

# **Injury in Ireland**

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# Glossary

## Cause/mechanism of injury

<b>Cut/pierce</b>	Injury or death caused by cutting and piercing instruments.
<b>Drowning</b>	Injury or death caused from drowning and submersion with and without involvement of a watercraft.
<b>Falls</b>	Injury or death from falls associated with various mechanisms.
<b>Fire/burn</b>	Injury or death from fire and flames and from hot objects and substances.
<i><b>Fire/flame</b></i>	<i>Injury or death caused by fire and flames, including those caused from smoke inhalation.</i>
<i><b>Hot objects/substances</b></i>	<i>Injury or death caused by hot liquids and steam and corrosives.</i>
<b>Firearms</b>	Injury or death from firearms, including unintentional, suicide, homicide, legal intervention, and undetermined intent.
<b>Machinery</b>	Injury or death associated with machinery used in various industrial and occupational activities.
<b>Motor vehicle traffic</b>	Injury or death involving automobiles, vans, trucks, motorcycles, and other motorised cycles known or assumed to be travelling on public roads or highways.
<i><b>Occupant</b></i>	<i>Injury or death where the person involved was the driver or passenger of the vehicle.</i>
<i><b>Motorcyclist</b></i>	<i>Injury or death where the person involved was the driver or passenger of the motorcycle.</i>
<i><b>Pedal cyclist</b></i>	<i>Injury or death involving an automobile where the person involved was a pedal cyclist.</i>
<i><b>Pedestrian</b></i>	<i>Injury or death involving an automobile where the person involved was a pedestrian.</i>
<i><b>Unspecified</b></i>	<i>Injury or death involving an automobile where the person involved was unspecified.</i>
<b>Pedal cyclist, other</b>	Injury or death among pedal cyclists not involving motor-vehicle traffic incidents.
<b>Pedestrian, other</b>	Injury or death among pedestrians hit by a train, a motor vehicle where the collision did not occur in traffic, or another means of transportation.

<b>Transport, other</b>	Injury or death associated with various other means of transportation: railway, off road and other motor vehicles not in traffic, other surface traffic, water and aircraft.
<b>Natural/environmental</b>	Injury or death caused by adverse bites and stings and environmental conditions: excessive heat, excessive cold, hunger, excessive exposure to weather conditions, cataclysmic storms (e.g. tornadoes, floods, hurricanes), cataclysmic land movement (e.g. earthquakes, land slides, avalanches, and tidal waves).
<b><i>Bites and stings</i></b>	<i>Injury or death from bites and stings of venomous and non-venomous insects and other animals.</i>
<b>Overexertion</b>	Injuries or death caused by overexertion.
<b>Poisoning</b>	Injury or death caused by drugs and other medicinal substances and gases and other substances.
<b>Struck by, against</b>	Injury or death resulting from being struck by or striking against objects or persons.
<b>Suffocation</b>	Injury or death caused by: a) the inhalation or ingestion of food or other objects that block respiration and b) other mechanical means that hinder breathing.
<b>Other specified &amp; classifiable</b>	Codes for injury or death not assigned to specific categories.
<b>Other specified, not elsewhere classifiable</b>	Codes for mechanisms of injury that have been reported but for which no specified E code exists.
<b>Unspecified</b>	Cases of injury or injury death where the mechanisms are not reported.

# Introduction

Injury mortality is the fourth commonest cause of death in Ireland. The treatment of injuries has a major impact on our hospitals and on our budget for health. Long term disability following accidents is a serious problem. The aim of this report is to examine the impact of accidents and injuries on the Irish population by analysing routine mortality and morbidity data, and to identify in turn those areas where preventive measures could have an impact.

In Section One the literature review details the advantages and disadvantages of each type of routine data source used in this report. The interpretation of data should take account of the constraints of the available data collected. The usefulness of routine data collection is highlighted, while identifying areas for improvement.

In Section Two the methodology employed in the study is detailed. In Section Three data on hospital admissions over a five-year period 1993-1997 are presented. An overview of injury admissions is presented, followed by further analysis of injury data by both cause and by age group.

In Section Four data on all accident-related deaths over a 17-year period, 1980-1996, are presented, with overall mortality data and mortality data by age group and by major causes of injury death detailed.

In Section Five comparisons are made between the eight health board regions for rates of admissions and deaths due to injury.

In presenting the data we use a matrix format devised and recommended by the International Collaborative Effort on Injury Statistics to display injury simultaneously by cause and intent. The use of a common format will also facilitate regional and international comparisons.

In Section Six the priority recommendations for injury prevention are outlined. The key findings are then discussed and further recommendations are presented with the aim of injury prevention, reduction of disability and improvement in injury surveillance.

# Section one:

## Literature review

### 1.1 Introduction

Injury is a serious public health problem. It is a leading cause of death in all age groups and the commonest cause of death in those under 45 years of age (Rivara *et al.* 1989, The National Committee for Injury Prevention and Control 1989). Injuries account for approximately one-third of deaths in children over one year of age (Clover *et al.* 1982). They account for a greater proportion of potential life lost than either cancer or heart disease combined (The National Committee for Injury Prevention and Control 1989). By the year 2020, the World Health Organisation (WHO) predicts that injury will become the greatest single reason for loss of healthy human life years (Murray *et al.* 1996).

For each person who is fatally injured many more are hospitalised or receive treatment in accident and emergency departments. Injury is a major cause of preventable morbidity and short- and long-term disability (Rivara *et al.* 1989). In Ireland injuries account for 20% of all childhood hospital admissions and over 40% of accident and emergency department visits (Kirke 1984, Laffoy 1997).

The economic, social and personal costs associated with injury are huge. Injury places a substantial burden on the health service. The National Health Strategy document 'Shaping a Healthier Future' emphasised the large financial burden accidents and related morbidity and mortality place on the Irish health service. The indirect costs of injuries

associated with disability, loss of earnings and other factors are even greater.

Injuries can be prevented and their impact on morbidity reduced through the implementation of proven interventions. These interventions can often be readily, easily and inexpensively implemented. In order to implement effective interventions to control the incidence and severity of injuries a good knowledge of the causes of injuries and their associated risk factors is needed.

### 1.2 Accidents and injury

Traditionally injuries have been classified as accidental or intentional. In this report injuries are classified as unintentional, self-inflicted or inflicted by other persons. The term 'unintentional injury' is used rather the term 'accident' because the term accident implies something which happens by chance or something which is uncontrollable and therefore unpreventable. Injuries do not happen by chance. They have known causes and can be prevented and controlled.

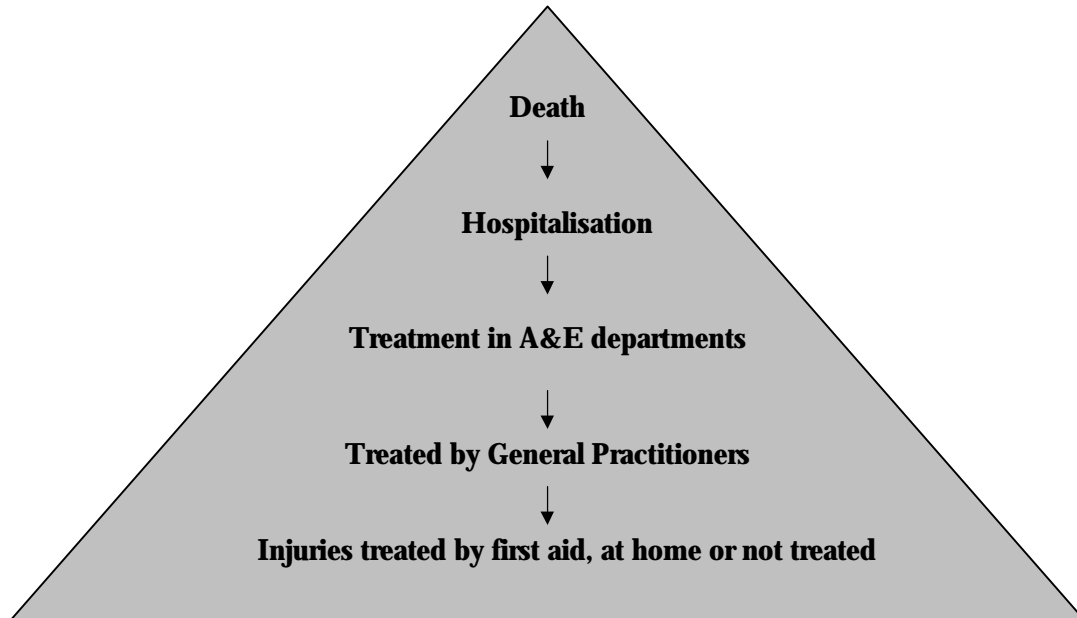
### 1.3 Unintentional injuries

Unintentional injury deaths account for between 61% and 72% of all injury deaths (Fingerhut *et al.* 1998). The principal causes of unintentional injury death include road traffic accidents (RTAs), poisoning, falls, drowning and suffocation. For each death that occurs due to injury many more injuries result either in hospitalisation, or are treated in accident and emergency departments or by family doctors. Even more are treated outside the hospital or surgery setting. The

injury pyramid, outlined below (Figure 1.1), illustrates how injury deaths, estimated to constitute only 1% of all injuries, are just the

tip of the iceberg (National Committee for Injury Prevention and Control 1989, Gallagher *et al.* 1984).

**Figure 1.1: Injury pyramid**



There are a number of known risk factors associated with an increased risk of unintentional injury. There is a strong association between poverty or lower social class and the risk of injury (Constantinides 1988). Studies have shown that the risk of injury to poor children is two to five times greater than for non-poor children (Nersesian *et al.* 1985, Rivara and Baber 1985, Pless 1987). Deaths due to accidents have been shown to have a steeper social class gradient than any other fatal condition (Working Party on Inequalities in Health 1980, Laflamme 1998).

Males under 65 years of age are known to have a higher risk of injury (Rivara *et al.* 1982, Baker *et al.* 1992). In Ireland Brannick *et al.* (1980) found boys, 1-14 years of age, twice as likely as girls to die from unintentional injuries. Males have also been shown to be more likely to sustain injuries leading to hospitalisation or treatment in

accident and emergency departments (Towner *et al.* 1994).

Risk factors for specific types of injuries are complex and depend on a number of factors including age and sex. Some examples are outlined below.

### **Road traffic accidents**

RTAs are a leading cause of unintentional injury deaths in most industrialised countries (Robertson 1992, Fingerhut *et al.* 1998). The average annual rate of deaths from RTAs in England and Wales was 6 per 100,000 between 1993 and 1995 (Fingerhut *et al.* 1998). For men aged 15-44 years RTAs are the greatest cause of ill-health and premature death world-wide (WHO 1999). RTAs are known to be a common cause of disability (Guria 1989).

RTAs involving pedestrians are a significant cause of injury in children of all age groups (Rivara 1994). Children 5-9 years are at a high risk of injury and death from

pedestrian injuries (Division of Injury Control 1990).

### **Falls**

Falls are a principal cause of injury related hospital admissions (Robertson 1992, Laffoy 1995). Young children and older people are known to have an increased risk of falls (Tinetti *et al.* 1988, Laffoy 1995). Older women, in particular, have very high rates of hospital admissions and deaths due to injuries sustained as the result of falls.

Studies estimate that between one-third of older people fall at least once each year (Perry 1982, Prudham and Evans 1981, Tinetti 1988, O'Loughlin *et al.* 1993). Fractures are a common outcome of a fall. Patients with fractures were found to occupy as much as 87% of all hospitalised days (Sahlin 1990). Recurrent falling is also a common problem among older people. Older people with a history of falls are likely to experience further falls. Common types of falls in young children include falls from playground equipment, baby walkers and windows (Kavanagh and Banco 1982, Altmann *et al.* 1996, Rivara and Aitken 1998).

### **Poisoning**

Poisoning is a leading cause of childhood admissions to hospital especially in children under 5 years of age (Laffoy 1995). Most studies report a peak in the incidence of childhood poisoning at age two years with a higher incidence in males (Hoy *et al.* 1999, Petridou 1996). Poisoning accounts for approximately 2% of all childhood deaths in developed countries, however mortality is just the tip of the iceberg in terms of the impact of childhood poisoning on child health (WHO 1993).

### **Fires and Burns**

Burns are of special importance in the field of injury prevention. They are not only an important cause of death but for those who

survive, burns can leave life long scars and a need for long term medical treatment. Those at the greatest risk are children under five years of age and older people. Nolan and Penny (1992) found burns accounted for 5% of emergency department injury presentations in children aged 0 to 14 years in Victoria, Australia. Most burn injuries occur in younger children (0-4 years) (Streeton and Nolan 1997, Rivara and Aitken 1998).

The majority of fire and burn deaths are due to house fires, and include deaths caused by smoke inhalation, toxic fumes and carbon monoxide gas resulting from fires.

### **Drowning**

Drowning has a high death rate. It is a common cause of unintentional death in children under 5 years of age, in adolescent males and young adults 15-24 years of age (Division of Injury Control 1990). One study carried out in the US found the rate of unintentional drowning to be highest in males (3.7 per 100,000), people aged 15-25 years (3.3 per 100,000) and children under 5 years of age (2.5 per 100,000) (Hedberg 1990).

Bathtub drowning is the leading cause of drowning in very young children while pools pose a high risk for toddlers. Swimming or boating accidents are more common in older children and adolescents. Drinking alcohol near open bodies of water has been blamed for a large proportion of drowning incidents in adolescents.

## **1.4 The cost of injuries**

Accidents and related morbidity and mortality give rise to considerable human suffering and place a large economic burden on society. Although most estimates of the cost of injuries are restricted to the financial impact on the health service the true cost of

injuries is much greater. The cost of injuries can include:

- The cost of medical care
- The cost of rehabilitation
- Disability
- Loss of earnings
- Loss of productivity
- Legal proceedings
- Loss of quality of life
- Pain and suffering

In the UK injuries were estimated to account for 7% of National Health Service (NHS) expenditure (Halliday and Zimmerman 1993). In the USA injuries were estimated to account for 12.1% of all direct medical care costs (Harlan *et al.* 1990).

The most expensive elements of medical care are those associated with inpatient treatment (Langley *et al.* 1993). Injury admissions are on average more expensive to treat than non-injury cases. Some of this additional cost is due to longer lengths of stay for injury admissions. RTA injuries are generally the most expensive to treat in hospital (Langley *et al.* 1993).

Guria (1991) estimated that inpatient costs for injuries requiring hospitalisation in New Zealand accounted for 65% of medical costs. The direct cost of inpatient care for injuries was conservatively estimated as £54,886,853 in Ireland in 1993 (Laffoy *et al.* 1993).

Disability is a common outcome of more serious injuries such as RTAs (Guria 1989). The cost of disability can include the cost of medical care, the loss of the victim's productivity, the cost of pain and suffering and the loss of quality of life suffered by the victim and their family. However disability and the social costs of disability are seldom included in any economic analysis of injuries. This is because of the difficulties

associated with measuring and costing disability.

To exclude the social costs associated with injury and disability when estimating the cost of injuries underestimates the true cost and consequently may hold implications for supplying resources devoted to injury prevention. However at present there is no systematic way of costing disability for inclusion in economic evaluations of accident prevention measures.

### **1.5 Injury surveillance**

There is good evidence that many unintentional injuries are largely preventable, and that carefully focussed public health interventions can save lives and reduce suffering (Kavanagh *et al.* 1982, Ytterstad *et al.* 1995(a), Ytterstad 1995(b)).

Significant reductions in the incidence and severity of injuries will depend on the development and implementation of proven interventions (Rivara *et al.* 1989). In order to design, implement and evaluate such interventions a good knowledge of the occurrence of injuries is required.

Injury surveillance is essential for policy making and the design of effective injury prevention strategies. It relates to the use of data to implement and monitor injury prevention strategies and to measure their performance in terms of health gain. The more comprehensive information available on where, when and how injuries occur, on risk factors for injuries and on the injured persons themselves, the more focussed these prevention strategies can be.

Information systems used for injury surveillance have been largely established for reasons other than public health injury prevention. For this reason the quality of the data collected does not always meet the standards necessary for injury prevention. Although all data systems have potential biases they are still useful.



A combination of data sources are often necessary to get a clearer picture of injuries. For example, as the rate of hospitalisation or accident and emergency visits due to near drowning is not notably high, examining these alone could lead one to believe that drowning is not a serious problem. However drowning is a leading cause of injury death.

Principal sources of injury-related mortality and morbidity data include vital registration data on deaths and hospital discharge data. Data are also collected from accident and emergency departments, primary care settings and special surveys.

### **1.5.1 Mortality data**

Vital registration data on causes of death are available in most countries. Such records are normally based on the death certificate completed by a physician at the time of death. In Ireland vital statistics on cause of death are compiled by the Central Statistics Office (CSO).

The advantages of mortality data are that they are available on a national basis and are often computerised.

The disadvantages associated with the use of mortality data include:

- (a) Mortality data only account for a small proportion of injuries and therefore do not reflect the true incidence of injury.
- (b) The causes of and risk factors for injury deaths may not correlate with those for injuries resulting in hospitalisation or emergency treatment (Sniezek *et al.* 1989, Sheane *et al.* 1995). The ratio of deaths to hospital admissions varies greatly depending on the type of injury.
- (c) Most countries allow only one cause of death to be recorded. Hence, where there are multiple causes of death the cause which is most relevant to injury

surveillance and prevention may be lost.

- (d) The quality of death certificates has been questioned in terms of both completeness and accuracy (Kirchner *et al.* 1985, Lapidus *et al.* 1990, Salmi 1990). Studies have found that death certificates sometimes fail to identify injury-related deaths (Jason *et al.* 1983, Stout and Bell 1991).
- (e) There may be delays in the dissemination of mortality statistics.

### **1.5.2 Hospital discharge data**

Hospital discharge data provide information on severe injuries (Sniezek 1989). They include information on diagnosis, procedures undertaken in hospital, length of stay and other factors. These data systems have been developed for the purposes of documenting hospital activity. The Irish system is known as the Hospital In-Patient Enquiry (HIPE) System.

The advantages of using hospital discharge data are that they are routinely collected and are often computerised.

The disadvantages of using hospital discharge data are that data may be affected by the availability of beds, admission policies and technologies and may not give a true reflection of the real rates of injury (Towner *et al.* 1994). Selection biases may also affect hospital attendance and admission, particularly with mild injuries (Walsh *et al.* 1996).

### **1.5.3 External cause of injury codes**

Mortality data and hospital discharge data in most industrialised countries, are coded using the International Classification of Diseases (ICD), a classification system for mortality data developed by the World Health Organisation (WHO).

External causes of injury and poisoning (E codes) are a component of this classification system and are considered by many to be an essential part of reporting injury data (Sniezek *et al.* 1989, Karlson *et al.* 1992). E codes are important in defining the size of the injury problem, identifying and characterising risk factors and planning, developing and evaluating prevention initiatives.

External causes are classified into several hundred categories. Each category begins with the letter E followed by a three or four digit number. E codes range from E800 – E999. E codes are classified by the cause or mechanism of injury (fall, poisoning, RTA, firearm) and the intent or manner of injury (accident [unintentional], suicide [intentionally self-inflicted], homicide [intentionally inflicted by another] or intent undetermined).

A number of deficiencies associated with the use of E codes have been highlighted:

- Poor discrimination for morbidity data, as the ICD system was originally developed for the classification of mortality data.
- Some authors report a lack of user guidelines and information necessary for the practical application of the system, creating the potential for inconsistent classification (Sneizek 1989, Cummings *et al.* 1995, Hoy *et al.* 1999).
- There are some internal inconsistencies. Many of these result from attempting to compress several conceptual dimensions into a one-dimensional classification. Each E code tries to encompass several concepts including: intent; location; type of road user; the injury event; type of object or substance involved in the injury.

- E codes are very detailed in some respects and not detailed in others. For example, poisonings are grouped in such a way that a particular drug could be assigned to one or more E code categories (Cummings *et al.* 1995, Hoy *et al.* 1999). Broad E code categories limit the ability to identify specific drugs or substances within those categories. The latest edition of the ICD system, ICD-10, has a number of extra sub-classes within the broad E codes which will facilitate the improved classification of poisonings, however the identification of specific agents will still be restricted.
- E codes do not distinguish between work-related injuries and injuries occurring in the home, school or during leisure activities.
- Classification using E codes requires a decision regarding the injury intent. Intent is a complex issue and it has been argued that classifications which rely on decisions about intent may obscure the overall cause of injury.
- Some studies have found the absence of E codes from hospital discharge data to be a major limitation of their use (Sniezek *et al.* 1989, The National Committee for Injury Prevention and Control 1989, Marganitt *et al.* 1990). Insufficient detail on the patient's chart and notes can result in no E code being assigned to the patient record or a reliance upon codes indicating 'other' or 'unspecific' cause of injury. The use of non-specific E codes are not useful in planning prevention initiatives (Smith *et al.* 1990).
- E codes are often excluded from the discharge information because they are not used as a basis of case-mix adjustment (for hospital resources), therefore other diagnoses receive priority (Sneizek 1989, Marganitt *et al.*

1990). Patients with no E code assigned are typically those with multiple injury-related diagnoses, older patients with existing chronic diseases prior to injury and patients with long hospital stays due to severe injuries or complications of injury.

### **1.6 Injury intervention Strategies**

In 'Shaping a Healthier Future' the importance of reducing the cost of accidents through the implementation of proven initiatives was stressed. A number of intervention strategies have been shown to be effective in reducing the incidence and severity of injuries.

There are three different approaches to injury prevention and control. These include:

- (a) Health education,
- (b) Environmental modifications and
- (c) Legislation.

#### **(a) Health education**

This involves providing individuals with information enabling them to make informed decisions and encouraging health-promoting behaviours.

#### **(b) Environmental modifications**

Environmental modifications provide passive and automatic protection to the individual, for example the provision of safe crossing areas and play areas. Passive protection through the modification of consumer products and environments has been seen as a more effective way of reducing injury.

#### **(c) Legislation**

Legislation requires individuals to alter their behaviour.

Most intervention strategies would combine two or more of these approaches. Some examples of initiatives used to prevent and

control major causes of injury are discussed below.

#### **Road traffic accidents**

RTAs can be controlled in a number of ways. Environmental modifications include traffic calming measures, cycle lanes and the separation of major road arteries from housing estates. There is considerable evidence that child car seat restraints reduce car occupant injuries in small children (Decker 1984, Agran *et al.* 1987, Christian *et al.* 1989, Dowswell *et al.* 1996).

Legislative measures have also been found to influence the incidence and severity of RTAs. Policies aimed at reducing speed can have a dramatic effect on the number of pedestrians killed in RTAs. Other legislative measures include the use of seat belts and enforcing drink driving laws (Rivara and Aitken 1998).

#### **Drowning**

There is good evidence to suggest that fencing around both public and private pools is effective in reducing drowning in young children (Pearn *et al.* 1979, Rivara and Aitken 1998).

Swimming lessons for children and the use of personal floating devices or life jackets have also been promoted as ways to prevent drowning (Rivara and Aitken 1998).

#### **Pedal cyclist injuries**

The use of cycle helmets has been promoted widely as a way of reducing head injuries (Dowswell *et al.* 1996, Rivara and Aitken 1998). The state of Victoria in Australia introduced a law requiring cyclists to wear helmets in 1990 and witnessed an increase in the use of helmets from 31% to 75% immediately following its introduction. There was a 48% reduction in pedal cyclist head injuries between 1989/90 and 1990/91 and a reduction of 70% over the 2 year period 1989/90 –1991/92. While some of this decrease can be attributed to other

factors such as a decrease in cycling among teenagers, at least half was attributed to the use of cycle helmets (Cameron *et al.* 1994, McDermott 1995).

### **Fires and burns**

Smoke detectors have been shown to be effective in reducing the number of deaths from house fires. One study showed that smoke detectors can reduce the risk of dying in a house fire by 71% (Runyan 1992). Initiatives designed to increase the use of smoke detectors have also been successful; smoke detector give-away programmes combined with education programmes and publicity have shown a substantial decrease in the incidence of fire related injuries (Gorman *et al.* 1985, Malone *et al.* 1996)

Streeton *et al.* (1997) attributed the decline in paediatric burns in Victoria, Australia to a combination of factors including improvements in product design, changes in product legislation and increased awareness of burn injury hazards. For example, a decrease in scald incidence was attributed to a reduction in the recommended temperature for hot water heaters, resulting in safer water temperatures, while mandatory changes in the design of children's nightwear led to reduced fire hazard.

### **Falls**

Initiatives to reduce falls in young children have included adding energy-absorbing surface materials in playgrounds, decreasing the height of playground equipment, educational programmes to reduce the use of baby walkers and the installation of window bars (Dowswell *et al.* 1996, Rivara and Aitken 1998, Lallier *et al.* 1999). A study of fatal falls in children carried out in New York found that 66% of fatal falls in children up to five years of age occurred when children crawled out of windows in high rise buildings (Bergner *et al.* 1971). A campaign called '*Children can't fly*' was launched in high-risk areas and the installation of widow bars was promoted. There was a subsequent 50% decline in fall rates over two years (Spiegel and Lindsman 1977).

### **Poisoning**

Reductions in childhood poisoning have been attributed to the introduction of child resistant packaging in a number of countries (Walton 1982, Corbett *et al.* 1991, Dowswell *et al.* 1996, Rodgers 1996).

# Section Two:

## Methodology

### 2.1 Aims and objectives

The aim of this study was to examine the impact of unintentional accidents and injuries on the Irish population by analysing routine mortality data and Hospital In-Patient Enquiry (HIPE) data.

#### 2.1.1 Specific objectives

1. To describe the pattern and trends of death and hospital admissions due to accidents and injuries in Ireland.
2. To estimate the burden of disease caused by accidents in Ireland.
3. To prepare reports for each health board on the pattern and trends of accidents and injuries in their region.
4. To identify gaps in the existing systems of data collection, and make recommendations on how these might be filled.

### 2.2 Definition of terms

The term '*injury*' in this report includes (a) unintentional injuries, (b) self-inflicted injuries, (c) injuries inflicted by other persons, and (d) injuries of undetermined intent. This report is primarily concerned with unintentional injury.

### 2.3 Methodology

#### 2.3.1 Data sources

Data relating to accidents and injuries in the Republic of Ireland were drawn together from two sources. Mortality data were

obtained from the Central Statistics Office (CSO) and Hospital discharge data from the Hospital In-Patient Enquiry (HIPE) system. Population data were obtained from the Irish Census.

#### Mortality data

Routine mortality data were obtained from the Central Statistics Office (CSO) for the years 1980-1997. Deaths due to external causes are not registered until a coroner's court has ruled. This can lead to significant delays in the registration of such deaths. For the years 1980-1995 data were provided relating to the year of death. However for 1996-1997 data relating to the year of registration were provided. Years 1996-1997 were merged and the year of death identified. Deaths which occurred in 1997 were excluded, as data for this year were incomplete.

For each death basic demographic characteristics are recorded, together with the underlying cause of death.

#### Hospital In-Patient Enquiry (HIPE) data

The Hospital In-Patient Enquiry (HIPE) system is a computerised discharge system designed to collect demographic, clinical and administrative data on discharges and deaths from acute general hospitals nationally. The HIPE Unit at the Economic and Social Research Institute (ESRI) is responsible for collecting, processing and

analysing HIPE data. Sixty acute public hospitals currently participate in HIPE.

When HIPE was first established participation was voluntary and for a number of years fewer than 70% of discharges from public hospitals were recorded. Since the Department of Health and Children decided, in 1993, to partially base hospital funding on case-mix derived from HIPE, coverage has greatly improved and in 1998 was estimated at 95%.

For each hospital discharge basic demographic characteristics are recorded, together with the source of admission, outcome of hospital stay, principal procedures undertaken and underlying cause of injury (up to six diagnoses).

### **2.3.2 Case selection**

Causes of injury in both mortality and HIPE data are coded using the International Classification of Diseases (ICD). ICD coding includes codes (N code) which describe the nature of disease or injury (for example, 820.0 is a closed transcervical fracture of the femur). ICD coding also includes codes which describe the cause or mechanism of injury, the external event, condition or circumstance of the injury. These external codes are referred to as E codes (for example E884.0 is a fall from playground equipment).

For this project all mortality and hospital discharge data containing ICD external cause codes (E codes) were included. Because HIPE data contains up to six diagnoses the primary (first) E code was used. Records with an injury or poisoning N code which did not have an E code were analysed separately.

Each HIPE discharge record represents one episode of care. For patients admitted to more than one hospital a record is made for

each episode of care. However recurrent admissions of the same person cannot be reliably identified. In order to minimise the impact of repeat admissions the discharge record of patients transferred to a hospital were excluded.

Patients not resident in Ireland were excluded and patients with 'no fixed abode' were allocated to the health board of the hospital where they were admitted.

### **2.3.3 Population data**

The population for each county were obtained from the 1981, 1986, 1991 and 1996 censuses. Estimates for intercensal years were derived by direct linear interpolation between census years. Estimates for 1997 were derived by linear extrapolation from the figures for 1995 and 1996.

### **2.3.4 Analysis**

Analysis was carried out using the Statistical Analysis System (SAS). Rates were calculated using standard methods. Standardised mortality ratios (SMR) and standardised admissions ratios (SAR) were calculated using standard methods with the appropriate set of age, sex and/or year specific rates for the entire country as the standard.

### **2.3.5 Data presentation**

In 1996 the International Collaborative Effort (ICE) on Injury Statistics adopted a framework for displaying mortality data (McLoughlin *et al.* 1997). As shown in Table 2.1, this 'matrix' format allows data to be presented simultaneously by cause (mechanism) and intent (manner). This framework was adopted for use in this report.

**Table 2.1:** Matrix for external cause of injury\*

Mechanism/ cause	Manner/intent				
	Unintentional	Self-inflicted	Inflicted by other persons	Undetermined	Other
Cut/ pierce	E920.0-9	E956	E966	E986	E974
Drowning/submersion	E830.0-9, E832.0-9, E910.0-9	E954	E964	E984	-
Fall	E880.0-E886.9, E888	E957.0-9	E968.1	E987.0-9	-
Fire/burn	E890.0- E899, E924.0-9	E958.0,,2,,7	E961, E968.0,,3	E988.1,,2,,7	-
<i>Fire/flame</i>	E 890.0- E899	E958.1	E968.0	E988.1	-
<i>Hot object/substance</i>	E924.0-9	E958.2,,7	E961, E968.3	E988.2,,7	-
Firearm	E922.0-9	E955.0-4	E965.0-4	E985.0-4	E970
Machinery	E919.0-9	-	-	-	-
Motor vehicle traffic <sup>†</sup>	E810- E819 (0-9)	E958.5	-	E988.5	-
<i>Occupant</i>	E810- E819 (0,,1)	-	-	-	-
<i>Motorcyclist</i>	E810- E819 (2,,3)	-	-	-	-
<i>Pedal cyclist</i>	E810- E819 (6)	-	-	-	-
<i>Pedestrian</i>	E810- E819 (7)	-	-	-	-
<i>Unspecified</i>	810-819 (9)	-	-	-	-
Pedal cyclist	E800- E807 (3); E820- E825 (6); E826.1,,9; E827- E829 (1)	-	-	-	-
Pedestrian, other	E800- E807 (2), E820- E825 (7), E826- E829 (0)	-	-	-	-
Transport, other	E800- E807 (0,,1,,8,,9), E820- E825 (0-5,,8,,9), E826.2-8, E827- E829 (2-9), E831.0-9, E833.0- E845.9	E958.6	-	E988.6	-
Natural/environmental	E900.0- E909, E928.0-2	E958.3	-	E988.3	-
<i>Bites and stings</i>	E905.0-6,,9; E906.0-4,,9	-	-	-	-
Overexertion	E927	-	-	-	-
Poisoning	E850.0- E869.9	E950.0- E952.9	E962.0-9	E980.0- E982.9	E972
Struck by, against	E916- E917.9	-	E960.0, E968.2	-	E973, E975
Suffocation	E911- E913.9	E953.0-9	E963	E983.0-9	-
Other specified, classifiable	E846- E848, E914- E915, E918, E921.0-9, E923.0-9, E925.0- E926.9, E929.0-5	E955.5-9, E958.0,4	E960.1, E965.5-9, E967.0-9, E968.4	E985.5; E988.0,4	E971, E978, E990- E994, E996, E997.0-2
Other specified, not elsewhere classifiable	E928.8, E929.8	E958.8, E959	E968.8, E969	E988.8, E989	977, 995, 997.8, 998, 999
Unspecified	E887, E928.9, E929.9	E958.9	E968.9	E988.9	976, 997.9
<b>All injury</b>	<b>E800- E869, E880- E929</b>	<b>E950- E959</b>	<b>E960- E969</b>	<b>E980- E989</b>	<b>970-978, 990-999</b>

\* Adapted from McLoughlin *et al.* 1997.

† For the purpose of this report the term 'road traffic accident' is used rather than the term 'motor vehicle traffic'.

# Section Three:

## Hospital admissions\* 1993-1997

### 3.1 All injuries, 1993-1997

Between 1993 and 1997 there were a total of 255,911 admissions to hospital as a result of injury (an average annual admission rate of 1,419.4 per 100,000). The average annual number of injury admissions was 51,182, rising from 48,391 in 1993 to 54,873 in 1997 (an increase of 13.4%).

This rise in injury admissions was observed in both males and females, across all age groups and major causes of injury. The rise in admissions may be due in part to the increase in HIPE data completeness.

Unintentional injuries accounted for the vast majority (87.4%; 223,556) of all injuries, an average annual admission rate of 1,239.9 per 100,000. Almost 7% (6.7%; 17,101) of injuries were self-inflicted (an average annual admission rate of 94.8 per 100,000) while 5.7% (14,647) of injuries were inflicted by other persons (an average annual admission rate of 81.2 per 100,000). The intent of 0.2% (587) of injuries was undetermined (an average annual admission rate of 3.3 per 100,000) and the intent of 29 injuries was coded as 'other'.

*Table 3.1* shows injury admissions data (1993-1997) by cause (or mechanism) and intent (or manner) as recommended by the International Collaborative Effort (ICE) on Injury Statistics in 1996 (McLoughlin et al. 1997).

The main causes of unintentional injuries were falls (42.9%), RTAs (14.5%) and being struck by or against an object or person (10.7%). Most self-inflicted injuries (95.0%) were due to poisoning by either prescription and non-prescription medications. Of the 14,647 injuries inflicted by other persons 66.8% were due to being struck by or against an object or person (Table 3.1). An explanation of each cause/mechanism category is outlined in the glossary.

- **An average of 51,182 patients were admitted to hospital each year as a result of injury**
- **87.4% of injury admissions were unintentional**
- **The rate of unintentional injury admissions was 1,239.9 per 100,000**

### 3.2 Unintentional injuries, 1993-1997

The average annual number of unintentional injury admissions was 44,711, rising from 42,521 in 1993 to 47,700 in 1997 (an increase of 10.9%). The average annual rate of unintentional injury admissions was 1,239.9 per 100,000.

Of the 223,556 patients admitted with unintentional injuries between 1993 and 1997, 61.5% (137,391) were male and 38.5% (86,165) were female. The average annual admission rate was 1,534.3 per 100,000 for males and 949.4 per 100,000 for females.

\* Each case recorded in HIPE relates to a discharge; however for the purposes of this report the term admission is used.



**Table 3.1: Injury admissions by cause and intent, 1993-1997**

Cause or mechanism	Intent or Manner					Total	Average annual admission rate per 100,000
	Unintentional	Self-inflicted	Inflicted by other persons	Undetermined	Other		
Cut/ pierce	12,265	391	1,383	169	-	14,208	78.8
Drowning/submersion	224	133	7	13	-	377	2.1
Fall	96,003	76	9	50	-	96,138	533.2
Fire/burn	4,504	30	48	20	-	4,563	25.3
<i>Fire/flame</i>	1,649	26	34	17	-	1,726	9.6
<i>Hot object/substance</i>	2,817	4	13	3	-	2,837	15.7
Firearm	212	29	71	57	5	374	2.1
Machinery	3,664	-	-	-	-	3,664	20.3
Road traffic accident	32,351	9	-	-	-	32,360	179.5
<i>Occupant</i>	20,387	-	-	-	-	20,387	113.1
<i>Motorcyclist</i>	4,356	-	-	-	-	4,356	24.2
<i>Pedal cyclist</i>	1,185	-	-	-	-	1,185	6.6
<i>Pedestrian</i>	5,034	-	-	-	-	5,034	27.9
<i>Unspecified</i>	1,190	-	-	-	-	1,190	6.6
Pedal cyclist, other	7,134	-	-	-	-	7,134	39.6
Pedestrian, other	1,060	-	-	-	-	1,060	5.9
Transport, other	3,670	2	-	-	-	3,672	20.4
Natural/environmental	3,404	1	-	-	-	3,405	18.9
<i>Bites and stings</i>	1,293	-	-	-	-	1,293	7.2
Overexertion	1,975	-	-	-	-	1,975	11.0
Poisoning	16,191	16,242	80	81	-	32,594	180.8
Struck by, against	23,935	-	9,779	-	17	33,731	187.1
Suffocation	758	93	14	15	-	880	4.9
Other specified, classifiable	11,694	25	143	11	4	11,877	65.9
Other specified, not elsewhere classifiable	604	26	379	50	1	1,060	5.9
Unspecified	3,946	44	2,735	112	2	6,839	37.9
<b>Total</b>	<b>223,556</b>	<b>17,101</b>	<b>14,647</b>	<b>578</b>	<b>29</b>	<b>255,911</b>	

Children under five years of age accounted for 9.7% (21,661) of all unintentional injury admissions while 16.6% (37,131) were in children aged 5-14 years. Over 20% (21.4%; 47,945) of admissions were in people aged

15-24 years and 34.1% (76,204) were in people 25-64 years. 18.2% (40,615) of admissions were in people aged 65 years and over. The mean age was 34.1 years and the median age 26 years.

There was a slight preponderance of males in all age groups under 65 years of age. The rate of admissions in males under 65 years of age peaked at 20-24 years (a rate of 2,384.8 per 100,000). This can be attributed to the high number of admissions in young males due to RTAs and being struck by or against an object or person (Figure 3.1).

- **26.3% of unintentional injury admissions were in children under 15 years of age**
- **18.2% of admissions were in people 65 years and older**
- **The rate of admissions in males aged 20-24 years was 2,384.8 per 100,000**

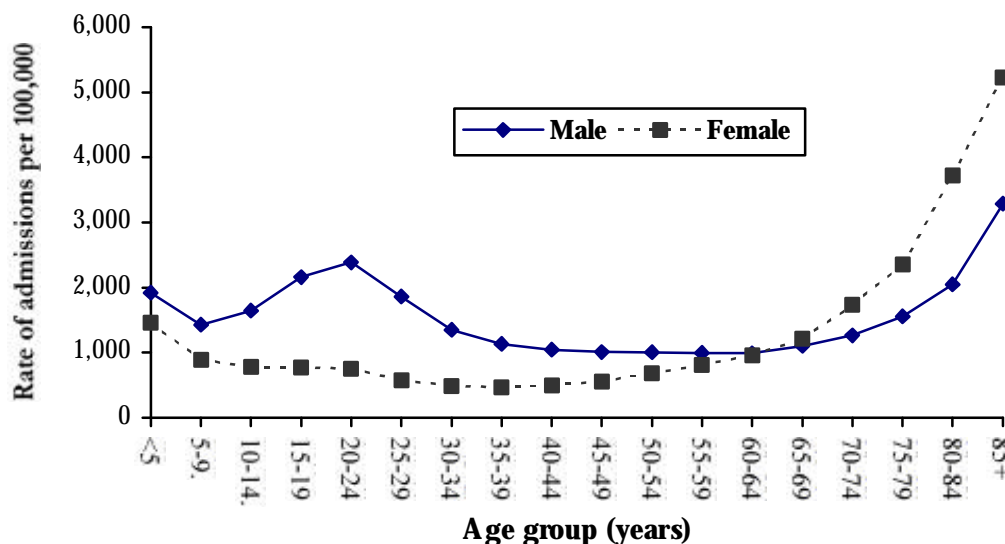
The rate of unintentional injury admissions for both males and females increased steadily after 65 years of age. There was a steeper gradient for women. Falls accounted

for the vast majority of admissions in this age group.

### 3.2.1 Source/place of unintentional injury

The available data show that 14.9% (33,372) of unintentional injuries occurred within the home and 14.3% (31,960) were RTAs. However the majority (63.1%; 141,114) of injuries were recorded as 'other injuries', and so there is no information as to the place of injury. Codes given to the remaining injuries (7.7%) are also unhelpful as to the place of injury. They were coded as follows: normal admissions (3.5%; 7,827), 'other than injury' (2.8%; 6,217), planned repeat (0.9%; 2,010), self-inflicted deliberate injury/poisoning (0.4%; 906), emergency readmission (129) and admission deferred (21).

**Figure 3.1:** Average annual rate of unintentional injury admission in each age group by sex, 1993-1997



### 3.2.2 Cause/mechanism of unintentional injury

Falls accounted for 42.9% of all unintentional injury admissions, an average annual admission rate of 532.5 per 100,000. Almost 15% of unintentional injuries were due to RTAs (an average annual admission rate of 179.4 per 100,000) while 10.7% were

the result of the patient being struck by or against an object or person (an average annual admission rate of 132.8 per 100,000). 7% of unintentional injury admissions were due to poisoning by both prescription and non-prescription drugs (an average annual admission rate of 89.8 per 100,000 (Table 3.2).

**Table 3.2: Cause/mechanism of unintentional injury, 1993-1997**

Cause	Total number 1993-1997		Average annual admission rate per 100,000
	N	%	
Cut/ pierce	12,265	5.5	68.0
Drowning/submersion	224	0.1	1.2
Fall	96,003	42.9	532.5
Fire/burn	4,504	2.0	25.0
<i>Fire/flame</i>	1,649	0.7	9.1
<i>Hot object/substance</i>	2,817	1.3	15.6
Firearm	212	0.1	1.2
Machinery	3,664	1.6	20.3
Road traffic accident	32,351	14.5	179.4
<i>Occupant</i>	20,387	9.1	113.1
<i>Motorcyclist</i>	4,356	2.0	24.2
<i>Pedal cyclist</i>	1,185	0.5	6.6
<i>Pedestrian</i>	5,034	2.2	27.9
<i>Unspecified</i>	1,190	0.5	6.6
Pedal cyclist, other	7,134	3.2	39.6
Pedestrian, other	1,060	0.5	5.9
Transport, other	3,670	1.6	20.4
Natural/environmental	3,404	1.5	18.9
<i>Bites and stings</i>	1,293	0.6	7.2
Overexertion	1,975	0.9	11.0
Poisoning	16,191	7.2	89.8
Struck by, against	23,935	10.7	132.8
Suffocation	758	0.3	4.2
Other specified, classifiable	11,694	5.2	64.9
Other specified, not elsewhere classifiable	604	0.3	3.4
Unspecified	3,946	1.8	21.9
<b>Total</b>	<b>223,556</b>	<b>100.0</b>	

Table 3.3 outlines the average annual admission rate for each cause of injury for males. The average annual admission rate due to unintentional falls was highest in men 65 years of age and over (977.3 per 100,000). The average annual admission rate due to RTAs was highest in men aged 15-24 years, with a rate of 532.4 per

100,000. This age group also had the highest average annual admission rate due to being struck by or against an object or person (532.7 per 100,000). The rate of unintentional poisoning admissions was highest in males under five years of age, with an average annual admission rate of 369.0 per 100,000.

**Table 3.3: Cause/mechanism of unintentional injury in age group for males, 1993-1997**

Cause/mechanism	Age group (years)					Total
	< 5	5-14	15-24	25-64	65+	
	<b>Average annual admission rate per 100,000</b>					
Cut/ pierce	72.2	79.9	201.0	101.1	35.8	106.6
Drowning/submersion	1.9	1.5	2.6	1.9	0.7	1.8
Fall	817.1	676.7	474.7	376.9	977.3	539.1
Fire/burn	115.9	22.8	26.2	22.1	34.3	31.0
<i>Fire/flare</i>	12.7	11.9	12.9	9.6	21.6	12.2
<i>Hot object/substance</i>	105.3	11.2	13.2	11.6	12.6	18.8
Firearm	0.2	0.8	4.2	2.7	0.3	2.2
Machinery	8.8	14.1	56.9	48.2	22.5	38.3
Road traffic accident	73.1	112.6	532.4	219.8	162.3	240.2
<i>Occupant</i>	29.5	37.5	294.5	147.0	100.4	142.2
<i>Motorcyclist</i>	1.4	3.2	155.4	30.5	7.3	44.1
<i>Pedal cyclist</i>	1.2	16.1	19.3	5.6	5.3	9.6
<i>Pedestrian</i>	40.2	53.0	37.3	22.9	4.3	34.1
<i>Unspecified</i>	1.1	1.2	18.6	9.2	5.3	8.6
Pedal cyclist, other	39.7	158.8	73.1	18.2	22.1	55.0
Pedestrian, other	11.8	19.2	7.1	3.4	5.1	7.6
Transport, other	8.2	23.2	39.6	22.3	9.3	23.2
Natural/environmental	36.0	21.8	17.9	24.5	42.3	25.4
<i>Bites and stings</i>	25.8	12.5	9.4	5.4	9.4	8.3
Overexertion	2.1	5.3	20.9	16.8	11.4	13.9
Poisoning	369.0	44.1	121.2	61.0	25.3	89.7
Struck by, against	109.8	252.8	532.7	161.9	39.3	228.4
Suffocation	13.4	2.7	2.6	3.7	6.2	4.3
Other specified, classifiable	187.6	87.9	91.6	85.5	55.5	91.6
Other specified, not elsewhere classifiable	0.2	0.9	10.5	6.5	2.2	5.3
Unspecified	26.4	16.8	48.9	31.0	23.7	30.6

Table 3.4 outlines the average annual admission rate for each cause of injury for females. The average annual admission rate due to unintentional falls was highest in females aged 65 years and over (2,017.9 per 100,000). The admissions rate due to RTAs was highest in females aged 15-24 years (206.1 per 100,000).

Younger women had a higher admission rate due to being struck by or against an object or person; the average annual admission rate was 67.0 per 100,000 in females aged 5-14 years. The admission rate due to poisoning was greatest among children under 5 years (321.6 per 100,000).

**Table 3.4:** Cause/mechanism of unintentional injury in age group for females, 1993-1997

Cause/mechanism	Age in years					Total
	< 5	5-14	15-24	25-64	65+	
	<b>Average annual admission rate per 100,000</b>					
Cut/ pierce	50.0	39.6	38.4	25.2	13.4	30.0
Drowning/submersion	2.1	0.6	1.0	0.4	0.6	0.7
Fall	626.2	380.9	174.4	276.1	2,017.9	525.9
Fire/burn	86.6	13.7	11.7	11.3	24.5	18.6
<i>Fire/flame</i>	13.6	5.4	4.5	4.5	11.3	6.2
<i>Hot object/substance</i>	74.6	8.6	7.0	6.6	13.0	12.4
Firearm	-	0.3	0.3	0.2	-	0.2
Machinery	2.6	2.1	4.7	2.4	1.3	2.6
Road traffic accident	50.2	66.6	206.1	118.2	115.8	119.5
<i>Occupant</i>	26.3	30.0	143.4	93.0	69.5	84.3
<i>Motorcyclist</i>	0.7	1.1	15.4	3.1	1.6	4.5
<i>Pedal cyclist</i>	0.5	5.9	7.0	2.5	1.9	3.6
<i>Pedestrian</i>	23.3	29.4	28.4	12.0	37.8	21.8
<i>Unspecified</i>	0.3	1.1	8.6	5.2	3.7	4.6
Pedal cyclist, other	26.3	79.4	27.0	7.7	9.4	24.4
Pedestrian, other	6.3	11.1	3.7	1.9	2.8	4.2
Transport, other	5.5	32.1	32.8	12.0	5.2	17.5
Natural/environmental	31.1	13.4	8.3	9.9	15.5	12.4
<i>Bites and stings</i>	25.6	8.2	1.4	4.2	6.0	6.1
Overexertion	2.6	3.8	7.6	9.2	12.6	8.1
Poisoning	321.6	50.7	154.6	64.0	26.5	89.9
Struck by, against	66.2	67.0	56.2	19.5	31.5	38.3
Suffocation	13.1	1.0	1.8	3.9	7.1	4.1
Other specified, classifiable	160.4	59.9	23.9	21.8	25.9	38.5
Other specified, not elsewhere classifiable	1.0	0.9	2.5	1.6	1.8	1.4
Unspecified	12.8	9.2	9.5	10.2	35.0	13.3

### 3.2.3 *Nature of unintentional injuries sustained*

Limb fractures accounted for 32.4% of all unintentional injuries sustained; 17.5% were fractures to the upper limb, while 14.9% were fractures to the lower limb (an average

annual admission rate of 217.0 and 185.1 per 100,000 respectively). Almost one-quarter (23.1%) of injuries were head injuries. 13.9% of injuries were open wounds and 5.4% were due to poisoning by drugs (Table 3.5).

**Table 3.5: Main unintentional injuries sustained, 1993-1997**

<b>Injury</b>	<b>Total number 1993-1997</b>		<b>Average annual admission rate per 100,000</b>
	<b>N</b>	<b>%</b>	
Intra-cranial injury	41,820	18.7	231.9
Fracture of upper limb	39,122	17.5	217.0
Fracture of lower limb	33,376	14.9	185.1
Open wound of upper limb	14,807	6.6	82.1
Open wound of head, neck & trunk	12,185	5.4	67.6
Poisoning by drugs	11,973	5.4	66.4
Fracture of skull	9,727	4.4	53.9
Fracture of spine and trunk	8,620	3.9	47.8
Certain traumatic complications	5,776	2.6	32.0
Dislocations	5,022	2.2	27.8
Contusion with intact skin surface	4,885	2.2	27.1
Open wound of lower limb	4,249	1.9	23.6
Burns	4,130	1.8	22.9
Toxic effects of substances	4,048	1.8	22.3
Sprains and strains	3,888	1.7	22.4
Effects of foreign body	3,190	1.4	17.7
Superficial injuries	2,524	1.1	14.0
Internal injury	1,652	0.7	9.2
Injury to nerves and spinal cord	1,169	0.5	6.5
Crushing injury	926	0.4	5.1
Other and unspecified effects	452	0.2	2.5
Injury to blood vessels	183	0.1	1.1
Other injury	9,832	4.4	54.5
<b>Total</b>	<b>223,556</b>	<b>100.0</b>	

### 3.2.4 Length of stay in hospital due to unintentional injuries

Almost half of all patients (47.7%; 106,619) spent only one day in hospital while 83.6% (186,964) of patients spent less than one week in hospital. 3.6% (8,132) of patients were in hospital for three weeks or more.

The mean length of stay was 4.6 days, the median length of stay was 2 days. The average length of stay increased with age (Table 3.6).

Leading causes of lengths of stay greater than 21 days were falls (60.1%; 4,928) and RTAs (16.6%; 1,361). Almost half (45.9%; 3,767) of all injuries requiring a length of stay greater than 21 days were fractures of the lower limb; of these 61.1% (2,300) were due to fractures of the hip.

- **47.7% of patients had a length of stay of one day**
- **Most lengths of stay > 21 days were due to falls or RTAs**
- **45.9% of injuries requiring a length of stay >21 days were fractures of the lower limb**

### 3.2.5 Outcome of hospital stay due to unintentional injuries

The vast majority of patients (87.4%; 195,299) went directly home on discharge. Transfers to other hospitals accounted for 7.8% (17,434) of discharges, while transfers to long stay units accounted for 2.4% (5,259). 1.6% (3,564) of patients discharged themselves from hospital, 0.7% (1,568) of patients died and 0.2% (432) of discharges were coded as 'other'.

**Table 3.6: Length of stay in hospital due to unintentional injuries by age group, 1993-1997**

Length of stay	Age group (years)					Total
	< 5	5-14	15-24	25-64	65+	
	%	%	%	%	%	%
1 day	76.9	64.2	51.6	42.4	22.4	47.7
2-3 days	14.8	24.5	28.5	28.5	18.6	24.7
4-6 days	4.0	6.6	11.3	14.4	13.1	11.2
7-13 days	2.3	2.8	5.8	9.7	20.4	8.9
14-20 days	0.9	0.6	1.4	2.7	13.0	3.8
21+ days	1.1	1.3	1.3	2.4	12.4	3.7
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

### 3.3 Unintentional falls

Between 1993 and 1997 there were 96,003 admissions to hospital as a result of unintentional falls, an average of 19,201 annually. The average annual admission rate due to unintentional falls was 532.5 per 100,000.

As outlined in Table 3.7, almost one-quarter of unintentional falls (22.5%; 21,612) involved slipping, tripping or stumbling on the same level while 18.0% (17,262) of falls involved falling from one level to another (for example, falling from a chair or bed).

Of patients admitted to hospital as a result of an unintentional fall, 50.3% (48,274) were male and 49.7% (47,729) were female. The average annual rate of unintentional admissions due to falls was 539.1 per 100,000 for males and 525.9 per 100,000 for females.

Children under 5 years of age accounted for 9.6% (9,237) of unintentional falls. 17.2% (16,531) of falls were in people aged 5-14 years, 10.7% (10,271) were in people aged

15-24 years while 28.8% (27,613) were in people aged 25-64 years. One-third of unintentional falls (33.7%; 32,351) were in people 65 years of age and over.

Males accounted for the majority of fall-related admissions in all age groups under 65 years, however the gender balance was reversed in the over 65 year age group (Figure 3.2).

- **The average annual admission rate due to unintentional falls was 532.5 per 100,000**
- **The average annual admission rate due to falls in people 65 + years was 1,563.3 per 100,000**
- **Half of all injuries sustained due to unintentional falls were limb fractures**

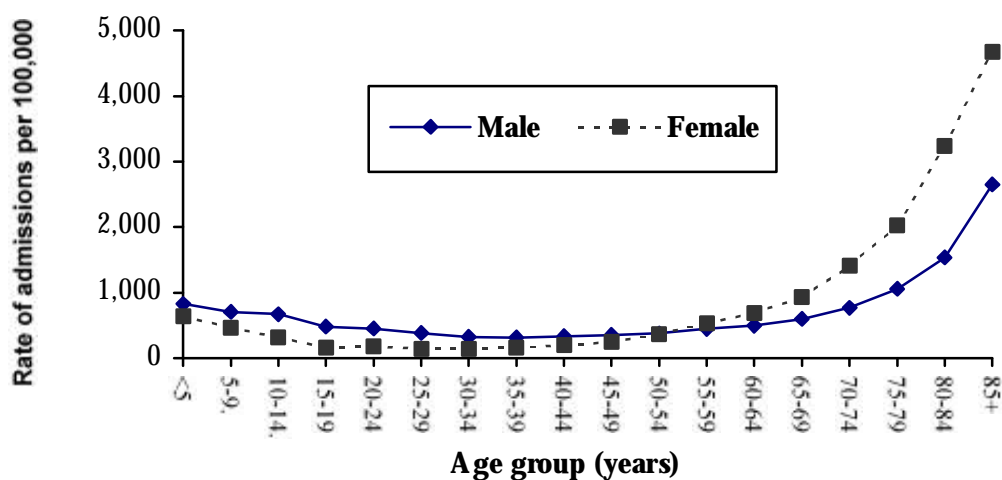
Half (50.3%; 48,258) of all injuries sustained as the result of an unintentional fall were limb fractures. Head injuries accounted for 23.9% (22,965) of injuries sustained (Figure 3.3).

**Table 3.7: Types of unintentional falls**

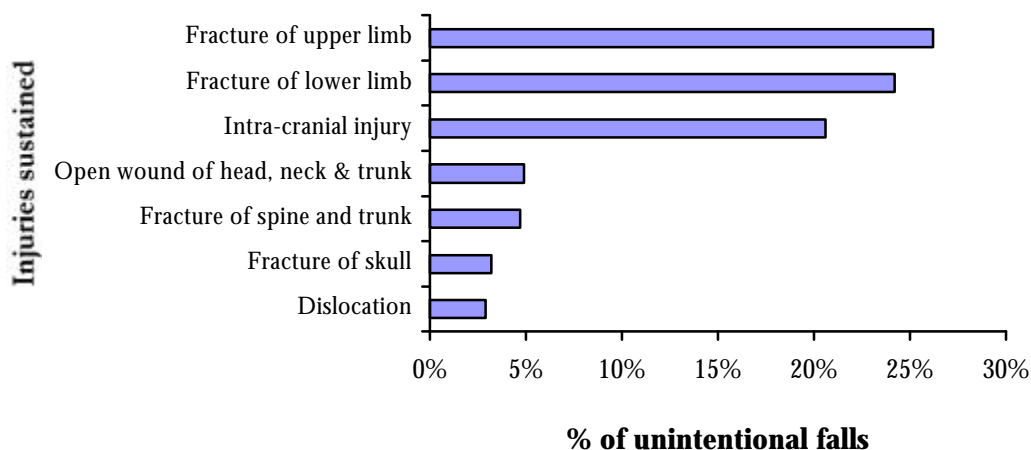
<b>Type of unintentional fall</b>	<b>N</b>	<b>%</b>
Fall on same level from slipping, tripping or stumbling	21,612	22.5
Other fall from one level to another	17,262	18.0
Fall on or from stairs or steps	5,771	6.0
Fall on same level from collision pushing or shoving, by or with other person	5,255	5.5
Fall on or from ladders or scaffolding	3,329	3.6
Fall from or out of a building or other structure	3,337	3.5
Falling into a hole or other opening in surface	277	0.3
Other and unspecified fall	39,160	40.8
<b>Total</b>	<b>96,003</b>	<b>100.0</b>



**Figure 3.2:** Average annual rate of admission due to unintentional falls in each age group by sex, 1993-1997



**Figure 3.3:** Main injuries sustained due to unintentional falls, 1993-1997



Less than half (45.5%; 43,707) of patients admitted due to an unintentional fall had a length of stay less than one day. Over 20% (22.4%; 21,467) of patients were in hospital for more than one week. Unintentional falls were the leading cause of lengths of stay greater than 21 days, accounting for 60.1% (4,928) of cases in this category.

The vast majority of patients suffering a fall (35.6%; 79,608) went directly home on discharge. Transfers to other hospitals accounted for 4.2% (9,474) of discharges, while transfers to long stay units accounted

for 2.0% (4,495). 0.5% (1,150) of patients discharged themselves from hospital, 0.5% (1,079) of patients died and 0.1% (197) of discharges were coded as 'other'.

Most of the patients transferred to other hospitals (64.0%; 6,067) or long stay units (94.0%; 4,226) were 65 years of age and over. Over 90% (91.9%; 992) of those who died as the result of an unintentional fall were 65 years of age and over.

### 3.4 Road traffic accidents

Between 1993 and 1997 there were 32,351 admissions to hospital as a result of RTAs, an average of 6,470 admissions annually, with an average annual admission rate of 178.4 per 100,000.

Of the 32,351 admissions due to RTAs, 63.0% (20,387) involved the occupant of the vehicle (whether driver or passenger), while 13.5% (4,356) involved a motorcyclist or their passenger. In 15.6% (5,034) of RTA related admissions the injured person was a pedestrian and in 3.7% (1,185) the injured person was a pedal cyclist. 0.6% (199) of admissions were in other persons while in the remaining 3.7% (1,190) of admissions the injured person was unspecified.

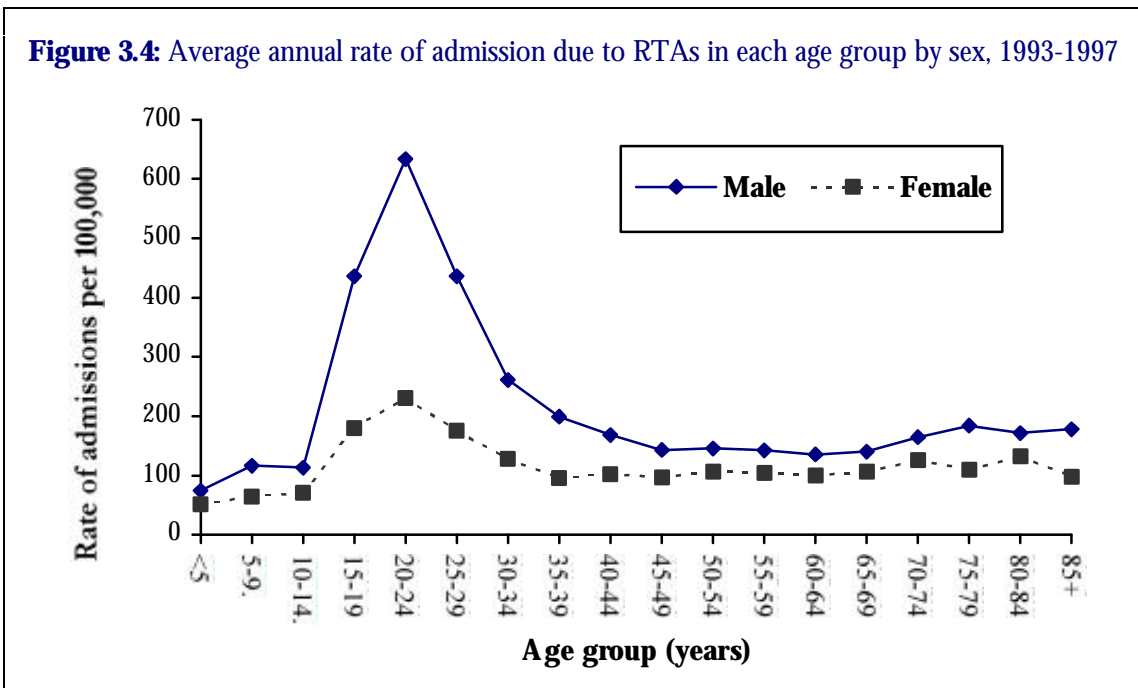
Two-thirds (66.5%; 21,506) of those admitted to hospital due to RTAs were male, an average annual rate of 240.2 per 100,000. The average annual rate for females was 119.5 per 100,000.

Children under five years of age accounted for 2.4% (790) of admissions due to RTAs while 8.6% (2,800) were in children aged 5-

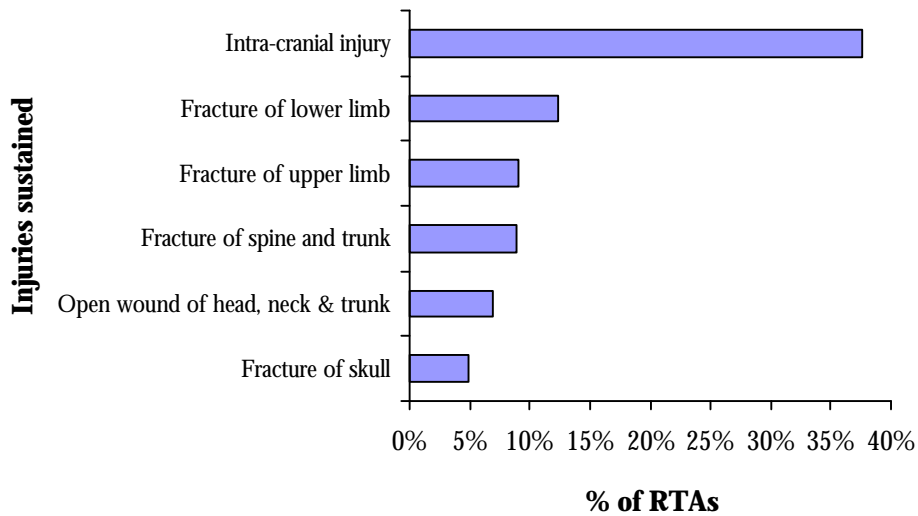
14 years. People aged 15-24 years accounted for 36.1% (11,679) of admissions, 44.2% (14,287) were in people aged 25-64 years and 8.6% (2,795) were in people 65 years of age and over.

- **Two-thirds of those admitted due to RTAs were male**
- **The average annual rate of RTA admissions in males 20-24 years of age was 633.6 per 100,000**
- **Head injuries accounted for 42.7% of injuries sustained**

There were a greater number of males admitted due to RTAs in all age groups (Figure 3.4). The rate of RTA related admissions in males peaked in the 20-24 year age group, an average annual admission rate of 633.6 per 100,000. The average annual rate of admissions in males in the 15-19 and 25-29 year age group was 436.6 and 436.0 per 100,000 respectively.



**Figure 3.5: Main unintentional injuries sustained due to RTAs, 1993-1997**



Head injuries accounted for 42.7% (13,817) of injuries sustained in RTAs. Fractures of the limb accounted for 21.6% (6,998) of injuries sustained (Figure 3.5).

38.9% (12,574) of patients admitted due to a RTA had a length of stay less than one day, 18.8% (6,078) had a length of stay greater than one week. RTAs accounted for 16.6% (1,361) of cases requiring a length of stay greater than 21 days.

Most patients (86.2%; 27,899) went directly home on discharge. Transfers to other hospitals accounted for 9.9% (3,208) of discharges, while transfers to long stay units accounted for less than 1% (0.6%; 211). 2.2% (704) of patients discharged themselves from hospital, 0.8% (269) of patients died and 0.2% (60) of discharges were coded as 'other'.

### 3.5 Unintentional struck by, against

Between 1993 and 1997 there were 23,935 admissions to hospital as a result of being struck by or against an object or person, an average of 4,787 annually. The average annual rate was 132.8 per 100,000. In 11.7% (2,795) of cases the patient was struck accidentally by a falling object.

Of the 24,198 patients admitted to hospital most (85.5%; 20,456) were male; 14.5% (3,479) were female. The average annual rate of admissions in males was 228.4 per 100,000 compared with 38.3 per 100,000 in females.

Children under five years of age accounted for 4.7% (1,130) of admissions while children aged 5-14 years accounted for 21.1% (5,040). 39.2% (9,386) of admissions were in people aged 15-24 years, 32.0% (7,662) were in people aged 25-64 years, while 3.0% (717) were in people 65 years of age and over.

Males accounted for most admissions in children under 5 years of age and the vast

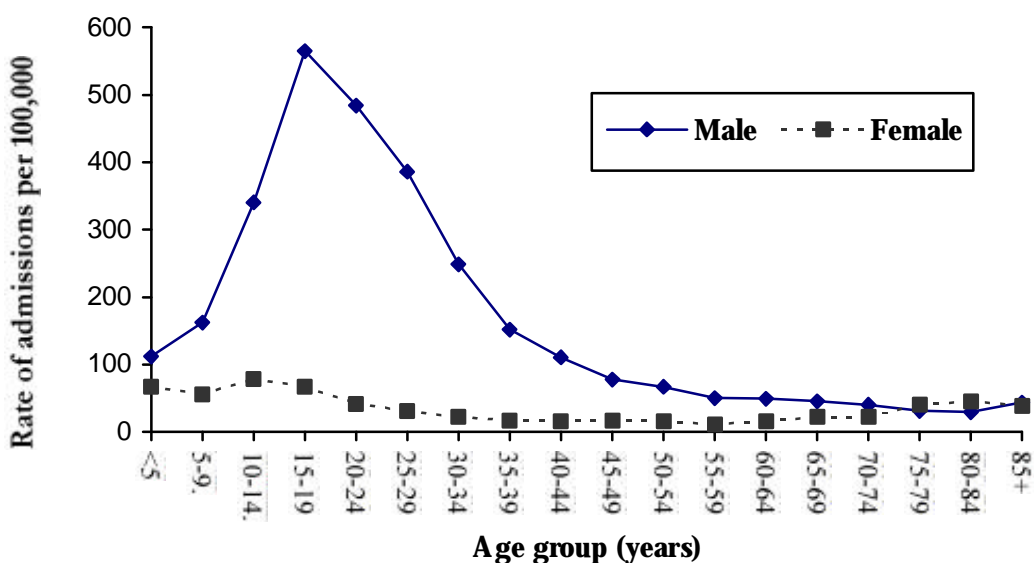
majority of admissions in 5-14, 15-24 and 25-64 year age groups. There was a similar proportion of admissions in people 65 years of age and over (Figure 3.6).

- **85.5% of patients admitted due to being struck by or against an object were male**
- **The rate of admissions was highest in males 15-24 years**
- **93.3% had a length of stay less than one week**

Head injuries accounted for over one-third (34.3%; 8,225) of injuries sustained as a result of being struck by or against an object or person while 30.5% (7,301) of injuries were limb fractures (Figure 3.7).

Over half (55.1%; 13,199) of patients admitted had a length of stay of one day. Only 6.7% (1,606) had a length of stay of one week or more.

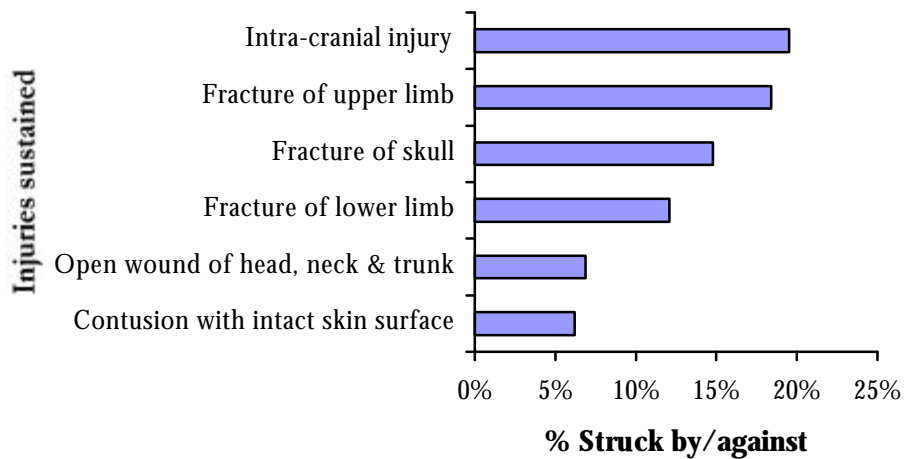
**Figure 3.6:** Average annual rate of admissions due to being struck by or against an object or person in each age group by sex, 1993-1997



The vast majority of patients (95.5%; 22,848) went directly home on discharge. Transfers to other hospitals accounted for 3.4% (816) of discharges, while transfers to long stay units accounted for 0.3% (72) of

discharges. Less than 1% (0.7%; 169) of patients discharged themselves from hospital, 8 patients died, while 22 discharges were coded as 'other'.

**Figure 3.7:** Main unintentional injuries sustained due to being struck by or against an object or person, 1993-1997



### 3.6 Unintentional poisoning

Between 1993 and 1997 there were 16,191 admissions to hospital due to unintentional poisoning, an average of 3,238 admissions annually, with an average annual admission rate of 89.8 per 100,000. Of these patients 50.4% (8,155) were female and 49.6% (8,036) male. The average annual rate of admissions was 89.7 per 100,000 for males and 89.9 per 100,000 for females.

Children under 5 years of age accounted for 28.3% (4,589) of unintentional poisoning admissions. Children aged 5-14 years accounted for 9.1% (1,469) of admissions while 26.6% (4,309) of admissions were in people aged 15-24 years. 32.7% (5,289) were in people aged 25-64 years and 3.3% (535) were in people 65 years of age and over.

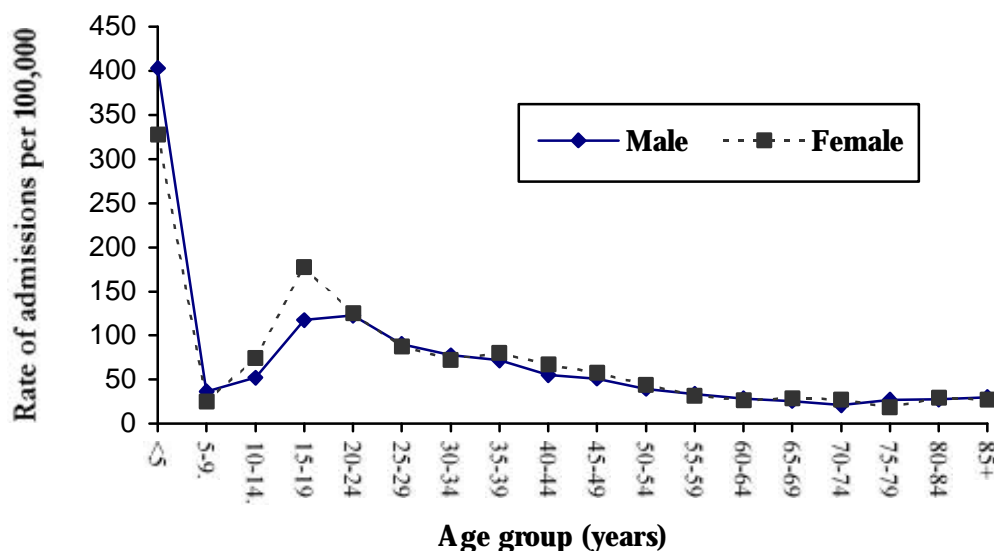
Of the 4,589 unintentional poisoning admissions in children under five years only 6.5% (297) were in children under 1 year of age. Almost one-third (27.7%; 1,271) were

in children aged one year, while 37.6% (1,727) were in children aged two years. 20.4% (936) of poisoning admissions were in children aged three years and 7.8% (358) were in children aged 4 years.

- **Children < 5 years accounted for 28.3% of unintentional poisoning admissions**
- **24.1% of poisonings were due to poisoning by analgesics, antipyretics or anti-rheumatics**
- **64.9% of patients had a length of stay of one day**

The rate of unintentional poisoning admissions was slightly higher for females in all age groups five years and over. Males accounted for a greater number of admissions in children under 5 years of age (Figure 3.8).

**Figure 3.8:** Average annual rate of admission due to unintentional poisoning in each age group by sex, 1993-1997



Almost one-quarter of unintentional poisonings were due to poisoning by analgesics, antipyretics or anti-rheumatics (Table 3.8).

Almost two-thirds (64.9%; 10,513) of patients spent one day in hospital, while 22.3% (3,613) of patients spent two or three days in hospital. Only 4.4% (719) had a length of stay of one week or more.

The majority of patients (87.3%; 14,130) went directly home on discharge. Over 5% (5.3%; 854) of patients were transferred to other hospitals while 0.5% (83) of patients were transferred to long stay units. Over 6% (6.2%; 1,012) of patients discharged themselves from hospital, 0.2% (37) of patients died, while 0.5% (75) of discharges were coded as 'other'.

**Table 3.8:** Main poisoning agents used in unintentional poisonings, 1993-1997

<b>Agent</b>	<b>Total number 1993-1997</b>	
	<b>N</b>	<b>%</b>
Analgesics/antipyretics/antirheumatics	3,884	24.1
Tranquillisers	2,648	16.4
Other psychotropic agents	1,584	9.8
Alcohol	1,327	8.2
Petroleum products, other solvents and their vapours	574	3.5
Drugs acting on central and autonomic nervous systems	561	3.5
Other gases and vapours	533	3.3
Corrosives and caustics	334	2.1
Agricultural & horticultural chemical & pharmaceutical preparations other than plant foods and fertilisers	321	2.0
Cleansing & polishing agents, disinfectants, paints, varnishes	317	2.0
Other and unspecified solid and liquid substances	293	1.8
Other sedatives / hypnotics	266	1.6
Antibiotics	222	1.4
Foodstuffs and poisonous plants	162	1.0
Other utility gas and other carbon monoxide	106	0.6
Barbiturates	103	0.6
Anti-infectives	82	0.5
Gas distributed by pipeline	6	*
Other drugs	2,870	17.8
<b>Total</b>	<b>16,191</b>	<b>100.0</b>

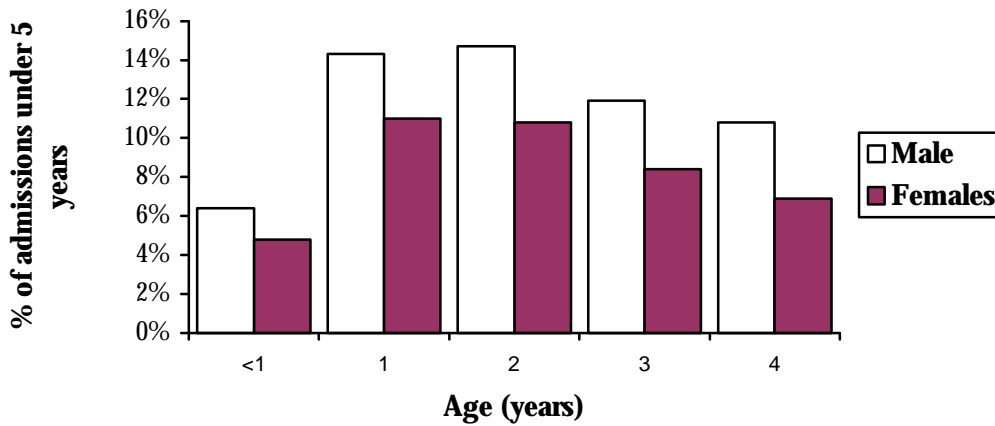
### 3.7 Unintentional injuries in children under 5 years of age

Between 1993 and 1997, there were a total of 21,661 unintentional admissions to hospital as a result of injury in children under 5 years (an average annual admission rate of 1,698.5 per 100,000). The average annual number of unintentional injury admissions in children under 5 years of age was 4,332, rising from 3,967 in 1993 to 4,638 in 1997.

Of the 21,661 children admitted with unintentional injuries, 57.6% (12,588) were male and 41.5% (9,073) female. The average annual admission rate was 1,920.3 per 100,000 for males and 1,463.9 per 100,000 for females.

11.2% (2,417) of admissions in children under five years were in children under one year of age (Figure 3.9).

**Figure 3.9:** Percentage of unintentional injury admissions in children under 5 years by age and sex, 1993-1997.



39.9% (8,646) of unintentional injuries in children under 5 years of age occurred within the home, while 3.8% (813) were RTAs. Most injuries 50.9% (11,025) were recorded as 'other injuries', therefore no place of injury was recorded. The remaining codes also gave no indication of place of injury: other than injury (2.6%; 563), normal admission (1.9%; 406), planned repeat admission (0.5%; 103), deliberate self-inflicted injury or poisoning (0.4%; 96) and emergency readmission (9).

As outlined in Table 3.9, falls accounted for 42.6% of all unintentional injury admissions in this age group (an average annual admission rate of 724.3 per 100,000). 21.2% of injuries were due to poisoning, an

average annual admission rate of 359.8 per 100,000.

Of the 4,589 admissions due to poisoning only 6.5% (297) were in children under one year of age. Almost one-third (27.7%; 1,271) were in children aged one year, while 37.6% (1,727) were in children aged two years, 20.4% (936) in children aged three years and 7.8% (358) were in children aged four years.

- **The average annual rate of admissions in children <5 years was 1,698.5 per 100,000**
- **Leading causes of unintentional injury admissions were falls and poisonings**



**Table 3.9:** Cause/mechanism of unintentional injury in children under 5 years, 1993-1997

Cause	Total number 1993-1997		Average annual admission rate per 100,000
	N	%	
Cut/ pierce	783	3.6	61.4
Drowning/submersion	25	0.1	2.2
Fall	9,237	42.6	724.3
Fire/burn	1,297	6.0	101.7
<i>Fire/flame</i>	165	0.8	12.9
<i>Hot object/substance</i>	1,132	5.2	90.4
Firearm	1	*	0.1
Machinery	71	0.3	6.2
Road traffic accident	790	3.6	62.0
<i>Occupant</i>	350	1.6	28.0
<i>Motorcyclist</i>	13	0.1	10.3
<i>Pedal cyclist</i>	11	0.1	0.9
<i>Pedestrian</i>	401	1.8	32.0
<i>Unspecified</i>	9	*	0.7
Pedal cyclist, other	423	2.0	33.2
Pedestrian, other	116	0.5	9.1
Transport, other	88	0.4	6.9
Natural/environmental	429	2.0	33.6
<i>Bites and stings</i>	322	1.5	24.3
Overexertion	30	0.1	2.4
Poisoning	4,589	21.2	359.8
Struck by, against	1,130	5.2	88.6
Suffocation	169	0.8	13.2
Other specified, classifiable	2,224	10.3	174.4
Other specified, not elsewhere classifiable	7	*	0.9
Unspecified	252	1.2	19.8
<b>Total</b>	<b>21,661</b>	<b>100.0</b>	

Intra-cranial injuries accounted for 23.4% of all unintentional injuries sustained in children under 5 years of age. Open wounds

of head, neck and trunk accounted for 14.7% of injuries while 13.7% were due to poisonings (Table 3.10).

**Table 3.10:** Main unintentional injuries sustained in children under 5 years, 1993-1997

<b>Injury</b>	<b>Total number 1993-1997</b>		<b>Average annual admission rate per 100,000</b>
	<b>N</b>	<b>%</b>	
Intra-cranial injury	5,079	23.4	405.7
Open wound of head, neck & trunk	3,183	14.7	254.2
Poisoning by drugs	2,969	13.7	237.1
Fracture of upper limb	2,103	9.7	168.0
Open wound of upper limb	1,473	6.8	117.6
Toxic effects of substances	1,411	6.5	112.7
Burns	1,238	74.5	98.9
Fracture of lower limb	937	4.3	74.8
Effects of foreign body	779	3.6	62.2
Fracture of skull	575	2.6	45.9
Contusion with intact skin surface	270	1.2	21.6
Certain traumatic complications	262	1.2	20.9
Open wound of lower limb	211	1.0	16.8
Crushing injury	161	0.7	12.8
Superficial injuries	126	0.6	10.1
Sprains and strains	56	0.3	4.5
Other and unspecified effects	48	0.2	3.8
Dislocations	41	0.2	3.3
Fracture of spine and trunk	21	0.1	1.7
Other injury	718	3.3	56.2
<b>Total</b>	<b>21,661</b>	<b>100.0</b>	

Over three-quarters (76.9%; 16,657) of children under 5 years of age spent just one day in hospital. 14.8% (3,198) spent 2-3 nights in hospital while 4.0% (876) spent 4-6 days in hospital. Only 4.3% (930) of children under 5 years of age were hospitalised for more than one week. The mean length of stay was 2.0 days.

The vast majority of children under 5 years (97.2%; 21,066) went directly home on discharge. 2.0% (425) were transferred to another hospital while 0.7% (150) were discharged from hospital by a parent or guardian. Of the remaining patients, three were transferred to a long stay unit and seven died during their stay in hospital. Ten discharges were coded as 'other injuries'.

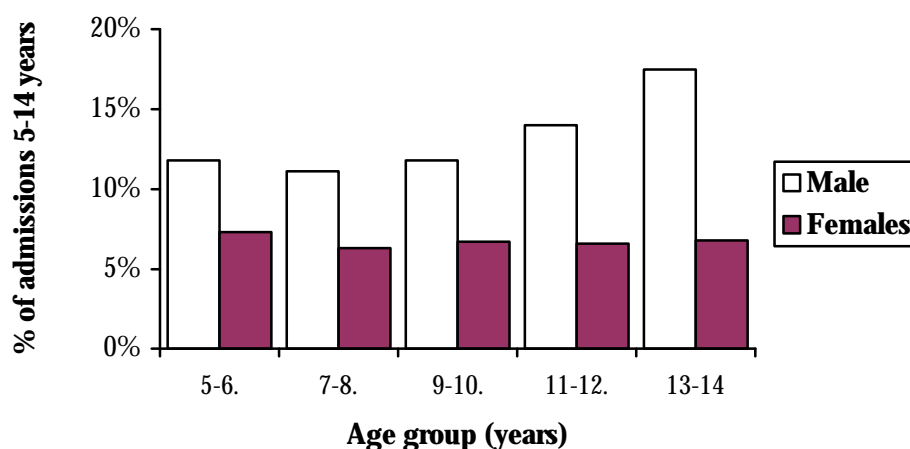
### 3.8 Unintentional injuries in children aged 5-14 years

There were a total of 37,131 admissions to hospital as a result of unintentional injuries in children aged 5-14 years between 1993 and 1997, an average annual admission rate of 1,196.6 per 100,000. The average annual number of unintentional injury admissions

in children aged 5-14 years was 7,426, rising from 6,901 in 1993 to 7,867 in 1997.

Of the 37,593 children admitted to hospital with unintentional injuries, 66.1% (24,565) were male and 33.9% (12,566) female. The average annual admission rate was 1,541.9 per 100,000 for males and 832.3 per 100,000 for females.

**Figure 3.10:** Percentage of unintentional injury admissions in children 5-14 years by age group and sex, 1993-1997.



11.5% (4,259) of unintentional injuries in children aged 5-14 years occurred within the home while RTAs accounted for 9.0% (3,344) of injuries. The majority of injuries (74.2%; 27,568) were recorded as 'other injuries', therefore the place of injury is unknown. The remaining injuries were coded as follows: other than injury (1.4%; 513), normal admission (2.9%; 1,091), planned repeat admission (0.7%; 261), deliberate self-inflicted injury or poisoning (0.2%; 69), emergency readmission (24) and admission deferred (2).

Falls accounted for 44.5% of all unintentional injury admissions in this age group, an average annual admission rate of 532.8 per 100,000. Other causes of unintentional injuries included being struck by or against an object or person (13.6%),

pedal cycling (10.0%) and poisoning (4.0%) (Table 3.11).

Fractures of the limb accounted for 35.9% of all unintentional injuries sustained in children 5-14 years of age. 28.1% of injuries sustained were head injuries (Table 3.12).

- **The average annual rate of admission in children 5-14 years was 1,196.6 per 100,000**
- **Leading causes of injury were falls and being struck by or against an object or person**

Over three-quarters (64.2%; 23,838) of children under 5-14 years of age spent just one day in hospital. Almost 25% (24.5%; 9,097) spent two to three nights in hospital. 4.7% (1,745) of children 5-14 years of age

were hospitalised for a week or more. The mean length of stay was 2.4 days.

The vast majority of children 5-14 years of age (97.0%; 36,029) went directly home on discharge. Almost 3% (2.6%; 952) of children aged 5-14 years were transferred to

another hospital, while 12 were transferred to a long stay unit. Of the remaining patients 0.3% (104) were discharged from hospital by a parent or guardian and 29 died in hospital. In 7 cases the discharge were coded as 'other'.

**Table 3.11: Cause/mechanism of unintentional injuries in children aged 5-14 years, 1993-1997**

Cause	Total number 1993-1997		Average annual admission rate per 100,000
	N	%	
Cut/ pierce	1,871	5.0	60.3
Drowning/submersion	33	0.1	1.1
Fall	16,531	44.5	532.8
Fire/burn	570	1.5	18.4
<i>Fire/flame</i>	269	0.7	8.5
<i>Hot object/substance</i>	301	0.8	9.9
Firearm	18	*	0.6
Machinery	256	0.7	8.2
Road traffic accident	2,800	7.5	90.2
<i>Occupant</i>	1,030	2.8	33.2
<i>Motorcyclist</i>	66	0.2	2.1
<i>Pedal cyclist</i>	338	0.9	10.9
<i>Pedestrian</i>	1,264	3.4	40.7
<i>Unspecified</i>	35	0.1	1.1
Pedal cyclist, other	3,729	10.0	120.2
Pedestrian, other	473	1.3	15.4
Transport, other	853	2.3	27.5
Natural/environmental	550	1.5	17.7
<i>Bites and stings</i>	314	0.8	10.3
Overexertion	142	0.4	4.6
Poisoning	1,469	4.0	47.3
Struck by, against	5,040	13.6	162.4
Suffocation	58	0.2	1.9
Other specified, classifiable	2,304	6.2	74.2
Other specified, not elsewhere classifiable	29	0.1	0.9
Unspecified	405	1.1	13.1
<b>Total</b>	<b>37,131</b>	<b>100.0</b>	

**Table 3.12:** Main unintentional injuries sustained in children aged 5-14 years, 1993-1997

<b>Injury</b>	<b>Total number 1993-1997</b>		<b>Average annual admission rate per 100,000</b>
	<b>N</b>	<b>%</b>	
Fracture of upper limb	10,667	28.7	350.3
Intra-cranial injury	9,173	24.7	301.2
Open wound of head, neck & trunk	2,742	7.4	90.0
Fracture of lower limb	2,676	7.2	87.8
Open wound of upper limb	2,170	5.8	71.3
Fracture of skull	1,250	3.4	41.0
Open wound of lower limb	1,099	3.0	36.1
Certain traumatic complications	915	2.5	30.0
Contusion with intact skin surface	891	2.4	29.2
Poisoning by drugs	851	2.3	27.9
Toxic effects of substances	599	1.6	19.7
Burns	570	1.5	18.7
Effects of foreign body	566	1.5	18.6
Dislocations	454	1.2	14.9
Superficial injuries	428	1.2	14.1
Sprains and strains	370	1.0	12.2
Fracture of spine and trunk	276	0.7	9.1
Internal injury	239	0.6	7.8
Crushing injury	161	0.4	5.3
Injury to nerves and spinal cord	86	0.2	2.8
Other and unspecified effects	58	0.2	1.9
Other injury	890	2.4	29.2
<b>Total</b>	<b>37,131</b>	<b>100.0</b>	

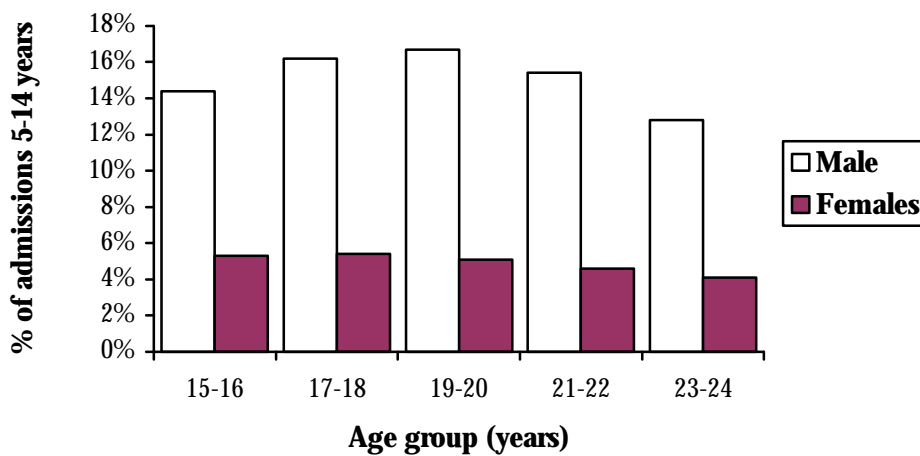
### 3.9 Unintentional injuries in people aged 15-24 years

There were a total of 47,945 admissions to hospital as a result of unintentional injuries in people aged 15-24 year between 1993 and 1997 (an average annual admission rate of 1,530.3 per 100,000). The average annual number of unintentional injury admissions

in this age group was 9,589, rising from 9,276 in 1993 to 9,744 in 1997 (Figure 3.11).

Of the 47,945 patients admitted to hospital with unintentional injuries, 75.6% (36,234) were male and 25.4% (11,711) female. The average annual admission rate was 2,264.3 per 100,000 for males and 764.0 per 100,000 for females.

**Figure 3.11:** Percentage of unintentional injury admissions in each age group in people aged 15-24 years by sex, 1993-1997.



The source of admission for 23.8% (11,414) of injuries in this age group was coded as a RTA while 8.1% (3,864) of injuries occurred within the home. The majority of unintentional injuries (58.7%; 28,163) were recorded as 'other injuries' therefore the place of injury is unknown. The remaining injuries were coded as follows: other than injury (1.8%; 840), normal admission (5.9%; 2,807), planned repeat admission (1.1%; 516), deliberate self-inflicted injury or poisoning (0.6%; 306), emergency readmission (25) and admission deferred (10).

RTAs accounted for 24.4% of all unintentional injury admissions in this age group, an average annual admission rate of 372.8 per 100,000. Other causes of unintentional injuries included falls (21.4%), being struck by or against an object or

person (19.6%), poisoning (9.0%) and being cut or pierced (7.9%) (Table 3.13).

- **The average annual rate of admission in people 15-24 years was 1,530.3 per 100,000**
- **Leading cause of injury included RTAs, falls and being struck by or against an object or person**

30.2% (14,718) of injuries sustained were head injuries (Table 3.14). Fractures of the limb accounted for 23.6% (11,518) of all unintentional injuries sustained.

Over a half (51.6%; 24,740) of people aged 15-24 years spent just one day in hospital. Almost 30% (28.5%; 13,664) spent 2-3 nights in hospital while 11.3% (5,418) spent 4-6 days in hospital. Almost 9% (8.5%; 1,745) of people aged 15-24 years were

hospitalised for a week. The mean length of stay was 3.0 days.

The majority of people 15-24 years of age (90.9%; 43,564) went directly home on discharge. 6.2% (2,998) of patients were transferred to another hospital, 0.2% (70)

were transferred to a long stay unit. 2.3% (1,122) of patients discharged themselves from hospital and 0.1% (29) died in hospital. The remaining (0.2%; 92) patient discharges were coded as 'other'.

**Table 3.13:** Cause/mechanism of unintentional injury in people aged 15-24 years, 1993-1997

Cause	Total number 1993-1997		Average annual admission rate per 100,000
	N	%	
Cut/ pierce	3,805	7.9	121.4
Drowning/submersion	56	0.1	1.8
Fall	10,271	21.4	327.8
Fire/burn	599	1.2	19.1
<i>Fire/flame</i>	277	0.6	8.8
<i>Hot object/substance</i>	322	0.7	10.3
Firearm	71	0.2	2.8
Machinery	983	2.1	31.4
Road traffic accident	11,679	24.4	372.8
<i>Occupant</i>	6,980	14.6	220.6
<i>Motorcyclist</i>	2,748	5.7	86.8
<i>Pedal cyclist</i>	419	0.9	13.2
<i>Pedestrian</i>	1,043	2.2	33.0
<i>Unspecified</i>	435	0.9	13.7
Pedal cyclist, other	1,584	3.3	50.6
Pedestrian, other	170	0.4	5.4
Transport, other	1,137	2.4	36.3
Natural/environmental	414	0.9	13.2
<i>Bites and stings</i>	92	0.2	2.9
Overexertion	452	0.9	14.4
Poisoning	4,309	9.0	137.5
Struck by, against	9,386	19.6	299.6
Suffocation	69	0.1	2.2
Other specified, classifiable	1,833	3.8	58.5
Other specified, not elsewhere classifiable	199	0.4	7.1
Unspecified	928	1.9	29.6
<b>Total</b>	<b>47,945</b>	<b>100.0</b>	

**Table 3.14:** Main unintentional injuries sustained in people aged 15-24 years, 1993-1997

<b>Injury</b>	<b>Total number 1993-1997</b>		<b>Average annual admission rate per 100,000</b>
	<b>N</b>	<b>%</b>	
Intra-cranial injury	10,698	22.3	338.1
Fracture of upper limb	6,527	13.6	206.2
Fracture of lower limb	4,824	10.1	152.4
Open wound of upper limb	4,188	8.7	132.3
Fracture of skull	3,718	7.8	117.5
Poisoning	3,527	7.4	111.4
Open wound of head, neck and trunk	2,082	4.3	65.8
Dislocations	1,404	2.9	44.5
Fracture of spine and trunk	1,384	2.9	43.7
Certain traumatic complication	1,358	2.8	42.9
Contusion with intact skin surface	1,113	2.3	35.2
Sprains and strains	1,012	2.1	32.0
Open wound of lower limb	838	1.7	26.5
Toxic effects	775	1.6	24.5
Superficial injuries	658	1.4	20.8
Burns	584	1.2	18.4
Internal injury	541	1.1	17.1
Injury to nerves and spinal cord	432	0.9	13.6
Effects of foreign body	276	0.6	8.7
Crushing injury	188	0.4	5.9
Other and unspecified effects	94	0.2	3.0
Other injury	1,724	3.6	54.5
<b>Total</b>	<b>47,945</b>	<b>100.0</b>	



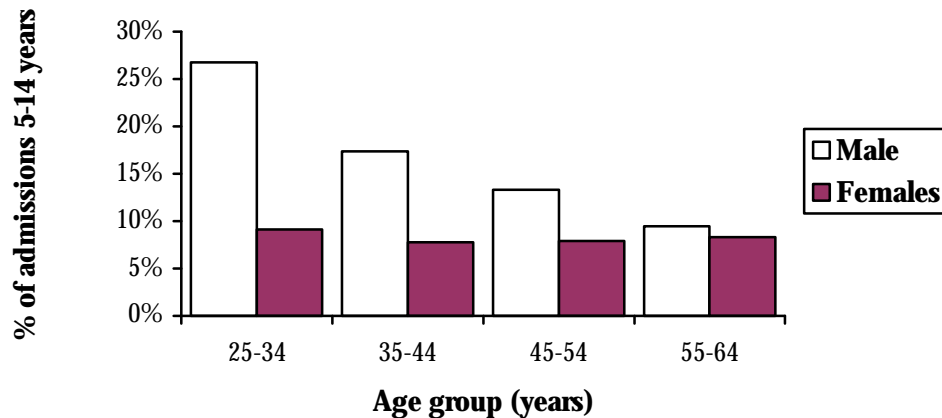
### 3.10 Unintentional injuries in people aged 25-64 years

There were a total of 76,204 admissions to hospital as a result of unintentional injuries in people aged 25-64 years between 1993 and 1997 (an average annual admission rate of 900.7 per 100,000). The average annual number of unintentional injury admissions in people aged 25-64 years of age was

15,240, rising from 14,655 in 1993 to 16,330 in 1997.

Of the 76,204 patients admitted to hospital with unintentional injuries, 66.9% (50,979) were male and 33.1% (25,225) were female. The average annual admission rate was 1,207.3 per 100,000 for males and 595.3 per 100,000 for females.

**Figure 3.12:** Percentage of unintentional injury admissions in people aged 25-64 years by age group and sex, 1993-1997



RTAs accounted for 18.5% (13,683) of injuries in this age group while 9.8% (7,618) of injuries occurred within the home. The majority of injuries (63.4%; 48,486) were recorded as 'other injuries' therefore the place of injury is unknown. The remaining injuries were coded as follows: other than injury (2.6%; 1,954), normal admission (3.9%; 3,034), planned repeat admission (1.3%; 972), deliberate self-inflicted injury or poisoning (0.5%; 409), emergency readmission (0.1%; 42) and admission deferred (6).

Falls accounted for 36.2% of all unintentional injury admissions in this age group, an average annual admission rate of 326.4 per 100,000. Other causes of unintentional injuries included RTAs

(19.9%), being struck by or against an object or person (10.1%), poisoning (6.9%) and being cut or pierced (7.0%) (Table 3.15).

Fractures of the limb accounted for 30.0% of all unintentional injuries sustained. Other common injuries sustained included head injuries (21.3%) and poisonings (5.5%) (Table 3.16).

- **The average annual rate of admissions in people aged 25-64 years was 900.7 per 100,000**
- **36.2% of admissions were due to falls**

Over 40% (42.4%; 32,310) of people aged 25-64 years spent one day in hospital. Almost 30% (28.5%; 21,718) spent 2-3 days

in hospital, while 14.4% (10,973) spent 4-6 days. 14.8% (11,278) of people age 25-64 years were hospitalised for one week or more. The mean length of stay was 4.1 days.

The majority of people aged 25-64 years (88.4%; 67,327) went directly home on discharge while 7.9% (6,028) were

transferred to another hospital and 0.6% (431) were transferred to a long stay unit. 2.7% (2,025) of patients discharged themselves from hospital and 0.3% (216) died in hospital. The remaining injury discharges (0.2%; 177) were coded as 'other'.

**Table 3.15:** Cause/mechanism of unintentional injury in people aged 25-64 years, 1993-1997

Cause	Total number 1993-1997		Average annual admission rate per 100,000
	N	%	
Cut/ pierce	5,333	7.0	63.0
Drowning/submersion	98	0.1	1.2
Fall	27,613	36.2	326.4
Fire/burn	1,409	1.8	16.6
<i>Fire/flame</i>	613	0.8	7.1
<i>Hot object/substance</i>	796	1.0	9.2
Firearm	119	0.2	1.6
Machinery	2,140	2.8	25.3
Road traffic accident	15,132	19.9	168.9
<i>Occupant</i>	10,315	13.5	121.9
<i>Motorcyclist</i>	1,445	1.9	17.1
<i>Pedal cyclist</i>	348	0.5	4.1
<i>Pedestrian</i>	1,500	2.0	17.7
<i>Unspecified</i>	620	0.8	7.3
Pedal cyclist, other	1,093	1.4	12.9
Pedestrian, other	223	0.3	2.6
Transport, other	1,449	2.0	17.1
Natural/environmental	1,456	1.9	17.2
<i>Bites and stings</i>	411	0.5	4.8
Overexertion	1,102	1.4	13.0
Poisoning	5,289	6.9	62.5
Struck by, against	7,662	10.1	90.6
Suffocation	324	0.4	3.8
Other specified, classifiable	4,538	6.0	53.6
Other specified, not elsewhere classifiable	329	0.4	4.3
Unspecified	1,740	2.3	20.6
<b>Total</b>	<b>76,204</b>	<b>100.0</b>	

**Table 3.16:** Main unintentional injuries sustained in people aged 25-64 years, 1993-1997

<b>Injury</b>	<b>Total number 1993-1997</b>		<b>Average annual admission rate per 100,000</b>
	<b>N</b>	<b>%</b>	
Intra-cranial injury	12,582	16.6	146.3
Fracture of upper limb	12,263	16.1	142.6
Fracture of lower limb	10,576	14.0	123.0
Open wound of upper limb	6,318	8.2	73.5
Poisoning	4,309	5.5	50.1
Fracture of spine and trunk	3,897	5.2	45.3
Fracture of skull	3,580	4.7	41.6
Open wound of head, neck and trunk	3,140	4.1	36.5
Dislocations	2,192	2.9	25.5
Certain traumatic complication	2,131	2.8	24.8
Sprains and strains	2,028	2.7	23.6
Contusion with intact skin surface	1,741	2.3	20.2
Open wound of lower limb	1,335	1.7	155.2
Burns	1,295	0.3	15.1
Effects of foreign body	1,148	1.5	13.3
Toxic effects	1,057	1.4	12.3
Superficial injuries	987	1.3	11.5
Internal injury	682	0.9	7.9
Injury to nerves and spinal cord	586	0.8	6.8
Crushing injury	375	0.5	4.4
Other and unspecified effects	184	0.2	2.1
Other injury	3,785	5.0	43.1
<b>Total</b>	<b>76,204</b>	<b>100.0</b>	

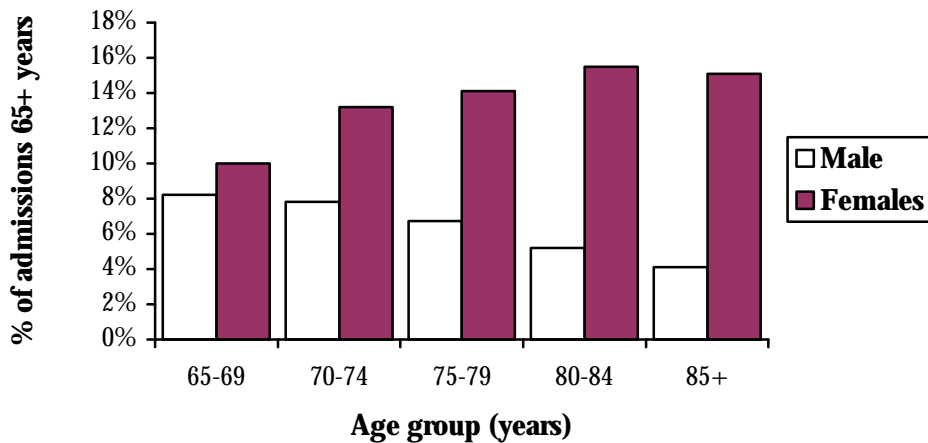
### 3.11 Unintentional injuries in people aged 65+ years

There were a total of 40,615 admissions to hospital as a result of unintentional injuries in people aged 65 years and over, between 1993 and 1997. The average annual number of unintentional injury admissions in people aged 65+ years of age was 8,123, rising from 7,722 in 1993 to 8,548 in 1997. The average annual rate of admissions was 1,973.1 per

100,000. There was a greater number of females admitted in each group over 65 years (Figure 3.13).

Of the 40,615 patients admitted to hospital with unintentional injuries, 32.1% (13,025) were male and 67.9% (27,590) female. The average annual admission rate was 1,475.5 per 100,000 for males and 2,346.7 per 100,000 for females.

**Figure 3.13:** Percentage of unintentional injury admissions in people 65+ years by age group and sex, 1993-1997



22.1% (8,985) of unintentional injuries occurred within the home while RTAs accounted for 5.8% (2,347) of injuries in this age group. The majority of injuries (63.7%; 25,872) were recorded as 'other injuries' therefore the place of injury is unknown. The remaining injuries were coded as follows: other than injury (5.8%; 2,358), normal admission (1.2%; 489), planned repeat admission (0.4%; 158), deliberate self-inflicted injury or poisoning (26), emergency readmission (29) and admission deferred (3).

Falls accounted for the majority (79.5%) of unintentional injury admissions in people 65 years and over with an average annual admission rate of 1,571.6 per 100,000 (Table 3.17).

Fractures of the lower limb accounted for 35.4% of all unintentional injuries sustained in people 65 years and over; of those 76.8% (11,028) were due to fractures of the neck of femur (hip fracture). Almost 19% of injuries were fracture to the upper limb, while head injuries accounted for 11.1% of injuries sustained (Table 3.18).

- **The average annual rate of admissions in people 65+ years 1,973.1 per 100,000**
- **Falls accounted for 79.5% of unintentional injury admissions**

Almost one-quarter (22.4%; 9,098) of people 65 years and over spent only one day in hospital. 18.6% (7,554) were hospitalised

for 2-3 days, while 13.1% (5,320) were hospitalised for 4-6 days. Almost half (45.8%; 18,602) of all patients 65 years and over had a length of stay equal to one week

or more and 12.4% (5,036) of patients had a length of stay of three weeks or more. The mean length of stay was 10.4 days.

**Table 3.17: Cause/mechanism of unintentional injury in people aged 65+ years, 1993-1997**

Cause	Total number 1993-1997		Average annual admission rate per 100,000
	N	%	
Cut/ pierce	473	1.2	23.0
Drowning/submersion	12	*	0.8
Fall	32,351	79.6	1,571.6
Fire/burn	591	1.5	28.7
<i>Fire/flame</i>	325	0.8	15.7
<i>Hot object/substance</i>	266	0.7	12.8
Firearm	3	*	*
Machinery	214	0.5	10.4
Road traffic accident	2,795	6.9	135.8
<i>Occupant</i>	1,712	4.2	82.7
<i>Motorcyclist</i>	84	0.2	4.1
<i>Pedal cyclist</i>	69	0.2	3.3
<i>Pedestrian</i>	826	2.0	39.9
<i>Unspecified</i>	91	0.2	4.4
Pedal cyclist, other	305	0.8	14.8
Pedestrian, other	78	0.2	3.8
Transport, other	143	0.4	7.0
Natural/environmental	555	1.4	27.0
<i>Bites and stings</i>	154	0.4	7.4
Overexertion	249	0.6	12.1
Poisoning	535	1.3	26.0
Struck by, against	717	1.8	34.8
Suffocation	138	0.3	6.7
Other specified, classifiable	795	2.0	38.6
Other specified, not elsewhere classifiable	40	0.1	1.9
Unspecified	621	1.5	30.2
<b>Total</b>	<b>40,615</b>	<b>100.0</b>	

Two-thirds of people 65 years of age and over (67.2%; 27,313) went directly home on discharge, 17.2% (7,031) were transferred to another hospital while 11.5% (4,749) were transferred to a long stay unit. Of the 4,743 (11.7%) patients transferred to a long stay unit 89.2% (4,232) were due to falls, 44.0% (1,862) of these falls resulted in a fracture to

the neck of the femur (hip). 3.0% (1,217) of patients 65 years of age and over died in hospital; most deaths (81.7%; 994) were due to falls. Almost half (47.6%; 473) of falls resulted in a fracture to the neck of the femur (hip fracture). The remaining patient discharges (0.4%; 146) were coded as 'other'.

**Table 3.18:** Main unintentional injuries requiring hospital admission in people aged 65+ years, 1993-1997

Injury	Total number 1993-1997		Average annual admission rate per 100,000
	N	%	
Fracture of lower limb	14,363	35.4	694.1
Fracture of upper limb	7,562	18.6	365.4
Intra-cranial injury	4,288	10.6	207.2
Fracture of spine and trunk	3,078	7.6	148.7
Certain traumatic complications	1,110	2.7	53.6
Open wound of head, neck and trunk	1,038	2.6	50.2
Dislocations	931	2.3	45.0
Contusion with intact skin surface	870	2.1	42.0
Open wound of lower limb	766	1.9	37.0
Open wound of upper limb	658	1.6	31.8
Fracture of skull	604	1.5	29.2
Burns	443	1.1	21.4
Sprains and strains	422	1.0	20.4
Effects of foreign body	421	1.0	20.3
Superficial injuries	325	0.8	15.7
Poisoning	317	0.8	15.3
Toxic effects	206	0.5	10.0
Internal injury	169	0.4	8.2
Injury to nerves and spinal cord	48	0.1	2.3
Other and unspecified effects	69	0.2	3.3
Other injury	2,903	7.2	138.3
<b>Total</b>	<b>40,615</b>	<b>100.0</b>	

### 3.12 Injuries without an E code present

There were an additional 37,990 injury admissions between 1993 and 1997 which did not have an E code assigned to them, an average of 7,598 annually. These accounted

for 14.8% of all injury admissions. The intent of these injuries is unknown.

Most (59.1%; 22,497) of these undefined injuries were in males, 40.8% (15,493) were in females.

**Table 3.19: Main unintentional injuries requiring hospital admission, 1993-1997**

Injury	Total number 1993-1997	
	N	%
Fracture of lower limb	6,583	17.6
Fracture of upper limb	4,484	12.0
Late effects of injuries	4,441	11.9
Intra-cranial injury	2,940	7.9
Dislocations	2,728	7.3
Fracture of skull	2,357	6.3
Fracture of spine and trunk	1,520	4.1
Effects of foreign body	1,400	3.7
Open wound of head, neck and trunk	1,348	3.6
Sprains and strains	1,330	3.6
Open wound of upper limb	1,072	2.9
Contusion with intact skin surface	959	2.6
Certain traumatic complications	864	2.3
Open wound of lower limb	600	1.6
Burns	500	1.3
Superficial injuries	350	0.9
Internal injury	322	0.9
Poisoning	279	0.7
Toxic effects	228	0.6
Injury to nerves and spinal cord	208	0.6
Crushing injury	117	0.3
Injury to blood vessels	48	0.1
Other and unspecified effects	2,751	7.3
<b>Total</b>	<b>37,990</b>	<b>100.0</b>

Children under 5 years accounted for 6.7% (2,549) of injuries, 12.7% (7,376) were in children aged 5-14 years, while 17.7% (6,715) were in people 15-24 years of age. People age 25-64 years accounted for 37.8% (14,371) of injuries and 25.1% (9,528) were in people 65 years and over.

39.2% (14,879) of patients had a length of stay of one day. 70.0% (26,595) of patients had a length of stay of less than one week.

Only 10.8% (4,109) of patients had a length of stay of 21 days or more.

The majority (87.9%; 33,388) people went directly home on discharge. 3.7% (1,398) were transferred to another hospital and 5.2% (1,979) were transferred to a long stay unit. Almost 2% (1.7%; 630) of patients died, 0.6% (220) discharged themselves and 0.4% (148) discharges were coded as other.



# Section Four:

## Deaths 1980-1996

### 4.1 All injury deaths 1980-1996

There were a total of 575,034 deaths from all causes in Ireland between 1980-1996 (an average of 3,3825.5 deaths annually). 4.4% (25,385) of all deaths were due to injury, an average of 1,493.2 annually. The average annual injury death rate was 42.3 per 100,000.

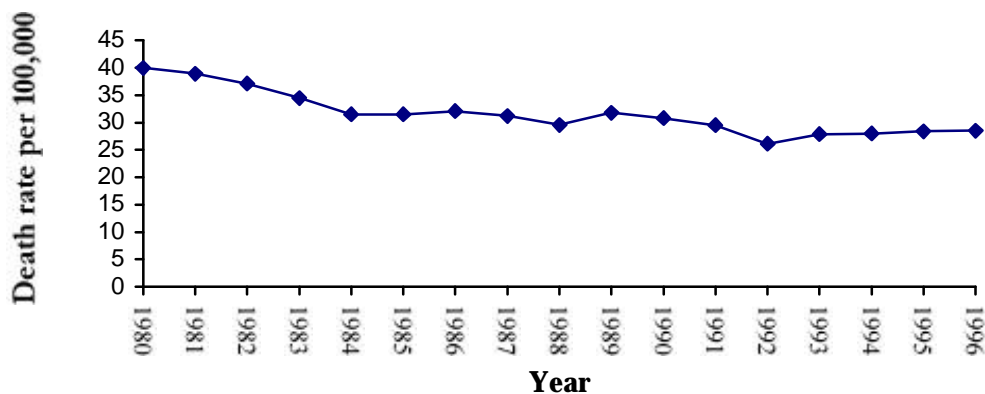
Unintentional injury deaths accounted for the majority (74.6%; 18,925) of all injury deaths over this 17 year period (an average annual death rate of 31.6 per 100,000) (Figure 4.1). 20.0% (5,073) of deaths were suicides (an average annual death rate of 8.5 per 100,000) while 1.9% (490) of injury deaths were homicides (an average annual death rate of 0.8 per 100,000). The intent of 3.5% (890) of injury deaths was undetermined (an average annual death rate

of 1.5 per 100,000) and the intent of 7 injury deaths was coded as 'other'.

Table 4.1 shows injury deaths (1980-1996) by cause (or mechanism) and intent (or manner) as recommended by the International Collaborative Effort (ICE) on Injury Statistics in 1996 (McLoughlin et al. 1997).

- **4.4% of all deaths were due to injury**
- **74.6% of injury deaths were unintentional**
- **Leading causes of unintentional injury deaths included RTAs, falls, drowning, suffocation, poisoning and fires**

**Figure 4.1:** Unintentional injury death rate, 1980-1996



The main causes of unintentional injury deaths over this 17-year period were RTAs (42.1%), falls (17.2%), drowning or submersion (7.6%), fire/burn (7.3%), suffocation (4.6%) and poisoning (4.1%). Most suicides were due to suffocation (31.7%), drowning or submersion (27.7%)

and poisoning (25.2%) by both prescription and non-prescription medications. Of the 490 homicides 26.3% were due to being cut, 20.4% were due to a firearm, while 7.3% were due to being struck by or against an object or person (Table 4.1).

**Table 4.1:** Total number of injury deaths by cause and intent, 1980-1996.

Cause or mechanism	Intent or Manner					Total	Average annual rate per 100,000
	Unintentional	Suicide	Homicide	Undetermined	Other		
Cut/ pierce	34	70	129	3	-	236	0.4
Drowning/submersion	1,433	1,405	15	562	-	3,415	5.7
Fall	3,253	110	2	22	-	3,387	5.6
Fire/burn	1,385	26	71	9	-	1,490	2.5
<i>Fire/flame</i>	1,345	26	70	9	-	1,450	2.4
<i>Hot object/scald</i>	39	-	1	-	-	40	0.1
Firearm	710	462	100	42	5	710	1.2
Machinery	334	-	-	-	-	334	0.6
Road traffic accident	7,964	3	-	1	-	7,968	13.3
<i>Occupant</i>	3,807	-	-	-	-	3,807	6.4
<i>Motorcyclist</i>	912	-	-	-	-	912	1.5
<i>Pedal cyclist</i>	548	-	-	-	-	548	0.9
<i>Pedestrian</i>	2,605	-	-	-	-	2,605	4.3
<i>Unspecified</i>	46	-	-	-	-	46	0.1
Pedal cyclist, other	95	-	-	-	-	95	0.2
Pedestrian, other	71	-	-	-	-	71	0.1
Transport, other	169	-	-	-	-	169	0.3
Natural/environmental	444	-	-	1	-	445	0.7
<i>Bites and stings</i>	4	-	-	-	-	4	*
Overexertion	4	-	-	-	-	4	*
Poisoning	780	1,281	1	173	-	2,235	3.7
Struck by/against	242	-	98	-	-	340	0.6
Suffocation	867	1,610	36	37	-	2,550	4.2
Other specified & classifiable	259	94	5	16	1	375	0.6
Other specified, not elsewhere classifiable	3	10	8	6	-	27	0.1
Unspecified	1,488	2	25	18	1	1,534	2.6
<b>Total</b>	<b>18,925</b>	<b>5,073</b>	<b>490</b>	<b>890</b>	<b>7</b>	<b>25,385</b>	

#### 4.2 Unintentional injury deaths, 1980-1996

There were a total of 18,925 unintentional injury deaths in Ireland between 1980-1996, accounting for 74.6% of all injury deaths. The average annual number of unintentional injury deaths was 1,113.2. The average annual death rate was 31.6 per 100,000.

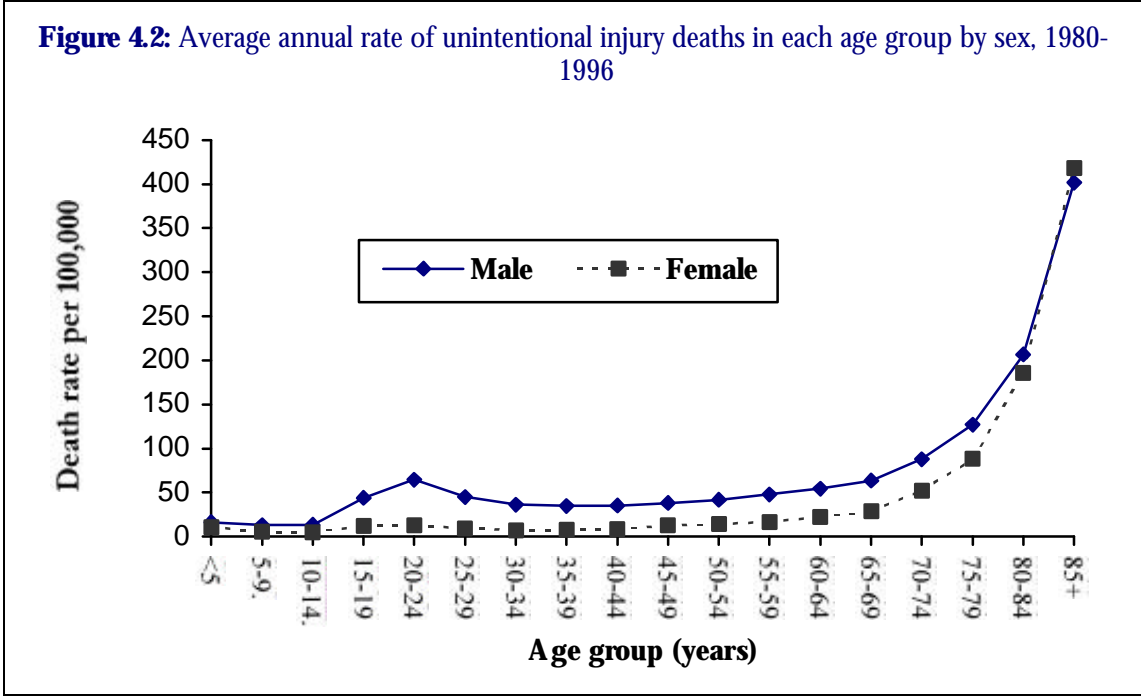
Two thirds of all unintentional injury deaths (66.2%; 12,532) were in males and 33.8% (6,393) in females. The average annual death rate due to unintentional injuries was 41.9 per 100,000 for males and 21.3 per 100,000 for females.

Children under five years of age accounted for 3.7% (703) of all unintentional injury deaths, 5.5% (1,044) were in children 5-14 years of age while 18.0% (3,400) were in those aged 15-24 years. 35.6% (6,733) of unintentional injury deaths were in people aged 25-64 years while 37.2% (7,045) were in people 65 years and over.

As outlined in Figure 4.2 the death rate due to unintentional injuries increased with age. The highest death rate due to unintentional injuries in those under 65 years were in males aged 20-24 years, an average annual death rate of 64.8 per 100,000.

16.9% (3,204) of all unintentional injury deaths occurred in hospital. Of the 3,204 patients who died in hospital as a result of their injuries 61.8% (1,979) were male and 38.2% (1,225) female. Almost 40% (38.5%; 1,233) of all unintentional injury deaths which occurred in hospital were in people 65 years of age and over.

- **The average annual death rate of unintentional injury deaths was 31.6 per 100,000**
- **66.2% of unintentional injury deaths were in males**
- **The death rate due to unintentional injuries in males age 20-24 years was 64.8 per 100,000**



#### 4.2.1 Cause of unintentional injury death

As outlined in Table 4.2, RTAs accounted for 42.1% (7,964) of all unintentional injury deaths, an average annual admission rate of 13.3 per 100,000. Other leading causes of

unintentional injury deaths included falls, at an average annual admission rate of 5.4 per 100,000 and drowning or submersion, with an average annual admission rate of 2.4 per 100,000.

**Table 4.2:** Cause/mechanism of unintentional injury deaths, 1980-1996

Cause	Total number 1990-1996		Average annual rate per 100,000
	N	%	
Cut/ pierce	34	0.2	0.1
Drowning/submersion	1,433	7.6	2.4
Fall	3,253	17.2	5.4
Fire/burn	1,385	7.3	2.3
<i>Fire/flame</i>	1,345	7.1	2.2
<i>Hot object/substance</i>	39	0.2	0.1
Firearm	710	0.5	0.2
Machinery	334	1.8	0.6
Road traffic accident	7,964	42.1	13.3
<i>Occupant</i>	3,807	20.1	6.4
<i>Motorcyclist</i>	912	4.8	1.5
<i>Pedal cyclist</i>	548	2.9	0.9
<i>Pedestrian</i>	2,605	13.8	4.3
<i>Unspecified</i>	46	0.2	0.1
Pedal cyclist, other	95	0.5	0.2
Pedestrian, other	71	0.4	0.1
Transport, other	169	0.9	0.3
Natural/environmental	444	2.3	0.7
<i>Bites and stings</i>	4	*	*
Overexertion	4	*	*
Poisoning	780	4.1	1.3
Struck by, against	242	1.3	0.4
Suffocation	867	4.6	1.4
Other specified, classifiable	259	1.4	0.4
Other specified, not elsewhere classifiable	3	*	*
Unspecified	1,488	7.9	2.5
<b>Total</b>	<b>18,925</b>	<b>100.0</b>	

#### 4.2.2 Nature of injury sustained

As outlined in Table 4.3, 16.2% of all unintentional injury deaths were due to an open wound of the head, neck or trunk (an average annual rate of 5.1 per 100,000).

15.3% were due to fractures of the lower limb, of which 61.6% (1,782) were fractures of the femur. 13.5% were due to skull fractures, while 11.1% were intra-cranial injuries.

**Table 4.3: Main unintentional injuries sustained, 1980-1996**

<b>Injury</b>	<b>Total number 1993-1997</b>		<b>Average annual rate per 100,000</b>
	<b>N</b>	<b>%</b>	
Open wound of head, neck & trunk	3,065	16.2	5.1
Fracture of lower limb	2,892	15.3	4.8
Fracture of skull	2,553	13.5	4.3
Intra-cranial injury	2,107	11.1	3.5
Other and unspecified effects	2,074	11.0	3.5
Internal injury	958	5.1	1.6
Toxic effects of substances	934	4.9	1.6
Fracture of spine and trunk	801	4.2	1.3
Effects of foreign body	784	4.1	1.3
Injury to nerves and spinal cord	708	3.7	1.2
Poisoning by drugs	328	1.7	0.6
Injury to blood vessels	232	1.2	0.4
Burns	166	0.9	0.3
Fracture of upper limb	108	0.6	0.2
Late effects of injury	83	0.4	0.2
Dislocations	55	0.3	0.1
Open wound of upper limb	42	0.2	0.1
Open wound of lower limb	20	0.1	*
Other injury	1,015	5.4	1.7
<b>Total</b>	<b>18,925</b>	<b>100.0</b>	

### 4.3 Unintentional deaths due to RTAs

Between 1980-1996 there were 7,964 unintentional deaths due to RTAs, an average of 468.5 deaths annually. The average annual death rate for RTAs was 13.3 per 100,000.

Of the 7,964 deaths due to RTAs, 47.8% (3,807) involved the occupant of the vehicle (whether passenger or driver), while 11.4% (912) involved a motorcyclist or their passenger. In 32.7% (2,605) of RTA related deaths the injured person was a pedestrian and in 6.9% (548) the injured person was a pedal cyclist. 0.6% (46) of RTA-related deaths were in other persons while in the remaining 0.6% (46) of deaths the injured person was unspecified.

Males accounted for the majority (73.9%; 5,884) of RTA-related deaths over this 17 year period, with an average annual death rate of 19.7 per 100,000. The average annual death rate for females was 6.9 per 100,000.

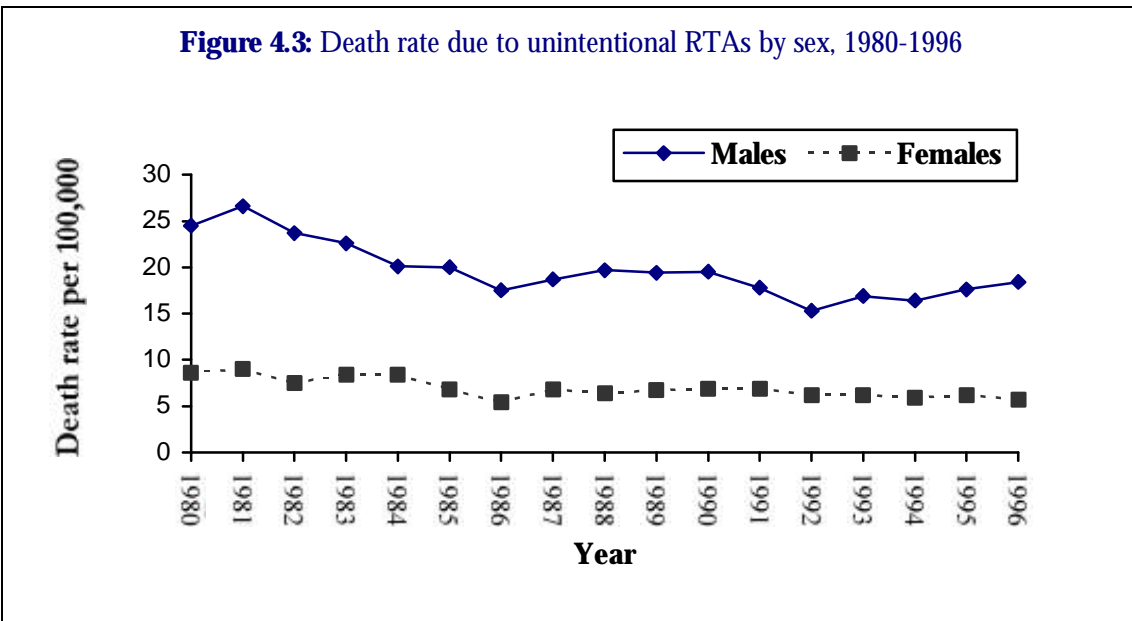
The death rate due to RTAs has decreased for both males and females over this 17-year

period. In 1980 the death rate due to RTAs in males was 24.5 per 100,000; this declined to 18.4 per 100,000 in 1996. The death rate due to RTAs in females decreased from 8.6 per 100,000 in 1980 to 5.7 per 100,000 in 1996 (Figure 4.3).

- **The average annual death rate due to RTAs was 13.3 per 100,000**
- **Males accounted for 73.9% of RTA-related deaths**
- **30.6% of RTA-related deaths were in people aged 15-24 years**
- **The death rate due to RTAs was 44.2 per 100,00 for males in the 20-24 year age group**

Children under five years of age accounted for an average of 3.0% (240) of all RTA-related deaths over this 17 year period, children 5-14 years of age accounted for 7.3% (580) of deaths while 30.6% (2,436) were in people aged 15-24 years. 39.8% (1,535) of RTA-related deaths were in people aged 25-64 years while 19.3% (1,535) were in people 65 years and over.

**Figure 4.3:** Death rate due to unintentional RTAs by sex, 1980-1996

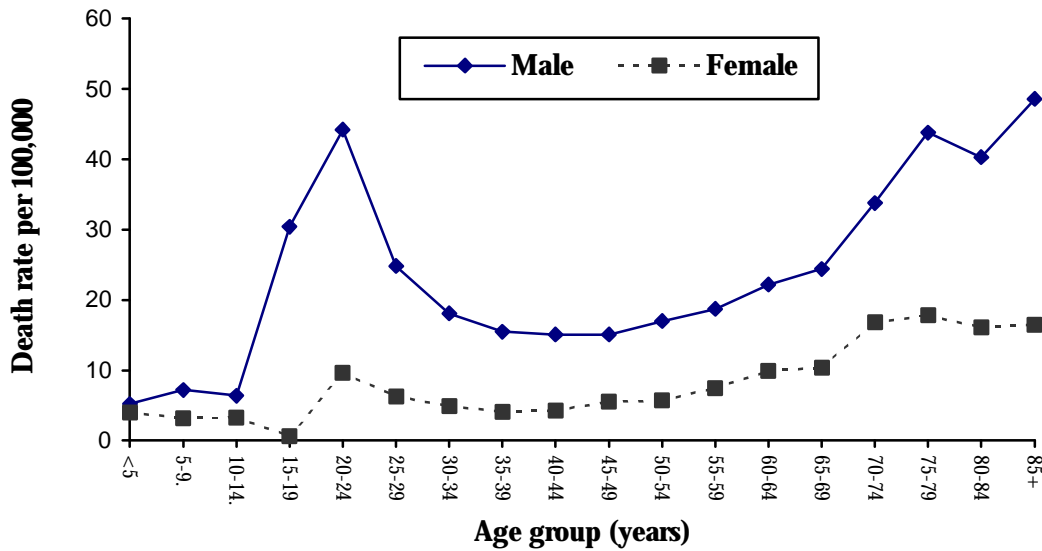


As outlined in Figure 4.4 the death rate due to RTAs peaked in those under 65 years at a rate of 44.2 per 100,000 for males in the 20-24 year age group. After the age of 40-44 years the death rate due to RTAs increased

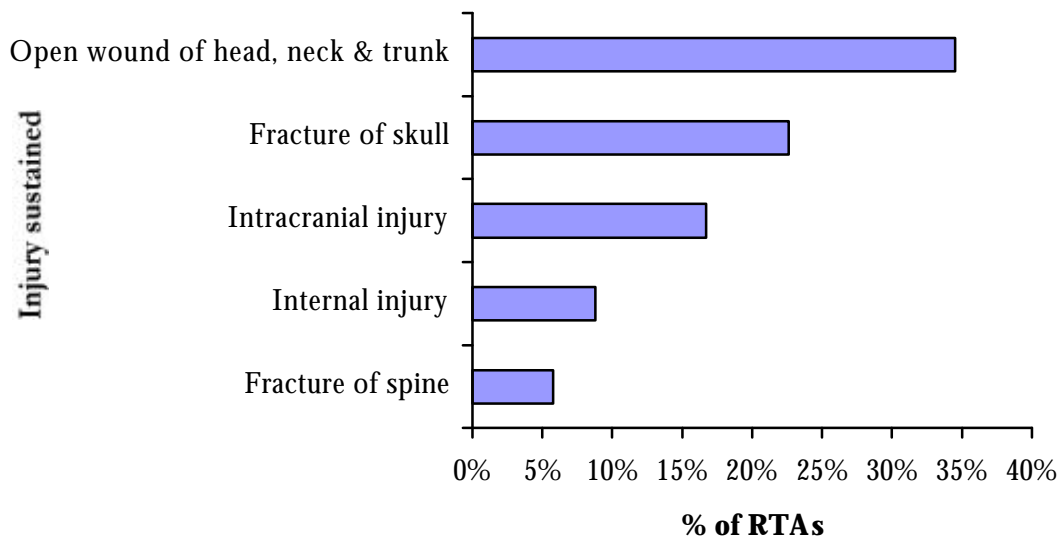
steadily with age. The gradient was steeper for males.

34.5% of injuries sustained in fatal RTAs were open wounds to the head, neck or trunk (Figure 4.5).

**Figure 4.4:** Average annual rate of RTA deaths in each age group by sex, 1980-1996



**Figure 4.5:** Main unintentional injuries sustained due to RTAs, 1980-1996



#### 4.4 Deaths due to unintentional falls

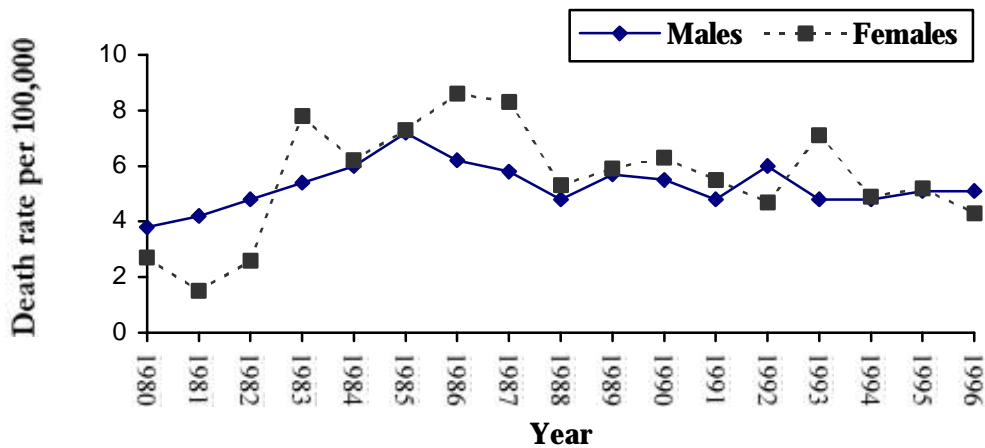
Between 1980-1996 there were 3,253 unintentional deaths due to falls, an average of 191.4 deaths annually. The average annual death rate for unintentional falls was 5.4 per 100,000.

Over half (51.4%; 1,671) of those admitted to hospital due to unintentional falls were male with an average annual death rate of 5.6 per 100,000. The average annual death rate for females was 5.3 per 100,000.

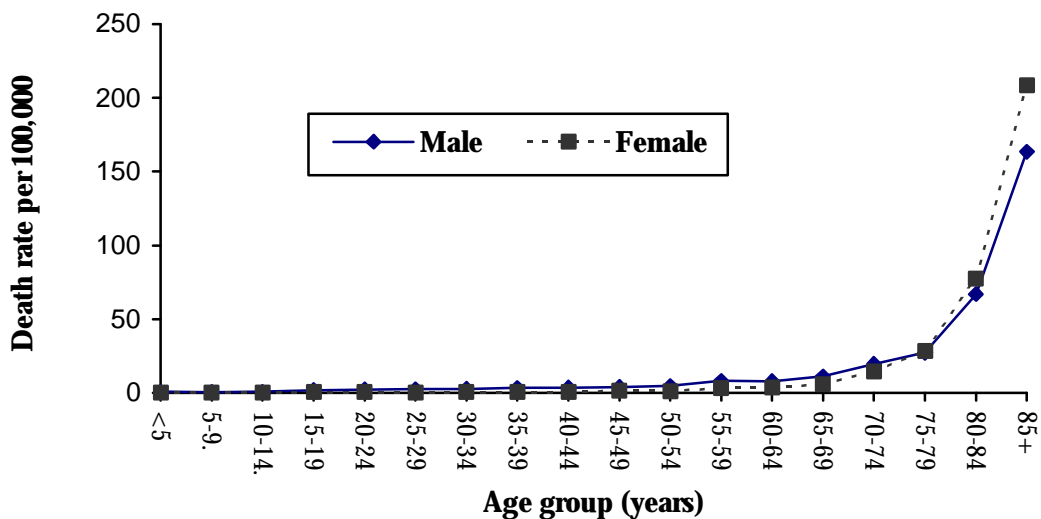
As outlined in Figure 4.6 the death rate due to falls remained similar in males and females over this 17-year period.

Children under five years of age accounted for an average of 0.7% (24) of all deaths due to unintentional falls, children 5-14 years of age accounted for 1.2% (39) and persons aged 15-24 years accounted for 4.0% (130). 21.5% (700) of fall-related deaths were in people aged 25-64 years while 72.6% (2,360) were in people 65 years and over.

**Figure 4.6:** Death rate due to unintentional falls for males and females, 1980-1996



**Figure 4.7:** Average annual death rate due to unintentional falls in each age group by sex, 1980-1996

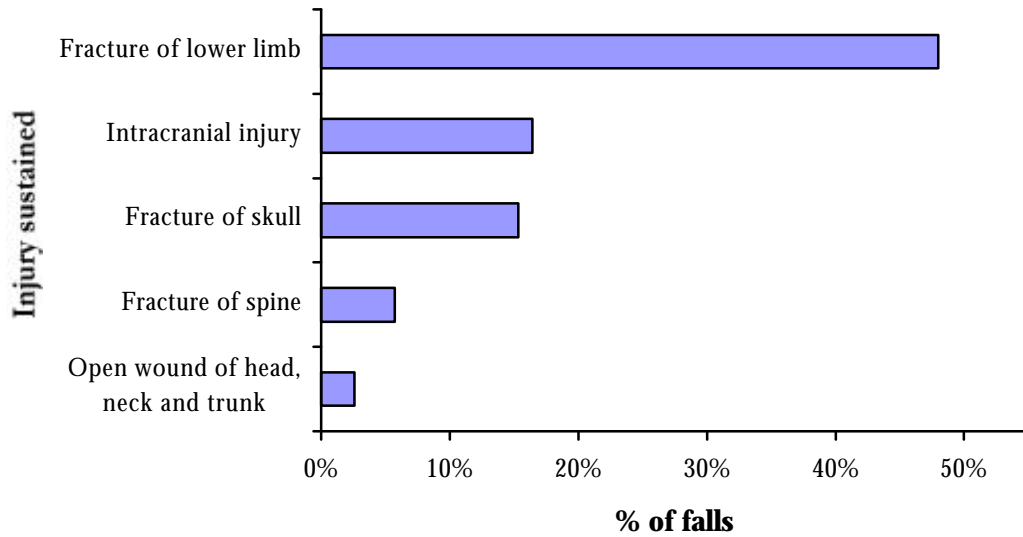




There was a steep increase in the death rate due to unintentional falls after 65 years of age (Figure 4.7).

As outlined in Figure 4.8 48.0% of injuries sustained in fatal falls were fractures to the lower limb.

**Figure 4.8:** Main unintentional injuries sustained due to unintentional falls, 1980-1996



#### 4.5 Deaths due to unintentional drowning/submersion

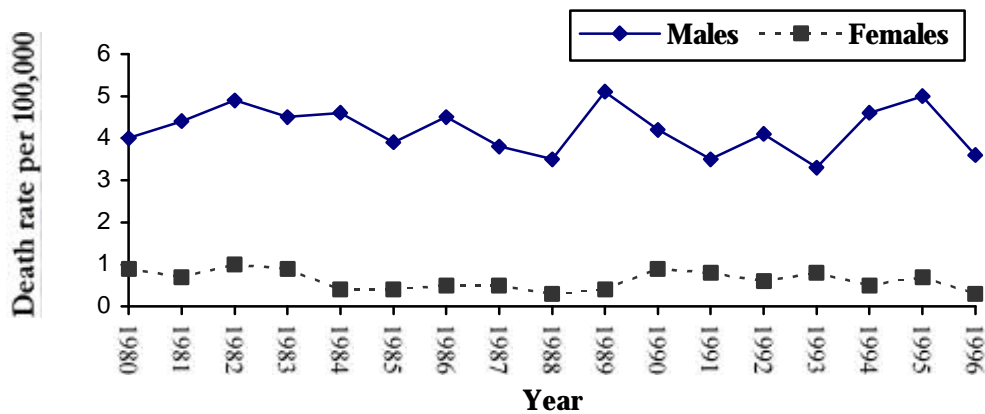
Between 1980-1996 there were 1,433 unintentional injury deaths due to drowning or submersion, an average of 84.3 deaths annually. The average annual death rate for unintentional drowning or submersion was 2.4 per 100,000.

87.0% (1,247) of those who died due to unintentional drowning or submersion were male, with an average annual death rate of 4.2 per 100,000.

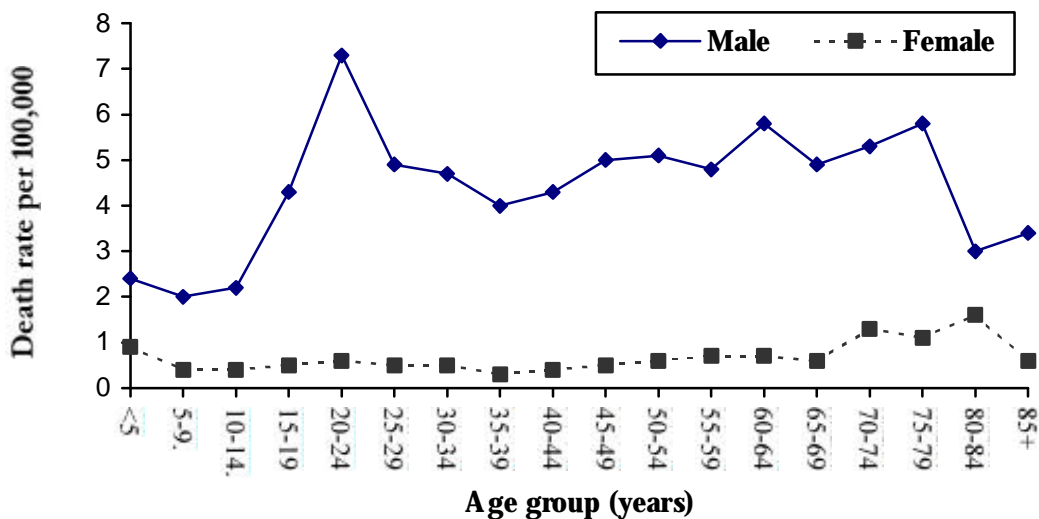
The average annual death rate for females was 0.6 per 100,000 (Figure 4.9).

Children under five years of age accounted for 6.0% (86) of all deaths due to unintentional drowning or submersion, children 5-14 years of age accounted for 9.5% (136) of deaths while 23.2% (332) were in people aged 15-24 years. Almost half (48.7%; 698) of drowning or submersion-related deaths were in people aged 25-64 years while 12.6% (181) were in people 65 years and over.

**Figure 4.9:** Death rate due to unintentional drowning/submersion for males and females, 1980-1996



**Figure 4.10:** Average annual death rate due to unintentional drowning/submersion in each age group by sex, 1980-1996



#### 4.6 Deaths due to unintentional fire/burn

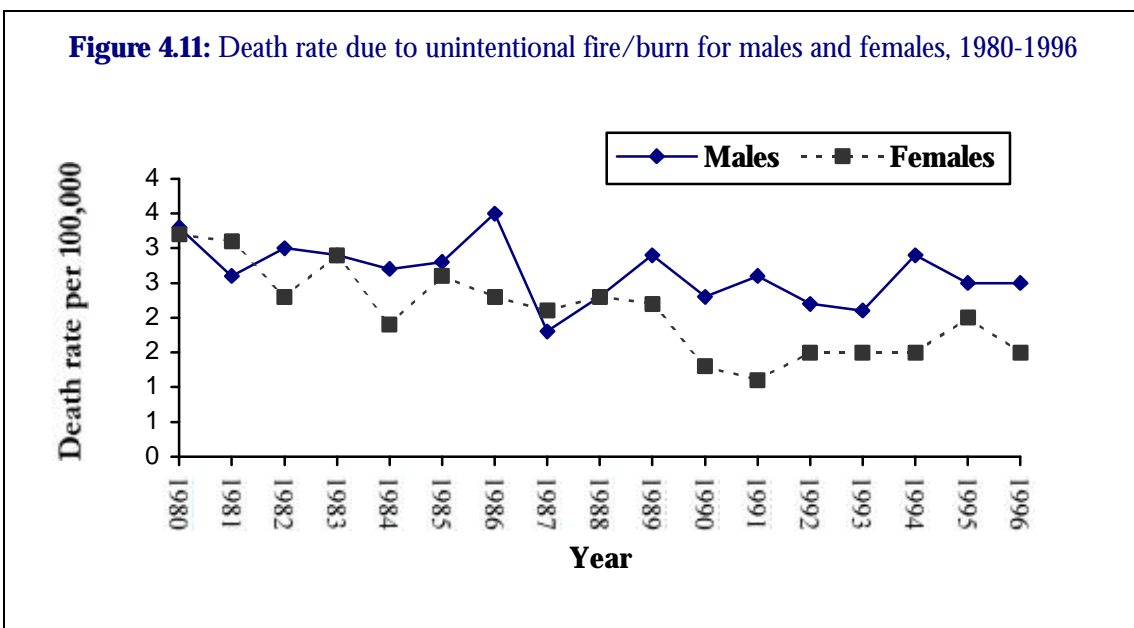
Between 1980-1996 there were 1,385 unintentional deaths due to fire/burn, an average of 81.5 deaths annually. The average annual death rate for unintentional fire/burn was 2.3 per 100,000 (Figure 4.11).

55.9% (774) of those admitted to hospital due to unintentional fire/burn were male, with an average annual death rate of 2.6 per

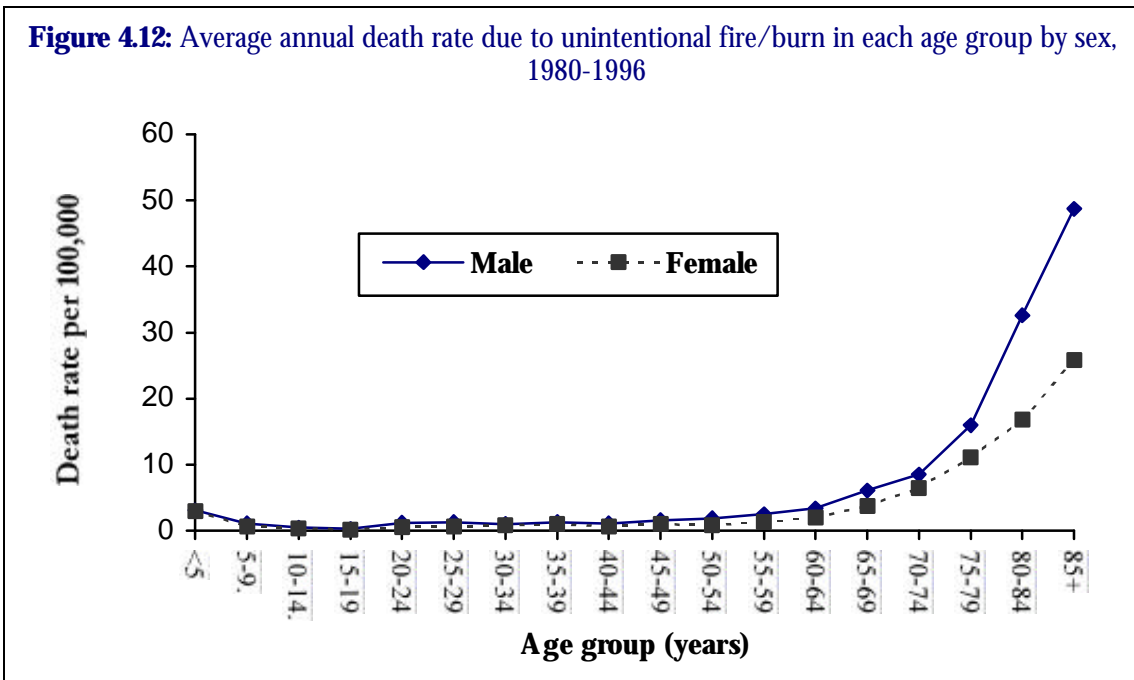
100,000. The average annual death rate for females was 2.0 per 100,000.

Children under five years of age accounted for 11.2% (155) fire-related deaths, children 5-14 years of age accounted for 5.5% (76) and 4.2% (58) were in people aged 15-24 years. 24.6% (341) of deaths were in people aged 25-64 years, while 54.4% (754) were in people 65 years and over. The death rate due to fire/burn increased sharply after 65 years of age (Figure 4.12).

**Figure 4.11:** Death rate due to unintentional fire/burn for males and females, 1980-1996



**Figure 4.12:** Average annual death rate due to unintentional fire/burn in each age group by sex, 1980-1996



## Section Five:

# Health Board Comparisons

For the purpose of health board comparisons standardised admission ratios (SAR) and standardised mortality ratios (SMR) have been used. The SARs and SMRs (presented in Tables 5.4 and 5.6) permit comparison between boards where the effect of differences in the age and sex distribution of the boards has been removed. An examination of the tables of rates (Tables 5.3 and 5.5) compared with the corresponding standardised rate ratios will confirm that such differences can have a significant effect on the relative position of different areas of the country.

When interpreting these figures it should be noted that an area with an SAR or SMR of 100 for a particular cause of admission or death has the same number of admissions

or deaths as expected, given the age and sex structure of that area. An area with an SAR or SMR in excess of 100 has more adverse events than expected, and an area with an SMR or SAR less than 100 has correspondingly fewer.

### 5.1 Hospital admissions

Almost one-third (31.1%) of patients admitted to hospital were resident in the Eastern Region (Table 5.1), however the Eastern Region had the second lowest standardised admission ratio (SAR) at 88.4. The Mid-Western Health Board had the lowest SAR at 87.7. The highest SAR was in the South Eastern Health Board at 128.5.

**Table 5.1:** Unintentional injury admissions by health board of residence, 1993-1997

Health Board	Total number 1993-1997		Standardised admission ratio (SAR)
	N	%	
South Eastern Health Board (SEHB)	31,092	13.9	128.5
North Eastern Health Board (NEHB)	21,814	9.8	115.4
Midland Health Board (MHB)	14,658	6.5	114.9
Western Health Board (WHB)	25,008	11.2	112.7
North Western Health Board (NWHB)	13,590	6.1	102.2
Southern Health Board (SHB)	30,618	13.7	90.4
Eastern Region (ER)	69,528	31.1	88.4
Mid-Western Health Board (MWHB)	17,248	7.7	87.7
<b>Total</b>	<b>223,556</b>	<b>100.0</b>	

Tables 5.3 and 5.4 document admission rates and SARs for the major causes of unintentional hospital admission. The highest SARs for falls were in the South Eastern Health Board (116.6) and the Western Health Board (113.6) (Table 5.4). The lowest SAR for falls was in the Southern Health Board (92.6). The SAR for RTAs was highest in the North Eastern Health Board at 165.8 and lowest in the Eastern Region at 75.6. The Eastern Region also had the lowest SAR for fire/burn, machinery, transport and natural or environmental injuries. The South Eastern Health Board had the highest SAR for being struck by or against an object or person (176.4) and poisoning (137.7).

## 5.2 Deaths

The Eastern Region had the lowest SMR for death due to injury at 86.5 (Table 5.2) The highest SMRs were in the North Western Health Board and North Eastern Health Board at 121.5 and 118.3 respectively.

Tables 5.5 and 5.6 document death rates and SMRs for the major causes of unintentional injury death. The SMR due to RTAs was lowest in the Southern Health Board (80.3) followed by the Eastern Region (88.8) (Table 5.6). The highest SMR for RTAs was in the North Eastern Health Board at 144.2. The SMR for falls was highest in the Southern Health Board at 127.8 and lowest in the Midland Health Board at 86.5.

**Table 5.2: Unintentional injury deaths by health board of residence, 1980-1996**

Health board	Total number 1993-1997		Standardised mortality ratio (SMR)
	N	%	
North Western Health Board (NWHB)	1,504	7.9	121.5
North Eastern Health Board (NEHB)	1,857	9.8	118.3
Midland Health Board (MHB)	1,224	6.5	111.3
South Eastern Health Board (SEHB)	2,184	11.5	106.3
Western Health Board (WHB)	2,121	11.2	103.0
Mid-Western Health Board (MWHB)	1,723	9.1	101.5
Southern Health Board (SHB)	2,896	15.3	98.0
Eastern Region (ER)	5,416	28.6	86.5
<b>Total</b>	<b>18,925</b>	<b>100.0</b>	

**Table 5.3:** Average annual admission rate for the leading causes of unintentional injury admission by health board region, 1993-1997

Cause/mechanism	Health Board								
	ER	MHB	MWHB	NEHB	NWHB	SEHB	SHB	WHB	Total
	Average annual admission rate per 100,000								
Fall	478.2	548.9	498.7	549.0	603.0	628.2	500.4	638.9	532.5
Road traffic accident	140.5	240.6	156.8	291.2	203.3	238.5	141.3	188.9	179.4
Struck by, against	104.0	168.5	133.5	112.2	84.9	233.6	122.6	166.9	132.8
Poisoning	102.7	78.9	80.2	112.4	75.9	119.8	52.4	70.7	89.8
Cut/ pierce	60.8	87.9	47.1	72.5	54.1	73.9	77.6	84.6	68.0
Pedal cyclist, other	33.8	50.0	19.6	47.5	40.0	56.4	35.8	52.8	39.6
Fire/burn	18.2	35.9	23.8	31.0	28.3	30.0	27.7	25.4	25.0
Transport, other	15.2	27.1	16.9	25.1	20.9	32.8	20.1	20.5	20.4
Machinery	10.2	29.4	16.0	39.5	27.8	29.3	22.4	21.5	20.3
Natural/environmental	9.5	33.1	16.7	27.4	19.0	28.9	18.7	28.6	18.9

**Table 5.4:** Standardised Admission Ratio (SAR) for the leading causes of unintentional injury admission by health board region, 1993-1997

Cause/mechanism	Health Board							
	ER	MHN	MWHB	NEHB	NWHB	SEHB	SHB	WHB
	Standardised Admission Ratio (SAR)							
Fall	93.4	100.4	93.3	102.9	107.1	116.6	92.6	113.6
Road traffic accident	75.6	137.0	87.9	165.8	118.3	135.9	79.1	107.8
Struck by, against	77.0	125.9	100.6	83.6	66.6	176.4	93.4	129.5
Poisoning	108.6	88.5	91.8	128.6	89.4	137.7	59.5	82.7
Cut	87.6	130.7	68.9	105.5	83.0	109.8	115.6	127.2
Pedal cyclist, other	87.5	120.6	48.9	116.2	99.2	140.3	91.2	132.0
Fire/burn	74.0	143.1	97.4	119.5	115.4	120.1	113.0	102.1
Machinery	50.6	147.7	76.8	185.7	141.4	145.6	111.5	109.1
Transport, other	73.2	134.4	83.3	124.2	107.4	161.5	99.1	102.5
Natural	50.0	168.9	87.3	142.1	103.3	153.5	99.1	150.0

**Table 5.5:** Average annual admission ratio for the leading cause/mechanism of unintentional injury death by health board region, 1980-1996

Cause/mechanism	Health Board								
	ER	MHB	MWHB	NEHB	NWHB	SEHB	SHB	WHB	Total
	Average annual admission rate per 100,000								
Road traffic accidents	13.3	17.0	14.0	19.0	14.2	14.4	10.9	13.9	13.3
Fall	5.4	3.9	5.4	5.3	7.9	5.3	7.2	5.9	5.4
Drowning/submersion	2.4	2.6	2.2	2.1	4.8	2.7	2.9	3.8	2.4
Fire/burn	2.3	2.7	2.4	2.1	3.3	2.3	2.9	2.9	2.3
Suffocation	1.4	2.3	1.9	1.1	1.5	1.2	1.3	2.0	1.4
Poisoning	1.3	0.8	0.8	0.9	1.3	1.1	1.0	1.0	1.3



**Table 5.6:** Standardised mortality ratio for the leading cause/mechanism of unintentional injury death by health board region, 1980-1996

Cause/mechanism	Health Board							
	ER	MHN	MWHB	NEHB	NWHB	SEHB	SHB	WHB
Standardised Mortality Ratio (SMR)								
Road traffic accident	88.8	125.9	105.3	144.2	103.7	108.9	80.3	100.0
Fall	93.9	72.8	98.0	100.2	115.2	96.9	127.8	86.5
Drowning	57.5	109.8	86.9	87.3	203.7	111.4	119.7	157.9
Fire/burn	84.8	114.6	97.7	94.8	121.1	95.4	118.0	105.6
Suffocation	86.0	159.8	132.0	79.3	101.0	81.5	92.0	131.5
Poisoning	135.7	67.1	66.0	79.5	103.9	92.8	77.6	84.3

# Section Six:

## Discussion and Recommendations

### 6.1 Priority recommendations

#### 1) A National Injury Strategy should be produced

Cancers, heart disease and injuries are the three major causes of premature mortality in Ireland. Injuries are almost certainly the main cause of severe acquired disability in those under 65. Just as a co-ordinated strategy of prevention and treatment was needed for cancer and heart disease, so a co-ordinated strategy for injury prevention and treatment is urgently required.

#### 2) Immediate action is needed to reduce Road Traffic deaths and injuries

The annual toll of road traffic accidents is simply unacceptable. Deaths are only the tip of the mountain of unnecessary misery caused every year on our roads. It is essential to implement and enforce a range of measures to reduce this carnage.

#### Specifically we urge :-

- Strict driving restrictions on provisional licence holders
- Random breath testing
- An effective penalty points system with a significant increase in Garda resources to enforce it
- A reduction in the permissible level of blood alcohol to 50 mg per 100 ml ( from 80 mg/ 100 ml)
- A review of the national Road Safety Strategy, given it's current poor impact on reducing the rate of RTAs

#### 3) A National Injury Prevention Authority should be established

Action to prevent injuries requires strategic thinking, and effective implementation. Giving a single body responsibility for the implementation of injury prevention and management strategies seems the only likely way to make progress. Much of the action required is local action, perhaps delivered by safer community strategies, but central leadership, support and action are essential.

#### **4) Fall prevention programmes for older people should be introduced**

Falls are a major cause of death, and one of the most common reasons for older people losing the capacity, or the confidence, to live independently. Fear of falling has a substantial detrimental effect on the quality of life of many older people. Fall prevention programmes have been shown to be feasible and effective. They should be introduced widely as part of routine health care for older people, especially in long stay institutions and nursing homes.

#### **5) Prevention of poisoning**

Poisoning remains an unacceptably common cause of death and serious injury in small children. The distribution of poisonous materials, especially prescription and non-prescription medicines, without child resistant caps or other protective packaging should be prohibited.

#### **6) Prevention of drowning**

Although drowning is uncommon, a very high proportion of drowning incidents are fatal. Greater awareness of the hazards of water is required. Learning to swim in childhood is an essential component of the prevention of death by drowning. Swimming lessons should be incorporated into the school curriculum for all children. First-time parents require greater education about the hazards of bathtubs for babies and toddlers. All swimming pools should be supervised at all times when open and access to swimming pools should be prohibited when the pool is unsupervised.

## 6.2 Injury surveillance

This report has used two routine sources of data to examine the impact of accidents and injury in Ireland. It must be acknowledged that these data sources reflect the most severe injuries only. Improvement in collection of accident and emergency and general practitioner data will facilitate further examination of less severe injuries in the future.

**R1. Accident & Emergency Departments should be computerised and the injury data recorded should be centrally collated.**

This report demonstrates the use of routinely collected Irish data to monitor trends. The improvement in HIPE coverage of acute general hospitals has created a wealth of useful data.

**R2. HIPE data should be more readily accessible.**

### ***Limitations of HIPE data***

A limitation of HIPE is that the data are presented as episodes of care rather than as individual patient records. Repeat admissions to hospitals for a single injury cannot be identified. We have tried to overcome this problem as far as possible through the exclusion of discharge records of patients transferred to a hospital from another hospital. This procedure should minimise the impact of repeat admissions.

One problem encountered with HIPE data was that 14.8% of all injury admissions did not have an assigned E code. Thus for 7,598 admissions per year the injury intent is unknown. This particular problem also

occurs in many similar information systems internationally.

**R3. The recording of E codes is important for full analysis of injury data. Recording of E codes should be a priority.**

A further limitation of the data is the lack of information on 'place of injury'. Only 40% of records had information regarding place of injury. This has been noted at a similar rate in a previous study using HIPE data (Laffoy et al, 1995). The collection of this information is essential in order to realise fully the potential of HIPE data.

**R4. Documentation of location of injury must be maximised to enhance the usefulness of HIPE data.**

The relationship between social class or social deprivation and Accident & Emergency attendance, injury admissions and injury mortality is well documented (Walsh et al. 1996, Alwash and McCarthy 1988, McFarlane and Fay 1978). The relationship between fatal injury and social class has been found to be particularly strong. These relationships are particularly true of childhood injury (Laffoy 1997, Taylor et al. 1983) Unfortunately the HIPE system does not include social class data.

A limitation of the admission data used in this report is that there is no direct classification of range of severity of admissions. Length of stay can act as a proxy measure of severity. Though hospital admissions due to unintentional injuries were common, the lengths of hospital stay were generally short; almost half were of

one day duration and the median length of stay was two days. However for people over 65 the mean length of stay was more than 10 days. The main causes of lengths of stay of over 21 days were falls and road traffic accidents. Lower limb fractures, mainly of the hip, accounted for the majority of these protracted hospital stays.

#### **Framework for injury data presentation**

The framework used in this report is that adopted by the International Collaborative Effort on Injury Statistics (Fingerhut et al. 1998). The matrix format allows presentation of results both by cause of injury and by intent. Adoption of such a framework internationally would facilitate comparisons both over time and between regions.

**R5. The framework adopted by the International Collaborative Effort on Injury Statistics and used in this report will aid comparisons between regions and timeframes. Awareness of this framework should be heightened and its use encouraged.**

#### **6.3 Morbidity and mortality patterns**

The findings of this report demonstrate the necessity of examining both mortality and hospital admission data to fully understand the importance of particular injuries. While HIPE data show drowning/submersion to represent 0.1% of injury admissions, the true seriousness of this cause of injury is reflected in the mortality rate of 5.7/100,000, representing 7.6% of all injury deaths. In a similar fashion road traffic accidents account for 14.5% of admissions but over 40% of injury deaths, fire/burn 2%

of admissions and 7.3% of deaths, and suffocation 0.3% of admissions but 4.6% of deaths. Falls have an opposite pattern, representing almost half of hospital admissions and a lower proportion of deaths; however falls still account for one fifth of deaths.

**R6. Morbidity and mortality data should be examined concurrently to elucidate patterns of injury.**

#### **6.4 Key affected age groups**

While injury and injury-related death affect all age groups in Ireland, the data show that the very young, young adults and older people have particular risks.

##### **Children**

A selection bias documented in the UK is that young children less than 5 years with less severe injuries gain hospital admission at a lower threshold than older children (Walsh et al. 1996). It is likely that this also prevails in Ireland and may account for some of the difference in admission rates between younger and older children. However it is unlikely to have altered over the time period of our study.

The most important causes of unintentional injury death in children under 5 years are road traffic accidents, fire-related deaths and drowning, while in children aged 5 to 14 years they are road traffic accidents and drowning.

The most common causes of unintentional injury admission in children under 5 years are falls, poisonings and burns; in children aged 5 to 14 years falls are again the commonest cause of admission, followed by being struck by or against an object or

person. Pedal cycle injuries are an important reason for admission to hospital at this age.

It is striking that most of the deaths and admissions due to injury in children are wholly preventable.

### ***Young Adults 15-24 years***

Young adult males pose a particular problem with regard to road safety. Males aged 20-24 years have the highest death rate for unintentional injury of all age groups up to age 70 years. Over 30% of RTA deaths occur in the 15-24 year age group; the highest rate of RTA-related deaths is in males aged 20-24 years.

Leading causes of injury admission in young adults included RTAs, which accounted for one quarter of admissions, falls and being struck by or against an object or person.

### ***Older people (over 65 years)***

Falls are the serious concern in this age group. Seventy percent of fall related deaths were in people 65 years and over and falls accounted for almost 80% of injury admissions in those over 65 years. Fire-related deaths due to burns and smoke inhalation are another important cause of death; 54.4% of fire and burn-related deaths occur in those over 65 years.

**R7. Different age groups have different injury risks. Injury prevention should be targeted at those at highest risk for each type of injury, particularly those in the lower socio-economic groups.**

### ***Gender***

Throughout this report the predominance of injuries in males is clear. Males account for two-thirds of injury deaths; while admission rates are also higher in males, the gender difference is not so dramatic.

### **6.5 Injury admissions**

Over 55,000 people are admitted to hospital each year in Ireland for treatment of an injury. The admission rate is increasing for all major causes of injury and across all age groups. Admissions due to injury represented 8.5% of hospital admissions for all causes during the period of study. This represents a major cost to the health service in terms of acute medical and nursing services and long term care. Unintentional injury admissions have a major impact on all age groups.

### **6.6 Injury deaths**

The unintentional injury death rate has fallen from 40 to 30 per 100,000 over the 17-year period examined. However in recent years the rate has plateaued and no further decline was seen between 1992 and 1996.

### **6.7 Falls**

Between 1993 and 1997 there were 96,003 hospital admissions due to a fall. The main injuries sustained after a fall were limb fractures, accounting for over half of all fall admissions, and head injury, accounting for one quarter. One third of fall admissions occurred in the over 65 age group; in this age group females predominate. Osteoporosis is recognised as a serious problem among older Irish women; a fall in an older person can result in a fracture, particularly of the upper limb or hip, with resultant loss of function, loss of confidence, loss of the ability to live independently or sometimes death. Fall

prevention programmes have been implemented successfully in Ireland (Barry et al, in press).

**R8. A fall prevention programme should become a routine part of preventive health care for all people over 65 years and standard practice in all long stay units for older people and in nursing homes.**

Children under the age of 5 years represent 9.6% of falls, which is the highest rate of falls in the those under 60 years. From the literature we know that many of these occur at home and in those in the lower social classes. We have not been able to adequately confirm this in our study because of incomplete recording of place of injury.

But falls affected all age groups and overall similar numbers of males and females. The main circumstances for hospital admission after a fall were slipping or tripping (22.5%) and falling from one level to another (18%). Falls account for a significant proportion of hospital bed-days; unintentional falls accounted for almost two-thirds of admissions with a length of stay of over 3 weeks.

The death rate due to falls failed to alter significantly over the 17-year period.

## **6.8 Road traffic accidents**

Between 1993 and 1997 there were 32,351 admissions due to a road traffic accident. RTAs not resulting in death cause serious injuries including head injury (42.7%) and limb fractures. A further 7,964 people died over the period 1980-1996 on Irish roads, an average of 468.5 annually.

While death rates due to RTAs have decreased over the 17-year period examined, the rates remain unacceptably high at 18.4/100,000 males and 5.7/100,000 females in 1996.

Of the 32,351 admissions due to road traffic accidents almost 80% involved a car or motorcycle driver or passenger. In smaller percentages of RTA related admissions the injured person was a pedestrian or a pedal cyclist, but these still represent 5,034 and 1,185 injured persons respectively. Pedestrians represent a far greater proportion of RTA-related deaths (32.7%); car occupants account for almost half of all RTA-related deaths.

Two thirds of admissions were young males and males accounted for almost 74% of RTA-related deaths. In the under 65 year population the peak both in deaths and in admissions is in males aged 20-24 years.

Eight hundred and twenty children under the age of 15 years died on our roads over the period. RTAs are the major cause of injury related death in children in Ireland.

These patterns are replicated world-wide where accident information is gathered. In a comparative study of injury mortality in 11 countries conducted by the International Collaborative Effort on Injury statistics (including England & Wales, several other European Countries, the USA and New Zealand), motor vehicle traffic-related injuries were the leading cause of injury death both among children aged 1-14 years and teenagers and young adults 15-25 years (Fingerhut et al. 1998).

Our data highlight death and hospital admissions due to RTA. The routinely collected data do not address the enormous

social and personal costs of post injury disability.

**R9. Road traffic accidents continue as a major source of unintentional injury and death. The National Road Safety Strategy requires to be thoroughly reviewed given its poor impact in improving the toll of injury and death on our roads.**

**R10. Driving restrictions for provisional drivers and those who have failed a driving test need to be tightened.**

**R11. The maximum level of blood alcohol should be reduced from 80mg/100 ml to 50mg/100 ml.**

**R12. Random breath testing should be introduced as a matter of urgency**

**R13. A penalty point system should be introduced as a matter of urgency and any necessary resources required by An Garda Siochana provided.**

### **6.9 “Being struck by or against an object or person”**

Between 1993 and 1997 there were 23,935 hospital admissions for the reason of “being struck against an object or person” and 85.5% of these were males. Though place of injury is incompletely coded in HIPE data it appears that many of these injuries are likely to have taken place in the work place or on the sports field. The main injuries sustained

were head injury (34.3%) and fractures of upper limb (18.4%) and lower limb (12.1%).

As would be expected, relatively few injuries occurred in the under 5 and over 65 year age groups. The highest proportion occurred in the 25-64 age group. This cause of injury was most common in young males.

### **6.10 Head injuries**

Over the period of study 23.1% of unintentional injury admissions were head injuries, with average annual admission rates for intracranial injury of 230/100,000 and for skull fracture of 53.6/100,000. Several studies have documented the nature of sequelae resulting from severe as well as minor head injury. It is recognised that there are insufficient facilities in Ireland to cater for the rehabilitative and care needs of the head injury survivor. This is particularly true for young people, amongst whom head injuries form a very significant proportion of admissions.

**R14. The use of cycle helmets should be encouraged, especially in young people. Parents, teachers and the Gardai should encourage their use at every opportunity.**

### **6.11 Drowning**

Death rates due to drowning remain little changed over the time examined. Almost half of drowning/submersion deaths occurred in those aged 25-64 years. Children under 15 years accounted for 15.5% of drowning deaths, a largely preventable loss of 222 deaths in this age group.



- R15. Greater awareness of the hazards of water is required.**
- R16. Learning to swim in childhood is an essential component of the prevention of death by drowning. Swimming lessons should be incorporated into the school curriculum for all children.**
- R17. First-time parents require greater education about the hazards of bathtubs for babies and toddlers.**
- R18. All swimming pools should be supervised at all times when open. Access to swimming pools should be prohibited when the pool is unsupervised.**

### **6.12 Poisonings**

Poisonings in children represent a wholly preventable cause of injury and death. Our figures show that between 1993 and 1997 there were 16,191 admissions due to poisoning and children under 5 accounted for over one quarter of these. Within this age group children aged two years had the highest admission rate. As expected males outnumber females in this age group; however, in the adult age group females slightly outnumbered males (50.4%). The main poisons ingested were the commonly medication available in the home e.g. pain killers, tranquillisers, anti-inflammatories. Approximately two-thirds spent less than one day in hospital while 4.4% had a length of stay of over one week.

- R19. Child resistant medicine containers should become a mandatory requirement for prescribed medicines (not already presented in blister packs).**

### **6.13 Burns**

Burn injuries are an important cause of paediatric morbidity, particularly in children under 5 years, where the average annual admission rate was over 100 per 100,000. While there has been some reduction in deaths due to burns among females, the death rate in males remains largely unchanged. On average 82 people die in Ireland each year from fire and burns. The high rate in young children and the sharp rise in death rates in the over 65-year population point to the need for universal implementation of simple preventive measures – fireguards and smoke alarms.

- R20. Comprehensive health promotion and health advice should be provided for all mothers of young children to help them prevent injuries at home. Basic first aid principles should be taught.**
- R21. Finance must not be a barrier to the provision of basic fire safety equipment.**

### **6.14 Comparisons between Health Boards**

Standardised admission ratios (SAR) and standardised mortality ratios (SMR) are essential for health board comparisons. The highest overall SAR was in the South Eastern Health Board. The highest overall

SMR was in the North Western Health Board. The Eastern region had the lowest SAR and SMR. The highest SMR for falls was in the Southern Health Board, however the highest SAR for falls was in the South Eastern Health Board. Both the SAR and SMR for RTAs were highest in the North Eastern Health Board.

### **6.15 Disability**

Existing sources of data only document deaths and time spent in hospital as a consequence of injury. The available data are silent on the long-term consequences of injuries in Ireland. While the tragedy of a family burying a son or daughter can be imagined from our figures, much of the real cost of injuries in our society is undocumented.

It is likely that injuries are the dominant cause of acquired severe disability in those aged under 65. Recent studies of head injuries suggest that many survivors of moderate to severe head injury suffer significant and persistent disability (Thornhill *et al.* 2000). The disability caused by spinal injuries is evident. Less obvious, but perhaps no less significant, are the long-term psychological, social and respiratory consequences of fires, burns and smoke inhalation.

In older people, especially older women, falls are a major contributor to losing the capacity to live independently of others. A hip fracture after a fall all too often leads to admission to nursing home facilities, and a loss of independence.

Existing data collection systems provide little or no insight into these issues.

**R22. Studies of the long-term consequences of injuries in the Irish population should be funded as a matter of some urgency. In particular, a needs assessment of those suffering the long-term consequences of head and spinal injuries is required.**

### **6.16 Strategy**

Injury prevention is a complex task requiring action from many sectors of society. Strategies for cancer and heart disease have been established, and are beginning to lead to changes in the provision of services for the treatment and prevention of these important conditions. Injury needs a similar co-ordinated strategy, and a body responsible for delivering on this.

**R23. An Injury Strategy should be produced.**  
**R24. A single agency should have responsibility for this strategy and for its implementation.**

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