Border Health in New Zealand

This factsheet presents information on how New Zealanders health is affected by exotic diseases which cross our international borders.

Key facts

Mosquito-borne disease notification counts have increased since 2001, particularly from 2014.

Dengue Fever continued to be the most commonly diagnosed mosquito-borne disease in 2017.

The Pacific was the most frequently visited region among people returning with Dengue, Zika and Chikungunya from 2016–17. Asia was the most frequently visited region for people returning with Malaria.

Pacific people had higher notification rates of mosquito-borne disease compared to other ethnicities in 2017.

Youth, adults and middle-aged adults had higher rates of mosquito-borne disease compared to all other age groups in 2017.

Ebola and Polio were Public Health Emergencies of International Concern (PHEICs) in 2019. No cases of these PHEICs were reported in New Zealand.

Background information

Certain exotic diseases can pose a greater risk because:

- New Zealanders are not immune to them (e.g. disease is not locally acquired, no vaccine exists)
- they spread easily
- they can cause severe illness
- they are difficult to treat.

High-risk exotic diseases include:

- any disease classified as a 'Public Health Emergency of International Concern' by the World Health Organization (WHO) – these pose a high international threat
- severe respiratory diseases which can cause serious lung infections (e.g. influenza like 'Bird Flu')
- and specific vector-borne diseases, particularly those spread by mosquitoes (e.g. Dengue Fever, Malaria) – these can cause fever, joint pain, bleeding problems, and can be fatal (WHO 2019).

The list of overseas diseases of priority concern to New Zealand needs regular review due to the fast-changing infectious disease environment in the world (Mackenzie 2011).

Current Public Health Emergencies of International Concern

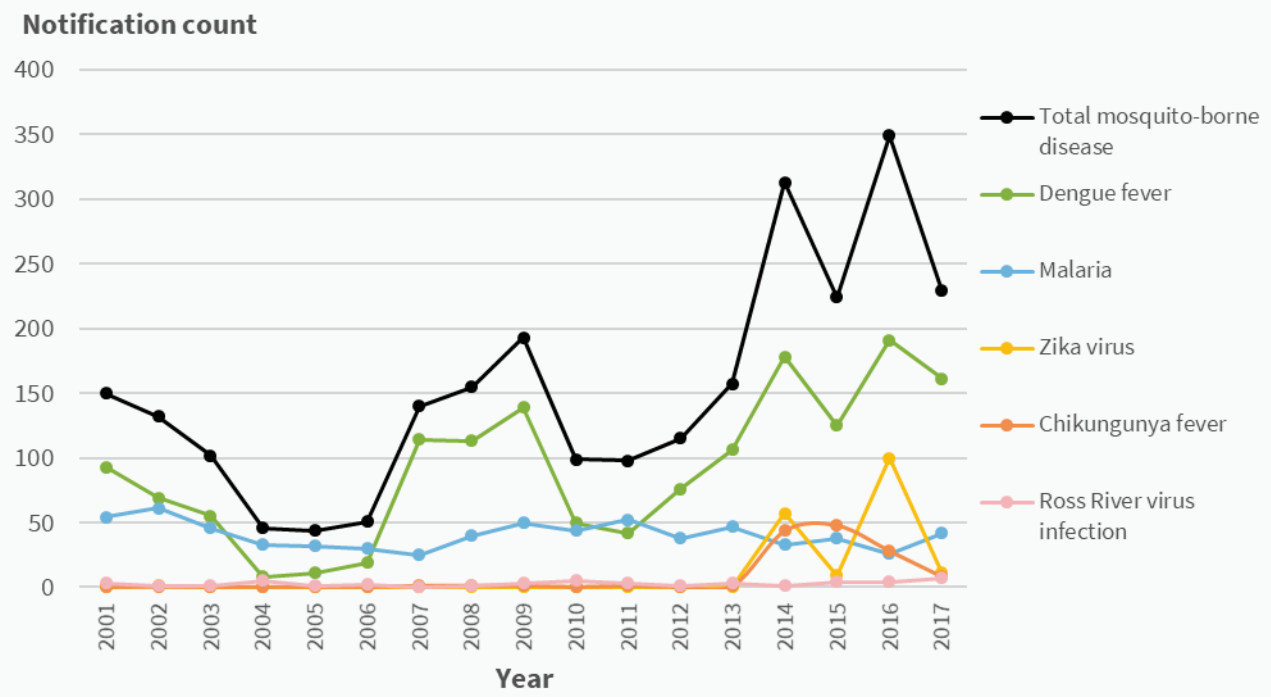
In 2019, there were two ongoing 'Public Health Emergencies of International Concern' (PHEICs) (WHO, 2019). These were Ebola (2019–present) and Polio (2014–present). Neither cases of Polio nor Ebola have been reported in New Zealand during these PHEIC periods.

Five mosquito-borne diseases detected in New Zealand in 2017

Five mosquito-borne diseases were reported in New Zealanders 2017 (ESR 2019). This included diseases caused by four mosquito-borne viruses; Chikungunya, Zika, Ross River virus and Dengue fever. One mosquito-borne parasitic disease was reported; Malaria.

Mosquito-borne disease notification counts have increased since 2001, particularly from 2014 (Figure 1). This trend was driven by an increase in the number of Dengue cases, and the emergence of Zika and Chikungunya since 2014.

Figure 1: Number of case notifications of priority border health diseases detected in New Zealand, 2001–17



Source: ESR 2019

Trends in Mosquito-borne Diseases in the Pacific

For live and historical data see:
Pacific Public Health Surveillance Network www.pphsn.net

Asymptomatic disease

As many as 80% of people infected with some mosquito-borne diseases may have no or mild symptoms (Duffy et al 2009). Therefore, the true burden of disease in New Zealand could be much greater than those who became symptomatic and were diagnosed.

Almost all mosquito-borne diseases were thought to have been acquired overseas

During the years 2016–17, nearly all people diagnosed with mosquito-borne diseases were thought to have acquired these diseases while travelling overseas (ESR 2019). The exception to this was one locally acquired case of Zika in 2016, although this was most likely sexually transmitted (ESR 2016). Figures 2a–c summarise the main destinations visited before diagnosis for Dengue Fever, Chikungunya and Zika in 2016 and 2017.

Countries reported to have been visited by New Zealand travellers prior to diagnosis, 2016–17 for mosquito-borne diseases.

Figure 2a: Dengue fever

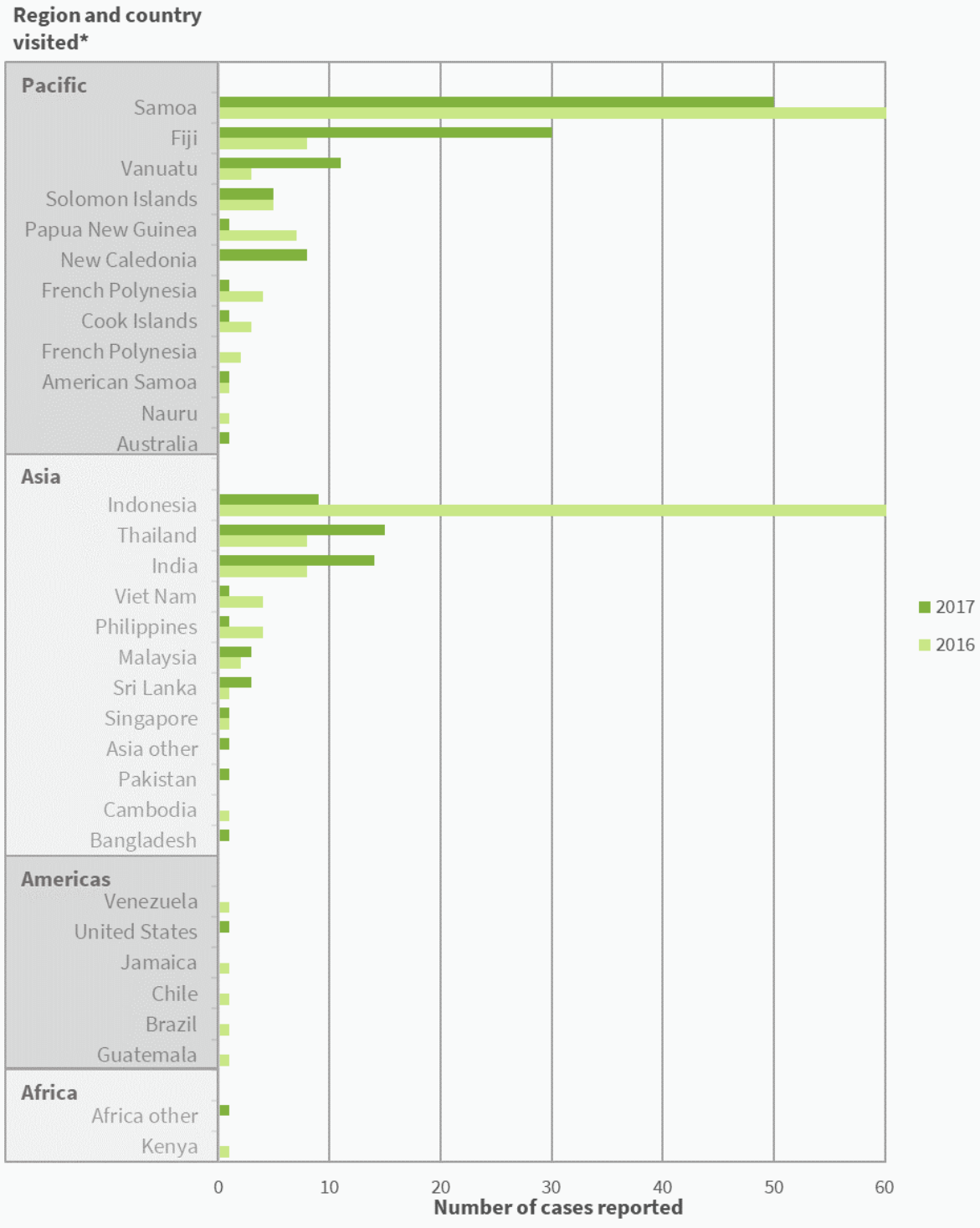


Figure 2b: Chikungunya

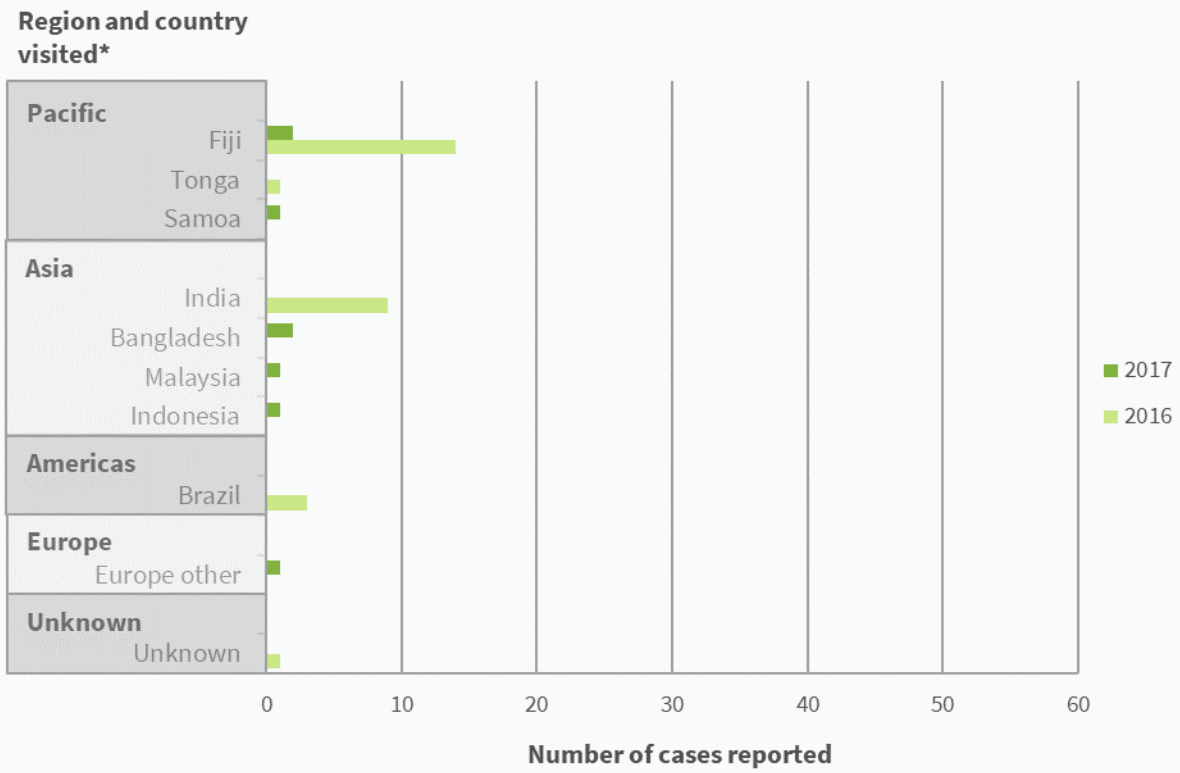
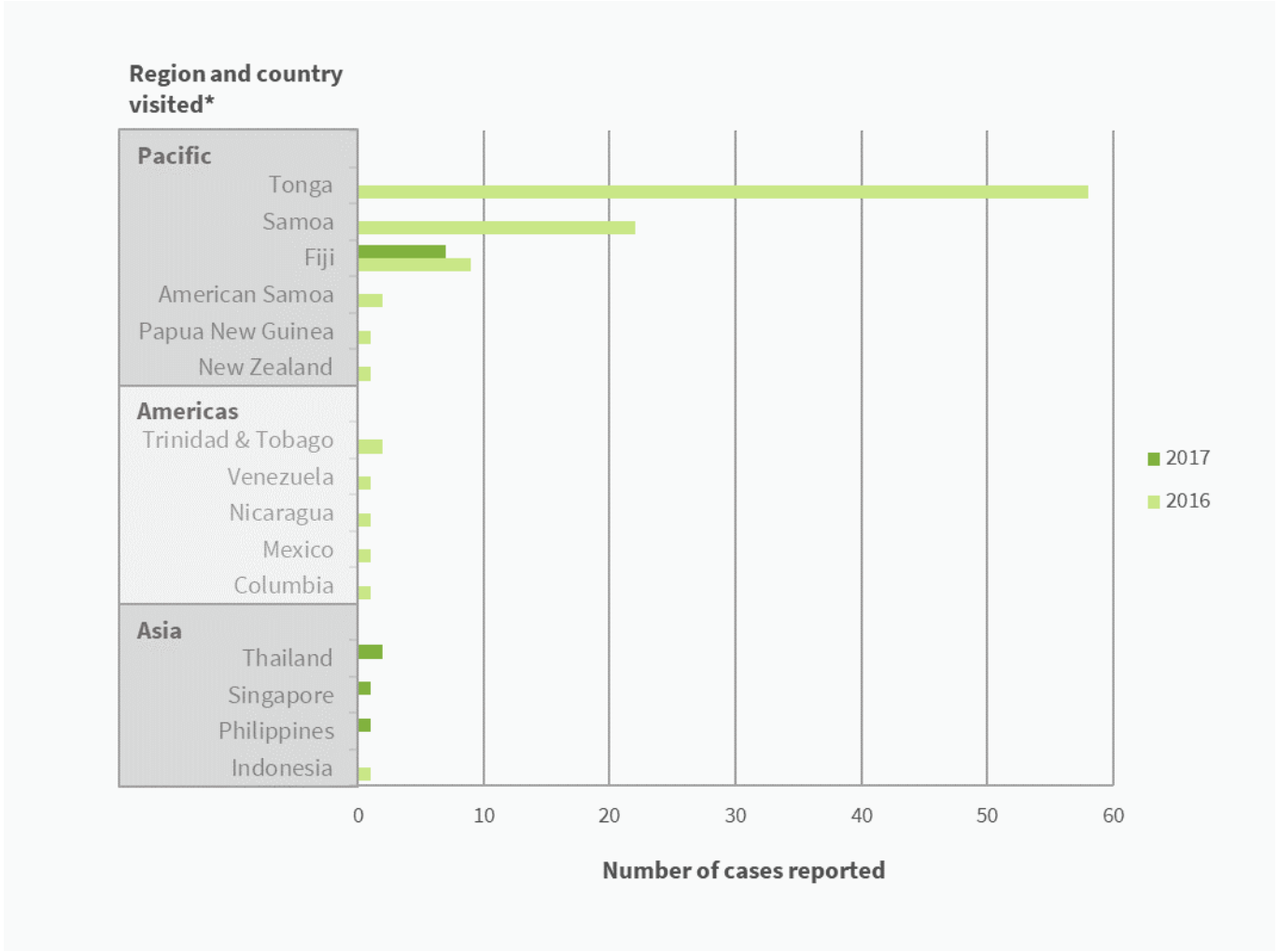


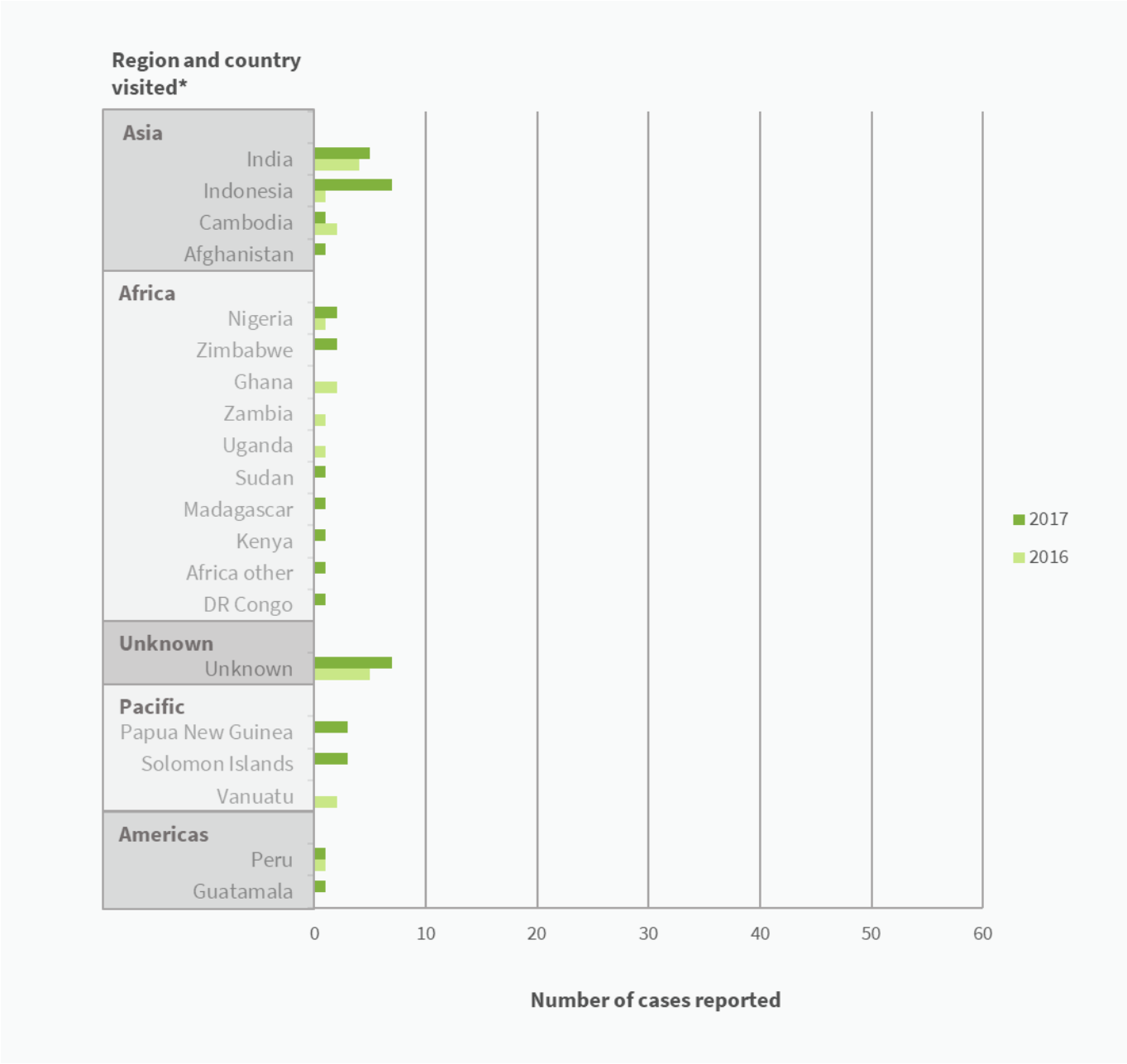
Figure 2c: Zika



Note: Some cases visited more than one country. All countries potentially attributable to disease infection are included.
Source: ESR 2019

From 2016 –17 the Pacific was the most commonly region visited for people returning to New Zealand with Dengue, Chikungunya and Zika. The most commonly visited countries for people returning with Dengue were Samoa, Indonesia and Fiji. For Zika, the most commonly visited countries were Tonga and Samoa. For Chikungunya, Fiji and India were most commonly visited countries (Figure 2 a–c).

Figure 3: Regions visited by before Malaria diagnosis, 2016–17



Note: Some cases visited more than one country. All countries potentially attributable to disease infection are included.
Source: ESR 2019

Over the 2016–17 period, people diagnosed with Malaria in New Zealand had most commonly visited Asia. Indonesia was the most frequently visited country in 2017, while India was the most frequently visited country in 2016. The country was unknown or not recorded for 19% of Malaria cases reported in New Zealand, 2016–17 (Figure 3).

Gender differences

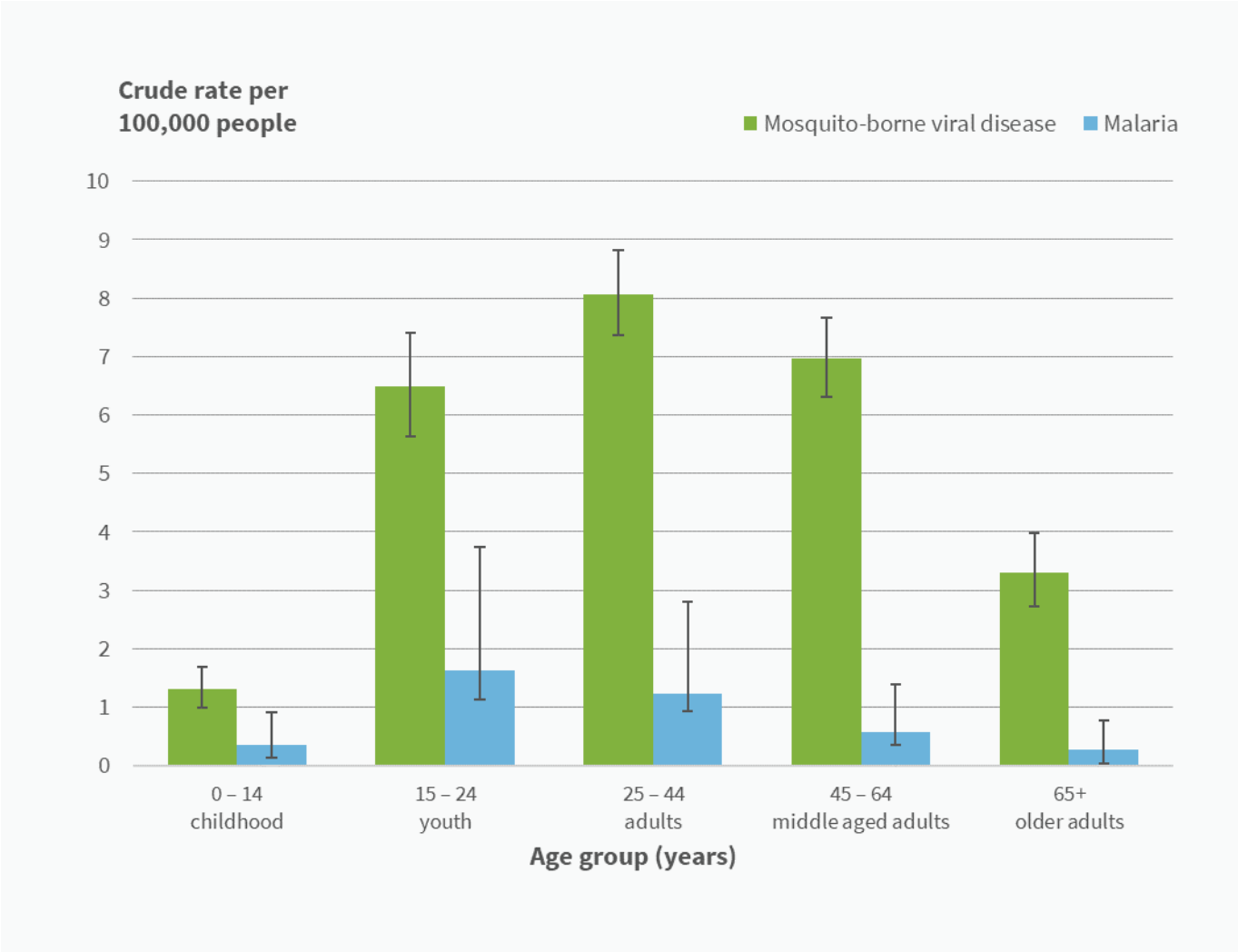
In 2016–17, New Zealand males and females were equally likely to be diagnosed with mosquito-borne diseases (ESR 2019).

Age differences

Over the five-year period, 2013–17, mosquito-borne viral disease notification rates were higher for youth, adults and middle-aged adults compared to the childhood and older adults age groups (Figure 4).

Over the same period, rates of Malaria were higher in youth and adults compared to childhood and older adults (Figure 4).

Figure 4: Notification rates of mosquito-borne viral disease and malaria diagnoses in New Zealand by age, 2013–17



Source: ESR 2019

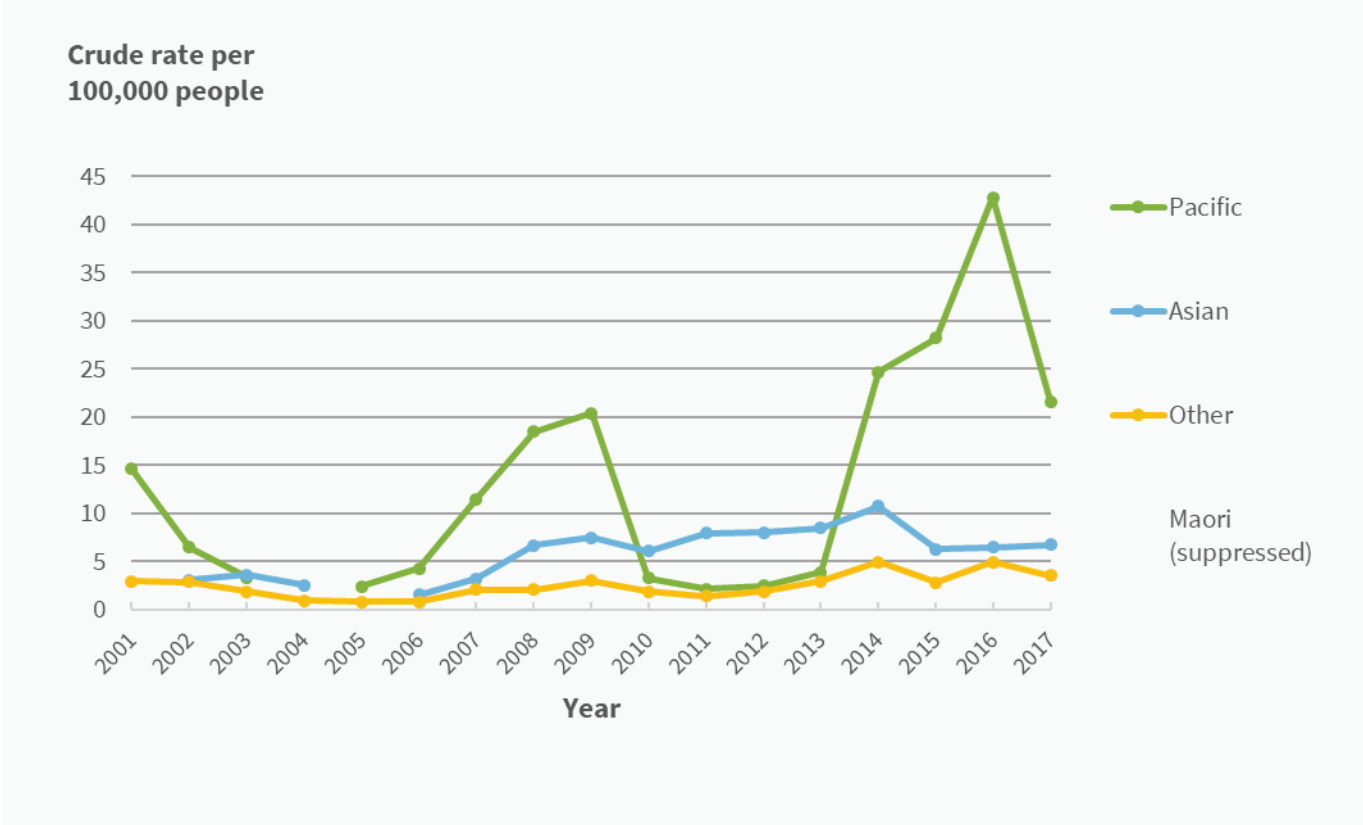
Ethnic differences

From 2014–17, the Pacific ethnic group had the highest rates of mosquito-borne disease. In 2017, the rate of mosquito-borne disease in Pacific people was 21.6 per 100,000, six times that of the Other ethnic group (Figure 5).

In late 2013, dengue serotype-3 re-emerged in the South Pacific causing outbreaks in several Pacific Island countries and territories in 2014 (Getahun et al 2019). This outbreak coincided with an increase in the rate of mosquito-borne disease among Pacific people in New Zealand (Figure 5).

In 2017, there was no difference in rates of malaria between ethnic groups (ESR 2019).

Figure 5: Notification rates of mosquito-borne disease in New Zealand by ethnicity, 2001–17



Note: Due to small numbers, rates for the Māori ethnic group is supressed with partial suppression for Pacific (2004) and Asian (2001, 2005) ethnic groups. Ethnicity is prioritised.
Source: ESR 201

Total case numbers for mosquito-borne viruses were highest for the European/Other (107) followed by Pacific (67) ethnic group in 2017. Māori reported the lowest count (4) (Table 1).

For all ethnic groups, Dengue fever was the most common mosquito-borne disease diagnosed, followed by Malaria.

Table 1: Number of cases of mosquito-borne diseases, 2017, by ethnicity

Ethnicity	Chikungunya	Dengue Fever	Ross River virus	Zika	Malaria	Total
Māori	0	2	1	0	1	4
Pacific	0	60	0	1	6	64
Asian	3	29	0	1	13	46
European/ other	5	65	6	9	22	107
Unknown	0	5	0	0	0	5
Total	**8**	**161**	**7**	**11**	**42**	**229**

Source: ESR 2019

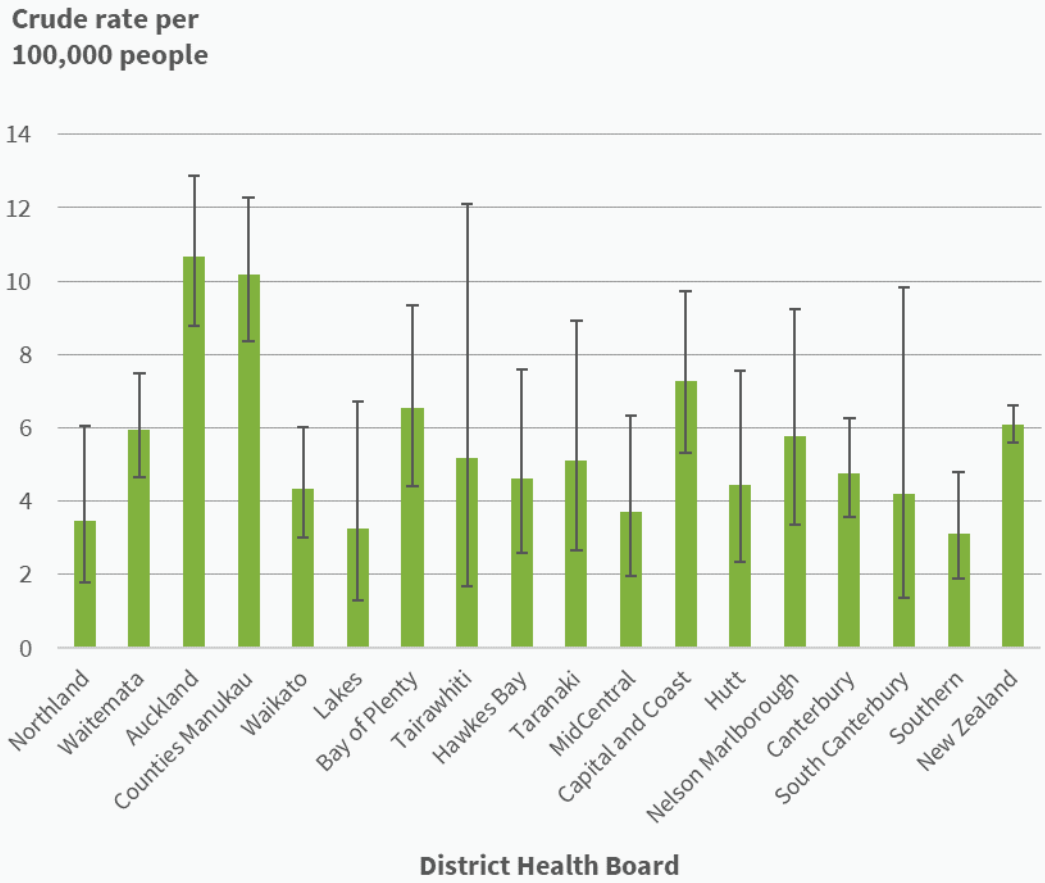
Socio-economic differences in rates of mosquito-borne diseases, 2016–17

For the 2016–17 period, there were differences in the notification rate of mosquito-borne disease by level of socio-economic deprivation (Atkinson et al 2014). More deprived areas had higher rates of mosquito-borne disease than less deprived areas. Notification rates were 8.4 cases of mosquito-borne disease per 100,000 people living in the most deprived areas (NZDep2013 quintile 5) and 5.4 cases per 100,000 in the least deprived areas (NZDep2013 quintile 1) (ESR 2019).

Mosquito-borne diseases rates highest in Auckland and Counties Manukau DHBs, 2016–17

Over the period 2016–17, people living in the Auckland DHB and Counties Manukau DHB had a higher rate of mosquito-borne disease compared to the New Zealand average (Figure 6). 220 of 578 cases (38%) were in Auckland and Counties Manukau DHBs.

Figure 6: Notification rates of mosquito-borne disease, 2016–17, by DHB



Source: ESR 2019

Data for this factsheet

This factsheet presents EpiSurv notifications from ESR. Notifications only cover those people who visited a GP or hospital, and therefore likely under estimate the true rate of the diseases. For additional information, see the metadata link below.

References

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Duffy MR, Chen TH, Hancock WT, Powers AM, Kool JL et al. 2009. Zika virus outbreak on Yap Island, Federated States of Micronesia. *N Engl J Med* 360: 2536–43.

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Other air quality topics include:

Overseas infectious diseases of priority concern

High-risk pests caught at New Zealand's border

Exotic mosquito species established in New Zealand

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Further information

For descriptive information about the data **Metadata Sheet**

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