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Environmental Health Intelligence New Zealand
Rapu Mātauranga Hauora mo te Taiao – Aotearoa

Related indicators

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Asthma hospitalisations (0–14 years)

This factsheet presents asthma (including wheeze) hospitalisation rates among children aged 0–14 years in 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.

Asthma hospitalisations in children aged 0–14 years increased by more than 50% in 2021 after a substantial drop the previous year.

Asthma hospitalisations declined after COVID-19 lockdown periods in 2020 and 2021.

Children aged 0–4 years have had the highest asthma hospitalisation rate since 2001. They had 13 times the rate of asthma as children aged 10–14 years.

Pacific children had three times the rate of asthma than European/Other children.

Children living in the most deprived areas (NZDep 2018 quintile 5) had twice the rate of asthma as children living in the least deprived areas (quintile 1).

Children living in urban areas had higher hospitalisation rates for asthma than children living in rural areas.

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 have been identified to be 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 (Jaakokola 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).

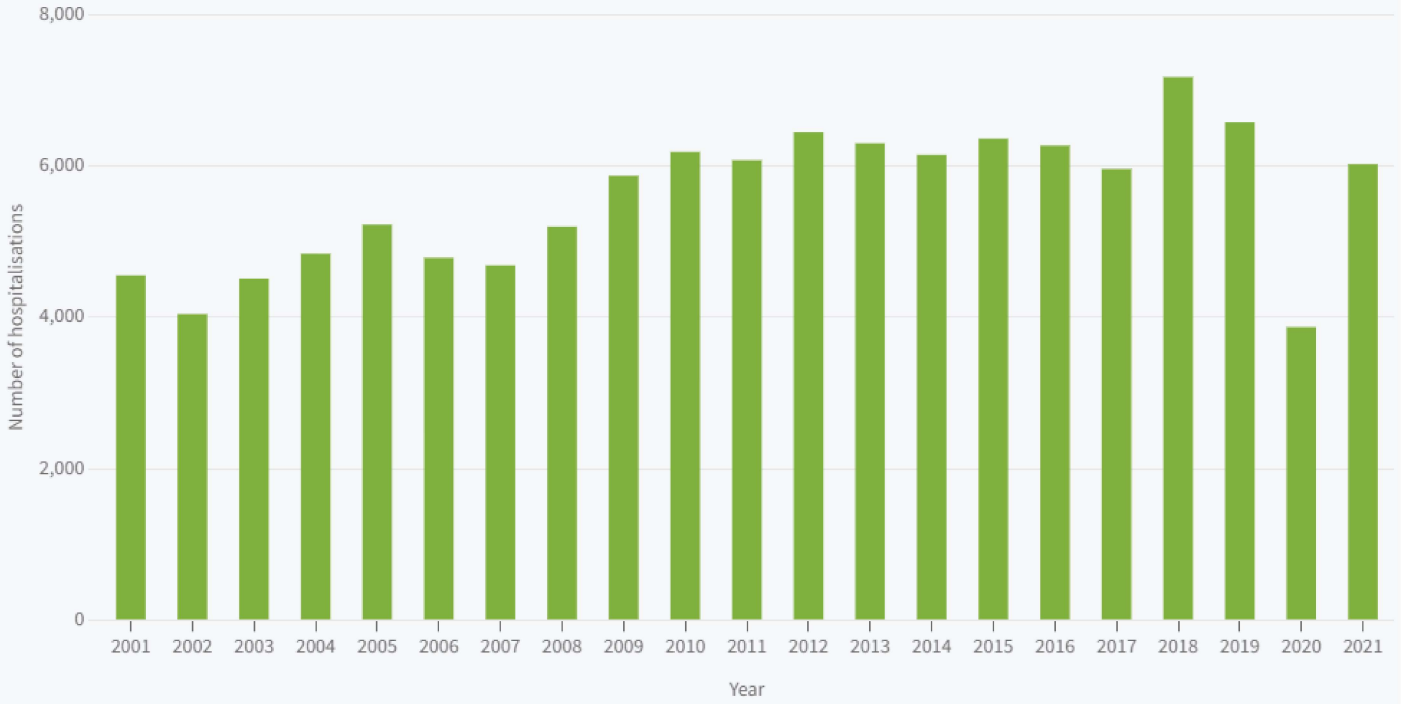
The COVID-19 pandemic

In March 2020, the New Zealand Government pursued an elimination strategy for COVID-19. New Zealand moved to Alert Level 4 (Lockdown) on 25 March 2020, along with temporary border closures, quarantine requirements, community testing, school closures, and contact tracing. These public health measures appeared to have affected asthma hospitalisation rates in children aged 0–14 years in 2020 and 2021.

Asthma hospitalisations are on the rise again after a drop in 2020

In 2021, there were 6027 hospitalisations in children aged 0–14 years, a 56% increase since 2020 (3872 hospitalisations) (Figure 1). This drop coincided with the nationwide COVID-19 lockdown on 25 March 2020. However, as COVID-19 restrictions have eased over time, the number of hospitalisations has almost bounced back to pre-COVID-19 levels.

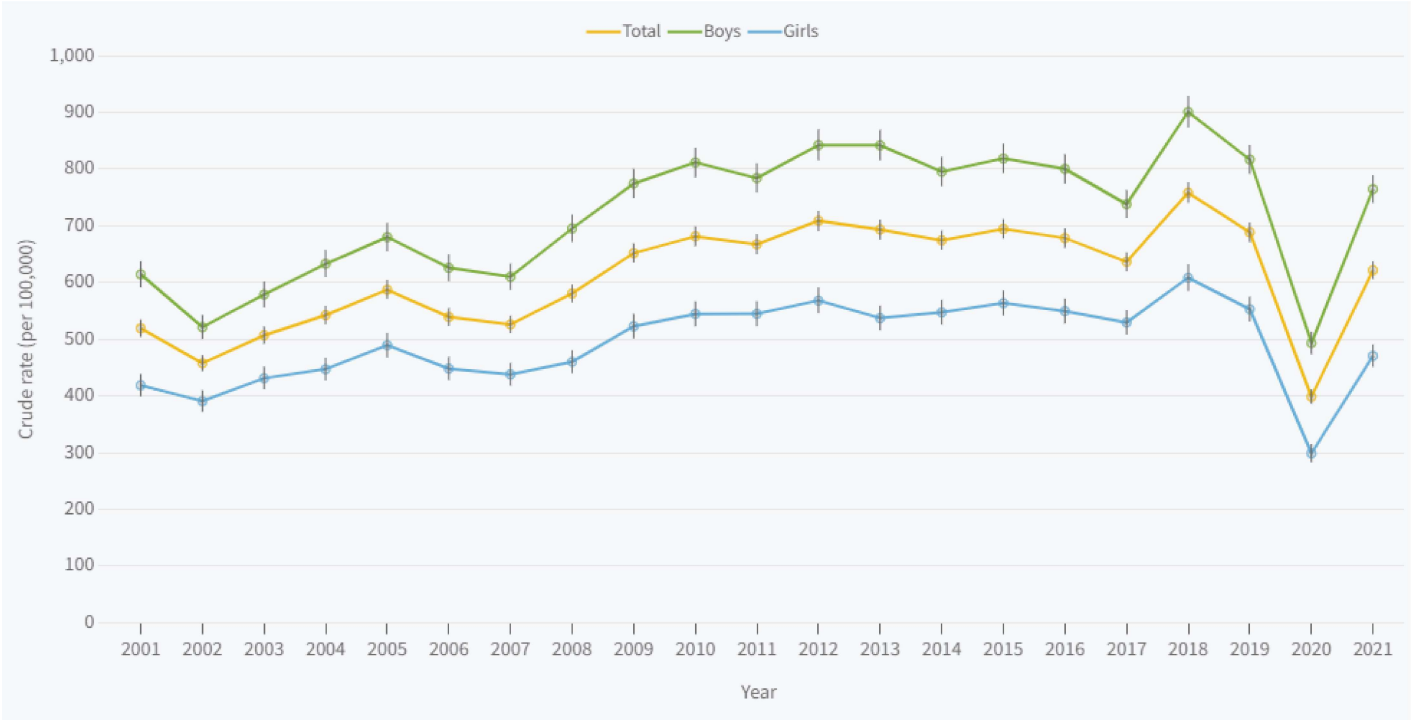
Figure 1 Number of asthma hospitalisations in children aged 0–14 years, 2001–21



Source: National Minimum Dataset, Ministry of Health 2022

Asthma hospitalisation rates in children also increased in 2021 (621.6 per 100,000) after a substantial drop in 2020 (398.7 per 100,000) (Figure 2).

Figure 2 Asthma hospitalisations in children aged 0–14 years, by sex, 2001–21 (crude rate per 100,000)



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

Source: National Minimum Dataset, Ministry of Health 2022

As with other childhood respiratory illnesses (eg, lower respiratory tract infections) (Jensen-fangle et al 2009, de Lusignan et al 2018), boys have higher asthma hospitalisation rates than girls (Fuseini and Newcomb 2017). Since 2001, boys consistently had higher asthma rates than girls.

Asthma hospitalisations declined after COVID-19 lockdown periods in 2020 and 2021

There was a substantial decline in asthma hospitalisations during lockdown periods in 2020 and 2021 (Figure 3). In April 2020, there were 46 hospitalisations, down from 549 in April 2019. This drop coincided with New Zealand's first lockdown on 25 March 2020. In 2021, New Zealand moved to Level 4 on 17 August, leading to another decrease in hospitalisations (246 hospitalisations in September, down from 686 in September 2019). Paediatric asthma hospitalisations have also declined overseas following COVID-19 lockdown periods (Homaira et al 2022; Krivec et al 2020). Low asthma hospitalisations have been linked to reduced viral respiratory infections which trigger asthma attacks, improved air quality, and changes in access to health services (Homaira et al 2022).

Figure 3 Number of asthma hospitalisations in children aged 0–14 years, by month, 2019–21

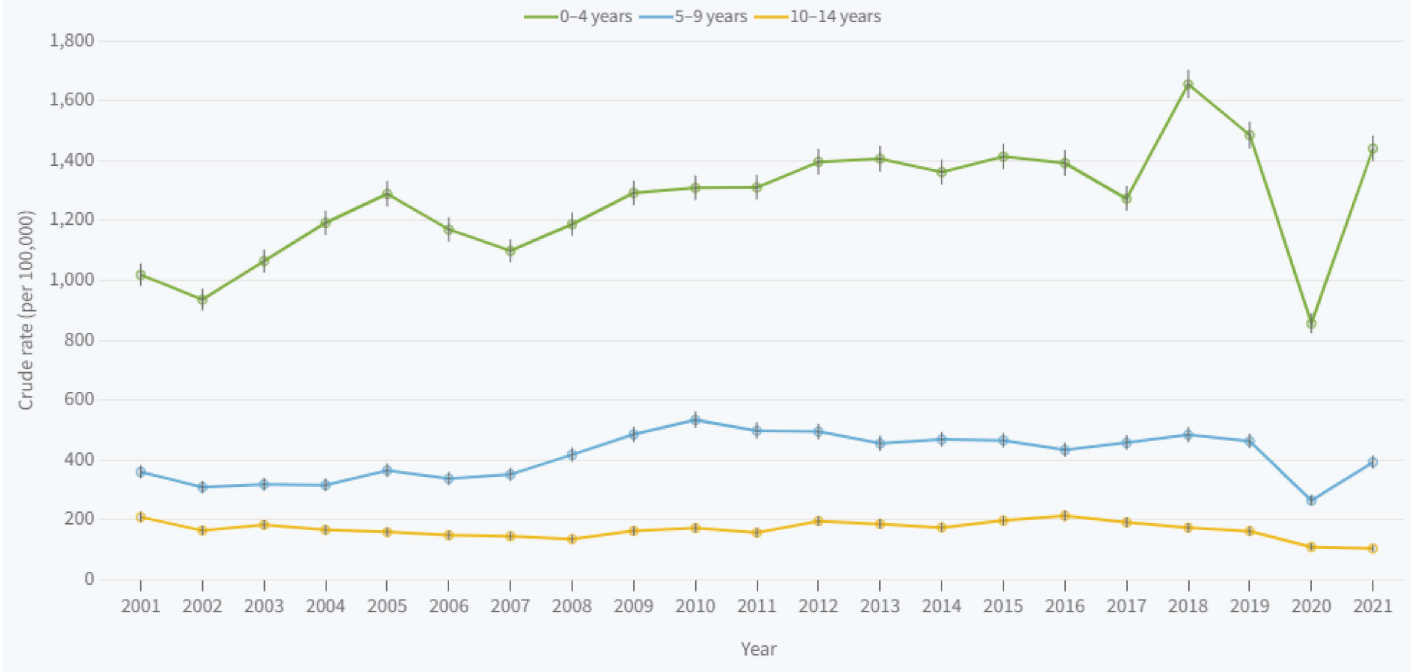
Source: National Minimum Dataset, Ministry of Health 2022

Children under five years old continue to have the highest asthma hospitalisation rates

In 2021, the rate of asthma hospitalisation among 0–4 year-olds (1439.6 per 100,000) was almost 14 times higher than the rate of children aged 10–14 years (103.9 per 100,000) (Figure 4).

Between 2001 and 2021, children aged 0–4 years had the highest rate of asthma hospitalisations compared with older children. This age group also experienced its highest rate in 2018 before dropping to its lowest in 2020.

Figure 4 Asthma hospitalisations in children aged 0–14 years, by age group, 2001–21 (crude rate per 100,000)



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

Source: National Minimum Dataset, Ministry of Health 2022

Asthma hospitalisations for children under the age of five years are presented in Figure 5. It showed that between 2001 and 2021, 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 0–4 years, 2001–21 (crude rate per 100,000)

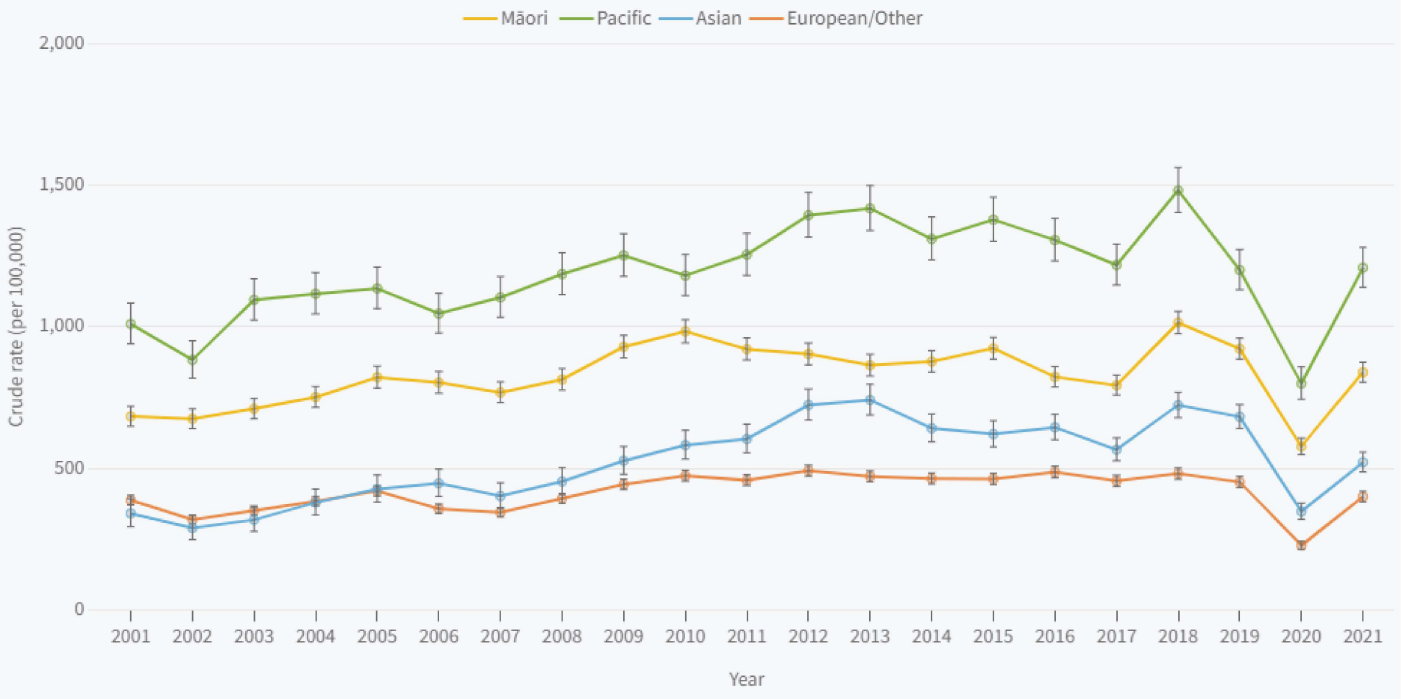
Note: 95% confidence intervals have been presented as error bars.

Source: National Minimum Dataset, Ministry of Health 2022

High asthma hospitalisation rates in Pacific children

Since 2001, Pacific children consistently had higher asthma hospitalisation rates than other children (Figure 6). In 2021, the asthma hospitalisation rate was three times higher in Pacific children (1207.4 per 100,000) than in European/Other children (400.0 per 100,000). In Māori children, the rate (838.4 per 100,000) was twice that of European/Other children.

Figure 6 Asthma hospitalisations in children aged 0–14 years, by ethnic group (prioritised), 2001–21 (crude rate



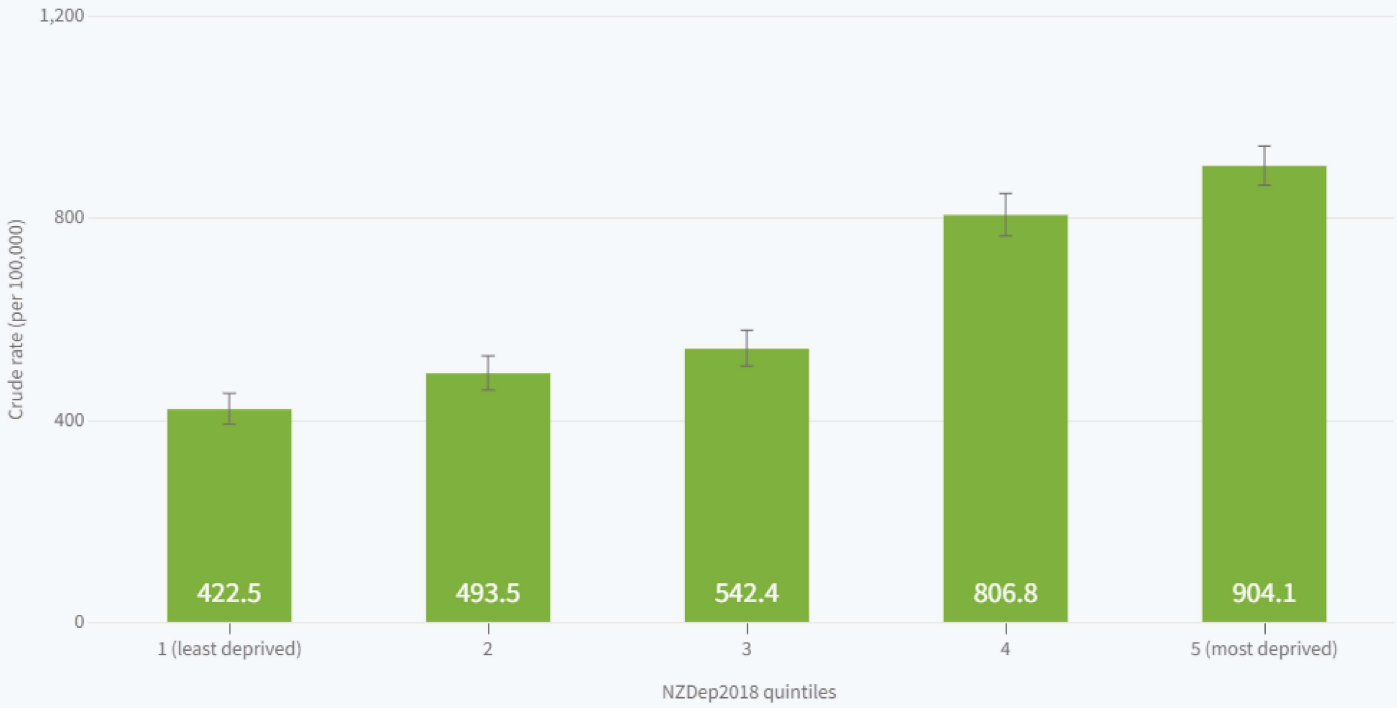
Note: 95% confidence intervals have been presented as error bars.

Source: National Minimum Dataset, Ministry of Health 2022

Higher asthma hospitalisation rates in more deprived areas

In 2021, asthma hospitalisation rates were higher in more socioeconomically deprived areas. Children living in the most deprived areas (NZDep2018 quintile 5) had about twice the rate of asthma hospitalisation as children living in the least deprived areas (quintile 1) (Figure 7).

Figure 7 Asthma hospitalisations in children aged 0–14 years, by NZDep2018 quintiles, 2021 (crude rate per 100,000)



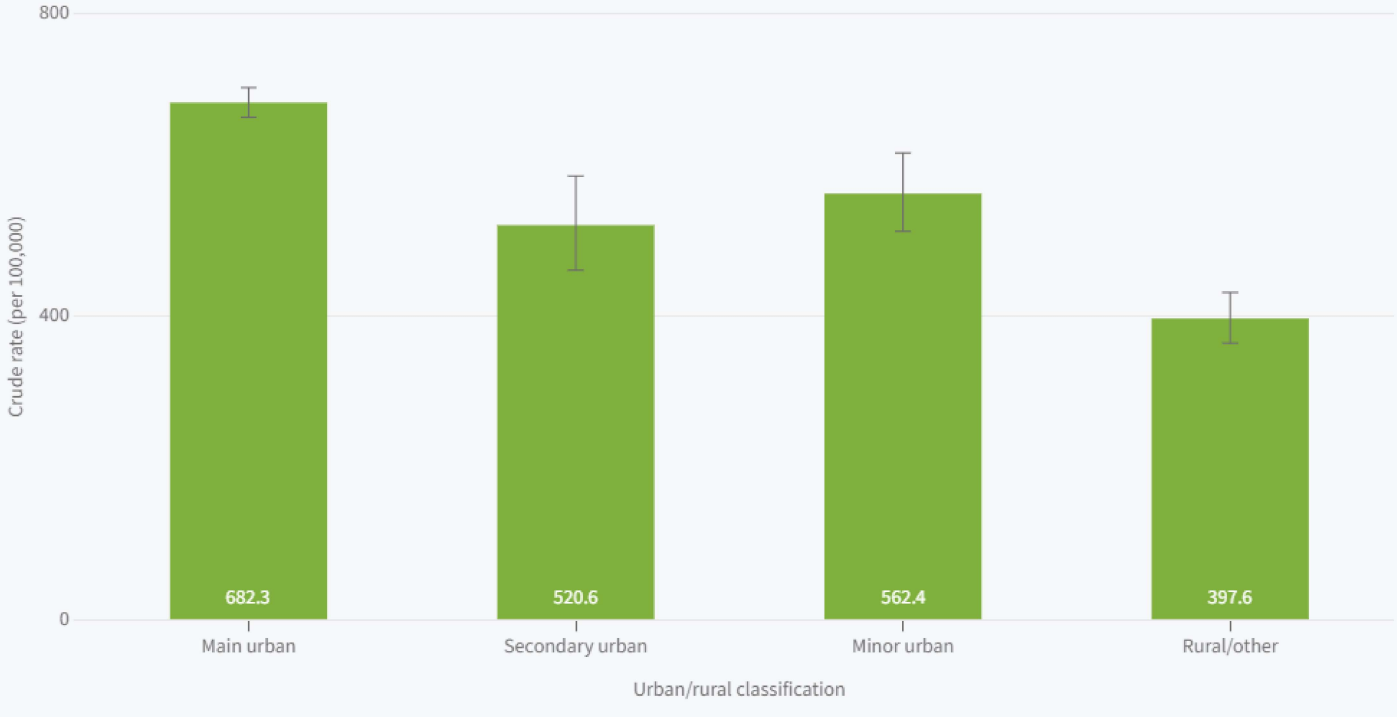
Note: 95% confidence intervals have been presented as error bars.

Source: National Minimum Dataset, Ministry of Health 2022

Higher asthma hospitalisation rates in urban areas

Hospitalisation rates for asthma vary according to where children live. In 2021, children living in main urban areas had a higher rate of hospitalisations for asthma (682.3 per 100,000) than children in other areas. The rates for children in secondary urban and minor urban areas were similar to each other, while the rate for children living in rural areas was lower than all other area categories (397.6 per 100,000) (Figure 8).

Figure 8 Asthma hospitalisations in children aged 0-14 years, by urban-rural classification, 2021 (crude rate per 100,000)



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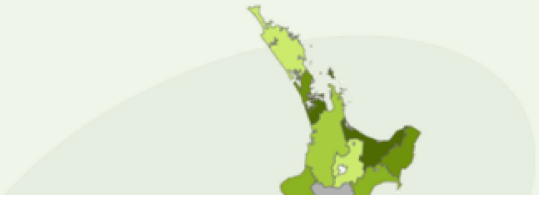
Interactive regional dashboard



Data for this indicator

This indicator is an analysis of the most recent data available from the National Minimum Dataset, provided to EHINZ by the Ministry of Health in July 2022.

The 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 metadata link below.

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Other related topics include:

Second-hand smoke exposure | Health burden due to second-hand smoke exposure | Other air pollutants

Health impacts from nitrogen dioxide | Particulate matter | Lower respiratory tract infections

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Further information

For descriptive information about the data Metadata Sheet

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