

Lower respiratory tract infection hospitalisations (0–4 years)

This report presents information on lower respiratory tract infection (LRTI) hospitalisation rates among children aged 0–4 years in Aotearoa New Zealand.

Key facts

- The number of LRTI hospitalisations among 0–4 year olds increased slightly from 9958 in 2022 to 10158 in 2023.
- The pattern of LRTI hospitalisations being highest during winter remained, but the number of admissions during the summer 2022/23 period was higher than in previous years.
- Infants (under one year old) continue to have the highest LRTI hospitalisation rates.
- Pacific children had three times the rate of LRTI hospitalisations as European/Other children in 2023.

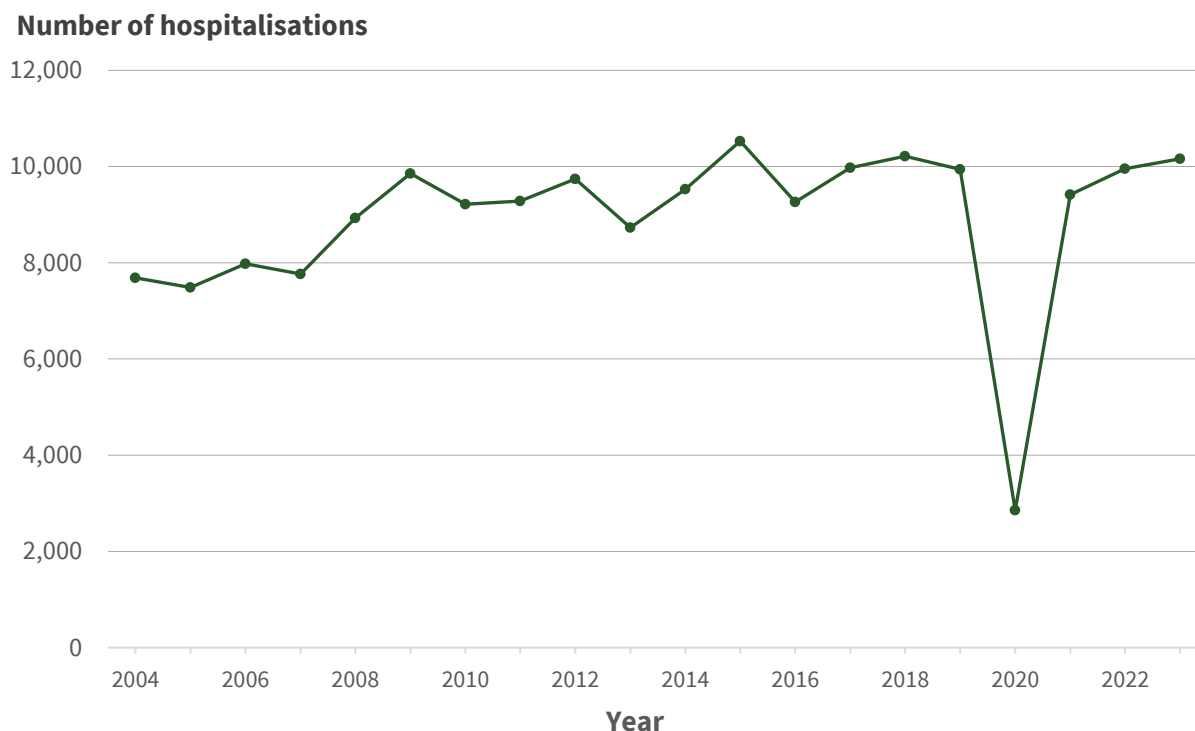
Poor indoor and outdoor air quality increases the risk of lower respiratory tract infections among children

Lower respiratory tract infections (LRTI) refer to infections of the windpipe (trachea), lungs, and airways (bronchi, bronchioles). These include pneumonia, bronchitis, and bronchiolitis. Household crowding, second-hand smoke exposure (Baker et al 2013; U.S. Department of Health and Human Services 2007), and outdoor air pollution (Mehta et al 2013) increase the risk of lower respiratory tract infections in young children. Compared with other developed countries, New Zealand has high rates of LRTI hospitalisation among young children (Trenholme et al 2013). For more background information, please visit our [website](#).

The total number of LRTI hospitalisations in 2023 was similar to 2022

In 2023, hospitalisations due to LRTI in children under five reached 10158, slightly higher than the 9958 hospitalisations in 2022. These numbers are consistent with hospitalisations before the COVID-19 pandemic (Figure 1).

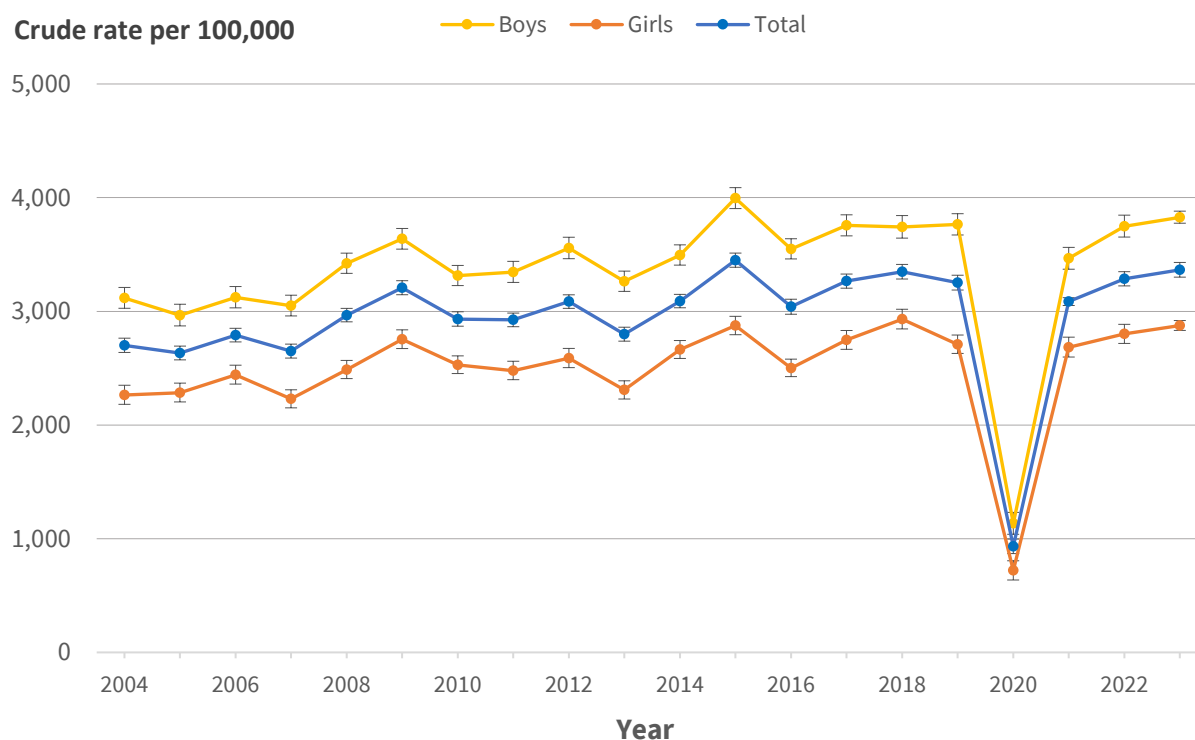
Figure 1: Number of lower respiratory tract infection hospitalisations in children aged 0–4 years, 2004–2023



Source: National Minimum Dataset, Ministry of Health 2024

There was no statistically significant change in the hospitalisation rate for LRTI between 2022 (3286.0 hospitalisations per 100,000; 95%CI 3221.8–3351.2) and 2023 (3365.0 per 100,000; 95%CI 3299.9–3431.1). The significantly lower rate in 2020 coincided with the onset of the nationwide COVID-19 lockdown on March 25, 2020. Hospitalisation rates have reverted to levels comparable to those seen before the pandemic. Boys have consistently had higher hospital rates for LRTI than girls throughout the period covered in this report (Figure 2).

Figure 2: Lower respiratory tract infection hospitalisations in children aged 0–4 years, by sex, 2004–2023 (crude rate per 100,000)

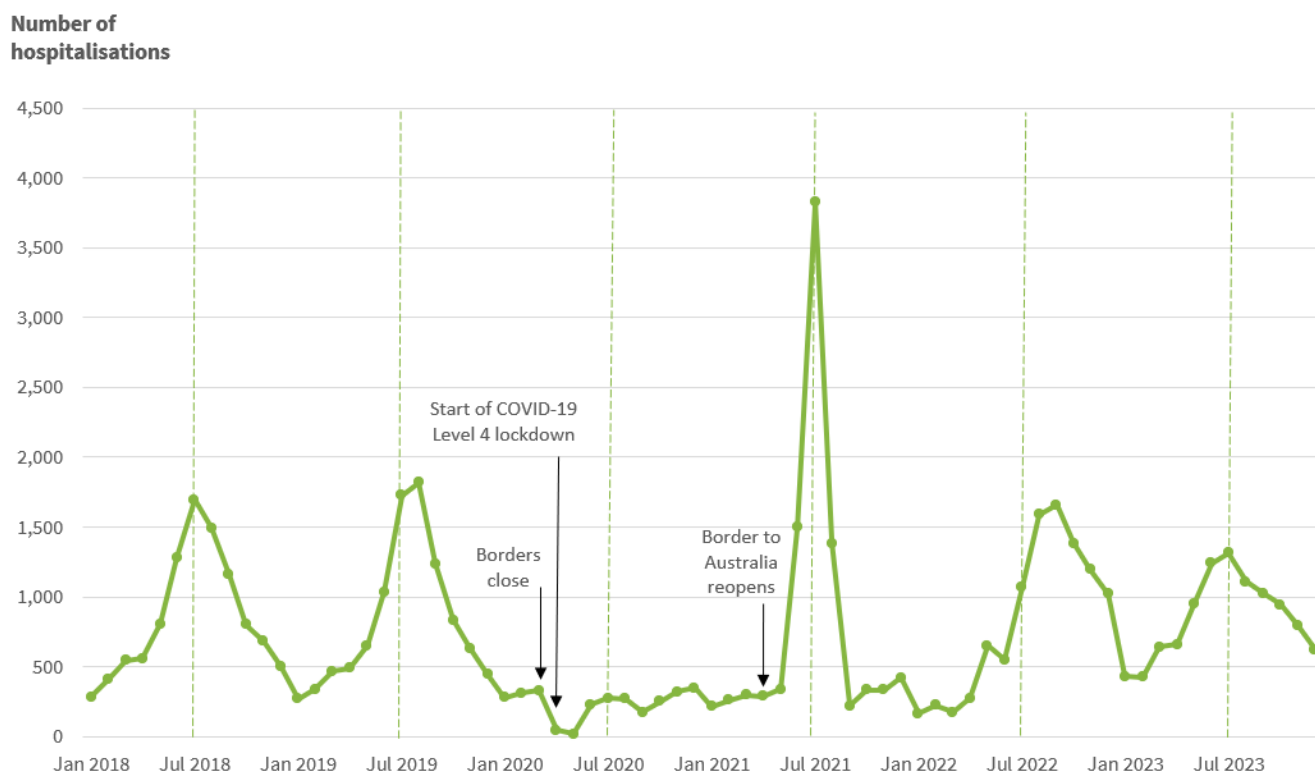


Note: 95% confidence intervals have been presented as vertical bars.
Source: National Minimum Dataset, Ministry of Health 2024

Higher admissions in warmer months than pre-COVID-19

The usual seasonal pattern for LRTI hospitalisations was disrupted in 2020 and 2021 while the country managed the COVID-19 pandemic. It is thought that one driver of the higher LRTI hospitalisations in 2021 was lower than usual levels of immunity among young children to respiratory syncytial virus (RSV) due to the reduced incidence of RSV and other seasonal viruses in 2020 (Britton et al 2020; Groves et al 2021). Border changes in April 2021 allowed quarantine-free travel between New Zealand and Australia and RSV cases quickly increased, peaking in July 2021 (Hatter et al 2021). The winter peak was near usual levels in 2022 and 2023, but summer hospitalisations from December 2022 through to February 2023 were higher than prior to the pandemic (Figure 3).

Figure 3: Number of lower respiratory tract infection hospitalisations in children aged 0–4 years, by month, 2018–2023

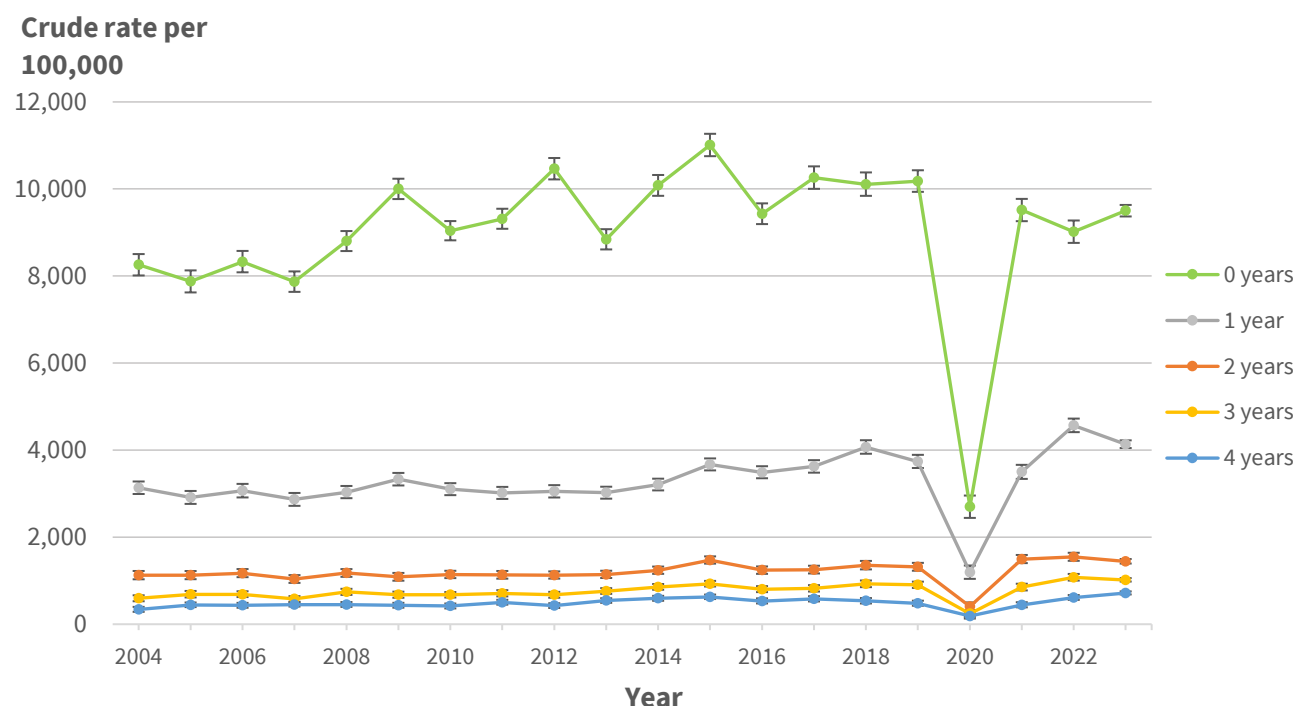


Source: National Minimum Dataset, Ministry of Health 2024

Infants continued to have the highest LRTI hospitalisation rates

In 2023, infants (under one-year-old) had the highest rate (9499.0 per 100,000; 95%CI 9255.4–9747.5) of LRTI hospitalisations compared to children aged 1–4 years (Figure 4). The rate for 1-year-olds in 2023 was 4133.9 per 100,000 (95%CI 3972.9–4299.8). While lower than the 2022 peak, this is still higher than in 2021.

Figure 4: Lower respiratory tract infection hospitalisations in children aged 0–4 years, by age, 2004–2023 (crude rate per 100,000)



Note: 95% confidence intervals have been presented as vertical bars.

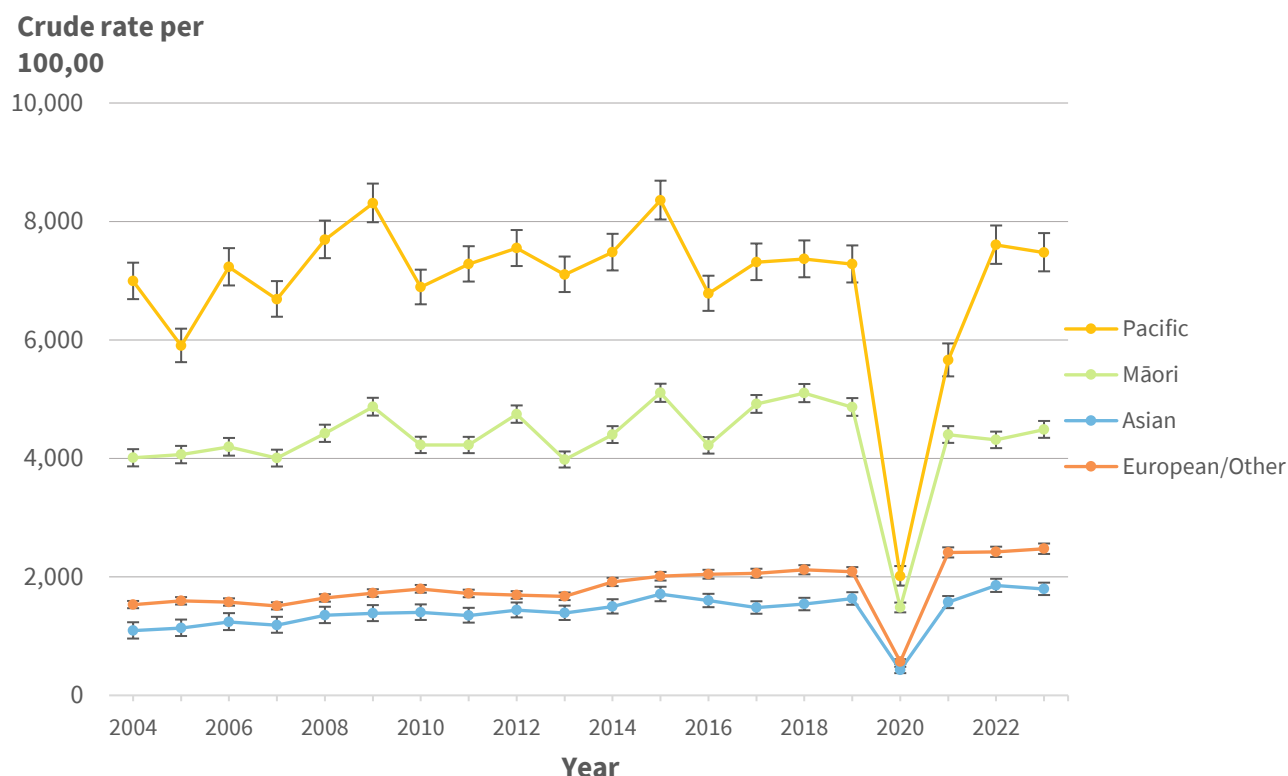
Source: National Minimum Dataset, Ministry of Health 2024

Pacific and Māori children were disproportionately affected by LRTI

Rates of LRTI hospitalisation for Pacific and Māori children have been consistently higher than those for European/Other children (Figure 5). In 2023, the LRTI hospitalisation rate was three times as high for Pacific children aged 0–4 years (7475.8 per 100,000; 95%CI 7158.1–7803.9) than for European/Other children (2474.2 per 100,000; 95%CI 2387.4–2563.3).

The large rise in hospitalisation rates for Pacific children between 2021 and 2022 was not repeated in 2023, but neither did the rate drop appreciably. With the protective measures used for the initial COVID-19 response gone, LRTI hospitalisation rates and associated disparities returned to 2019 levels.

Figure 5: Lower respiratory tract infection hospitalisations in children aged 0–4 years, by ethnic group (prioritised), 2004–2023 (crude rate per 100,000)

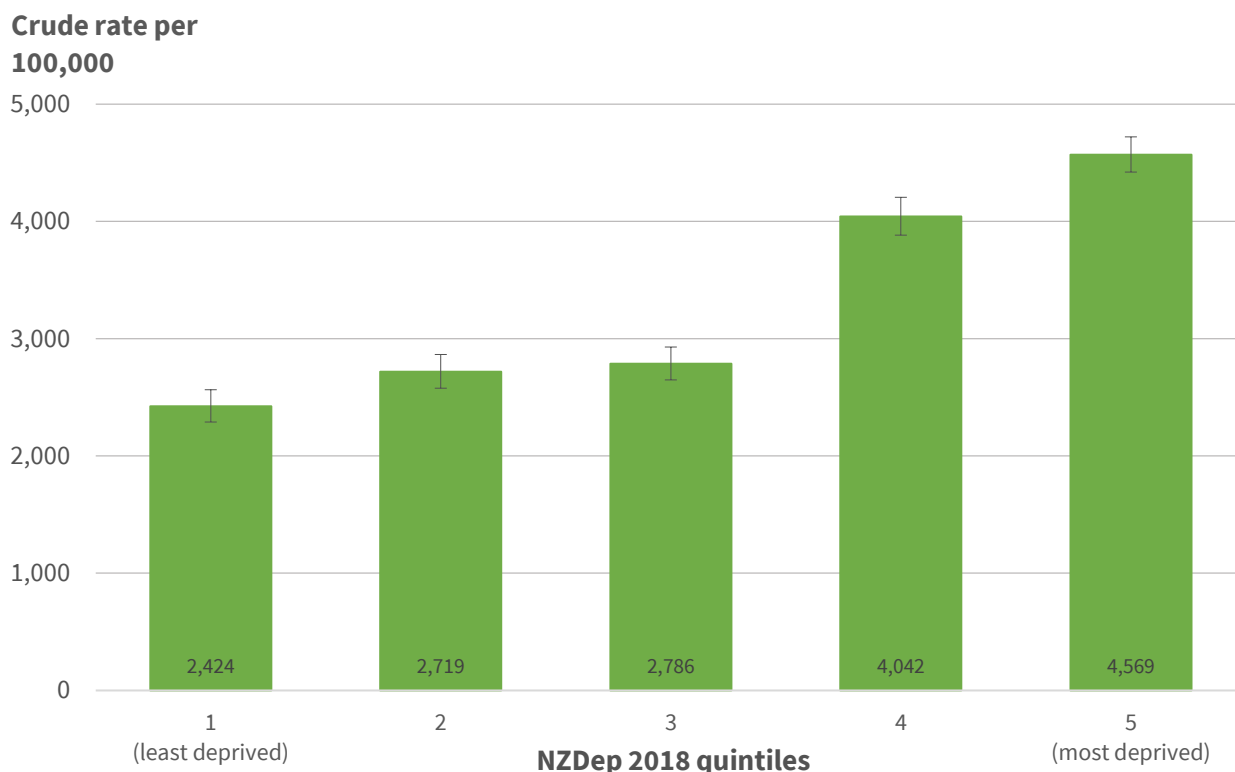


Note: 95% confidence intervals have been presented as vertical bars.
Source: National Minimum Dataset, Ministry of Health 2024

Higher LRTI hospitalisation rates in more deprived areas

In 2023, LRTI hospitalisation rates were much higher in more socioeconomically deprived areas (Figure 6). Children living in the most deprived areas (NZDep2018 quintile 5) had nearly two times the rate of LRTI hospitalisation as children living in the least deprived areas (quintile 1) (rate ratio=1.9, 95%CI 1.8–2.0).

Figure 6: Lower respiratory tract infection hospitalisations in children aged 0–4 years, by NZDep 2018 quintiles, 2023 (crude rate per 100,000)



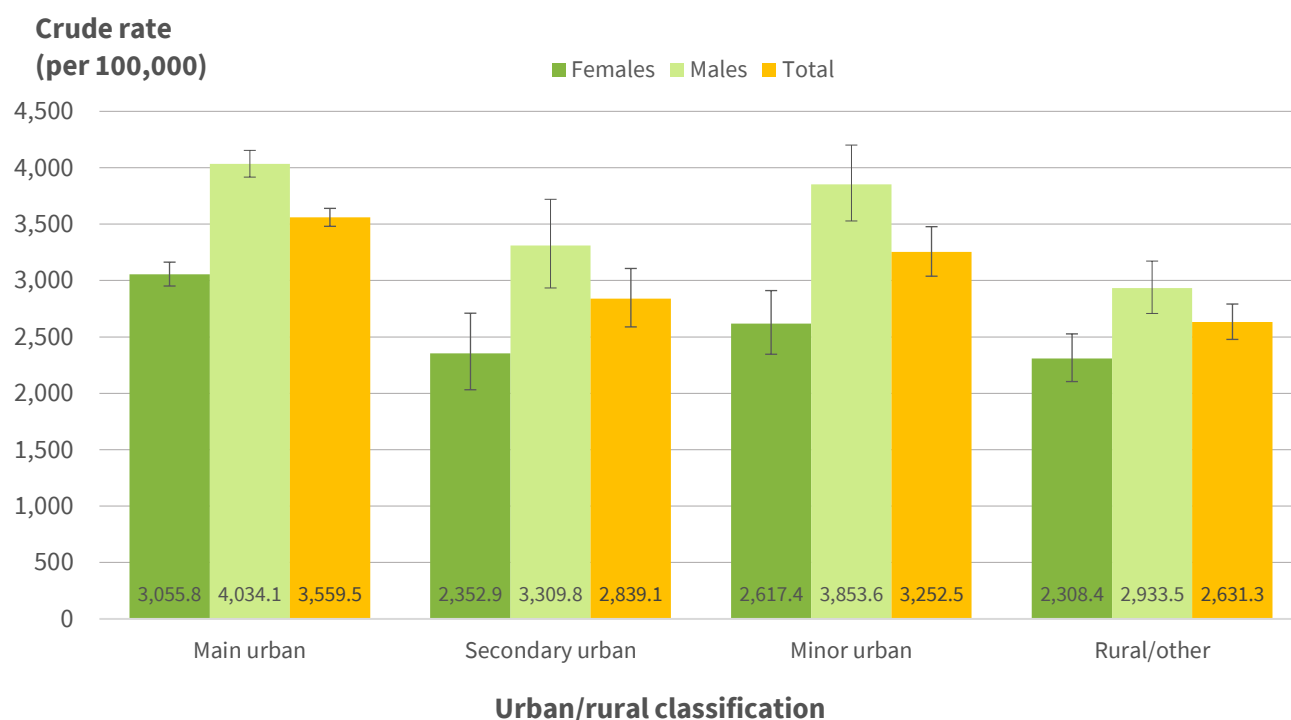
Note: 95% confidence intervals have been presented as vertical bars.

Source: National Minimum Dataset, Ministry of Health 2024

Higher LRTI hospitalisation rates in urban areas

LRTI hospitalisation rates for 2023 were higher for children living in the main urban areas (3559.5 per 100,000; 95%CI 3480.5–3639.7) than for children living in rural areas (2631.3 per 100,000; 95%CI 2477.9–2791.8). Across all urban and rural categories, males had a statistically significantly higher rate of LRTI hospitalisation than females (Figure 7).

Figure 7: Lower respiratory tract infection hospitalisations in children aged 0–4 years, by urban/rural classification, 2023 (crude rate per 100,000)



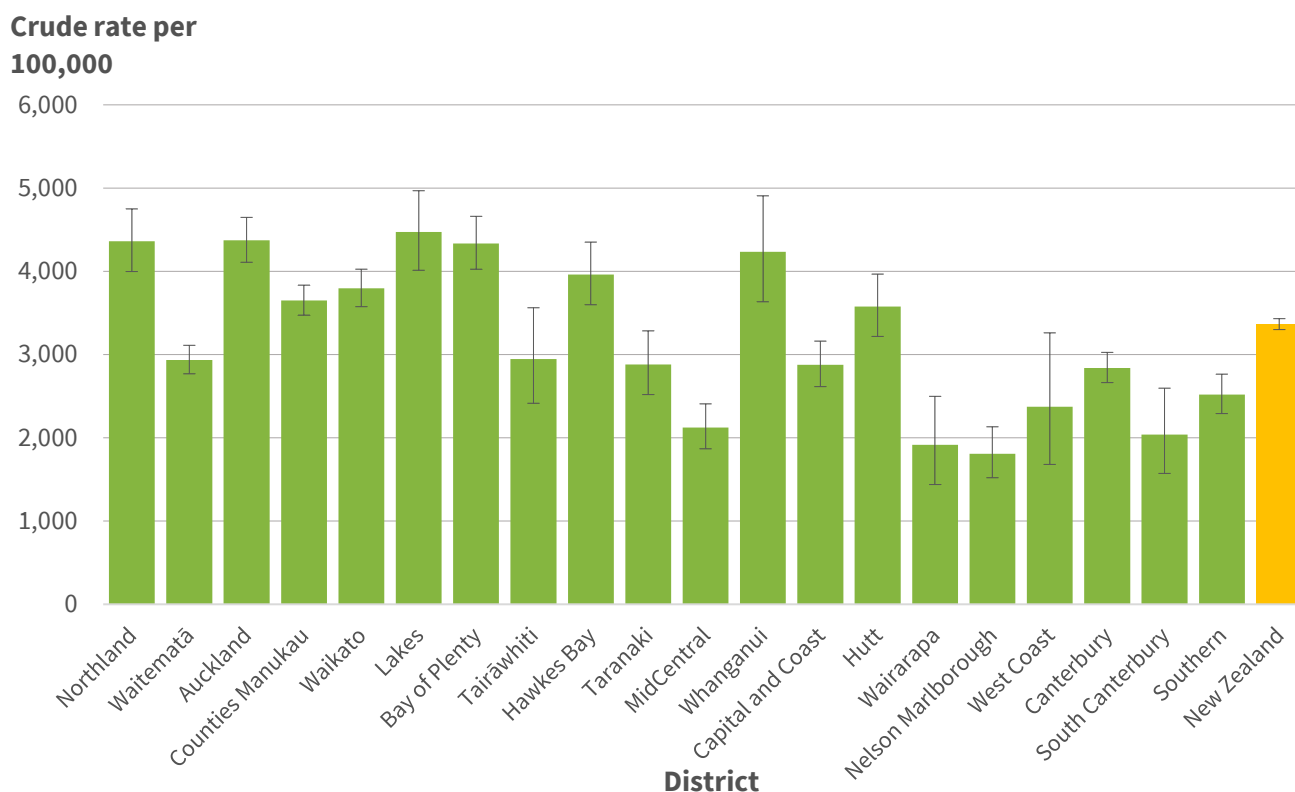
Notes: 95% confidence intervals have been presented as vertical bars. The Statistics New Zealand urban-rural classification for 2013 has been used. Main urban areas are major towns and cities with a population of 30,000 or more. Secondary urban areas are smaller towns with a population of 10,000–29,999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

Source: National Minimum Dataset, Ministry of Health 2024

High LRTI hospitalisation rates in Northland, Auckland, Lakes, Bay of Plenty, and Whanganui

Children living in Northland, Auckland, Lakes, Bay of Plenty, and Whanganui districts had relatively high rates in 2023 (Figure 8).

Figure 8: Lower respiratory tract infection hospitalisations in children aged 0–4 years, by district, 2023 (crude rate per 100,000)



Notes : 95% confidence intervals have been presented as vertical bars. Districts refer to areas formerly known as District Health Boards (DHBs).
Source: National Minimum Dataset, Ministry of Health 2024

Further results by territorial authority can be accessed using the [Indoor Environment domain dashboard](#).

Data for this indicator

Data for this indicator comes from the National Minimum Dataset, published by the Ministry of Health. The indicator reports on LRTI hospitalisations among children aged 0–4 years with a primary diagnosis in the following ICD-10AM codes:

- pneumonia (J12, J13, J14, J15, J16, J18)
- bronchitis (J20)
- bronchiolitis (J21)
- unspecified acute lower respiratory tract infection (J22).

For additional information, see the [Metadata](#) sheet.

References

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