Notifications of potentially waterborne diseases

This factsheet presents information on how New Zealander's health is affected by three potentially waterborne diseases: campylobacteriosis, giardiasis and cryptosporidiosis.

Key facts

The age-standardised campylobacteriosis notification rate was 132 per 100,000 people in 2018 (6,463 notifications). This was approximately the equal lowest rate since reports began in 2001.

The age-standardised notification rate for cryptosporidiosis was 38 per 100,000 people in 2018 (1,551 notifications). This was approximately the equal highest with 2001.

The age-standardised notification rate for giardiasis was 31 per 100,000 people in 2018 (1,392 notifications). This has remained unchanged since 2015.

Notification rates for potentially waterborne diseases continued to be higher for children aged 0–4, people of European/Other, and people living in less deprived or rural areas.

Background information

Waterborne diseases are, by definition, transmitted by ingesting contaminated water, either as drinking water or through recreational use (eg. while swimming).

Campylobacteriosis, giardiasis and cryptosporidiosis are gastrointestinal diseases caused by infection with the *Campylobacter* bacteria, *Giardia* parasite and *Cryptosporidium* parasite respectively. These diseases are transmitted through contact with the faeces of infected animals and humans, either through ingesting contaminated food or water, or contact with infected animals or humans. Younger children and immune-compromised people are more likely to be infected, and to have more severe disease.

Campylobacteriosis is the most common of these diseases. For campylobacteriosis, poultry is considered the main transmission source in New Zealand, with poultry-associated strains of *Campylobacter* more likely to be found in urban than rural areas (Mullner et al, 2010). However, food-related interventions led to more than a 50% decrease in cases in 2008 (Sears et al, 2011; ESR, 2017). Other transmission routes, including untreated water that is contaminated with *Campylobacter* from animal faeces, are a relatively minor source of campylobacteriosis (Gilpin et al, 2013). These transmission routes may become more significant over time, as food-borne campylobacteriosis cases decrease.

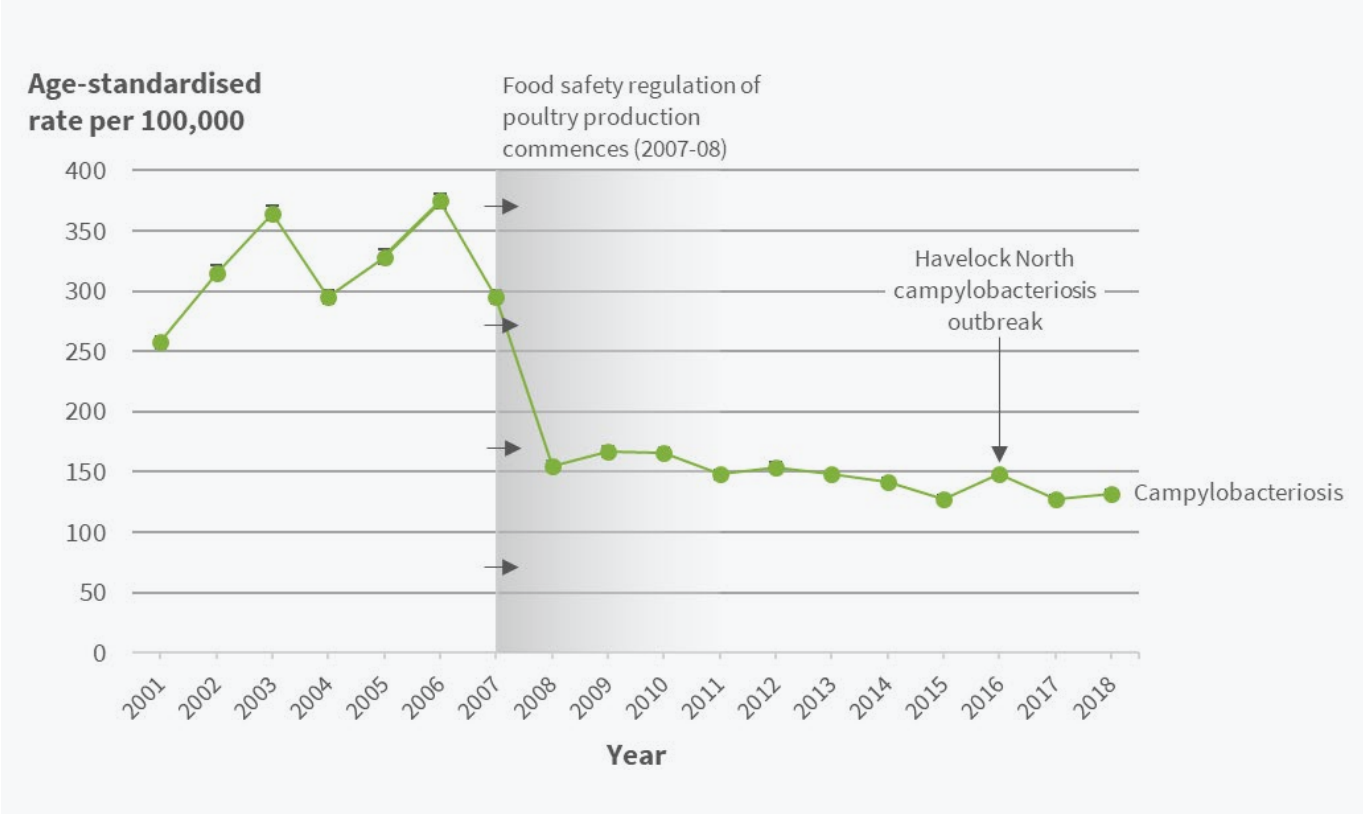
Potentially waterborne disease notification rates

The campylobacteriosis notification rate in 2018 was 132 (128 – 135) per 100,000 people (6,463 notifications). Year-on-year, the notification rate has mostly remained stable or trended downwards since 2009. The notification rate in 2018 was tied approximately equal lowest with 2015: 128 (124–131) and 2017: 128 (125–131) since reports began in 2001 (Figure 1).

A campylobacteriosis outbreak in Havelock North likely explains the increase in 2016.

The large decrease in the campylobacteriosis rate from 2008 onward (Figure 1) has been attributed to the introduction of food safety regulations for poultry production in 2007 and 2008 (Duncan, 2014).

Figure 1: Campylobacteriosis notification rate, 2001–2018



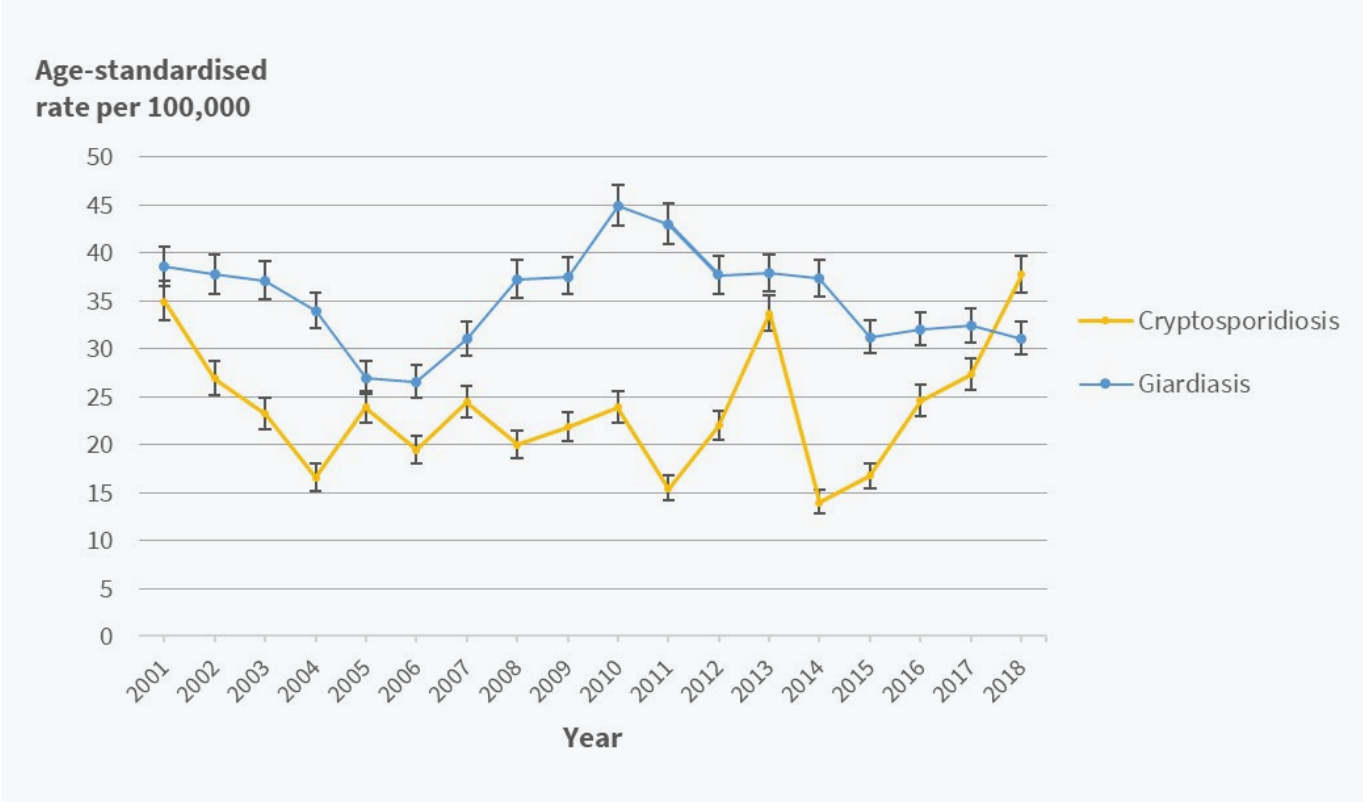
Source: ESR 2020.

In 2018, the age-standardised notification rate for giardiasis was 31 (29–33) per 100,000 people (1,392 notifications). The rate has remained unchanged from 2015 (Figure 2).

The age-standardised notification rate for cryptosporidiosis was 38 (36–40) per 100,000 people (1,551 notifications) in 2018. The rate marks an increase from 2014 and it is now approximately equal highest with 2001: 35 (33–37) (Figure 2).

Changes in potentially waterborne disease rates are partly explained by improvements in diagnostic testing. Across New Zealand, there has been a gradual shift to culture-independent diagnostic testing (CIDT) for enteric diseases. CIDT tests for several enteric diseases simultaneously, which has resulted in improved detection rates (New Zealand Food Safety, 2019).

Figure 2: Cryptosporidiosis and giardiasis notification rates, 2001–2018

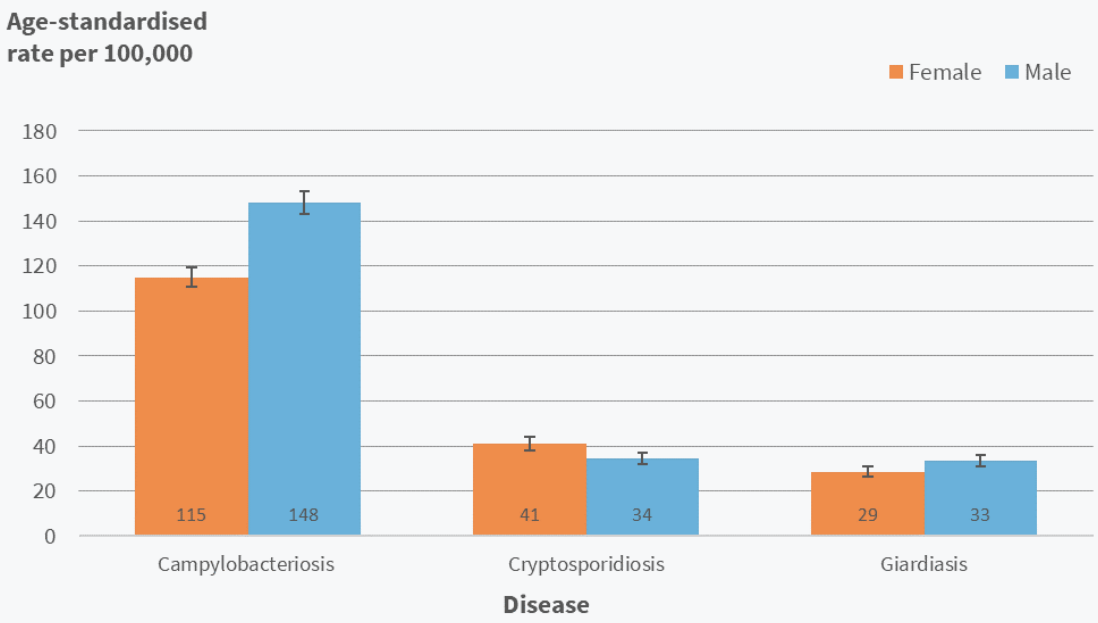


Source: ESR 2020.

Higher campylobacteriosis notification rates for males

In 2018, notification rates for campylobacteriosis and Giardiasis were higher for males than females, standardising for age. The notification rate for cryptosporidiosis was higher for females than males, standardising for age (Figure 3).

Figure 3: Notification rates for campylobacteriosis, cryptosporidiosis and giardiasis, by sex, 2018

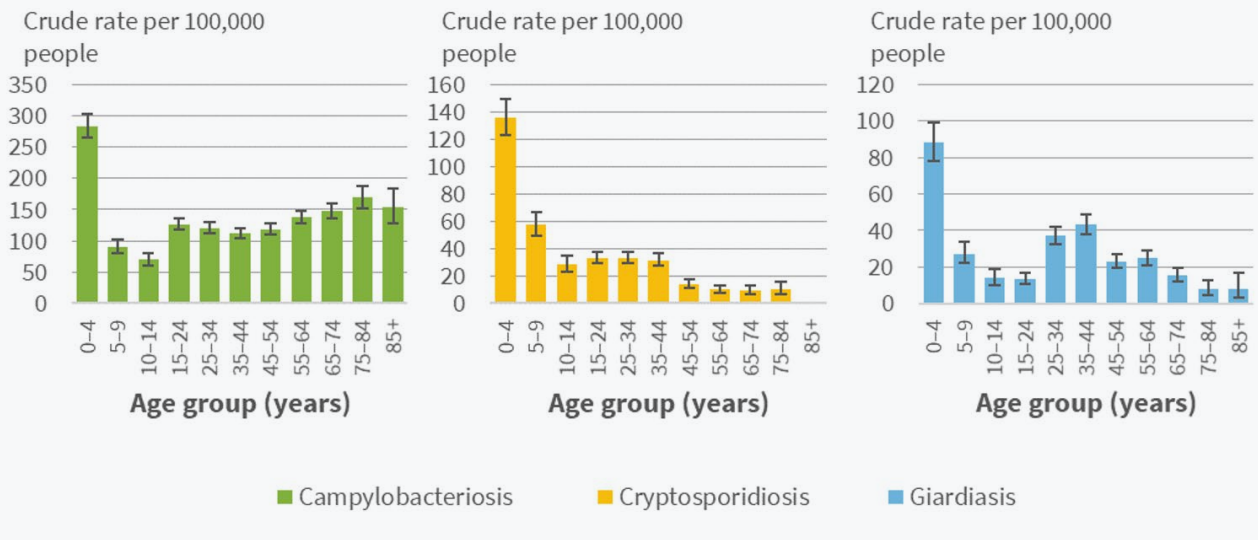


Source: ESR 2020.

Highest notification rates among children aged between 0–4 years for all potentially waterborne diseases

In 2018, children aged between 0–4 years continued to have the highest notification rates for campylobacteriosis, giardiasis and cryptosporidiosis (Figure 4).

Figure 4: Notification rates for campylobacteriosis, cryptosporidiosis and giardiasis, by age group, 2018

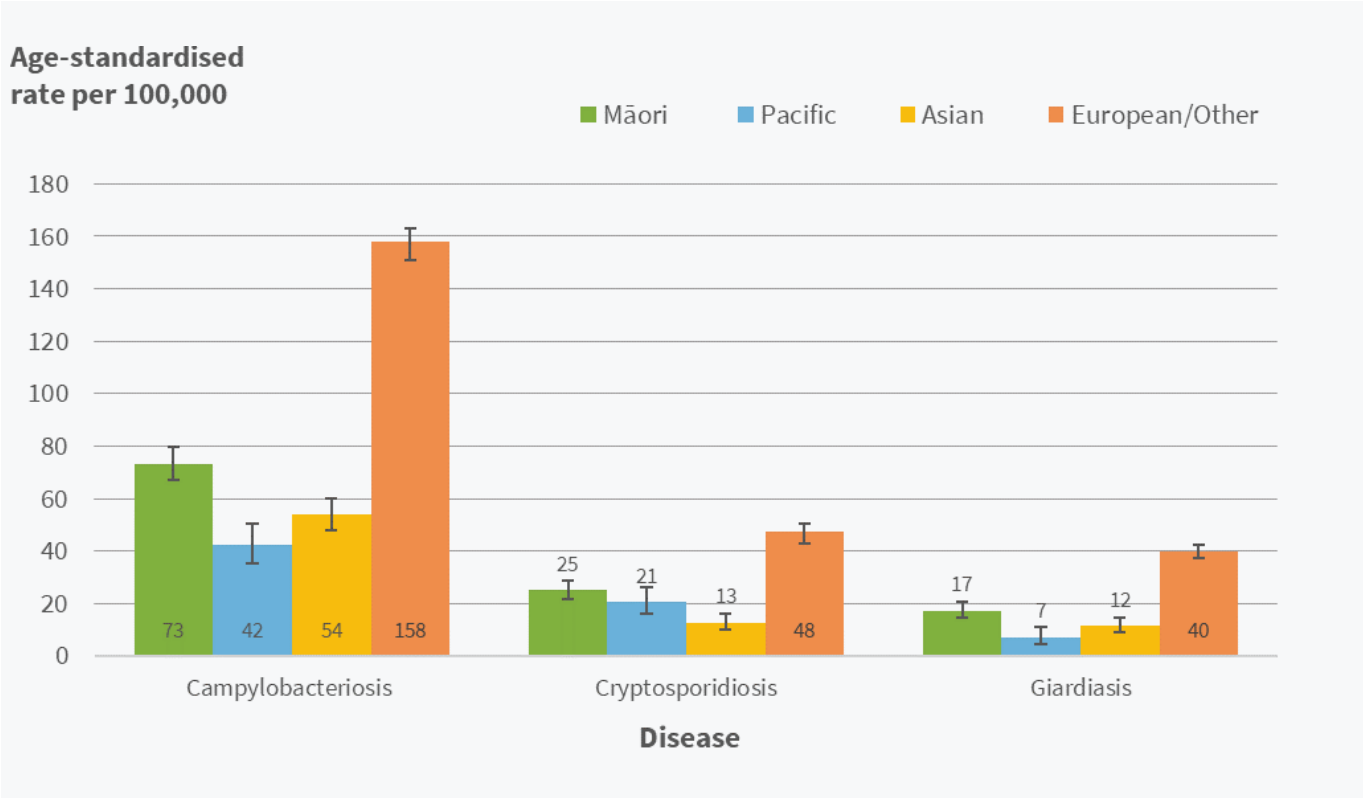


Source: ESR 2020.

Highest notification rates among people of European/Other ethnicity

People of European/Other ethnicity had the highest notification rate for all three potentially waterborne diseases in 2018 (Figure 5).

Figure 5: Notification rate of campylobacteriosis, cryptosporidiosis and giardiasis, by ethnic group (prioritised), 2018

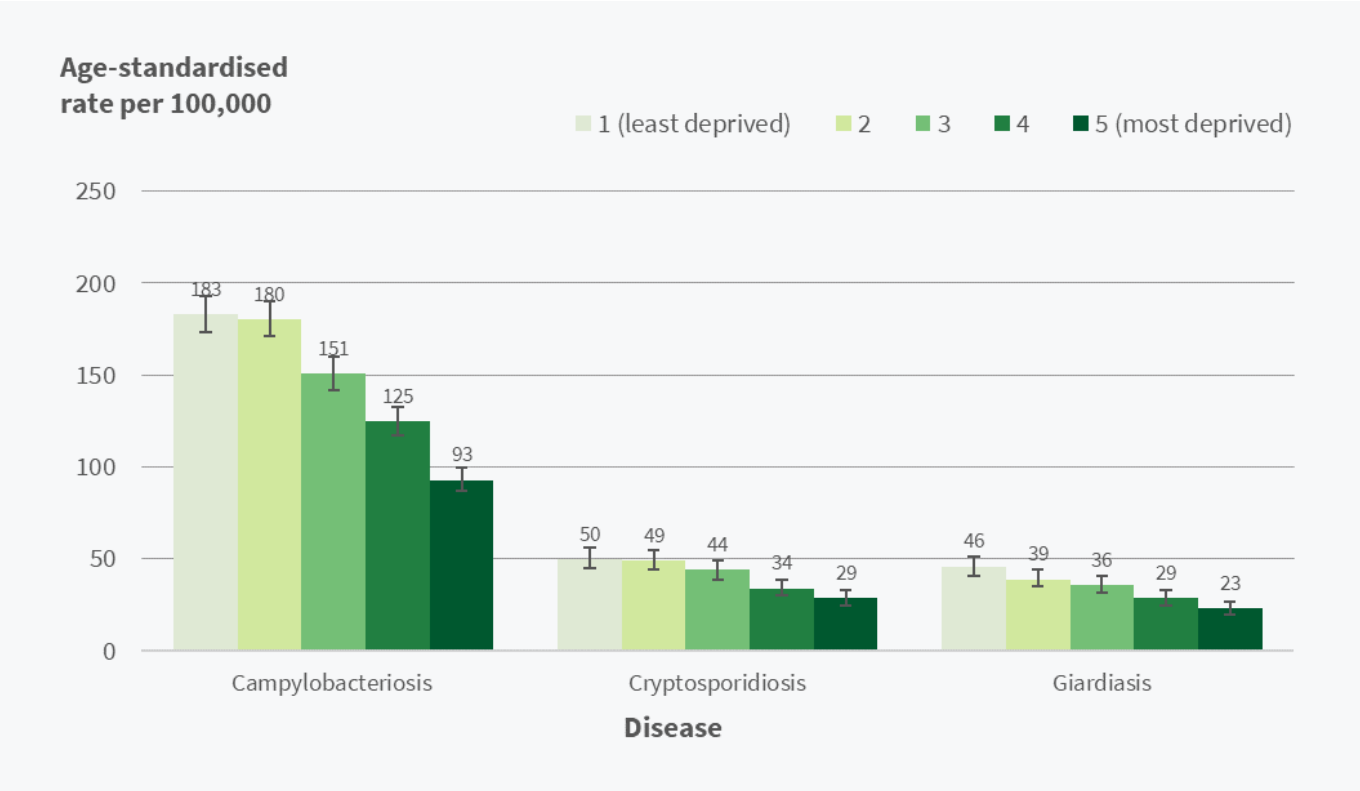


Source: ESR 2020.

Highest notification rates in the least deprived areas

In 2018, people living in less deprived areas continued to have higher notification rates for potentially waterborne diseases compared to people living in more deprived areas (Figure 6). It is unclear whether this reflects the actual pattern of disease, or merely differences in accessing healthcare when sick. People living in deprived areas may find it more difficult to access healthcare compared to people in less deprived areas resulting in under-reporting.

Figure 6: Notification rates for campylobacteriosis, giardiasis and cryptosporidiosis, by NZDep2013 quintiles, 2018

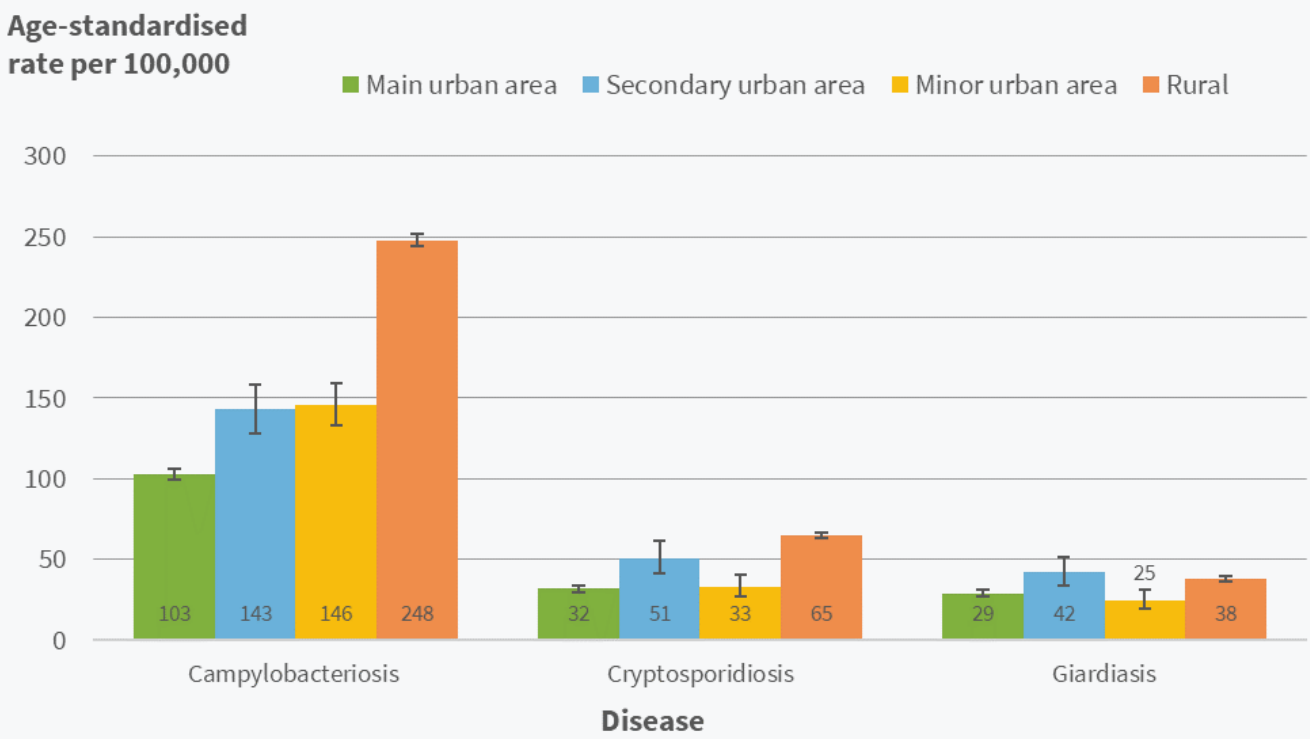


Source: ESR 2020.

People living in rural areas have higher notification rates of potentially waterborne diseases than main urban areas

For all three diseases, people living in rural areas continue to have higher notification rates than people living in main urban areas (Figure 7). In particular, the campylobacteriosis notification rate was twice as high in rural areas than in main urban areas, standardising for age (standardised rate ratio (SRR) = 2.4, 2.4–2.5). The giardiasis notification rate was 1.3 times as high in rural areas than in main urban areas, standardising for age (SRR=1.3, 1.2–1.4), while the cryptosporidiosis notification rate was two times as high in rural areas than in main urban areas, standardising for age (SRR = 2.0, 1.9–2.1).

Figure 7: Notification rates for campylobacteriosis, cryptosporidiosis and giardiasis, by urban/rural classification, 2018 (age-standardised rate per 100,000)



Source: ESR 2020.

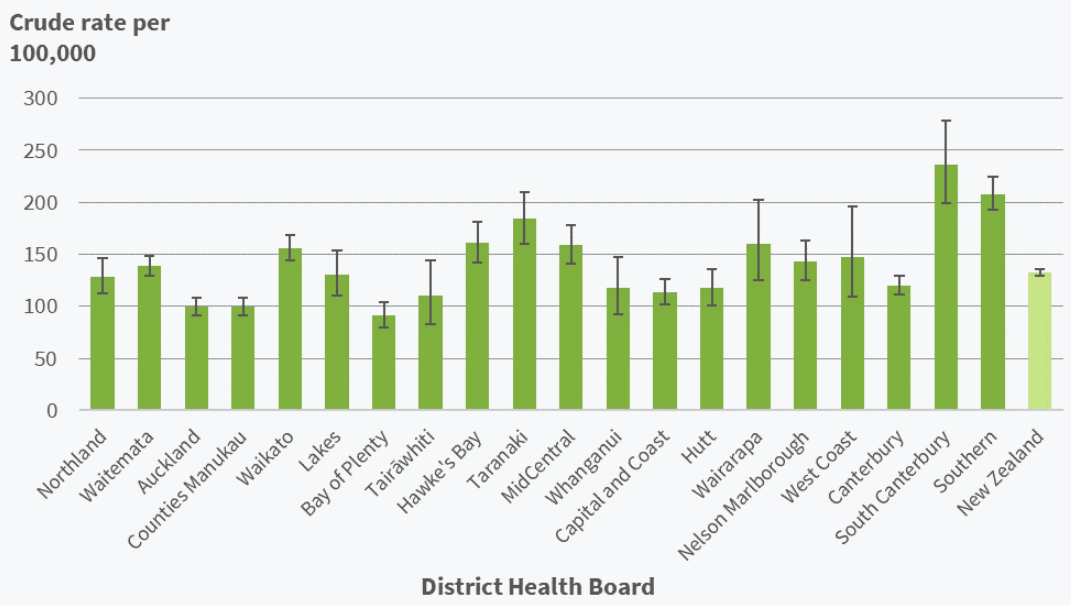
Potentially waterborne diseases notification rates by District Health Board (DHB), 2018

Bay of Plenty, Auckland, and Counties Manukau DHBs have the lowest rates of campylobacteriosis, while South Canterbury, Southern, Taranaki and Waikato DHBs have the highest (Figure 8).

Canterbury has the lowest rate of cryptosporidiosis, while Capital and Coast DHB has the highest (Figure 9).

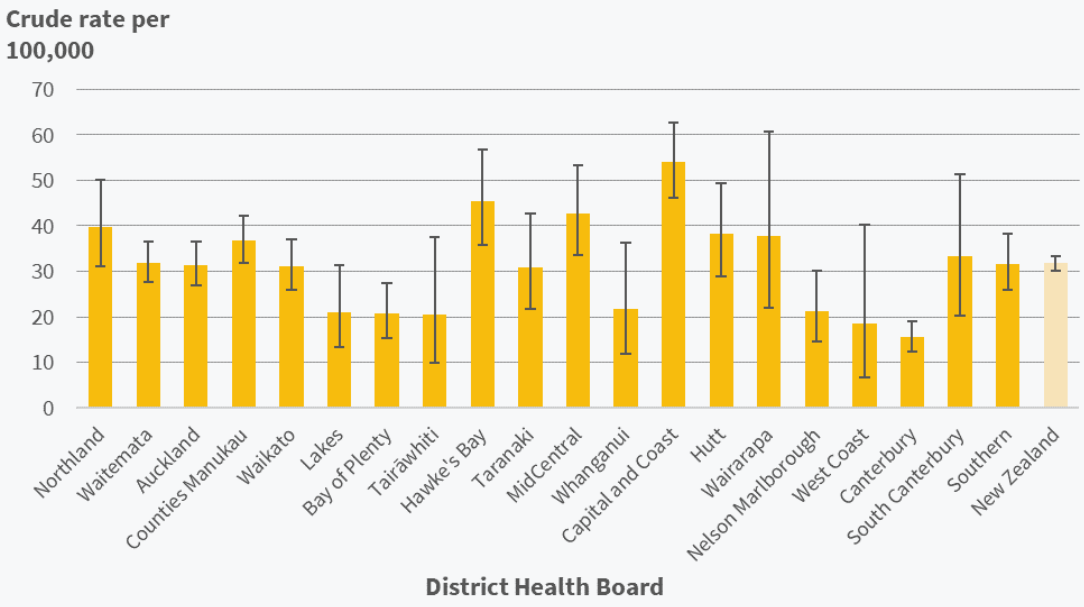
Tairāwhiti and Auckland DHBs have the highest rates of giardiasis (Figure 10).

Figure 8: Campylobacteriosis notification rate by District Health Board, 2018



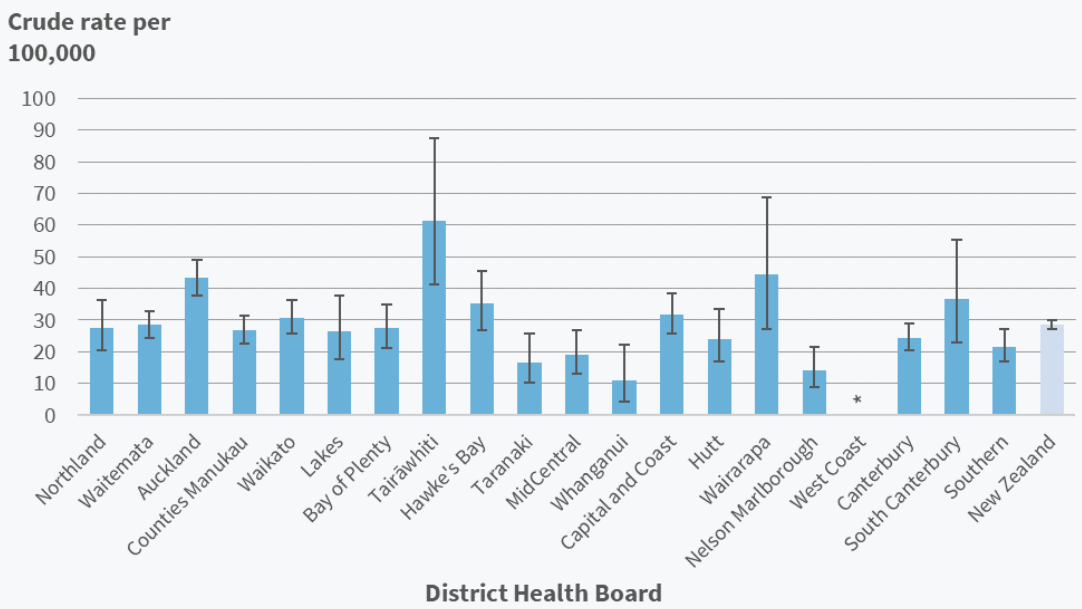
Source: ESR 2020.

Figure 9: Cryptosporidiosis notification rate by District Health Board, 2018



Source: ESR 2020.

Figure 10: Giardiasis notification rate by District Health Board, 2018



***Note:** West Coast District Health Board rate is suppressed.
Source: ESR 2020.

Data for this indicator

This factsheet presents EpiSurv notifications from Institute for Environmental Science and Research (ESR). Notifications exclude cases where the person was overseas during the incubation period. Notifications only cover those people who visited a GP or hospital for treatment and are therefore likely to underestimate the true rate of disease in the population. Risk factor data for cases who reported contact with either untreated drinking water or recreational water are available in separate factsheets.

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

References

Duncan, G. 2014. Determining the health benefits of poultry industry compliance measures: the case of campylobacteriosis regulation in New Zealand. *New Zealand Medical Journal* 127(1391): 22–37.

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Other related topics include:

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Oral health of children

Access to fluoridated water

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Further information

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