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 2023/24 New Zealand Health Survey) and rates of asthma (including wheeze) hospitalisation among children aged 0–14 years (calculated using the 2001–2023 National Minimum Dataset) in Aotearoa New Zealand. Including wheeze aligns with the approach taken by the Child Youth and Epidemiology Service and the Health Quality and Safety Commission, as paediatricians are increasingly diagnosing wheeze instead of asthma, especially in young children.

Key facts

- In 2023/24, around 99,000 children aged 2–14 years were diagnosed with asthma and were currently taking asthma medication.
- There were 7533 hospitalisations in children aged 0–14 years in 2023, down from 7862 in 2022.
- Children under five years old continued to experience lower rates of asthma prevalence but higher hospitalisation rates, particularly among one-year-olds, compared to other age groups. In 2023, the hospitalisation rate for those aged 0–4 was 13 times higher than that of 10–14-year-olds.
- In 2023/24, Māori children aged 2–14 years experienced a higher prevalence of asthma compared to non-Māori children. In addition, Pacific children aged 0–14 years have 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 2023.
- The Auckland district had the highest asthma hospitalisation rate in 2022 and 2023.

Both poor indoor and outdoor air quality increases the risk of asthma in children.

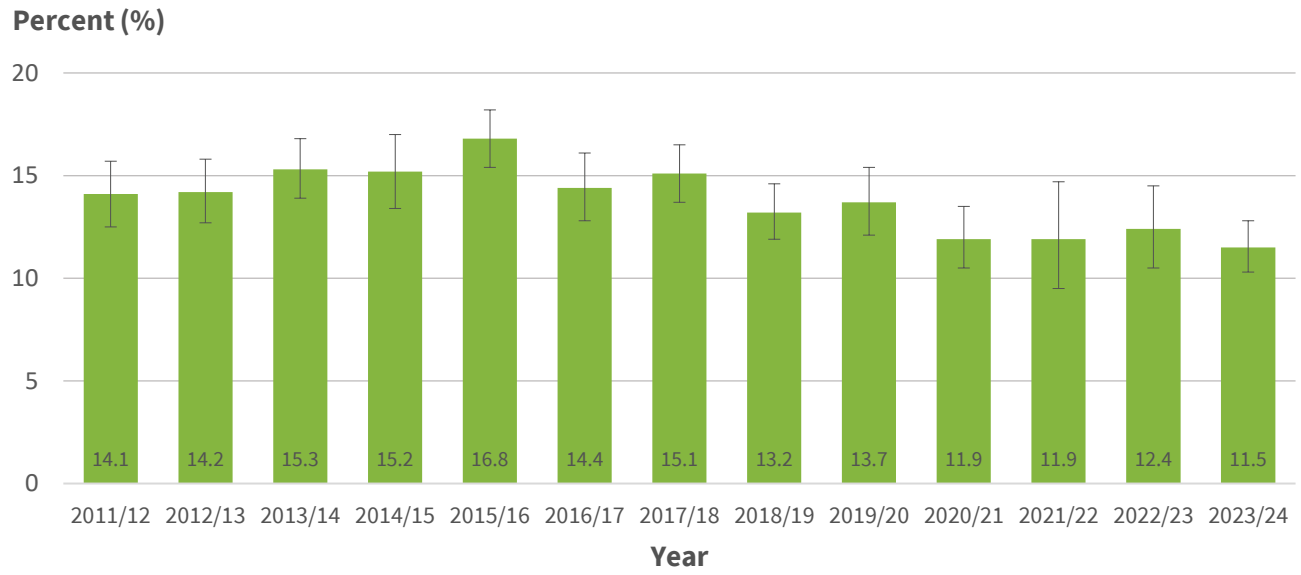
Asthma is a chronic respiratory condition that causes coughing, wheezing and shortness of breath. Poor indoor environment conditions are associated with an increased risk of developing asthma in children. Second-hand smoke exposure can increase the risk of asthma and wheeze in children (He et al 2020). 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 rates have remained stable since 2019/20

In 2023/24, 11.5% of children (about 99,000 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 2019/20.

Figure 1: Medicated asthma in children aged 2–14 years, 2011/12–2023/24



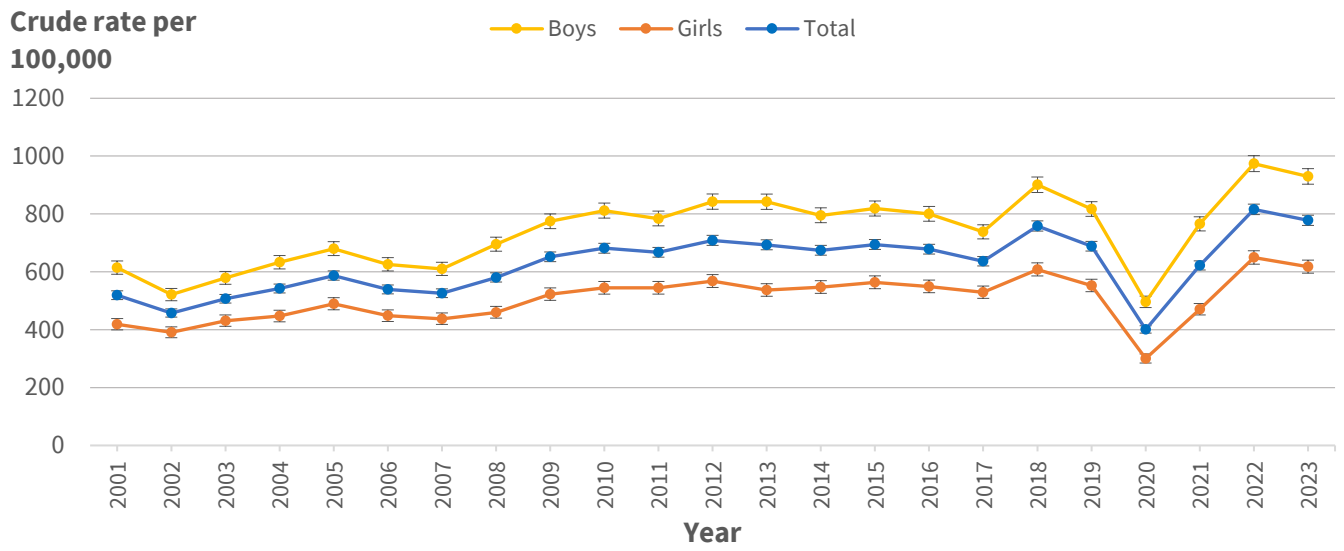
Note: 95% confidence intervals have been presented as vertical bars.
Source: New Zealand Health Survey, Ministry of Health 2024a

Asthma hospitalisation rates declined in 2023

In 2023, there were 7533 hospitalisations (778.0 per 100,000, 95%CI 760.5–795.7) in children aged 0–14 years, down from 7862 (815.8 per 100,000, 95%CI 797.9–834.1) in 2022 (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 returned to levels similar to those seen before the pandemic.

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

Figure 2: **Asthma hospitalisations in children aged 0–14 years, by sex, 2001–2023 (crude rate per 100,000)**

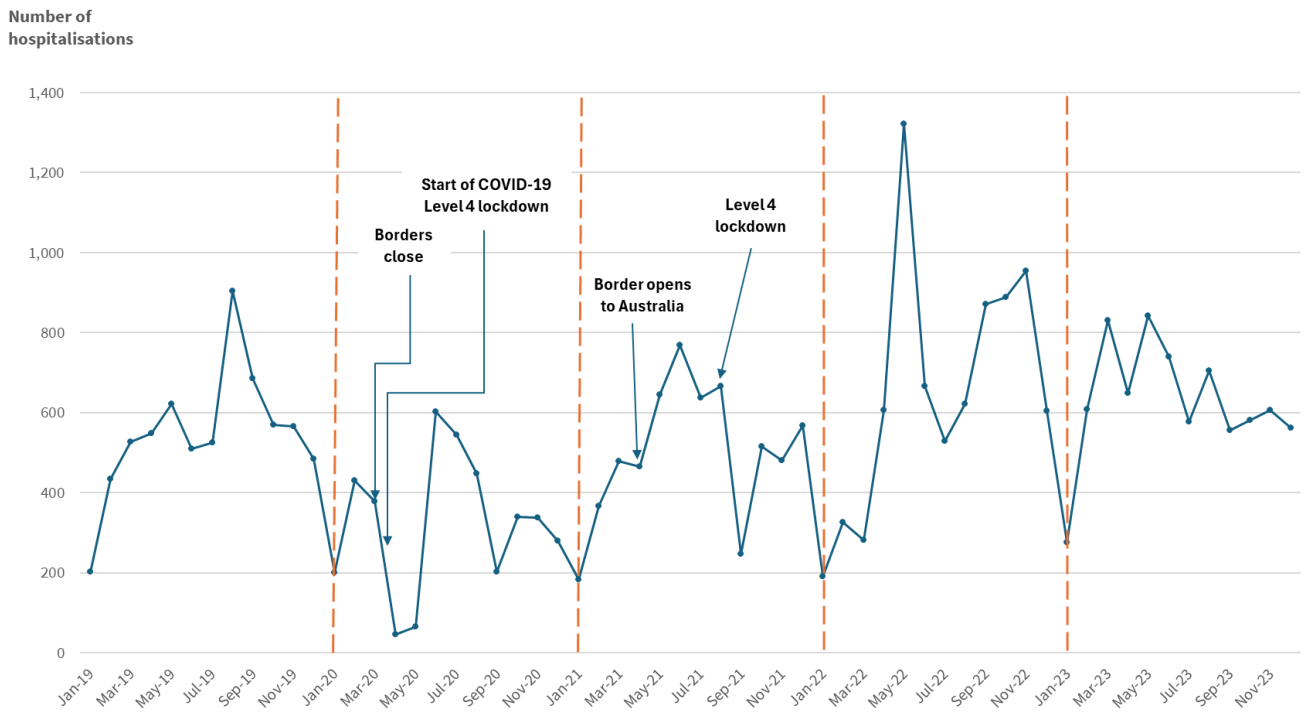


Note: 95% confidence intervals have been presented as vertical bars.
Source: National Minimum Dataset, Ministry of Health 2024

Asthma hospitalisations were highest in March and May 2023

In 2023, there were minor fluctuations in asthma hospitalisations among children throughout the year but no major spikes or drops compared to previous years. The highest hospitalisations in 2023 occurred in March and May, with 831 and 842 hospitalisations, respectively. In May 2022, there were 1321 hospitalisations, marking the highest monthly total since 2001 (Figure 3). Furthermore, studies have shown an increase in asthma hospitalisations in the first few weeks after the school holidays (Telfar-Barnard and Zhang 2024; Lincoln et al 2006).

Figure 3: Number of asthma hospitalisations in children aged 0–14 years, by month, January 2019–December 2023

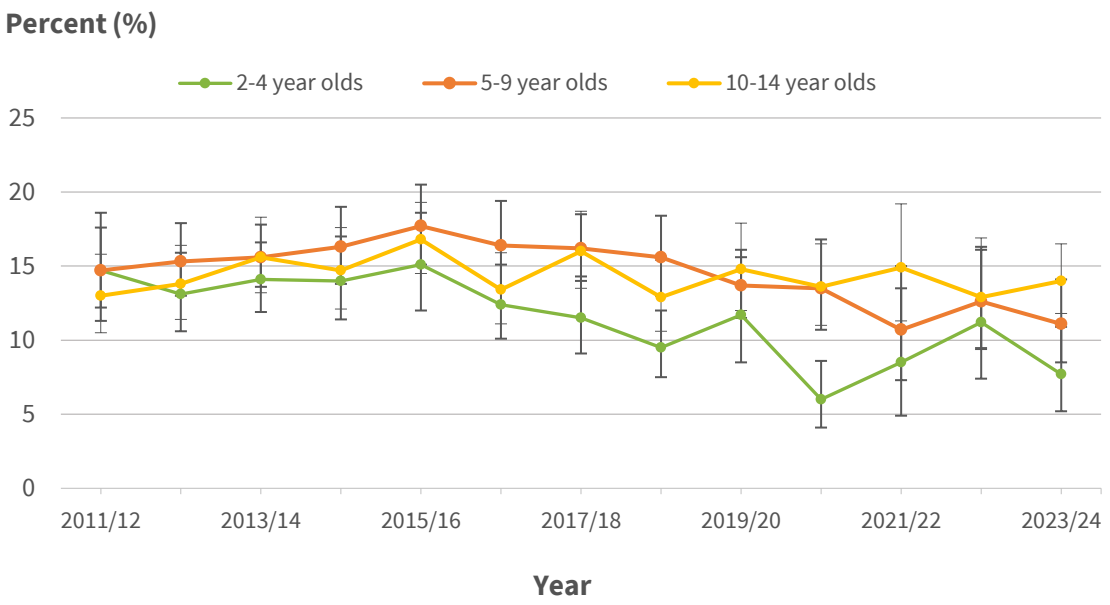


Source: National Minimum Dataset, Ministry of Health 2024

Children aged 2–4 years have lower asthma prevalence rates

In 2023/24, children aged 2–4 years had a lower asthma prevalence (7.7%) than those aged 5–9 (11.1%) and 10–14 years (14.0%) (Figure 4). This has been a consistent difference in prevalence since 2012/13 onwards. However, these differences are not statistically significant in 2023/24.

Figure 4: Medicated asthma in children aged 2–14 years, by age group, 2011/12–2023/24



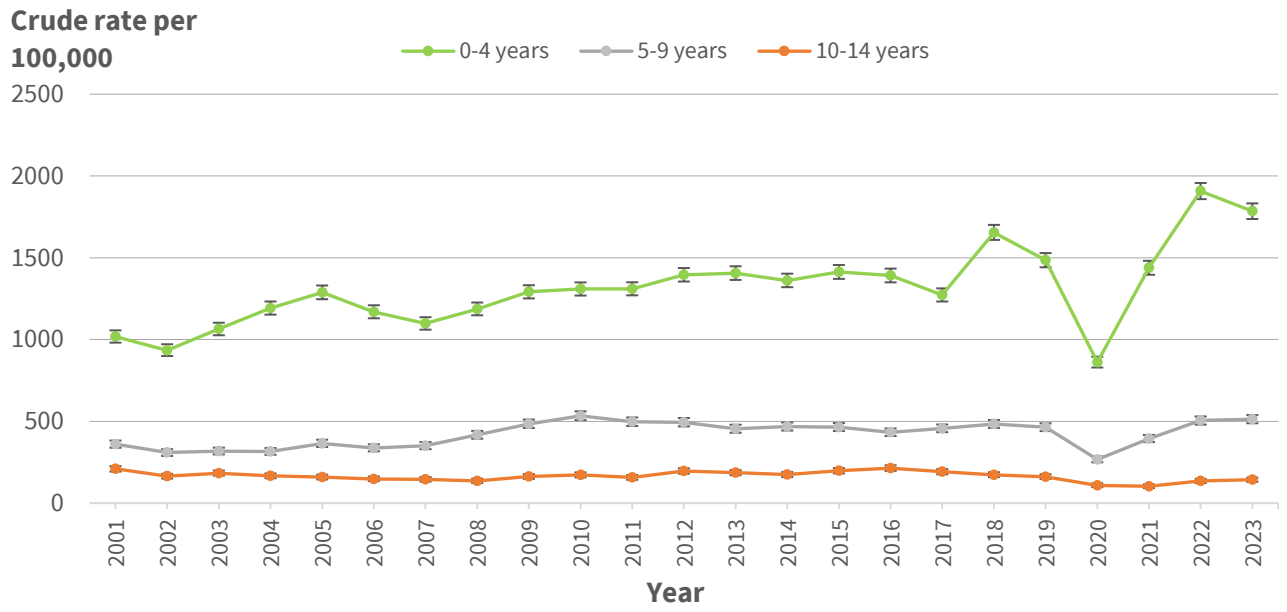
Note: 95% confidence intervals have been presented as vertical bars.
Source: New Zealand Health Survey, Ministry of Health 2024a

Children under five have the highest asthma hospitalisation rates

In 2023, the rate of asthma hospitalisation among 0–4-year-olds (1784.2 per 100,000; 95%CI 1736.9–1832.5) was 13 times higher than the rate of children aged 10–14 years (142.5 per 100,000; 95%CI 130.2–155.7) (Figure 5). Between 2001 and 2023, children aged 0–4 years consistently had the highest rate of asthma hospitalisations compared with older children. However, in 2023, the rate for this age group decreased following a spike in 2022.

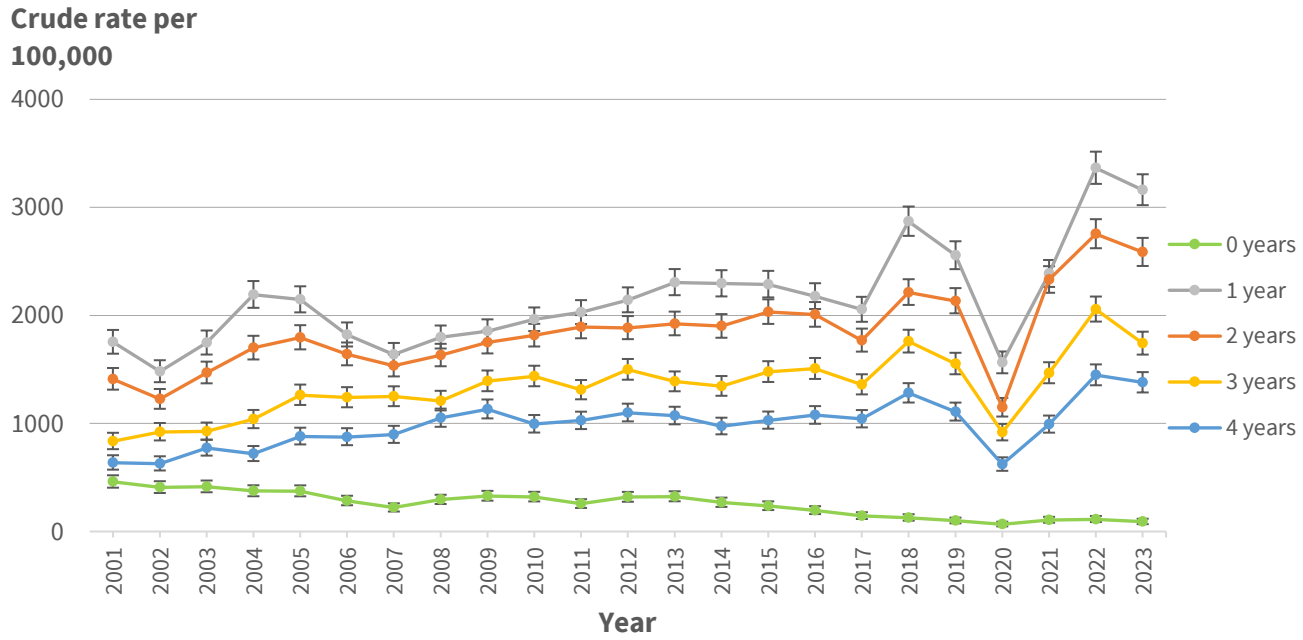
Asthma hospitalisations for children under the age of five years are presented in Figure 6. Between 2001 and 2023, 1-year-olds had relatively high asthma hospitalisation rates, while infants (under 1-year-old) had the lowest rates. Infants have low rates because they are more likely to be diagnosed with bronchiolitis than asthma or wheeze (BPAC 2020).

Figure 5: Asthma hospitalisations in children aged 0–14 years, by age group, 2001–2023 (crude rate per 100,000)



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

Figure 6: Asthma hospitalisations in children aged 0–4 years, 2001–2023 (crude rate per 100,000)



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

Māori children were disproportionately affected by asthma

Māori children had the highest prevalence of medicated asthma in 2023/24 (19.7%) (Table 1). They were 2.32 times as likely to have medicated asthma as non-Māori children after adjusting for age and sex. Pacific children were less likely to have medicated asthma than non-Pacific children, but this was not statistically significant.

Table 1: Medicated asthma in children aged 2–14 years, by ethnic group (total response), 2023/24

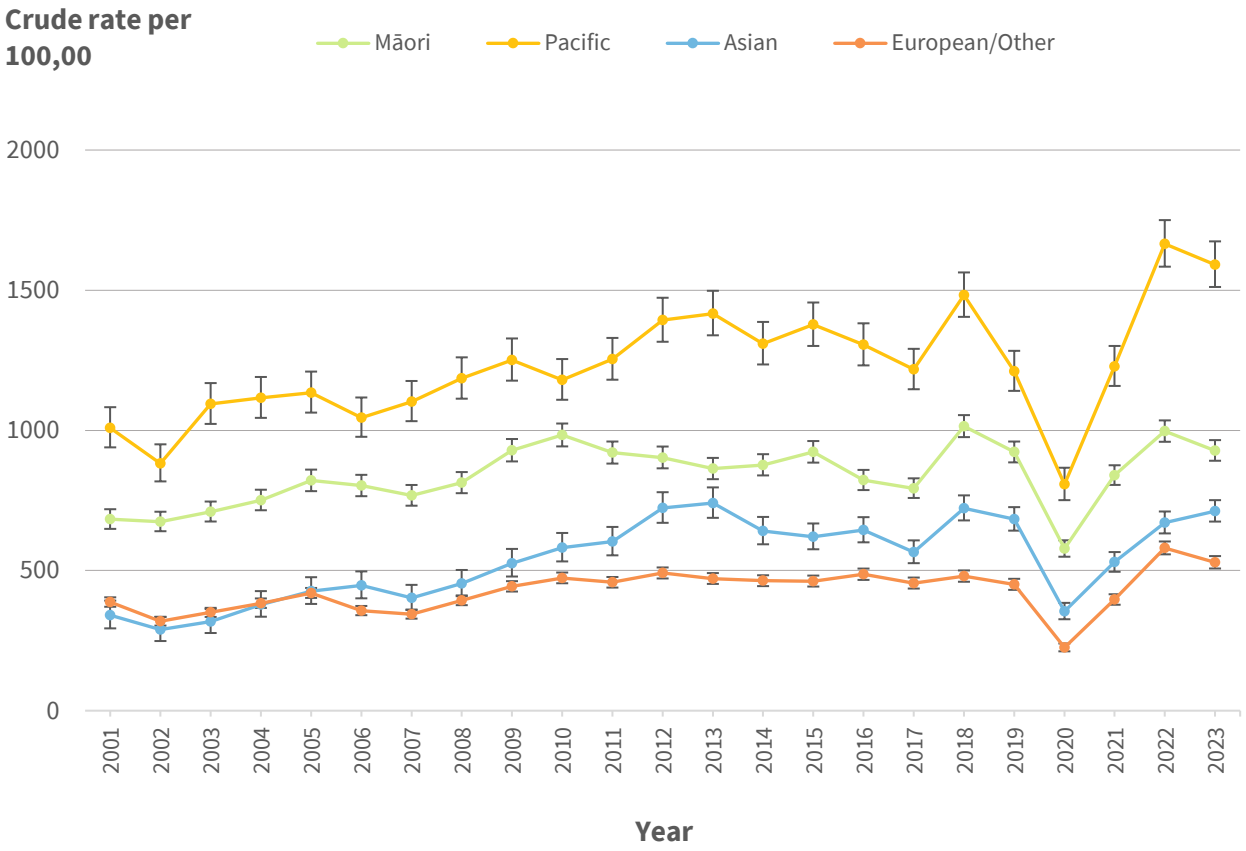
Ethnic group (total response)	Unadjusted prevalence (%, 95%CI)	Estimated number of children	Comparison groups	Adjusted rate ratio (RR, 95%CI)^
Total	11.5 (10.3–12.8)	99,000		
Māori	19.7 (16.2–23.7)	46,000	vs non-Māori	2.32 (1.76–3.06)*
Pacific	10.3 (7.0–14.5)	11,000	vs non-Pacific	0.89 (0.61–1.29)
Asian	7.3 (5.1–10.1)	12,000	vs non-Asian	0.59 (0.42–0.85)*
European/Other	12.7 (11.1–14.5)	73,000		

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 used to control 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 2024a

Since 2001, Pacific children have consistently had the highest asthma hospitalisation rates (Figure 7). These rates decreased from 1665.4 per 100,000 (95%CI 1583.9–1750.1) in 2022 to 1591.3 per 100,000 (95%CI 1511.0–1674.3) in 2023. While asthma hospitalisation rates have decreased for Māori, Pacific and European children in 2023, Asian children have experienced a slight increase in asthma hospitalisation rates.

Figure 7: Asthma hospitalisations in children aged 0–14 years, by ethnic group (prioritised, 2001–2023 (crude rate per 100,000)



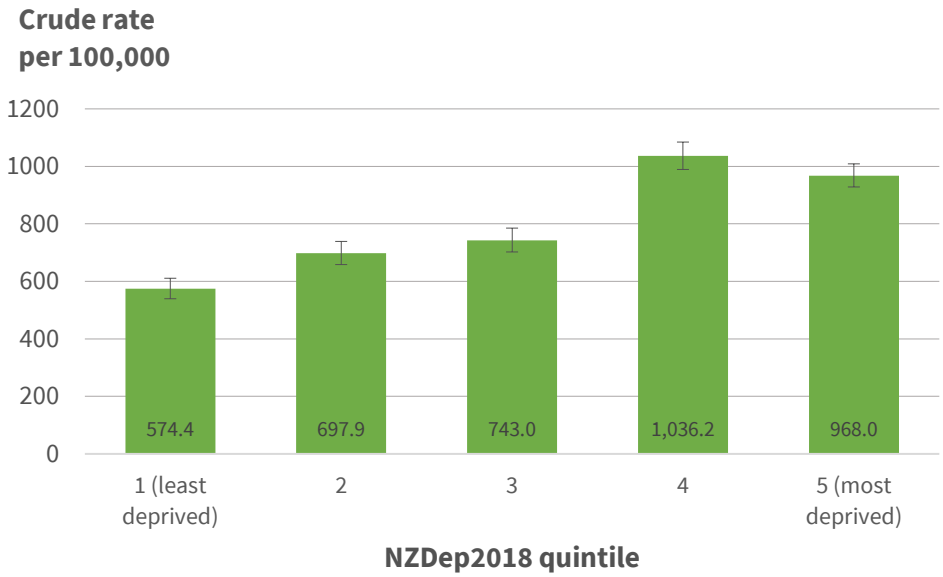
Note: 95% confidence intervals have been presented as vertical bars.
Source: National Minimum Dataset, Ministry of Health 2024

Higher asthma rates in more socioeconomically deprived areas

Children living in the most socioeconomically deprived areas (NZDep 2018 quintile 5) were 1.15 times as likely as those living in the least deprived areas (quintile 1) to have medicated asthma (adjusted rate ratio 1.15; 95%CI 0.67–1.97) 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 (quintiles 4 and 5) (Figure 8). Children living in the most deprived areas (NZDep 2018 quintile 5) had 1.50 times the rate of asthma hospitalisation as children living in the least deprived areas (quintile 1) (rate ratio 1.50; 95%CI 1.39–1.61).

Figure 8: **Asthma hospitalisations in children aged 0–14 years, by NZDep 2018 quintiles, 2023 (crude rate per 100,000)**

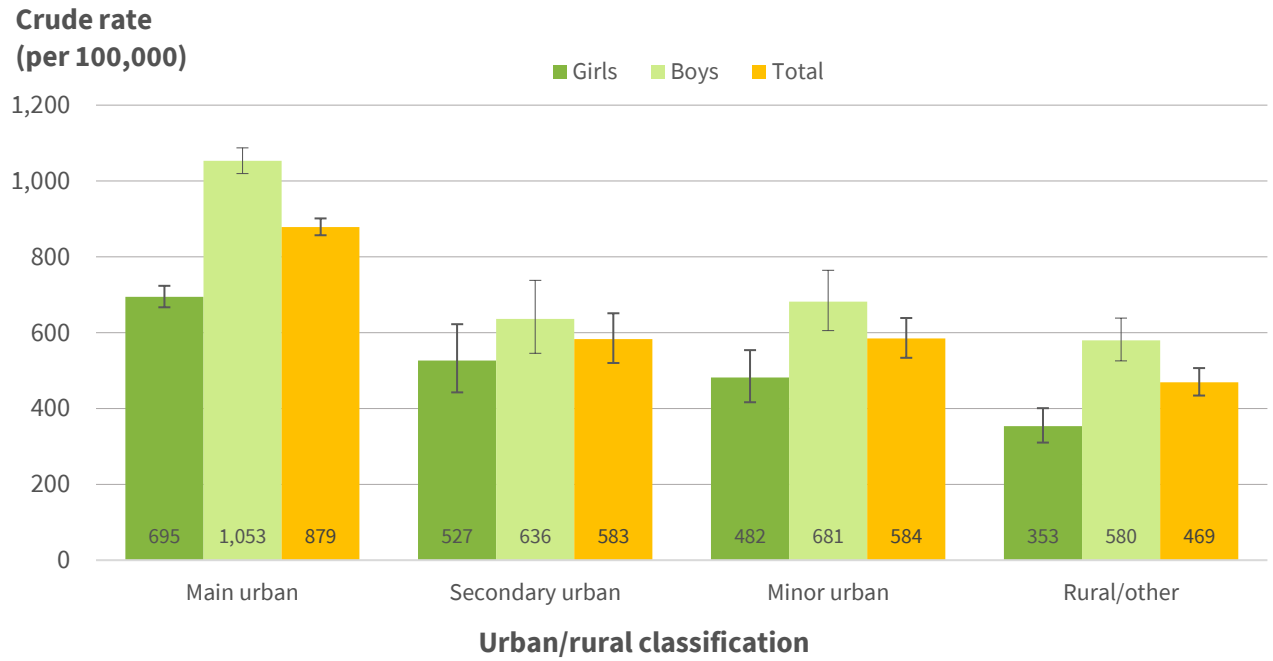


Note: 95% confidence intervals have been presented as vertical bars.
Source: National Minimum Dataset, Ministry of Health 2024

Higher asthma hospitalisation rates in urban areas

Asthma hospitalisation rates for 2023 were higher for children living in main urban areas (878.9 per 100,000; 95%CI 856.9–901.3) than for children living in rural areas (469.3 per 100,000; 95%CI 434.1–506.6) (Figure 9). In all urban/rural categories, boys had higher hospitalisation rates than girls, with the largest rate difference in rural and main urban areas.

Figure 9: Asthma hospitalisations in children aged 0–14 years, by urban/rural classification, 2023 (crude rate per 100,000)



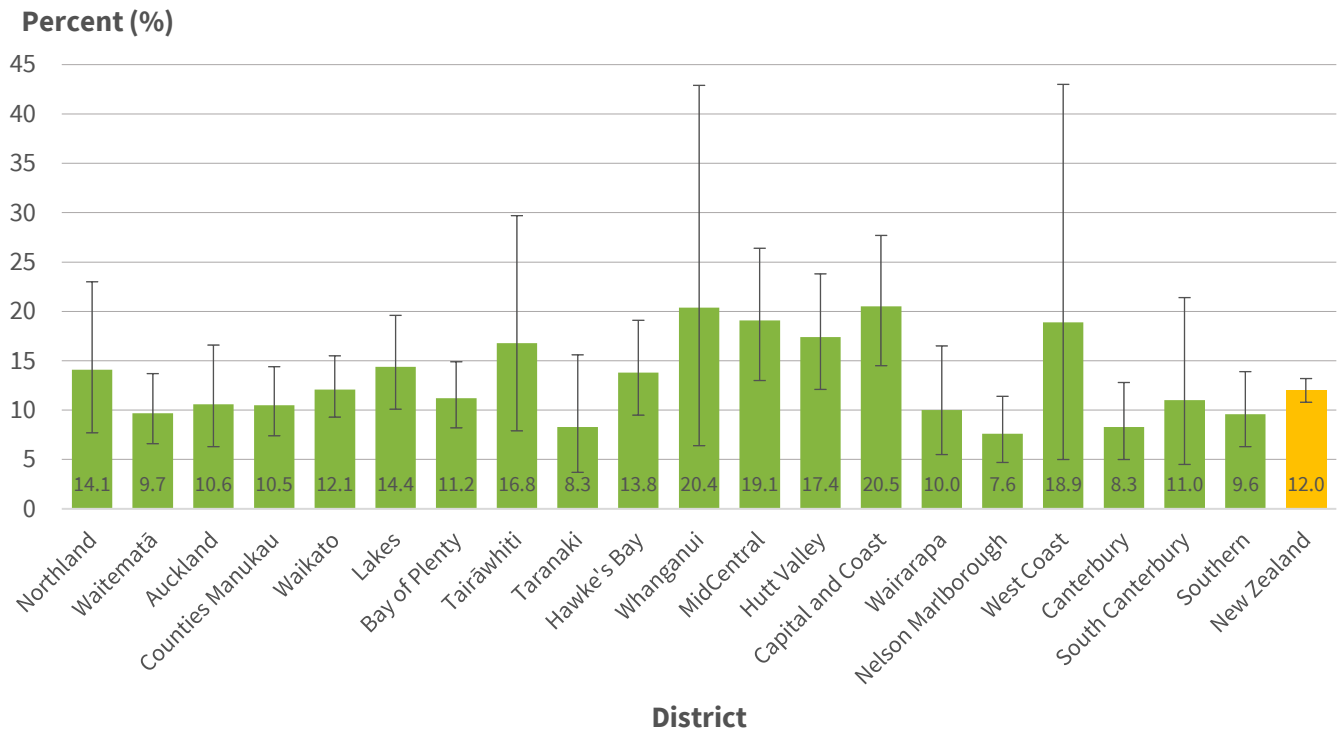
Note 1: 95% confidence intervals have been presented as vertical bars.
Note 2: The Statistics New Zealand urban-rural classification for 2013 has been used. Main urban areas are major towns and cities with a population of 30,000 or more. Secondary urban areas are smaller towns with a population of 10,000–29,999 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 2024

Higher asthma prevalence in the Capital and Coast and Whanganui districts

From 2021/22 to 2023/24, the Capital and Coast (20.5%) and Whanganui (20.4%) districts had relatively high asthma prevalence (Figure 10).

Figure 10: Medicated asthma in children aged 2–14 years, by district, 2021/22–2023/24

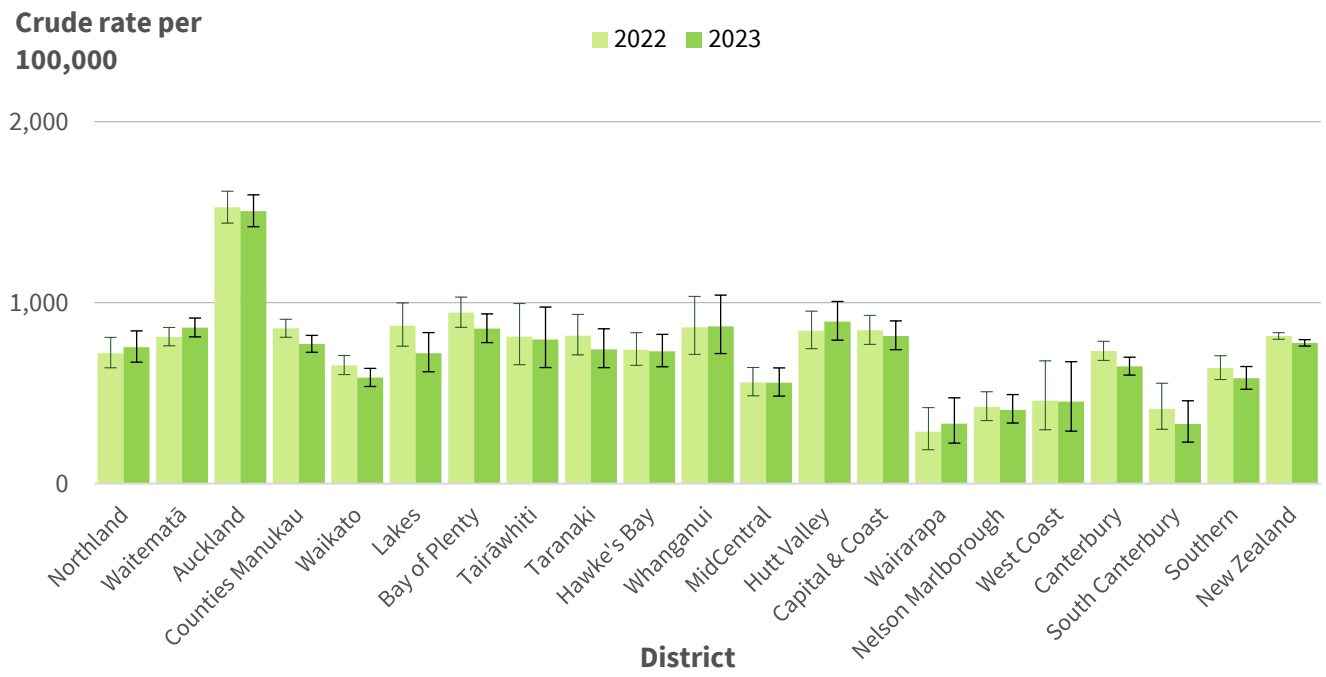


Note: 95% confidence intervals have been presented as vertical bars. District results are presented as a three-year rolling average. Data representing the three-year period from 2021/22 to 2023/24, contains data from survey years 2021/22, 2022/23, and 2023/24. Estimates for the Tairāwhiti, Taranaki, Whanganui, West Coast, and South Canterbury districts have a sampling error of over 30% and should be interpreted with caution.
Source: New Zealand Health Survey, Ministry of Health 2024a

Auckland district had the highest asthma hospitalisation rate in 2023

In 2023, children living in the Auckland district had the highest rate of asthma hospitalisations (1505.9 per 100,000; 95% CI 1419.9–1595.7), while the South Canterbury district recorded a lower rate (329.3 per 100,000; 95% CI 229.3–457.9) (Figure 11). Auckland also had the highest rate in 2022. The HAPINZ 3.0 study found that in 2016, children in the Auckland region experienced the highest number of asthma hospitalisations linked to nitrogen dioxide exposure (Kuschel et al 2022).

Figure 11: Asthma hospitalisations in children aged 0–14 years, by district, 2022–2023 (crude rate per 100,000)



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

Kawerau District had high asthma hospitalisation rates compared to all other territorial authorities

In 2023, children living in the Kawerau District experienced the highest hospitalisation rate for asthma at 1286.5 per 100,000 (95% CI 806.3–1947.9). This district also recorded the highest rate in 2022.

To access the interactive map, refer to the Indoor Environment dashboard.

Data for this indicator

The **Asthma prevalence** indicator contains the most recent data available from the 2023/24 New Zealand Health Survey published by the Ministry of Health in November 2024. The Ministry of Health calculated all the results.

The prevalence of medicated asthma is defined as having been diagnosed by a doctor or nurse as having asthma and using inhalers, medicine, tablets, pills or other medication, in children aged 2–14 years (Ministry of Health 2024b).

In the latest regional data release, data is presented as a three-year rolling average. This means that each statistic is calculated by pooling three consecutive Health Survey cycles and re-weighting the combined sample, so it represents an 'average' year across that three-year window.

Estimates with a high relative sampling error (RSE) are suppressed if the RSE is over 100% or flagged as 'low quality' if the RSE is over 30%.

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 September 2024.

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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