

## Asthma hospitalisations (0–14 years)

### HIGHLIGHTS:

- In 2016, there were 6271 hospitalisations for asthma (including wheeze) in children aged 0–14 years in New Zealand. Boys had a higher asthma hospitalisation rate than girls.
- Young children (aged 0–4 years) had the highest asthma hospitalisation rate in 2016, particularly young boys.
- Pacific and Māori children had much higher asthma hospitalisation rates than Asian and European/Other children, after standardising for age.
- The asthma hospitalisation rate was 2.3 times as high in the most deprived areas (NZDep2013 quintile 5) as in the least deprived areas (quintile 1) in 2016, after standardising for age.
- In 2016, the District Health Boards (DHBs) with the highest asthma hospitalisation rates were Auckland, Lakes, Whanganui and Hutt DHBs.

### Relevance of asthma to environmental health

Asthma affects a person’s airways, and makes it difficult to breathe. Second-hand smoke exposure can increase the risk of asthma and wheeze in children (US Department of Health and Human Services 2007). Nitrogen dioxide from gas ovens and unflued gas heaters may also exacerbate asthma (Belanger et al., 2013; Pilotto et al., 2004). Indoor dampness/mould is also associated with asthma onset and exacerbation in children (Jaakkola et al., 2011; Prezant & Douwes, 2011). Evidence also suggests that asthma can be exacerbated by exposure to outdoor air pollution, particularly particulate matter (PM<sub>2.5</sub>), nitrogen dioxide and sulphur dioxide (Orellano et al., 2017).

New Zealand has high asthma rates for children compared with other countries (Lai et al., 2009; OECD, 2015). Each year, a small number of children die from asthma; in 2014, four children died from asthma in New Zealand.

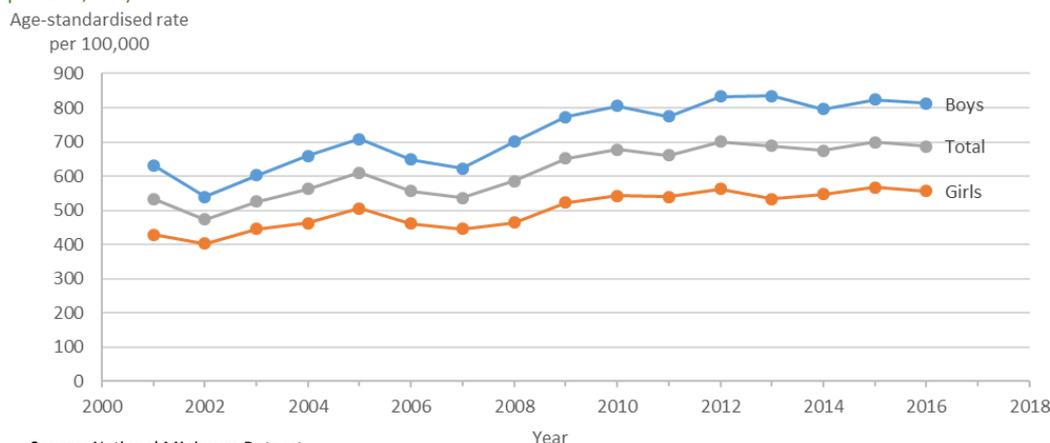
### Data for this indicator

This indicator presents hospitalisations for asthma and/or wheeze for children aged 0–14 years from the National Minimum Dataset. Wheeze has been included as it is common for doctors to diagnose wheeze rather than asthma, particularly in younger children (HQSC, 2016).

### Over 6000 hospitalisations for childhood asthma in 2016

In 2016, there were 6271 hospitalisations for asthma among children aged 0–14 years. The age-standardised rate for asthma hospitalisations had increased 45% from 2002 (473 per 100,000) to 2016 (688 per 100,000) (Figure 1).

**Figure 1 :** Asthma hospitalisations in children aged 0–14 years, by sex, 2001–2016 (age-standardised rate per 100,000)



Boys have consistently had a higher asthma hospitalisation rate than girls. In 2016, the age-standardised rate was 813 per 100,000 for boys, compared with 557 per 100,000 for girls.

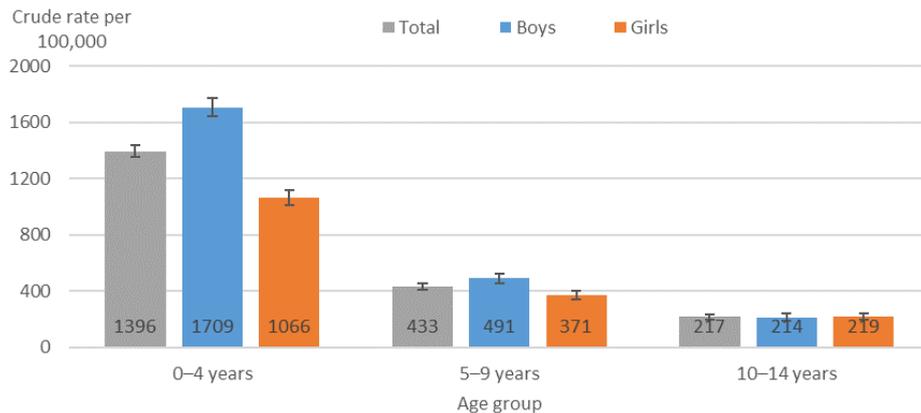
Source: National Minimum Dataset

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### Younger children have higher asthma hospitalisation rates

In 2016, the asthma hospitalisation rate was highest among 0–4-year-olds (1396 per 100,000), compared with children aged 5–9 years (433 per 100,000) and 10–14 years (217 per 100,000). The difference between boys and girls was largest for young children, with boys aged 0–4 years having a hospitalisation rate 1.6 times as high (1709 per 100,000) as girls aged 0–4 years (1066 per 100,000).

**Figure 2:** Asthma hospitalisation rates, children aged 0–14 years, by age group and sex, 2016 (crude rate per 100,000)



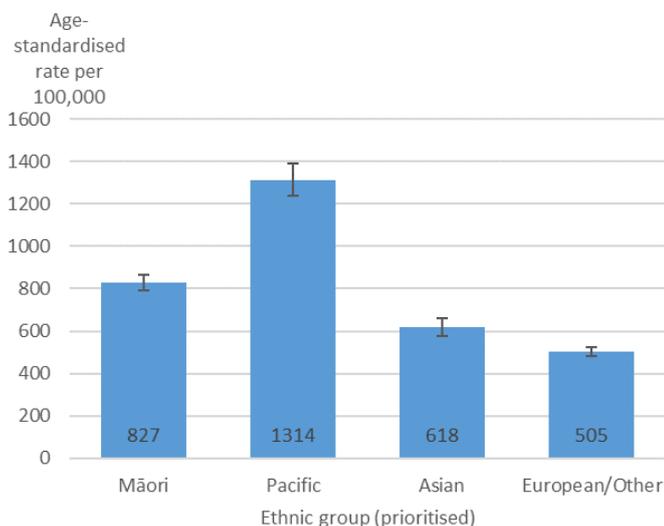
Source: National Minimum Dataset

### Pacific and Māori children have higher asthma hospitalisation rates

In 2016, asthma hospitalisation rates were highest among Pacific (1314 per 100,000) and Māori (827 per 100,000) children, after standardising for age (Figure 3). The rates for Asian children (681 per 100,000) and European/Other children (505 per 100,000) were much lower.

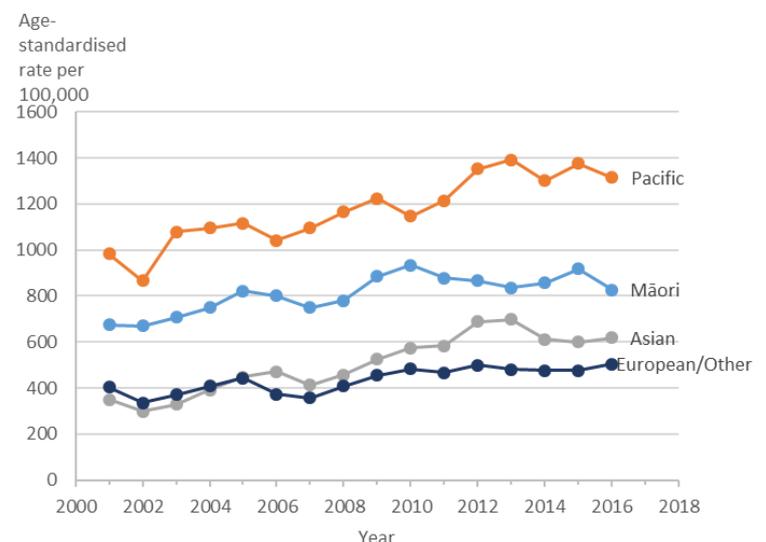
Asthma hospitalisation rates have increased for all ethnic groups from 2002 to 2016 (Figure 4). In the past six years (since 2010), the asthma hospitalisation rate increased for Pacific children (1148 per 100,000 to 1314 per 100,000), but decreased for Māori children (935 per 100,000 to 827 per 100,000).

**Figure 3:** Asthma hospitalisations, children aged 0–14 years, by prioritised ethnic group, 2016 (age-standardised rate per 100,000)



Source: National Minimum Dataset

**Figure 4:** Asthma hospitalisations, children aged 0–14 years, by prioritised ethnic group, 2001–2016 (age-standardised rate per 100,000)



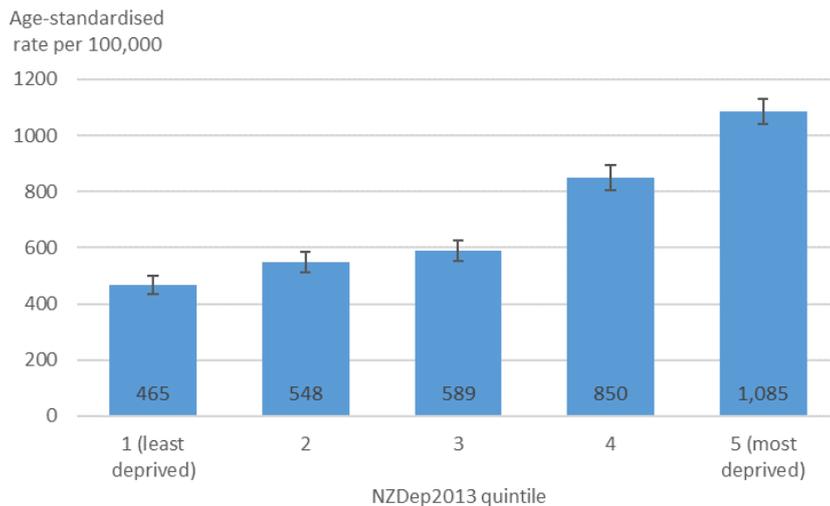
Source: National Minimum Dataset

## Asthma hospitalisations (0–14 years)

### Higher asthma hospitalisation rates for children living in more deprived areas

In 2016, the asthma hospitalisation rate was higher for children living in more deprived areas (NZDep2013 quintile 5) (1085 per 100,000) than those in the least deprived areas (quintile 1) (465 per 100,000), standardising for age (Figure 5). Standardising for age, the hospitalisation rate was 2.3 times as high in the most deprived areas (quintile 5) than in the least deprived areas (quintile 1) (standardised rate ratio = 2.33, 95% confidence interval 2.15–2.53).

**Figure 5:** Asthma hospitalisations, children aged 0–14 years, by NZDep2013 quintiles, 2016 (age-standardised rate per 100,000)

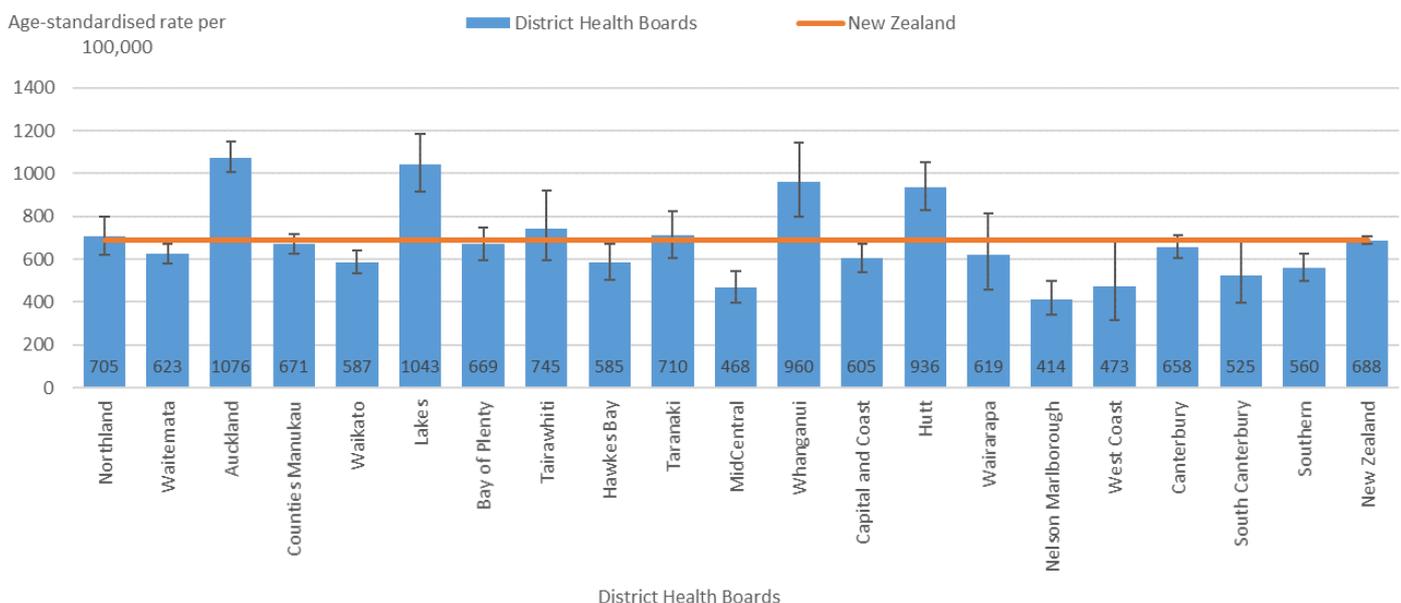


Source: National Minimum Dataset

### Auckland DHB had the highest asthma hospitalisation rate in 2016

In 2016, there were substantial regional differences in children’s asthma hospitalisation rates. The highest asthma hospitalisation rates were in Auckland, Lakes, Whanganui and Hutt District Health Boards (DHBs) (Figure 6). The lowest asthma hospitalisation rates were in Nelson-Marlborough, MidCentral and West Coast DHBs.

**Figure 6:** Asthma hospitalisations, children aged 0–14 years, by District Health Board, 2016 (age-standardised rate per 100,000)



Source: National Minimum Dataset

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### DATA SOURCES AND ANALYSIS

Data come from the National Minimum Dataset, from the Ministry of Health. The indicator presents data for acute and semi-acute hospitalisations with asthma (ICD-10-AM J45–J46) or wheeze (R06.2) as the primary diagnosis. Including wheeze is consistent with the approach used by Child Youth and Epidemiology Service (Simpson et al., 2017) and Health Quality and Safety Commission (2016), to account for paediatricians increasingly diagnosing wheeze instead of asthma, particularly for young children. Analyses excluded overseas visitors, deaths and transfers within and between hospitals. Day cases and emergency department short stays (longer than three hours) have been included, as this is considered to be the best approach for having regional consistency in childhood hospitalisations for medical reasons (HQSC, 2016).

Age-standardised rates have been presented, to account for differences in age structure of population groups. 95% confidence intervals have been presented. For more information, see the metadata.

### RELATED INDICATORS

Related environmental health indicators for the indoor environment, available from the EHINZ website ([www.ehinz.ac.nz](http://www.ehinz.ac.nz)), include:

- Asthma prevalence
- Lower respiratory tract infections hospitalisations
- Sudden unexpected death in infancy (SUDI)
- Meningococcal disease
- Second-hand smoke exposure
- Maternal smoking at two weeks postnatal
- Household crowding

See also the indicators in the Air Quality domain.

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