

Road traffic injury mortality in New Zealand

HIGHLIGHTS

- In 2017, the road toll was 379 traffic deaths. The road toll has increased significantly since 2013 (253 deaths).
- In 2014, population groups with higher mortality rates of traffic injuries included: males, people aged 15–24 years, people aged 75+ years, Māori, people living in more deprived areas (NZDep2013 quintile 5), and people living outside of main urban areas.
- Motorcyclists, and to a lesser extent cyclists, were at higher risk of traffic injury mortality per time spent travelling.
- The District Health Boards with the highest traffic injury mortality rates in 2009–2014 were West Coast, Tairāwhiti and South Canterbury DHBs.



The health impact of road transport accidents

Traffic-related deaths and injuries are the main health impact of road transport in New Zealand (Briggs et al 2016). Each year 200–400 people die on New Zealand roads. Traffic injuries affect all types of road users; however, pedestrians, cyclists and motorcyclists are particularly vulnerable, as they tend to suffer more severe injuries from collisions, due to lack of personal protection. By comparison, vehicle occupants are protected by the vehicle and safety features (such as seatbelts).

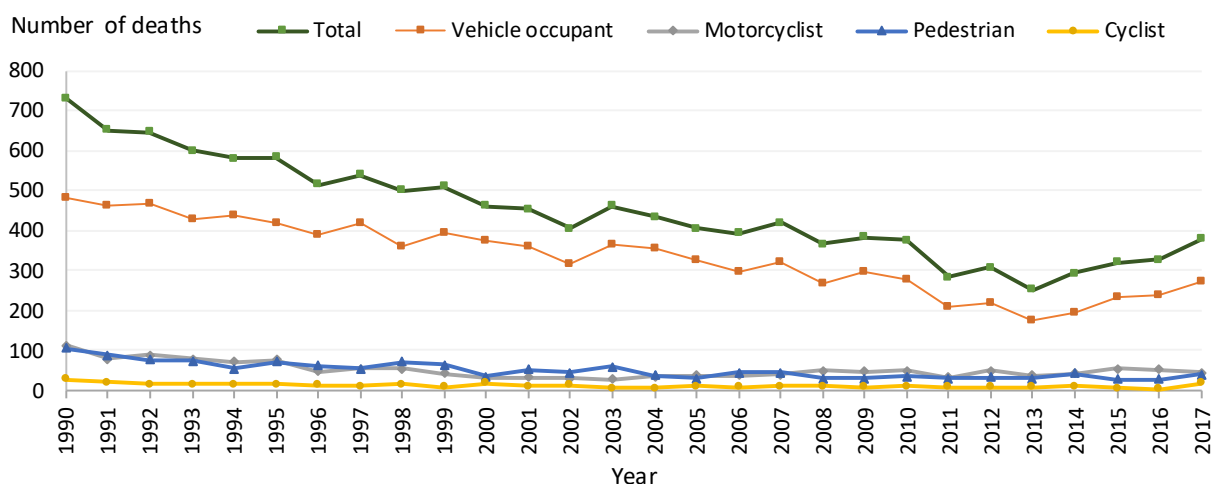
Data for this indicator

This factsheet includes two sources of data on road transport mortality. Data are firstly presented for the annual road toll statistics (1990–2017) from the Ministry of Transport. More in-depth data are then presented from the New Zealand Mortality Collection (2001–2014), for all traffic injuries, then for specific transport modes, to show how users of different forms of transport are affected. Results are presented by year, sex, age group, ethnic group, socioeconomic deprivation (NZDep2013 quintiles), urban/rural classification, and District Health Board (DHB). Rates are presented per population (100,000 people, or 100,000 people per year when multiple years of data have been combined), as well as by time spent travelling, which takes into account the different amounts of time spent travelling by different modes of transport. 'All traffic injuries' include occupant injury (injuries of driver or passenger of three or four-wheeled motor vehicles), motorcyclist injury, pedestrian injury, cyclist injury, other injury and unspecified injury.

The road toll increased from 2013 to 2017

In 2017, there were 379 road deaths due to traffic injuries (Figure 1). The road toll decreased from 1990 (730 deaths) to 2013 (253 deaths), but increased from 2013 to 2017. In 2017, among the 379 deaths, 72% were vehicle occupants (274 deaths), 12% were motorcyclists (46 deaths), 11% were pedestrians (41 deaths) and 5% were cyclists (18 deaths).

Figure 1: Annual road toll, by mode of transport, 1990–2017



Source: Annual road toll, Ministry of Transport.

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Drops in mortality rates for some road user types for 2001 to 2014

This section presents data from the New Zealand Mortality Collection for 2001–2014.

Mortality rates decreased over time for all road user types from 2001 to 2014. The overall age-standardised rate of road traffic injury deaths dropped substantially from 11.1 per 100,000 in 2001–03 to 6.0 per 100,000 in 2012–14 (Figure 2).

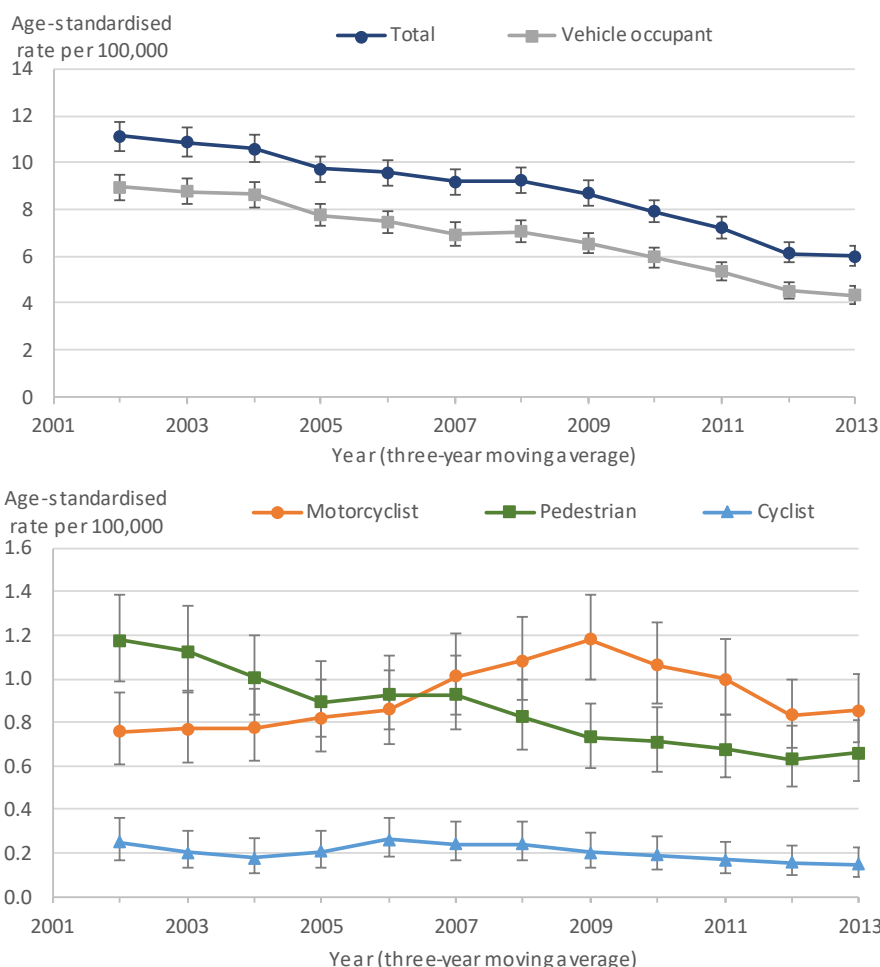
For vehicle occupants, the mortality rate decreased from 8.9 per 100,000 in 2001–03 to 4.3 per 100,000 in 2012–14 (Figure 2).

The motorcyclist mortality rate increased from 0.76 per 100,000 in 2001–03 to 1.18 per 100,000 in 2008–10, then decreased to 0.85 per 100,000 in 2012–14 (Figure 3).

For pedestrians, the mortality rate decreased from 1.18 per 100,000 in 2001–03 to 0.66 per 100,000 in 2012–14 (Figure 3).

The cyclist injury death rate was relatively stable over time, varying from 0.26 per 100,000 (in 2005–07) to 0.15 per 100,000 (in 2012–14) (Figure 3).

Figures 2 and 3: Road traffic injury deaths, by road user type, 2001–03 to 2012–14 (three-year moving averages) (age-standardised rate per 100,000)



Source: New Zealand Mortality Collection

Table 1: Traffic injury mortality risk per ten million hours travelled, by mode of transport, 2004–2013

Year*	Number of deaths per ten million hours travelled				
	All traffic injury	Vehicle occupant injury**	Pedestrian injury	Motorcyclist injury	Cyclist injury
2004–2006	2.6	2.7	1.8	53.1	4.1
2005–2007	2.6	2.5	2.0	50.7	4.7
2006–2008	2.4	2.3	2.0	74.7	4.5
2007–2009	2.5	2.4	1.8	67.2	3.7
2008–2010	2.4	2.3	1.7	86.2	3.3
2009–2011	2.3	2.2	1.7	70.8	3.2
2010–2012	2.1	2.0	1.7	68.7	3.4
2011–2013	1.8	1.7	1.5	66.1	3.2

Motorcyclists and cyclists were at higher risk of traffic injury mortality per time spent travelling

The risk of injury mortality per time spent travelling was much higher for motorcyclists, and to a lesser extent cyclists, compared to vehicle occupants and pedestrians (Table 1).

In 2011–2013, for every ten million hours travelled by transport mode, there were 66.1 motorcyclist and 3.2 cyclist deaths, compared to 1.7 vehicle occupant and 1.5 pedestrian deaths.

The risk of traffic injury mortality per time travelled has decreased for vehicle occupants, pedestrians and cyclists. However, the mortality risk for motorcyclists has increased by over a quarter, from 53.1 deaths per ten million hours travelled in 2004–2006 to 66.1 deaths per ten million hours travelled in 2011–2013 (Table 1).

Source: New Zealand Mortality Collection (Ministry of Health) and the New Zealand Household Travel Survey (Ministry of Transport)

*Three-year moving averages have been presented. Injury mortality from the New Zealand Mortality Collection was calculated based on calendar year (e.g. January 2004 – December 2006), while time travelled (from the Household Travel Survey) was available by financial year (e.g. July 2004 – June 2007).

**Occupant travelling hours included travelling time in cars, vans, and public transport (bus/train/ferry).

Road traffic injury mortality in New Zealand

Road traffic injury mortality statistics

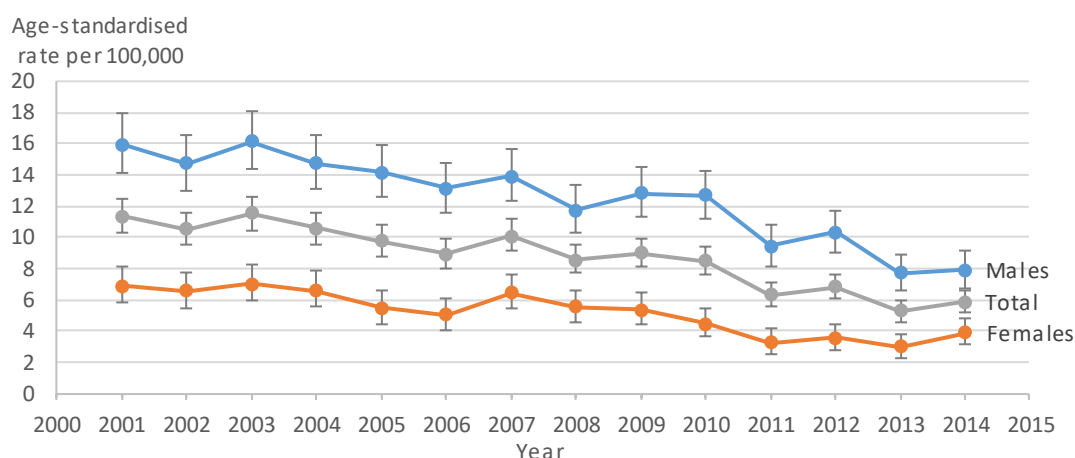
This section presents road traffic injury mortality statistics by sex, age group, ethnic group, socioeconomic deprivation, urban/rural classification, and District Health Board, using New Zealand Mortality Collection data for 2001–2014. Results are presented for all traffic deaths, then by road user type.

Decline in road traffic injury mortality rate for both sexes

The road traffic injury mortality rate has decreased since 2001, for both males and females (Figure 4). However, the male mortality rate has consistently stayed much higher than the female mortality rate since 2001.

In 2014, the age-standardised rate for males was twice as high (7.9 per 100,000) as the rate for females (3.9 per 100,000).

Figure 4: Road traffic injury deaths in New Zealand, by sex, 2001–2014 (age-standardised rate per 100,000)

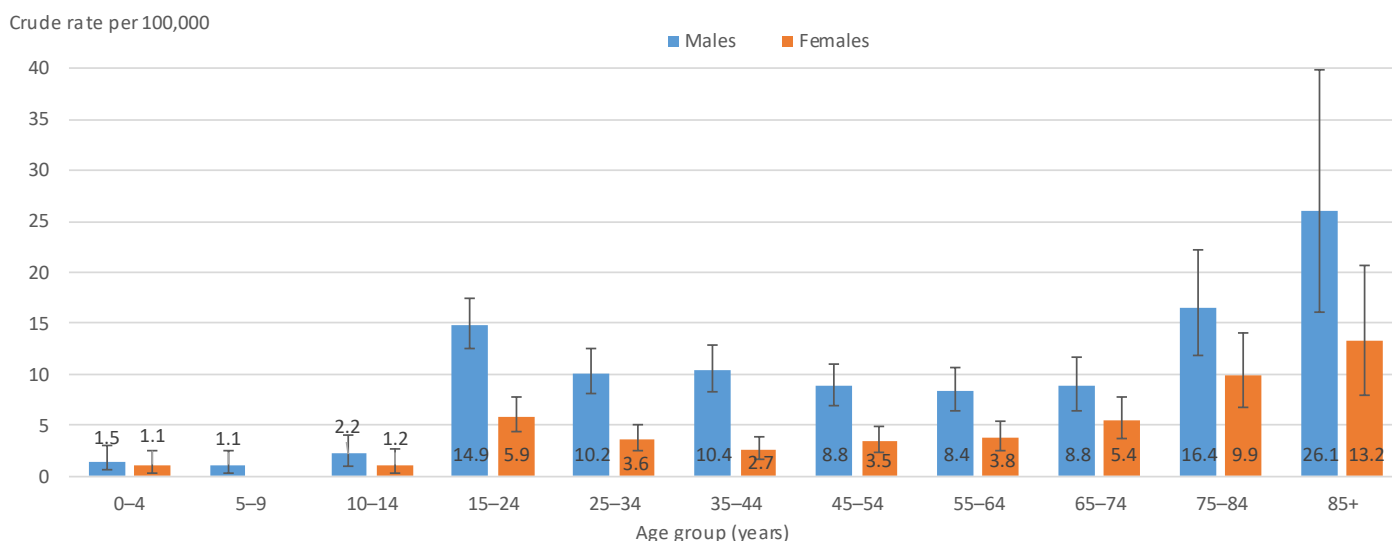


Source: New Zealand Mortality Collection

Highest mortality rates among 75+ year olds and 15–24 year olds

Young people aged 15–24 years, and older adults aged 75+ years, had the highest road traffic injury mortality rates in 2012–14 (Figure 5). For age groups from 15–64 years, males had significantly higher rates than females.

Figure 5: Road traffic injury deaths, by age group and sex, 2012–14 (crude rate per 100,000)



Note: The mortality rate for females aged 5–9 years was suppressed due to counts less than 5.

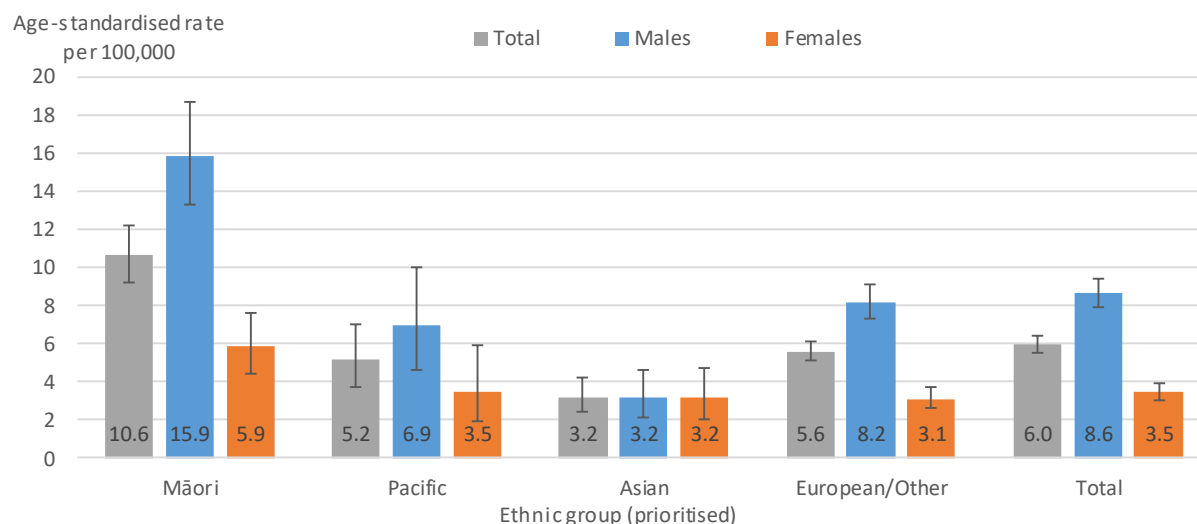
Source: New Zealand Mortality Collection

Road traffic injury mortality in New Zealand

Māori males have higher road traffic injury mortality rates

In 2012–14, Māori had the highest age-standardised mortality rate for road traffic injuries by ethnic group, with a particularly high rate for Māori males (Figure 6). Asian males had a much lower mortality rate than males in other ethnic groups.

Figure 6: Road traffic injury deaths, by ethnic group and sex, 2012–14 (age-standardised rate per 100,000)



Note: Prioritised ethnic groups have been used.

Source: New Zealand Mortality Collection

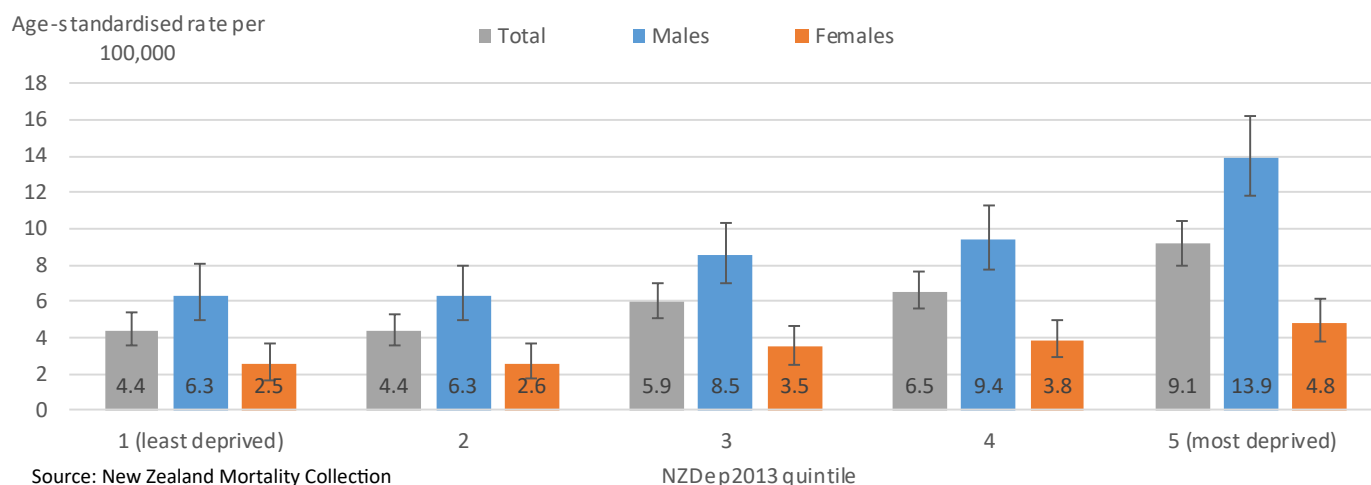
From 2001–03 to 2012–14, the Māori age-standardised mortality rate almost halved, from 19.9 per 100,000 in 2001–03, to 10.6 per 100,000 in 2012–14. The mortality rate also dropped substantially for Asians (8.9 per 100,000 in 2001–03 to 3.2 per 100,000 in 2012–14), Pacific peoples (9.1 per 100,000 to 5.2 per 100,000) and Europeans/Others (10.0 per 100,000 to 5.6 per 100,000) over the time period 2001–03 to 2012–14.

People living in more deprived areas have higher mortality rates for road traffic injuries

Mortality rates for road traffic injuries were much higher in the most deprived areas (NZDep2013 quintile 5) than in the least deprived areas (quintile 1) in 2012–2014, for both males and females (Figure 7).

Standardising for age, people living in the most deprived areas (quintile 5) were twice as likely to die in a road traffic crash than those living in the least deprived areas (quintile 1) (standardised rate ratio = 2.1, 95% confidence interval 1.6–2.6).

Figure 7: Road traffic injury deaths, by socioeconomic deprivation (NZDep2013 quintiles) and sex, 2012–14 (age-standardised rate per 100,000)



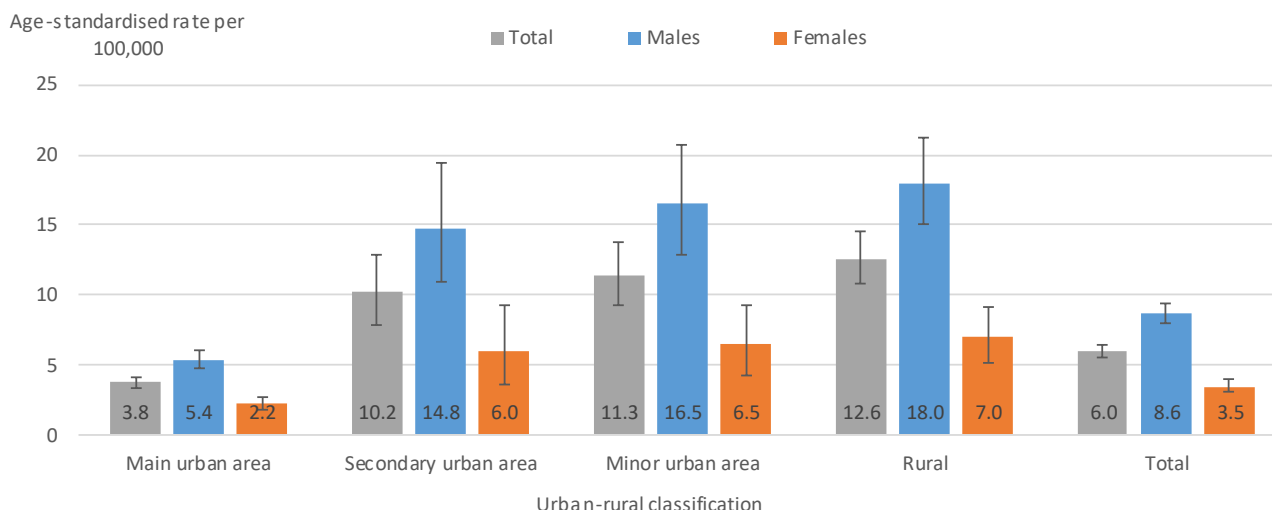
Source: New Zealand Mortality Collection

Road traffic injury mortality in New Zealand

People living in main urban areas had lower road traffic mortality rates

People living in main urban areas had a much lower mortality rate for road traffic injuries than people living outside of these areas (that is, people living in secondary urban areas, minor urban areas or rural areas) in 2012–14 (Figure 8).

Figure 8: Road traffic injury deaths, by urban/rural classification and sex, 2012–14 (age-standardised rate per 100,000)



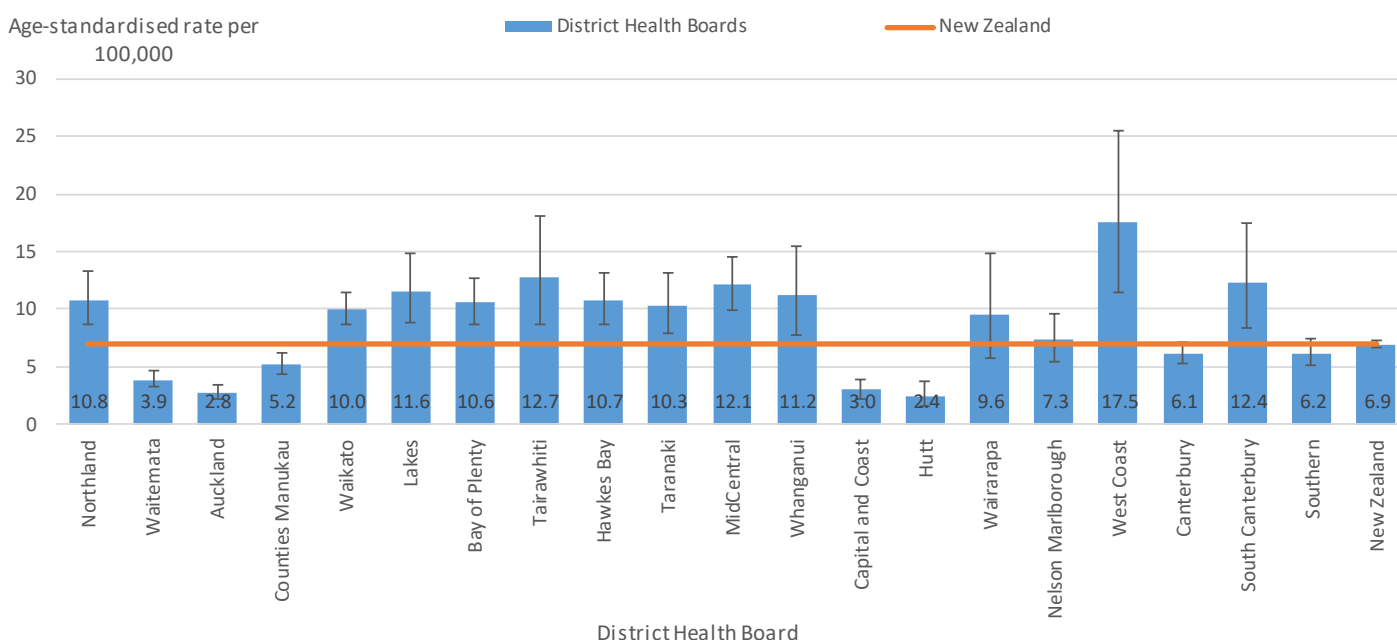
Note: Urban/rural classification is for 2013. Main urban areas refer to major towns and cities with a population of 30,000 or more. Secondary urban areas are smaller towns with a population of 10,000–29,999 people. Minor urban areas are towns with a population of 1,000–9,999 people. Rural areas include rural centres, and rural areas outside of these.

Source: New Zealand Mortality Collection

Highest road mortality rates in West Coast DHB

There were substantial regional differences in the road traffic injury mortality rate by District Health Board (DHB) in the six-year period 2009–2014 (Figure 9). The highest mortality rates were in West Coast, Tairāwhiti and South Canterbury DHBs. The lowest rates were in Hutt, Capital and Coast, Auckland, Waitemata and Counties Manukau DHBs.

Figure 9: Road traffic injury deaths, by District Health Board, 2009–2014 (age-standardised rate per 100,000)



Source: New Zealand Mortality Collection

Road traffic injury mortality in New Zealand

Road traffic injury mortality statistics by road user type

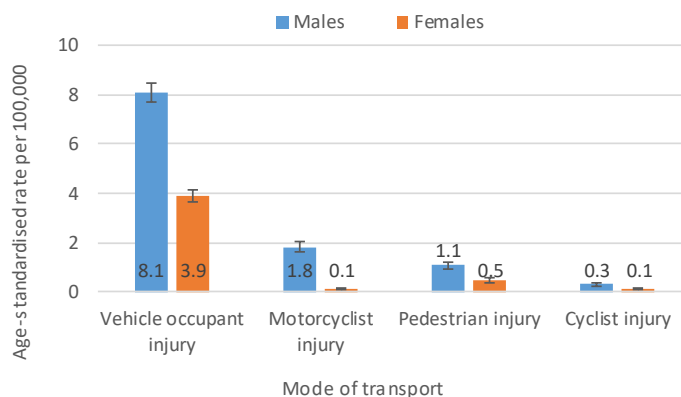
This section presents results by road user type (mode of transport). Multiple years of data have been combined to give sufficient numbers for analysis.

Males had higher mortality rates of traffic injury

In 2005–2014, males had significantly higher mortality rates of traffic injury than females for all modes of transport (Figure 10).

The mortality rate was especially higher for males (compared with females) for motorcyclist deaths (1.8 vs 0.1 per 100,000 population, for males vs females).

Figure 10: Road traffic injury deaths, by sex and mode of transport, 2005–2014 (age-standardised rate per 100,000)



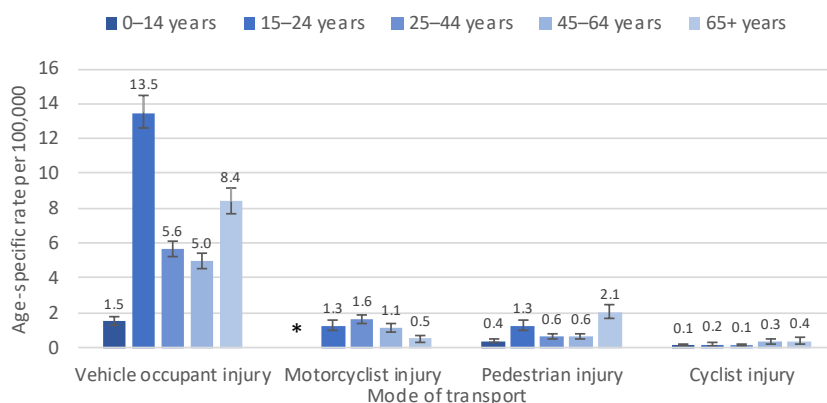
Younger adults (15–24 years) and older adults (65+ years) tended to have higher mortality rates

Young adults (15–24 years) and older people (65+ years) had higher mortality rates for vehicle occupant and pedestrian injuries than other age groups in 2005–14 (Figure 11).

By contrast, for motorcyclist deaths, people aged 15–44 years had higher mortality rates.

For cyclist deaths, people aged 45+ years tended to have a higher mortality rate.

Figure 11: Road traffic injury deaths, by age group and mode of transport, 2005–2014



Māori had higher mortality rates for vehicle occupant and pedestrian injuries

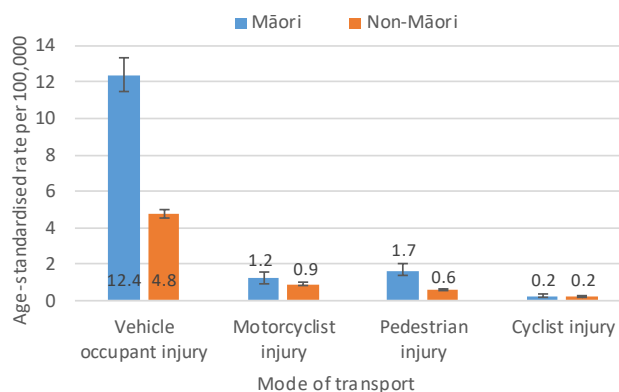
In 2005–2014, Māori had significantly higher mortality rates than non-Māori for vehicle occupant injuries and pedestrian injuries (Figure 12).

Compared with non-Māori, the Māori mortality rate was 2.6 times as high (12.4 vs 4.8 per 100,000 population) for vehicle occupant injury, and 2.8 times as high (1.7 vs 0.6 per 100,000 population) for pedestrian injury.

There were no significant differences between Māori and non-Māori for motorcyclist and cyclist injuries.

Overall, Māori had a higher traffic injury mortality rate (15.5 per 100,000 population) than non-Māori (6.5 per 100,000 population) in 2005–2014.

Figure 12: Road traffic injury deaths, by Māori/non-Māori and mode of transport, 2005–2014 (age-standardised rate per 100,000 population)



Source of Figures 10, 11 and 12: New Zealand Mortality Collection
Note: An asterisk (*) shows that the rate was suppressed due to small numbers.

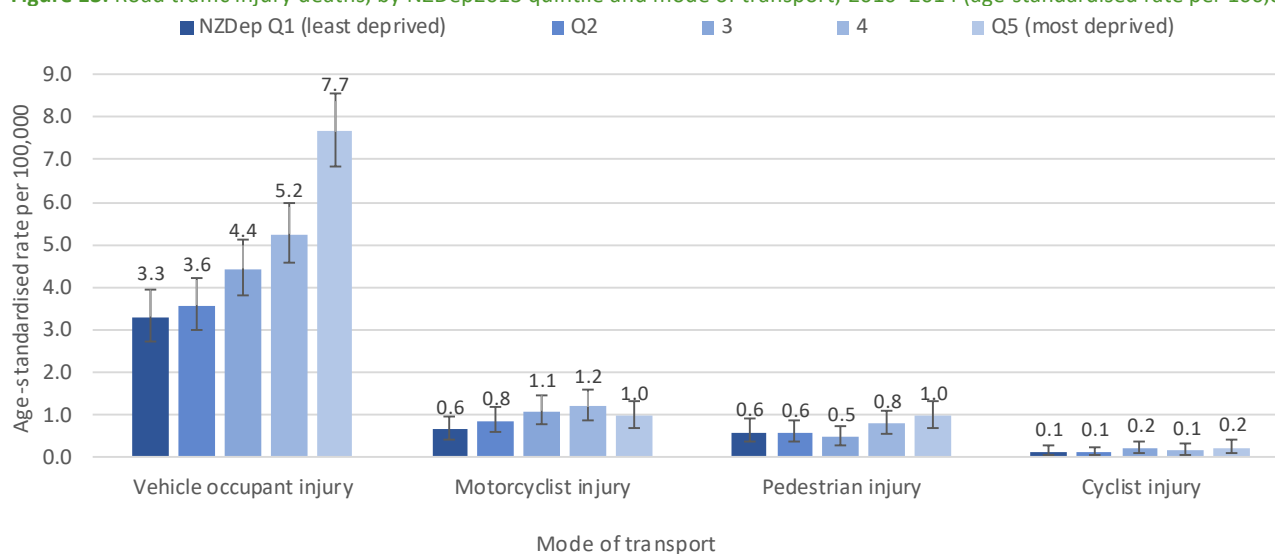
Road traffic injury mortality in New Zealand

Higher traffic injury mortality rates in more deprived areas

In 2010–2014, the injury mortality rates increased with socioeconomic deprivation (NZDep2013 quintiles) for vehicle occupants, and to a lesser extent, motorcyclists and pedestrians (Figure 13). No pattern by NZDep was seen for cyclist injuries.

In 2010–2014, compared to the least deprived areas (NZDep2013 quintile 1), people from the most deprived areas (NZDep2013 quintile 5) had 2.3 times the vehicle occupant mortality rate (7.7 vs 3.3 per 100,000 population, standardised rate ratio = 2.3, 1.9–2.9).

Figure 13: Road traffic injury deaths, by NZDep2013 quintile and mode of transport, 2010–2014 (age-standardised rate per 100,000)



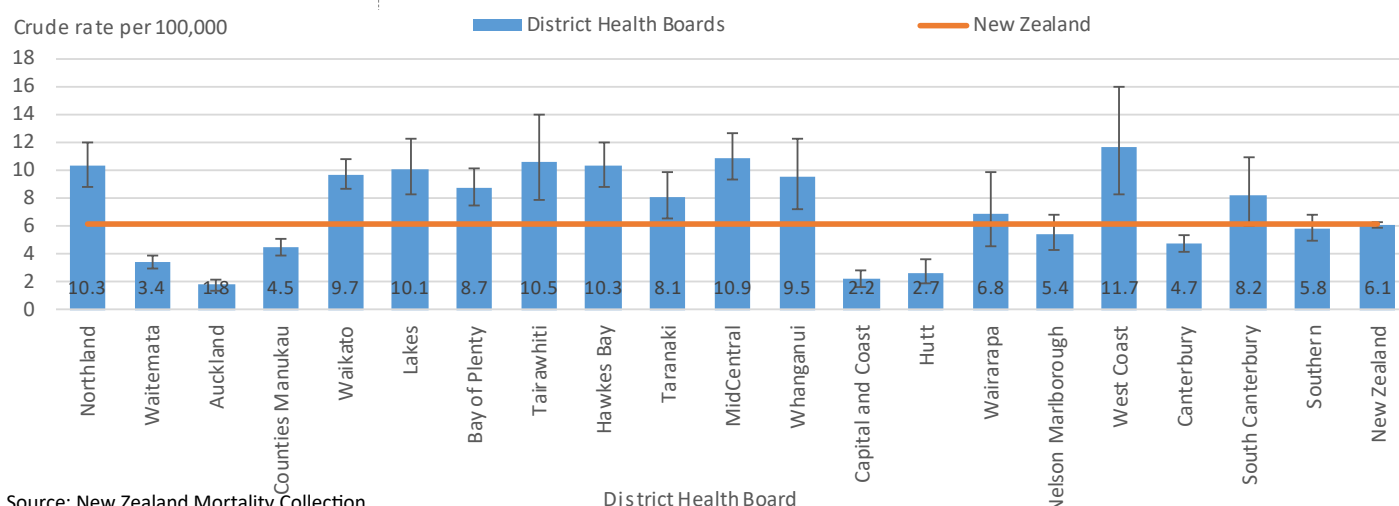
Source: New Zealand Mortality Collection

Large DHB differences in traffic injury mortality by mode of transport

There were substantial differences by District Health Board (DHB) in the traffic injury mortality rates by different modes of transport, in 2005–2014. The following graphs present crude rates, rather than age-standardised rates, due to low numbers. This means that the results do not take into account the differing population age structures in the different DHBs.

For vehicle occupant deaths (Figure 14), the DHBs with the highest mortality rates were West Coast, MidCentral, Tairāwhiti, Northland, and Lakes DHBs. The lowest mortality rates were in the main cities of Auckland (Waitemata, Auckland and Counties Manukau DHB), Wellington (Capital and Coast, and Hutt DHBs) and Christchurch (Canterbury DHB).

Figure 14: Vehicle occupant injury deaths, by DHB, 2005–2014 (crude rate per 100,000)



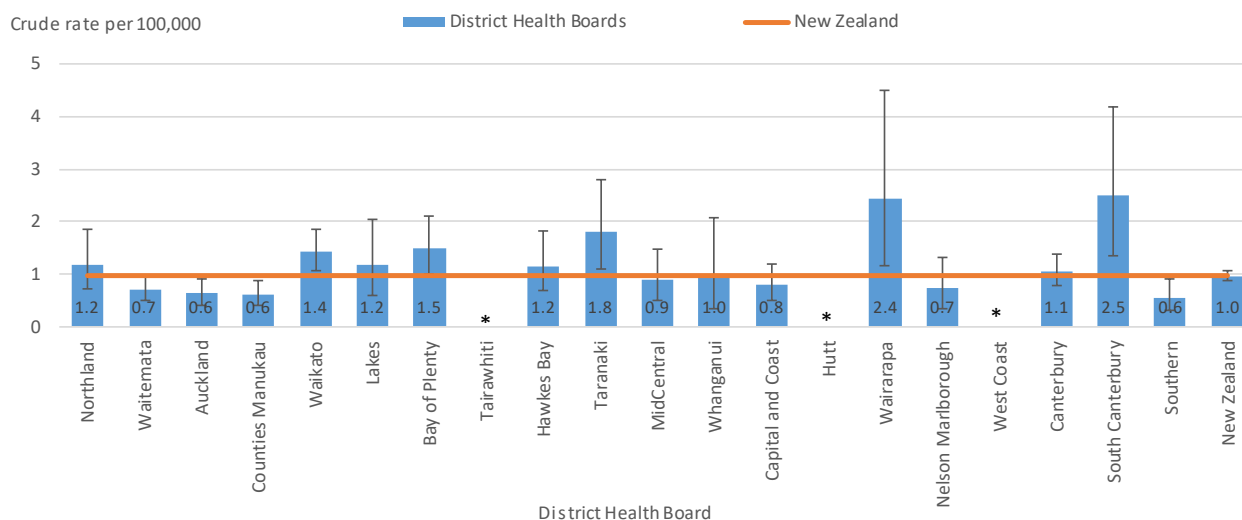
Source: New Zealand Mortality Collection

District Health Board

Road traffic injury mortality in New Zealand

For motorcyclist deaths (Figure 15), the highest mortality rates were in South Canterbury, Wairarapa and Taranaki DHBs.

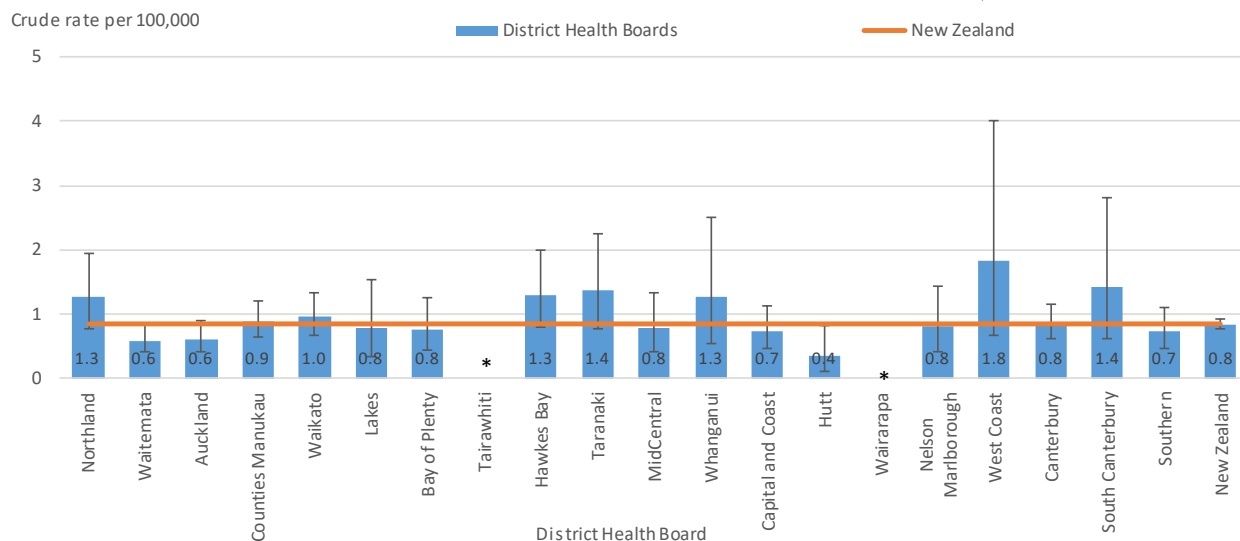
Figure 15: Motorcyclist injury deaths, by DHB, 2005–2014 (crude rate per 100,000)



Notes: An asterisk (*) shows that a rate has been suppressed due to counts less than 5.
Source: New Zealand Mortality Collection

For pedestrian deaths (Figure 16), the DHBs with the highest mortality rates were West Coast, Taranaki, South Canterbury, Whanganui, Hawke's Bay and Northland DHBs. The lowest pedestrian mortality rates were in Hutt, Waitemata and Auckland DHBs.

Figure 16: Pedestrian injury deaths, by DHB, 2005–2014 (crude rate per 100,000)



Notes: An asterisk (*) shows that a rate has been suppressed due to counts less than 5.
Source: New Zealand Mortality Collection

Results for cyclist deaths have not been presented by District Health Board, due to small numbers.

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DATA SOURCES

Annual road toll data came from the Ministry of Transport (2018).

Mortality data for this factsheet come from the New Zealand Mortality Collection, from the Ministry of Health. The following ICD-10AM codes were used:

- Occupant: [V30–V79](.4–.9), [V83–V86](.0–.3)
- Motorcyclist: [V20–V28](.3–.9), V29(.4–.9)
- Pedal cyclist: [V12–V14](.3–.9), V19(.4–.6)
- Pedestrian: [V02–V04](.1–.9), V09.2
- Other: V80(.3–.5), V81.1, V82.1
- Unspecified: V87(.0–.8), V89.2

These ICD codes are consistent with the classification of external cause of injury used by the Centers for Disease Control and Prevention (2002).

Age-standardised rates have been presented where possible, to take into account the population age structures of different population groups. 95% confidence intervals have been presented as error bars on graphs. See the metadata for more information about this indicator.

RELATED INDICATORS

Related environmental health indicators for transport, available from the EHINZ website (www.ehinz.ac.nz), include:

- Road traffic injury hospitalisations in New Zealand
- Number of motor vehicles
- Main mode of transport to work on Census day
- Active transport to and from school
- Household travel time by mode of transport
- Unmet GP need due to transport
- About transport and health (information factsheet).

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