

National Suicide Research Foundation Ireland



## **Pilot Implementation of the European Injury Database (IDB) Report of 2005 Data for Ireland**

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### **Introduction:**

Injury is a global public health emergency affecting mostly children and young adults. Worldwide there are 16,000 injury related deaths each day. Injury is the leading cause of death for individuals aged between 0 and 40 years (World Health Organisation, 2003). Throughout the European Union injuries account for 11% of all hospital admissions (Council of the European Union 2007).

Fatal injuries as a result of suicide and road traffic accidents will continue to grow resulting in a huge economic burden at State level and throughout the health care services unless the issue is tackled appropriately (World Health Organisation 1996). However, a vast majority of injuries are preventable.

The prevention of injury is widely acknowledged as a primary objective of public health policies internationally. It is vital that injury and prevention policies be developed, adopted and maintained both internationally and at national level.

Communication and coordination among the various groups working in the area of injury prevention is essential to develop effective policy measures aimed at tackling the burden

of injuries in Ireland. Effective injury prevention policies would have the potential to reduce morbidity and mortality and produce significant savings for the health services.

In 2001, the Irish Department of Health and Children, in its strategy document Quality & Fairness, acknowledged injuries as a public health issue Chapter 6; Responding to People's needs (Page 158) "A National Injury Prevention Strategy to co-ordinate action on injury prevention will be prepared".

The Council of the European Union, in May 2007, recommended that "...with a view to providing for a high level of public health, Member States should: (1) Make better use of existing data and develop, where appropriate, representative injury surveillance and reporting instruments to obtain comparable information, monitor the evolution of injury risks and the effects of prevention measures over time and assess the needs for introducing additional initiatives on product and service safety and in other areas;.....".

In 2005, the National Suicide Research Foundation, because of expertise gained in the development and operation of the National Registry of Deliberate Self Harm, was invited

by the European Public Health Programme 2003 to conduct a pilot study of monitoring of all injuries using the All Injuries - Injury Data Base (IDB) Monitoring Manual.

**Background to the involvement of the National Suicide Research Foundation in the Monitoring of All Injuries**

The aim of the NSRF is to produce an internationally recognised body of reliable knowledge from a multidisciplinary perspective. The implementation of the pilot IDB with data collection, injury surveillance and evaluation is the beginning of steps being taken towards injury prevention. The NSRF has been recognised as a Centre of Excellence and the Irish focal point for information regarding suicide and its prevention by the WHO. For more than a decade the NSRF has carried out work on

- (i) the incidence and determinants of deliberate self harm in the population
- (ii) the analysis of trends in suicide mortality in Ireland, and
- (iii) the extent and determinants of suicide ideation in the population.

With unit grant funding from the Health Research Board, the Foundation established the first Irish monitoring study of hospital treated cases of deliberate self harm based on a geographically defined catchment area (the former Southern and Mid-Western Health Boards).

In 2000, this work was extended to establish a National Registry of Deliberate Self Harm (NRDSH), the first of its kind in the world, with funding from the Department of Health and Children. Under the directorship of Professor Ivan J. Perry, University College Cork, the NRDSH is currently operating in all general Irish hospital emergency departments collecting data on socio-demographic and behavioural features of cases of deliberate self harm (DSH).

The NSRF's experience in establishing an internationally acknowledged database of deliberate self harm placed it in an excellent position to lead the task of recording injury related attendances in Irish Emergency Departments.

## **Injury Database (IDB)**

The EU IDB is an injury surveillance system based on hospital Emergency Department (ED) data from selected member state hospitals. The IDB within the current EU Public Health Programme 2003-2008 is the successor to the former European Home and Leisure Accidents Surveillance System (EHLASS) at DG SANCO, European Commission. The data is collected by the National Data Administrators (NDAs) who are responsible for the implementation and maintenance of the IDB in their country. The standardised national IDB data sets are then prepared and uploaded to the central database. This data is aggregated at EU level in a standardised way and stored in a password restricted central database hosted by the European Commission at:

<https://webgate.cec.eu.int/idb/>

In 2004, organisations from seven countries (Austria, Denmark, France, Greece, The Netherlands, Portugal and Sweden) were collecting data on home and leisure accidents. In order to develop injury prevention policies throughout the EU the range of the data being collected was extended from home and leisure accidents to all injuries. Currently twelve member states are collecting "all injuries" IDB data (Cyprus, Czech Republic, Estonia, Latvia,

Malta, Poland, Slovenia, Slovakia, Belgium, Germany, Italy and Ireland). England and Turkey are willing to join the IDB project while Wales are to adjust their existing injury surveillance systems in the coming year.

## **IDB Implementation in Ireland**

Ireland participated in data collection as part of the European Home and Leisure Accident Surveillance System (EHLASS) between 1986 and 2000. The National Data Administrator was then Mr. Hugh Magee of the Information Management Unit at the Department of Health and Children. Data collection systems were set up in Cork University Hospital and Mayo General Hospital. In 2000, 7,102 accidents were reported from these hospitals with the Cork hospital recording 5,332 and 1,770 at the Mayo hospital. Although the two hospitals together serve an urban/rural population base, the areas were not sufficiently definable or representative to arrive at national estimates. However, this EHLASS data proved very valuable in illustrating the distribution of accidents and their consequent injuries in addition to identifying products with high risk of causing injury. Unfortunately, this data collection ceased due to insufficient funding.

The IDB was developed under EU Public Health Programme 2003, Injury Database - the Maintenance, Development and Promotion of the ISS Hospital Survey Project whereby three primary objectives have been outlined:

- 1) Maintain the collection of high quality standardised injury data.
- 2) Develop data collection from home and leisure injury to all injury data, including intentional injuries.
- 3) Promote the project in all EU member states.

Under the terms of the project, the NSRF, because of the expertise gained in developing and maintaining the National Registry of Deliberate Self Harm in Ireland, was invited to take charge of the pilot implementation of the extension of the ISS to all injuries, including intentional injuries, utilising the All Injury IDB Coding Manual.

## Glossary

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## **Methods**

Ethical approval for injury data collection has been granted by the Research Ethics Committee of the Cork Teaching Hospitals.

Data collection in Ireland is carried out as a paper-based system through general hospital 2005 Emergency Department records. Three hospitals were selected in the county of Cork; Cork University Hospital, Mercy University Hospital and South Infirmity Victoria Hospital. The catchment area for these three hospitals is not well defined but is estimated to have an approximate population of 411,737; which was ascertained from the NRDSH.

Data from the NRDSH were used to estimate the percentage of deliberate self harm presentations made to these three hospitals by residents of Cork County. As 85% of the deliberate self harm presentations came from Cork county residents it was estimated that the catchment population of the hospitals was 85% of the Cork county population i.e. 411,737.

The annual number of presentations to the emergency departments of Cork University Hospital, The Mercy University Hospital and the South Infirmity Victoria Hospital is approximately 60,000, 23,000 and 23,000

respectively. Data were collected over the period from 1<sup>st</sup> of July 2005 to 31<sup>st</sup> of December 2005. This sampling strategy generated 2967 IDB entries for 2005. Data were recorded on all injury related presentations to the emergency departments. A sampling strategy was utilised whereby all presentations on a one in every eight days was recorded.

## **Data Items**

The data were anonymised and entered via laptop into the IDB database package. This package is an Access database that has been developed by Psytel – IDB partner in France. The database is based on a standardised dataset. Detailed in Appendix 1 are the data elements available in the IDB. Availability of data elements varied from hospital to hospital; details of Cork University Hospital are outlined in Appendix 2.

Once collection was completed the data were transferred from the IDB access database into



an SPSS 14.0 file for statistical analysis. For the purpose of this report the following data items were analysed.

### 1) Sex of Patient

Recorded male or female when known.

### 2) Age Groups

Recorded person's age at the time the injury occurred.

### 3) Intent of Injury

The purpose of human action in the injury event.

#### *Sub-Categories of Intent:*

#### a) Unintentional intent:

Accidental injury events

#### b) Intentional Self-Harm:

Cases of attempted suicide and self-mutilation.

#### c) Assault:

Excludes cases of legal intervention.

#### d) Other Violence:

Includes cases of legal intervention.

#### e) Unspecified Intent:

Cases whereby there is no information available that can influence a decision. This includes Euthanasia.

#### f) Undetermined Intent:

Cases whereby there is some information but it is insufficient to make a confident decision or cases where the information may be conflicting or inconsistent.

### 4) Part of the Body Injured

### 5) Type of Injury

### 6) Place of Occurrence

### 7) Mechanism of Injury

The way in which the injury was sustained.

#### *Sub-Categories of Mechanism of Injury:*

#### a) Blunt Force:

Cases whereby the injury was sustained due to contact with any external force but excludes piercing/penetrating force or machinery.

#### b) Piercing/Penetrating Force:

Cases whereby the injury was sustained due to a force that makes a way through or into human tissue.

#### c) Physical Over-Exertion:

### **8) Activity When Injured**

Activity the person was engaged in at the time of injury.

### **9) Direct Object/Substance Producing Injury**

The object/substance producing the actual physical harm.

### **10) Underlying Object/Substance Producing Injury**

The object/substance involved at the start of the injury event.

### **Calculation of Rates**

The anonymisation of the data meant that only event rates could be calculated. For the purpose of this report two types of rates were calculated.

- 1) Crude and age specific rates per 100,000 population were calculated. These rates were calculated by dividing the number of injury events by the appropriate population, which was broken into six ages groups.
  
- 2) European age standardised rates were calculated. Age-standardisation allows for comparisons across areas by allowing and adjusting for variations in the age distribution of the local population.

95% confidence intervals were calculated for the rates and are represented in the charts by error bars.

## Results

The World Health Organisation states that injury is the lead cause for individuals aged between 0 and 40. The IDB data collected in Cork for 2005 also reflects this trend whereby 77% of presentations been aged between 0 and 45 years. Over the period from the 1<sup>st</sup> of July to the 31<sup>st</sup> of December 2005 the IDB recorded 2967 presentations to three Cork hospitals. Of all the presentations recorded by the IDB the majority were male (63%) as illustrated in Figure 1.1. The most prominent group which presented to Emergency Departments were aged between 15-29 years, 38% (n=1130), which is clearly illustrated in Figure 1.2.

Figure 1: Sex of Patient

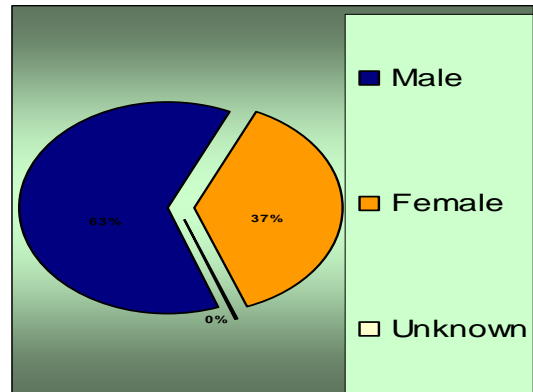
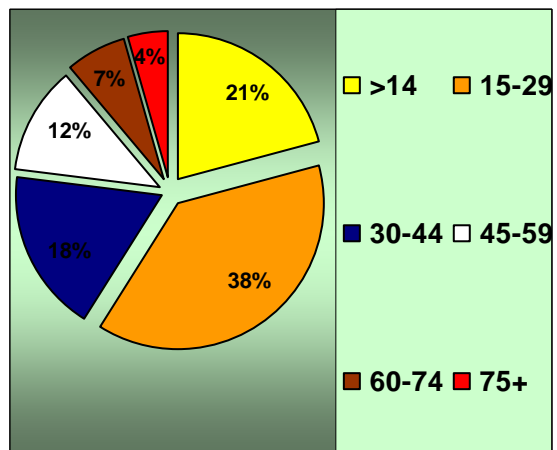
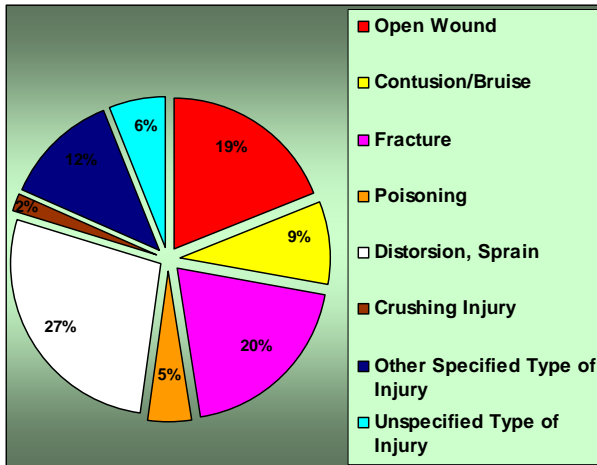


Figure 2: Age Groups



TYPE OF INJURY

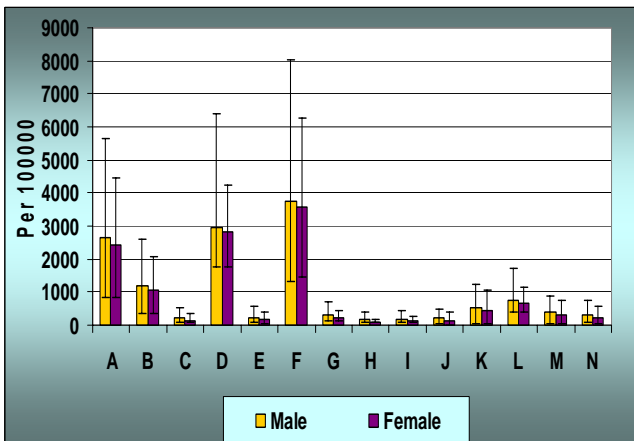
Figure 3: Type of Injury



The main purpose of this data element (in combination with data element body part injured) is to enable injury cases to be grouped into diagnosis categories.

Soft tissue injuries (distorsions and sprains) were the most frequent type of injury (27%, n=815) presenting to Emergency Departments. The second and third most frequent were fractures (20 %, n=583) and open wounds (19%, n=558) respectively.

Figure 4: European Age Standardised Incidence Rates of Injury Events in the Republic of Ireland by Sex.



- A: Fracture      B: Contusion/Bruise    C: Abrasion
- D: Open Wound    E: Dislocation/Luxation
- F: Distortion/Sprain      G: Crushing Injury
- H: Consequences of Foreign Body in Natural Orifice
- I: Burns/Scalds    J: Injury to Muscle/Tendon
- K: Poisoning      L: Other Specified Injury
- M: Unspecified Injury
- N: No Injury Diagnosed

A striking pattern in the incidence of injury emerges when the data are broken down by age and compared by sex.

Figure 5: Person based Rate of Injury, Aged 0-14 Years, in the Republic of Ireland by Sex.

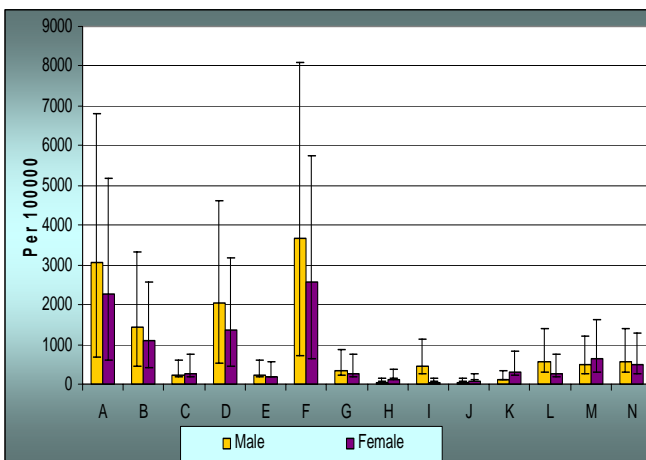


Figure 6: Person based Rate of Injury, Aged 15-29 Years, in the Republic of Ireland by Sex.

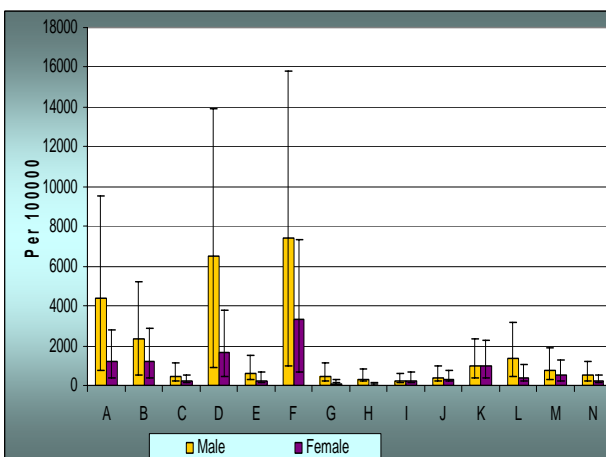
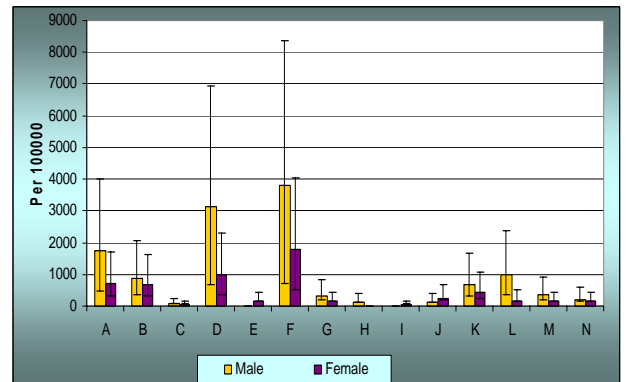


Figure 7: Person based Rate of Injury, Aged 30-44 Years, in the Republic of Ireland by Sex.



- A: Fracture      B: Contusion/Bruise    C: Abrasion
- D: Open Wound    E: Dislocation/Luxation
- F: Distortion/Sprain      G: Crushing Injury
- H: Consequences of Foreign Body in Natural Orifice
- I: Burns/Scalds    J: Injury to Muscle/Tendon
- K: Poisoning              L: Other Specified Injury
- M: Unspecified Injury
- N: No Injury Diagnosed

Figure 5, 6 and 7 illustrate the incidence of injury for the population in three age groups up to 44 years of age. As mentioned previously soft tissue injuries are the most common type of injury presenting to Emergency Departments. Fractures and open wounds also have high incidence rates. What is interesting to note is that male rates in the younger populations are much higher than those of the female rates. This is particularly evident amongst the 15-29 year olds.

There is a slight change in the pattern of the incidence rates illustrated in Figure 3.6, Figure 3.7 and Figure 3.8 whereby the rate of injury reduces significantly.

Figure 8: Person based Rate of Injury, Aged 45-59 Years, in the Republic of Ireland by Sex.

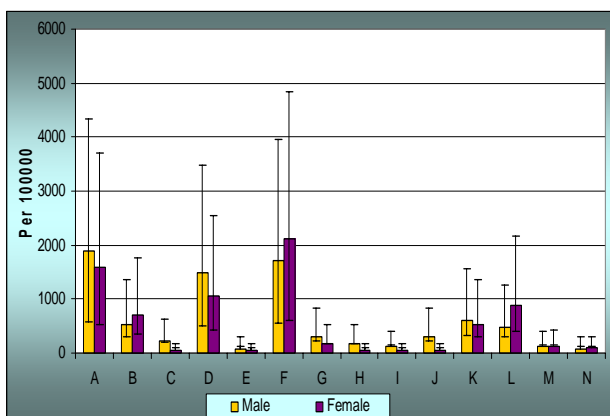


Figure 9: Person based Rate of Injury, Aged 60-74 Years, in the Republic of Ireland by Sex.

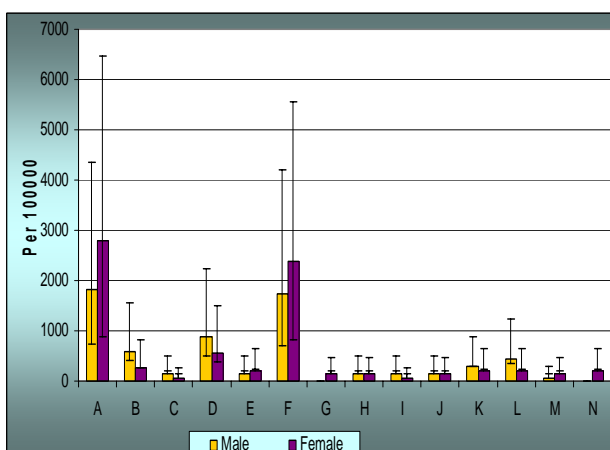
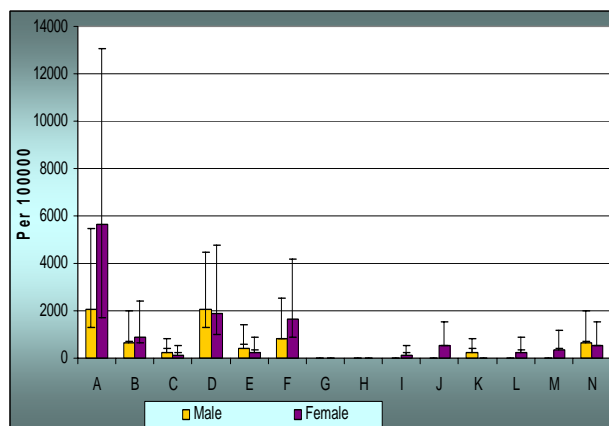


Figure 10: Person based Rate of Injury, Aged 75+ Years, in the Republic of Ireland by Sex.

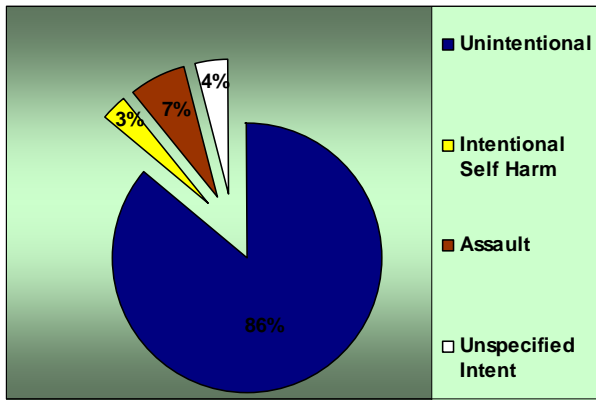


- A: Fracture      B: Contusion/Bruise    C: Abrasion
- D: Open Wound    E: Dislocation/Luxation
- F: Distortion/Sprain      G: Crushing Injury
- H: Consequences of Foreign Body in Natural Orifice
- I: Burns/Scalds    J: Injury to Muscle/Tendon
- K: Poisoning      L: Other Specified Injury
- M: Unspecified Injury
- N: No Injury Diagnosed

The above figures 8, 9 and 10 illustrate the incidence of injury for the population from 45 to 75+ years of age. Soft tissue injuries remain the most common type of injury presenting to emergency departments. However unlike the younger population examined earlier there is a shift to higher rates of females suffering fractures and soft tissue injuries than males in the older population. There is also a clear reduction in the rate of injuries presenting in comparison to the younger population.

INTENT OF INJURY

Figure 11: Intent of Injury



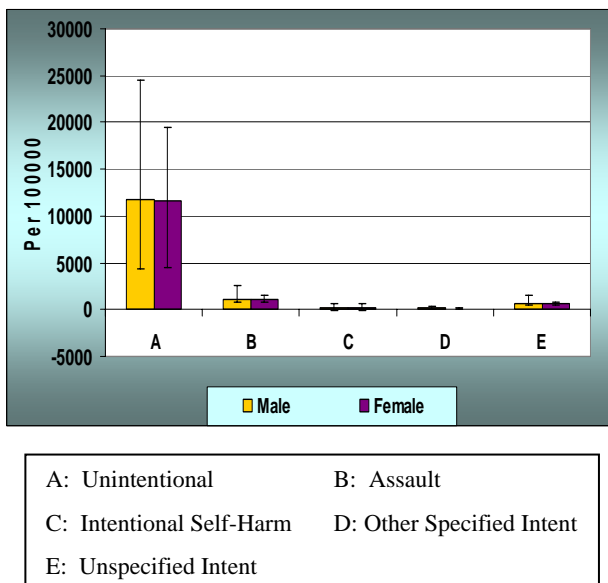
Unintentional intent refers to accidental injury events

Intentional Self-Harm refers to cases of attempted suicide and self-mutilation.

Assault excludes cases of legal intervention.

Unspecified intent refers to cases where there is no information available that can influence a decision. This includes Euthanasia.

Figure 12: Person Based European Age Standardised Incidence Rates of Intent in the Republic of Ireland by Sex.

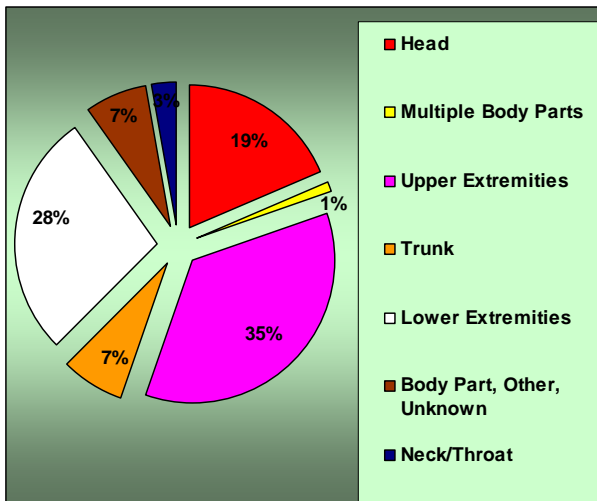


Data relating to the role of human intent in the occurrence of an injury was also recorded.

85% (n=2530) of injuries which presented to Emergency Departments were unintentional in nature. Of these unintentional injuries, 61% (n=1555) were presented by male patients. Of the remaining injuries, (15%), just under half (7% n=205) were due to assault. Of these assault injuries 76% (n=156) were presented by male patients. As was previously mentioned the most prominent group which presented to Emergency Departments were aged between 15 and 29 years. Within this age group 1130 cases of injury presented to Emergency Departments of which 78% (n=879) were unintentional injuries. Of the remaining injuries in this age group 12% (n=139) were due to assault.

PART OF THE BODY INJURED

Figure 13: Part of the Body Injured.



365% (n=1058) were to the upper limbs and 28% (n=821) were to the lower limbs. Of the remaining injuries 19% (n=552) were injuries to the head.

PLACE OF OCCURENCE

Figure 14: Place of Occurrence

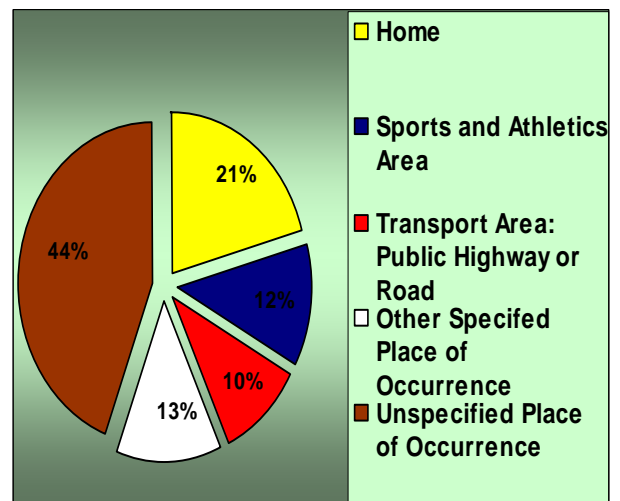


Figure 6.1 illustrates it was most common for injuries to present with 20% (n=615) of injuries which occurred in the home while 12% of injuries occurred in sports and athletics areas. Such data may influence safety and security planning in the community.



ACTIVITY WHEN INJURED

Figure 15: Activity When Injured

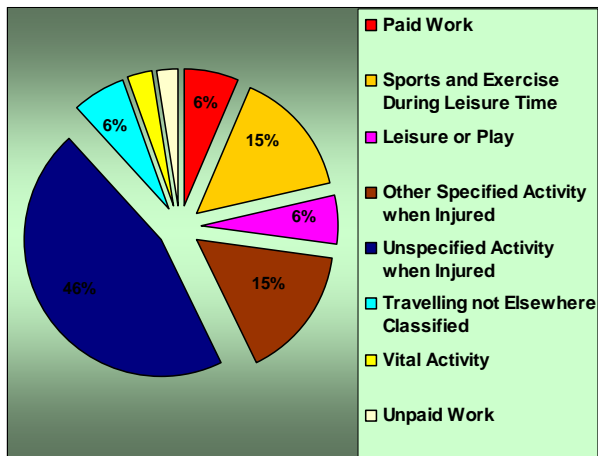
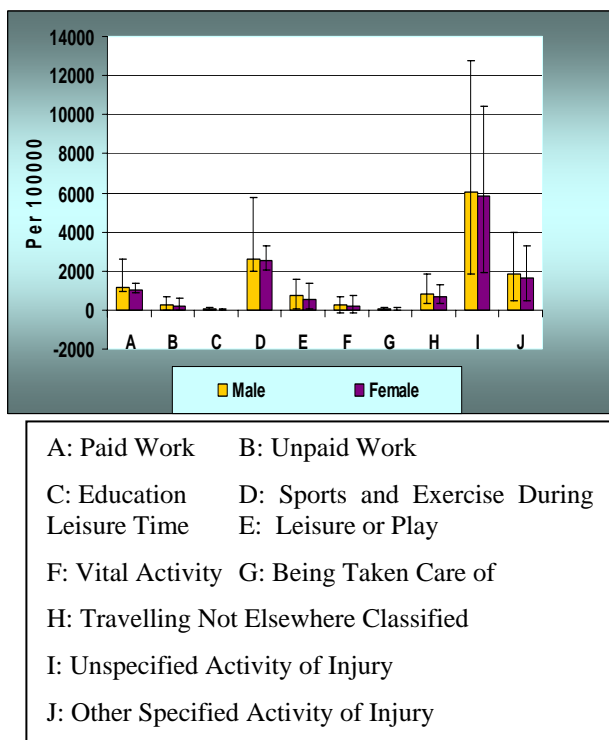


Figure 16: European Age Standardised Incidence Rates of Activity when Injured Events in the Republic of Ireland by Sex.



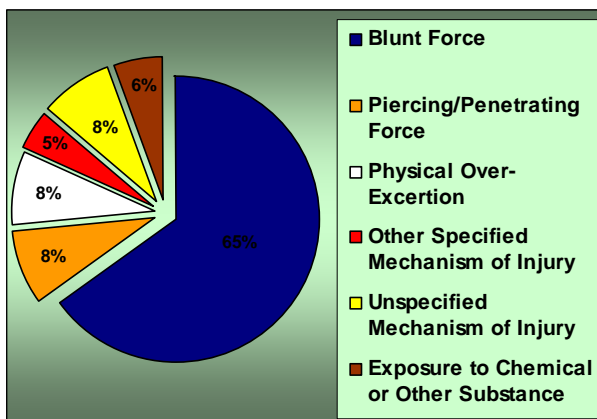
Sports and Exercise refers to cases where the activity has a functional purpose, eg. partaking in competition or preparing for competition.

Leisure or Play refers to cases where the activity is a hobby or undertaken for pleasure or relaxation, eg. children playing or watching tv. However what is clearly evident from Figure 15 is that 46% (1356) of injuries which presented to Emergency Departments in 2005 had no record of the activity of the patient when injured. Injuries due to activities such as sports and exercise during leisure time (15%, n=441), leisure or play (6%, n=177) and paid work (7% n=191) were the most frequent amongst those injuries that were specified.

Activity when injured data allows injury cases to be grouped into categories that correspond to areas of responsibility for injury prevention. For example, being able to identify injuries that occur while a person is working or injuries that occur while playing a sport may help guide development of more effective prevention strategies. Activity data are especially useful when combined with place of occurrence data.

MECHANISM OF INJURY

Figure 17: Mechanism of Injury:



**Blunt Force** refers to cases whereby the injury was sustained due to contact with any external force but excludes piercing/penetrating force or machinery.

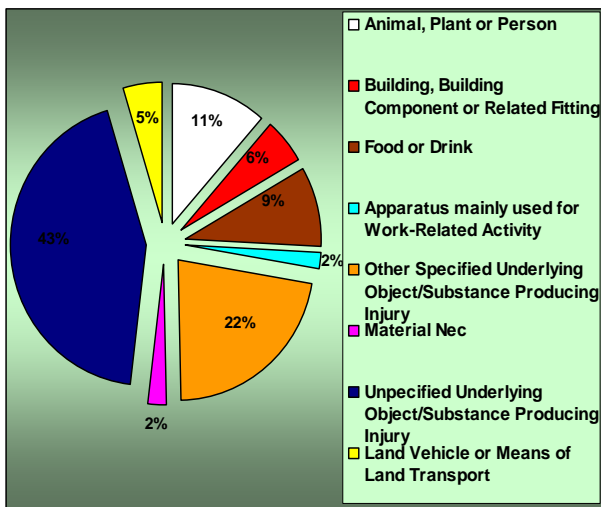
**Piercing/Penetrating Force** refers to cases whereby the injury was sustained due to a force that makes a way through or into human tissue.

Mechanism of injury describes the process by which the injury occurred. 65% (n=1933) of who presented to Emergency Departments were injured due to a form of blunt force. Injuries due to blunt force include those due to contact with object, animal or person; crushing; or due to falling, stumbling, jumping or being pushed. Injuries due to a piercing or penetrating force (n=246); such as scratching, cutting, tearing, stabbing, biting and stinging and injuries due to physical over-exertion (n=245) were the second and third most common mechanism of injury to present to Emergency Departments in 2005.

OBJECT/SUBSTANCE PRODUCING INJURY

Injuries are often the result of a sequence of events. The underlying object/ product producing injury is involved at the start of an injury event, e.g. if an individual trips on an electrical cord and hits their head off the counter the electrical cord is the underlying object producing the injury.

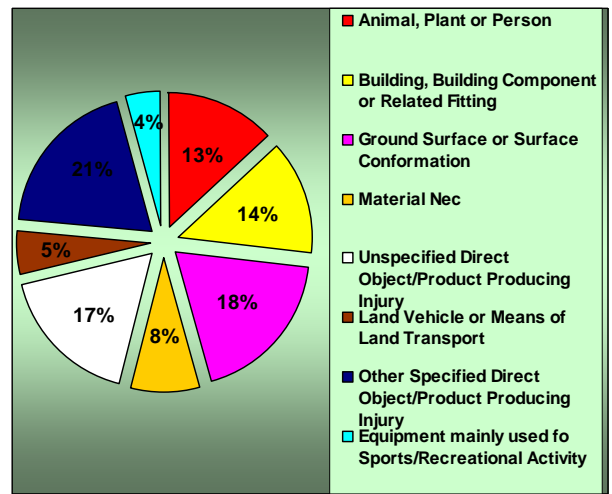
Figure 18: Underlying Object/Substance Producing Injury



Of the injuries which presented to Emergency Departments, 48% (n=1286) of the underlying objects/products were unspecified. Injuries due to underlying objects/products such as animals, plants or people (11%, n=336) and food or drink (9% n=264) were the most frequent amongst those with a specified underlying object/product producing injury.

The direct object/product producing injury is that which produces the actual physical harm to the individual.

Figure 19: Direct Object/Substance Producing Injury



Of the injuries which presented to Emergency Departments, 25% (n=730) had an unspecified direct object/product producing injury. Injuries due to objects/products such as ground surface or surface conformation (19%, n=546), animals, plants or people (17%, n=494) and building, building component or related fitting (14% n=415) were the most frequent amongst those with a specified direct object/product producing injury.

## **Recommendations**

1) Effective injury prevention strategies can only be developed based on recorded data of injury patterns. Data items in emergency departments need greater levels of detail and completion. Implementation of IT systems to record data would facilitate better extraction of data.

2) Data which is recorded needs to be utilised more effectively in public health planning. This includes road safety, health and safety regulations and the introduction of other preventative measures.

3) There are a variety of different organisations recording injury and trauma data including academic departments and healthcare agencies. By co-ordinating information from these data sources the extent of the injury burden in Ireland will become more apparent. This would result in more effective injury surveillance by informing policy makers of the magnitude, scope and characteristics of the various types of injuries at various life stages. This can only be achieved if the approach is evidence based.

4) Further progress in harmonising IT systems in Emergency Departments. What clearly stands out is the missing data in key fields. By co-ordinating and standardising IT systems at both local and national level this will allow for comparability at all levels including comparisons at EU level. In order for this to be achieved there is a need for a centrally funded national database.

5) The dataset should collect data on the patients current place of residence to link with the activities of Health Atlas Ireland.

## **Conclusions**

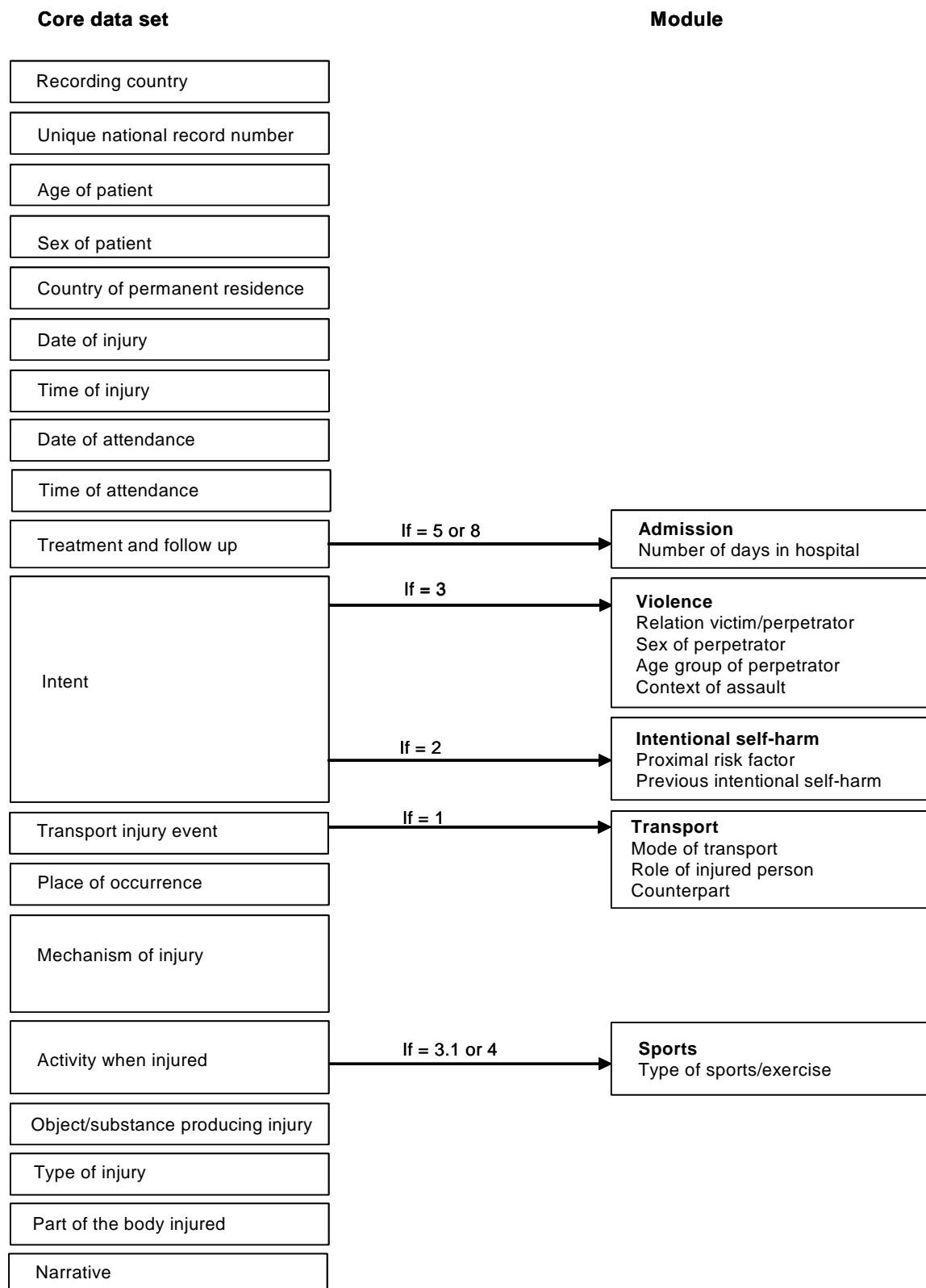
The outcomes of the IDB pilot data are relevant not only to health boards and health care providers but to educators, parents and individuals. The amount of information that the IDB pilot data provides is vast and enables individuals to draw on the information most relevant to the area they are working in. The data enables both individuals and groups to be more conscious of the areas that are at most risk.

One of the primary recommendations which has arisen from the IDB pilot data is the need for more detailed information to be provided in Emergency Departments. The data analysed here is a sample of three hospitals in the city of Cork in the Republic of Ireland. However, just fewer than 3000 cases were recorded. It is estimated from this that 48,000 cases of injury will be generated from these hospitals annually. This pilot is a snapshot of the extent of injuries occurring across not only Ireland but Europe. Injury prevention needs to become a priority, and in order to do so there has to be an emphasis placed on the initial data collection

when patients present to Emergency Departments. What became increasingly evident while analysing the data is the amount of information which was unspecified, particularly as the data is analysed in greater detail. This issue needs to be addressed in order to facilitate the development of valuable, effective and useful injury prevention policies as recommended by the Council of the European Union.

## Appendix 1

### IDB Dataset



## **Appendix 2**

### **Cork Hospitals: Cork University Hospital;**

The following compulsory information is collected in electronic format on arrival to CUH:

Name

Address

Date of Birth

Gender

Occupation

Name of General Practitioner

Next of Kin

Number of Previous Attendances

Brief Synopsis of the Event/Injury

In the ED the treating doctor hand records the following information:

Exact Details of Injury and Symptoms the Patient Complains of

Site of Injury

Allergies/Medication

Previous Medical History

Determine whether Left or Right Handed

Details of Social Care: Home Care or Help etc.

Assess the Risk of Domestic Violence (Where Necessary)

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