Asthma prevalence and hospitalisations in children (0–14 years)

This report combines information on the prevalence of medicated asthma in children aged 2–14 years (from the 2022/23 New Zealand Health Survey) and rates of asthma (including wheeze) hospitalisation among children aged 0–14 years (calculated using the 2001–2022 National Minimum Dataset) in Aotearoa New Zealand. Including wheeze is consistent with the approach used by Child Youth and Epidemiology Service and Health Quality and Safety Commission to account for paediatricians increasingly diagnosing wheeze instead of asthma, particularly for young children.

Key facts

- In 2022/23, around 104,000 children aged 2–14 years were diagnosed with asthma and were currently taking asthma medication.
- There were 7683 hospitalisations in children aged 0–14 years in 2022, the highest since 2001.
- Children under five years old continued to have lower asthma prevalence but higher hospitalisation rates than other age groups. In 2022, the hospitalisation rate among 0–4 year-olds was 14 times higher than that of 10–14-year-olds.
- Māori and Pacific children had a higher asthma prevalence than non-Māori and non-Pacific children in 2022/23. Additionally, Pacific children consistently had higher hospitalisation rates than other children since 2001.
- Asthma prevalence and hospitalisation rates were higher in children living in the most deprived areas (NZDep 2018 quintile 5) than children living in the least deprived areas.
- Children living in main urban areas had higher hospitalisation rates than children living in rural areas in 2022.
- Auckland district had the highest asthma hospitalisation rate in 2022.

Poor indoor and outdoor air quality increases the risk of asthma among children

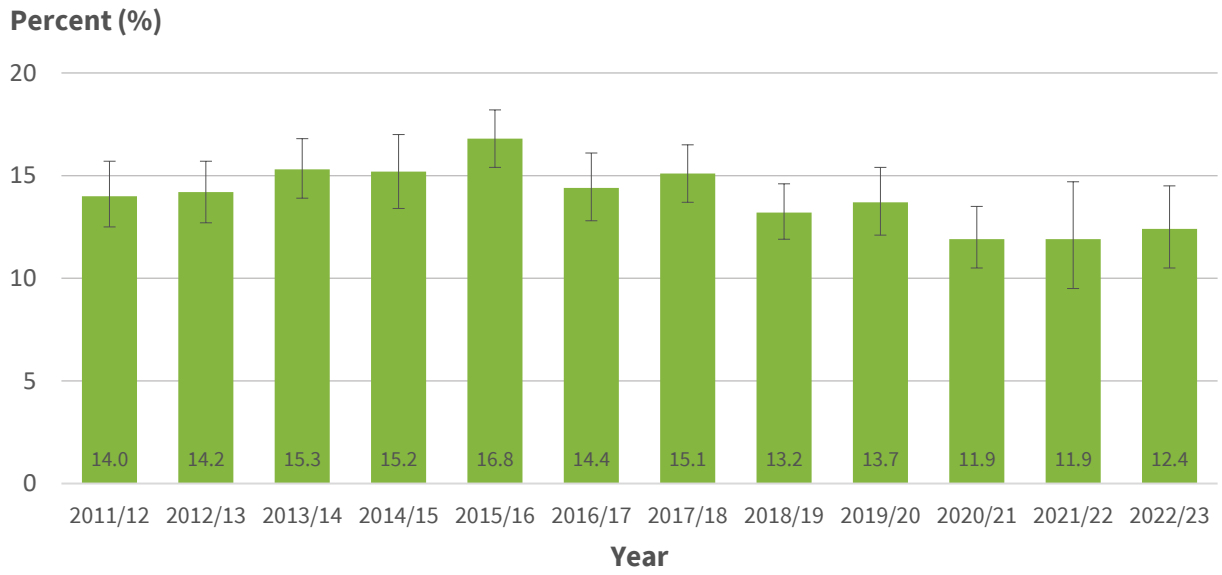
Asthma is a chronic respiratory condition that causes coughing, wheezing and shortness of breath. Poor indoor environment conditions are associated with the increased risk of developing asthma in children. Second-hand smoke exposure can increase the risk of asthma and wheeze in children (He et al 2020). Indoor dampness/mould is also associated with asthma onset and exacerbation in children (Jaakkola et al 2011). Additionally, several studies have found an increase in asthma prevalence or incidence associated with exposure to outdoor air pollutants, particularly nitrogen dioxide (Guarnieri and Balmes 2014; Orellano et

al 2017; Kuschel et al 2022). Asthma exacerbations can also be triggered by lower respiratory tract infections (Homaira et al 2022).

Asthma prevalence have stayed stable since 2017/18

In 2022/23, 12.4% of children (about 104,000 children) were diagnosed with asthma and were currently being treated for it (Figure 1). There has been no statistically significant change in asthma prevalence since 2017/18.

Figure 1: Medicated asthma in children aged 2–14 years, 2011/12–2022/23



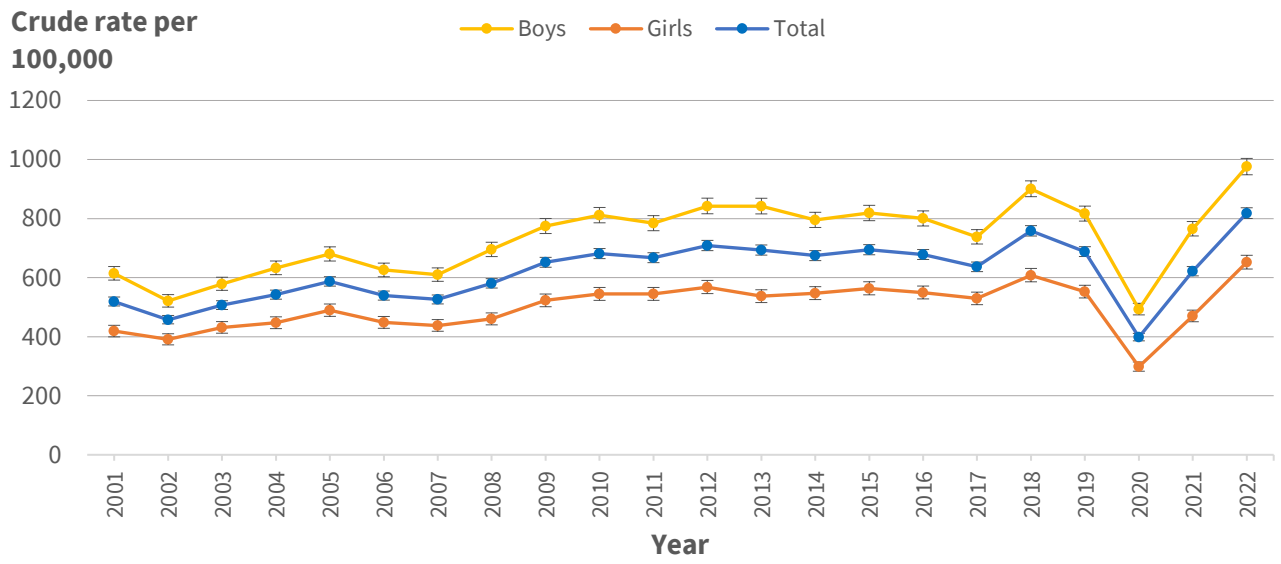
Note: 95% confidence intervals have been presented as vertical bars.
Source: New Zealand Health Survey, Ministry of Health 2023

Asthma hospitalisation rates have increased in 2022

In 2022, there were 7863 hospitalisations in children aged 0–14 years, up from 6022 in 2021. Furthermore, 2022 saw the highest hospitalisation rates (818.3 per 100,000; 95% CI 800.3–836.6) in children since 2001 (Figure 2). A drop in hospitalisations in 2020 coincided with the nationwide COVID-19 lockdown on 25 March 2020. With the gradual relaxation of COVID-19 restrictions, hospitalisation rates have reverted to levels comparable to those seen before the pandemic.

Since 2001, boys consistently had higher asthma hospitalisation rates than girls.

Figure 2: **Asthma hospitalisations in children aged 0–14 years, by sex, 2001–2022 (crude rate per 100,000)**

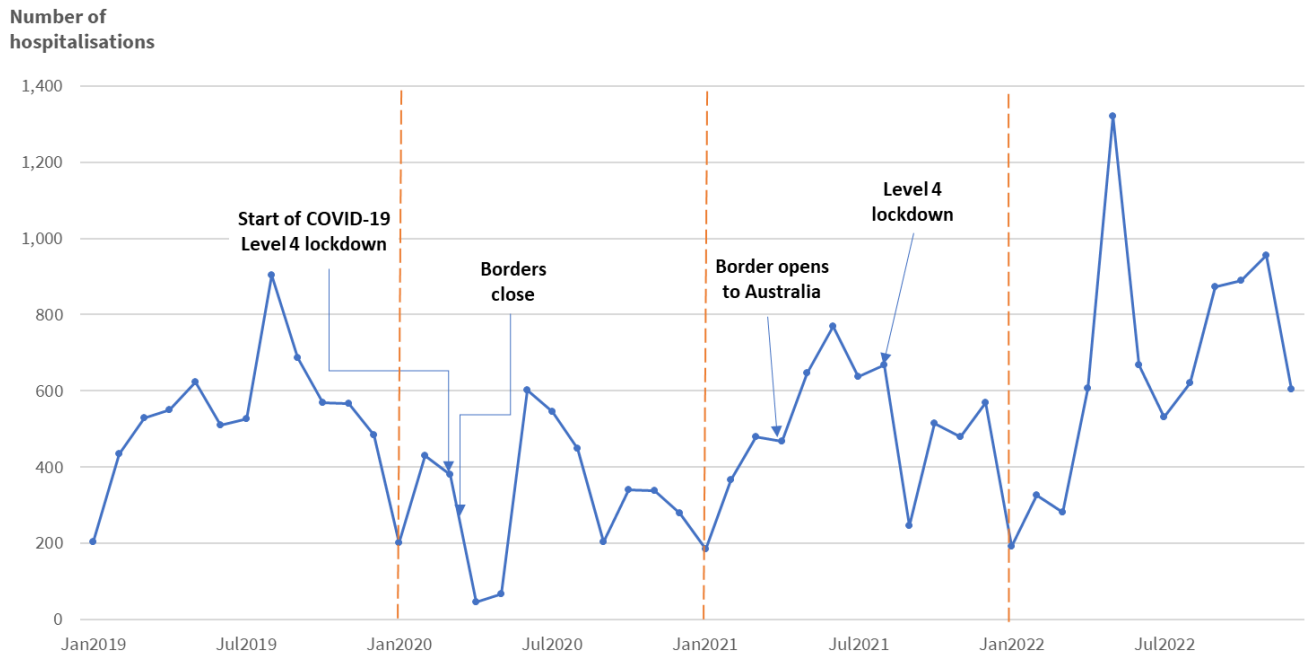


Note: 95% confidence intervals have been presented as vertical bars.
Source: National Minimum Dataset, Ministry of Health 2023

Asthma hospitalisations reached its highest monthly total in May 2022

In May 2022, there were 1321 hospitalisations, marking the highest monthly total since 2001 (Figure 3). This surge was followed by a notable decrease during the winter months, and another rise in November, with 955 hospitalisations, the second highest monthly total.

Figure 3: Number of asthma hospitalisations in children aged 0–14 years, by month, January 2019–December 2022

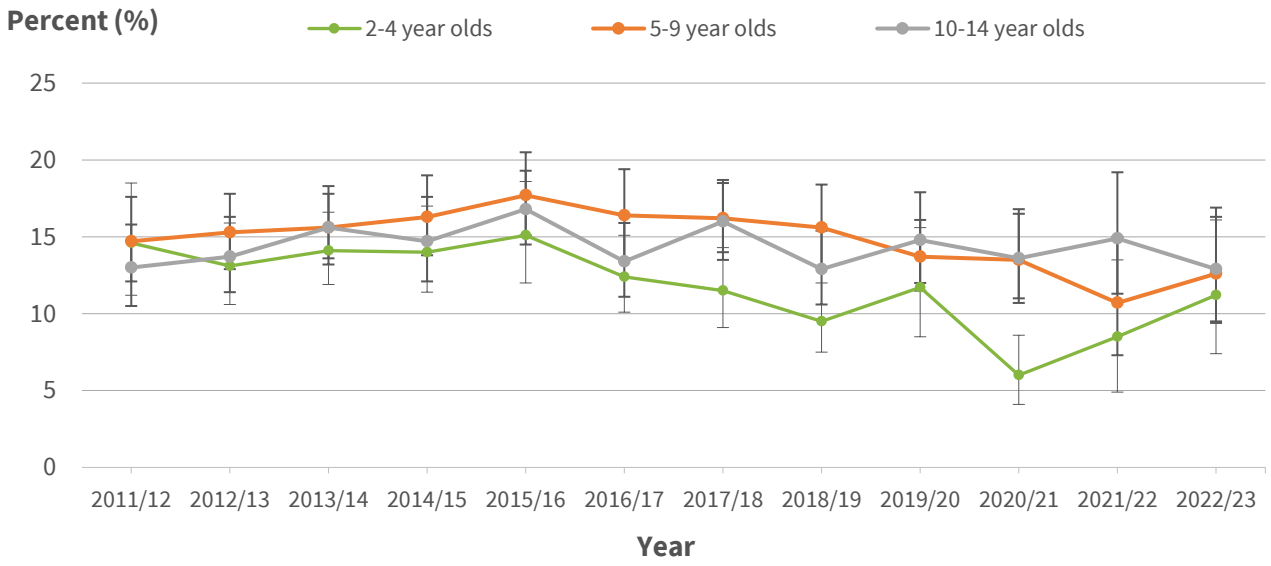


Source: National Minimum Dataset, Ministry of Health 2023

Children aged 2–4 years have lower asthma prevalence rates

In 2022/23, children aged 2–4 years had a lower asthma prevalence (11.2%) than those aged 5–9 (12.6%) and 10–14 years (12.9%) (Figure 4). From 2012/13 to 2022/23, the 2–4 year age group consistently had lower asthma prevalence rates than its older counterparts. However, the difference was not statistically significant.

Figure 4: Medicated asthma in children aged 2–14 years, by age group, 2011/12–2022/223



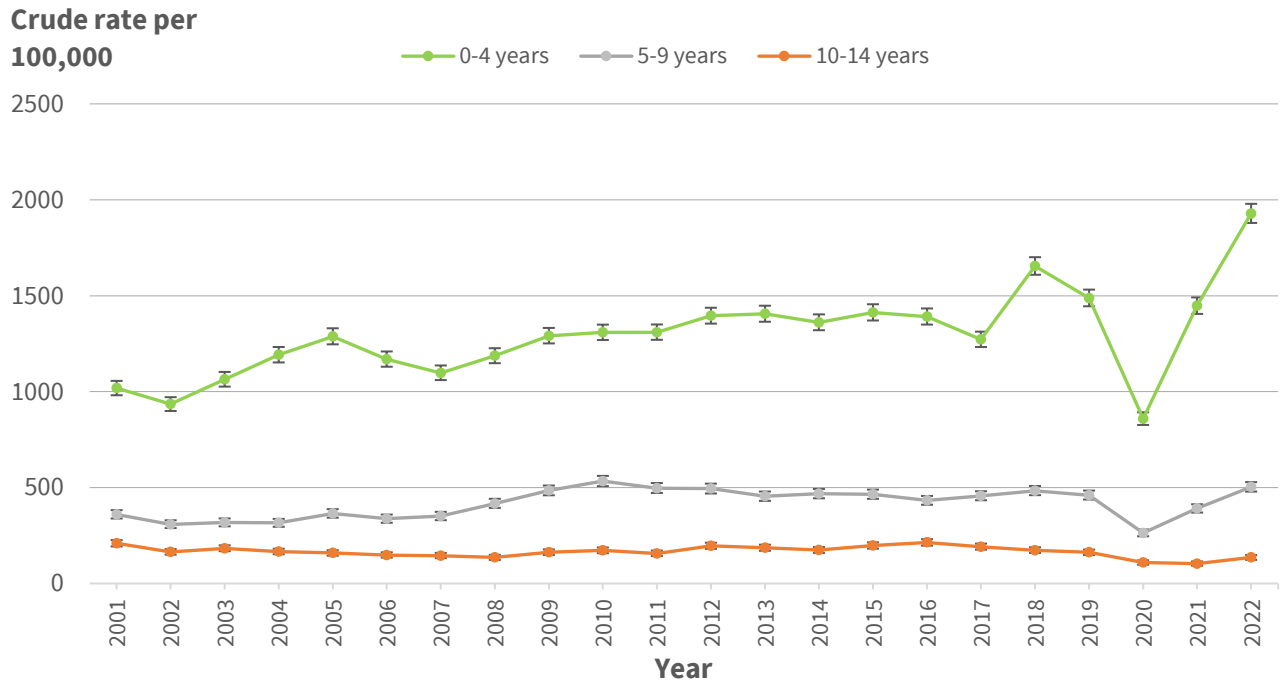
Note: 95% confidence intervals have been presented as vertical bars.
Source: New Zealand Health Survey, Ministry of Health 2023

Children under five have the highest asthma hospitalisation rates

In 2022, the rate of asthma hospitalisation among 0–4-year-olds (1928.7 per 100,000; 95%CI 1879.3–1979.1) was 14 times higher than the rate of children aged 10–14 years (135.3 per 100,000; 95%CI 123.2–148.3) (Figure 5). Between 2001 and 2022, children aged 0–4 years consistently had the highest rate of asthma hospitalisations compared with older children. The 2022 rate for this age group was the highest since 2001.

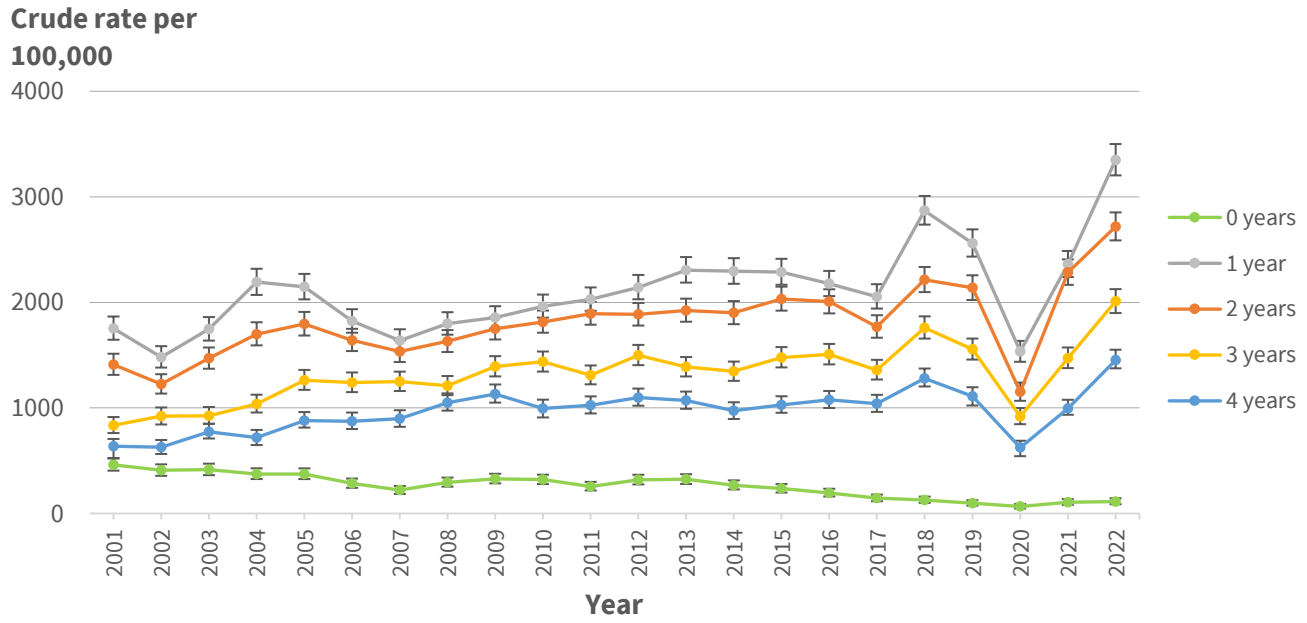
Asthma hospitalisations for children under the age of five years are presented in Figure 6. Between 2001 and 2022, 1-year-olds had relatively high asthma hospitalisation rates, while infants (under 1-year-old) had the lowest rates. Infants have low rates because they are more likely to be diagnosed with bronchiolitis than asthma or wheeze (BPAC 2020).

Figure 5: Asthma hospitalisations in children aged 0–14 years, by age group, 2001–2022 (crude rate per 100,000)



Note: 95% confidence intervals have been presented as vertical bars.
Source: National Minimum Dataset, Ministry of Health 2023

Figure 6: Asthma hospitalisations in children aged 0–4 years, 2001–2022 (crude rate per 100,000)



Note: 95% confidence intervals have been presented as vertical bars.
Source: National Minimum Dataset, Ministry of Health 2023

Pacific and Māori children were disproportionately affected by asthma

Māori (18.7%) and Pacific children (16.0%) had the highest prevalence of medicated asthma in 2022/23 (Table 1). Māori children were 1.85 times as likely to have medicated asthma as non-Māori children, after adjusting for age and sex. Pacific children also had a relatively high, but not statistically significant rate ratio.

Table 1: Medicated asthma in children aged 2–14 years, by ethnic group (total response), 2022/23

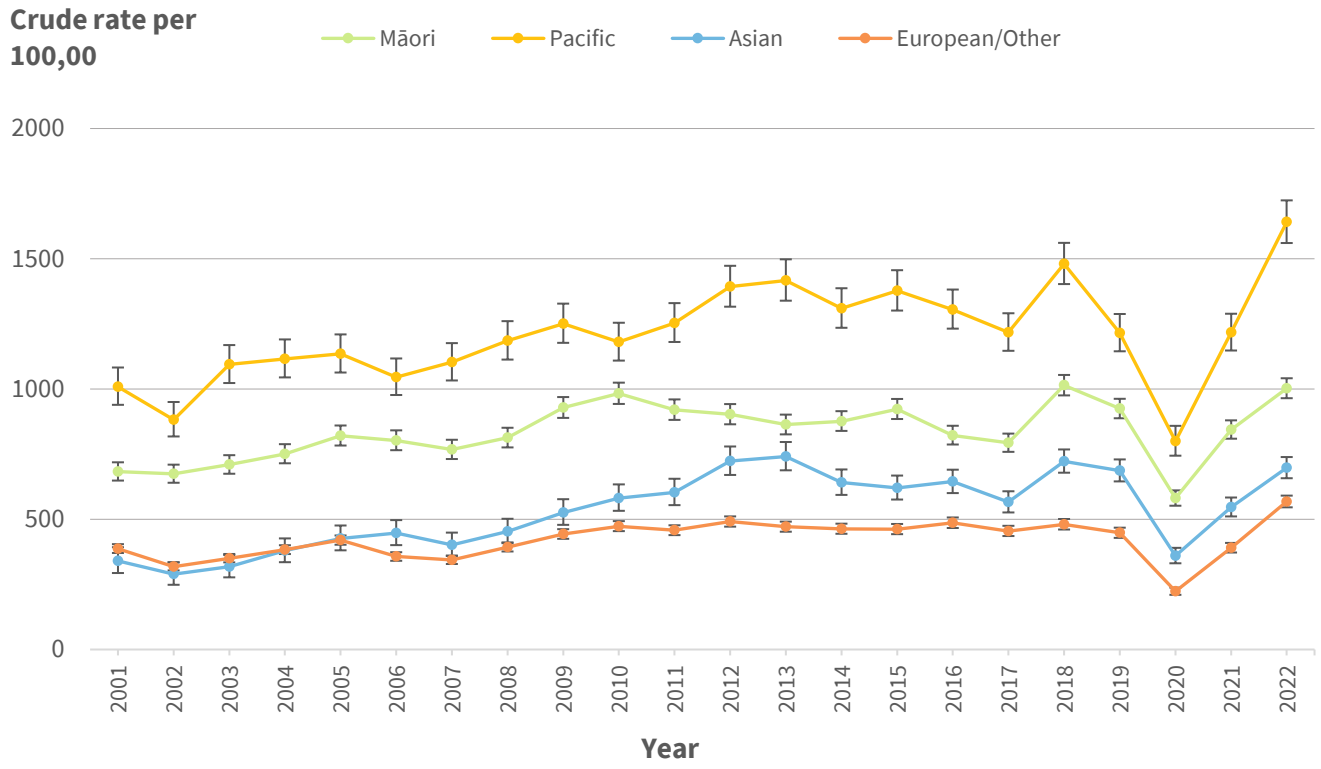
Ethnic group (total response)	Unadjusted prevalence (%, 95 CI)	Estimated number of children	Comparison groups	Adjusted rate ratio (RR, 95% CI)^
Total	12.4 (10.5–14.5)	104,000		
Māori	18.7 (15.1–22.9)	42,000	vs non-Māori	1.85 (1.38–2.49)*
Pacific	16.0 (10.3–23.3)	22,000	vs non-Pacific	1.36 (0.87–2.13)
Asian	6.7 (3.7–11.2)	12,000	vs non-Asian	0.48 (0.28–0.83)*
European/Other	12.3 (9.9–14.9)	66,000		

Note: 95% confidence intervals (CI) are given in brackets. Estimated numbers will add to more than the total for ethnic groups due to total response ethnic groups being used (where everyone is included in every ethnic group they report).
^ Rate ratios (RR) are used to compare results for different population subgroups. Adjusted rate ratios are for age and sex differences that could influence the comparison. An adjusted rate ratio above 1.0 shows that the indicator is more likely in the group of interest (eg, Māori) than in the comparison group (eg, non-Māori). An adjusted ratio below 1.0 shows the indicator is less likely in the group of interest than the comparison group.
* Indicates that the adjusted ratio is statistically significant.

Source: New Zealand Health Survey, Ministry of Health 2023

Since 2001, Pacific children have consistently had the highest asthma hospitalisation rates (Figure 7). There has been a statistically significant increase in rates for Pacific children, from 1216.9 per 100,000 (95%CI 1147.8–1289.1) in 2021 to 1640.8 per 100,000 (95%CI 1560.4–1724.2) in 2022, marking the highest rate recorded since 2001.

Figure 7: Asthma hospitalisations in children aged 0–14 years, by ethnic group (prioritised, 2001–2022 (crude rate per 100,000)



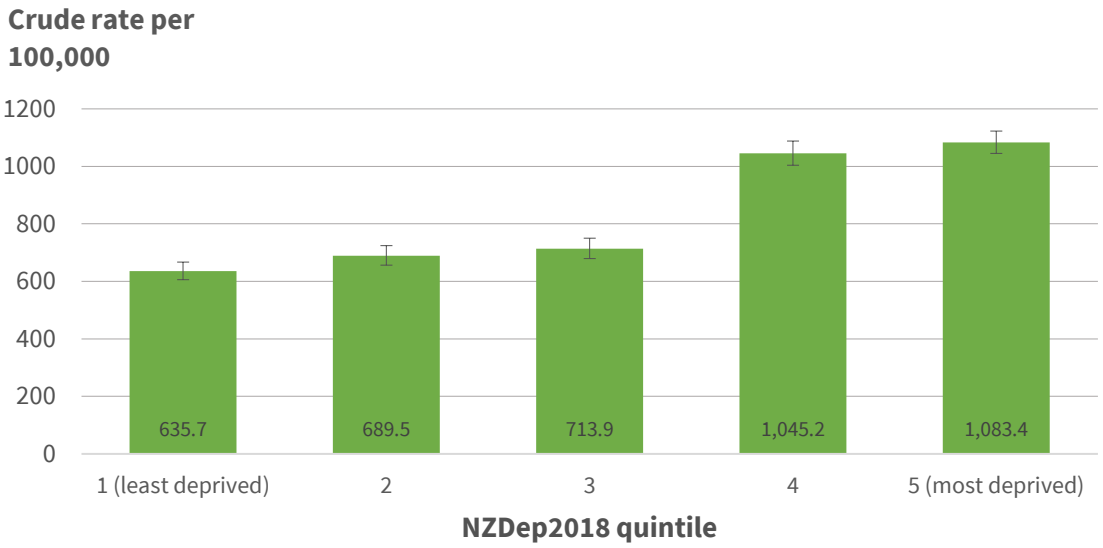
Note: 95% confidence intervals have been presented as vertical bars.
Source: National Minimum Dataset, Ministry of Health 2023

Higher asthma rates in more socioeconomically deprived areas

Children living in the most socioeconomically deprived areas (NZDep 2018 quintile 5) were 1.36 times as likely as those living in the least deprived areas (quintile 1) to have medicated asthma (adjusted rate ratio 1.36; 95%CI 0.79–2.36) after adjusting for age, sex, and ethnicity. However, the difference was not statistically significant.

The rate of asthma hospitalisation in children aged 0–14 years was also higher in more socioeconomically deprived areas (quintile 4 and 5) (Figure 8). Children living in the most deprived areas (NZDep 2018 quintile 5) had 1.7 times the rate of asthma hospitalisation as children living in the least deprived areas (quintile 1).

Figure 8: Asthma hospitalisations in children aged 0–14 years, by NZDep 2018 quintiles, 2022 (crude rate per 100,000)

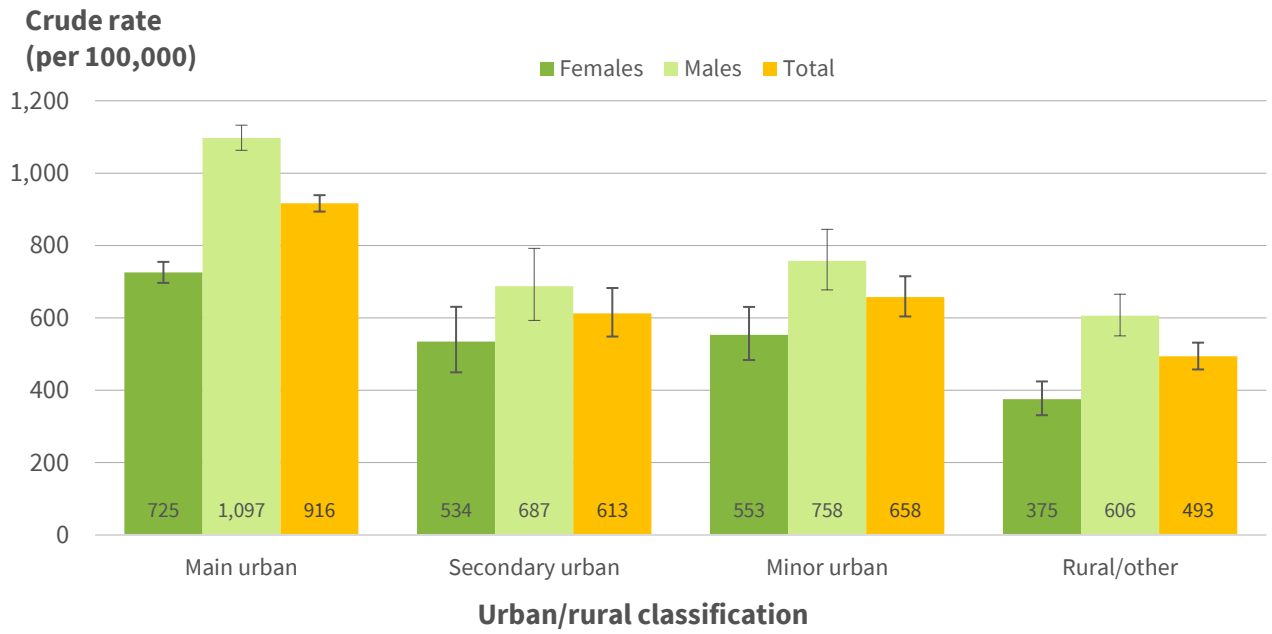


Note: 95% confidence intervals have been presented as vertical bars.
Source: National Minimum Dataset, Ministry of Health 2023

Higher asthma hospitalisation rates in urban areas

Asthma hospitalisation rates for 2022 were higher for children living in main urban areas (916.2 per 100,000; 95%CI 893.7–939.1) than for children living in rural areas (493.4 per 100,000; 95%CI 457.4–531.6) (Figure 9). In all urban/rural categories, males had higher hospitalisation rates than females.The difference was largest among residents in rural and main urban areas.

Figure 9: **Asthma hospitalisations in children aged 0–14 years, by urban/rural classification, 2022 (crude rate per 100,000)**



Note 1: 95% confidence intervals have been presented as vertical bars.
Note 2: 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.

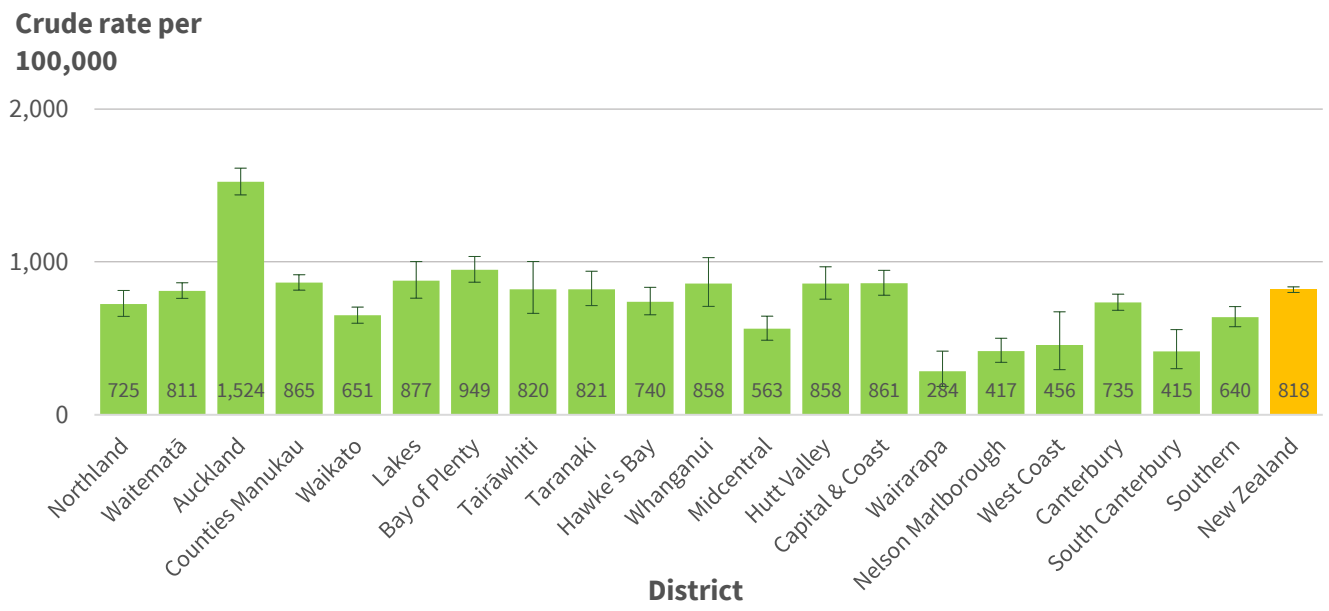
Source: National Minimum Dataset, Ministry of Health 2023

Auckland district had the highest asthma hospitalisation rate in 2022

In 2022, children living in the Auckland district had the highest asthma hospitalisation rate (1524.0 per 100,000; 95%CI 1438.0–1613.7), while the Wairarapa district had a low rate (284.5 per 100,000; 95%CI 185.8–416.8) (Figure 10).

District results for the New Zealand Health Survey are yet to be updated. Children living in the Canterbury district (10.1%) had the lowest asthma prevalence in 2017–20 (see dashboard) (Ministry of Health 2021).

Figure 10: Asthma hospitalisations in children aged 0–14 years, by district, 2022 (crude rate per 100,000)



Note: 95% confidence intervals have been presented as vertical bars.
Source: National Minimum Dataset, Ministry of Health 2023

Data for this indicator

The **Asthma prevalence** indicator contains the most recent data available from the 2022/23 New Zealand Health Survey published by the Ministry of Health in December 2023. The Ministry of Health calculated all the results.

The most recent publication of the Regional Results 2017–2020: New Zealand Health Survey was released in October 2021. There have been no subsequent updates to this data.

In December 2023, the Ministry of Health advised that results published in 2022 for the 2021/22 year were affected by an error in assigning New Zealand Index of Deprivation (NZDep) decile. The errors were corrected for the latest survey results release. Full details regarding the error can be found on the Ministry of Health website. For the Asthma prevalence indicator, the greatest impact was on results by NZDep2018 Quintile. However, all changes were within the original margin of error given for the results.

For additional information, see the Asthma prevalence Metadata sheet.

The **Asthma hospitalisation** indicator is an analysis of data from the National Minimum Dataset, provided to EHINZ by the Ministry of Health in August 2023.

This indicator reports on acute and semi-acute asthma hospitalisations among children aged 0–14 years with a primary diagnosis in the following ICD-10AM codes:

- asthma (J45–J46)
- wheeze (R06.2)

Including wheeze is consistent with the approach used by Child Youth and Epidemiology Service (Simpson et al 2017) and Health Quality and Safety Commission (HQSC 2020) to account for paediatricians increasingly diagnosing wheeze

instead of asthma, particularly for young children.

For additional information, see the Asthma hospitalisation Metadata sheet.

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