

# INJURIES IN YOUNG PEOPLE

## Introduction

Injury is the leading cause of mortality among young people aged 15-24 years, with the rate at which these events occur being far higher than for other age groups [233]. During 2000-2004, on average, 290 young people each year died as the result of an injury, as compared to 98 children per year during the same period [22]. When compared to children, a different set of causes are also seen, with more than a third of all injury deaths in young people being the result of self-harm. An equivalent proportion of deaths arise when young people are the occupants in a vehicle in a crash, many of which are traffic related events on public roads. Further deaths result from motorcycle and pedestrian crashes both on and off road. Considerable concern has been focused on the high rate of mortality and morbidity from MVTC in this age group [234].

Hospitalisation for injury among this age group is also comparatively high, with the top four reasons for admission being the result of inanimate mechanical forces (for example, being struck by or caught between objects), falls, as occupants of vehicles, and from assault [234]. Risk factors among those hospitalised included age, gender, ethnicity and deprivation. Risk factors evident for vehicle occupants are being male, Māori and from an area of higher deprivation [97]. Motorcycle and pedal cycle risk factors include being male and European, with pedal cyclists also more likely to be from less deprived areas. Pedal cyclists are also more commonly younger than motorcyclists and vehicle occupants. Among non-transport injury events, with the exception of gender, risk factors are less evident [234].

The following section reviews injuries in young people using data from the National Minimum Dataset and the National Mortality Collection. The section concludes with a brief overview of local policy documents and evidence-based reviews which consider the prevention of childhood injuries at the population level.

### Data Sources and Methods

#### Indicator

##### 1. Hospital Admissions for Injuries in Young People Aged 15–24 Years

**Numerator:** National Minimum Dataset: Hospital admissions in young people aged 15–24 years with a primary diagnosis of Injury (ICD-10-AM S00–T79). Causes of injury were assigned using the ICD-10-AM primary external cause code (E code). The following were excluded: 1) Admissions with an E code in the Y40–Y89 range (complications of drugs/medical/surgical care and late sequelae of injury). 2) Admissions with an Emergency Medicine Specialty code (M05–M08) on discharge.

Causes of injury were assigned using the primary E code (hospital admissions) or the main underlying cause of death as follows: Pedestrian (V01–V09), Cyclist (V10–V19), Motorbike (V20–29), Vehicle Occupant (V40–79), Other Land Transport (V30–39, V80–89); Other Transport (V90–V99); Falls (W00–W19), Mechanical Forces: Inanimate (W20–W49), Mechanical Forces: Animate (W50–64), Drowning/Submersion (W65–74), Accidental Threat to Breathing (W75–W84), Electricity/Fire/Burns (W85–X19), Accidental Poisoning (X40–X49), Intentional Self-Harm (X60–84), Assault (X85–Y09), Undetermined Intent (Y10–Y34). Broader Categories included Land Transport Injuries (V01–V89) and Unintentional Non-Transport Injuries (W00–W74, W85–X19)

**Denominator:** Statistics NZ Estimated Resident Population (with linear extrapolation being used to calculate denominators between Census years).

##### 2. Mortality from Injuries in Young People Aged 15–24 Years

**Numerator:** National Mortality Collection; Deaths in young people aged 15–24 years where the main underlying cause of death was an injury (V01–Y36). Causes of injury were assigned using the codes listed above.

**Denominator:** Statistics NZ Estimated Resident Population (with linear extrapolation being used to calculate denominators between Census years).

#### Notes on Interpretation

Note 1: Because of regional inconsistencies in the uploading of Emergency Department cases to the National Minimum dataset (see **Appendix 3**) all hospital admissions with an Emergency Department specialty code on discharge have been excluded. In addition, because of the potential for these inconsistencies to impact significantly on time series analysis, any reviews of long term trends have been restricted to mortality data, with hospital admission data being used to explore cross sectional associations between demographic factors and different injury types. Despite these restrictions, the reader must bear in mind the fact that differences in the



way different DHBs upload their injury cases to the NMDS may also impact on the regional vs. New Zealand analyses presented (see **Appendix 3** for a fuller explanation of these issues).

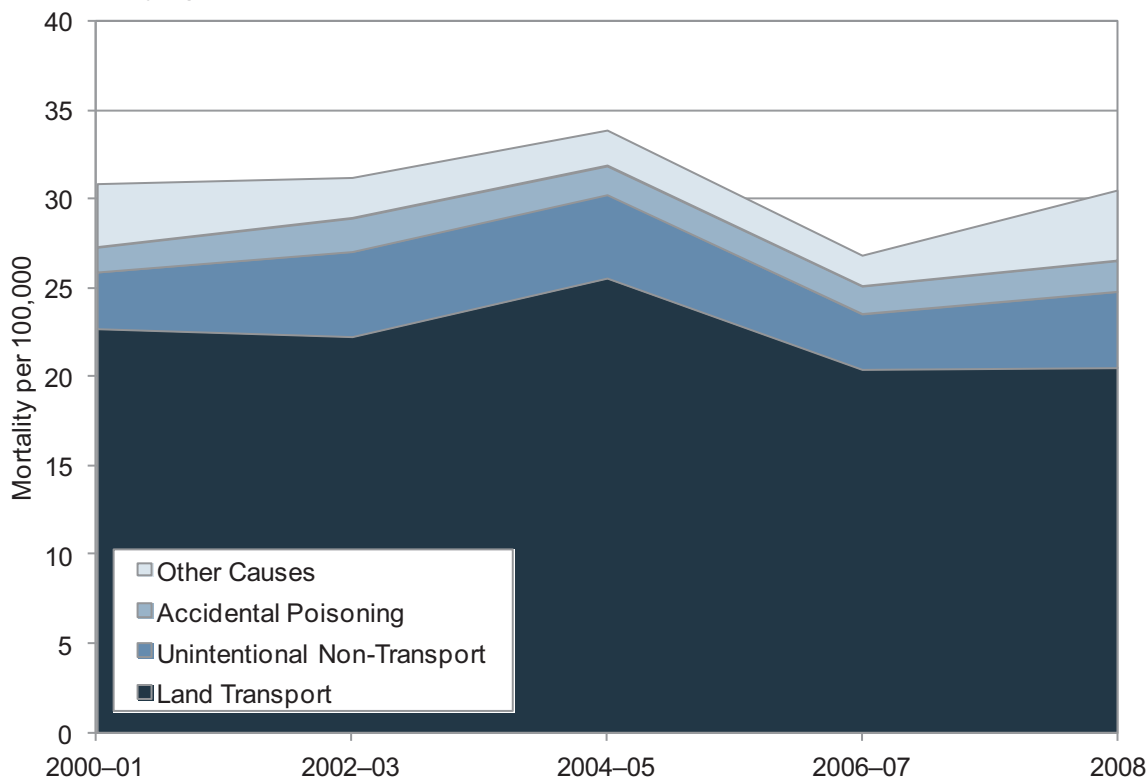
Note 2: 95% confidence intervals have been provided for the rate ratios in this section and where appropriate, the terms *significant* or not *significant* have been used to communicate the significance of the observed associations. Tests of statistical significance have not been applied to other data in this section, and thus (unless the terms *significant* or non-*significant* are specifically used) the associations described do not imply statistical significance or non-significance (see **Appendix 2** for further discussion of this issue).

## All Injuries

### New Zealand Trends

In New Zealand during 2000–2008, mortality from land transport injuries fluctuated, while mortality from unintentional non-transport injuries and accidental poisoning remained relatively static (**Figure 131**).

Figure 131. Mortality from Unintentional Injuries in Young People Aged 15–24 Years by Main Underlying Cause of Death, New Zealand 2000–2008



Source: Numerator: National Mortality Collection (Assault and suicide excluded); Denominator: Statistics NZ Estimated Resident Population.

### New Zealand Distribution by Cause

In New Zealand during 2006–2010, inanimate mechanical forces and falls were the leading causes of injury admissions in young people, although as a group transport injuries also made a significant contribution. In contrast, during 2004–2008, intentional self-harm and vehicle occupant injuries were the leading causes of injury related mortality in young people (**Table 152**).

### South Island Distribution by Cause

In the South Island during 2006–2010, inanimate mechanical forces and falls were also the leading causes of injury admissions in young people, although as a group transport injuries again made a significant contribution. In contrast, during 2004–2008, intentional self-harm and vehicle occupant injuries were the leading causes of injury related mortality (**Table 153**, **Table 154**).

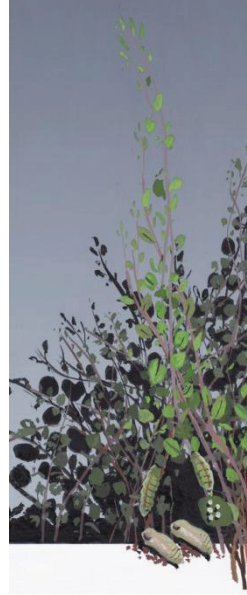


Table 152. Hospital Admissions (2006–2010) and Mortality (2004–2008) from Injuries in New Zealand Young People Aged 15–24 Years by Cause

Main External Cause of Injury	Number: Total per 5 Year Period	Number: Annual Average	Rate per 100,000	Percent (%)
<b>New Zealand</b>				
<b>Injury Admissions 15–24 Years, 2006–2010</b>				
Mechanical Forces: Inanimate	11,539	2,307.8	364.4	22.3
Mechanical Forces: Animate	3,575	715.0	112.9	6.9
Falls	9,913	1,982.6	313.0	19.2
Transport: Vehicle Occupant	5,293	1,058.6	167.1	10.2
Transport: Motorbike	2,886	577.2	91.1	5.6
Transport: Cyclist	1,409	281.8	44.5	2.7
Transport: Pedestrian	709	141.8	22.4	1.4
Transport: Other Land Transport	1,222	244.4	38.6	2.4
Transport: Other Transport	257	51.4	8.12	0.5
Electricity / Fire / Burns	778	155.6	24.6	1.5
Accidental Poisoning	597	119.4	18.9	1.2
Accidental Threat to Breathing	25	5.0	0.79	<0.1
Drowning / Submersion	51	10.2	1.61	0.10
Assault	5,490	1,098.0	173.4	10.6
Intentional Self-Harm	3,221	644.2	101.7	6.2
Undetermined Intent	762	152.4	24.1	1.5
No External Cause Listed	15	3.0	0.47	<0.1
Other Causes	3,994	798.8	126.1	7.7
<b>New Zealand Total</b>	<b>51,736</b>	<b>10,347.2</b>	<b>1,633.8</b>	<b>100.0</b>
<b>Injury Mortality 15–24 Years, 2004–2008</b>				
Intentional Self-Harm	550	110.0	18.19	36.3
Transport: Vehicle Occupant	538	107.6	17.79	35.5
Transport: Motorbike	54	10.8	1.79	3.6
Transport: Pedestrian	52	10.4	1.72	3.4
Transport: Cyclist	10	2.0	0.33	0.7
Transport: Other Land Transport	24	4.8	0.79	1.6
Transport: Other Transport	16	3.2	0.53	1.1
Assault	51	10.2	1.69	3.4
Accidental Poisoning	49	9.8	1.62	3.2
Drowning / Submersion	48	9.6	1.59	3.2
Falls	43	8.6	1.42	2.8
Mechanical Forces: Inanimate	15	3.0	0.50	1.0
Mechanical Forces: Animate	<3	s	s	s
Electricity / Fire / Burns	12	2.4	0.40	0.8
Accidental Threat to Breathing	12	2.4	0.40	0.8
Undetermined Intent	31	6.2	1.03	2.0
Other Causes	10	2.0	0.33	0.7
<b>New Zealand Total</b>	<b>1,517</b>	<b>303.4</b>	<b>50.2</b>	<b>100.0</b>

Source: Numerators: National Minimum Dataset and National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population. Note: s: suppressed due to small numbers.



Table 153. Hospital Admissions (2006–2010) and Mortality (2004–2008) from Injuries in Nelson Marlborough Young People Aged 15–24 Years by Cause

Main External Cause of Injury	Number: Total per 5 Year Period	Number: Annual Average	Rate per 100,000	Percent (%)
<b>Nelson Marlborough</b>				
<b>Injury Admissions 15–24 Years, 2006–2010</b>				
Mechanical Forces: Inanimate	265	53.0	336.5	14.7
Mechanical Forces: Animate	90	18.0	114.3	5.0
Falls	263	52.6	333.9	14.6
Transport: Vehicle Occupant	204	40.8	259.0	11.3
Transport: Motorbike	115	23.0	146.0	6.4
Transport: Cyclist	62	12.4	78.7	3.4
Transport: Pedestrian	29	5.8	36.8	1.6
Transport: Other Land Transport	32	6.4	40.6	1.8
Transport: Other Transport	20	4.0	25.4	1.1
Electricity / Fire / Burns	21	4.2	26.7	1.2
Accidental Poisoning	40	8.0	50.8	2.2
Accidental Threat to Breathing	<3	s	s	s
Drowning / Submersion	<3	s	s	s
Assault	198	39.6	251.4	11.0
Intentional Self-Harm	194	38.8	246.3	10.8
Undetermined Intent	103	20.6	130.8	5.7
No External Cause Listed	<3	s	s	s
Other Causes	162	32.4	205.7	9.0
<b>Nelson Marlborough Total</b>	<b>1,803</b>	<b>360.6</b>	<b>2,289.2</b>	<b>100.0</b>
<b>Injury Mortality 15–24 Years, 2004–2008</b>				
Intentional Self-Harm	13	2.6	17.0	31.7
Transport: Vehicle Occupant	14	2.8	18.3	34.1
Transport: Pedestrian	3	0.6	3.92	7.3
Accidental Poisoning	3	0.6	3.92	7.3
All Other Causes	8	1.6	10.4	19.5
<b>Nelson Marlborough Total</b>	<b>41</b>	<b>8.2</b>	<b>53.5</b>	<b>100.0</b>

Source: Numerators: National Minimum Dataset and National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population. Note: s: suppressed due to small numbers.



Table 154. Hospital Admissions (2006–2010) and Mortality (2004–2008) from Injuries in South Canterbury Young People Aged 15–24 Years by Cause

Main External Cause of Injury	Number: Total per 5 Year Period	Number: Annual Average	Rate per 100,000	Percent (%)
<b>South Canterbury</b>				
<b>Injury Admissions 15–24 Years, 2006–2010</b>				
Mechanical Forces: Inanimate	102	20.4	324.5	12.9
Mechanical Forces: Animate	57	11.4	181.4	7.2
Falls	125	25.0	397.7	15.8
Transport: Vehicle Occupant	85	17.0	270.4	10.7
Transport: Motorbike	56	11.2	178.2	7.1
Transport: Cyclist	28	5.6	89.1	3.5
Transport: Pedestrian	6	1.2	19.1	0.8
Transport: Other Land Transport	36	7.2	114.5	4.5
Transport: Other Transport	<3	s	s	s
Electricity / Fire / Burns	18	3.6	57.3	2.3
Accidental Poisoning	8	1.6	25.5	1.0
Assault	98	19.6	311.8	12.4
Intentional Self-Harm	60	12.0	190.9	7.6
Undetermined Intent	50	10.0	159.1	6.3
No External Cause Listed	<3	s	s	s
Other Causes	60	12.0	190.9	7.6
<b>South Canterbury Total</b>	<b>792</b>	<b>158.4</b>	<b>2,519.9</b>	<b>100.0</b>
<b>Injury Mortality 15–24 Years, 2004–2008</b>				
Intentional Self-Harm	10	2.0	32.7	45.5
Transport: Vehicle Occupant	6	1.2	19.6	27.3
All Other Causes	6	1.2	19.6	27.3
<b>South Canterbury Total</b>	<b>22</b>	<b>4.4</b>	<b>72.0</b>	<b>100.0</b>

Source: Numerators: National Minimum Dataset and National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population. Note: s: suppressed due to small numbers.



Table 155. Hospital Admissions (2006–2010) and Mortality (2004–2008) from Injuries in Canterbury Young People Aged 15–24 Years by Cause

Main External Cause of Injury	Number: Total per 5 Year Period	Number: Annual Average	Rate per 100,000	Percent (%)
<b>Canterbury</b>				
<b>Injury Admissions 15–24 Years, 2006–2010</b>				
Mechanical Forces: Inanimate	1,168	233.6	320.2	22.4
Mechanical Forces: Animate	369	73.8	101.2	7.1
Falls	964	192.8	264.3	18.5
Transport: Vehicle Occupant	432	86.4	118.4	8.3
Transport: Motorbike	255	51.0	69.9	4.9
Transport: Cyclist	192	38.4	52.6	3.7
Transport: Pedestrian	87	17.4	23.9	1.7
Transport: Other Land Transport	148	29.6	40.6	2.8
Transport: Other Transport	26	5.2	7.13	0.5
Electricity / Fire / Burns	79	15.8	21.7	1.5
Accidental Poisoning	83	16.6	22.8	1.6
Accidental Threat to Breathing	4	0.8	1.10	0.1
Drowning / Submersion	3	0.6	0.82	0.1
Assault	486	97.2	133.2	9.3
Intentional Self-Harm	473	94.6	129.7	9.1
Undetermined Intent	36	7.2	9.87	0.7
Other Causes	401	80.2	109.9	7.7
Canterbury Total	5,206	1,041.2	1,427.2	100.0
<b>Injury Mortality 15–24 Years, 2004–2008</b>				
Intentional Self-Harm	64	12.8	18.3	41.8
Transport: Vehicle Occupant	41	8.2	11.7	26.8
Transport: Motorbike	6	1.2	1.72	3.9
Transport: Pedestrian	5	1.0	1.43	3.3
Transport: Other Land Transport	3	0.6	0.86	2.0
Assault	7	1.4	2.00	4.6
Accidental Poisoning	7	1.4	2.00	4.6
Drowning / Submersion	4	0.8	1.14	2.6
Falls	3	0.6	0.86	2.0
Electricity / Fire / Burns	3	0.6	0.86	2.0
Undetermined Intent	3	0.6	0.86	2.0
All Other Causes	7	1.4	2.00	4.6
Canterbury Total	153	30.6	43.8	100.0

Source: Numerators: National Minimum Dataset and National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population



Table 156. Hospital Admissions (2006–2010) and Mortality (2004–2008) from Injuries in West Coast Young People Aged 15–24 Years by Cause

Main External Cause of Injury	Number: Total per 5 Year Period	Number: Annual Average	Rate per 100,000	Percent (%)
<b>West Coast</b>				
<b>Injury Admissions 15–24 Years, 2006–2010</b>				
Mechanical Forces: Inanimate	81	16.2	443.0	15.7
Mechanical Forces: Animate	24	4.8	131.3	4.6
Falls	83	16.6	453.9	16.1
Transport: Vehicle Occupant	92	18.4	503.1	17.8
Transport: Motorbike	35	7.0	191.4	6.8
Transport: Cyclist	14	2.8	76.6	2.7
Transport: Pedestrian	11	2.2	60.2	2.1
Transport: Other Land Transport	19	3.8	103.9	3.7
Transport: Other Transport	<3	s	s	s
Electricity / Fire / Burns	18	3.6	98.4	3.5
Accidental Poisoning	21	4.2	114.8	4.1
Drowning / Submersion	<3	s	s	s
Assault	51	10.2	278.9	9.9
Intentional Self-Harm	36	7.2	196.9	7.0
Undetermined Intent	8	1.6	43.8	1.5
Other Causes	21	4.2	114.8	4.1
<b>West Coast Total</b>	<b>517</b>	<b>103.4</b>	<b>2,827.5</b>	<b>100.0</b>
<b>Injury Mortality 15–24 Years, 2004–2008</b>				
Transport: Vehicle Occupant	7	1.4	39.5	41.2
All Other Causes	10	2.0	56.4	58.8
<b>West Coast Total</b>	<b>17</b>	<b>3.4</b>	<b>95.9</b>	<b>100.0</b>

Source: Numerators: National Minimum Dataset and National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population. Note: s: suppressed due to small numbers.



Table 157. Hospital Admissions (2006–2010) and Mortality (2004–2008) from Injuries in Otago Young People Aged 15–24 Years by Cause

Main External Cause of Injury	Number: Total per 5 Year Period	Number: Annual Average	Rate per 100,000	Percent (%)
<b>Otago</b>				
<b>Injury Admissions 15–24 Years, 2006–2010</b>				
Mechanical Forces: Inanimate	426	85.2	250.8	19.2
Mechanical Forces: Animate	160	32.0	94.2	7.2
Falls	531	106.2	312.6	23.9
Transport: Vehicle Occupant	239	47.8	140.7	10.8
Transport: Motorbike	154	30.8	90.7	6.9
Transport: Cyclist	69	13.8	40.6	3.1
Transport: Pedestrian	27	5.4	15.9	1.2
Transport: Other Land Transport	64	12.8	37.7	2.9
Transport: Other Transport	11	2.2	6.48	0.5
Electricity / Fire / Burns	31	6.2	18.2	1.4
Accidental Poisoning	20	4.0	11.8	0.9
Accidental Threat to Breathing	6	1.2	3.53	0.3
Drowning / Submersion	<3	s	s	s
Assault	160	32.0	94.2	7.2
Intentional Self-Harm	161	32.2	94.8	7.2
Undetermined Intent	48	9.6	28.3	2.2
No External Cause Listed	7	1.4	4.12	0.3
Other Causes	107	21.4	63.0	4.8
Otago Total	2,222	444.4	1,308.0	100.0
<b>Injury Mortality 15–24 Years, 2004–2008</b>				
Intentional Self-Harm	24	4.8	14.5	40.0
Transport: Vehicle Occupant	18	3.6	10.9	30.0
Transport: Motorbike	3	0.6	1.82	5.0
Transport: Other Land Transport	3	0.6	1.82	5.0
Assault	3	0.6	1.82	5.0
All Other Causes	9	1.8	5.45	15.0
Otago Total	60	12.0	36.4	100.0

Source: Numerators: National Minimum Dataset and National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population. Note: s: suppressed due to small numbers.

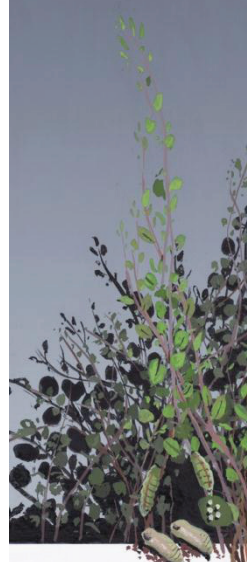




Table 158. Hospital Admissions (2006–2010) and Mortality (2004–2008) from Injuries in Southland Young People Aged 15–24 Years by Cause

Main External Cause of Injury	Number: Total per 5 Year Period	Number: Annual Average	Rate per 100,000	Percent (%)
<b>Southland</b>				
<b>Injury Admissions 15–24 Years, 2006–2010</b>				
Mechanical Forces: Inanimate	334	66.8	459.1	20.7
Mechanical Forces: Animate	106	21.2	145.7	6.6
Falls	325	65.0	446.7	20.1
Transport: Vehicle Occupant	158	31.6	217.2	9.8
Transport: Motorbike	136	27.2	186.9	8.4
Transport: Cyclist	48	9.6	66.0	3.0
Transport: Pedestrian	14	2.8	19.2	0.9
Transport: Other Land Transport	51	10.2	70.1	3.2
Transport: Other Transport	17	3.4	23.4	1.1
Electricity / Fire / Burns	24	4.8	33.0	1.5
Accidental Poisoning	13	2.6	17.9	0.8
Assault	144	28.8	197.9	8.9
Intentional Self-Harm	89	17.8	122.3	5.5
Undetermined Intent	57	11.4	78.4	3.5
Other Causes	100	20.0	137.5	6.2
<b>Southland Total</b>	<b>1,616</b>	<b>323.2</b>	<b>2,221.3</b>	<b>100.0</b>
<b>Injury Mortality 15–24 Years, 2004–2008</b>				
Intentional Self-Harm	24	4.8	33.7	40.7
Transport: Vehicle Occupant	21	4.2	29.5	35.6
Transport: Motorbike	3	0.6	4.21	5.1
Transport: All Other Causes	4	0.8	5.61	6.8
Drowning / Submersion	3	0.6	4.21	5.1
All Other Causes	4	0.8	5.61	6.8
<b>Southland Total</b>	<b>59</b>	<b>11.8</b>	<b>82.8</b>	<b>100.0</b>

Source: Numerators: National Minimum Dataset and National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population

## Land Transport Injuries

### South Island DHBs vs. New Zealand Distribution

In Nelson Marlborough, South Canterbury, the West Coast and Southland during 2006–2010, hospital admissions for land transport injuries in young people were *significantly* higher than the New Zealand rate, while admissions in Canterbury and Otago were *significantly* lower. During 2004–2008 mortality from land transport injuries in the West Coast and Southland was *significantly* higher than the New Zealand rate, while mortality in Canterbury and Otago was *significantly* lower. Rates in Nelson Marlborough and South Canterbury were not *significantly* different from the New Zealand rate (**Table 159**).

### South Island Distribution by Season

In the South Island during 2006–2010, hospital admissions for land transport injuries in young people were generally lower during winter (**Figure 132**).

Table 159. Hospital Admissions (2006–2010) and Mortality (2004–2008) from Land Transport Injuries in Young People 15–24 Years, South Island DHBs, vs. New Zealand

DHB	Number: Total per 5 Year Period	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI
<b>Land Transport Injuries</b>					
<b>Hospital Admissions in Young People Aged 15–24 Years, 2006–2010</b>					
Nelson Marlborough	442	88.4	561.2	1.54	1.40–1.70
West Coast	171	34.2	935.2	2.57	2.21–2.99
Canterbury	1,114	222.8	305.4	0.84	0.79–0.89
South Canterbury	211	42.2	671.3	1.85	1.61–2.11
Otago	553	110.6	325.5	0.89	0.82–0.97
Southland	407	81.4	559.5	1.54	1.39–1.70
New Zealand	11,519	2,303.8	363.8	1.00	
<b>Mortality in Young People Aged 15–24 Years, 2004–2008</b>					
Nelson Marlborough	17	3.4	22.2	0.99	0.61–1.60
West Coast	9	1.8	50.8	2.26	1.17–4.37
Canterbury	55	11.0	15.7	0.70	0.53–0.92
South Canterbury	9	1.8	29.5	1.31	0.68–2.54
Otago	24	4.8	14.5	0.65	0.43–0.97
Southland	28	5.6	39.3	1.75	1.20–2.56
New Zealand	678	135.6	22.4	1.00	

Source: Numerators: National Minimum Dataset and National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population

### New Zealand Distribution by Age

*Age and Gender:* In New Zealand during 2006–2010, hospital admissions for land transport injuries in males increased rapidly during late childhood and adolescence, to reach a peak at 19 years of age. While similar patterns were evident for females, the rate of increase was much slower prior to fifteen years of age. At all ages (with the exception of infants <1 year) admission rates were higher for males than for females. Mortality during 2004–2008 demonstrated a similar pattern, with rates peaking at 18 years in both genders (**Figure 133**).

*Age and Cause:* In New Zealand during 2006–2010, hospital admissions for vehicle occupant injuries increased rapidly after 13 years of age, with rates reaching a peak at 19 years, before declining again. Motorbike injury admissions also increased during adolescence, with rates being highest amongst those in their late teens and early twenties. In contrast, cycle injury admissions increased during childhood to reach a peak amongst those aged 11–14 years, while pedestrian injuries were more evenly distributed across childhood/adolescence/early adulthood (**Figure 134**).

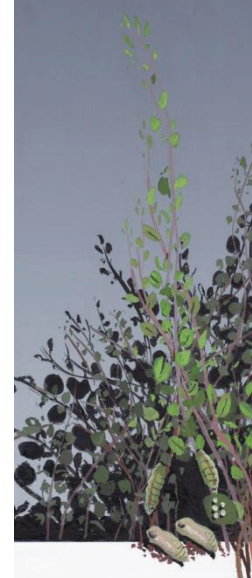
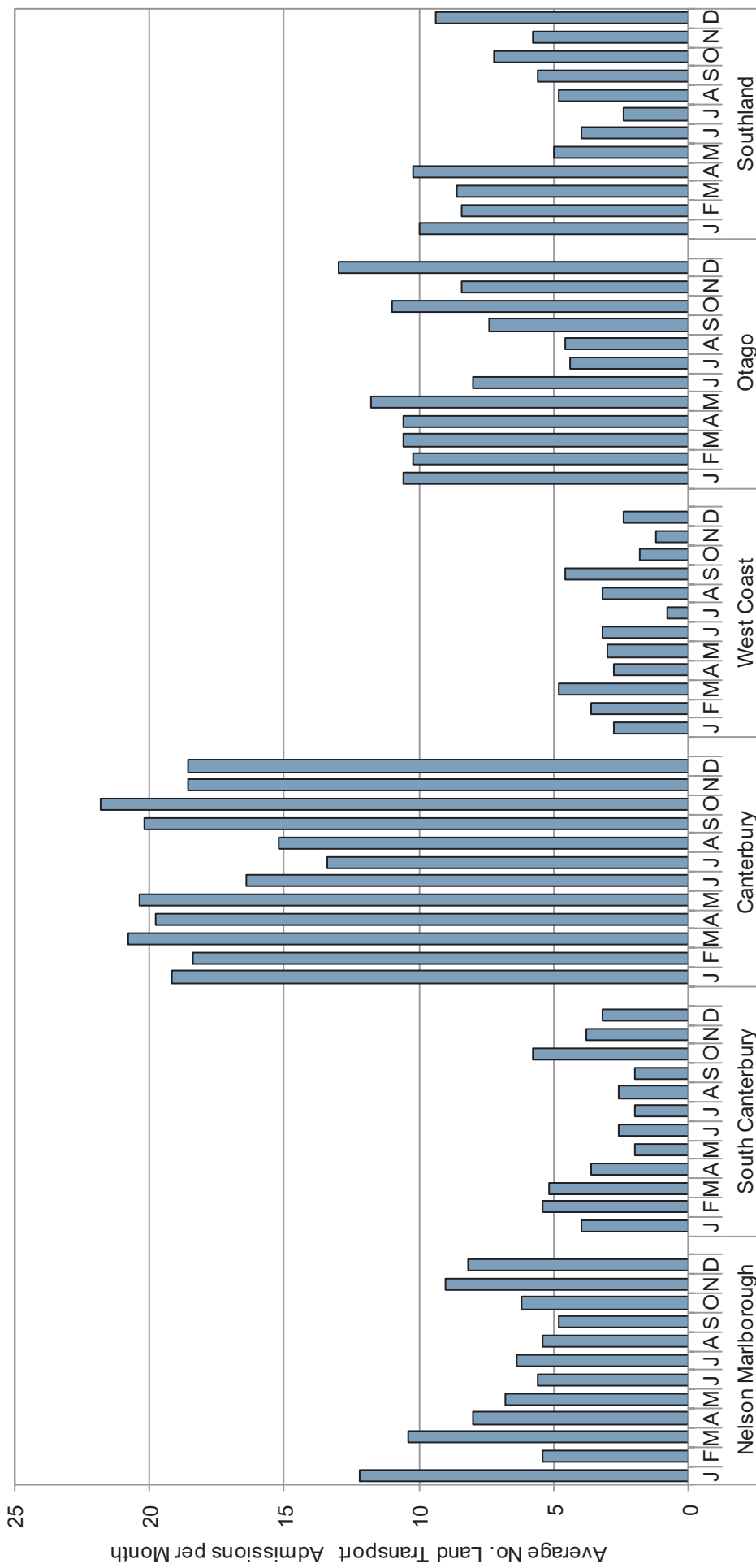
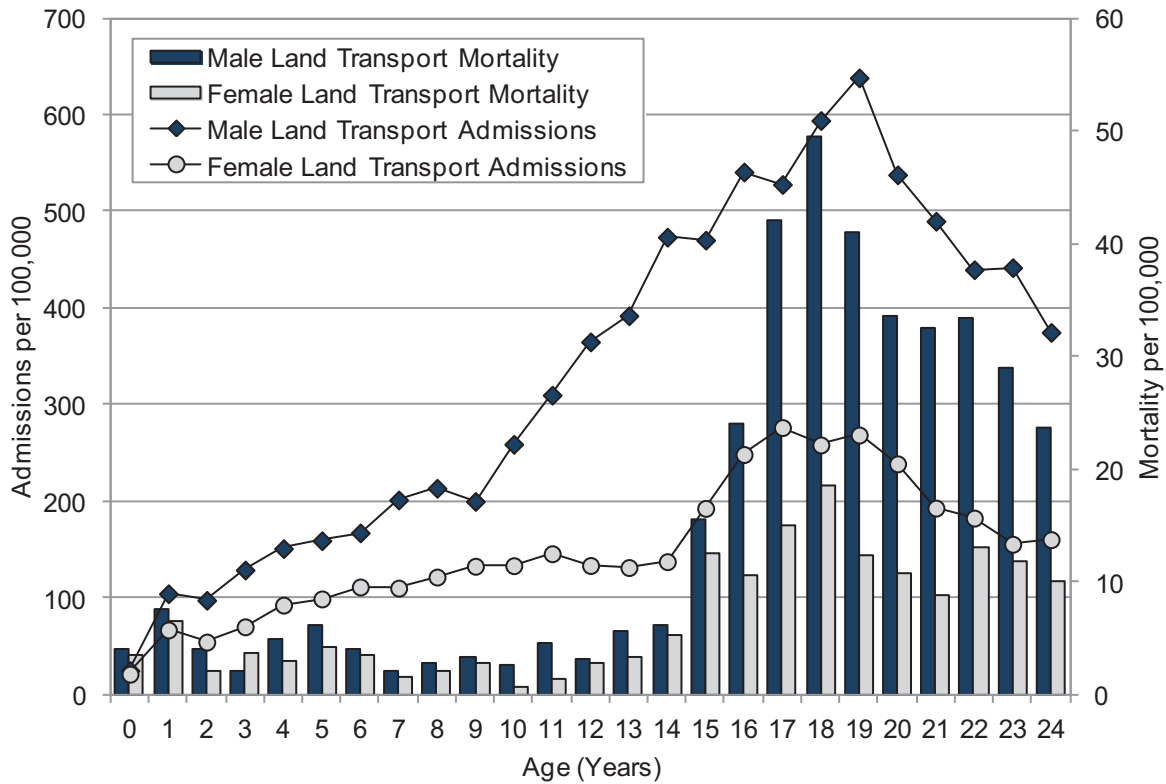


Figure 132. Average Number of Hospital Admissions for Land Transport Injuries per Month in Young People Aged 15-24 Years, South Island DHBs 2006-2010



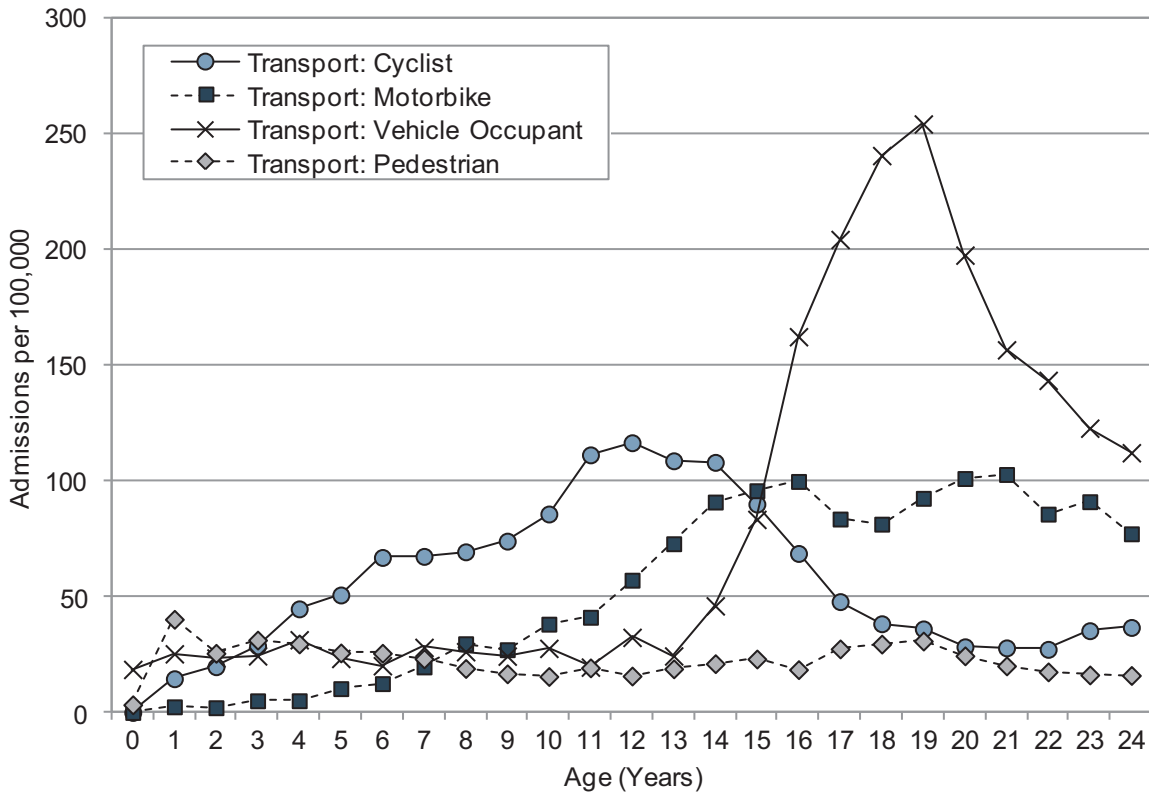
Source: National Minimum Dataset

Figure 133. Hospital Admissions (2006–2010) and Deaths (2004–2008) from Land Transport Injuries in New Zealand Children and Young People 0–24 Years by Age and Gender



Source: Numerators: National Minimum Dataset and National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population

Figure 134. Hospital Admissions for Transport Injuries in Children and Young People Aged 0–24 Years by Age and Injury Type, New Zealand 2006–2010



Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population



## New Zealand Distribution by Ethnicity, NZDep Index Decile and Gender

*Pedestrian Injuries:* In New Zealand during 2006–2010, hospital admissions for pedestrian injuries were *significantly* higher for males, for Māori > European > Asian/Indian young people and those from more deprived (NZDep deciles 7–8 and 10) areas (**Table 160**).

Table 160. Hospital Admissions for Pedestrian and Cyclist Injuries in Young People 15–24 Years by Gender, Ethnicity and NZ Deprivation Index Decile, New Zealand 2006–2010

Variable	Rate	Rate Ratio	95% CI	Variable	Rate	Rate Ratio	95% CI
New Zealand							
Pedestrian Injuries 15–24 Years							
NZ Deprivation Index Decile				NZ Deprivation Index Quintile			
Decile 1	16.4	1.00		Decile 1–2	15.7	1.00	
Decile 2	15.1	0.92	0.60–1.41	Decile 3–4	16.3	1.04	0.77–1.39
Decile 3	16.1	0.99	0.65–1.51	Decile 5–6	21.8	1.39	1.05–1.83
Decile 4	16.4	1.01	0.67–1.52	Decile 7–8	27.2	1.73	1.34–2.23
Decile 5	21.7	1.33	0.89–1.97	Decile 9–10	25.6	1.63	1.27–2.10
Decile 6	21.9	1.34	0.91–1.96	Prioritised Ethnicity			
Decile 7	28.7	1.76	1.22–2.53	European	22.6	1.00	
Decile 8	25.9	1.58	1.10–2.26	Māori	29.6	1.31	1.10–1.56
Decile 9	21.4	1.31	0.91–1.88	Pacific	22.5	1.00	0.75–1.31
Decile 10	30.7	1.88	1.32–2.67	Asian/Indian	9.11	0.40	0.30–0.55
Gender							
Female	14.9	1.00					
Male	29.8	2.01	1.72–2.35				
Cyclist Injuries 15–24 Years							
NZ Deprivation Index Decile				NZ Deprivation Index Quintile			
Decile 1	54.4	1.00		Decile 1–2	52.3	1.00	
Decile 2	50.4	0.93	0.73–1.17	Decile 3–4	47.5	0.91	0.77–1.07
Decile 3	51.8	0.95	0.75–1.20	Decile 5–6	45.2	0.86	0.73–1.02
Decile 4	43.5	0.80	0.63–1.02	Decile 7–8	41.9	0.80	0.68–0.94
Decile 5	42.7	0.79	0.61–1.01	Decile 9–10	34.4	0.66	0.56–0.78
Decile 6	47.3	0.87	0.69–1.09	Prioritised Ethnicity			
Decile 7	50.9	0.94	0.75–1.17	European	61.8	1.00	
Decile 8	34.5	0.63	0.50–0.80	Māori	29.1	0.47	0.40–0.55
Decile 9	39.5	0.73	0.58–0.91	Pacific	14.6	0.24	0.17–0.33
Decile 10	28.2	0.52	0.40–0.67	Asian/Indian	7.29	0.12	0.08–0.16
Gender							
Female	12.4	1.00					
Male	76.0	6.11	5.26–7.11				

Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population. Note: Rate is per 100,000; Ethnicity is Level 1 Prioritised. Decile is NZDep2001.

*Cyclist Injuries:* In New Zealand during 2006–2010, hospital admissions for cycle injuries were *significantly* higher for males and European > Māori > Pacific > Asian/Indian young people. Admissions were also *significantly* higher in those from the least deprived (NZDep decile 1) areas, when compared to those from more deprived (NZDep decile 8–10) areas (**Table 160**).

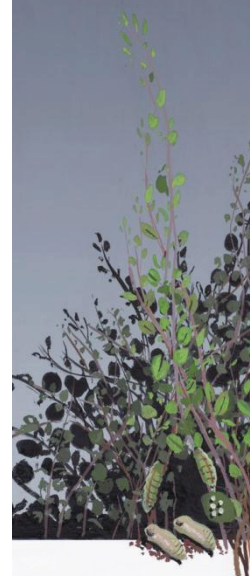
**Motorbike Injuries:** In New Zealand during 2006–2010, hospital admissions for motorbike injuries were *significantly* higher for males, and for European > Māori > Pacific and Asian/Indian young people. No consistent social gradients were evident however by NZDep index decile (**Table 161**).

**Vehicle Occupant Injuries:** In New Zealand during 2006–2010, hospital admissions for vehicle occupant injuries were *significantly* higher for males, Māori > European > Pacific > Asian/Indian young people and those from average-to-more deprived (NZDep decile 4–10) areas (**Table 161**).

Table 161. Hospital Admissions for Motorbike and Vehicle Occupant Injuries in Young People Aged 15–24 Years by Gender, Ethnicity and NZ Deprivation Index Decile, New Zealand 2006–2010

Variable	Rate	Rate Ratio	95% CI	Variable	Rate	Rate Ratio	95% CI
<b>New Zealand</b>							
<b>Motorbike Injuries 15–24 Years</b>							
NZ Deprivation Index Decile				NZ Deprivation Index Quintile			
Decile 1	83.7	1.00		Decile 1–2	89.9	1.00	
Decile 2	95.7	1.14	0.96–1.37	Decile 3–4	105.8	1.18	1.04–1.33
Decile 3	111.1	1.33	1.12–1.58	Decile 5–6	100.1	1.11	0.99–1.26
Decile 4	101.0	1.21	1.01–1.44	Decile 7–8	84.6	0.94	0.83–1.06
Decile 5	94.9	1.13	0.95–1.36	Decile 9–10	76.7	0.85	0.76–0.96
Decile 6	104.3	1.25	1.05–1.48	Prioritised Ethnicity			
Decile 7	95.6	1.14	0.96–1.36	European	129.8	1.00	
Decile 8	75.4	0.90	0.76–1.08	Māori	67.0	0.52	0.46–0.57
Decile 9	84.6	1.01	0.86–1.19	Pacific	13.0	0.10	0.07–0.14
Decile 10	67.1	0.80	0.67–0.96	Asian/Indian	9.31	0.07	0.05–0.10
Gender							
Female	16.3	1.00					
Male	164.6	10.09	8.87–11.47				
<b>Vehicle Occupant Injuries 15–24 Years</b>							
NZ Deprivation Index Decile				NZ Deprivation Index Quintile			
Decile 1	104.2	1.00		Decile 1–2	113.3	1.00	
Decile 2	122.0	1.17	1.00–1.37	Decile 3–4	135.9	1.20	1.08–1.33
Decile 3	121.6	1.17	0.99–1.37	Decile 5–6	166.6	1.47	1.33–1.63
Decile 4	149.0	1.43	1.23–1.66	Decile 7–8	169.4	1.49	1.36–1.65
Decile 5	157.1	1.51	1.29–1.76	Decile 9–10	207.3	1.83	1.67–2.01
Decile 6	174.4	1.67	1.45–1.93	Prioritised Ethnicity			
Decile 7	181.5	1.74	1.51–2.01	European	164.8	1.00	
Decile 8	159.4	1.53	1.33–1.77	Māori	256.4	1.56	1.46–1.65
Decile 9	185.3	1.78	1.55–2.04	Pacific	133.1	0.81	0.72–0.90
Decile 10	233.9	2.24	1.96–2.57	Asian/Indian	57.3	0.35	0.31–0.39
Gender							
Female	135.4	1.00					
Male	198.3	1.47	1.39–1.55				

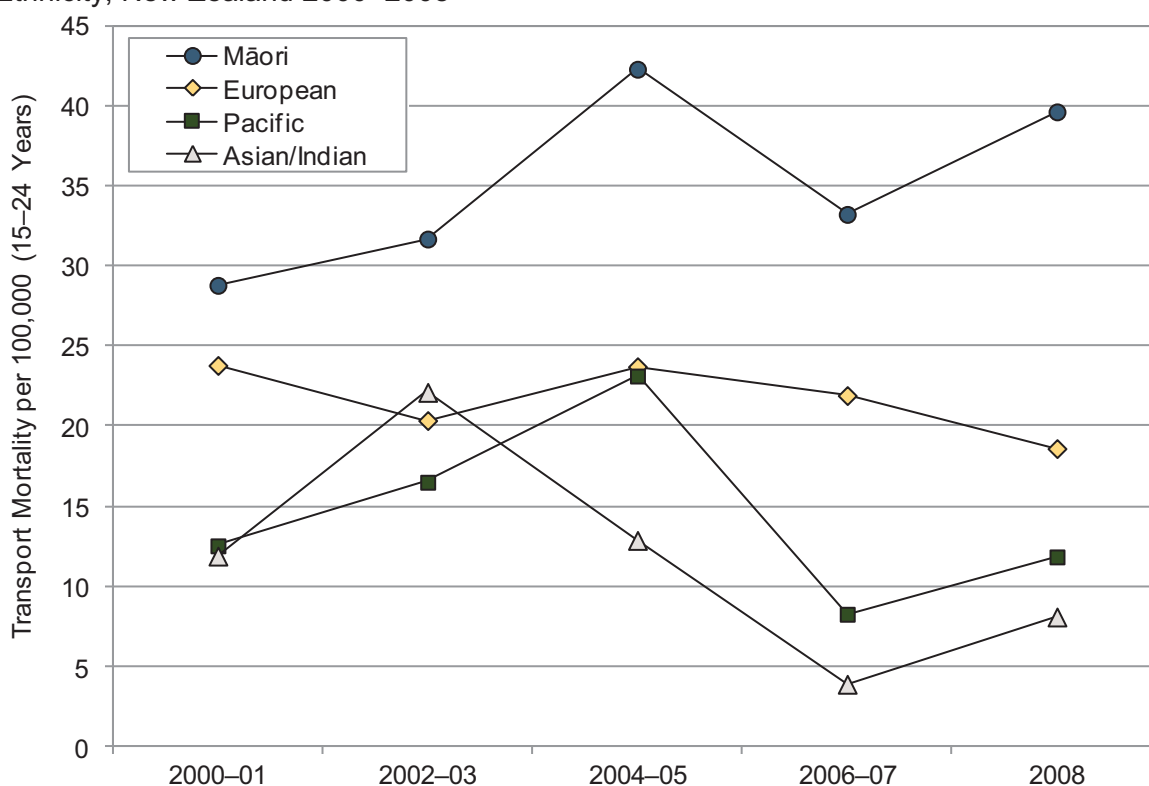
Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population.  
Note: Rate is per 100,000; Ethnicity is Level 1 Prioritised; Decile is NZDep2001.



## New Zealand Mortality Trends by Ethnicity

In New Zealand during 2000–2008, mortality from land transport injuries was consistently higher for Māori young people than for young people of other ethnic groups (**Figure 135**).

Figure 135. Mortality from Land Transport Injuries in Young People Aged 15–24 Years by Ethnicity, New Zealand 2000–2008



Source: Numerator: National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population.  
Note: Ethnicity is Level 1 Prioritised

## Unintentional Non-Transport Injuries

### South Island DHBs vs. New Zealand Distribution

In the West Coast, South Canterbury and Southland during 2006–2010, hospital admissions for unintentional non-transport injuries in young people were *significantly* higher than the New Zealand rate, while in Canterbury and Otago rates were *significantly* lower, and in Nelson Marlborough, rates were similar. Mortality from unintentional non-transport injuries during 2004–2008 was *significantly* higher than the New Zealand rate in the West Coast, but not *significantly* different from the New Zealand rate in the other South Island DHBs, with the exception of South Canterbury, where small numbers precluded a valid comparison (**Table 162**).

### South Island Distribution by Season

In the South Island during 2006–2010, there were no consistent seasonal patterns in hospital admissions for unintentional non-transport injuries in young people (**Figure 136**).



Table 162. Hospital Admissions (2006–2010) and Mortality (2004–2008) from Unintentional Non-Transport Injuries in the South Island DHBs Young People Aged 15–24 Years, vs. New Zealand

DHB	Number: Total per 5 Year Period	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI
<b>Unintentional Non-Transport Injuries</b>					
<b>Hospital Admissions in Young People Aged 15–24 Years, 2006–2010</b>					
Nelson Marlborough	641	128.2	813.9	1.00	0.92–1.08
West Coast	207	41.4	1,132.1	1.39	1.21–1.59
Canterbury	2,583	516.6	708.1	0.87	0.83–0.90
South Canterbury	302	60.4	960.9	1.18	1.05–1.32
Otago	1,149	229.8	676.4	0.83	0.78–0.88
Southland	789	157.8	1,084.5	1.33	1.24–1.43
New Zealand	25,856	5,171.2	816.5	1.00	
<b>Mortality in Young People Aged 15–24 Years, 2004–2008</b>					
Nelson Marlborough	5	1.0	6.53	1.64	0.67–4.02
West Coast	3	0.6	16.9	4.26	1.36–13.41
Canterbury	12	2.4	3.43	0.87	0.48–1.57
South Canterbury	<3	s	s	s	s
Otago	5	1.0	3.03	0.76	0.31–1.87
Southland	5	1.0	7.02	1.77	0.72–4.33
New Zealand	120	24.0	3.97	1.00	

Source: Numerators: National Minimum Dataset and National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population. Note: s: suppressed due to small numbers.

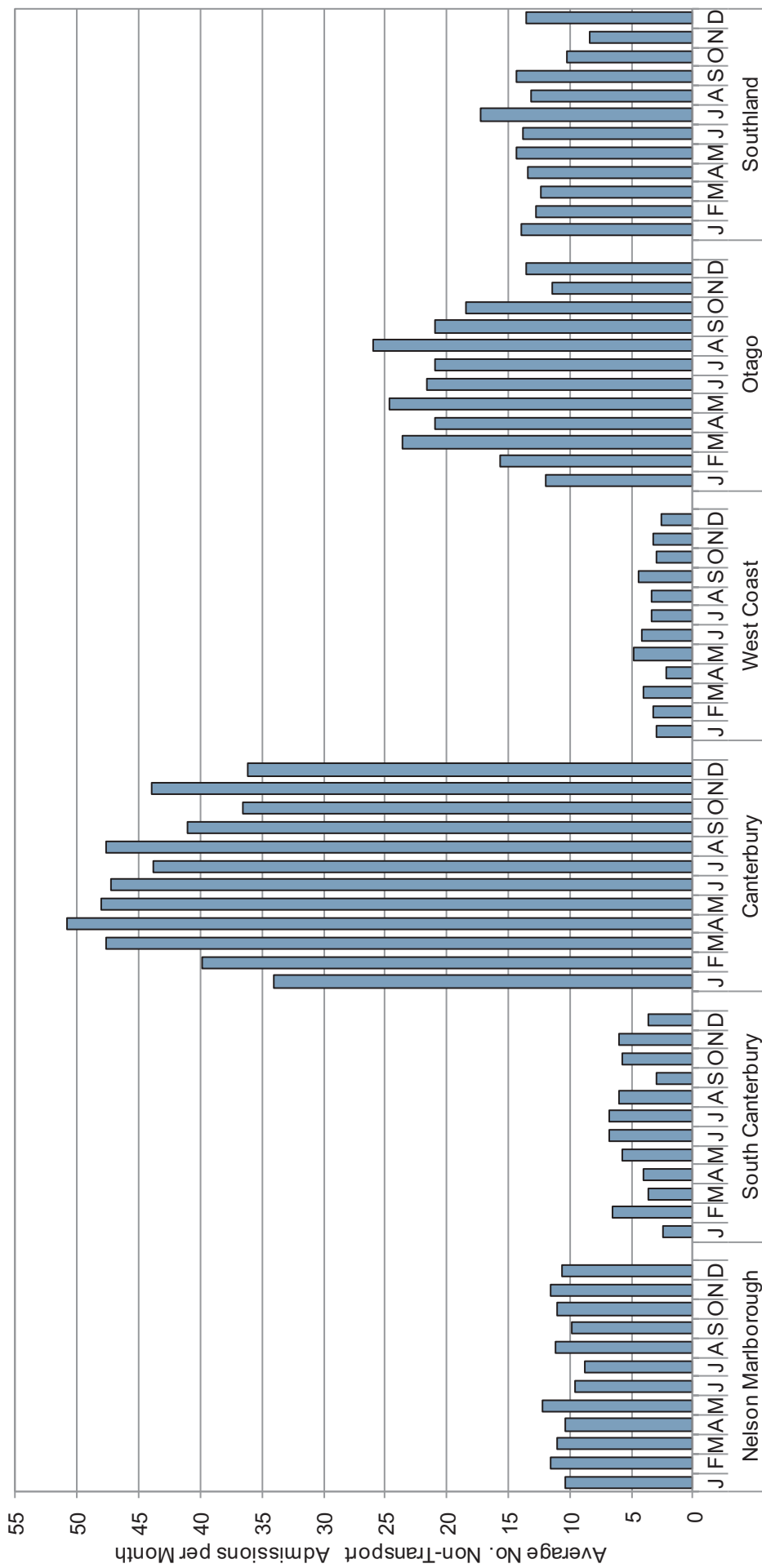
### New Zealand Distribution by Age

In New Zealand during 2006–2010, after peaking at one year of age and again at five years, hospital admissions for unintentional non-transport injuries declined in both males and females. For males, admissions reached a nadir at ten years of age, before increasing again, to reach a further peak at 19 years. For females, rates continued to decline until around fifteen years, after which time they became static. Mortality during 2004–2008 demonstrated a similar pattern, with rates for males being consistently higher than for females from 12 years onwards (as they were during the preschool years) (**Figure 137**). While admissions for injuries arising from inanimate mechanical forces and falls tended to be higher in children, they were also prominent causes of injury admission in young people aged 15–24 years (**Figure 138**).



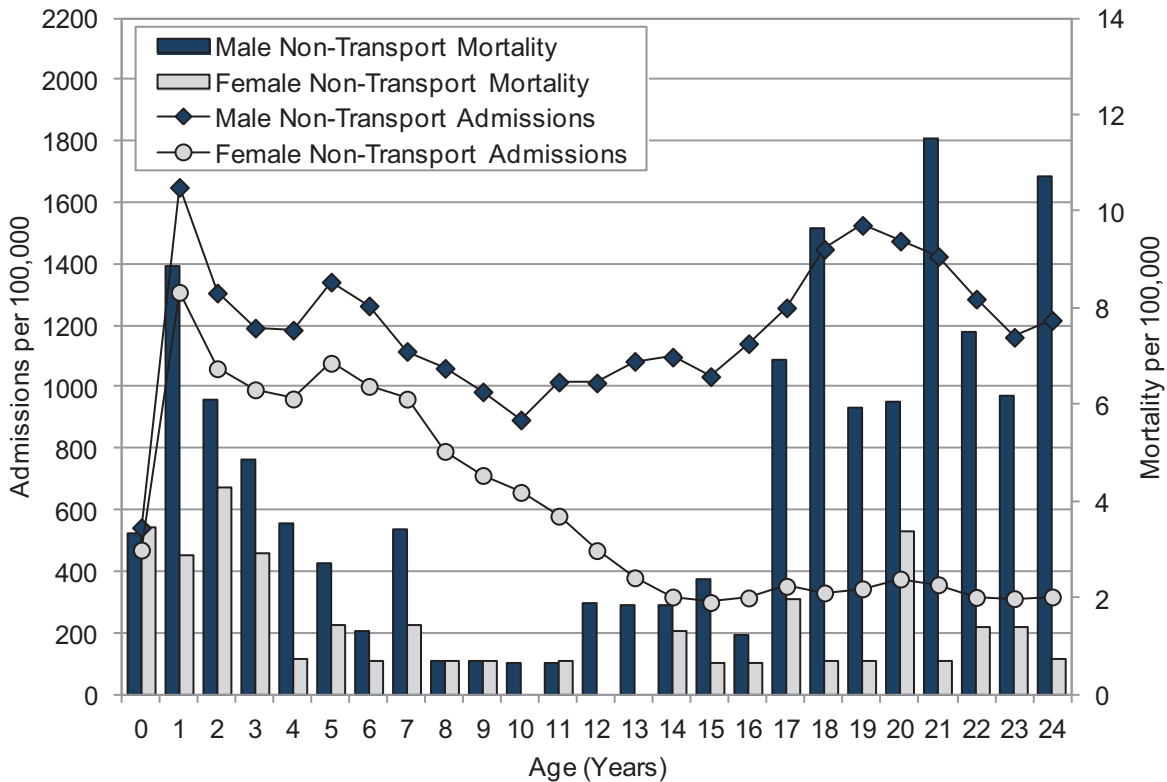


Figure 136. Average Number of Hospital Admissions for Unintentional Non-Transport Injuries per Month in Young People 15-24 Years, the South Island DHBs 2006-2010



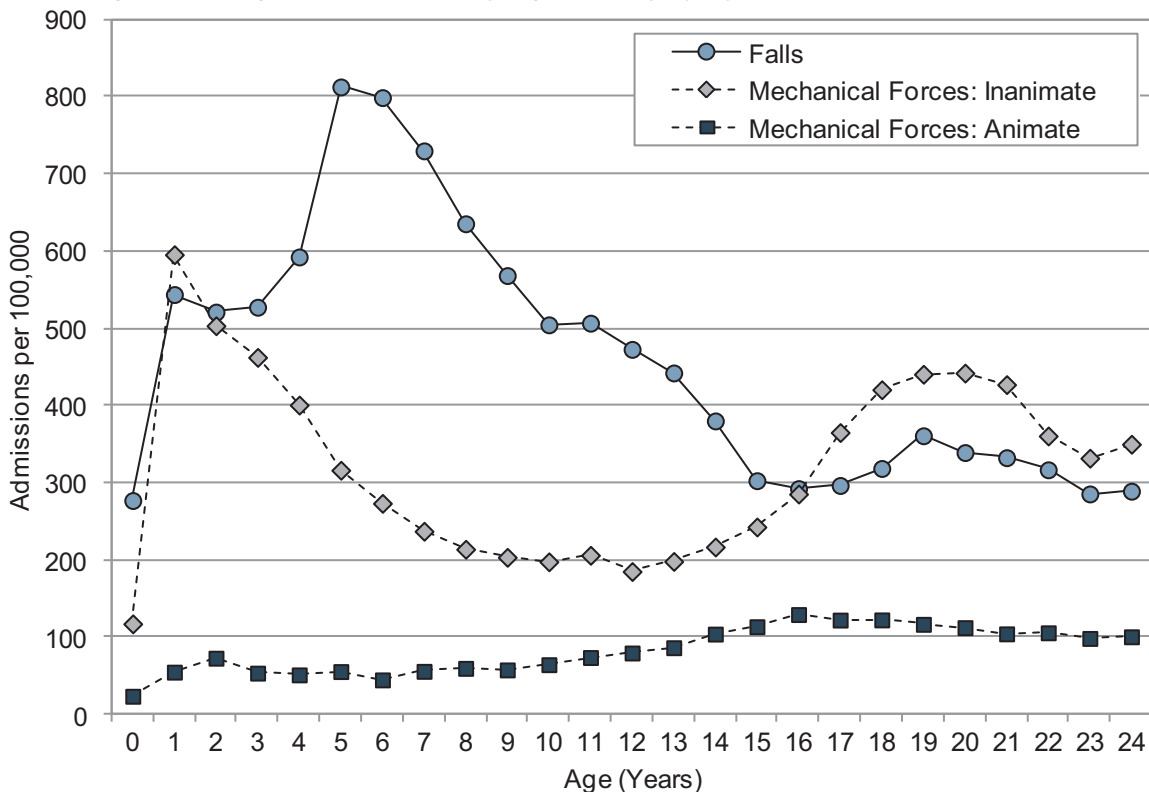
Source: National Minimum Dataset

Figure 137. Hospital Admissions (2006–2010) and Deaths (2004–2008) from Unintentional Non-Transport Injuries in New Zealand Children and Young People Aged 0–24 Years by Age and Gender



Source: Numerators: National Minimum Dataset and National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population

Figure 138. Hospital Admissions for Falls and Mechanical Force Type Injuries in Children and Young People Aged 0–24 Years by Age and Injury Type, New Zealand 2006–2010



Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population



## New Zealand Distribution by Ethnicity, NZDep Index Decile and Gender

*Falls:* In New Zealand during 2006–2010, hospital admissions for falls were *significantly* higher for males, Pacific > European and Māori > Asian/Indian young people and those from more deprived (NZDep deciles 7 and 9–10) areas (**Table 163**).

*Electricity/Fire/Burns:* In New Zealand during 2006–2010, hospital admissions for injuries arising from electricity/fire/burns were *significantly* higher for males, Māori > European > Pacific > Asian/Indian young people and those from more deprived (NZDep decile 5–10) areas (**Table 163**).

Table 163. Hospital Admissions for Falls and Electricity/Fire/Burn Injuries in Young People 15–24 Years by Gender, Ethnicity and NZ Deprivation Index Decile, New Zealand 2006–2010

Variable	Rate	Rate Ratio	95% CI	Variable	Rate	Rate Ratio	95% CI
<b>New Zealand</b>							
<b>Falls 15–24 Years</b>							
NZ Deprivation Index Decile				NZ Deprivation Index Quintile			
Decile 1	274.6	1.00		Decile 1–2	275.1	1.00	
Decile 2	275.6	1.00	0.91–1.11	Decile 3–4	292.1	1.06	0.99–1.14
Decile 3	313.0	1.14	1.03–1.26	Decile 5–6	281.4	1.02	0.95–1.10
Decile 4	273.0	0.99	0.90–1.10	Decile 7–8	299.9	1.09	1.02–1.17
Decile 5	293.2	1.07	0.96–1.18	Decile 9–10	343.7	1.25	1.17–1.33
Decile 6	271.5	0.99	0.90–1.09	Prioritised Ethnicity			
Decile 7	305.5	1.11	1.01–1.23	European	339.4	1.00	
Decile 8	295.2	1.07	0.98–1.18	Māori	322.8	0.95	0.90–1.00
Decile 9	337.9	1.23	1.13–1.34	Pacific	439.3	1.29	1.21–1.38
Decile 10	350.7	1.28	1.17–1.40	Asian/Indian	85.2	0.25	0.23–0.28
Gender							
Female	144.9	1.00					
Male	478.2	3.30	3.15–3.46				
<b>Electricity / Fire / Burn Injuries 15–24 Years</b>							
NZ Deprivation Index Decile				NZ Deprivation Index Quintile			
Decile 1	13.3	1.00		Decile 1–2	14.4	1.00	
Decile 2	15.5	1.16	0.74–1.82	Decile 3–4	16.7	1.15	0.85–1.56
Decile 3	15.8	1.18	0.76–1.85	Decile 5–6	24.9	1.73	1.31–2.28
Decile 4	17.5	1.31	0.85–2.02	Decile 7–8	30.4	2.11	1.62–2.74
Decile 5	26.3	1.98	1.32–2.97	Decile 9–10	30.9	2.15	1.66–2.77
Decile 6	23.8	1.79	1.20–2.67	Prioritised Ethnicity			
Decile 7	32.6	2.45	1.67–3.60	European	25.7	1.00	
Decile 8	28.5	2.14	1.46–3.14	Māori	33.8	1.32	1.12–1.56
Decile 9	32.0	2.41	1.66–3.48	Pacific	17.8	0.69	0.51–0.94
Decile 10	29.6	2.22	1.52–3.25	Asian/Indian	7.90	0.31	0.22–0.43
Gender							
Female	11.3	1.00					
Male	37.6	3.31	2.80–3.91				

Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population.  
Note: Rate is per 100,000; Ethnicity is Level 1 Prioritised. Decile is NZDep2001.

*Inanimate Mechanical Forces:* In New Zealand during 2006–2010, hospital admissions for injuries arising from inanimate mechanical forces were *significantly* higher for males, Pacific and Māori > European > Asian/Indian young people and those from average-to-more deprived (NZDep decile 3–10) areas (**Table 164**).

*Animate Mechanical Forces:* In New Zealand during 2006–2010, hospital admissions for injuries arising from animate mechanical forces were *significantly* higher for males, Pacific > Māori > European > Asian/Indian young people and those from more deprived (NZDep decile 8–10) areas (**Table 164**).

Table 164. Hospital Admissions for Injuries Arising from Inanimate and Animate Mechanical Forces in Young People Aged 15–24 Years by Gender, Ethnicity and NZ Deprivation Index Decile, New Zealand 2006–2010

Variable	Rate	Rate Ratio	95% CI	Variable	Rate	Rate Ratio	95% CI
<b>New Zealand</b>							
<b>Mechanical Forces: Inanimate Injuries 15–24 Years</b>							
NZ Deprivation Index Decile				NZ Deprivation Index Quintile			
Decile 1	249.1	1.00		Decile 1–2	251.3	1.00	
Decile 2	253.3	1.02	0.91–1.13	Decile 3–4	294.4	1.17	1.09–1.26
Decile 3	282.9	1.14	1.02–1.26	Decile 5–6	338.7	1.35	1.26–1.44
Decile 4	304.8	1.22	1.11–1.35	Decile 7–8	364.9	1.45	1.36–1.55
Decile 5	341.3	1.37	1.24–1.51	Decile 9–10	491.6	1.96	1.84–2.08
Decile 6	336.5	1.35	1.23–1.49	Prioritised Ethnicity			
Decile 7	355.5	1.43	1.30–1.57	European	346.0	1.00	
Decile 8	372.7	1.50	1.36–1.64	Māori	519.8	1.50	1.44–1.57
Decile 9	426.8	1.71	1.57–1.87	Pacific	548.3	1.58	1.50–1.68
Decile 10	569.6	2.29	2.09–2.50	Asian/Indian	88.9	0.26	0.23–0.28
Gender							
Female	135.9	1.00					
Male	588.8	4.33	4.13–4.54				
<b>Mechanical Forces: Animate Injuries 15–24 Years</b>							
NZ Deprivation Index Decile				NZ Deprivation Index Quintile			
Decile 1	104.2	1.00		Decile 1–2	96.3	1.00	
Decile 2	88.9	0.85	0.72–1.01	Decile 3–4	93.1	0.97	0.86–1.09
Decile 3	91.9	0.88	0.74–1.05	Decile 5–6	103.9	1.08	0.96–1.21
Decile 4	94.2	0.90	0.76–1.07	Decile 7–8	111.4	1.16	1.03–1.29
Decile 5	98.8	0.95	0.80–1.12	Decile 9–10	141.1	1.47	1.32–1.63
Decile 6	108.2	1.04	0.89–1.22	Prioritised Ethnicity			
Decile 7	98.6	0.95	0.80–1.11	European	106.2	1.00	
Decile 8	122.0	1.17	1.01–1.36	Māori	146.9	1.38	1.28–1.50
Decile 9	137.2	1.32	1.14–1.52	Pacific	219.3	2.06	1.88–2.27
Decile 10	145.9	1.40	1.21–1.62	Asian/Indian	19.8	0.19	0.15–0.23
Gender							
Female	38.6	1.00					
Male	185.9	4.82	4.42–5.26				

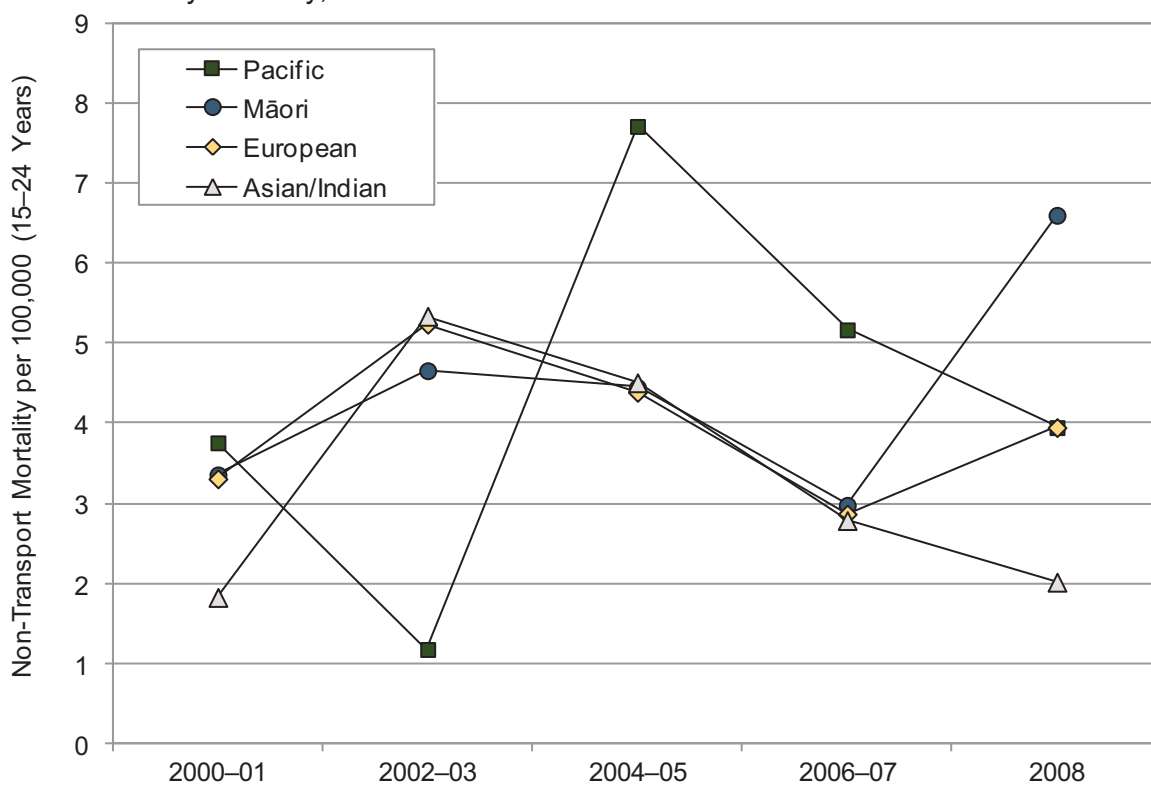
Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population. Note: Rate is per 100,000; Ethnicity is Level 1 Prioritised; Decile is NZDep2001.



## New Zealand Mortality Trends by Ethnicity

In New Zealand during 2000–2008, there were no consistent ethnic differences in mortality from unintentional non-transport injuries in young people (Figure 139).

Figure 139. Mortality from Unintentional Non-Transport Injuries in Young People Aged 15–24 Years by Ethnicity, New Zealand 2000–2008



Source: Numerator: National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population.  
Note: Ethnicity is Level 1 Prioritised

## Summary

In New Zealand during 2006–2010, inanimate mechanical forces and falls were the leading causes of injury admissions in young people, although as a group transport injuries also made a significant contribution. In contrast, during 2004–2008, intentional self-harm and vehicle occupant injuries were the leading causes of injury related mortality. During 2000–2008, mortality from land transport injuries fluctuated, while mortality from unintentional non-transport injuries and accidental poisoning remained relatively static.

In the South Island during 2006–2010, inanimate mechanical forces and falls were also the leading causes of injury admissions in young people, although as a group transport injuries again made a significant contribution. In contrast, during 2004–2008, intentional self-harm and vehicle occupant injuries were the leading causes of injury related mortality.



## Local Policy Documents and Evidence-Based Reviews Relevant to the Prevention of Injuries in Young People

In New Zealand, the *NZ Injury Prevention Strategy* provides the broad strategic direction in the area of unintentional injury. The multi-factorial nature of unintentional injuries and the range of contexts in which they occur however, means that a range of initiatives may be required, if injury rates are to be reduced. **Table 165** provides an overview of local policy documents and evidence-based reviews which consider the most effective approaches to injury prevention in young people, while **Table 121** on **Page 359** considers a range of initiatives relevant to children. (Note: Reviews on the effectiveness of cycle helmets, the prevention on pedestrian injuries and the effectiveness of smoke alarms are considered in the child injury section).

Table 165. Local Policy Documents and Evidence-Based Reviews Relevant to the Prevention Unintentional Injuries in Young People

New Zealand Policy Documents
<p>Minister for Accident Compensation Corporation, 2003. <b>New Zealand Injury Prevention Strategy</b>. Wellington.  <a href="http://www.nzips.govt.nz/documents/strategycolour.pdf">http://www.nzips.govt.nz/documents/strategycolour.pdf</a></p> <p>New Zealand's first national injury prevention strategy was published in 2003. It sets out goals and objectives for achieving a positive safety culture and creating safe environments. It also defines principles by which the process will operate. Injury to those less than 25 years is included in all priority areas: namely, road safety, falls, drowning, assault, suicide and work related injury.</p>
<p>Ministry of Transport. <b>Safer Journeys: New Zealand's Road Safety Strategy 2010-2020</b>  <a href="http://www.transport.govt.nz/saferjourneys/Documents/SaferJourneyStrategy.pdf">http://www.transport.govt.nz/saferjourneys/Documents/SaferJourneyStrategy.pdf</a></p> <p>Increasing the safety of young drivers is a major priority in the Road Safety Strategy 2010-2020. The aim is to reduce road fatality rates for young people from 21 per 100,000 to a rate similar to Australia (13 per 100,000). Proposed strategies include multiple policy and practice initiatives across four key areas: safe roads and roadsides, safe speeds, safe vehicles and safe road use. The strategy reflects a programme designed to address some of the risk factors that research has identified but also to actively engage the community in acting positively to increase road safety.</p>
<p>Department of Labour, 2011. <b>Workplace Health and Safety Strategy for New Zealand to 2015: National Action Agenda 2010–2013</b>. Wellington, Department of Labour.  <a href="http://www.dol.govt.nz/whss/action-agenda/National%20Action%20Agenda%202011.pdf">http://www.dol.govt.nz/whss/action-agenda/National%20Action%20Agenda%202011.pdf</a></p> <p>While this document does not specifically mention young workers, much of the proposed action has direct implications for this age group. The industries identified as being of most concern for health and safety are construction, agriculture, forestry, manufacturing and fishing. All of these industries rely on the under 25 year old workforce, leaving this age group exposed to the risk of injury.</p>
<p>Minister for Accident Compensation Corporation, 2005. <b>Drowning Prevention Strategy: Towards a Water Safe New Zealand 2005-2015</b>. Accident Compensation Corporation, Wellington, 2005.  <a href="http://www.acc.co.nz/PRD_EXT_CSMP/groups/external_ip/documents/guide/wcm2_020949.pdf">http://www.acc.co.nz/PRD_EXT_CSMP/groups/external_ip/documents/guide/wcm2_020949.pdf</a></p> <p>The Drowning Prevention Strategy was intended to provide a framework for people, groups, organisations and communities to work coherently to prevent drowning and to improve water safety. The focus in this document is on identified priority population groups: males 15-24 years and children aged 0-4 years.</p>
<p>New Zealand Government. <b>Land Transport (Road Safety and Other Matters) Amendment Act 2011</b>.  <a href="http://www.legislation.govt.nz/act/public/2011/0013/latest/viewpdf.aspx?search=qs_act_age+driver+licence_resel&amp;p=1">http://www.legislation.govt.nz/act/public/2011/0013/latest/viewpdf.aspx?search=qs_act_age+driver+licence_resel&amp;p=1</a></p> <p>This amendment to the Land Transport Act raises the minimum age for holding a driver's licence to 16 years.</p>
Systematic Reviews: Road Safety
<p>Russell, K. F., B. Vandermeer, et al. <b>Graduated driver licensing for reducing motor vehicle crashes among young drivers</b>. Cochrane Database of Systematic Reviews. (2011) (10).</p> <p>Young drivers are more likely to be involved in motor vehicle crashes than older drivers. One intervention that has been introduced in New Zealand and elsewhere is the graduated drivers licence (GDL). This systematic review examines 34 studies that evaluate GDL programmes implemented in the US, Canada, New Zealand and Australia. The authors concluded that GDL is effective in reducing crash rates among young drivers. However, as there was considerable variation in the restrictions on young drivers, the review was unable to determine from the studies critiqued which components of the GDL have had the most effect.</p>

Roberts IG, Kwan I. **School-based driver education for the prevention of traffic crashes.** Cochrane Database of Systematic Reviews 2001, Issue 3. Art. No.: CD003201. DOI: 10.1002/14651858.CD003201

This review aimed to quantify the effect of school-based driver education on licensing and road traffic crashes. While school-based driver education has been promoted as a strategy to reduce road crashes among teenagers who are at high risk of road death and serious injury, the evidence is that driver education in schools leads to early licensing. The studies included found no evidence that road crash involvement diminished with school-based education. Rather this training potentially may increase the proportion of teenagers involved in traffic crashes.

Kardamanidis K, Martiniuk A, Ivers RQ, Stevenson MR, Thistlethwaite K. **Motorcycle rider training for the prevention of road traffic crashes.** Cochrane Database of Systematic Reviews 2010, Issue 10. Art. No.: CD005240. DOI: 10.1002/14651858.CD005240.pub2

This review considered evaluations of the effectiveness of motorcycle rider courses in reducing the number of traffic offences, crashes, injuries and death. There was a variety of content and delivery within the 23 research studies included in the review. The evidence was unclear as to whether training reduces any of these outcomes, and what kind of training is most effective. The authors concluded they could not recommend a particular type of rider training. They did note that some form of rider training was necessary for learning basic motorcycle handling techniques and to ride a motorcycle safely and that further research was required.

#### Systematic Reviews: Sport and Recreational Injury

Abernethy, L., & Bleakley, C. (2007). **Strategies to prevent injury in adolescent sport: a systematic review.** British Journal of Sports Medicine, 41(10), 627-638.

Effective strategies for reducing sport injury were identified as needing to focus on preseason conditioning, functional training, education, balance and sport specific skills that were continued throughout a season. Evidence was inconclusive regarding the role of protective equipment for injury prevention. Further research is required. Care is needed in interpreting the review as it excluded the following sports: equestrian, water, snow boarding and skiing, ice hockey, skating and motorised.

#### Systematic Reviews: Work Environment

Rautiainen R, Lehtola MM, Day LM, Schonstein E, Suutarinen J, Salminen S, Verbeek JH. **Interventions for preventing injuries in the agricultural industry.** Cochrane Database of Systematic Reviews 2008, Issue 1. Art. No.: CD006398. DOI: 10.1002/14651858.CD006398.pub2

Six studies were included in this review which assessed the effectiveness of interventions to prevent occupational injuries among workers in the agricultural industry compared to no interventions or to alternative interventions. Two of these studies included evaluations of educational interventions for children and adolescents. The interventions were educational, financial and legislative (regarding pesticide and tractor use). No evidence was found that educational interventions were effective in reducing injury rates, but financial incentives may reduce injury rates and the legislation to ban pesticides could be effective. Requiring the use of ROPS on tractors was associated with decreased mortality.

van der Molen H, Lehtola MM, Lappalainen J, Hoonakker PLT, Hsiao H, Haslam RA, Hale AR, Verbeek JH. **Interventions for preventing injuries in the construction industry.** Cochrane Database of Systematic Reviews 2007, Issue 4. Art. No.: CD006251. DOI: 10.1002/14651858.CD006251.pub2

Five studies were eligible for inclusion in this review that examined effects of interventions for preventing injuries among workers at construction sites. Three studies evaluated the effect of regulations, one evaluated a safety campaign, and one a drug-free workplace program on fatal or non-fatal injuries compared to no drug-free workplace program. The overall quality of the studies was considered to be poor. The authors concluded that the regulatory interventions were less likely to be effective in preventing injury, and that it was urgent that more effort should be directed to evaluating the considerable number of 'technical, human factors and organisational interventions which are recommended by standard texts of safety, consultants and safety courses'.

#### Relevant Publications from New Zealand

Brookland, R. and Begg, D. **Adolescent, and their parents, attitudes towards graduated driver licensing and subsequent risky driving and crashes in young adulthood.** *Journal of Safety Research* 2011; 42(2): 109-115.

The introduction of the graduated drivers licence system (GDLS) in New Zealand has had a positive impact on youth road safety but young people continue to be over represented in road traffic crashes injury statistics. This article examines contextual issues around driving related to the attitudes of the young drivers and their parents to the GDLS. The findings in this article provide insights for developing interventions to reduce the risky driving behaviours and crash risk among young drivers.

#### Other Relevant Links – New Zealand Websites

Statistics New Zealand. **Injury Information Portal**

[http://search.stats.govt.nz/browse\\_for\\_stats/health/injuries.aspx](http://search.stats.govt.nz/browse_for_stats/health/injuries.aspx)

This website provides links to various websites that provide data on New Zealand injury.