



## Safe Communities Foundation New Zealand

Dr Carolyn Coggan, PhD  
Jacqui Fill, BA  
Mildred Lee, BTech (*Hons*)

### Porirua Injury Data Report

Report Number: **Nine**

**April, 2005**

---

**Safe Communities Foundation New Zealand (SCFNZ)**

10 College Hill, Ponsonby, PO Box 90640, Auckland Mail Centre, Auckland 1030, New Zealand.

Tel: +64 9 360 8846 Fax: +64 9 360 8849 [www.safecommunities.org.nz](http://www.safecommunities.org.nz)

Certifying Centre of the WHO Safe Community Network;

Affiliate Safe Community Support Centre of the WHO Collaborating Centre on Community Safety Promotion; &

Affiliate Centre with Certifying Authority of the International Safe Schools Movement.

# Table of Contents

<b>Introduction</b>	3
1.1 Overview	3
1.2 How to use this report	4
1.3 Objectives	5
<b>2.0 Methodology</b>	6
2.1 Sources of information	6
2.2 Data analysis	6
<b>3.0 Porirua City Injury Statistics</b>	8
3.1 Porirua City demographics	8
3.2 Injury statistics	9
3.3 ACC injury statistics	25
3.4 LTSA Road injury statistics	29
<b>4.0 Eastern Ward</b>	33
4.1 Demographics	33
4.2 Injury statistics	34
<b>5.0 Northern Ward</b>	39
5.1 Demographics	39
5.2 Injury statistics	40
<b>6.0 Western Ward</b>	44
6.1 Demographics	44
6.2 Injury statistics	45
<b>7.0 Key Findings</b>	50
<b>8.0 References</b>	51

## **1.0 Introduction**

### **1.1 Overview**

The prevention of injuries is a major public health priority area in New Zealand, as injury is the leading cause of death between 1-34 years (Coggan, Langley & Dawe, 2000). Injuries account for more potential years of life lost than heart disease and cancer combined. Following complications of childbirth and pregnancy, injuries are also responsible for more hospitalisations than any other cause.

Although injury prevention is a relatively new discipline, there is increasing recognition nationally and internationally that community-based injury prevention programmes are an effective and acceptable way to reduce the burden of injury experienced by individuals, whanau/families and communities. Based on the World Health Organisation (WHO) 'safe communities' model, the community-based programme has been adopted in New Zealand following successful Australian and Scandinavian initiatives (Coggan, Bennett, Patterson & Borne, 2003; Coggan, Patterson, Brewin, Hooper, & Robinson 2000; Svanstrom 1997; Day, Ozanne-Smith, Cassell, Li, 2001). The model is a community-based all age, all injury prevention model which recognises that those most able to solve community injury prevention programmes are those people living in that particular community (Brewin & Coggan, 2004).

Community-based injury prevention programmes were first established in Aotearoa/New Zealand in the early 1990s, and rigorous evaluation evidence indicates that the model is effective (Coggan, Patterson, Brewin et al, 2000; Brewin & Coggan, 2003). Currently in Aotearoa/New Zealand there are, in addition to Porirua City, more than 20 other communities at various stages of implementing community action in injury prevention, including Whangarei City, Auckland City, Waitakere City, Manukau City, North Shore City, Wellington City, Turanganui-a-kiwa, Ngati Porou, Waimakariri and 23 ACC ThinkSafe communities.

Evidence from the evaluations undertaken with three of these initiatives to date, strongly suggests that community-based injury prevention activities are able to have an impact on the injury burden experienced by people of all ages. For example, evaluation findings from the Turanganui-a-kiwa CIPP indicate that injury death rates

have steadily declined for the period 1996-1999 (Brewin & Coggan, 2002). Conversely, injury death rates for the comparison community, where there was no community-based injury prevention programmes in place, increased during this period.

Similarly, following implementation of Safe Waitakere in 1996 injury death rates decreased considerably from 48 deaths per 100,000 population in 1997 to 34 deaths per 100,000 per population in 1999. Waitakere City also had a lower injury hospitalisation rate than the rest of Auckland in 1998, 2000 and 2001. This injury hospitalisation rate for Waitakere City was considerably lower than the comparison community (where there was no community-based injury prevention programmes in place), from 1997-2001 (Coggan, Lee, Patterson & Fill, 2003). The provision of injury data is an essential tool for assessing the effects of community-based programmes. It is also vital for the identification of groups at high risk of injury within specific communities.

## **1.2 How to use this report**

This report consists of five main sections: Section one provides a brief introduction and overview of the report objectives. Section two describes the data sources used to support this report, and the methods of data analysis used.

Section three describes Porirua City injury statistics. Firstly, this section begins by providing an overview of the demographic data of Porirua City. Secondly, injury mortality data is described, including leading causes of injury deaths, overall rates of injury deaths by age group and comparisons of injury deaths by Ward. Injury hospitalisations for Porirua City are also outlined, including leading causes of injury hospitalisations; overall rates of injury hospitalisations by age group; rates of injury hospitalisations by gender; injury hospitalisations by ethnicity; and comparisons of injury hospitalisations by Ward. Other sources of injury data are also described, including ACC injury statistics, and Land Transport Safety Authority (LTSA) road injury statistics.

Sections four to six outline demographic and injury statistics for the three Wards which comprise Porirua City (Section four: Eastern Ward; Section five: Northern Ward; Section six: Western Ward). Data is provided on the usual population of each Ward,

including information about the age and gender composition of the total population. Household and personal income information is also provided. For each Ward, an analysis of overall leading causes of injury deaths is provided, and, where possible, an analysis by ethnicity is also provided. Overall causes of injury hospitalisation are provided, and a detailed analysis of injury hospitalisation is provided, including analysis by age, gender and ethnicity. Leading causes of injury hospitalisation and rates of injury hospitalisation are provided for each Ward, for Maori, New Zealand European and Pacific populations. Finally Section Seven briefly outlines the key injury findings for Porirua.

### **1.3 Objectives**

The objectives of this report are to present:

1. Routinely collected baseline data which can be used to identify injury prevention related needs and issues in Porirua City;
2. Routinely collected data on a Ward-by-Ward basis to enable comparisons by areas;
3. Routinely collected data to enable comparisons over time; and
4. The data in a meaningful manner to assist in the development of strategic plans for injury prevention for Porirua City.

## **2.0 Methodology**

### **2.1 Sources of information**

The information utilised to develop this community injury profile came from a wide variety of sources, including:

- Routinely collected injury statistics from the New Zealand Health Information Service (NZHIS) related to injury deaths (1993-1999) and hospitalisations (1993-2003) for Porirua City;
- 1991, 1996 and 2001 New Zealand Census data from Statistics New Zealand;
- LTSA data for 1997-2002; and
- ACC data for 1994/5-2003/4.

### **2.2 Data analysis**

Data was analysed using SAS Version 9.0 in Windows. Injury data were sourced from the NZHIS Minimum Dataset. Injury deaths and hospitalisations caused by medical misadventure, adverse effects, and late effects were excluded from the analysis. Injury hospitalisation records were selected for patients who were admitted overnight to hospital with a primary diagnosis of injury. Cases were only included if the patient survived the injury, and if the admission was the first hospitalisation for this injury.

The category labelled "*motor vehicle traffic crash on a public road*" includes crashes involving a pedestrian, but does not include cycle crashes, which are coded as a separate category. Note that this data is for people resident in Porirua City, not for the location in which the injury event occurred.

As changes were made to the definition of ethnicity in 1995, 1996 is the beginning of a new time series for ethnicity data. Therefore all ethnicity statistics for injury death data in this document refer only to the period from 1996 onwards. Also, because of a change in the wording of the question in the 2001 Census of Population and Dwellings that asks about ethnicity, the 2001 Census data is not consistent with the 1996 Census data. Since age specific rates were calculated from population estimates based on the Census data, ethnicity statistics for injury hospitalisation data refer only

to the period from 2001 onwards (for years not in a Census year, population figures were estimated). The standard population used in the calculation of age-standardised rate is Segi's world population.

Sections four to six of this report present injury data at the Ward level. Injury data for the Wards were compiled by using the domicile code recorded for the injured person's place of residence. Some domicile codes may fall into two Ward boundaries, however these records are counted only once in one ward according to the list provided by Statistics New Zealand. As the numbers of injury deaths for each of the wards are relatively small, separate analyses by ethnicity were not carried out for mortality data.

The ACC data is taken from a summary of entitlement claims data for Porirua City (prepared by ACC Scheme Analysis). The data excludes claims lodged with Private Insurers. An entitlement claim is one where payment is made for entitlement other than medical treatment, such as weekly compensation, independence allowance, and social rehabilitation. In addition, claims requiring dental treatment are classed as entitlement claims.

The LTSA data are taken from Motor Accidents in New Zealand 2001 (LTSA, 2002); Motor Vehicle Crashes in New Zealand 2002 (LTSA, 2003); Road Safety Atlas (LTSA, 1996); and 1997/98 Travel Survey Report (LTSA, 2000). It should be noted that not all motor vehicle crashes are reported to the Police; therefore LTSA figures underestimate the burden of injury due to motor vehicle crashes in New Zealand.

## 3.0 Porirua City Injury Statistics

### 3.1 Porirua City Demographics

This section provides information relating to population, age, ethnicity and income for Porirua City.

**Table 1: Porirua City - usually resident population**

Population*	2001 Census	%	1996 Census	%	1991 Census	%
Maori	9381	20	8916	19	8826	19
NZ European/Other	31281	66	30663	66	30534	66
Pacific peoples	12231	26	10524	23	10506	23
Total persons <sup>≈</sup>	47370	112	46626	108	46542	108

\* In 1991 Maori ethnicity was determined by ancestry, whereas in 1996 and 2001 Maori ethnicity was by self-definition.

<sup>≈</sup> Total percentage may not add up to 100% as people may belong to more than one ethnic group.

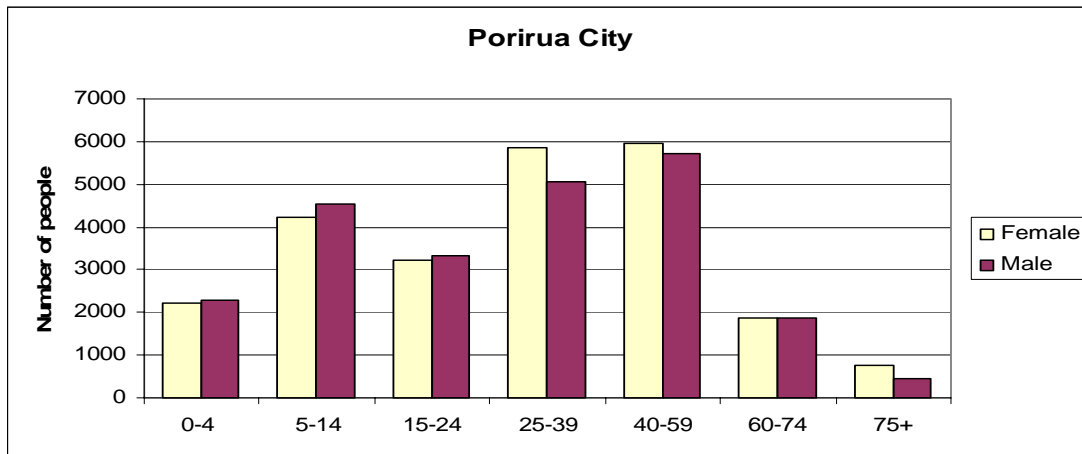
**Table 2: Porirua City - age composition**

Age Composition	2001 Census (%)	1996 Census (%)	1991 Census (%)
0-4	10	10	11
5-14	18	18	18
15-24	14	15	18
25-39	23	24	24
40-59	25	23	20
60-74	8	8	7
75+	3	2	2

**Table 3: Porirua City - household and personal income**

Income	2001 Census – number	2001 Census (%)
Households earning > \$30,000	7146	58
Personal incomes > \$30,000	10146	30
Average per capita personal income	\$27,368	

**Figure 1: Porirua City - age distribution by gender in 2001 Census**



### 3.2 Injury statistics

#### 3.2.1 NZHIS injury mortality 1993-1999

Between 1993 and 1999, 139 residents of Porirua City died as the result of receiving an injury. This is equivalent to a crude injury rate of 42 injury deaths per 100,000 person years. Males accounted for the majority (68%) of fatalities.

Figure two shows that the leading cause of injury deaths was suicide (32%). Motor vehicle crashes on a public road were the second leading cause of injury death (23%); followed by falls (19%); drowning (10%); and homicide (5%).

**Figure 2: Porirua City - leading causes of injury mortality 1993-1999**

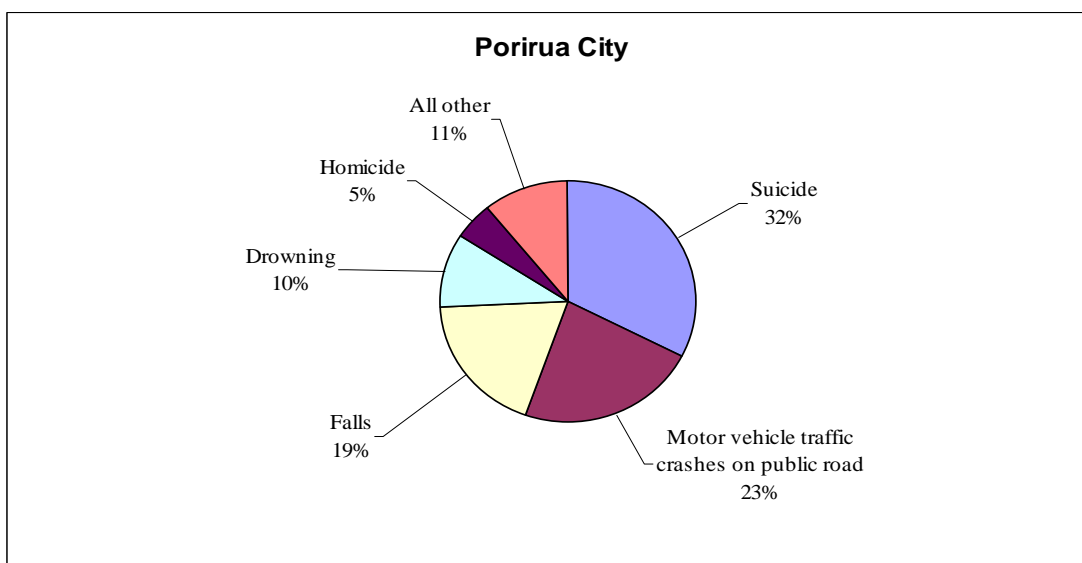
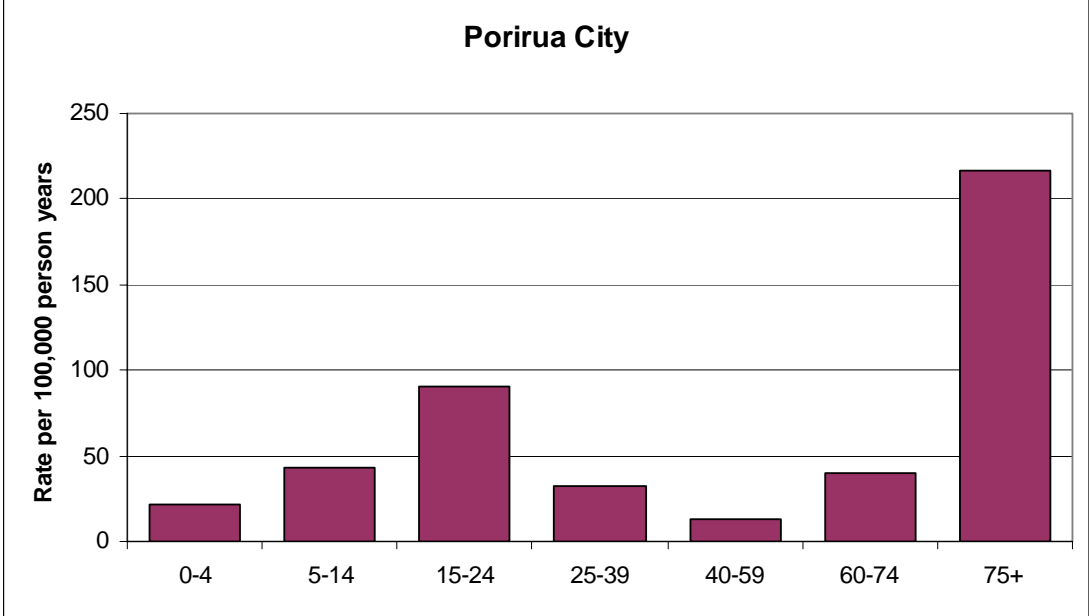


Figure three shows that the 75+ age group had the highest rate of injury death (217 deaths per 100,000 person years) followed by young people aged 15-24 years (90 deaths per 100,000 person years).

**Figure 3: Rates of injury death by age group, 1993-1999**



**3.2.1.1 Leading causes of injury death by age group**

Figure four shows that fire and flames (29%) and suffocation (29%) were the leading causes of injury death for 0-4 year age group. The other leading causes of injury deaths were falls (14%); homicide (14%); and motor vehicle traffic crashes on a public road (14%).

**Figure 4: Leading causes of injury mortality for 0-4 year olds, 1993-1999**

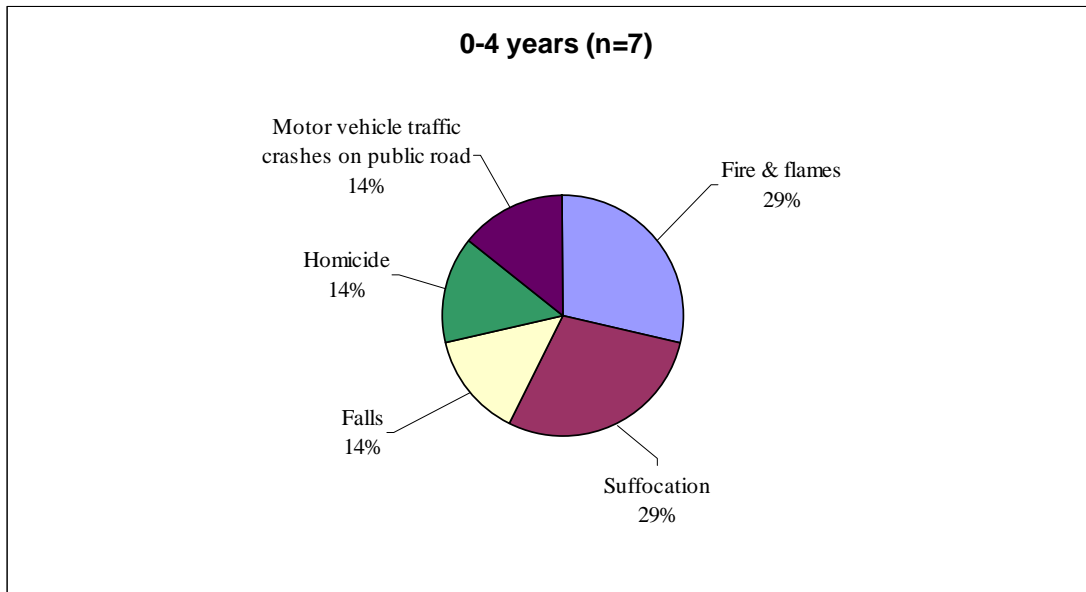
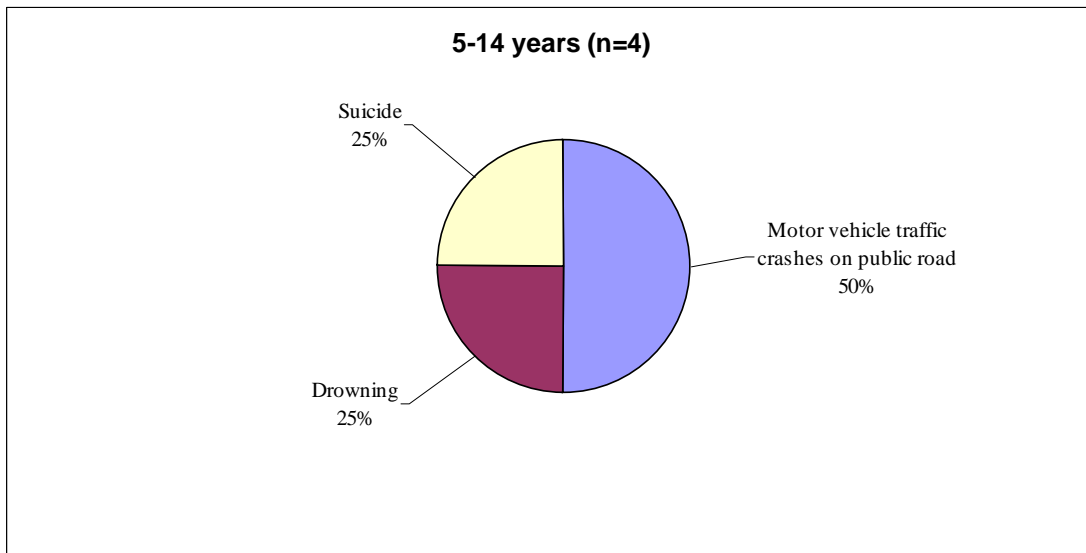


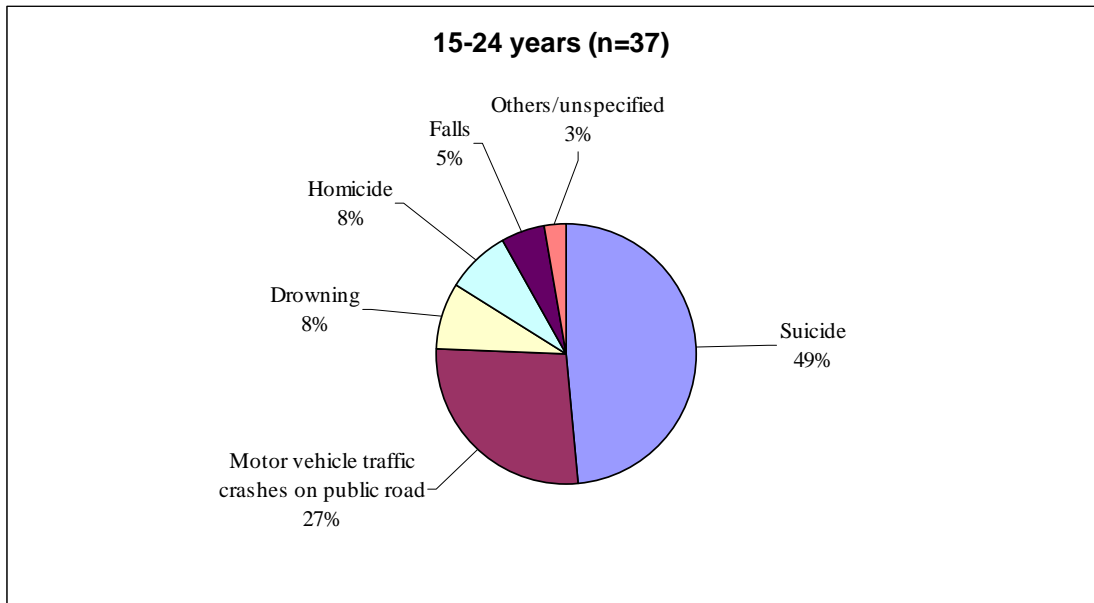
Figure five shows that in the 5-14 year age group, motor vehicle crashes on a public road were the leading cause of injury deaths (50%). Drowning accounted for 25% of the injury deaths; and suicide also accounted for 25% of the deaths.

**Figure 5: Leading causes of injury mortality for 5-14 year olds, 1993-1999**



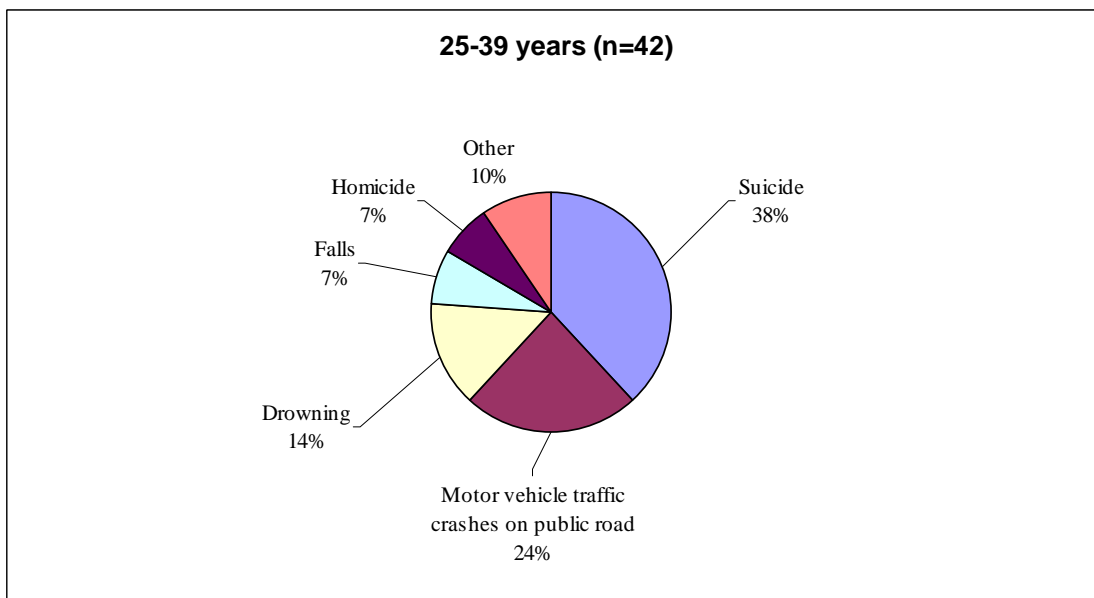
For 15-24 year olds, suicide was the leading cause of injury death (49%, figure six). Motor vehicle crashes on a public road accounted for over one-quarter (27%) of the deaths; 8% were the result of drowning; homicide accounted for 8% of injury deaths; and 5% of the fatalities were as a result of falls.

**Figure 6: Leading causes of injury mortality for 15-24 year olds, 1993-1999**



In the 25-39 age group, suicide accounted for more than one-third (38%) of the deaths (figure seven). Approximately one-quarter (24%) of the injury deaths were caused by motor vehicle crashes on a public road; 14% were the result of drowning; 7% of deaths were caused by falls; and 7% of the fatalities were as a result of homicide.

**Figure 7: Leading causes of injury death for 25-39 year olds, 1993-1999**



As shown in figure eight, in the 40-59 age group, suicide was the leading cause of injury death (31%). Motor vehicle crashes on a public road were the second leading cause of injury death (26%); followed by drowning (17%); and falls (13%).

**Figure 8: Leading causes of injury mortality for 40-59 year olds, 1993-1999**

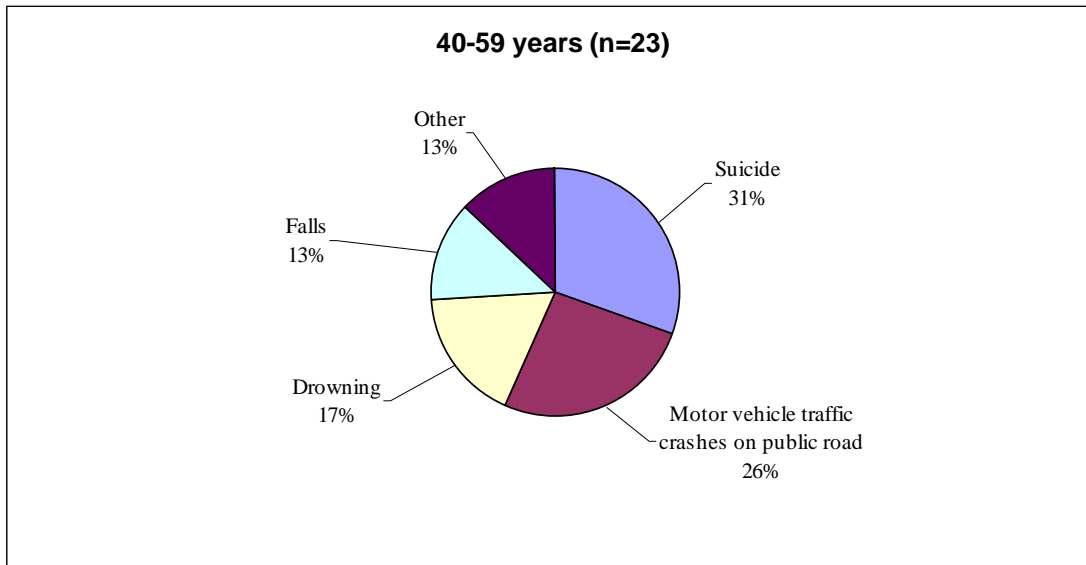
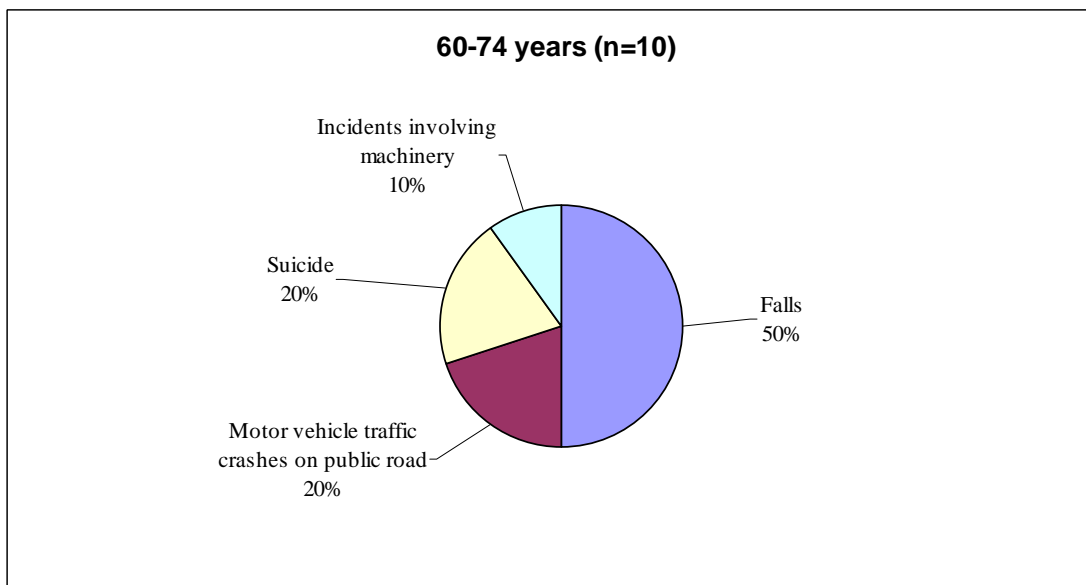


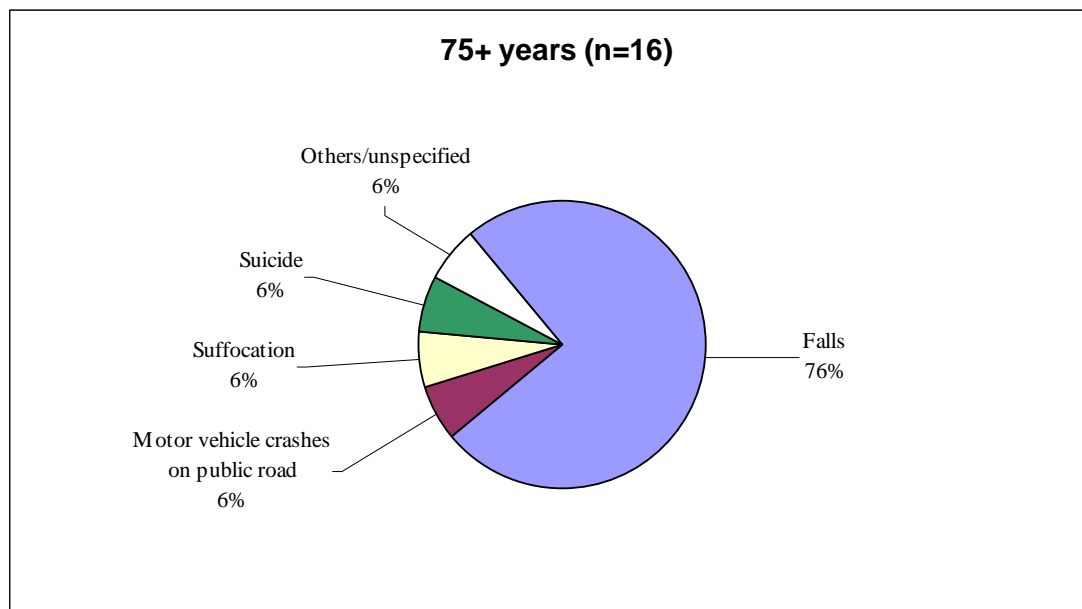
Figure nine shows that for people aged between 60-74 years of age, half (50%) of the deaths were the result of falls; motor vehicle crashes on a public road (20%); and suicide (20%), were the second leading causes of injury death; followed by incidents involving machinery (10%).

**Figure 9: Leading causes of injury death for 60-74 year olds, 1993-1999**



For older people aged 75+, over three-quarters (76%) of the deaths were the result of falls (Figure 10). The other leading causes of injury death were motor vehicle crashes on a public road (6%); suffocation (6%); and suicide (6%).

**Figure 10: Leading causes of injury mortality for 75+ year olds, 1993-1999**



### 3.2.1.2 Ethnic comparison

For the period 1996-1999, Maori had the highest age-standardised rate (69 deaths per 100,000 person years) of injury deaths, followed by Pacific (32 deaths per 100,000 person years), and New Zealand European/Other (29 deaths per 100,000 person years). Of the 75 people who died from injury, New Zealand European/Other accounted for the majority (52%), Maori accounted for 31%, and Pacific peoples accounted for 17%.

Figure 11 gives a breakdown of injury death rates by ethnicity and age group. The New Zealand European/Other ethnic groups had the highest injury death rates (276 deaths per 100,000 person years) in the older age groups (75+). Pacific peoples also had the highest rate (249 deaths per 100,000 person years) of injury death for age group 75+ years.

**Figure 11: Injury mortality rates by ethnicity and age group for Porirua City, 1996-1999**

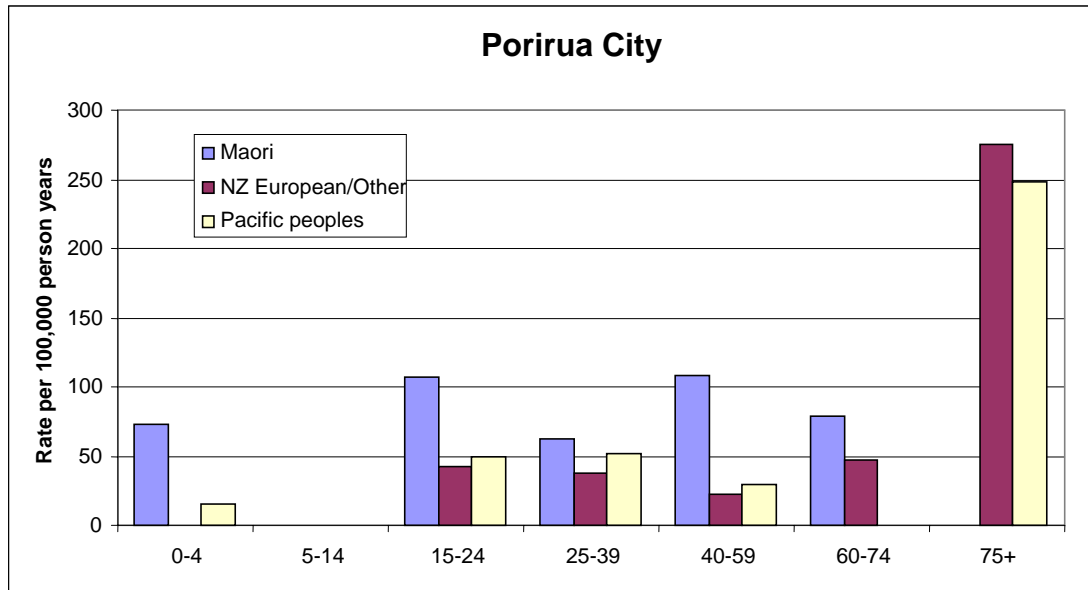


Table four shows that suicide/deliberate self-harm was the leading cause of injury deaths for Maori (39%) and New Zealand European/Other (38%). Drowning was the leading cause of injury deaths for Pacific peoples (38%).

**Table 4: Ethnic comparison of leading causes of injury mortalities, 1996-1999**

Maori (n=23)		NZ European/Other (n=39)		Pacific peoples (n=13)	
Cause	%	Cause	%	Cause	%
Suicide	39	Suicide	38	Drowning	38
Falls	17	Falls	28	Suffocation	15
Drowning	9	Motor vehicle crashes on public road	18	Others/unspecified	15
Fire & flames	9	Drowning	10	Suicide	15
Homicide	9	Homicide	3	Falls	8

### 3.2.1.3 Comparison by Ward

The Ward comparison in figure 12 shows that Western Ward had the highest rate of injury death, while Northern Ward had the lowest.

**Figure 12: Age-standardised Injury mortality rates by Ward for Porirua City, 1993-1999**

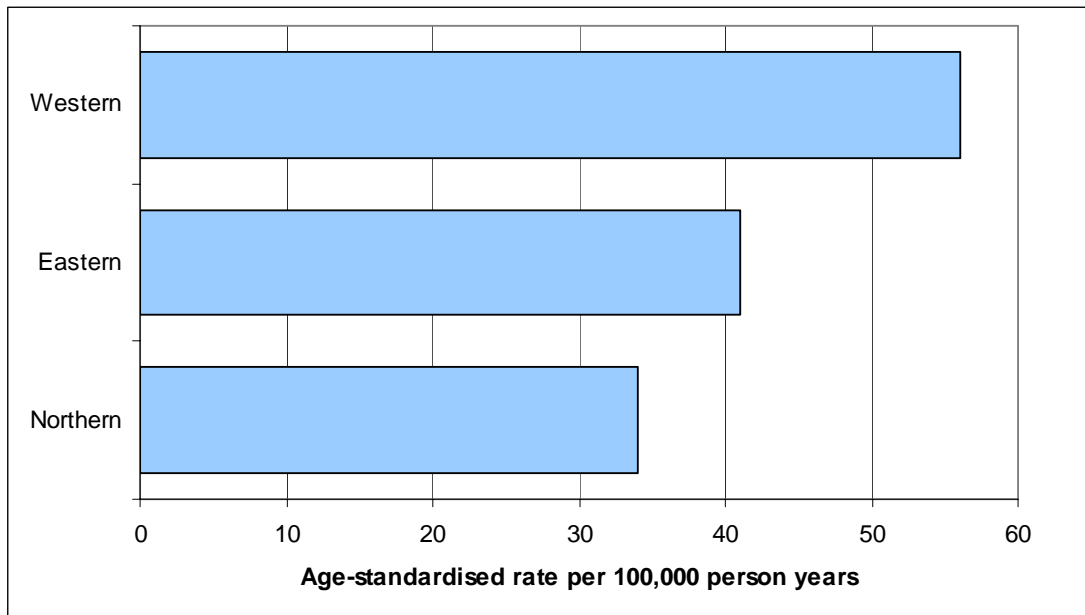
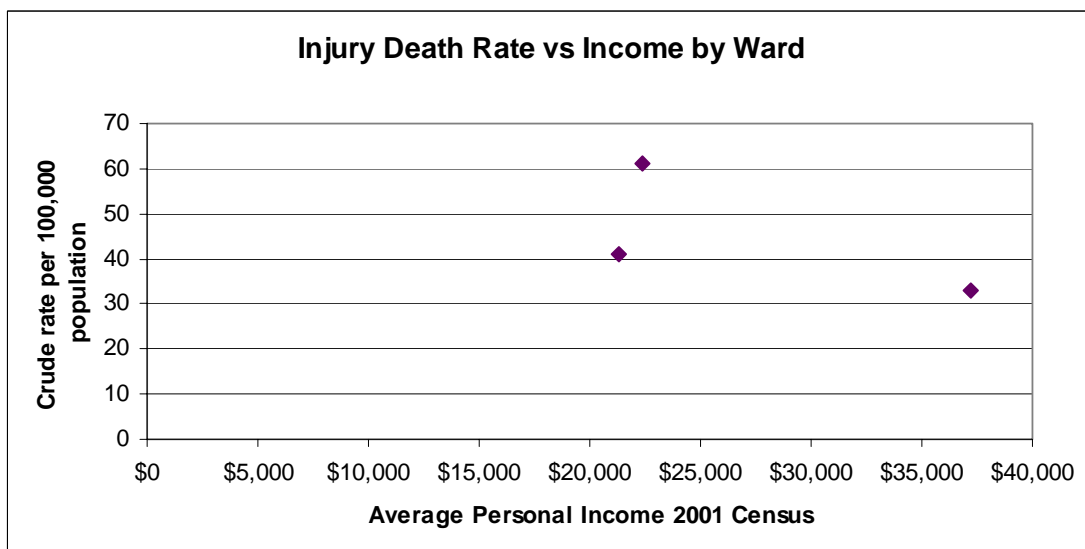


Figure 13 shows a plot of the crude injury mortality rate for each Ward, graphed against the average personal income for each Ward. The graph shows that there was no obvious trend in the relationship between the crude injury mortality rate and the average personal income. Note that the plot should be interpreted with caution, as there are only three points in the graph.

**Figure 13: Relationship between injury death rate and income on a Ward basis**

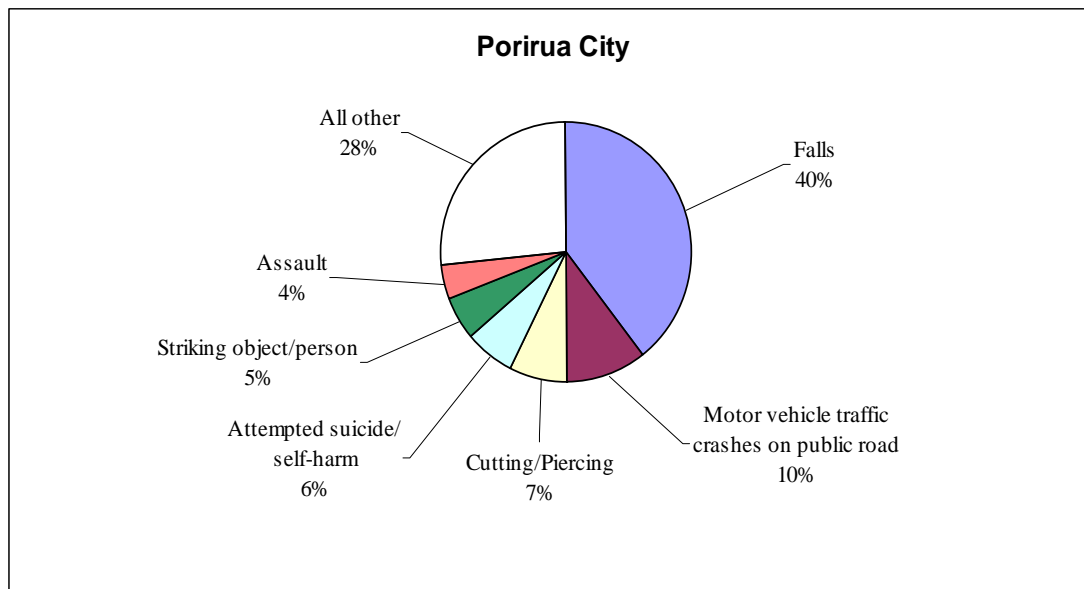


### 3.2.2 NZHIS injury hospitalisation 1993-2003

Between 1993 and 2003, 5,293 residents of Porirua City were hospitalised for injury. The crude injury hospitalisation rate during this period was 1,020 injury hospitalisations per 100,000 person years. Males accounted for over half (61%) of the injury hospitalisations.

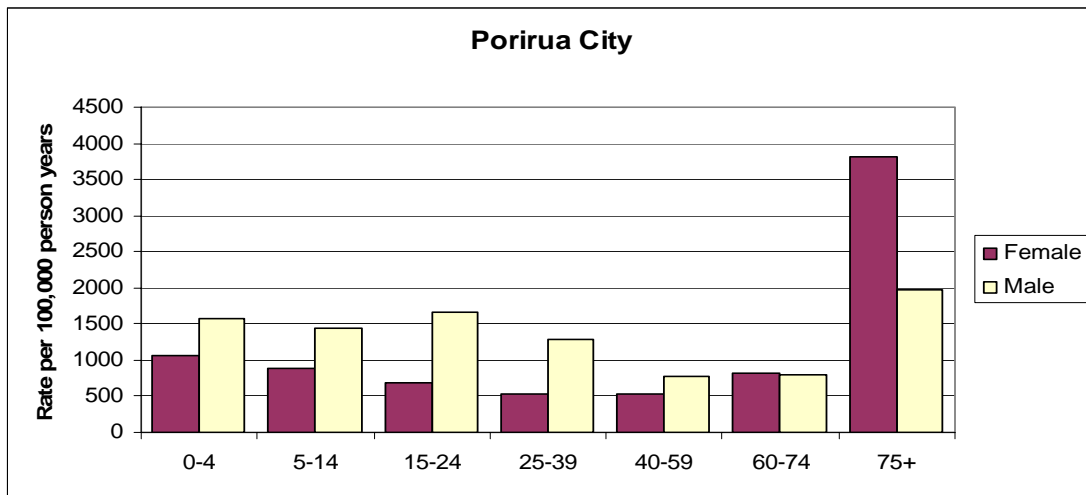
Figure 14 shows that the leading cause of injury hospitalisation was falls (40%). The other leading causes of injury were motor vehicle traffic crashes on a public road (10%); cutting and piercing (7%); attempted suicide/deliberate self-harm (6%); striking an object or person (5%); and assault (4%).

**Figure 14: Porirua City - leading causes of injury hospitalisation 1993-2003**



As shown by figure 15, for females, the 75+ age group had the highest rates (3,817 hospitalisations per 100,000 person years) of injury hospitalisation, followed by pre-school children aged 0-4 years (1,058 hospitalisations per 100,000 person years). For males, the 75+ age group had the highest rates (1,977 hospitalisations per 100,000 person years) of injury hospitalisation, followed by young people aged 15-24 years (1,670 hospitalisations per 100,000 person years). Males had higher rates of injury across all age groups below the age of 60.

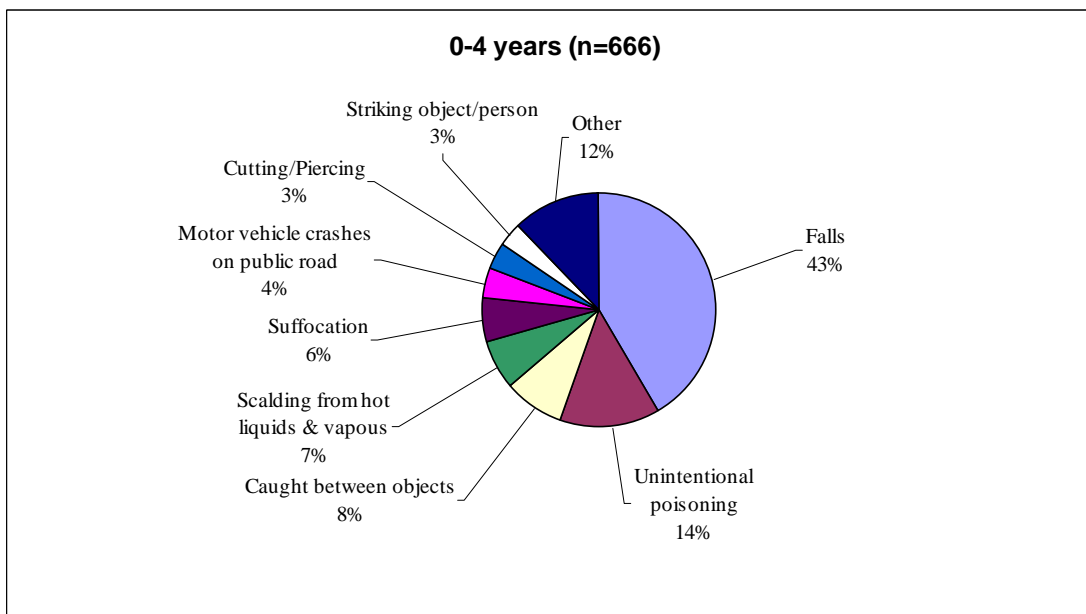
**Figure 15: Rates of injury hospitalisation by age and gender, 1993-2003**



### 3.2.2.1 Leading causes of injury hospitalisation by age group

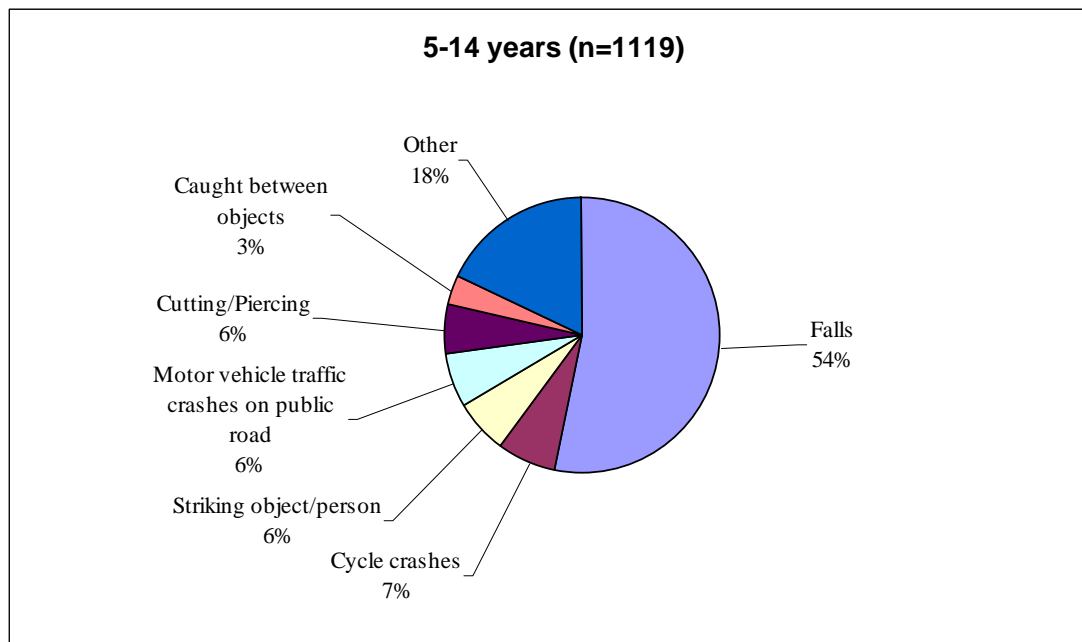
Figure 16 shows that for 0-4 year olds, falls were the leading cause of injury hospitalisation, accounting for 43%. The other leading causes of injury were unintentional poisoning (14%); caught between objects (8%); scalding from hot liquids and vapours (7%); suffocation (6%); motor vehicle crashes on a public road (4%); cutting and piercing (3%); and striking an object or person (3%).

**Figure 16: Leading causes of injury hospitalisation for 0-4 year olds, 1993-2003**



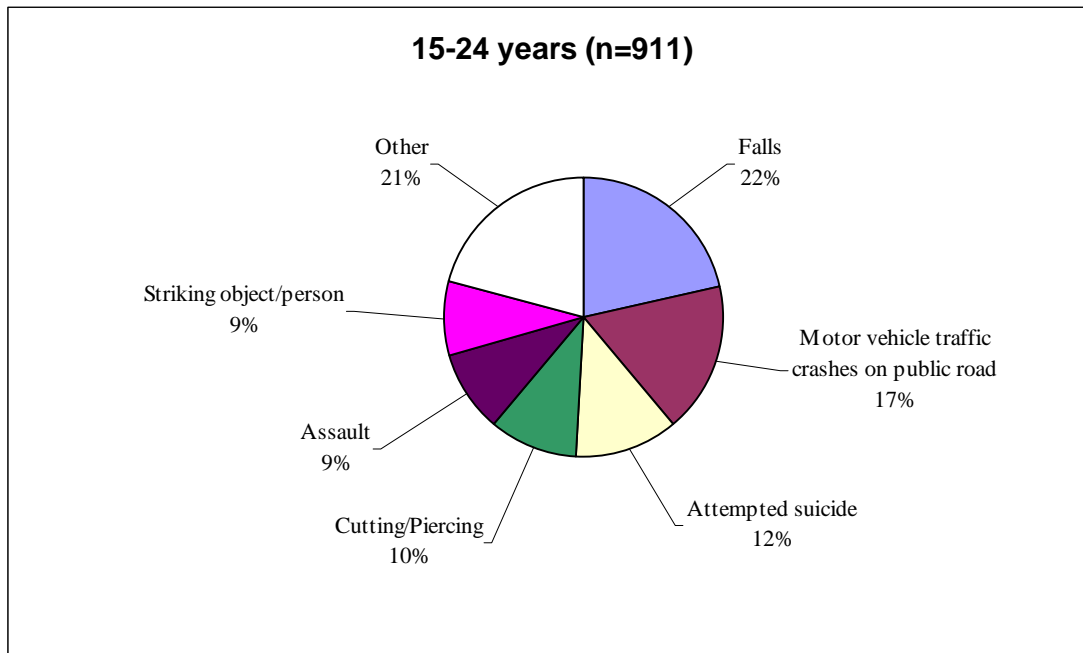
For 5-14 year olds, falls accounted for more than half (54%) of the injury hospitalisations (figure 17). The other leading causes were cycle crashes (7%); striking an object or person (6%); motor vehicle crashes on a public road (6%); cutting and piercing (6%); and caught between objects (3%).

**Figure 17: Leading causes of injury hospitalisation for 5-14 year olds, 1993-2003**



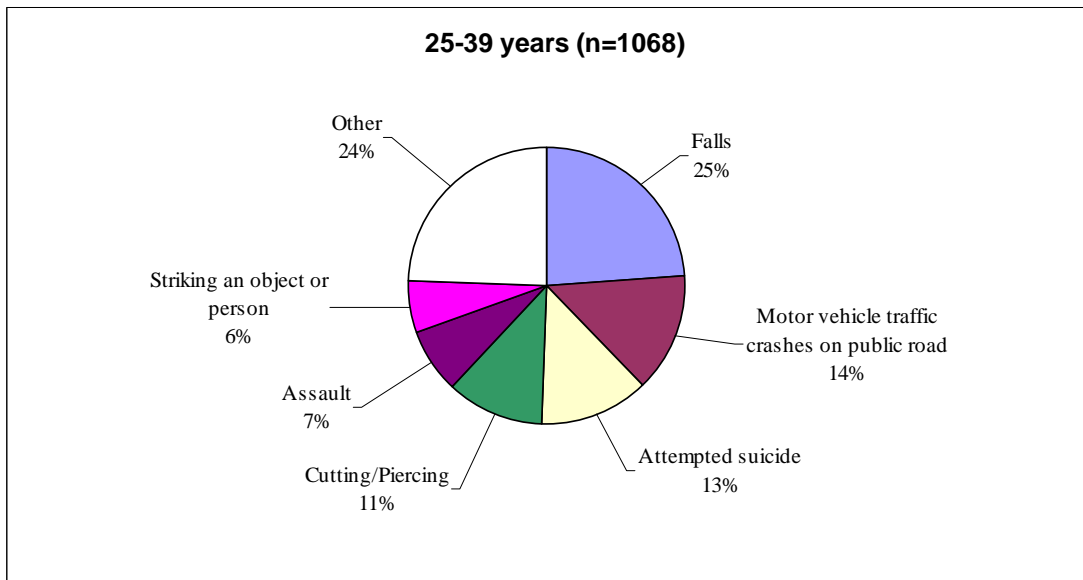
For 15-24 year olds, falls were the leading cause of injury hospitalisation (22%), followed by motor vehicle crashes on a public road (17%; figure 18). The other leading causes were attempted suicide (12%); cutting and piercing (10%); assault (9%); and striking a person or object (9%).

**Figure 18: Leading causes of injury hospitalisation for 15-24 year olds, 1993-2003**



For 25-39 year olds, falls (23%) were the leading cause of injury hospitalisation (figure 19). The other leading causes were motor vehicle crashes on a public road (14%); attempted suicide (13%); cutting and piercing (11%); assault (7%); and striking a person or object (6%).

**Figure 19: Leading causes of injury hospitalisation for 25-39 year olds, 1993-2003**



For 40-59 year olds, falls (30%) were the leading cause of injury hospitalisation (figure 20). The other leading causes were motor vehicle crashes on a public road (12%); cutting and piercing (9%); attempted suicide (9%); assault (6%); and overexertion and strenuous movements (5%).

**Figure 20: Leading causes of injury hospitalisation for 40-59 year olds, 1993-2003**

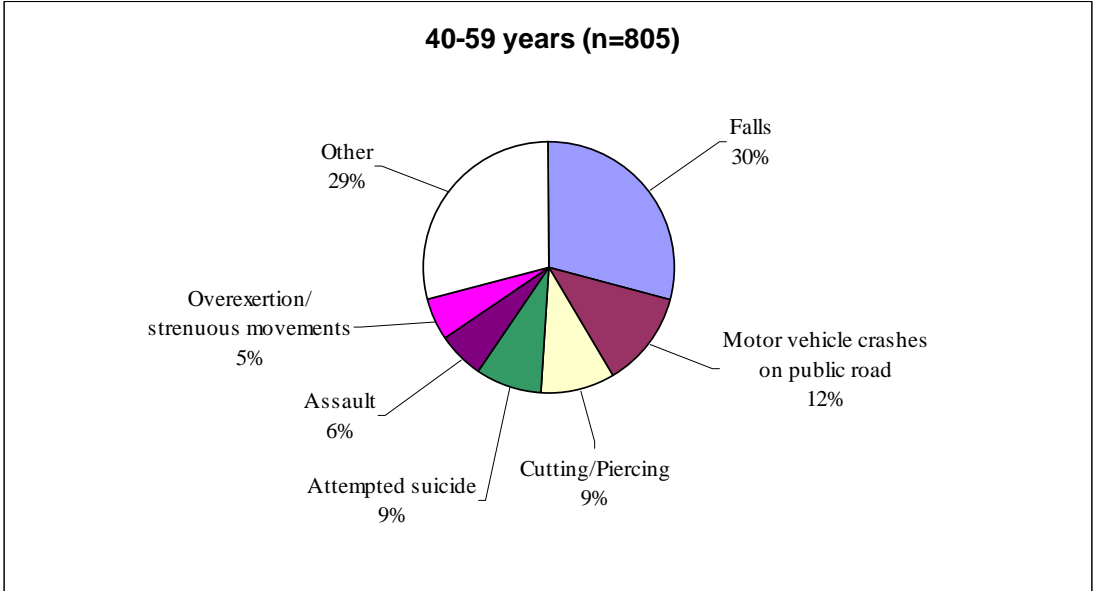
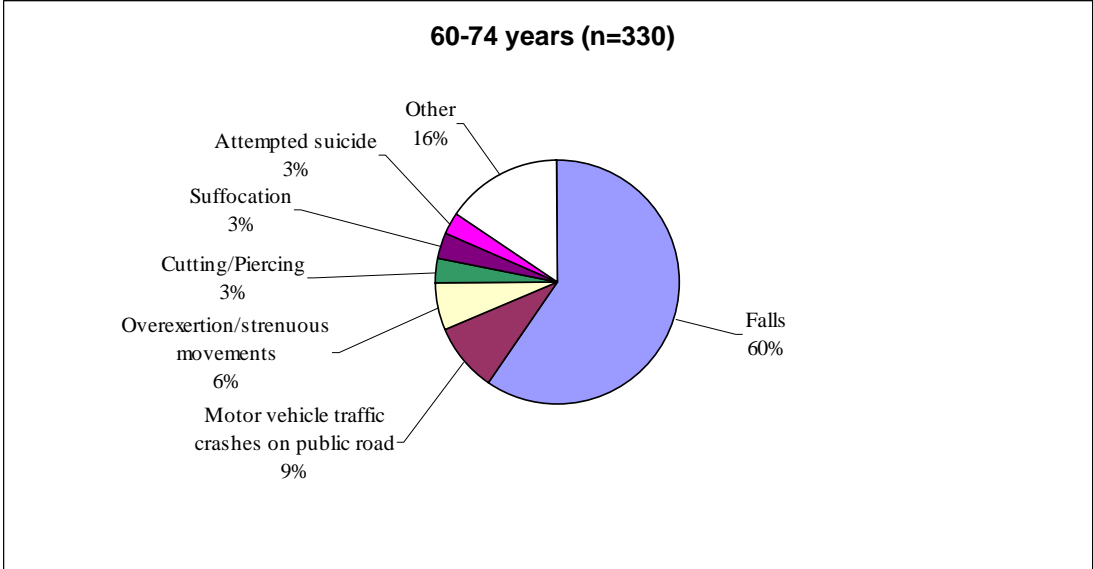


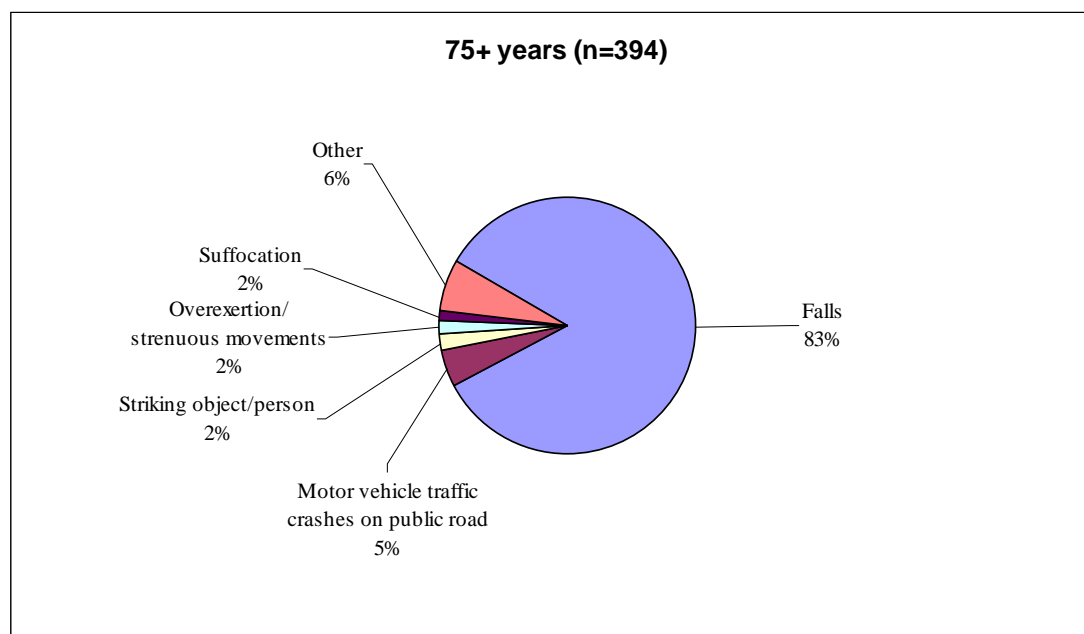
Figure 21 shows that for 60-74 year olds, falls were the leading cause of injury hospitalisation, accounted for 60% of the injuries. The other leading causes were motor vehicle crashes on a public road (9%); overexertion and strenuous movements (6%); cutting and piercing (3%); suffocation (3%); and attempted suicide (4%).

**Figure 21: Leading causes of injury hospitalisation for 60-74 year olds, 1993-2003**



For 75+ year olds, falls (83%) were the leading cause of injury hospitalisation (figure 22). The other leading causes were motor vehicle crashes on a public road (5%); striking an object or person (2%); overexertion and strenuous movement (2%); and suffocation (2%).

**Figure 22: Leading causes of injury hospitalisation for 75+ year olds, 1993-2003**



### 3.2.2.2 Ethnic comparison

For the period 2001-2003, Maori had the highest age-standardised rate of hospitalised injuries (963 per 100,000 person years), followed by Pacific peoples (805 per 100,000 person years), and New Zealand European/Other (671 per 100,000 person years). New Zealand European/Other accounted for over half (53%) of the injury hospitalisations, Pacific peoples accounted for 25%, and Maori accounted for 22%.

Figure 23 gives a breakdown of injury hospitalisation rates by ethnicity and age group. The New Zealand European/Other ethnic group had the highest injury rate (3,721 hospitalisations per 100,000 person years) in the older age group (75+). Similarly for Maori, those aged 75+ years tended to have the highest rate (1,495 hospitalisations per 100,000 person years) of injury. Pacific peoples aged 75+ years also had the highest rate (1,094 hospitalisations per 100,000 person years) of injury hospitalisation.

**Figure 23: Injury hospitalisation rates by ethnicity and age group for Porirua City, 2001-2003**

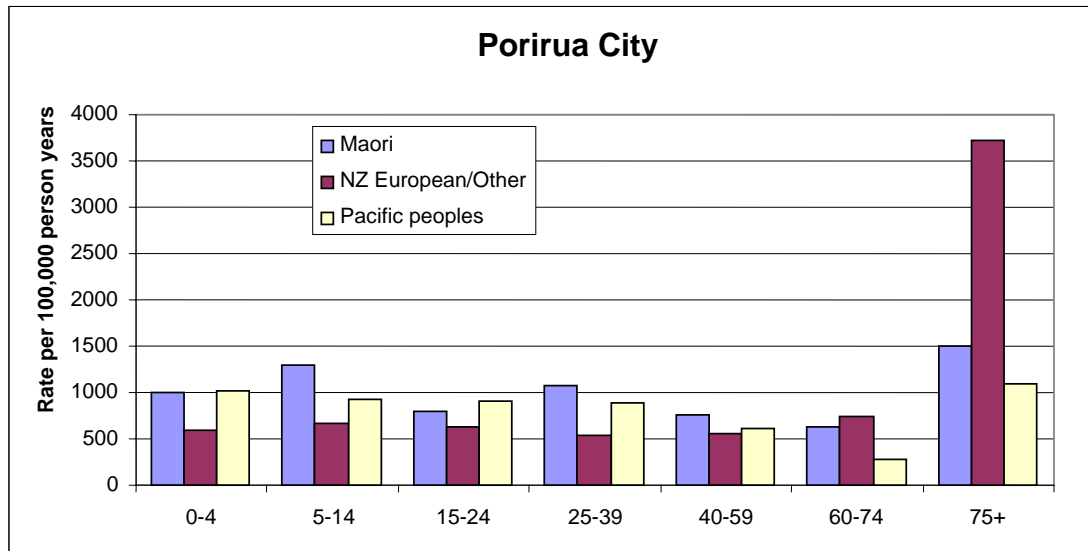


Table five shows that the leading causes of injury hospitalisation during the period 2001-2003 were similar across all ethnic groups. However, a higher percentage of New Zealand European/Other were injured by falls (42%) compared to the other ethnic groups, and Maori had a higher proportion of injuries caused by cutting and piercing (11%). Injuries caused by caught between objects only featured as a leading cause of injury for Pacific peoples (7%).

**Table 5: Ethnic comparison of leading causes of injury hospitalisation, 2001-2003**

<b>Maori (n=287)</b>		<b>NZ European/Other (n=676)</b>		<b>Pacific peoples (n=315)</b>	
<b>Cause</b>	<b>%</b>	<b>Cause</b>	<b>%</b>	<b>Cause</b>	<b>%</b>
Falls	33	Falls	42	Falls	34
Cutting/Piercing	11	Motor vehicle crashes on public road	8	Cutting/Piercing	10
Motor vehicle crashes on public road	8	Others/unspecified	6	Caught between objects	7
Others/unspecified	7	Cutting/Piercing	5	Others/unspecified	7
Attempted suicide/self-harm	6	Attempted suicide/self-harm	5	Motor vehicle crashes on public road	6

### 3.2.2.3 Comparison by Ward

The comparison of Ward rates in figure 24 shows that Western Ward had the highest rate of injury hospitalisation, while Northern Ward had the lowest.

**Figure 24: Age-standardised injury hospitalisation rates by Ward for Porirua City, 1993-2003**

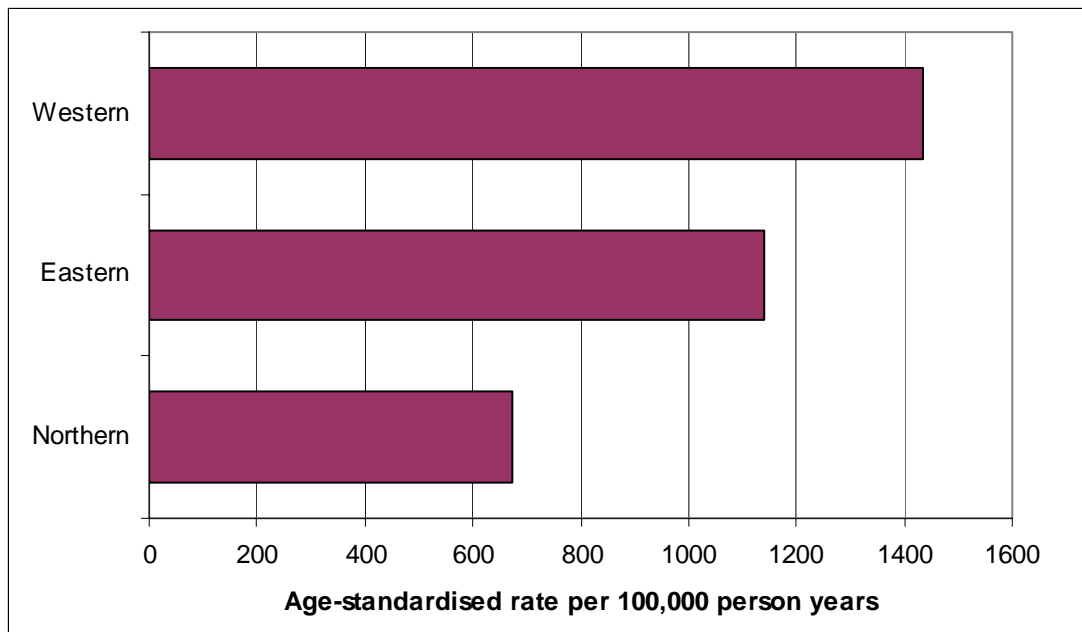
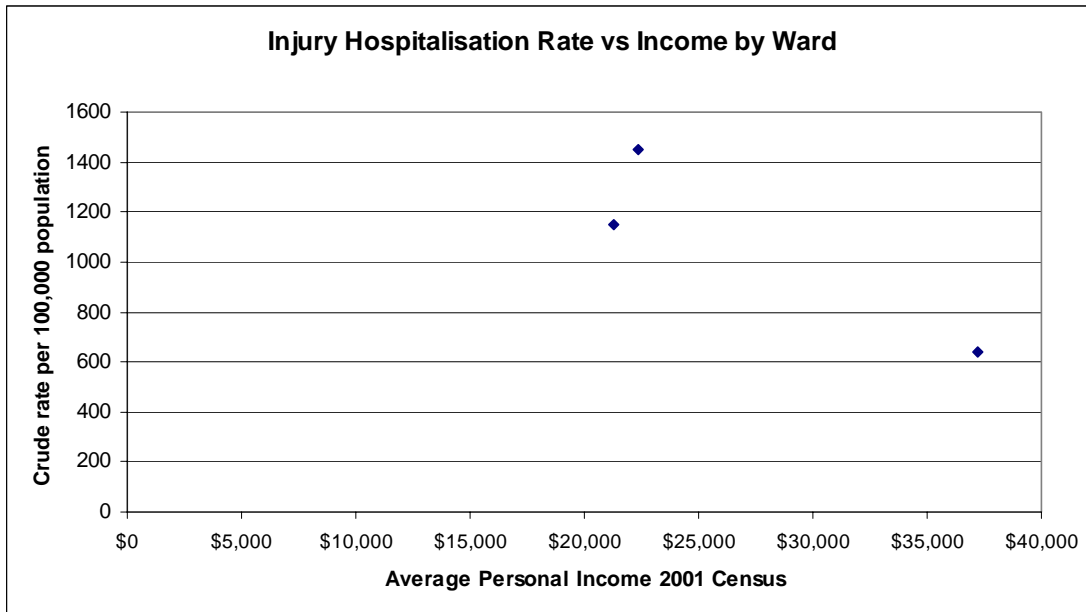


Figure 25 shows a plot of the crude injury hospitalisation rate for each Ward, graphed against the average personal income for each Ward. The graph shows that there was no obvious trend in the relationship between the crude injury hospitalisation rate and the average personal income. Note that the plot should be interpreted with caution, as there are only three points in the graph.

**Figure 25: Relationship between injury hospitalisation rate and income on a Ward basis**



### **3.3 ACC injury statistics**

The information in this section is taken from an ACC analysis of entitlement claims and injury deaths for residents of the Porirua City community. It should be noted that the number of entitlement claims will be less than the total number of injury claims made to ACC, as entitlement claims only exist for cases where some form of compensation is paid directly to the injured person.

As shown in figure 26, the total cost of new and ongoing entitlement claims in Porirua City fluctuated between \$13.7 million and \$15.6 million during the 1994/95 and 1998/99 period, then decreased in the subsequent years to \$9.6 million in 2002/03.

**Figure 26: Costs of new and ongoing entitlement claims in Porirua City, 1994/5-2003/4**

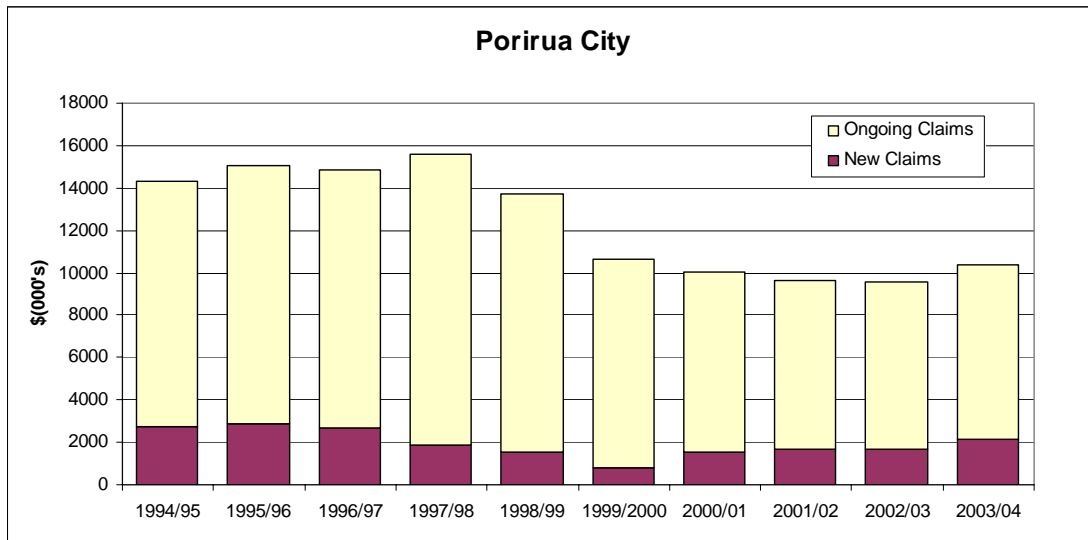


Figure 27 shows that the number of fatal claims in Porirua City decreased from nine claims in 1994/95 to four claims in 1997/98. The number of fatal claims then fluctuated during the 1998/99 and 2003/4 period with the lowest of four claims in 1999/2000 and the maximum of 11 claims in 2003/04.

**Figure 27: Fatal claims occurring in Porirua City, 1994/5 – 2002/3**

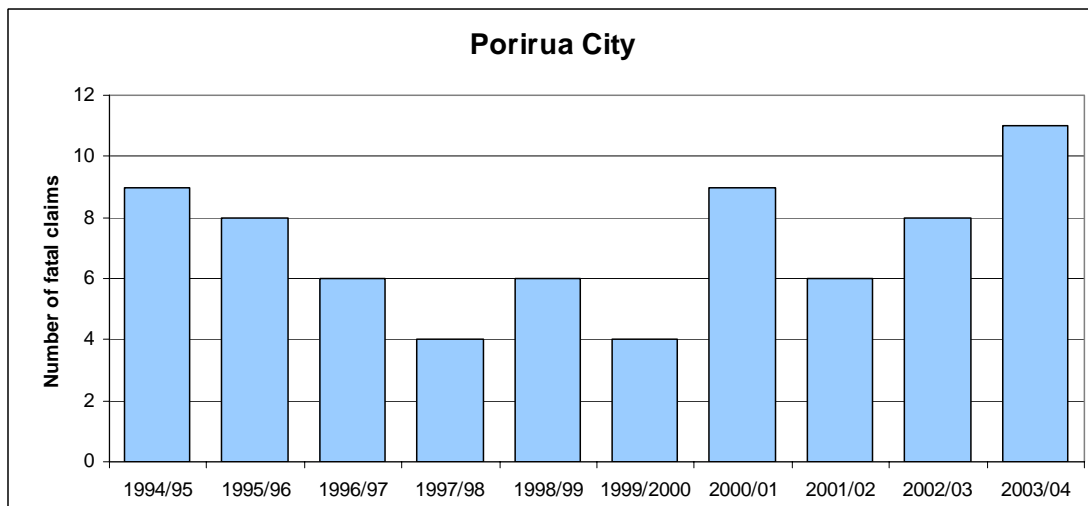


Figure 28 shows that injuries occurring at home accounted for approximately one-third (33%) of new entitlement claims registered with ACC in 2002/03. Injuries happened at a place for recreation or sports accounted for 19% of claims, injuries occurred at an industrial place accounted for 15% of claims, and injuries occurred at a commercial or service location accounted for 11% of new entitlement claims.

**Figure 28: New entitlement claims registered with ACC in 2002/03 by scene of injury, Porirua City**

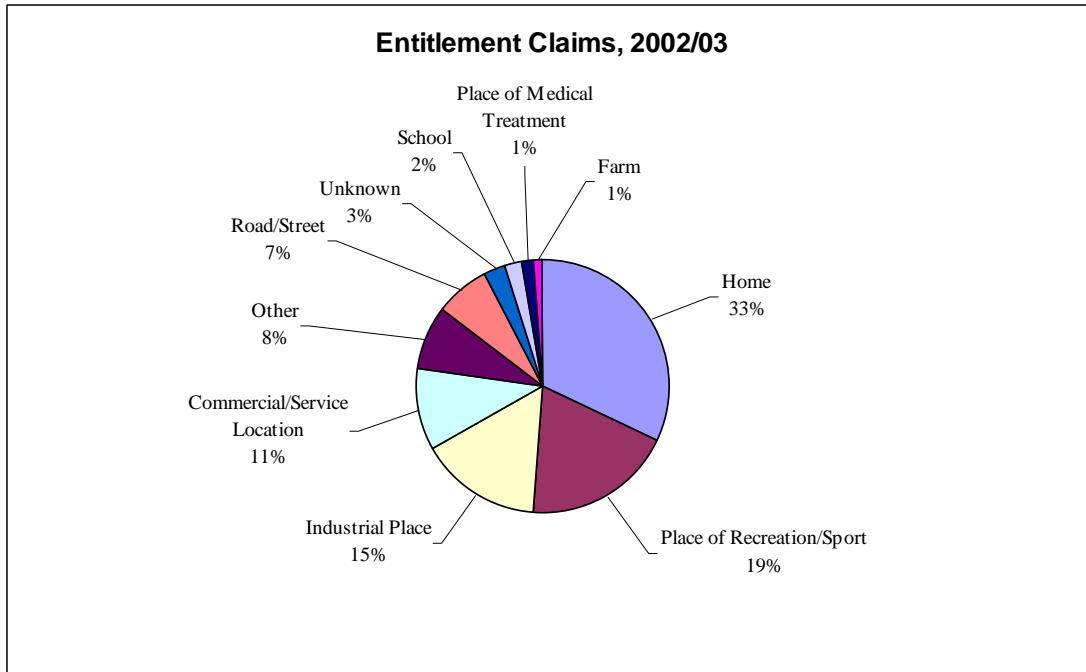
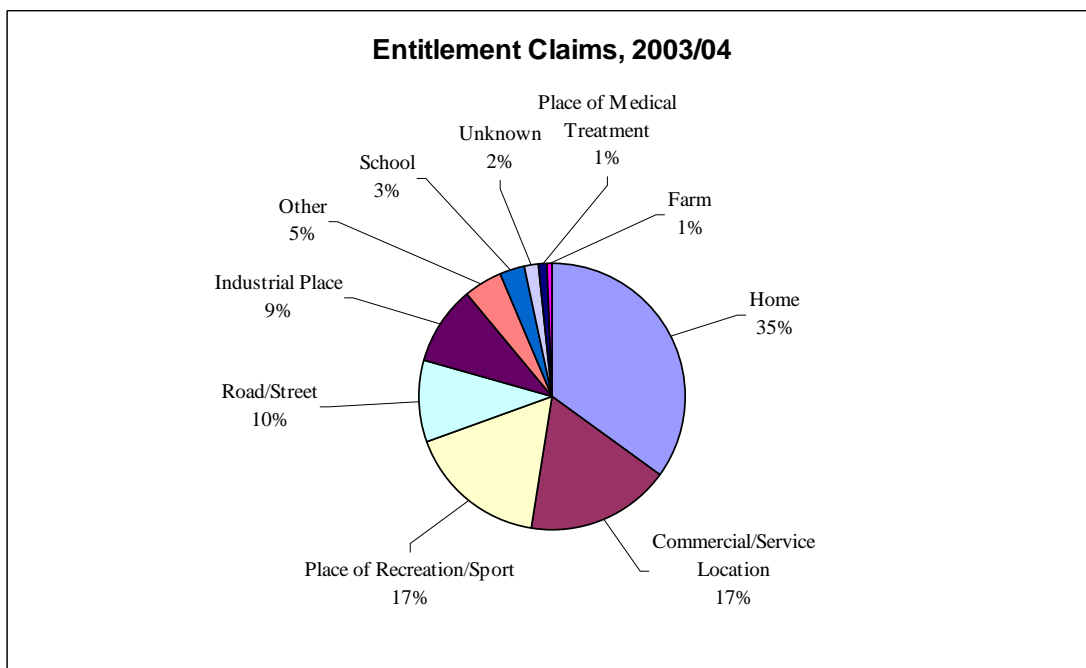


Figure 29 shows that injuries occurring at home accounted for just over one-third (35%) of entitlement claims registered with ACC in 2003/04. Injuries that occurred at a commercial or service location accounted for 17% of claims, injuries at a place for recreation or sport accounted for 17% of claims, and road or street injuries accounted for 10% of new entitlement claims.

**Figure 29: New entitlement claims registered with ACC in 2003/04 by scene of injury, Porirua City**



A breakdown of entitlement claims by diagnosis shows that soft tissue injuries accounted for 50% of all claims (figure 30). Fractures and dislocations accounted for nearly one-quarter (23%) of claims, and lacerations/punctures accounted for 11% of the claims.

**Figure 30: Diagnosis of entitlement claims registered with ACC in 2003/04, Porirua City**

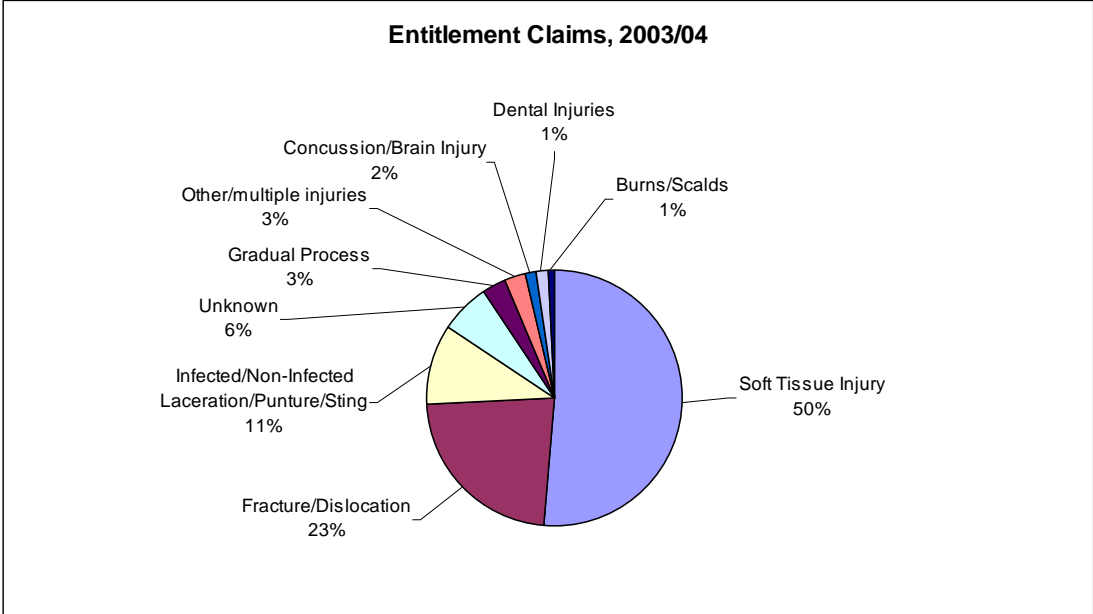
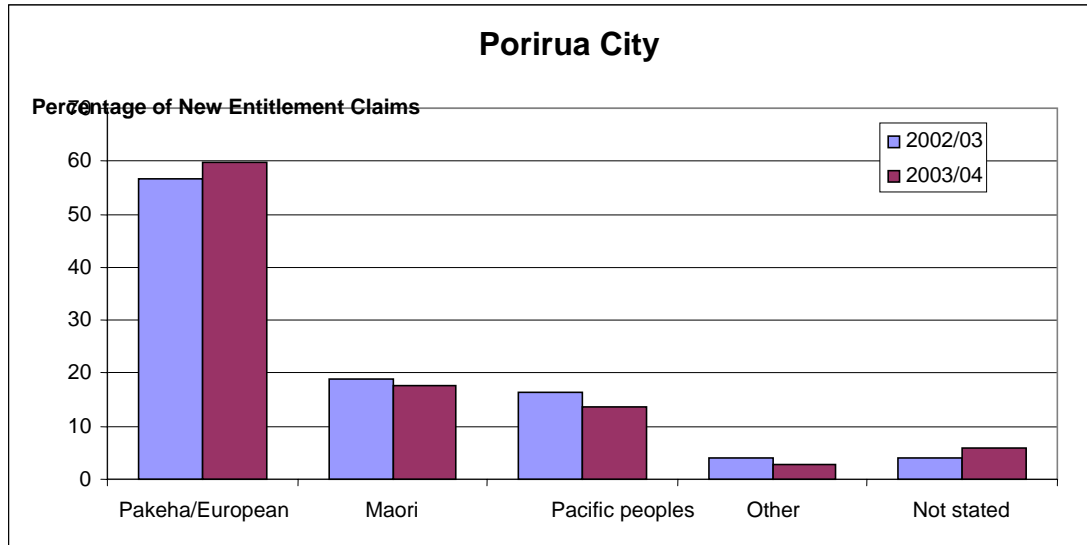


Figure 31 shows that New Zealand European had the highest percentage of new entitlement claims registered with ACC in both 2002/03 (57%) and 2003/04 (60%) in Porirua City. In 2003/04, Maori accounted for 18% new entitlement claims and Pacific peoples accounted for 14% of the new entitlement claims. Overall, the percentage of new entitlement claims in 2002/3 and 2003/4 were similar across all ethnic groups.

**Figure 31: New entitlement claims by ethnicity registered with ACC in 2002/03 and 2003/04, Porirua City**



### 3.4 LTSA road injury statistics

The figures quoted in this section are taken from Motor vehicle crashes in New Zealand 2002 (LTSA, 2003), Road Safety Atlas (LTSA, 1996), and 1997/98 Travel Survey Report (LTSA, 2000). It should be noted that not all motor vehicle crashes are reported to the Police; therefore LTSA figures underestimate the burden of injury due to motor vehicle crashes in New Zealand.

In 2002, Porirua City had a crash rate of 15.5 crashes per 10,000 population, and a casualty rate of 20.7 per 10,000 population. As shown in table six, in 2002 there were 297 road traffic crashes in Porirua, resulting in 75 casualties.

**Table 6: Reported road traffic crashes and casualties in Porirua City, 2002**

Type of injury	Number of crashes	Number of injuries
Fatalities	2	3
Serious injuries	73	23
Minor injuries		77
Total	75	103

The social cost of road injury in Porirua City is \$35 million dollars/year, which is equivalent to a per capita social cost of \$857/person/year (table seven). The per capita social cost for Porirua City was higher when compared with Wellington Region

and the whole of New Zealand, and Porirua City also had the highest social cost per road km.

**Table 7: Measures of road safety**

Other road safety measures	Porirua City	Wellington Region	New Zealand
Per capita social cost (\$/person/year)	857	677	840
Social cost per road km (\$000/km/yr)	140	60	33

As defined by the Road Safety Atlas (LTSA, 1996), risk ratios for causal factors in road crashes are calculated as the social cost per unit of traffic volume and are a useful tool for measuring and comparing the contribution of causal factors to road traffic injury.

As can be seen from table eight, Porirua City has lower risk-ratios for ‘Alcohol and speed combined’ and ‘Speed’ factors compared to the whole of New Zealand and Wellington Region. However Porirua City has higher risk-ratios for ‘Alcohol’ and ‘Driver-not speed or alcohol’ factors than Wellington Region and the whole of New Zealand. The risk ratio of ‘non-driver factor’ for Porirua city was higher than Wellington Region but lower than the whole of New Zealand.

**Table 8: Risk ratios for driver factors**

Risk –Driver factors (cents/veh-km)	Porirua City	Wellington Region	New Zealand
Alcohol	2.16	1.03	1.68
Alcohol and speed combined	0.51	0.80	1.29
Speed	1.04	1.12	1.48
Driver -not speed or alcohol eg. Overtaking, failure to give way, tiredness	4.59	3.62	3.94
Non driver factor	1.42	1.18	1.45
All causes	9.72	7.74	9.84

Table nine shows that the risk-ratios for pedestrian involvement and cyclist involvement in Porirua City were higher compared to Wellington Region and the whole of New Zealand. The risk-ratio for no pedestrian or cyclist involved in Porirua City was higher than the risk-ratio for the Wellington Region but slightly lower than the whole of New Zealand. The cyclist involvement in Porirua City was lower than Wellington Region and the whole of New Zealand.

**Table 9: Risk ratios for pedestrian and cyclist factors**

Risk –pedestrian and cyclist factors (cents/veh-km)	Porirua City	Wellington Region	New Zealand
No pedestrian or cyclist involved	8.31	6.54	8.78
Pedestrian involvement	1.28	0.88	0.78
Cyclist involvement	0.12	0.32	0.28
All causes	9.72	7.74	9.84

As shown in table 10, the risk-ratio for road factor involved e.g. slippery surface, obstructions, and road works in Porirua City were higher than the risk-ratio for the Wellington Region but lower than the whole of New Zealand. The risk-ratio for non-road factor in Porirua City was higher than the risk-ratio for Wellington Region and the whole of New Zealand.

**Table 10: Risk ratios for road factors**

Risk - road factors (cents/veh-km)	Porirua City	Wellington Region	New Zealand
Non road factor	8.96	7.20	8.84
Road factor involved eg slippery surface, obstructions, road works	0.76	0.54	1.00
All causes	9.72	7.74	9.84

Table 11 shows that the risk-ratios for non-vehicle factor and vehicle factor involved e.g. faulty brakes, worn tyres, and punctures in Porirua City were higher than the risk-ratios for Wellington Region but slightly lower than the whole of New Zealand.

**Table 11: Risk ratios for vehicle factors**

Risk – vehicle factors (cents/veh-km)	Porirua City	Wellington Region	New Zealand
Non vehicle factor	9.12	7.31	9.20
Vehicle factor involved eg faulty brakes, worn tyres, punctures	0.60	0.43	0.64
All causes	9.72	7.74	9.84

Overall, these risk ratios indicate that driver factors contribute the greatest amount of risk for motor vehicle crashes occurring in the Porirua City.

Table 12 shows the results of a restraint usage survey published in Motor Vehicle Crashes in New Zealand 2002 (LTSA, 2003). The figures show that the use of restraints by adults and the rate of cycle helmet wearing were higher in Wellington

Region compared to the whole of New Zealand. There was no information available for Porirua City.

**Table 12: Restraint usage, March-April 2002 and November/December 2002**

Restraint Usage	Wellington Region (%)	New Zealand (%)
Front seat adults	93	92
Rear seat adults	84	80
Child restraints	82	86
Cycle helmet wearing	92	89

The regional figures in table 13 are obtained from the 1997/98 Travel Survey Report (LTSA, 2000) and show that the travel habits of Wellington Region residents were similar to the whole of New Zealand except the percentages of travelling distances for pedestrian and bus in Wellington Region were slightly higher compared to the whole of New Zealand. The travelling distances for driver in Wellington Region were however slightly lower than the whole of New Zealand.

**Table 13: Travelling distances for motorists in Wellington Region and New Zealand 1997/98**

Millions of trips per year (as a percentage of total)	Wellington Region (%)	New Zealand (%)
Driver	42.9	49.8
Passenger	24.3	26.6
Cyclist	2.0	1.9
Pedestrian	27.5	19.4
Bus	3.2	2.3

## 4.0 Eastern Ward

### 4.1 Demographics

This section provides information relating to population, age, ethnicity and income for the Eastern Ward.

**Table 14: Eastern Ward- usually resident population**

Population*	2001 Census	%	1996 Census	%	1991 Census	%
Maori	4680	25	4467	24	5196	26
NZ European/Other	7059	37	7137	38	7551	38
Pacific peoples	10125	53	8589	46	8964	45
Total Persons <sup>~</sup>	19008	115	18855	108	19800	109

\* In 1991 Maori ethnicity was determined by ancestry, whereas in 1996 and 2001 Maori ethnicity was by self-definition.

<sup>~</sup> Total percentage may not add up to 100% as people may belong to more than one ethnic group.

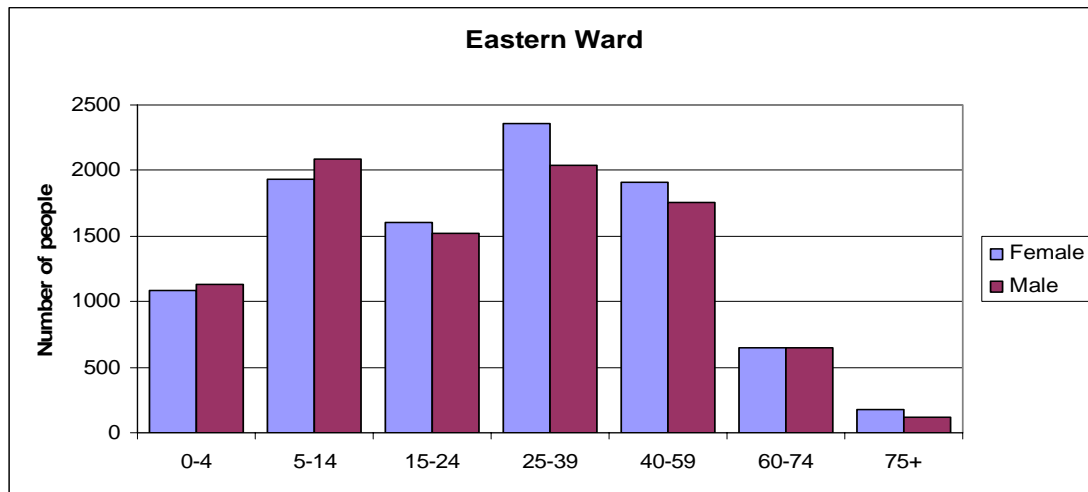
**Table 15: Eastern Ward - age composition**

Age Composition	2001 Census (%)	1996 Census (%)	1991 Census (%)
0-4	12	11	13
5-14	21	20	21
15-24	16	18	21
25-39	23	22	22
40-59	19	20	17
60-74	7	7	5
75+	2	2	1

**Table 16: Eastern Ward- household and personal income**

Income	2001 Census – number	2001 Census (%)
Households earning > \$30,000	2547	46
Personal incomes > \$30,000	3174	20
Average per capita personal income	\$21,309	

**Figure 32: Eastern Ward- age distribution by gender in 2001 Census**



## 4.2 Injury statistics

### 4.2.1 NZHIS injury mortality 1993-1999

Between 1993 and 1999, 55 residents of the Eastern Ward died as the result of receiving an injury. This is equivalent to a crude injury rate of 41 injury deaths per 100,000 person years. Males accounted for 82% of the fatalities.

As can be seen in figure 33, suicide was the leading cause of injury death (38%). The other leading causes of injury death were falls (15%); motor vehicle crashes on a public road (15%); and drowning (11%).

**Figure 33: Eastern Ward - leading causes of injury mortality 1993-1999**

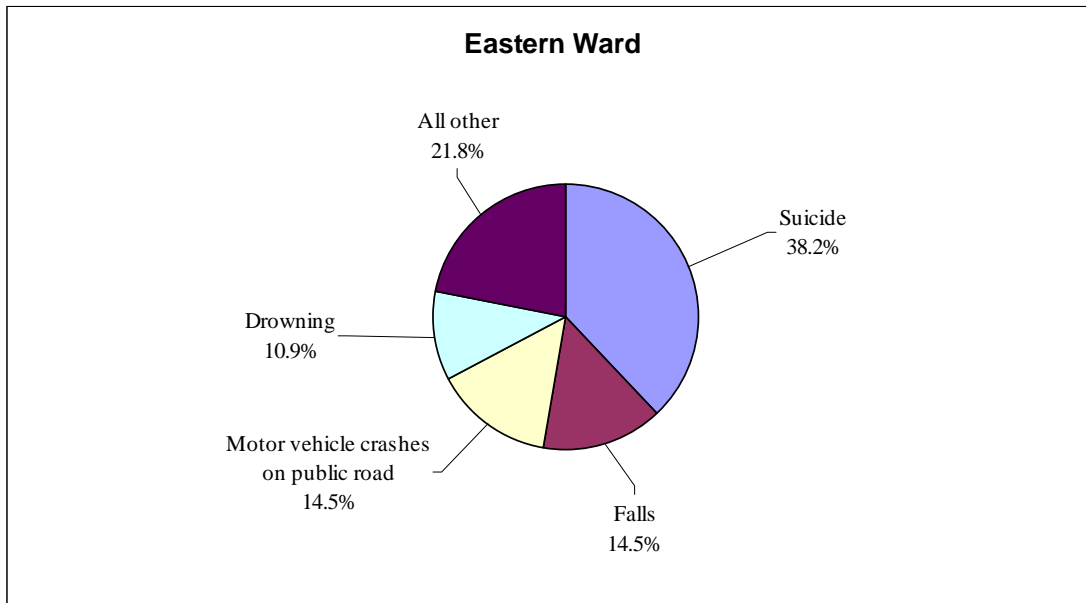
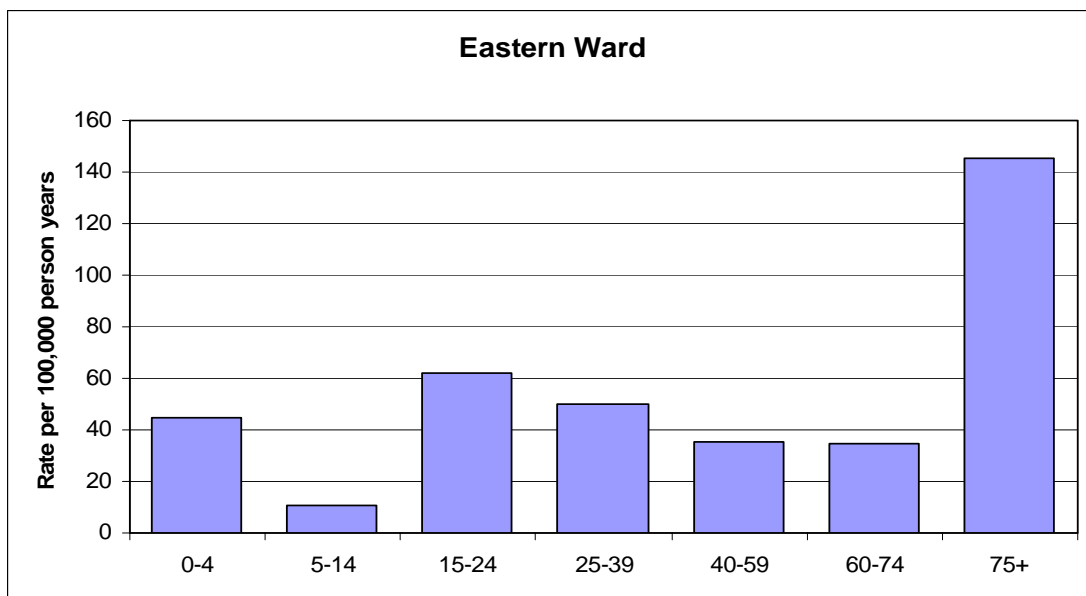


Figure 34 shows that the 75+ age group had the highest rate (145 deaths per 100,000 person years) of injury death, followed by young people aged 15-24 years (62 deaths per 100,000 person years).

**Figure 34: Rates of injury mortality by age group, 1993-1999**



Of the 27 people who died from injury between 1996 and 1999, 12 (44%) were Maori, 11 (41%) were Pacific peoples, and four (15%) were of New Zealand European/Other ethnicity.

#### 4.2.2 NZHIS injury hospitalisation 1993-2003

Between 1993 and 2003, 2417 residents of the Eastern Ward were hospitalised after receiving an injury. The crude injury hospitalisation rate during this period was 1,147 injury hospitalisations per 100,000 person years. Males accounted for 64% of the hospitalisations.

Figure 35 shows that falls accounted for the greatest number of injury hospitalisations (38%). The other leading causes of injury were motor vehicle traffic crashes on a public road (11%); cutting and piercing (8%); striking an object or person (6%); attempted suicide/deliberate self-harm (5%); and assault (5%).

**Figure 35: Eastern Ward- leading causes of injury hospitalisation 1993-2003**

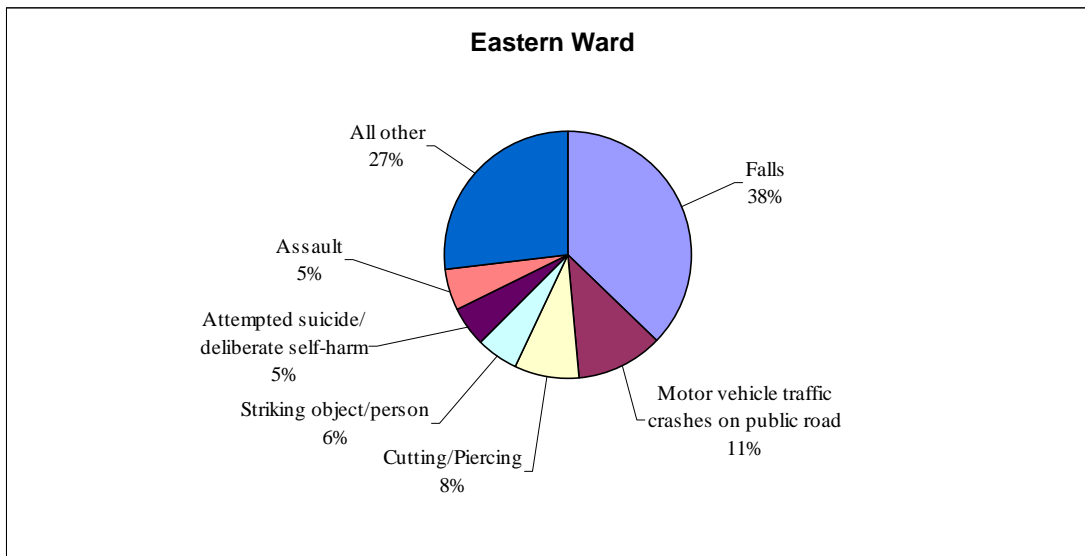


Figure 36 shows that for females, those aged 75+ had the highest rate (2,593 hospitalisations per 100,000 person years) of injury hospitalisation, followed by pre-school children aged 0-4 years (1,325 hospitalisations per 100,000 person years). For males, the 75+ age group had the highest rate (1,966 hospitalisations per 100,000 person years) of injury hospitalisation, followed by young adults aged 15-24 years (1,852 hospitalisations per 100,000 person years). Males had higher rates of injury hospitalisation than females across all age groups under 75.

**Figure 36: Rates of injury hospitalisation by age and gender, 1993-2003**

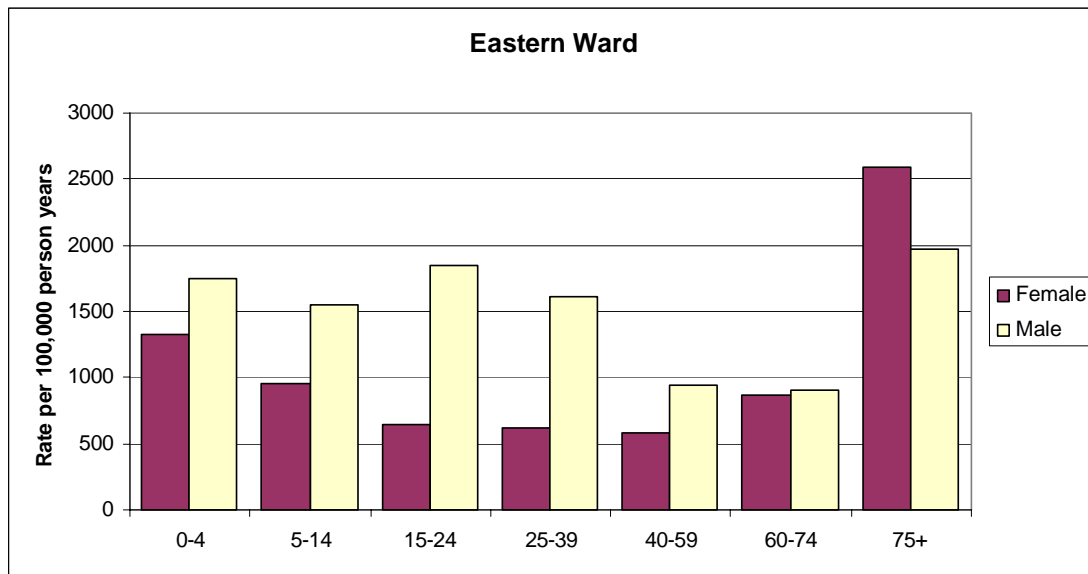


Figure 37 shows that for the period 2001-2003, Maori had the highest rate of hospitalised injury (1,077 injury hospitalisations per 100,000 person years), followed by New Zealand European/Other (886 injury hospitalisations per 100,000 person years) and Pacific peoples (826 injury hospitalisations per 100,000 person years). Pacific peoples accounted for the majority (43%) of the injuries.

**Figure 37: Injury hospitalisation rates by ethnicity for Eastern Ward, 2001-2003**

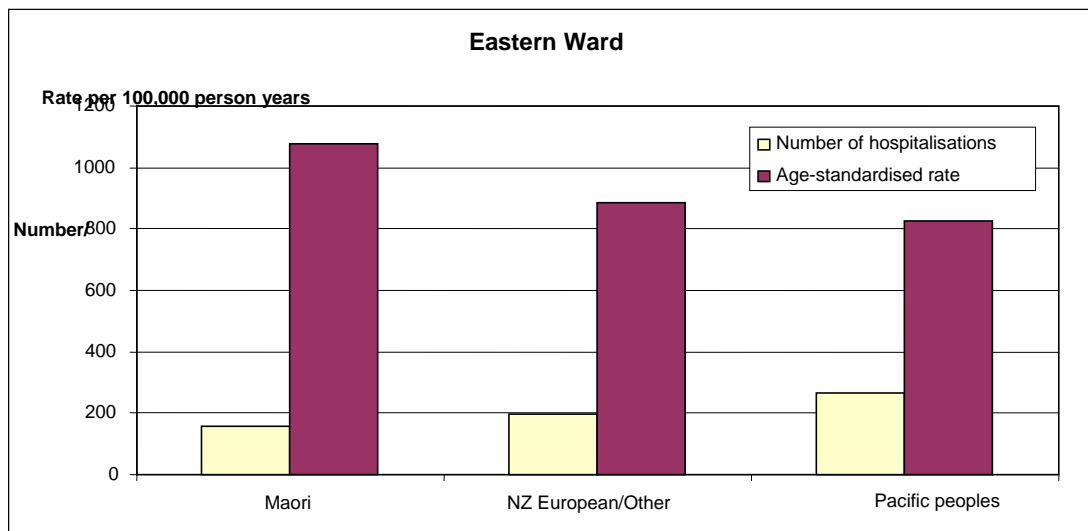


Table 17 shows that for the period of 2001-2003, falls were the leading causes of injury hospitalisation for all ethnic groups, however New Zealand European/Other had the highest percentage (38%) of hospitalised falls. A higher proportion of Maori (12%) and Pacific peoples (11%) were hospitalised as a result of cutting and piercing than

New Zealand European/Other. Injuries caused by caught between objects only featured as a leading cause of injury for Pacific peoples (7%).

**Table 17: Ethnic comparison of leading causes of injury hospitalisation, 2001-2003**

<b>Maori (n=156)</b>		<b>NZ European/Other (n=196)</b>		<b>Pacific peoples (n=266)</b>	
<b>Cause</b>	<b>%</b>	<b>Cause</b>	<b>%</b>	<b>Cause</b>	<b>%</b>
Falls	30	Falls	38	Falls	33
Cutting/Piercing	12	Motor vehicle crashes on public road	8	Cutting/Piercing	11
Motor vehicle crashes on public road	8	Cutting/Piercing	6	Caught between objects	7
Striking an object or person	6	Cycle crashes	5	Motor vehicle crashes on public road	7
Attempted suicide/self-harm	6	Striking an object or person	5	Assault	5

## 5.0 Northern Ward

### 5.1 Demographics

This section provides information relating to population, age, ethnicity and income for the Northern Ward.

**Table 18: Northern Ward - usually resident population**

Population*	2001 Census	%	1996 Census	%	1991 Census	%
Maori	1383	7	1260	7	801	5
NZ European/Other	17445	94	16248	93	15309	96
Pacific peoples	606	3	495	3	318	2
Total Persons <sup>≈</sup>	18513	104	17526	103	15990	103

\* In 1991 Maori ethnicity was determined by ancestry, whereas in 1996 and 2001 Maori ethnicity was by self-definition.

<sup>≈</sup> Total percentage may not add up to 100% as people may belong to more than one ethnic group.

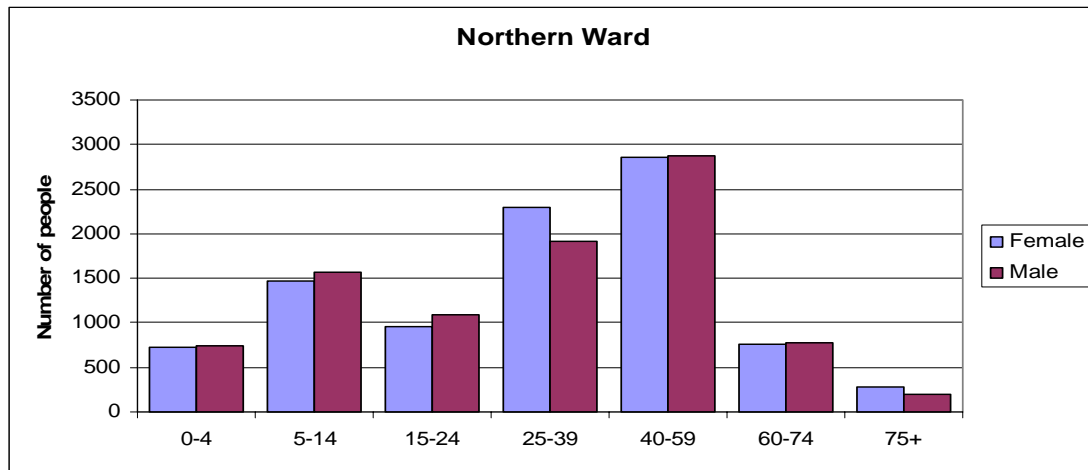
**Table 19: Northern Ward - age composition**

Age Composition	2001 Census (%)	1996 Census (%)	1991 Census (%)
0-4	8	8	9
5-14	16	16	16
15-24	11	12	14
25-39	23	26	27
40-59	31	28	25
60-74	8	8	7
75+	3	2	2

**Table 20: Northern Ward - household and personal income**

Income	2001 Census – number	2001 Census (%)
Households earning > \$30,000	3297	78
Personal incomes > \$30,000	5181	47
Average per capita personal income	\$37,239	

**Figure 38: Northern Ward - age distribution by gender in 2001 Census**



## 5.2 Injury statistics

### 5.2.1 NZHIS injury mortality 1993-1999

Between 1993 and 1999, 40 residents of the Northern Ward died as the result of receiving an injury. This is equivalent to a crude injury rate of 33 injury deaths per 100,000 person years. Males accounted for 55% of the fatalities.

As can be seen in figure 39, motor vehicle crashes on a public road were the leading cause of injury death (34%). The other leading causes of injury death were suicide (27%); falls (23%); drowning (8%); homicide (5%); and suffocation (3%).

**Figure 39: Northern Ward - leading causes of injury mortality, 1993-1999**

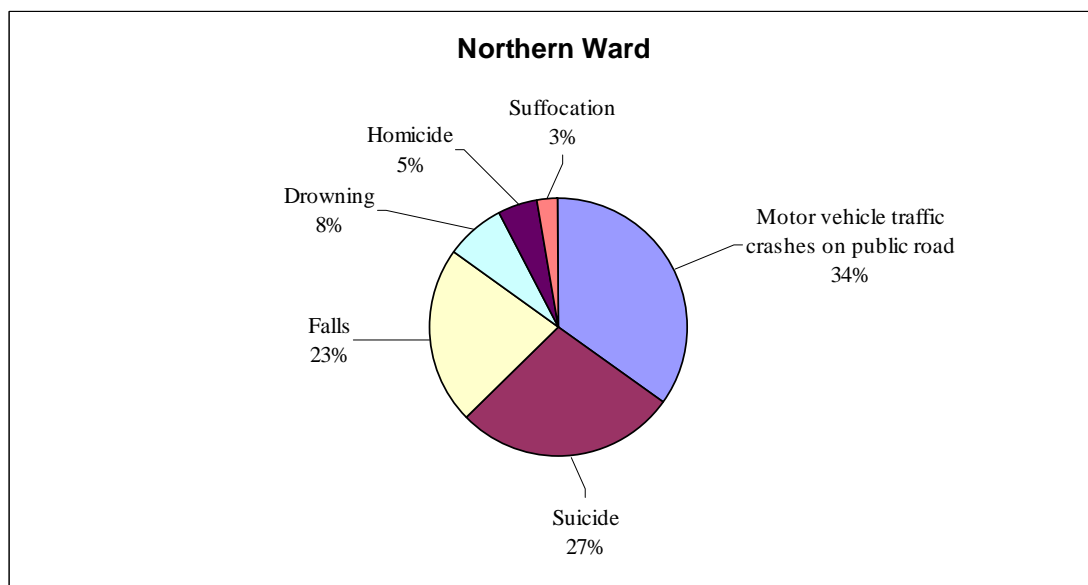
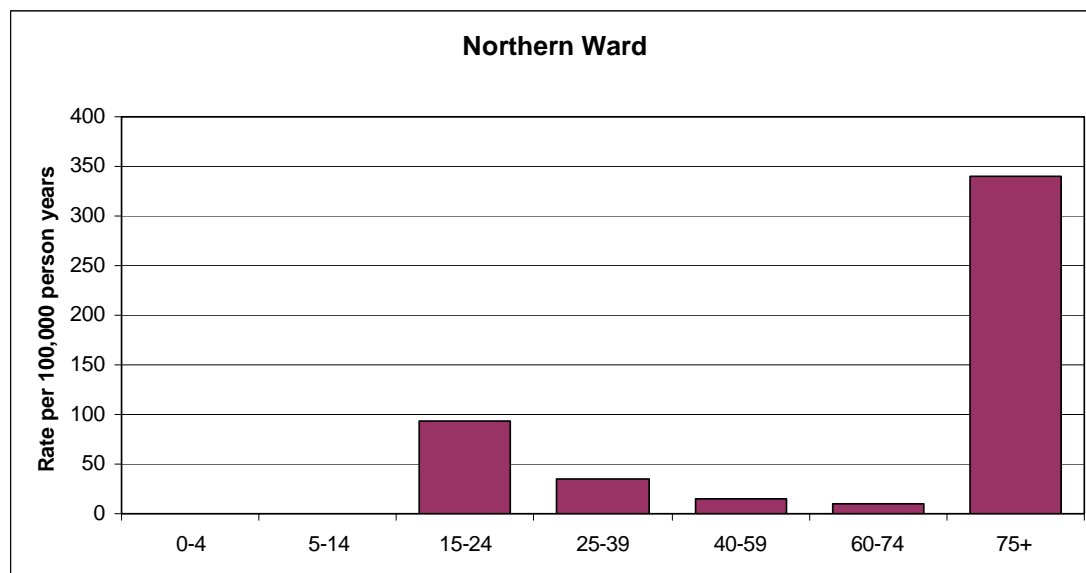


Figure 40 shows that the 75+ age group had the highest rate (341 deaths per 100,000 person years) of injury death, followed by age group of 15-24 years (94 deaths per 100,000 person years).

**Figure 40: Rates of injury mortality by age group, 1993-1999**



Of the 21 people who died from injury between 1996 and 1999, 19 (90%) were of New Zealand European/Other ethnicity, one was Maori (5%), and one was Pacific peoples (5%).

### 5.2.2 NZHIS injury hospitalisation 1993-2003

Between 1993 and 2003, 1,252 residents of the Northern Ward were hospitalised after receiving an injury. The crude injury hospitalisation rate during this period was 637 injury hospitalisations per 100,000 person years. Males accounted for 57% of the hospitalisations.

Figure 41 shows that falls accounted for the greatest number of injury hospitalisations (46%). The other leading causes of injury were motor vehicle traffic crashes on a public road (10%); cutting and piercing (6%); striking an object or person (5%); attempted suicide/deliberate self-harm (4%); and cycle crashes (3%).

**Figure 41: Northern Ward - leading causes of injury hospitalisation, 1993-2003**

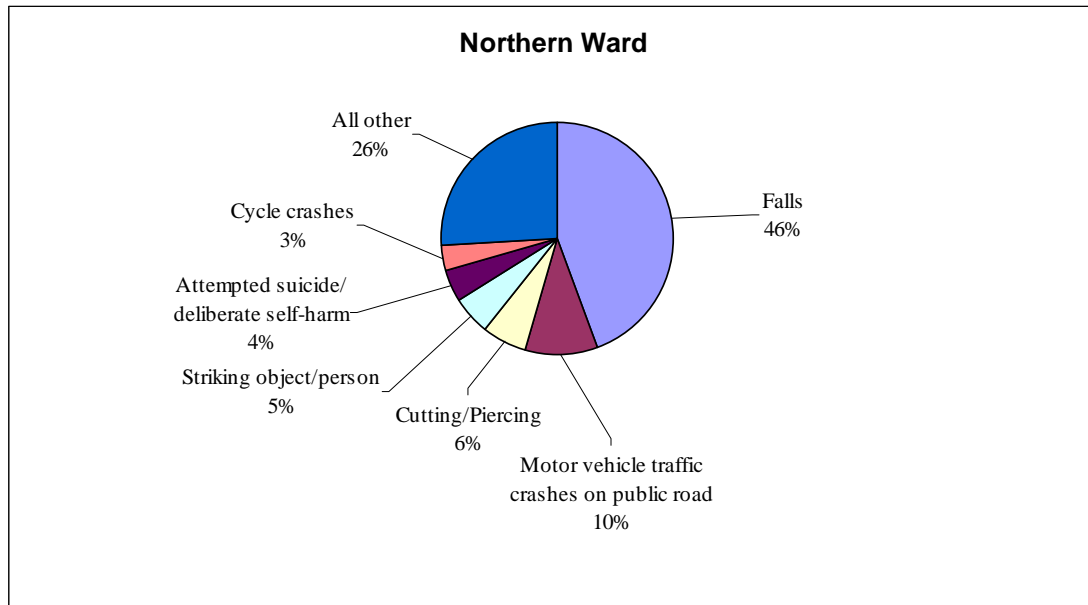


Figure 42 shows that for females, those aged 75+ had the highest rate (4,577 hospitalisations per 100,000 person years) of injury hospitalisation, followed by adults aged 60-74 years (721 hospitalisations per 100,000 person years). For males, the 75+ age group had the highest rate (1,652 hospitalisations per 100,000 person years) of injury hospitalisation, followed by young people aged 15-24 years (1,034 hospitalisations per 100,000 person years). Males had higher rates of injury hospitalisation than females across all age groups under 60.

**Figure 42: Rates of injury hospitalisation by age and gender, 1993-2003**

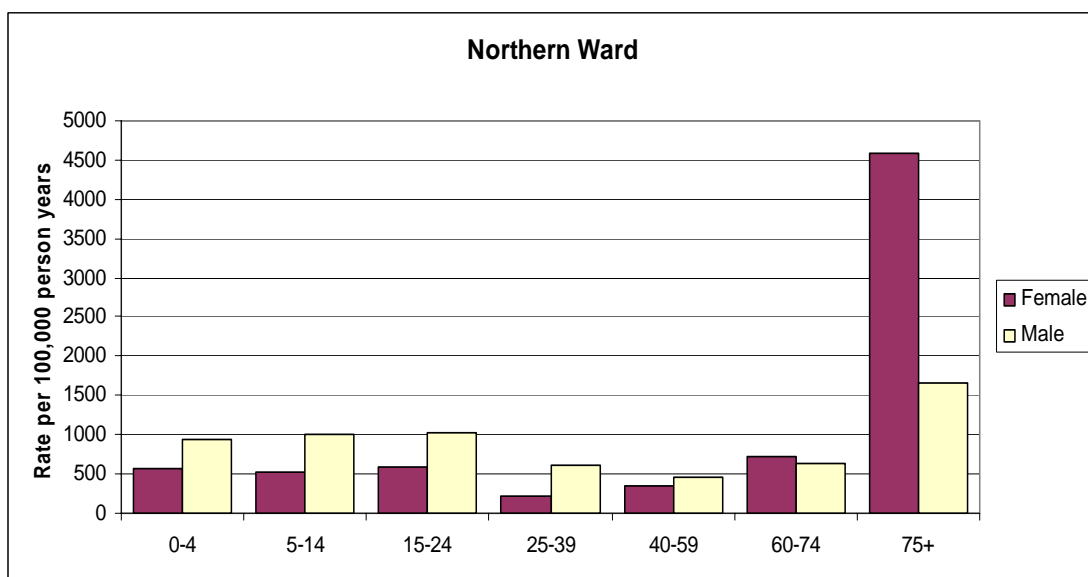


Figure 43 shows that for the period 2001-2003, New Zealand European/Other had the highest rate of hospitalised injury (554 injury hospitalisations per 100,000 person years), followed by Pacific peoples (441 injury hospitalisations per 100,000 person years) and Maori (397 injury hospitalisations per 100,000 person years). New Zealand European/Other accounted for the majority (92%) of the injuries.

**Figure 43: Injury hospitalisation rates by ethnicity for Northern Ward, 2001-2003**

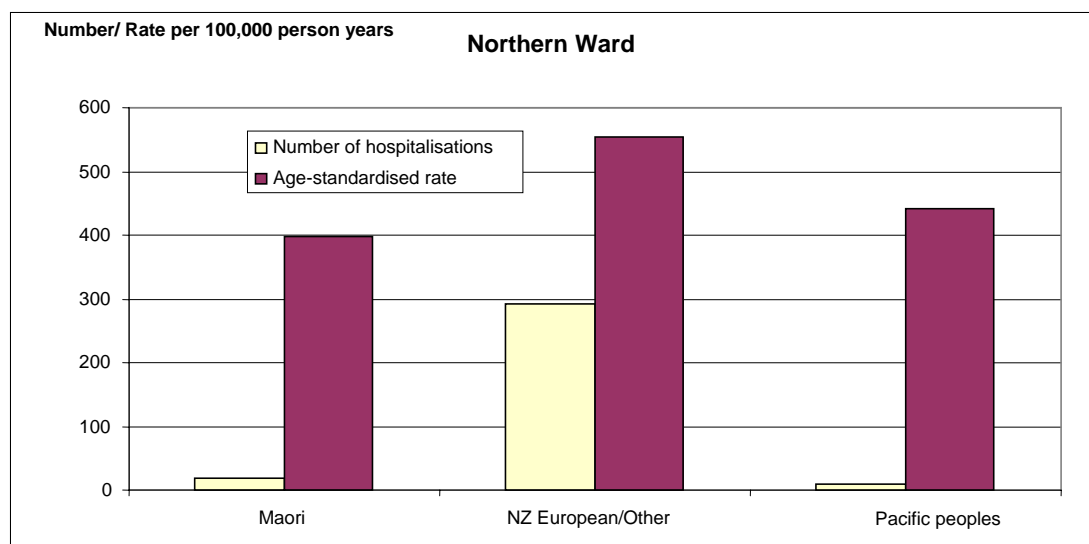


Table 21 shows that for the period of 2001-2003, there were some ethnic differences in the leading causes of injury hospitalisation. New Zealand European/Other (45%) and Pacific peoples (44%) had a much higher proportion of falls compared to Maori. Maori were more likely to be injured by cutting or piercing (17%).

**Table 21: Ethnic comparison of leading causes of injury hospitalisation, 2001-2003**

<b>Maori (n=18)</b>		<b>NZ European/Other (n=292)</b>		<b>Pacific peoples (n=9)</b>	
<b>Cause</b>	<b>%</b>	<b>Cause</b>	<b>%</b>	<b>Cause</b>	<b>%</b>
Falls	33	Falls	45	Falls	44
Cutting/Piercing	17	Motor vehicle crashes on public road	7	Caught between objects	11
Attempted suicide/self-harm	17	Cutting/Piercing	7	Cutting/Piercing	11
Cycle crashes	11	Others/unspecified	5	Motor vehicle crashes on public road	11
Caught between objects	6	Overexertion/strenuous movements	4	Striking an object or person	11

## 6.0 Western Ward

### 6.1 Demographics

This section provides information relating to population, age, ethnicity and income for the Western Ward.

**Table 22: Western Ward - usually resident population**

Population*	2001 Census	%	1996 Census	%	1991 Census	%
Maori	3315	34	3186	31	2829	26
NZ European/Other	6774	69	7287	71	7671	71
Pacific people	1500	15	1443	14	1227	11
Total Persons <sup>~</sup>	9852	118	10242	116	10752	108

\* In 1991 Maori ethnicity was determined by ancestry, whereas in 1996 and 2001 Maori ethnicity was by self-definition.

<sup>~</sup> Total percentage may not add up to 100% as people may belong to more than one ethnic group.

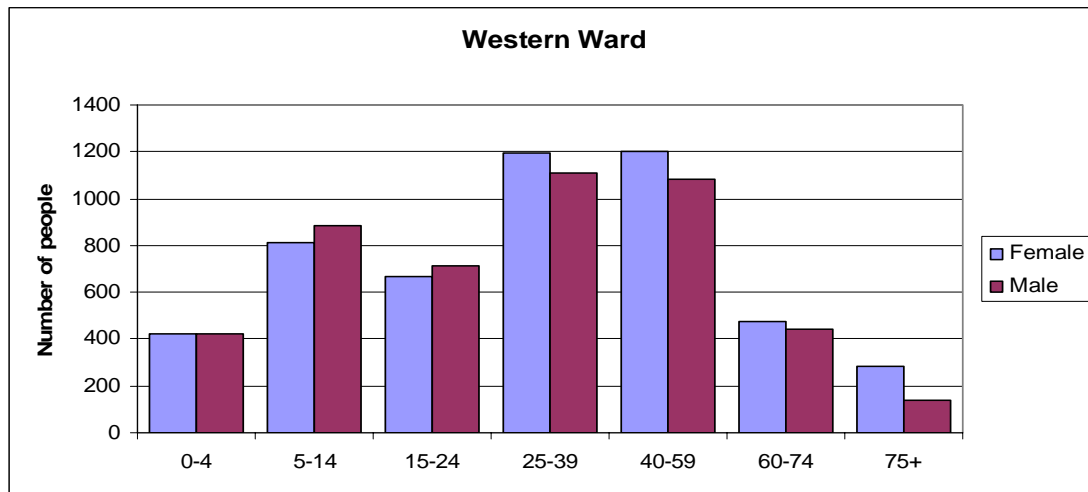
**Table 23: Western Ward - age composition**

Age Composition	2001 Census (%)	1996 Census (%)	1991 Census (%)
0-4	9	9	10
5-14	17	18	16
15-24	14	15	17
25-39	23	24	24
40-59	23	21	19
60-74	9	10	11
75+	4	4	4

**Table 24: Western Ward - household and personal income**

Income	2001 Census – number	2001 Census (%)
Households earning > \$30,000	1296	53
Personal incomes > \$30,000	1779	24
Average per capita personal income	\$22,389	

**Figure 44: Western Ward - age distribution by gender in 2001 Census**



## 6.2 Injury statistics

### 6.2.1 NZHIS injury mortality 1993-1999

Between 1993 and 1999, 44 residents of the Western Ward died as the result of receiving an injury. This is equivalent to a crude injury rate of 61 injury deaths per 100,000 person years. Males accounted for 64% of the fatalities.

As can be seen in figure 45, suicide was the leading cause of injury death (30%). The other leading causes of injury death were motor vehicle crashes on a public road (23%); falls (20%); drowning (11%); and homicide (5%).

**Figure 45: Western Ward - leading causes of injury mortality, 1993-1999**

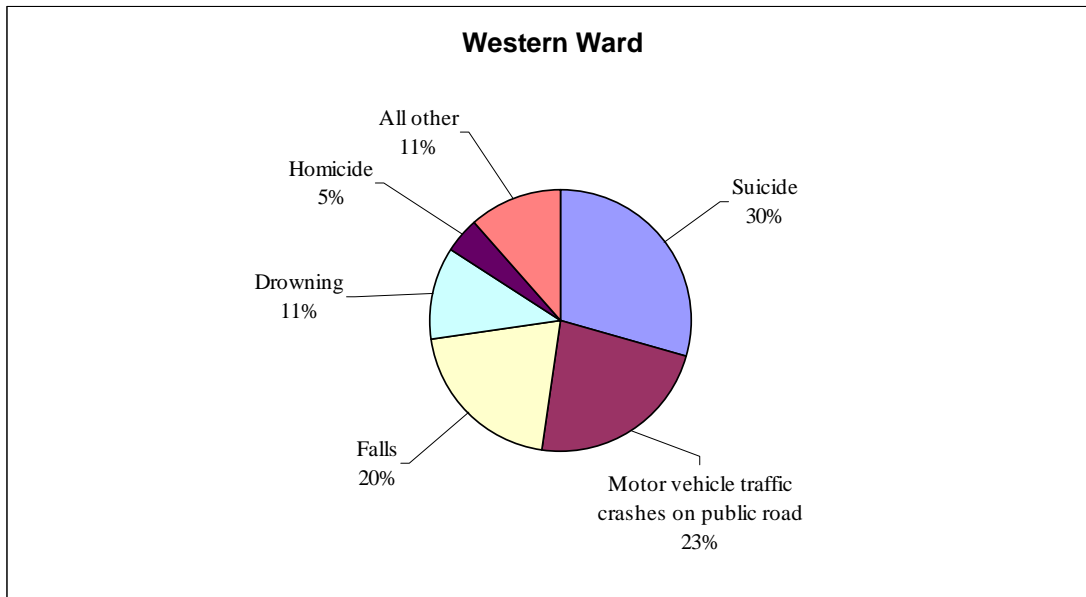
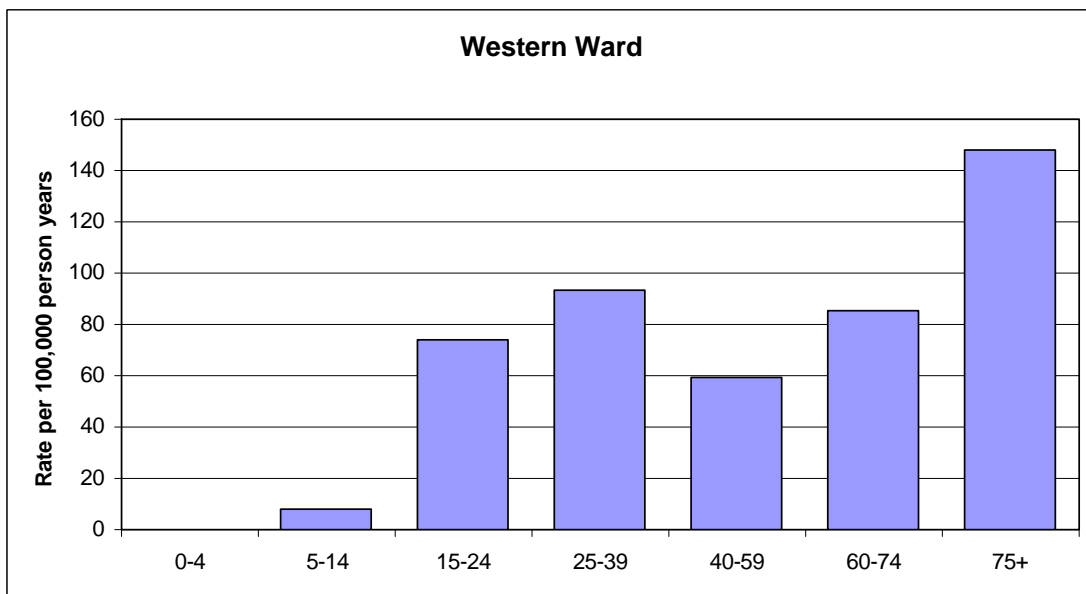


Figure 46 shows that the 75+ age group had the highest rate (148 deaths per 100,000 person years) of injury death, followed by adults aged 25-39 years (93 deaths per 100,000 person years).

**Figure 46: Rates of injury death by age group, 1993-1999**



Of the 27 people who died from injury between 1996 and 1999, 16 (59%) were of New Zealand European/Other ethnicity, 10 (37%) were Maori, and one (4%) was Pacific peoples.

### 6.2.2 NZHIS injury hospitalisation 1993-2003

Between 1993 and 2003, 1,624 residents of the Western Ward were hospitalised after receiving an injury. The crude injury hospitalisation rate during this period was 1,452 injury hospitalisations per 100,000 person years. Males accounted for 59% of the hospitalisations.

Figure 47 shows that falls accounted for the greatest number of injury hospitalisations (39%). The other leading causes of injury were motor vehicle traffic crashes on a public road (10%); attempted suicide/deliberate self-harm (9%); cutting and piercing (7%); assault (5%); striking an object or person (5%); and unintentional poisoning (3%).

**Figure 47: Western Ward - leading causes of injury morbidity 1993-2003**

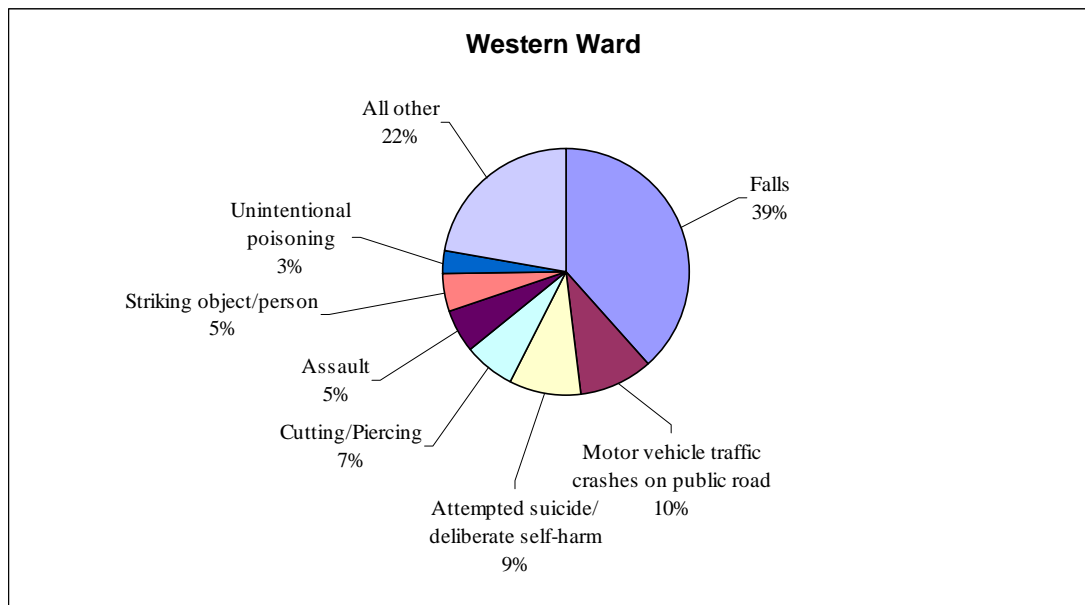


Figure 48 shows that for females, those aged 75+ had the highest rate (3,870 hospitalisations per 100,000 person years) of injury hospitalisation, followed by children aged 5-14 years (1,366 hospitalisations per 100,000 person years). For males, the age group of 75+ years had the highest rate of injury hospitalisation (2,285 hospitalisations per 100,000 person years), followed by young people aged 15-24 years (2,210 hospitalisations per 100,000 person years). Males had higher rates of injury hospitalisation than females across all age groups under 75.

**Figure 48: Rates of injury hospitalisation by age and gender, 1993-2001**

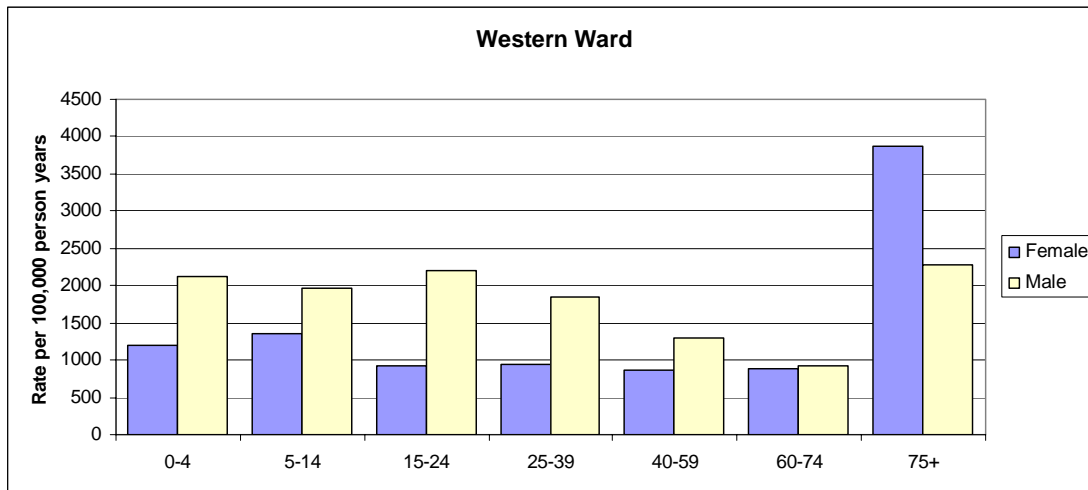


Figure 49 shows that for the period 2001-2003, Maori had the highest rate of hospitalised injury (1,075 injury hospitalisations per 100,000 person years), followed by New Zealand European/Other (770 injury hospitalisations per 100,000 person years) and Pacific peoples (769 injury hospitalisations per 100,000 person years). New Zealand European/Other accounted for just over half (55%) of the injuries.

**Figure 49: Injury hospitalisation rates by ethnicity for Western Ward, 2001-2003**

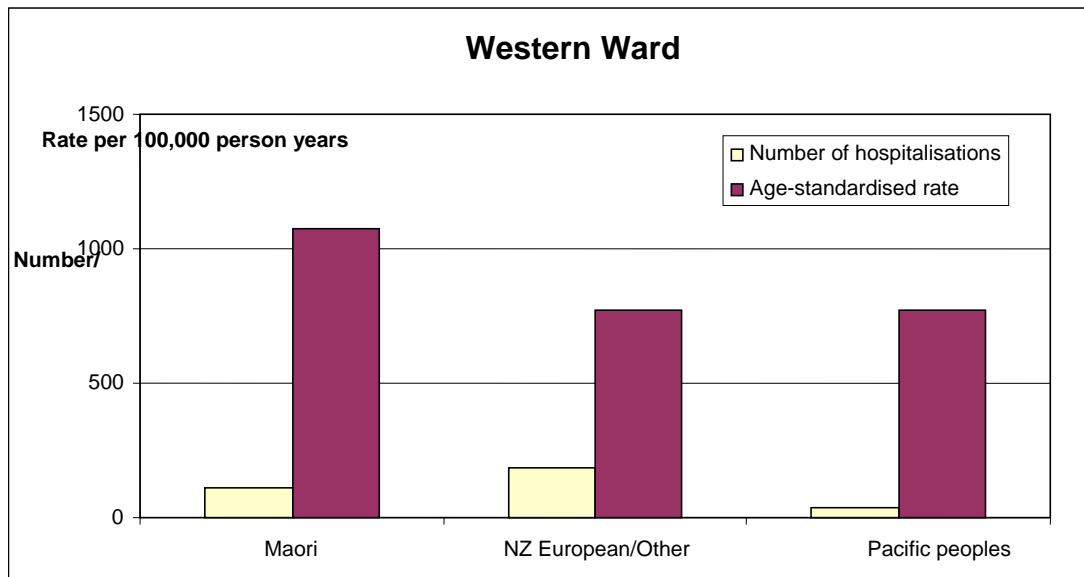


Table 25 shows that falls were the leading cause of injury hospitalisation for all ethnic groups during the period 2001-2003. Maori had a much higher proportion of cutting and piercing (9%) compared to the other ethnic groups. Injuries caused by caught between objects only feature as a leading cause of injury for Pacific peoples (8%). A

higher proportion of New Zealand European/Other were hospitalised due to attempted suicide or self-harm (10%).

**Table 25: Ethnic comparison of leading causes of injury hospitalisation, 2001-2003**

<b>Maori (n=113)</b>		<b>NZ European/Other (n=188)</b>		<b>Pacific peoples (n=40)</b>	
<b>Cause</b>	<b>%</b>	<b>Cause</b>	<b>%</b>	<b>Cause</b>	<b>%</b>
Falls	38	Falls	43	Falls	43
Motor vehicle crashes on public road	10	Attempted suicide/ self-harm	10	Others/unspecified	13
Cutting/Piercing	9	Motor vehicle crashes on public road	9	Caught between objects	8
Non-road transport crashes	7	Others/unspecified	4	Cutting/Piercing	5

## 7.0 Key Findings

The data detailed in this report thus far indicates that injury is a significant cause of death and hospitalisation for people in Porirua City. The injury hospitalisation data discussed in sections three to six clearly indicates that falls; motor vehicle crashes on a public road; cutting and piercing injuries; suicidal behaviours; striking an object or person; and assaults are leading injury concerns for Porirua City. Suicide or deliberate self-harm; motor vehicle traffic crashes; falls; and drowning were the leading causes of injury deaths for Porirua City.

Analysis of injury data by Ward shows that Western Ward had consistently the highest injury death and injury hospitalisation rates; and Northern Ward had the lowest death and hospitalisation injury rates.

In addition to those aged 75+ years, who had the highest rates of injury hospitalisations, other age groups at high risk of injury hospitalisations were children and adults aged under 40 years (particularly males). During 2001-2003 period, Maori and Pacific peoples aged between 0 and 59 years were more likely to be hospitalised following an injury than New Zealand European/Other. However, New Zealand European/Other aged 60 years had a higher injury hospitalisation rate than their Maori or Pacific peoples counterparts. Falls were the leading cause of injury hospitalisation for all ethnic groups. Overall, New Zealand European/Other accounted for more than half (53%) of injury hospitalisations; Pacific peoples accounted for 25%; and Maori accounted for 22%.

For injury deaths, other than those aged 75+ years who had the highest rates of injury deaths, young people 15-24 years had the second highest injury death rates, followed by children aged between 5-14 years. Children aged 5-14 years of all ethnic groups were the only age group that had no injury death during the period of 1996-1999. In general, Maori were more likely to have higher injury death rates compared to New Zealand European/Other and Pacific peoples for all age groups. It is of concern that Maori and New Zealand European/Other had a high proportion of injury death as a result of suicide. Overall, New Zealand European/Other accounted for the majority of injury deaths (57%), Maori accounted for one-quarter (25%), and Pacific peoples accounted for 18%.

## 8.0 References

Brewin M., & Coggan C. Evaluation of a New Zealand indigenous community injury prevention project. *Injury Control and Safety Promotion* 2002; 9 (2): 83-88.

Brewin M, Coggan C. Evaluation of the Ngati Porou Community Injury Prevention Project. *Ethnicity and Health*. 2004; 9(1).

Coggan C, Bennett S, Patterson P, Borne H. The ACC ThinkSafe Community Projects: Formative Evaluation. Auckland: Injury Prevention Research Centre, 2003.

Coggan C, Lee M, Patterson P, Fill J. Safe Waitakere Injury Prevention: re-assessing the evidence. Auckland: Injury Prevention Research Centre, 2003.

Coggan C., Langley J., Dawe M., et al. *A proposed strategy for Vote Health funding for injury prevention: Funding advice commissioned by the Health Funding Authority*. Auckland: Injury Prevention Research Centre, 2000.

Coggan C., Patterson P., Brewin M., Hooper R., Robinson E. Evaluation of the Waitakere Community Injury Prevention Project. *Injury Prevention* 2000; 6(2):130-134.

Day L.M., Ozanne-Smith J., Cassell E., Li L. Evaluation of the La Trobe Valley Better Health Injury Prevention Project. *Injury Prevention* 2001; 7:66-69.

Svanstrom L. More Safe Communities Programs in Scandinavia have been evaluated: Repeating the results from Falkoping. *Injury Prevention* 1997; 3:230-1.