18-20,18,19,20,21-24,25-64,25-34,35-44,45-54,55-59,60-64,65-69,65+,10-74,75-79,80+)	IRTAD
MVC	150	Numero hospitalizaciones según se sepa o no edad	IRTAD
MVC	151	Numero hospitalizaciones según se sepa o no localización accidentes	IRTAD
MVC	152	Numero hospitalizaciones según tipo vía (urbana, interurbana, autopistas, autovías, "A-level roads outside urban areas", otras	IRTAD
MVC	153	Numero hospitalizaciones según se sepa tipo vehículo o no	IRTAD
MVC	154	Numero hospitalizaciones según tipo vehículo (bicicletas, ciclomotores, motocicletas, turismos, minusvalidos, furgonetas PM <= 3500 k, camiones PM > 3500, autobuses, ambulancias, peatones, otros, desconocido)	IRTAD
MVC	155	Numero hospitalizaciones según tipo vehículo (bicicletas) y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	156	Numero hospitalizaciones según tipo vehículo (ciclomotores) y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	157	Numero hospitalizaciones según tipo vehículo (motocicletas) y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	158	Numero hospitalizaciones según tipo vehículo (turismos) y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	159	Numero hospitalizaciones según tipo vehículo (minusvalidos) y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	160	Numero hospitalizaciones según tipo vehículo (furgonetas) y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida) * furgonetas y camiones < 3500 PMA	IRTAD
MVC	161	Numero hospitalizaciones según tipo vehículo (camiones) y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida) Camiones > 3500 PMA, cisternas y articulados	IRTAD
MVC	162	Numero hospitalizaciones según tipo vehículo (autobuses) y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	163	Numero hospitalizaciones según tipo vehículo (ambulancias) y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	164	Numero hospitalizaciones según tipo vehículo (peatones) y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	165	Numero hospitalizaciones según tipo vehículo (otros) y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	166	Numero hospitalizaciones según tipo vehículo (desconocido) y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	167	Numero heridos leves	CARE

MVC	168	Muertos a 30 días	CARE IRTAD
MVC	169	Muertos a 30 días según tipo usuario (conductor, pasajero, peatón)	CARE
MVC	170	Muertos a 30 días según sexo (hombre, mujer)	CARE
MVC	171	Numero de muertos a 30 días según tipo vehículo (bicicletas, ciclomotores, motocicletas, turismos, minusválidos, furgonetas PM <= 3500 k, camiones PM > 3500, autobuses, ambulancias, peatones, otros, desconocido)	CARE
MVC	172	Numero de muertos según tipo vehículo (bicicletas, ciclomotores, motocicletas, turismos, minusválidos, furgonetas PM <= 3500 k, camiones PM > 3500, autobuses, ambulancias, peatones, otros, desconocido)	IRTAD
MVC	173	Numero muertos según se sepa tipo vehículo o no	IRTAD
MVC	174	Numero de víctimas mortales y no mortales según tipo de vehículo (peatones, bicicletas, ciclomotores, motocicletas, turismos, minusválidos, furgonetas PM <= 3500 k, camiones PM > 3500, autobuses, ambulancias, otros, desconocido) y según tipo vía (urbana, periurbana, rurales, autovías, "A level roads", otras, desconocida)	IRTAD
MVC	175	Numero de victimas (mortales y no mortales)	CEMT
MVC	176	Numero de victimas (mortales y no mortales) y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	177	Numero de victimas (mortales y no mortales) peatones	CEMT
MVC	178	Numero de victimas (mortales y no mortales) peatones y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	179	Numero de victimas (mortales y no mortales) conductores o pasajeros de bicicleta	CEMT
MVC	180	Numero de victimas (mortales y no mortales) conductores o pasajeros de bicicleta y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	181	Numero de victimas (mortales y no mortales) conductores o pasajeros de ciclomotor	CEMT
MVC	182	Numero de victimas (mortales y no mortales) conductores o pasajeros de ciclomotor y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	183	Numero de victimas (mortales y no mortales) conductores o pasajeros de motocicleta	CEMT
MVC	184	Numero de victimas (mortales y no mortales) conductores o pasajeros de motocicleta y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	185	Numero de victimas (mortales y no mortales) conductores o pasajeros de turismos	CEMT
MVC	186	Numero de victimas (mortales y no mortales) conductores o pasajeros de turismos y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	187	Numero de victimas (mortales y no mortales) conductores de turismos	CEMT
MVC	188	Numero de victimas (mortales y no mortales) conductores de turismos y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	189	Numero de victimas (mortales y no mortales) pasajeros de turismos	CEMT
MVC	190	Numero de victimas (mortales y no mortales) pasajeros de turismos y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	191	Numero de victimas (mortales y no mortales) conductores o pasajeros de furgonetas	CEMT
MVC	192	Numero de victimas (mortales y no mortales) conductores o pasajeros de furgonetas y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	193	Numero de victimas (mortales y no mortales) conductores o pasajeros de camiones	CEMT
MVC	194	Numero de victimas (mortales y no mortales) conductores o pasajeros de camiones y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	195	Numero de victimas (mortales y no mortales) conductores o pasajeros de autobuses	CEMT
MVC	196	Numero de victimas (mortales y no mortales) conductores o pasajeros de autobuses y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	197	Numero de victimas (mortales y no mortales) conductores o pasajeros de ambulancias	CEMT
MVC	198	Numero de victimas (mortales y no mortales) conductores o pasajeros de ambulancias y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	199	Numero de victimas (mortales y no mortales) conductores o pasajeros de otros	CEMT
MVC	200	Numero de victimas (mortales y no mortales) conductores o pasajeros de otros y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	201	Numero de victimas (mortales y no mortales) conductores o pasajeros de desconocido	CEMT

MVC	202	Numero de victimas (mortales y no mortales) conductores o pasajeros de desconocido y según edad de la víctima (0-5, 6-9, 10-14, 15-17,18-20,21-24,25-64,65+, edad desconocida)	IRTAD
MVC	203	Numero de muertos peatones	IRTAD
MVC	204	Numero de muertos peatones según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida)	IRTAD
MVC	205	Numero de muertos en bicicletas	IRTAD
MVC	206	Numero de muertos en bicicleta según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	IRTAD
MVC	207	Numero de muertos conductores de bicicletas	IRTAD
MVC	208	Numero de muertos conductores de bicicleta según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	IRTAD
MVC	209	Numero de muertos en ciclomotores	IRTAD
MVC	210	Numero de muertos en ciclomotores según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	IRTAD
MVC	211	Numero de muertos conductores de ciclomotores	IRTAD
MVC	212	Numero de muertos conductores de ciclomotores según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	IRTAD
MVC	213	Numero de muertos en motocicletas	IRTAD
MVC	214	Numero de muertos en motocicletas según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	IRTAD
MVC	215	Numero de muertos conductores de motocicletas	IRTAD
MVC	216	Numero de muertos conductores de motocicletas según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	IRTAD
MVC	217	Numero de muertos en vehículos con conductor por motivos particulares	IRTAD
MVC	218	Numero de muertos en vehículos con conductor por motivos particulares según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	IRTAD
MVC	219	Numero de muertos conductores en vehículos con conductor por motivos particulares	IRTAD
MVC	220	Numero de muertos conductores en vehículos con conductor por motivos particulares (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	IRTAD
MVC	221	Numero de muertos pasajeros de vehículos conducidos por motivos particulares	IRTAD
MVC	222	Numero de muertos pasajeros de vehículos con conductores en vehículos con conductor por motivos particulares (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	IRTAD
MVC	223	Numero de muertos en autobuses y trenes	IRTAD
MVC	224	Numero de muertos en autobuses y trenes según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	IRTAD
MVC	225	Numero de muertos conductores de autobuses y trenes	IRTAD
MVC	226	Numero de muertos conductores de autobuses y trenes según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	IRTAD
MVC	227	Numero de muertos en otros vehículos de transporte	IRTAD
MVC	228	Numero de muertos en otros vehículos de transporte según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	IRTAD
MVC	229	Numero de muertos conductores de otros vehículos de transporte	IRTAD
MVC	230	Numero de muertos conductores de otros vehículos de transporte según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	IRTAD
MVC	231	Numero de muertos en desconocido	IRTAD UN_ECE_TD
MVC	232	Numero de muertos en desconocido según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	IRTAD
MVC	233	Numero de muertos conductores de desconocido	IRTAD
MVC	234	Numero de muertos conductores de desconocido según edad (<6 años, 6-9, 10-14, 15-17, 18-20, 21-24, 25-64, 65+, desconocida	IRTAD
MVC	235	Numero muertos según se sepa o no localización accidentes	IRTAD
MVC	236	Numero muertos según tipo vía (autopista, autovía, vía rápida, vía convencional con carril lento, vía convencional, camino vecinal, vía de servicio, ramal de enlace, otro tipo)	IRTAD
MVC	237	Numero de muertos a 30 días según edad (<14, 14-17, 18-25, 26-50, 51-65, 65+)	CARE
MVC	238	Numero muertos según edad (0-5,6-9,10-14,15-17,18-20,21-24,25-34,35-44,45-54,55-59,60-64,65-69,70-74,75-79,80+, desconocida)	IRTAD
MVC	239	Numero muertos según se sepa o no edad	IRTAD
MVC	240	Número de peatones y conductores heridos o fallecidos en accidentes	UN_ECE_TD
MVC	241	Número de peatones y conductores heridos o fallecidos en accidentes según alcoholemia (<0.5, 0.5-0.8, 0.8-1.5, >=1.5)	UN_ECE_TD
MVC	242	Número de peatones y conductores varones heridos o fallecidos en accidentes	UN_ECE_TD
MVC	243	Número de peatones y conductores varones heridos o fallecidos en accidentes según alcoholemia (<0.5, 0.5-0.8, 0.8-1.5, >=1.5)	UN_ECE_TD
MVC	244	Número de peatones y conductores mujeres heridos o fallecidos en accidentes	UN_ECE_TD
MVC	245	Número de peatones y conductores mujeres heridos o fallecidos en accidentes según alcoholemia (<0.5, 0.5-0.8, 0.8-1.5, >=1.5)	UN_ECE_TD
MVC	246	Número de peatones heridos o fallecidos en accidentes	UN_ECE_TD
MVC	247	Número de peatones heridos o fallecidos en accidentes según alcoholemia (<0.5, 0.5-0.8, 0.8-1.5, >=1.5)	UN_ECE_TD

MVC	248	Número de conductores de bicicletas heridos o fallecidos en accidentes	UN_ECE_TD
MVC	249	Número de conductores de bicicletas heridos o fallecidos en accidentes según alcoholemia (<0.5, 0.5-0.8, 0.8-1.5, >=1.5)	UN_ECE_TD
MVC	250	Número de conductores de ciclomotores heridos o fallecidos en accidentes	UN_ECE_TD
MVC	251	Número de conductores de ciclomotores heridos o fallecidos en accidentes según alcoholemia (<0.5, 0.5-0.8, 0.8-1.5, >=1.5)	UN_ECE_TD
MVC	252	Número de conductores de motocicleta heridos o fallecidos en accidentes	UN_ECE_TD
MVC	253	Número de conductores de motocicleta heridos o fallecidos en accidentes según alcoholemia (<0.5, 0.5-0.8, 0.8-1.5, >=1.5)	UN_ECE_TD
MVC	254	Número de conductores de vehículos turismos heridos o fallecidos en accidentes	UN_ECE_TD
MVC	255	Numero de conductores de vehículos turismos fallecidos	IRTAD
MVC	256	Numero de conductores de vehículos turismos fallecidos según edad (0-5, 6-9, 10-14,15-17, 18-20, 21-24, 25-34, 35-44, 45-54, 55-59, 60-64, 65+, edad desconocida)	IRTAD
MVC	257	Numero de pasajeros de vehículos turismos fallecidos	IRTAD
MVC	258	Numero de pasajeros de vehículos turismos fallecidos según edad (0-5, 6-9, 10-14,15-17, 18-20, 21-24, 25-34, 35-44, 45-54,55-59, 60-64, 65+, edad desconocida)	IRTAD
MVC	259	Número de conductores de vehículos turismos heridos o fallecidos en accidentes según alcoholemia (<0.5, 0.5-0.8, 0.8-1.5, >=1.5)	UN_ECE_TD
MVC	260	Número de conductores de otros vehículos heridos o fallecidos en accidentes	UN_ECE_TD
MVC	261	Número de conductores de otros vehículos heridos o fallecidos en accidentes según alcoholemia (<0.5, 0.5-0.8, 0.8-1.5, >=1.5)	UN_ECE_TD
MVC	262	Número de otros heridos o fallecidos en accidentes	UN_ECE_TD
MVC	263	Número de otros heridos o fallecidos en accidentes según alcoholemia (<0.5, 0.5-0.8, 0.8-1.5, >=1.5)	UN_ECE_TD
MVC	264	Porcentaje uso cinturón seguridad en conductores en carreteras urbanas	IRTAD
MVC	265	Porcentaje uso cinturón seguridad en conductores en carreteras rurales	IRTAD
MVC	266	Porcentaje uso cinturón seguridad en conductores en autopistas	IRTAD

Sources:

CEMT – Conferencia Europea de Ministros de Transporte.

UN_ECE_TD – UN División de Transportes Comisión Económica Europea.

CARE – Community Database of Accidents Resulting in Death or Injury on Road in Europe

IRTAD – International Road Traffic and Accident Database.

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