Readers' Guide: Understanding Weekly and Annual National Notifiable Diseases Surveillance System WONDER Tables

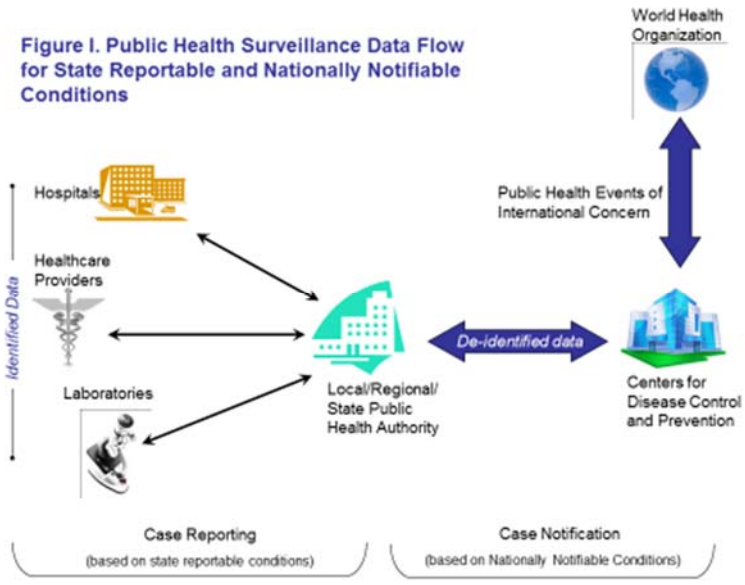
Background Information

Surveillance background:

The CDC National Notifiable Diseases Surveillance System (NNDSS) is the nation's public health surveillance system that enables all levels of public health (local, state, territorial, federal and international) to share information on diseases and conditions that the Council of State and Territorial Epidemiologists (CSTE), in consultation with CDC, has designated as nationally notifiable https://wwwn.cdc.gov/nndss/. Public health professionals use the data from NNDSS to monitor, control, and prevent the occurrence and spread of disease. CDC administers NNDSS in collaboration with CSTE.

Initially, nationally notifiable disease data are collected locally as a result of state, territorial, and local legislation and regulations that require health care providers, medical laboratories, and other entities to submit data on reportable conditions to state and local public health departments. The reportable conditions vary depending upon each jurisdiction's health priorities. The reporting jurisdictions, which include the 50 U.S. states, New York City and Washington DC and 8 territories (American Samoa, Commonwealth of Northern Mariana Islands, Guam, Puerto Rico, U.S. Virgin Islands, the Federated States of Micronesia, the Republic of the Marshall Islands, and the Republic of Palau), voluntarily submit case notifications for the nationally notifiable conditions to CDC. Figure I below shows the reporting flow for NNDSS data.

A list of current and historical notifiable conditions, along with their surveillance case definitions and classifications, is available at (https://wwwn.cdc.gov/nndss/conditions/). NNDSS uses national surveillance case definitions to help ensure that cases are identified, classified, and enumerated consistently across reporting jurisdictions for each condition. As new pathogens and conditions emerge and methods of disease detection and classification evolve, conditions are added to the nationally notifiable disease list, and definitions and classifications for conditions are changed. Conditions are deleted from the list when surveillance is not found to be useful at a national level.



Print criteria:

From NNDSS data, CDC prepares various tables of infectious diseases and conditions and publishes them in CDC WONDER (accessible through the NNDSS Data and Statistics Web page) as weekly and cumulative counts and as finalized annual data. WONDER also includes links to noninfectious conditions and disease outbreak surveillance reports published by CDC programs.

For a case notification of a nationally notifiable infectious disease to be published in CDC WONDER,

- The reporting jurisdiction must have designated the nationally notifiable disease or condition reportable in their state or territory for the year corresponding to the data year of report to CDC (see the "Reporting Exceptions for Nationally Notifiable Diseases [NND]" spreadsheet under NNDSS Related Information on the following page: https://wwwn.cdc.gov/nndss/downloads.html).
- The case must meet the required case classification criteria for the condition (see the "Print Criteria" column of the "Event (disease/condition) Code List" for the specified year, available at https://wwwn.cdc.gov/nndss/case-notification/related-documentation.html). These classifications are based on the NNDSS surveillance case definitions (see https://wwwn.cdc.gov/nndss/case-definitions.html.)

Provisional and finalized data:

CDC considers NNDSS data provisional and subject to change until the data are reconciled and verified with the state and territorial data providers after the end of the calendar year. Cumulative counts of cases presented each week can increase or decrease as additional information becomes available and counts are updated.

Data are finalized approximately 10 months after the end of the year. At this time, they are published in CDC WONDER as final annual data.

For most conditions, cumulative provisional case counts and rates do not match the final case counts and rates.

Limitations to data: completeness and timeliness of reporting to the jurisdictions and of notifications to CDC

Completeness and timeliness of reporting to the jurisdictions and of submission of notifications to CDC vary by condition and location. Detection and reporting of health conditions to jurisdictions may be influenced by the severity of the illness; patient and public awareness of conditions; patient access to health care; the availability of diagnostic facilities; interests, resources, and priorities of the clinicians, laboratories, hospitals and others that report to the jurisdictions; jurisdiction reporting requirements and resources; emerging pathogens and conditions; and priorities of state and local health departments. Reporting delays occur for various reasons, including competing priorities such as outbreak response, technical problems, and changes in staffing levels. Moreover, data may be batch reported during outbreaks and at other times, including at the end-of-year when surveillance staff are finalizing the data.

CDC has not adjusted provisional data for variations in reporting procedures across different states or for delays in reporting. Because of variations among the jurisdictions assignment of event dates (https://wwwn.cdc.gov/nndss/document/MMWR_Week_overview.pdf), updates to case data, and variations in the timing of submission of notifications to CDC, weekly totals cannot be added to compute the cumulative count for a year. Some cases are not reported for a given week until after the report has been generated for that week and some cases that are counted for a given week are subsequently

deleted from the cumulative total because updated information revealed that the cases did not meet the case definition or criteria for publication.

Some changes in case counts and rates may reflect changes in public and provider awareness, changes in laboratory and diagnostic techniques, or changes in the definition of conditions.

These limitations should be considered when comparing counts and rates across conditions, among areas or over time. Not all variations in the data reflect true changes in the incidence of disease.

Data sets used for weekly analysis:

Two provisional data sets are used to produce CDC WONDER weekly tables/figures. One data set is used to produce Figure I. Figure I provides the output of the historical limits aberration detection algorithm run at the national level for selected nationally notifiable diseases and conditions and is based upon a snap shot of the provisional data that comes in each week and remains uncorrected over time. The other data set is used to produce the case counts for weekly tables 1 and 2 presented in CDC WONDER. This data set is updated weekly with corrections, additions, deletions, and edits made by reporting jurisdictions each week. Changes are only reflected in the cumulative case count column(s) of the tables (i.e., if changes occur after the weekly table is published in CDC WONDER, the cumulative total column(s) for the following week would reflect the changes; the weekly case count in the previously published table would not be updated).

To create the final NNDSS data set used in the annual tables, CDC carefully reconciles the data received during the year with the reporting jurisdictions until each state or territorial epidemiologist confirms that the data from their area is correct.

The following example illustrates how the data set for CDC WONDER Figure I is constructed versus how the dataset for CDC WONDER weekly tables are prepared:

Week 1: data were reported for 10 cases in Week 1.
Week 2: data were reported for 12 cases in Week 2 and 2 cases were deleted for Week 1.
Week 3: data were reported for 4 cases in Week 3, 2 new cases for Week 2, and 4 new cases for Week 1.
Week 4: data were reported for 2 cases in Week 4, 1 new case for Week 3, and 1 new case for Week 1.

See table below:

	MMWR Week 1	*MMWR* Week 2	*MMWR* Week 3	*MMWR* Week 4
Submitted Week 1	**10**			
Submitted Week 2	-2	**12**		
Submitted Week 3	4	2	**4**	
Submitted Week 4	1	0	1	**2**

Weekly data sets used for CDC WONDER Figure I (hereafter referred to as the Figure I data set) are the original number of cases submitted during each given week.

Current case count for each selected condition is the total number of provisional cases reported during the current 4 week period. In the above example, the total case count for week 4 is 28 (10+12+4+2).

Data set for CDC WONDER weekly tables 1, and 2 are the cumulative number of cases submitted for each *MMWR* week as of the date of publication.

Current case count for each week

Cases in MMWR week 1 -- 10 cases
Cases in MMWR week 2 -- 12 cases
Cases in MMWR week 3 -- 4 cases
Cases in MMWR week 4 – 2 cases

Cumulative case count for each week

Total cases submitted by the end of MMWR week 1 – 10 cases
Total cases submitted by the end of MMWR week 2 – 20 cases (10-2+12)
Total cases submitted by the end of MMWR week 3 -- 30 cases (10-2+12+4+2+4)
Total cases submitted by the end of MMWR week 4 – 34 cases (10-2+12+4+2+4+1+0+1+2)

Data accessibility:

NNDSS data are accessible in various machine-readable formats:

Weekly

- NNDSS Data and Statistics web page - https://wwwn.cdc.gov/nndss/data-and-statistics.html
- WONDER Weekly Tables of Infectious Diseases (1996 to present) - https://wonder.cdc.gov/nndss/nndss_weekly_tables_menu.asp
- DATA.CDC.gov (2014 to present) - https://data.cdc.gov/browse?category=NNDSS&sortBy=last_modified
- MMWR Weekly Tables of Infectious Diseases (1982-2017) – https://www.cdc.gov/mmwr/mmwr_wk/wk_pvol.html
- CDC Stacks Collections of Weekly Infectious Disease Tables (1953 to present) - https://stacks.cdc.gov/cbrowse?parentId=cdc:49375&pid=cdc:49375

Annual

- NNDSS Data and Statistics web page - https://wwwn.cdc.gov/nndss/data-and-statistics.html
- WONDER Annual Tables of Infectious Diseases (2016 to present) - https://wonder.cdc.gov/nndss/nndss_annual_tables_menu.asp
- MMWR Annual Tables of Infectious Diseases (1993-2015) - https://www.cdc.gov/mmwr/mmwr_nd/index.html
- CDC Stacks Collections of Annual Tables of Infectious Diseases and Conditions (1951 to present) https://stacks.cdc.gov/cbrowse?parentId=cdc:49375&pid=cdc:49375 (once in CDC Stacks, go to left side of screen and select "Annual Reports" from "Narrow Results", "Genre")

Weekly Table/Figure

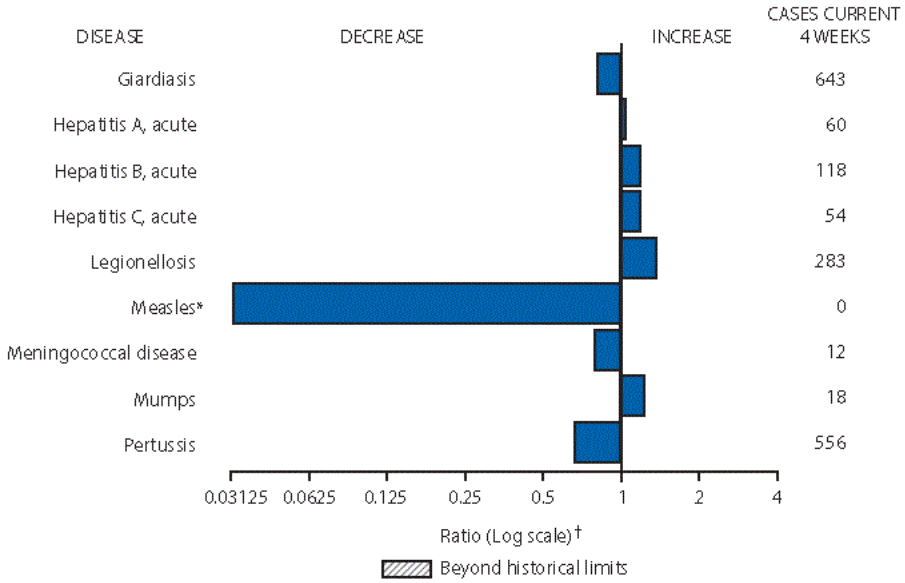
Figure I

Figure I Title: Selected notifiable disease reports, United States, comparison of provisional 4-week totals with historical data.

Data set used: Weekly data set for Figure 1

Description: Conditions to be included in this graphic are agreed upon by the CDC programs and selected for inclusion by statisticians working on the methods. Cases reported from the U.S. territories or foreign residence (based on the country of usual residence) are not included in Figure I. The methodology used in Figure I is most appropriate for diseases that do not exhibit frequent changes in trend or level and that occur often enough so that a few case notifications during a current week would not indicate an aberration.

FIGURE I. Selected notifiable disease reports, United States, comparison of provisional 4-week totals October 10, 2015, with historical data



* No measles cases were reported for the current 4-week period yielding a ratio for week 40 of zero (0).

† Ratio of current 4-week total to mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

Methods taken directly from:

Stroup DF, Wharton M, Kafadar K, and Dean, AG. Evaluation of a method for detecting aberrations in public health surveillance data. American Journal of Epidemiology, Vol 137 (3), 373-380, 1993.

Current case count for each selected condition is the total number of provisional cases reported during the current 4 week period for the 50 states, excluding U.S. territories. To increase the historical sample size and to account for any seasonal effect, the baseline is the average number of cases for the preceding 4-week period, the corresponding 4-week period, and the following 4-week period, for the

previous 5 years. This yields 15 correlated observations, referred to as the historical observations or baseline (see graph below).

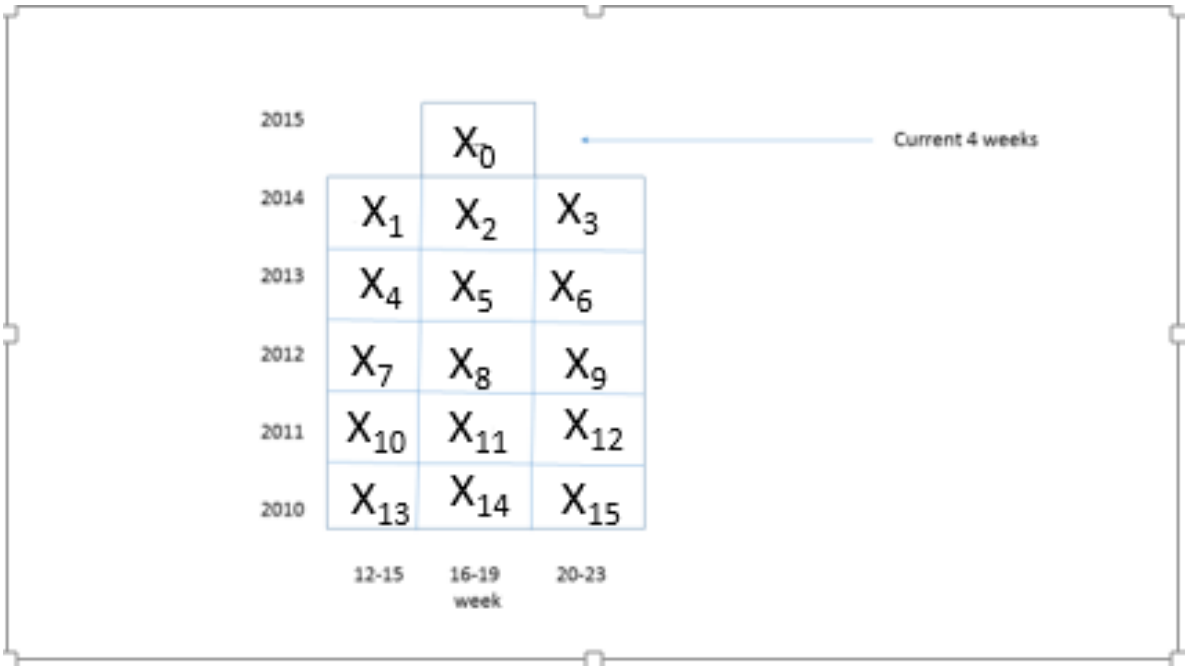
The choice of 4 weeks as the "current period" is based on evidence of weekly fluctuation in disease reporting that is usually due to irregular reporting rather than to disease incidence. The use of a 5-year history achieves the objective of applying the same model for all conditions depicted, which is particularly helpful because some health events were made notifiable only recently. In addition, modeling of reported influenza incidence has shown that more accurate forecasts are based on more recent data.

This graphical method was initially introduced by the CDC to display national notifiable disease data in the *MMWR* in April 1990. The method (also known as Figure I in CDC WONDER) was developed to detect unusual patterns for selected infectious diseases included in the NNDSS. To support early identification of disease morbidity tends, this methods plots unusually high or low numbers of reported cases in the bar graph for each disease by comparing the number of reported cases in the current 4-week period for a given health event with historical data on the same condition from the preceding 5 years.

Interpretation of the graphic:

Let X_0 be the number of cases of a given disease reported to CDC in the 4-week period ending with the current week. This method compares the current values with a baseline report consisting of 15 previous totals for the preceding 4-week period, the corresponding 4-week period, and the following 4-week period for the previous 5 years, denoted X_1, X_2,… X_{15}. The method assumes that X_1, $X_{2...}$ X_{15}, and X_0 are independent random variables with the same distribution function. A two-sided confidence interval for the “expected” number of cases for a 4-week period for a given disease is calculated and is used, along with the “observed” current value X_0, to conclude whether the disease process is “out of range” for the current month. This method assumes that the reported data are normally distributed for each disease and each time period.

The historical limits of the ratio of current reports to the historical mean (X_0 / μ_h) are calculated as 1 plus or minus 2 times the standard deviation divided by the mean ($1 \pm 2 * (\sigma_h / \mu_h)$). X_0 is the current 4-week total, μ_h represents the mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years), and σ_h represents the standard deviation of historical baseline data.



The number of cases in the current month are presented in the right hand column in Figure I to facilitate interpretation of instability caused by small numbers. The ratio is plotted on a log scale so that no change from past patterns (a ratio of 1:1) produces a bar of zero length (i.e., centered at 1 on the log scale). A horizontal bar to the right represents increased incidence for the current 4-week total incidence and a bar to the left of the vertical line (where log ratio equals 1) represents decreased incidence. The hatched area in any bar represents unusually high or low reported incidence where the current 4-week count is greater (right-sided) or less than (left-sided) two standard deviations from the mean of the historical observations.

Table 1

Table 1 Title: Weekly cases of notifiable diseases United States, U.S territories, and Non U.S. Residents - week ending XXX (Week X)

Description: This table contains provisional data on incident (new) reports of cases of nationally notifiable infectious diseases and conditions that are reportable to NNDSS for the given year. The data are reported weekly by the 50 states, New York City, Washington DC, and five U.S. territories. The table is summarized by Region, US Residents, excluding US Territories; US Territories; non-US Residents; and Total. NOTE: Country of usual residence, used to defind non-US Residents, is currently not reported by all jurisdictions or for all conditions.

The cumulative (year-to-date) incidence data from the previous year are presented in Table 1 as a crude method to identify aberrations or discrepancies in reported disease data, whether because of disease incidence or reporting artifact.

Data set used: weekly data set

TABLE I. Weekly cases*+ of notifiable diseases, United States, U.S. territories, and Non US-Residents weeks ending Month Day, Year, and Month Day, Year (WEEK XX)

Reporting Area	Babesiosis				Campylobacteriosis			
	Current week	Previous 52 Weeks Max~	Cum YTD 2019~	Cum YTD 2018~	Current week	Previous 52 Weeks Max~	Cum YTD 2019~	Cum YTD 2018~
US Residents, excluding US Territories								
New England								
Connecticut								
Maine								
Massachusetts								
New Hampshire								
Rhode Island								
Vermont								
US Territories								
American Samoa								
Commonwealth of Northern Mariana Islands								
Guam								
Puerto Rico								
U.S. Virgin Islands								
Non-US Residents		NC		NP		NC		NP
Total								

Contents of table (Columns):

- **Reporting area** – This column represents the U.S. Department of Health and Human Services Regions (HHS) and the jurisdictions (50 U.S. states, five U.S. territories, New York City and Washington DC) that submit case notifications to NNDSS. The non-US residents' data represents illness that occurred in the US in individuals whose country of usual residence is outside the US or US territories.

- **Week** – The week identified in this table refers to the variable "*MMWR* week" which represents the week of the epidemiologic year (*MMWR* year) for which the NNDSS disease report is assigned by the local, county, or state health department, for the purposes of disease incidence reporting or publishing. Jurisdictions assign a case to an *MMWR* week for a variety of different purposes and the epidemiologic meaning of the *MMWR* week varies by jurisdiction and by condition. Refer to the *MMWR* fact sheet for more information about how *MMWR* weeks are defined (http://wwwn.cdc.gov/nndss/document/MMWR_Week_overview.pdf). *MMWR* week calendars can be found at the bottom of the follow page under *MMWR* Week Calendars https://wwwn.cdc.gov/nndss/downloads.html.

- **Current Week** – For a case to be published in the table under current week, it must have been reported to CDC during that week and assigned by the jurisdiction to that *MMWR* week. Cases assigned by the jurisdiction to that *MMWR* week but reported later are published in the CDC WONDER weekly tables in the cumulative total column for that year, but are not published in any current week column. As a result, the sum of the number of cases published each week under current week does not equal the cumulative sum of cases for that year published each week.

- **Previous 52 weeks Max**– To calculate the national maximum, the data are first aggregated to the national level for each week, and the maximum number of cases for the year-to-date is identified. Likewise, to calculate the maximum for a region, the data are first aggregated to the regional level by week and the maximum number of cases for the year-to-date is identified (see example below). At the state level, the data are aggregated by week, and then the maximum of cases for the year-to-date is identified. This enables the reader to compare the current week case count and the cumulative year-to-date case count totals with the "Previous 52 weeks Max" column for monitoring purposes. Previous 52 week maximum is determined from periods of time when the condition was reportable in the jurisdiction (i.e., may be less than 52 weeks of data).

Condition A

Reporting areas	WK 1	WK2	WK3	MAX
Connecticut	3	1	1	3
Maine	4	0	0	4
Massachusetts	1	3	1	3
New Hampshire	0	1	2	2
Rhode Island	3	2	0	3
Vermont	1	3	6	6
New England	12	10	10	12

- **Cum YTD (current year)** – The cumulative year-to-date current year count presents the cumulative year-to-date provisional counts for the specified disease or condition. This count includes cases reported to CDC during the current week and assigned to that *MMWR* week and cases reported during the current week and assigned to earlier *MMWR* weeks of the current year. The cumulative case count also reflects cases deleted from the cumulative total because the reporting jurisdiction's case investigations found that the cases did not meet criteria for reporting and publication. As a result, the successive current weekly totals cannot be added to compute the cumulative count in a year, for a specified condition. Cumulative year-to-date totals

are determined from periods of time when the condition is reportable in the jurisdiction (i.e., may be incomplete data to calculate cum YTD for the current year).

- **Cum YTD (previous year)** – The cumulative year-to-date previous year count presents the cumulative number of cases up to the same week last year for comparison purposes. Cumulative year-to-date totals are determined from periods of time when the condition is reportable in the jurisdiction (i.e., may be incomplete data to calculate cum YTD for the previous year).

Contents of table (Rows):

- **US Residents, excluding US Territories** –The sum of the case counts in the state-specific table cells (including the Washington DC and New York City table cells) where reporting jurisdiction is a US state, Washington DC, or New York City and 'Country of Usual Residence' is the United States, US Territories, unknown, or null.
- **Individual regions** – The sum of the case counts in US Department of Health and Human Services Regions (HHS).
- **Individual States** – Case counts for the US states, Washington DC, and New York City
- **US Territories** –The sum of the case counts in the territories where the reporting jurisdiction is a US territory and 'Country of Usual Residence' is the United States, US territory, unknown, or null.
- **Individual Territories** – Case counts for the US territories.
- **Non-US Residents** – The sum of the cases across all reporting jurisdictions (states, Washington DC, New York City and territories) where the 'Country of Usual Residence' is outside the US or US territories. This case count represents all reported cases occurring in non-US residents. These cases are not included in the US Residents or US Territories sections of the table.
- **Total** – The sum of US Residents, excluding US Territories; US Territories; and non-US Residents.

Abbreviations and symbols used in table:

- **U** – Unavailable.
- **--** – No reported cases**.** NNDSS does not receive reports of zero cases and thus cannot distinguish whether no cases occurred or no cases are reported.
- **N** – Not reportable. The reporting jurisdiction did not add the condition to the list of reportable conditions in the specified jurisdiction. For data to appear in this table, the condition had to be reportable in the reporting jurisdiction for the specified nationally notifiable condition.
- **NN** – Not nationally notifiable.
- **NP**– Nationally notifiable but not published.
- **NC** – Not calculated.
- **Cum** – Cumulative year-to-date counts.
- **Med** – Median.
- **Max** – Maximum.

Table 2

Table 2 Title: Quarterly tuberculosis cases, United States and U.S. territories, quarter ending xxxx

Description: This table contains the total number of tuberculosis cases reported in the United States, by region and state. The data are reported by the 50 states, New York City, the District of Columbia, and the U.S. territories in aggregate form and are published quarterly. The counts presented for the United States do not include the case counts from the U.S. territories. Territory totals are listed separately at the bottom of the table.

Data set used: weekly data set

TABLE 3. Quarterly tuberculosis cases*, United States and U.S. territories, quarter ending December 30, 2017

Reporting Area	Tuberculosis†				
	Current quarter	Previous 4 quarters		Cum 2017	Cum 2016
		Min	Max		
United States	1,613	1,613	2,213	7,831	9,224
New England	73	66	91	297	298
Connecticut	6	6	19	51	52
Maine	1	1	6	14	23
Massachusetts	58	43	58	200	190
New Hampshire	6	3	6	17	15
Rhode Island	1	1	6	12	12
Vermont	1	0	1	3	6
Middle Atlantic	315	264	331	1,222	1,220
New Jersey	81	35	81	254	294
New York (excluding New York City)	41	37	49	173	202
New York City	147	141	169	607	558
Pennsylvania	46	36	55	188	166
East North Central	146	146	208	659	751

Contents of table:

- **Reporting area** – This column represents the U.S. Department of Health and Human Services Regions and the jurisdictions (50 U.S. states, five U.S. territories, New York City, and Washington, DC) that submit case notifications to NNDSS.

- ***MMWR* Quarter** – This column represents the quarter of the epidemiologic year for which the NNDSS disease report is assigned by the local, county, or state health department for the purposes of disease incidence reporting or publishing. The *MMWR* Quarter is based on the *MMWR* week. For tuberculosis, *MMWR* week represents the date CDC surveillance staff verified that the case met the criteria in the national surveillance case definition. *MMWR* week calendars can be found at the bottom of the follow page under *MMWR* Week Calendars: https://wwwn.cdc.gov/nndss/downloads.html

  The MMWR Quarter Schedule is shown below.

  1st QRT: *MMWR* Week 1 -- Week 13
  2nd QRT: *MMWR* Week 14 -- Week 26
  3rd QRT: *MMWR* Week 27 -- Week 39
  4th QRT: *MMWR* Week 40 -- Week 52 (or 53, if applicable)

- **Current quarter** – This column represents the total number of provisional cases reported in the current *MMWR* quarter. *MMWR* quarter is based on *MMWR* week. If a case belonging in the current quarter is reported in a subsequent quarter, the case will appear in the cumulative total

for the year but not the current quarter column. As a result, the sum of the number of cases published each quarter under current quarter does not necessarily equal the cumulative sum of cases for that year published each quarter. Territories are not included in this calculation.

- **Previous 4 quarters (Min)** -- To calculate the national minimum, the data are first aggregated to the national level for each quarter, and then the minimum number of cases in a quarter is identified across the 4 quarters. Likewise, to calculate the minumum for a region, the data are first aggregated across the states included in the region for each quarter, and then the minimum is identified across the 4 quarters. At the state level, the data are aggregated by quarter, and then the minimum is identified across the 4 quarters. This enables the reader to compare the current quarter case count and the previous 4 quarter minimum for monitoring purposes.

- **Previous 4 quarters (Max)** -- To calculate the national maximum, the data are first aggregated to the national level for each quarter, and then the maximum number of cases in a quarter is identified across the 4 quarters. Likewise, to calculate the maximum for a region, the data are first aggregated across the states included in the region for each quarter, and then the maximum is identified across the 4 quarters. At the state level, the data are aggregated by quarter, and then the maximum is identified across the 4 quarters. This enables the reader to compare the current quarter case count and the previous 4 quarter maximum for monitoring purposes.

- **Cum (for the current year)** –- This column represents the cumulative year-to-date provisional counts for the specified condition. This column includes cases reported in the current quarter, but also cases not previously reported because some cases were reported after the quarter ending date. The cumulative case count column includes the outcome of adjustments made for provisional cases added or deleted, based upon the outcome of case investigations, which may not have been represented in the “Current quarter” column. Therefore, the successive current quarterly totals cannot be added to compute the cumulative count in a year, for a specified condition. The cumulative total does not include the territories.

- **Cum (for the previous year)** -- The Cumulative previous year count presents the cumulative number of cases up to the same quarter last year for comparison purposes.

Abbreviations and symbols used in table:

- **U** – Unavailable
- **--** – No reported cases. NNDSS does not receive reports of zero cases and thus cannot distinguish whether no cases occurred or no cases are reported.
- **N** – Not reportable (The reporting jurisdiction did not add the condition to the list of reportable conditions in the specified jurisdiction. For data to appear in this table, the condition had to be reportable in the reporting jurisdiction for the specified nationally notifiable condition.)
- **NN** – Not nationally notifiable
- **NP** – Nationally notifiable but not published
- **Cum** – Cumulative year-to-date counts
- **Min** – Minimum
- **Max** – Maximum

Annual Tables

Table 1

Table 1 Title. Reported cases of notifiable diseases and rates per 100,000 population, excluding U.S. territories — United States, YYYY

Description: This table contains finalized data on incident (new) reports of cases of nationally notifiable infectious diseases and conditions reported to CDC for the specified year that meet the print criteria when counts were finalized. The data are reported to CDC by the 50 states, New York City, and Washington DC. Prior to 2014, the population estimates (per 100,000 population) used to calculate the rates were taken from the prior year (e.g., 2011 data used 2010 population estimates). Starting in 2014, the population estimates are taken from the current year. See the "Interpreting the Results" section below to learn more about the census data used to calculate rates.

Data set used: Final/annual

TABLE 1. Reported cases of notifiable diseases and rates per 100,000, excluding U.S. territories - - United States, 2016

Disease	Case Count	Rate
Anthrax	–	–
Arboviral diseases		
Chikungunya virus disease	247	0.08
Eastern equine encephalitis virus disease		
Neuroinvasive	7	0.00
Non-neuroinvasive	–	–
Jamestown Canyon virus disease		
Neuroinvasive	7	0.00
Non-neuroinvasive	8	0.00
La Crosse virus disease		
Neuroinvasive	31	0.01
Non-neuroinvasive	4	0.00
Powassan virus disease		
Neuroinvasive	21	0.01
Non-neuroinvasive	1	0.00
St. Louis encephalitis virus disease		
Neuroinvasive	7	0.00
Non-neuroinvasive	1	0.00

Table 2

Table 2 Title. Reported cases of notifiable diseases, by region and reporting area – United States and US territories, YYYY

Description: This table contains finalized data on incident (new) reports of cases of nationally notifiable infectious diseases and conditions reported to CDC for the specified year as of a particular date that meet the print criteria. The data are reported to CDC by the 50 states, New York City, Washington DC and the U.S. territories and are presented by Disease, Geographic Region (HHS Regions), and State or Territory. Cases reported from the U.S. territories are not included in the United States total case counts. Counts from the territories are included separately at the bottom of the table. Total resident population (in thousands) is included in the table to allow the reader to calculate rates. Prior to 2014, the population estimates were taken from the prior year (e.g., 2011 data used 2010 population

estimates). Starting in 2014, the population estimates were taken from the current year. See the "Interpreting the Results" section to learn more about the census data used to calculate rates.

Data set used: Final/annual

TABLE 2a. Reported cases of notifiable diseases, by region and reporting area - United States and U.S. territories, 2016

Reporting Area	Total Resident Population	Anthrax	Arboviral diseases				
			Chikungunya virus disease	Eastern equine encephalitis virus disease		Jamestown Canyon virus disease	
				Neuroinvasive	Non-neuroinvasive	Neuroinvasive	Non-neuroinvasive
United States	323,127,513	–	247	7	–	7	8
New England	14,735,525	–	12	–	–	1	1
Connecticut	3,576,452	–	2	–	–	–	–
Maine	1,331,479	–	–	–	–	–	–
Massachusetts	6,811,779	–	6	–	–	1	1
New Hampshire	1,334,795	–	1	–	–	–	–
Rhode Island	1,056,426	–	3	–	–	–	–
Vermont	624,594	–	–	–	–	–	–
Middle Atlantic	41,473,985	–	53	1	–	–	–
New Jersey	8,944,469	–	11	1	–	–	–
New York (excluding New York City)	11,207,616	–	10	–	–	–	–
New York City	8,537,673	–	27	–	–	–	–
Pennsylvania	12,784,227	–	5	–	–	–	–
East North Central	46,755,973	–	25	2	–	5	2

Table 3

Table 3 Title. Reported cases of notifiable diseases, by month, excluding US territories -- United States, YYYY

Description: This table contains finalized data on incident (new) reports of cases of nationally notifiable infectious diseases and conditions reported to CDC during the preceding year as of a particular date that meet the print criteria. The data are reported by the 50 states, New York City, and Washington DC in aggregate form by Disease and *MMWR* month (computed from *MMWR* week) (including January--December, and unknown month). Cases reported from the U.S. territories are not included in Table 3.

Data set used: Final/annual

TABLE 3. Reported cases of notifiable diseases, by month*, excluding U.S. territories - - United States, 2016

Disease	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Unknown	Total
Anthrax	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Arboviral diseases														
Chikungunya virus disease	24	27	11	6	11	17	17	34	32	25	25	18	–	247
Eastern equine encephalitis virus disease														
Neuroinvasive	–	–	–	–	–	–	3	–	2	2	–	–	–	7
Non-neuroinvasive	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jamestown Canyon virus disease														
Neuroinvasive	–	–	–	–	–	1	1	2	–	1	2	–	–	7
Non-neuroinvasive	–	–	–	–	–	–	2	3	2	1	–	–	–	8
La Crosse virus disease														
Neuroinvasive	–	–	–	–	1	1	6	7	10	4	2	–	–	31
Non-neuroinvasive	–	–	–	–	–	–	2	2	–	–	–	–	–	4
Powassan virus disease														
Neuroinvasive	–	–	–	2	1	2	2	–	1	4	5	4	–	21
Non-neuroinvasive	–	–	–	–	–	–	–	–	1	–	–	–	–	1
St. Louis encephalitis virus disease														
Neuroinvasive	–	–	–	–	–	1	3	1	2	–	–	–	–	7

Table 4

Table 4 Title. Reported cases of notifiable diseases and rates per 100,000 population, by age, excluding US territories -- United States, YYYY

Description: This table contains finalized data on incident (new) reports of cases of nationally notifiable infectious diseases and conditions reported to CDC for the specified year as of a particular date that meet the print criteria. The table contains data from 50 states, New York City, and Washington DC in aggregate form by Disease and Age Group (<1 year, 1--4 years, 5--14 years, 15--24 years, 25--39 years, 40--64 years, 65+ years, and age not stated). Prior to 2014, the population estimates (per 100,000 population) used to calculate the rates were taken from the prior year (e.g., 2011 data used 2010 population estimates). Starting in 2014, the population estimates are taken from the current year. Territories are not included in Table 4. See the “Interpreting the Results” section below to learn more about the census data used to calculate rates.

Data set used: Final/annual

TABLE 4. Reported cases of notifiable diseases and rates per 100,000, by age, excluding U.S. territories - - United States, 2016

Disease	<1 yr		1-4 yrs		5-14 yrs		15-24 yrs		25-39 yrs		40-64 yrs		≥65 yrs		Age not stated	Total
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	No.
Anthrax	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Arboviral diseases																
Chikungunya virus disease	–	–	2	0.01	8	0.02	17	0.04	68	0.10	112	0.11	38	0.08	2	247
Eastern equine encephalitis virus disease																
Neuroinvasive	–	–	–	–	–	–	1	0.00	1	0.00	2	0.00	3	0.01	–	7
Non-neuroinvasive	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Jamestown Canyon virus disease																
Neuroinvasive	–	–	–	–	–	–	–	–	2	0.00	3	0.00	2	0.00	–	7
Non-neuroinvasive	–	–	–	–	–	–	–	–	1	0.00	3	0.00	4	0.01	–	8
La Crosse virus disease																
Neuroinvasive	–	–	6	0.04	19	0.05	–	–	3	0.00	1	0.00	2	0.00	–	31
Non-neuroinvasive	–	–	2	0.01	–	–	1	0.00	1	0.00	–	–	–	–	–	4
Powassan virus disease																
Neuroinvasive	1	0.03	–	–	–	–	–	–	–	–	9	0.01	11	0.02	–	21
Non-neuroinvasive	–	–	–	–	–	–	–	–	–	–	1	0.00	–	–	–	1
St. Louis encephalitis virus disease																

Table 5

Table 5 Title: Reported cases of notifiable diseases and rates per 100,000 population, by sex, excluding U.S. territories -- United States, YYYY

Description: This table contains data on incident (new) reports of cases of nationally notifiable infectious diseases and conditions reported to CDC for the specified year as of a particular date that meet the print criteria. The table contains data from 50 states, New York City, and Washington DC in aggregate form by Disease and Sex (male, female, and sex not stated). Prior to 2014, the population estimates (per 100,000 population) used to calculate the rates were from the prior year (e.g., 2011 data used 2010 population estimates). Starting in 2014, the population estimates were from the current year. Cases reported from the U.S. territories are not included in Table 5. See the “Interpreting the Results” section below to learn more about the census data used to calculate rates.

Data set used: Final/annual

TABLE 5. Reported cases of notifiable diseases and rates per 100,000, by sex, excluding U.S. territories - - United States, 2016

Disease	Female		Male		Sex not stated	Total
	No.	Rate	No.	Rate	No.	No.
Anthrax	–	–	–	–	–	–
Arboviral diseases						
Chikungunya virus disease	134	0.08	113	0.07	–	247
Eastern equine encephalitis virus disease						
Neuroinvasive	1	0.00	6	0.00	–	7
Non-neuroinvasive	–	–	–	–	–	–
Jamestown Canyon virus disease						
Neuroinvasive	2	0.00	5	0.00	–	7
Non-neuroinvasive	1	0.00	7	0.00	–	8
La Crosse virus disease						
Neuroinvasive	10	0.01	21	0.01	–	31
Non-neuroinvasive	–	–	4	0.00	–	4
Powassan virus disease						
Neuroinvasive	7	0.00	14	0.01	–	21
Non-neuroinvasive	1	0.00	–	–	–	1

Table 6

Table 6 Title. Reported cases of notifiable diseases and rates per 100,000 population, by race, excluding U.S. territories -- United States, YYYY

Description: This table contains data on incident (new) reports of cases of nationally notifiable infectious diseases and conditions reported to CDC for the specified year as of a particular date that meet the print criteria. Diseases or conditions with less than 25 incident (new) cases nationally are not included in this table. The table contains data from 50 states, New York City, and Washington DC in aggregate form by Disease and Race (American Indian or Alaska Native, Asian or Pacific Islander, Black, White, Other, Race not stated). Prior to 2014, the population estimates (per 100,000 population) used to calculate the rates were taken from the prior year (e.g., 2011 data used 2010 population estimates). Starting in 2014, the population estimates were taken from the current year. Cases reported from the U.S. territories are not included in Table 6. See the “Interpreting the Results” section below to learn more about the census data used to calculate rates.

Data set used: Final/annual

TABLE 6. Reported cases of notifiable diseases and rates per 100,000, by race, excluding U.S. territories - - United States, 2016

Disease	American Indian or Alaska Native		Asian or Pacific Islander		Black		White		Other Race	Race not stated	Suppressed *	Total
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	No.	No.	No.
Anthrax	–	–	–	–	–	–	–	–	–	–	–	–
Arboviral diseases												
Chikungunya virus disease	–	–	65	0.32	14	0.03	79	0.03	18	71	–	247
Eastern equine encephalitis virus disease												
Neuroinvasive	S	S	S	S	S	S	S	S	S	S	7	7
Non-neuroinvasive	–	–	–	–	–	–	–	–	–	–	–	–
Jamestown Canyon virus disease												
Neuroinvasive	S	S	S	S	S	S	S	S	S	S	7	7
Non-neuroinvasive	S	S	S	S	S	S	S	S	S	S	8	8
La Crosse virus disease												
Neuroinvasive	–	–	–	–	–	–	25	0.01	–	6	–	31
Non-neuroinvasive	S	S	S	S	S	S	S	S	S	S	4	4
Powassan virus disease												

Table 7

Table 7 Title. Reported cases of notifiable diseases and rates per 100,000 population, by ethnicity, excluding U.S. territories -- United States, YYYY

Description: This table contains data on incident (new) reports of cases of nationally notifiable infectious diseases and conditions reported to CDC for the specified year as of a particular date that meet the print criteria. Diseases or conditions with less than 25 incident (new) cases nationally are not included in this table. The table contains data from 50 states, New York City, and Washington DC in aggregate form by Disease and Ethnicity (Hispanic, Non-Hispanic, Ethnicity not stated). Prior to 2014, the population estimates (per 100,000 population) used to calculate the rates were taken from the prior year (e.g., 2011 data used 2010 population estimates). Starting in 2014, the population estimates were taken from the current year. Cases reported from the U.S. territories are not included in Table 7. See the "Interpreting the Results" section below to learn more about the census data used to calculate rates.

Data set used: Final/annual

TABLE 7. Reported cases of notifiable diseases and rates per 100,000 population, by ethnicity, excluding U.S. territories - - United States, 2016

Disease	Hispanic		Non-Hispanic		Ethnicity not stated	Suppressed *	Total
	No.	Rate	No.	Rate	No.	No.	No.
Anthrax	—	—	—	—	—	—	—
Arboviral diseases							
Chikungunya virus disease	60	0.10	132	0.05	55	—	247
Eastern equine encephalitis virus disease							
Neuroinvasive	S	S	S	S	S	7	7
Non-neuroinvasive	—	—	—	—	—	—	—
Jamestown Canyon virus disease							
Neuroinvasive	S	S	S	S	S	7	7
Non-neuroinvasive	S	S	S	S	S	8	8
La Crosse virus disease							
Neuroinvasive	1	0.00	20	0.01	10	—	31
Non-neuroinvasive	S	S	S	S	S	4	4
Powassan virus disease							
Neuroinvasive	S	S	S	S	S	21	21
Non-neuroinvasive	S	S	S	S	S	1	1
St. Louis encephalitis virus disease							

Interpreting the tables

Population estimates

Population estimates are obtained from the NCHS postcensal estimates of the resident population of the United States, by year, county, single year of age (range: 0 to >=85 years), bridged-race (white, black or African American, American Indian or Alaska Native, Asian, or Pacific Islander), Hispanic ethnicity (not Hispanic or Latino, Hispanic or Latino), and sex, prepared under a collaborative arrangement with the U.S. Census Bureau. Population estimates for states are available at https://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm. Population estimates for territories are available from the U.S. Census Bureau International Data Base at https://www.census.gov/programs-surveys/international-programs/about/idb.html. The choice of population denominators is based on the availability of census population data at the time of the publication of WONDER tables.

Abbreviations and symbols used in tables

- **---** – No reported cases**.** NNDSS does not receive reports of zero cases and thus cannot distinguish whether no cases occurred or no cases are reported.
- **N** – Not reportable (i.e., report of disease is not required in that jurisdiction)
- **U** – Unavailable.
- **S** – Suppressed