Road traffic injury mortality

This surveillance report presents information on deaths caused by road traffic injuries in Aotearoa New Zealand. The first section of the report covers data from the Ministry of Transport's annual road toll statistics (1990–2023). The majority of the remainder of the report focuses on more detailed data from the New Zealand Mortality Collection (2001–2019).

Key facts

- In 2023, there were 341 traffic-related fatalities in New Zealand, down from 371 in 2022.
- In 2017–19, mortality rates were highest for males (especially those aged 15–24 and 85 years and over), Māori, older adults, people living in more socioeconomically deprived areas and those living outside main urban areas.
- In terms of deaths per time spent travelling and distance travelled, motorcyclists were at more than 100-times greater risk of death (respectively) than non-motorcyclists.
- In 2015–19, Northland, Whanganui and West Coast districts had high traffic injury mortality rates.

The health impact of road traffic accidents

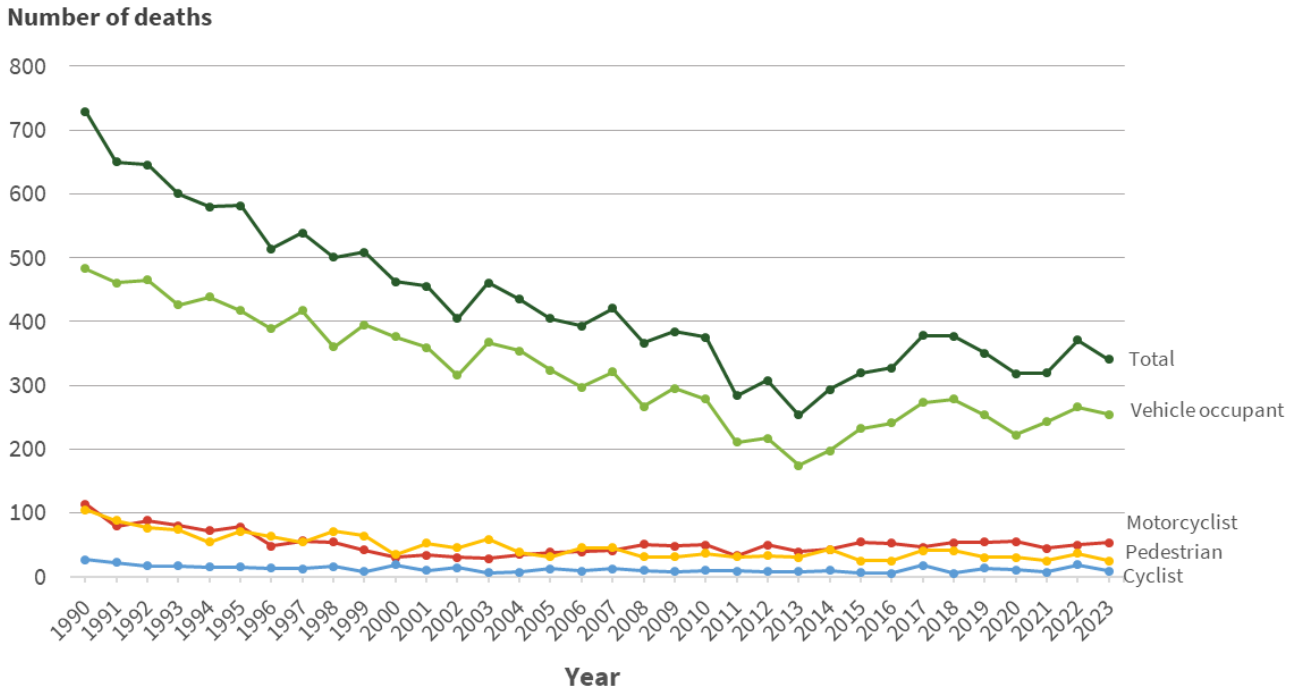
Traffic-related deaths and injuries are the main health impact of road transport in New Zealand (Briggs et al 2016). Traffic injuries may affect all types of road users, though pedestrians, cyclists and motorcyclists are particularly vulnerable as they tend to suffer more severe injuries from collisions, due to lack of personal protection. By comparison, vehicle occupants are protected by the vehicle body and fitted safety features (such as seatbelts or airbags). Vehicle occupant injury may be related to speed, vehicle type and the age of the vehicle, as newer models often have more and better safety features. See the 'Age of motor vehicles' surveillance report for more information on the age of the vehicle fleet.

The road toll increased after decreases during COVID-19 affected years

In 2023, there were 341 road deaths due to traffic injuries (Figure 1). Of the 341 deaths, 254 were vehicle occupants (74%), 53 were motorcyclists (16%), 25 were pedestrians (7%) and 9 were cyclists (3%).

The road toll decreased from 1990 (729 deaths) to 2013 (253 deaths) before rising again until 2017. The number of deaths then decreased, particularly during years with COVID-19 restrictions, but the 2023 road toll (341) remains well above that of ten years ago.

Figure 1: Annual road toll, by mode of transport, 1990–2023



Source: Annual road toll (Ministry of Transport)

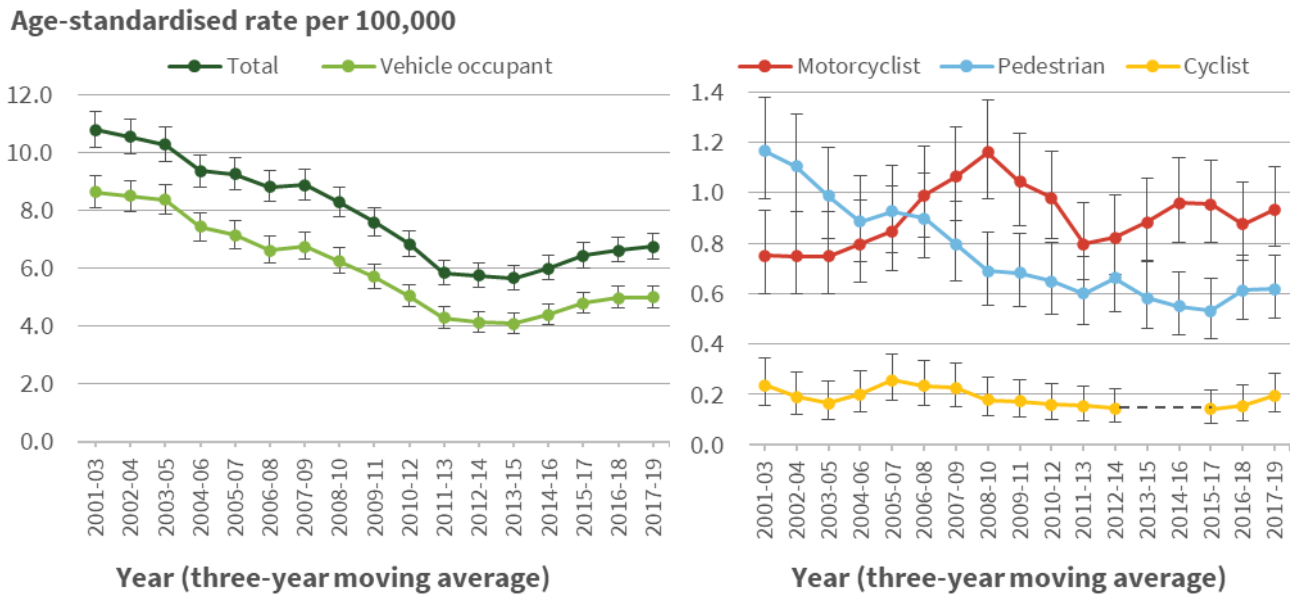
These road toll figures include all deaths, both New Zealand residents and overseas visitors. The rest of this factsheet focuses on mortality rates using data from the New Zealand Mortality Collection. As the denominator for mortality rates is the usually resident population, deaths of overseas residents are excluded from calculations. For the most recently available year of mortality data, 2019, there were 368 road traffic injury deaths, including 21 overseas residents. Information on road traffic injury deaths of overseas residents over time is shown in Figure 13.

Total injury mortality rates have increased but remain lower than historical highs

After a period of decreases to 2013–15, mortality rates for total road traffic injuries have since increased steadily. This increase has been largely driven by vehicle occupant injuries and is consistent with recent increases in the road toll (Figures 2a & 2b).

The mortality rate for motorcyclists increased up until 2008–10, before decreasing and then beginning to increase again more recently. In contrast, mortality rates for pedestrian injuries have decreased overall, allowing for some fluctuations. Rates for cyclists are too low to discern a clear trend but have stayed at or below 0.2 per 100,000 people.

Figures 2a & 2b: Road traffic injury mortality rates, by mode of transport, 2001–03 to 2017–19



Note: 95% confidence intervals have been presented as vertical bars.
Source: New Zealand Mortality Collection

Motorcyclists were most at risk of death

Travel by motorcycle represents a very small proportion of the time and distance New Zealanders travel every year but carries a far greater risk of fatal injury than any other mode of transport. Compared to non-motorcyclists, the risk was more than 100 times greater (Table 1).

Table 1: Road traffic injury mortality risk by mode of transport, 2021–23

	Vehicle occupant	Motorcyclist	Pedestrian	Cyclist	All traffic
Million hours travelled	1,417.3	2.4	185.4	38.1	1,660.5
Million kilometres travelled	50,789.7	75.8	631.8	470.5	55,041.8
Number of deaths	254.3	49.0	28.7	11.7	343.7
Deaths per million hours	**0.2**	**20.5**	**0.2**	**0.3**	**0.2**
Deaths per million kilometres	**<0.1**	**0.7**	**<0.1**	**<0.1**	**<0.1**

Note: The annual average number of deaths for the three-year period 2021–2023 from the annual Road Toll was calculated based on calendar year (January–December), while the annual average time and distance travelled (from the 2021–2023 Household Travel Survey) was based on the financial year (July–June). These are the intervals for which the data is recorded in each source.

Sources: Annual road toll and New Zealand Household Travel Survey 2021–2023 (Ministry of Transport)

Mortality rates for both sexes have decreased

Despite the small increase in overall road traffic injury mortality rates between 2013 and 2017, rates for both sexes were still lower in 2019 than they were in 2001. The mortality rate for males was consistently higher than the rate for females throughout this period. In 2019, the male mortality rate was 9.5 deaths per 100,000 (95%CI 8.3–10.8) compared to 3.6 per 100,000 for females (95%CI 2.9–4.5).

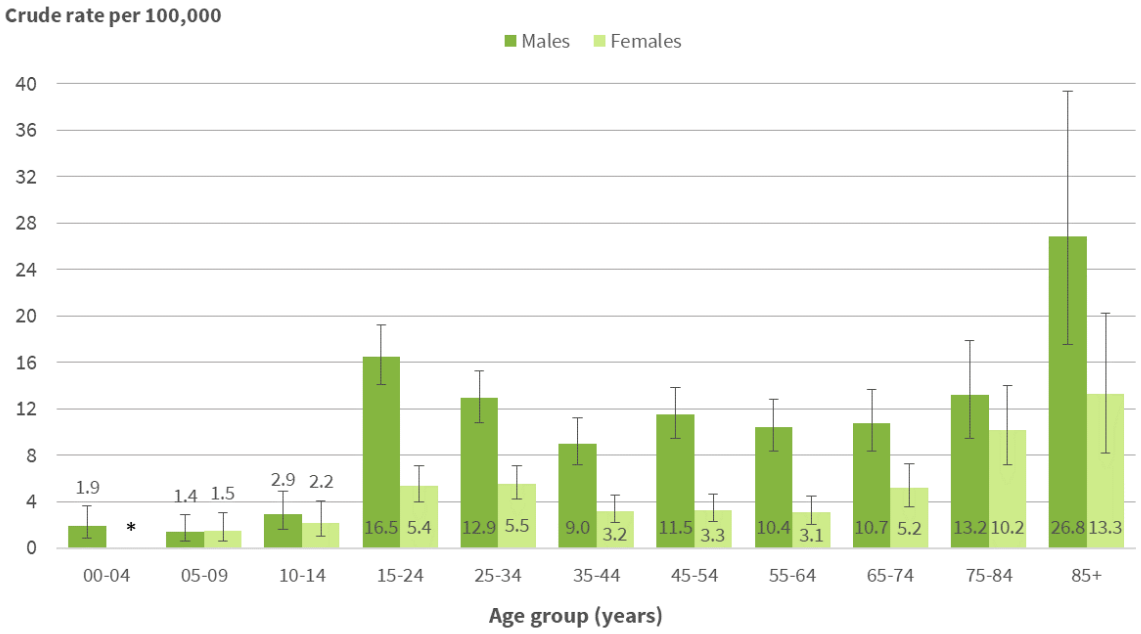
Figure 3: Road traffic injury mortality rates, by sex, 2001–2019

Note: 95% confidence intervals have been presented as vertical bars.
Source: New Zealand Mortality Collection

The highest mortality rates were among males and older adults

For all age groups 15–24 years old and above, males had a higher road traffic injury mortality rate than females. The highest mortality rates were for males 85 years and over (Figure 4).

Figure 4: Road traffic injury mortality rates, by age group and sex, 2017–19

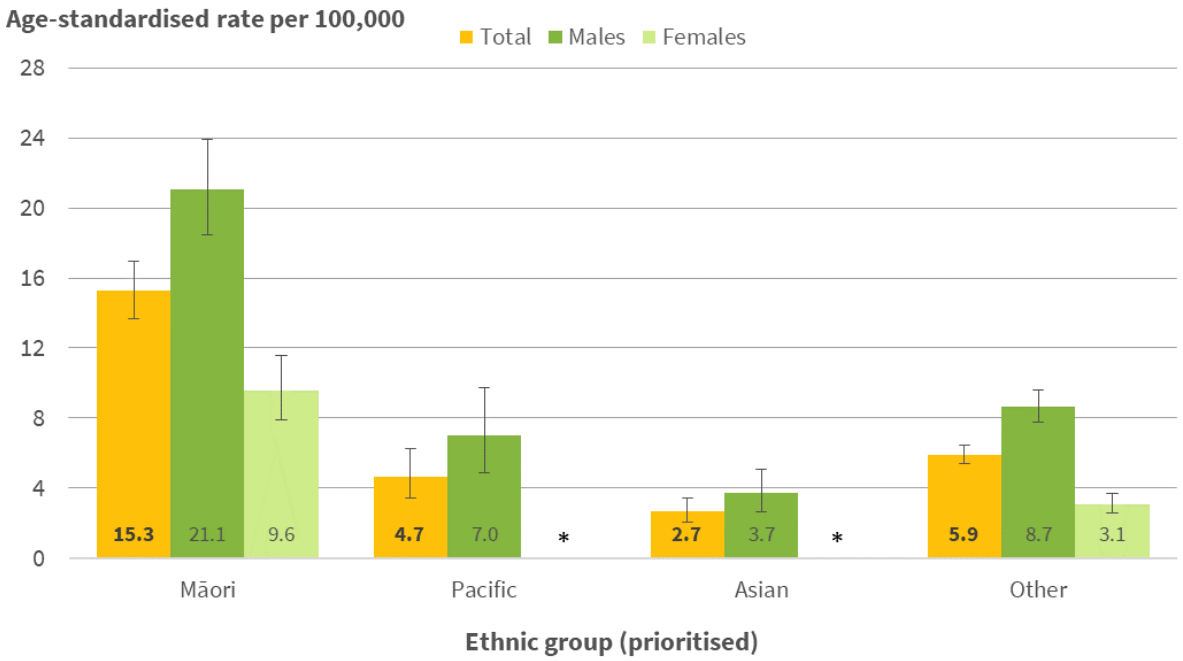


Note: 95% confidence intervals have been presented as vertical bars. * = Rate was suppressed due to a low count of deaths (<5).
Source: New Zealand Mortality Collection

Māori males had higher traffic injury mortality rates

In 2017–19, Māori had the highest mortality rate for traffic injuries of any ethnic group, with the rate for Māori males being especially high (21.1 per 100,000, 95%CI 18.5–23.9). For European/Other and Māori, the mortality rate among females was much lower than the rate for males. There were insufficient deaths to calculate rates for females for Asian and Pacific ethnic groups.

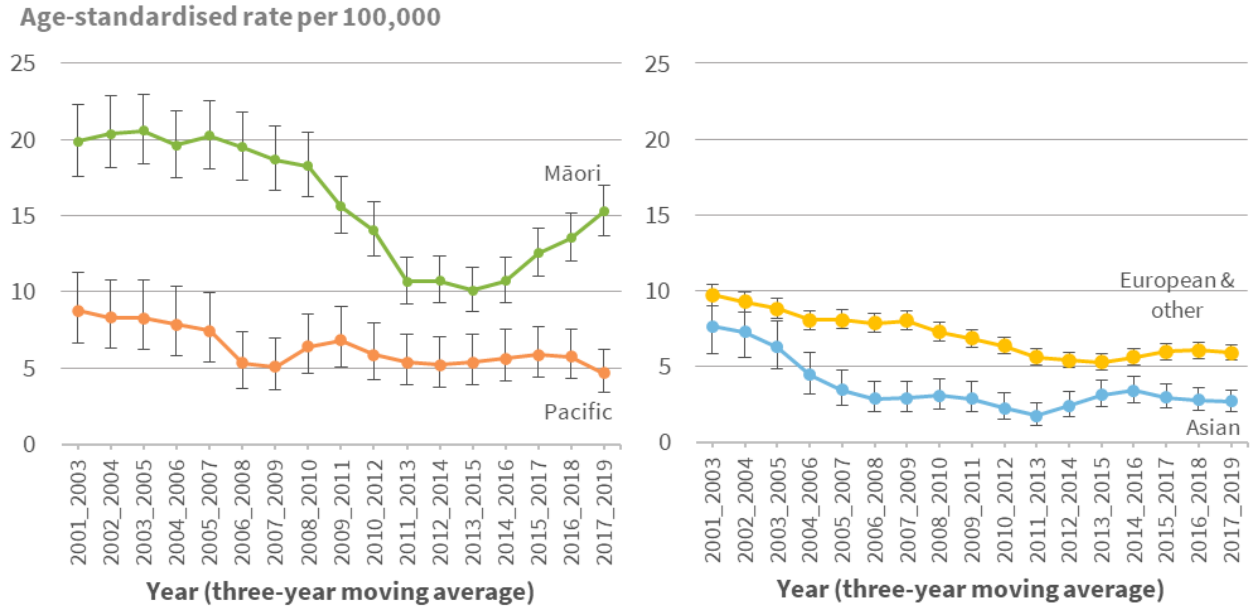
Figure 5: Road traffic injury mortality rate, by ethnic group (prioritised), 2017–19



Note: 95% confidence intervals have been presented as vertical bars. * = Rate was suppressed due to a low count of deaths (<5).
Source: New Zealand Mortality Collection

After a period of decline, the overall mortality rate for Māori increased from 10.1 per 100,000 (95%CI 8.7–11.6) in 2013–15 to 15.3 per 100,000 (95%CI 13.7–17.0) in 2017–19 (Figures 6a & 6b). Rates for other ethnic groups over the same period were relatively stable.

Figures 6a & 6b: Road traffic injury mortality rate, by ethnic group (prioritised), 2001–03 to 2017–19



Note: 95% confidence intervals have been presented as vertical bars.
Source: New Zealand Mortality Collection

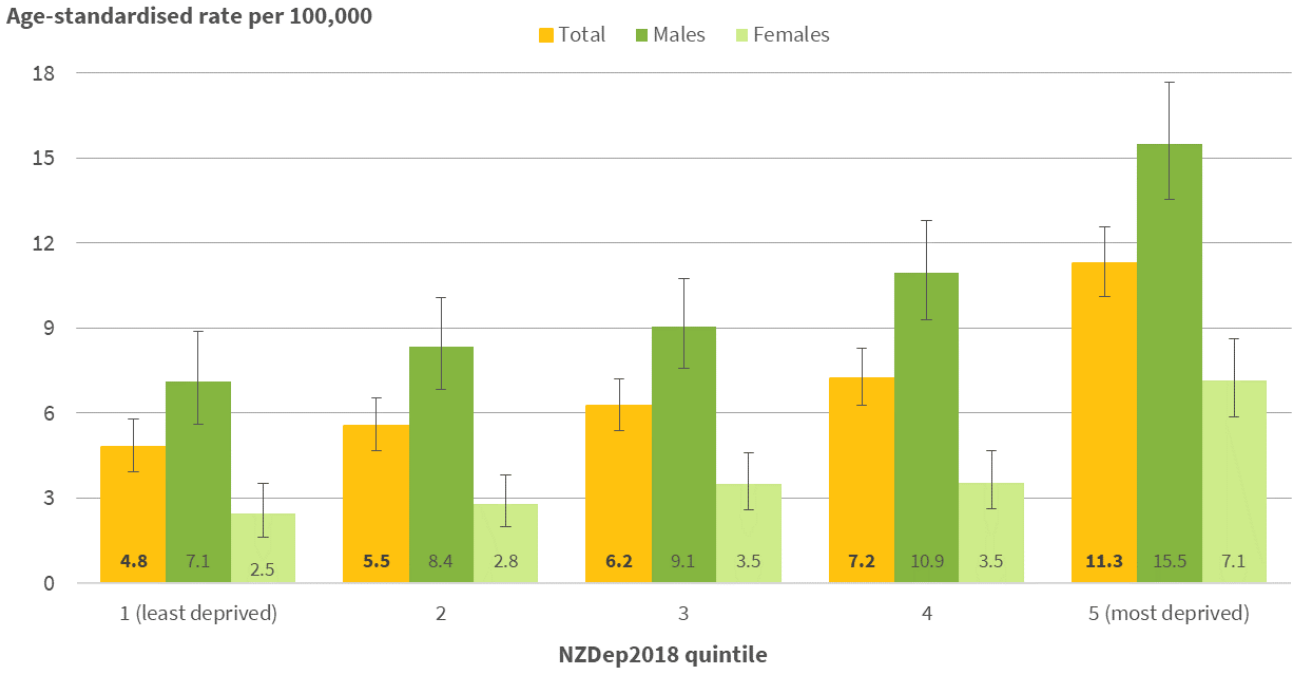
People living in more deprived areas had higher mortality rates

Road traffic injury mortality rates in the most socioeconomically deprived areas (NZDep2018 quintile 5) were much higher than those in the least deprived areas (quintile 1) in 2017–19. This was true for both sexes (Figure 7). After standardising for age, people living in the most socioeconomically deprived areas were more than twice as likely to die as the result of a road traffic injury than those in the least deprived areas (rate ratio = 2.4, 95%CI 1.9–2.9).

A similar pattern is seen for traffic injury hospitalisation rates, with people living in the most socioeconomically deprived areas being twice as likely to be hospitalised for a road traffic injury than those in the least deprived areas (rate ratio = 2.1, 95%CI 1.8–2.3) (Environmental Health Intelligence NZ 2023a).

Private passenger vehicles registered to addresses in areas of higher socioeconomic deprivation are older, on average, than those registered to addresses in areas of low deprivation (Environmental Health Intelligence NZ 2023b). Older cars tend to have lower crashworthiness ratings, and cars with lower ratings are more likely to be in serious crashes (Ministry of Transport 2019). This may partially explain the association seen here, but vehicle safety is only one of several key factors that contribute to the risk of road traffic injury, and more research is needed to explore this.

Figure 7: Road traffic injury mortality rates, by NZDep2018 quintile and sex, 2017–19

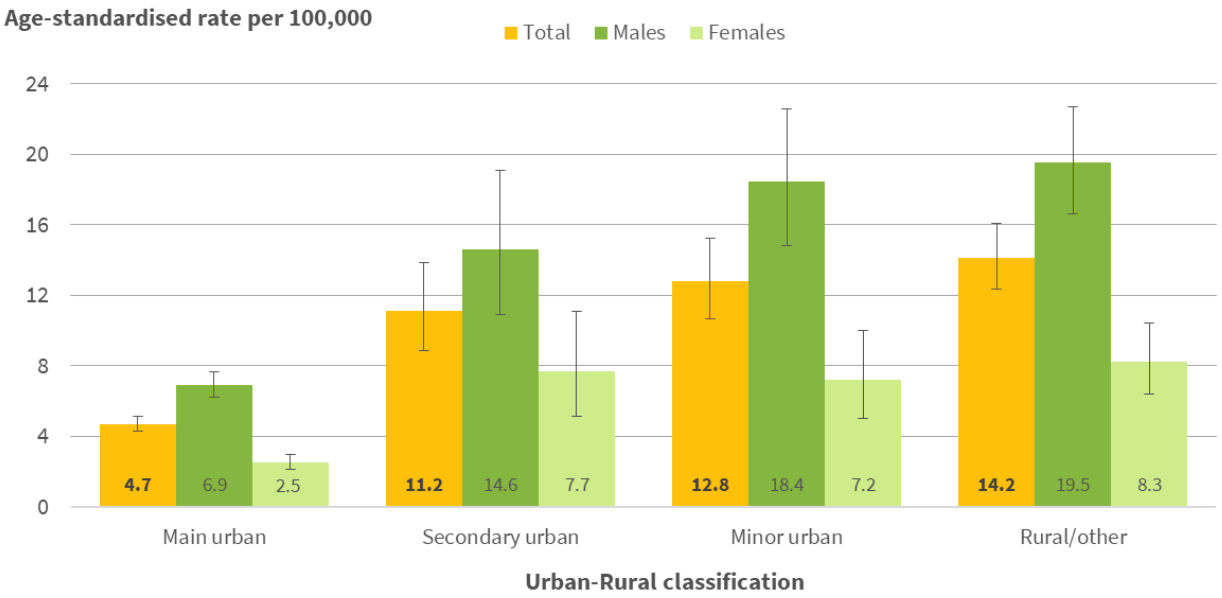


Note: 95% confidence intervals have been presented as vertical bars.
Source: New Zealand Mortality Collection

People living in main urban areas had lower mortality rates

In 2017–19, people living in rural areas had much higher mortality rates for road traffic injuries than people living in main urban areas (RR=3.0, 95%CI 2.6–3.5). The rate for males was also substantially lower in main urban areas than in rural ones (Figure 8).

Figure 8: Road traffic injury mortality rates, by urban-rural classification and sex, 2017–19

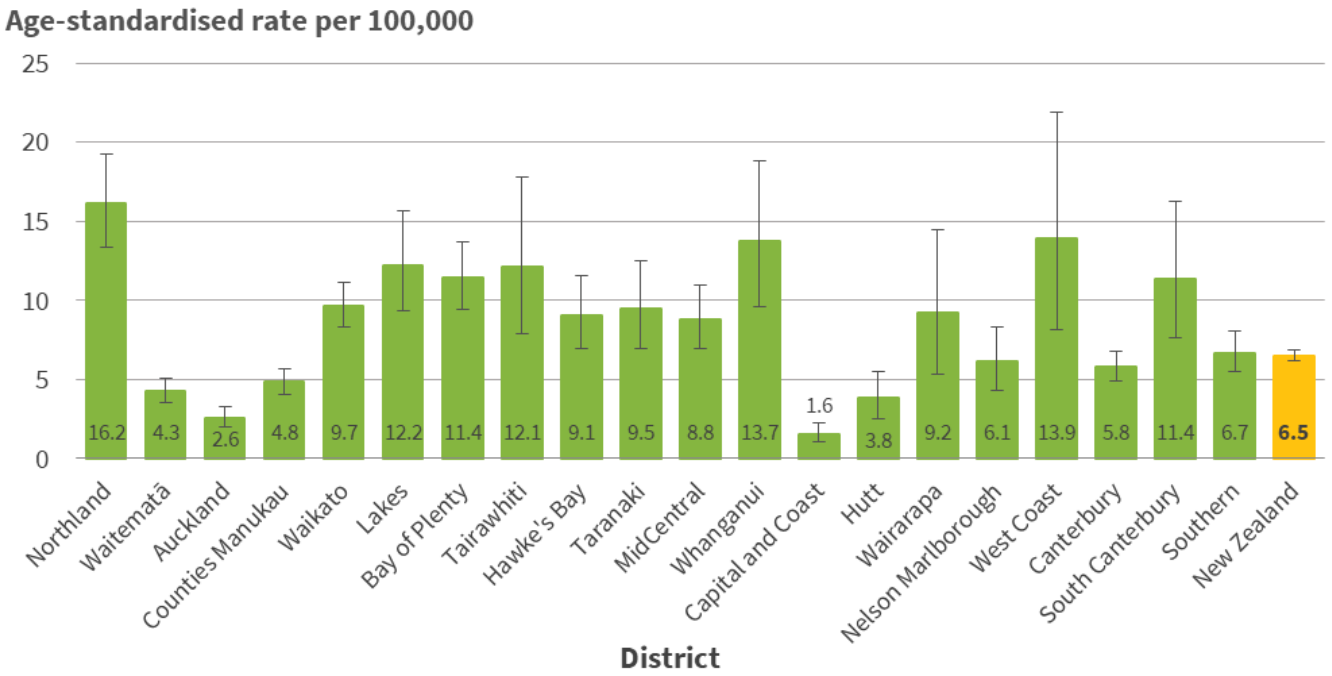


Note: 95% confidence intervals have been presented as vertical bars. The Statistics NZ urban-rural classification for 2013 has been used. Main urban areas are major towns and cities with a population of 30,000 or more. Secondary urban areas are smaller towns with a population of 10,000–29,999. Minor urban areas are towns with a population of 1,000–9,999. Rural areas include rural centres and surrounding rural areas.
Source: New Zealand Mortality Collection

The highest mortality rates were in Northland and West Coast districts

In 2015–19, Northland, Whanganui and West Coast districts (areas formerly known as District Health Boards) had high traffic injury mortality rates. Auckland and Capital & Coast districts had low rates (Figure 9).

Figure 9: Road traffic injury mortality rates, by district, 2015–19

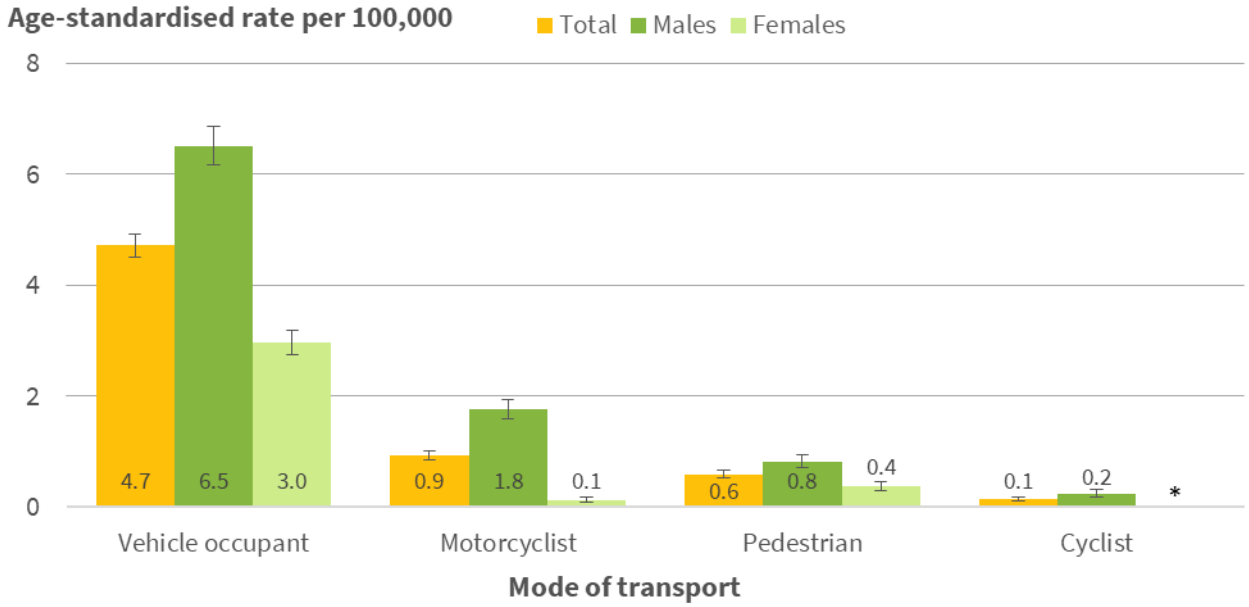


Note: 95% confidence intervals have been presented as vertical bars.
Source: New Zealand Mortality Collection

Mortality rates vary by road user type

In 2010–19, males had substantially higher mortality rates for all modes of transport compared to females (Figure 10). The contrast was especially strong between male and female motorcyclists.

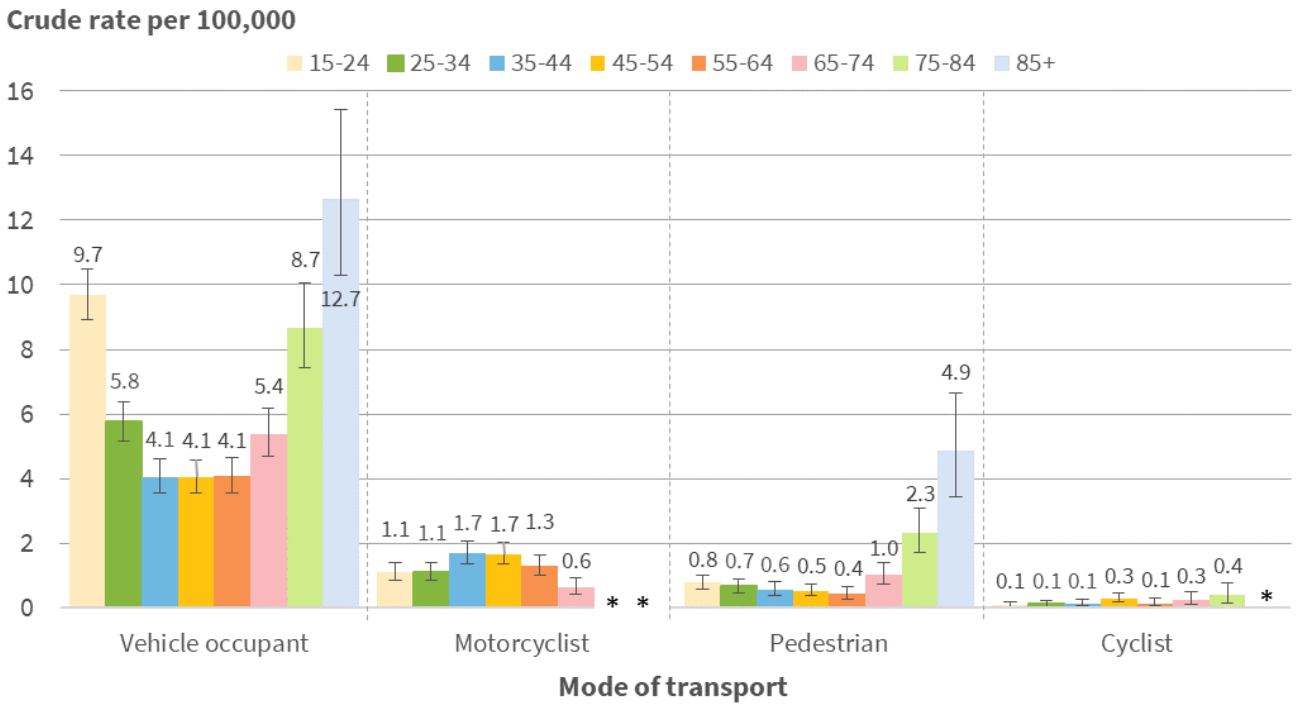
Figure 10: Road traffic injury mortality rates, by mode of transport and sex, 2010–19



Note: 95% confidence intervals have been presented as vertical bars.
Source: New Zealand Mortality Collection

Younger adults (15–24 years) and older adults (75+ years) had higher mortality rates for vehicle occupant injury. Mortality rates among pedestrians were also highest in older adults. By contrast, motorcyclists had higher mortality rates in the middle years, with younger and older adults having generally lower rates. Rates for cyclists were too low to distinguish any differences between age groups (Figure 11).

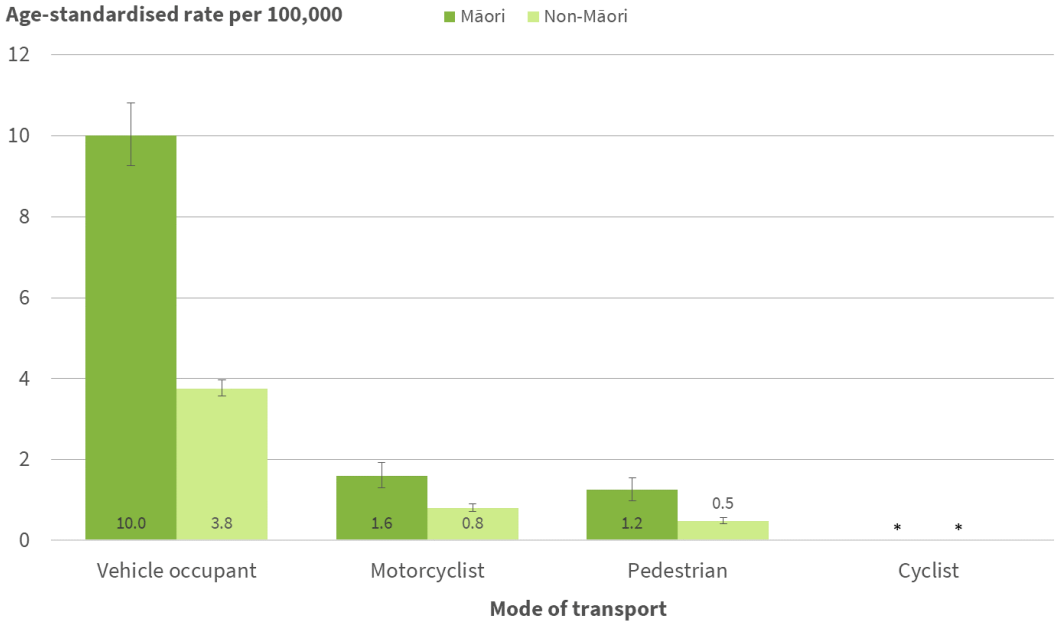
Figure 11: Road traffic injury mortality rates, by mode of transport and age group, 2010–19



Note: 95% confidence intervals have been presented as vertical bars.
Source: New Zealand Mortality Collection

Māori had higher mortality rates than non-Māori for all modes of transport except for cycling (Figure 12). The disparity was particularly strong for the vehicle occupant category, where the Māori rate was more than double the non-Māori rate (rate ratio=2.7, 95%CI 2.4–2.9).

Figure 12: Road traffic injury mortality rates, by mode of transport and Māori/non-Māori ethnicity, 2010–19

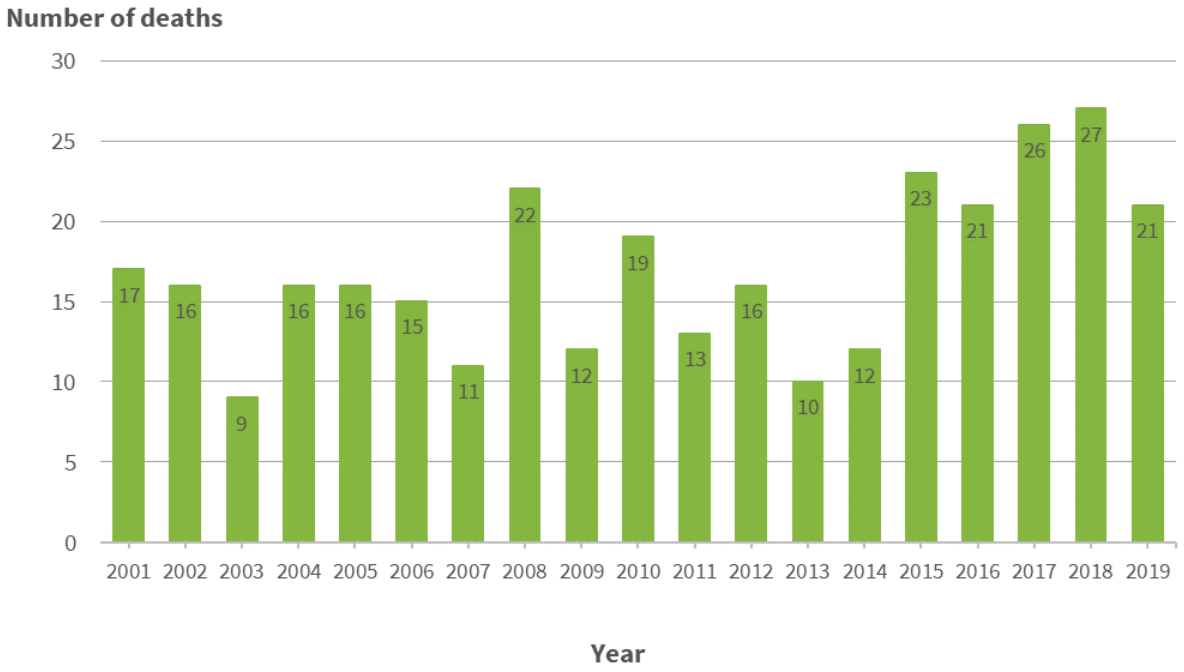


Note: 95% confidence intervals have been presented as vertical bars. * = Rates suppressed due to a low count of deaths (<20). All rates are per 100,000 persons, not per 100,000 users of the relevant mode of transport.
Source: New Zealand Mortality Collection

Deaths of overseas residents on New Zealand roads

While overseas residents are excluded from mortality rate calculations, they do make up a part of the total NZ road toll. Figure 13 shows the number of road traffic injury deaths of overseas residents each year from 2001 up until the most recent year of mortality collection data. Over this period, the number of deaths of overseas residents ranged from 9 in 2003 to 27 in 2018.

Figure 13: Road traffic injury mortality counts, overseas residents only, 2001–2019



Source: New Zealand Mortality Collection

Inequalities in road traffic injury deaths are high in Aotearoa New Zealand

Rates of road traffic injury deaths show strong inequalities. Māori, people living in areas with greater socioeconomic deprivation and people in rural areas have higher road traffic injury mortality rates. In addition, mortality rates for Māori appear to be increasing. These patterns are similar to those found in our 'Road traffic injury hospitalisations' surveillance report (Environmental Health Intelligence NZ 2023a).

Data for this indicator

This report includes two primary sources of data on road transport mortality. The annual road toll statistics (1990–2023) from the Ministry of Transport and more in-depth data from the New Zealand Mortality Collection (2001–2019). Some supporting data is from the New Zealand Household Travel Survey, also produced by the Ministry of Transport.

The following ICD–10AM codes were used to identify relevant cases from the mortality collection:

- Vehicle 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 (using the WHO population) have been presented, where possible, to account for the population age structures of different population groups.

For additional information, see the Metadata sheet.

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