

Hazardous substances-related hospitalisations

This factsheet presents a national indicator, which allows us to monitor hospitalisations from unintentional hazardous substances injuries and exposure.

Key facts



In 2019, there were 463 unintentional hazardous substances-related hospitalisations, and the number of hospitalisations has decreased since 2006 (563 hospitalisations).



Children under five years continue to have the highest hazardous substances-related hospitalisation rates compared to other age groups.



The most common cause of injury in children under five years was from 'solvents, hydrocarbons and corrosive' substances.



Males have had consistently higher rates of hazardous substances-related hospitalisations than females since 2006.



Māori had a higher rate of hazardous substances-related hospitalisations than non-Māori since 2006.



The West Coast District Health Board has the highest hazardous substances-related hospitalisation rate in the last ten years.



The hazardous substances-related hospitalisation rate was higher in the most deprived areas (NZDep 2013 quintile 5).

Hazardous substances exposure may affect people's health and wellbeing

A hazardous substance is anything that can explode, catch fire, oxidise, corrode, or be toxic to humans as defined in the Hazardous Substances and New Organisms Act 1996. This definition does not include medicines in finished dose, alcohol when classified as a food, chemical toxins associated with food, nor radioactive materials as these are covered by different legislation. Manufactured articles are also not included (eg, batteries) except those with explosive properties (eg, fireworks).

Injuries or diseases caused by hazardous substances form a vast group of diagnoses covering many scenarios. They include:

- Children swallowing cleaning products or cosmetics
- Intentional exposure to agrichemicals
- Illness caused by exposure to chemicals such as solvents or chlorine, contact dermatitis from chemicals, an injury from fireworks, or inhalation or ‘huffing’ of butane.

Injuries from hazardous substances in New Zealand are often preventable, and a high proportion of these incidents are caused by substances used in everyday domestic and workplace situations. Furthermore, discharges of chemicals into the air and water can cause adverse effects for human health (World Health Organization 2016). Acute health effects from exposure to a hazardous substance are diverse and include headache, nausea and vomiting, skin corrosion and burns. Chronic health effects include asthma, dermatitis, nerve damage, and cancer (MBIE 2013). It is important to note that this data does not adequately capture chronic disease from a hazardous substance, as the cause of the chronic disease can often not be identified.

Unintentional injuries account for the majority of hazardous substances-related hospitalisations

There were 665 hazardous substances-related hospitalisations involving unintentional, intentional and unknown intent injuries in 2019, with an average 690 per year from 2006 to 2019. The age-standardised rate for 2019 was 14.2 per 100,000, and the rate has decreased by 32.4% since 2006 (18.8 per 100,000, 730 hospitalisations).

Unintentional injuries were responsible for the majority of hazardous substances-related hospitalisations (71%, 463 hospitalisations in 2019), while intentional and unknown intent injuries were less common.

Figure 1 Hospitalisations related to hazardous substances, by intent, sex and year (age-standardised rate per 100,000)



Intentional



Source: National Minimum Dataset, Ministry of Health.

The following analysis of hazardous substances hospitalisations focuses on unintentional exposure cases only. This is because most intentional exposure cases (such as carbon monoxide poisoning from inhalation of vehicle exhaust and intentional ingestion of a known hazardous substance) cannot be prevented by legislative controls.

Males continued to have higher unintentional hazardous substances-related hospitalisation rates than females

Since 2006, the hazardous substances-related hospitalisation rates for males have more than doubled the rates for females. Sex differences are due to males being over-represented in higher-risk industrial occupations (Stergiou-Kita et al 2015).

Although males have higher rates of hazardous substances-related hospitalisations, it has dropped by 37% between 2006 and 2019 (21.7 and 13.7 per 100,000 respectively) (Figure 1). The female hospitalisation rates has dropped by 20% between 2006 and 2019 (7.6 and 6.1 per 100,000 respectively).

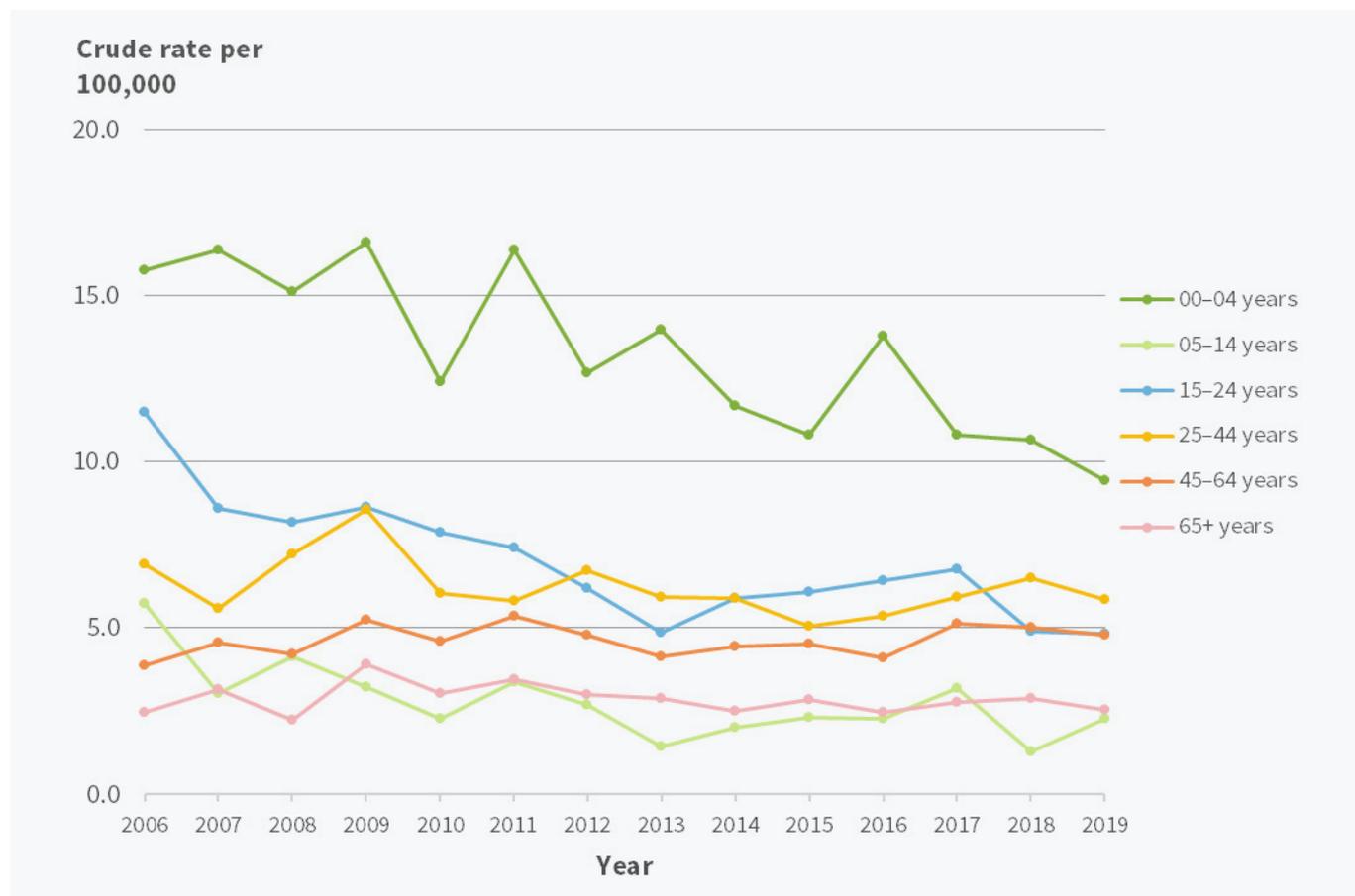
Every year children under five years have the highest hazardous substances-related hospitalisation rates

From 2006 to 2019, there was a marked difference in the crude rates in hazardous substances-related hospitalisation for children in the 00–04 years age group. Children under five years of age have the highest hazardous substances-related hospitalisation rates every year, although the rate has decreased from 2006 to 2019 (Figure 2). Several factors likely influence their exposure at this age, including:

- Desire to put things in their mouths
- Appeal to children of the colour, shape, taste, smell or presentation of some chemical products
- A large amount of time spent in the home
- Newfound mobility
- Inability to recognise potential danger (Kamboj et al 2019).

In 2019, the hospitalisation rate continues to be the highest for children under five years of age at 9.4 per 100,000 (58 hospitalisations), with the next highest age group being 25–44 years old with a rate of 5.8 per 100,000 (154 hospitalisations).

Figure 2 Hospitalisations related to hazardous substances, by age group, 2006 –2019 (crude rate per 100,000)



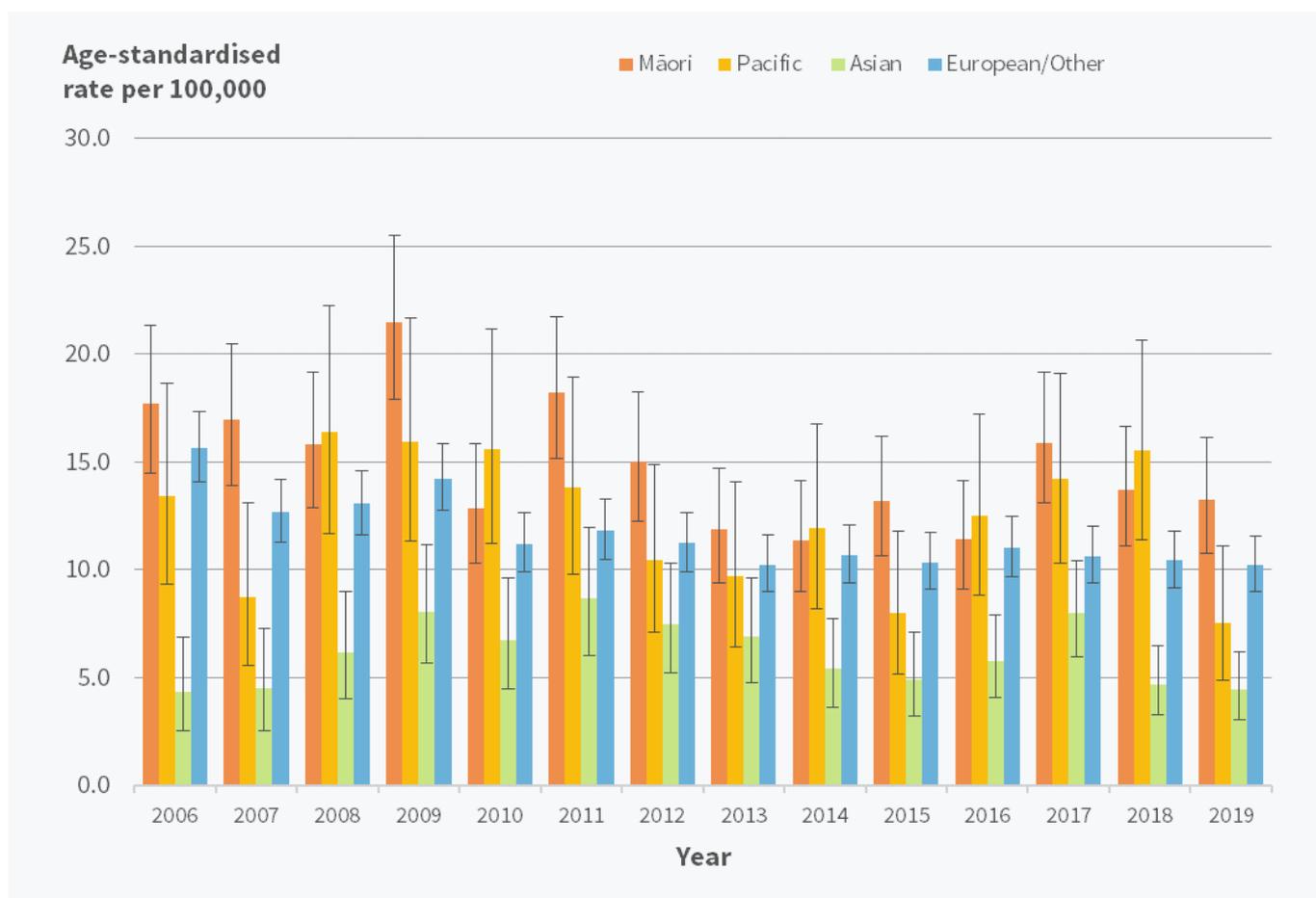
Source: National Minimum Dataset.

Māori are disproportionately affected by unintentional hazardous substances-related injuries

In the last 14 years, from 2006 to 2019, Māori had higher rates of hazardous substances-related hospitalisations compared with non-Māori, after controlling for age. In 2019, the rate for Māori was 13.3 per 100,000 (102 hospitalisations), higher than the rate for non-Māori (8.9 per 100,000; 359 hospitalisations).

When the data from non-Māori category is further sub-divided into ‘Pacific’, ‘Asian’ and ‘European/Other’ ethnic groups, Māori were twice as more likely than Pacific peoples to be hospitalised from hazardous substances-related injuries in 2019 (Figure 3). The age-standardised rate for Pacific peoples has halved from 15.5 per 100,000 (47 hospitalisations) in 2018 to 7.5 per 100,000 (25 hospitalisations) in 2019.

Figure 3 Hospitalisations related to hazardous substances, by ethnicity, 2006–2019 (age-standardised rate per 100,000)



Source: National Minimum Dataset, Ministry of Health.

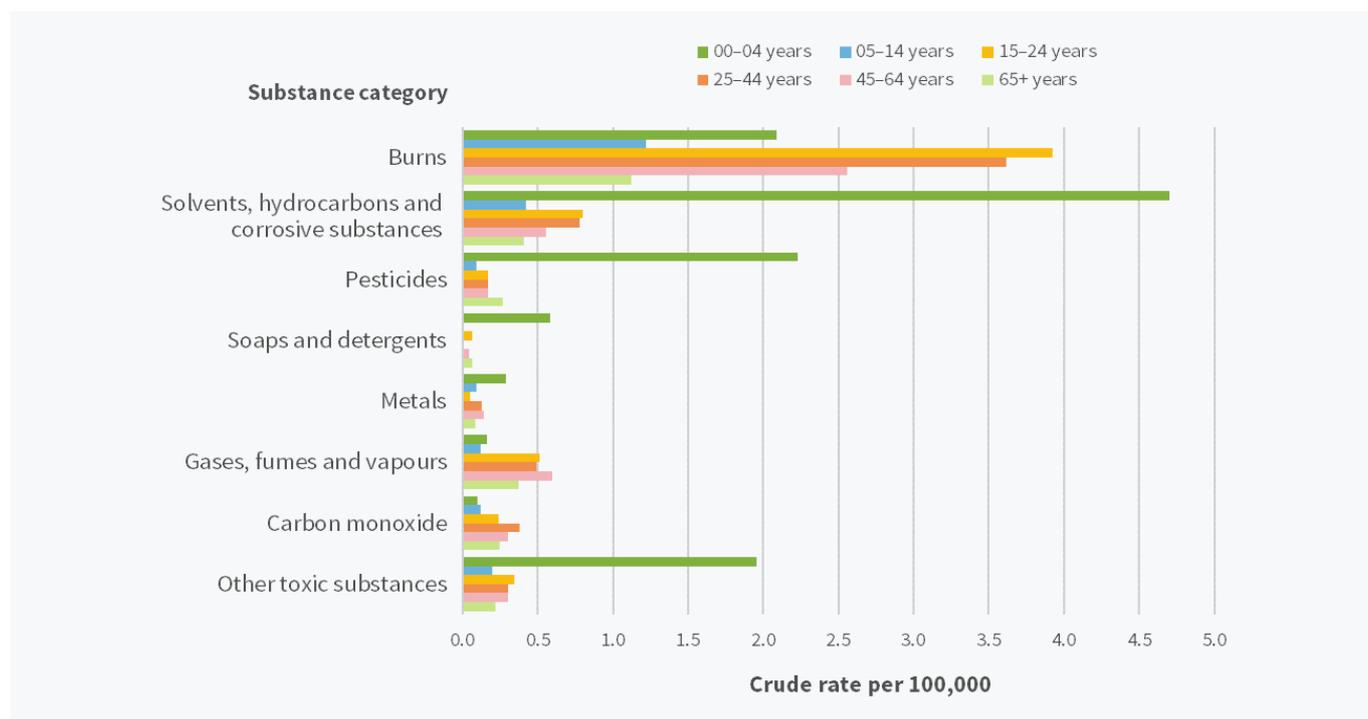
Solvents, hydrocarbons and corrosive substances were the most common cause of hazardous substances-related hospitalisations in children under five years old

There were 754 hazardous substances-related hospitalisations among children aged under five years in the ten years from 2010 to 2019, representing 16% of all unintentional exposures. Of these, 291 cases were due to 'solvents, hydrocarbons and corrosive substances', with a rate of 4.7 per 100,000 (Figure 4). Children under five years were more than six times as likely as any other age group to be hospitalised from hazardous substances-related injuries caused from 'solvents, hydrocarbons and corrosive substances' (eg, household bleach, glue, turpentine, diffuser oil).

The second highest rate of hospitalisations were injuries from 'burns' including fireworks, gas explosions and petrol, affecting people in all age groups, particularly people in the 15–24 year age group (3.9 per 100,000; 509 hospitalisations). These types of injuries represent 51% of all unintentional exposures.

As well as 'solvents, hydrocarbons and corrosive substances', children aged under five years had disproportionately high rates of hospitalisations from 'pesticides' (herbicide, insecticide, rat poison), 'soaps and detergent', and 'other toxic substances' which includes disinfectant, ammonia hair dye, and any unspecified substance.

Figure 4 Hospitalisations related to hazardous substances, by age group and substance category, 2010–2019 (crude rate per 100,000)

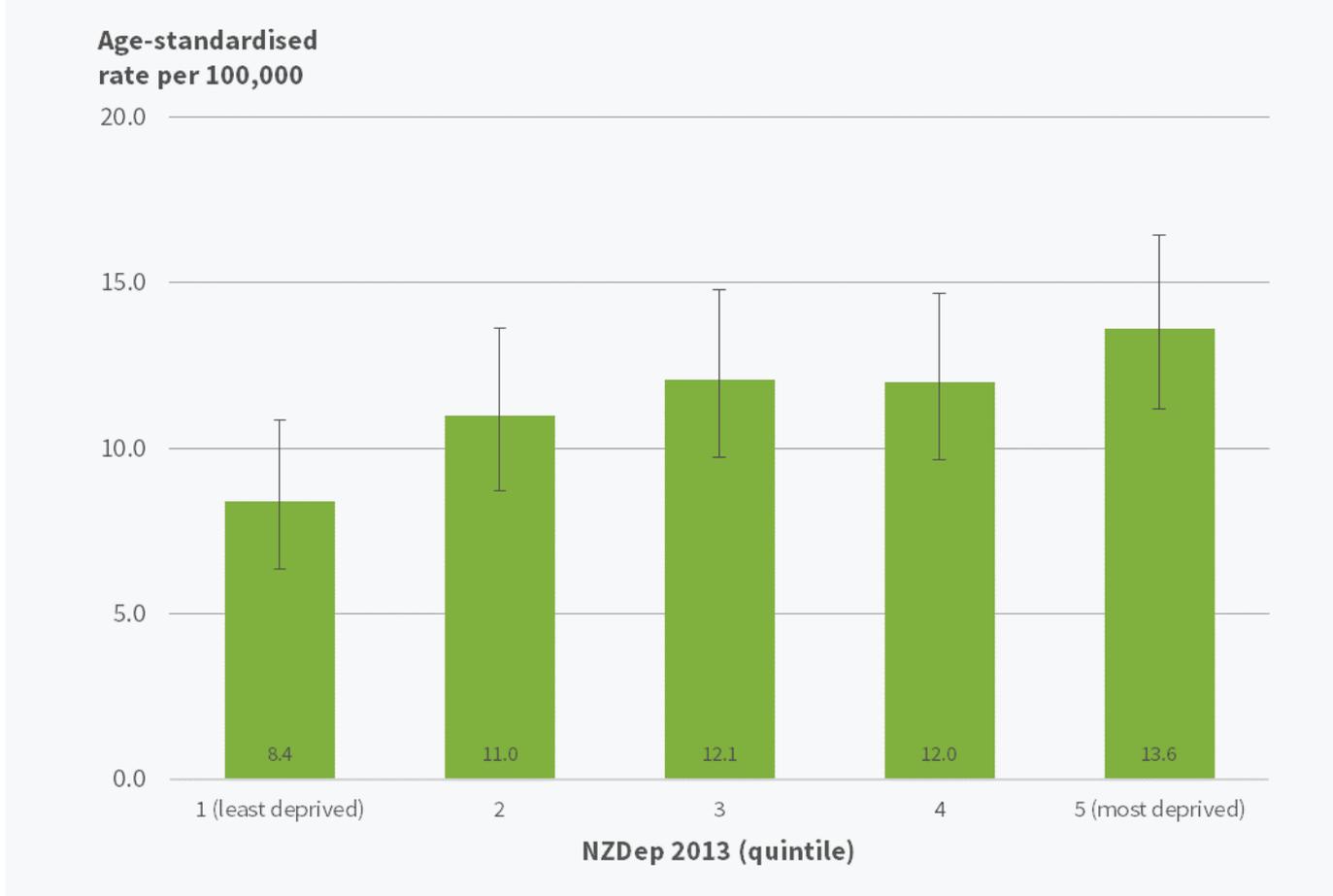


Source: National Minimum Dataset, Ministry of Health.

The highest hazardous substances-related hospitalisation rates occurred in the most deprived areas

In 2019, there is an increasing rate of hazardous substances-related hospitalisations with increasing NZDep quintile levels (from least deprived to most deprived) (Figure 5).

Figure 5 Hospitalisations related to hazardous substances, by deprivation, 2019 (age-standardised rate per 100,000)

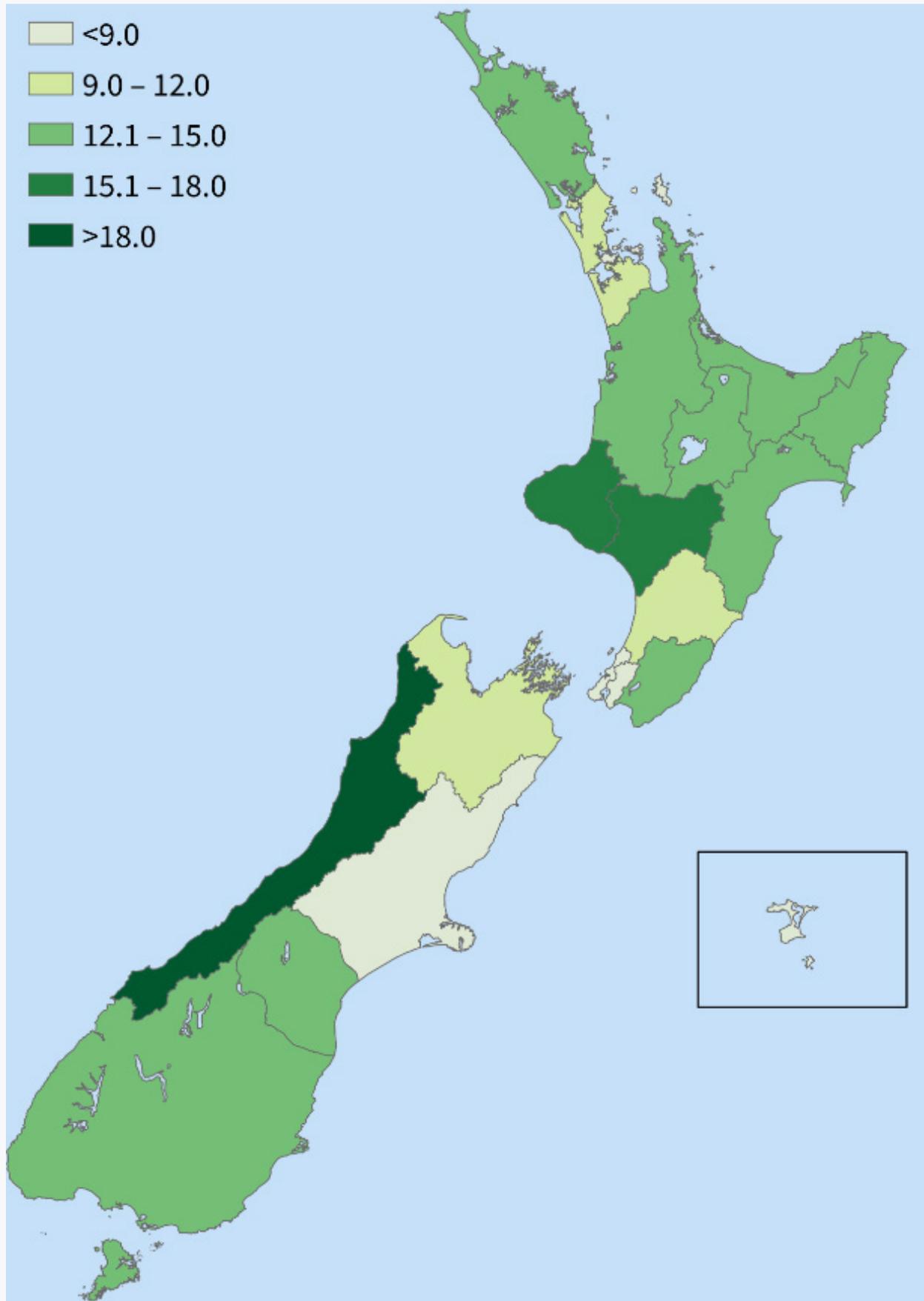


Source: National Minimum Dataset, Ministry of Health.

West Coast District Health Board (DHB) had the highest rate of hazardous substances-related hospitalisations in the last ten years

In the ten year period from 2010 to 2019, West Coast DHB had the highest rate of hospitalisations (21 per 100,000; 61 hospitalisations) from hazardous substances injuries (Figure 6). Capital and Coast DHB had the lowest rate of hospitalisations (5.8 per 100,000; 172 hospitalisations).

Figure 6 Hospitalisations related to hazardous substances, by DHB, 2010–2019 (age-standardised rate per 100,000)



Source: National Minimum Dataset, Ministry of Health.

Data for this indicator

This indicator reports hazardous substances-related hospital discharges using data from 2006 onwards. Data has been pooled to give sufficient numbers for analysis where appropriate.

95% confidence intervals have been presented as error bars on graphs. Unless otherwise stated, all differences mentioned in the text between two values are statistically significant at the 5% level or less.

References

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[Health effects of hazardous substances](#)

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