Information topic	Details
Indicator name	**Leptospirosis notifications**
Domain and topic	Climate change – Climate-sensitive diseases
Indicator definition and units	The number and rate of notifications of leptospirosis. Rates are presented per 100,000 population.
Data source	National database of notifiable diseases (EpiSurv), from the Institute of Environmental Science and Research (ESR).
Numerator	Number of notifications of leptospirosis cases with status of confirmed, probable and under investigation (excluding notifications with a known overseas travel history during the incubation period).
Denominator	Annual population estimates (2018 and prior) and projections (after 2018) from Statistics New Zealand by district. For the New Zealand Index of Deprivation analysis, the 2018 denominator population by NZDep2018 deciles, age group, and sex has been used based on Census 2018 data.
Methodology	Age-standardised rates have been calculated using the direct method, using the World Health Organization world population age distribution (Ahmad et al 2001). Prioritised ethnicity has been used in the following prioritisation order: Māori, Pacific peoples, Asian, European/Other. Variables provided on the dataset have been used for the analysis, including prioritised ethnicity, sex, NZDep 2018 decile and district. Free-text occupation data have been categorised into occupation groups at risk of exposure to leptospirosis based on WorkSafe guidelines of at-risk occupations (WorkSafe New Zealand 2019).
Time period and time scale	Annual data, from 2001 to the most recent data available.
Population coverage	National
Spatial coverage	National, District
Measures of frequency	Results are presented by occupation type, year, sex, age group, ethnic group (prioritised), NZDep2018, and urban/rural classification at the national level.
Confidence interval methodology	95% confidence intervals were calculated based on the methodology outlined in Eayers (2008). Confidence intervals are presented as error bars on graphs.

Limitations of indicator	Increases in leptospirosis notifications may reflect an increase in disease incidence; however, they may also reflect a change in testing procedures. For example, the increased use of nucleic acid testing by laboratories since 2016 may be improving the detection of leptospirosis.
Limitations of data source	Leptospirosis is notifiable in New Zealand. All cases diagnosed by doctors and/or laboratories are required to be notified to the Medical Officer of Health in the region, who notifies the case to the national data collection (EpiSurv) administered by ESR. Notifications only cover those people who visited a GP or hospital for treatment and, therefore, may underestimate the true rate of disease in the population. As part of the leptospirosis notification process, information is collected on certain risk factors, including occupation. It should be noted that the risk factors are not confirmed as the cause of the disease; several risk factors may be recorded.
Related indicators	Drought and rainfall Agricultural activity Social vulnerability indicators for natural hazards Climate-sensitive diseases
For more information	https://www.health.govt.nz/our-work/diseases-and-conditions/communicable-disease-control-manual/leptospirosis
References	Ahmad OB, Boschi-Pinto C, Lopez AD, et al. 2001. *Age Standardization of Rates: A New WHO Standard (Technical Report).* GPE Discussion Paper Series: No. 31. Geneva: World Health Organization. Eayers D. 2008. *Technical Briefing 3: Commonly used public health statistics and their confidence intervals.* York, UK: Association of Public Health Observatories (APHO). WorkSafe New Zealand. 2019. *Prevention and Control of Leptospirosis*. Wellington: WorkSafe New Zealand. URL: https://worksafe.govt.nz/topic-and-industry/working-with-animals/prevention-and-control-of-leptospirosis/gpg/ (accessed 3 February 2020).