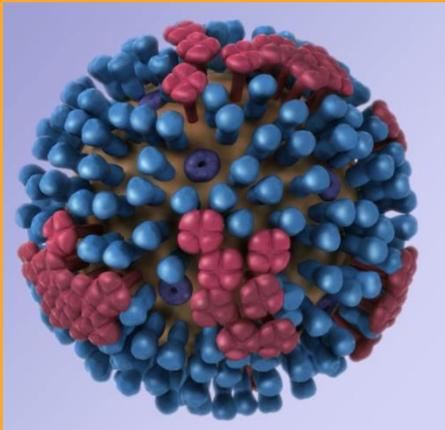


# SAN DIEGO COUNTY ANNUAL COMMUNICABLE DISEASE REPORT

## 2018



County of San Diego, Health and Human Services Agency  
Epidemiology and Immunization Services Branch



# SAN DIEGO COUNTY ANNUAL COMMUNICABLE DISEASE REPORT 2018

County of San Diego  
Health and Human Services Agency  
Public Health Services

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# ACKNOWLEDGMENTS

Communicable disease surveillance in San Diego County is a collaborative effort among Public Health Services, a department of the County of San Diego Health and Human Services Agency, hospitals, medical providers, laboratories, schools, and the [San Diego Health Connect](#) Health Information Exchange. We would like to thank all involved for their contributions to disease reporting.

This report was prepared by Marjorie A. Richardson, MPH, and Kimberly A. Foster, MPH.

We would also like to thank the subject matter experts and all other Epidemiology and Immunization Program staff who made contributions to this report.

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[Live Well San Diego](#) is a regional vision adopted by the San Diego County Board of Supervisors in 2010 that aligns the efforts of County government, community partners and individuals to help all San Diego County residents be healthy, safe, and thriving. The vision includes three components. *Building Better Health*, adopted on July 13, 2010, focuses on improving the health of residents and supporting healthy choices; *Living Safely*, adopted on October 9, 2012, focuses on protecting residents from crime and abuse, making neighborhoods safe, and supporting resilient communities; and, *Thriving*, adopted on October 21, 2014, focuses on cultivating opportunities for all people to grow, connect and enjoy the highest quality of life.

Cover photos: Top left: Centers for Disease Control and Prevention [Public Health Image Library](#), CDC/ Douglas Jordan, Illustrator: Dan Higgins. All other photos from the County of San Diego.

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# INTRODUCTION

The purpose of this report is to provide an overview of select communicable diseases in San Diego County in 2018. It is intended to serve as a resource for the medical community and to inform the general public.

The Epidemiology and Immunization Services Branch (EISB) in Public Health Services (PHS), a department of the County of San Diego Health and Human Services Agency (HHS), is responsible for registering, investigating, and monitoring reports of numerous communicable diseases, with the goals of preventing morbidity and mortality and protecting the health of the community. Important components of meeting these goals are interviewing case-patients and taking direct public health action as a result. Equally important, however, is using the data collected via the reports and interviews to describe the characteristics of cases and review trends over time. This type of analysis may help detect outbreaks and suggest additional, population-based public health prevention and control measures.

This report includes descriptive summaries highlighting 29 diseases that are commonly reported or are of particular public health interest. Also included are an influenza season summary and an outbreak investigation summary. Diseases investigated by other PHS branches or programs are not covered in this report. HIV disease reports are managed by the [HIV Epidemiology Unit](#); sexually

transmitted disease (chlamydia, gonorrhea, syphilis, chancroid, pelvic inflammatory disease) reports are managed by the [HIV, STD, and Hepatitis Branch](#); and tuberculosis reports are managed by the [Tuberculosis Control and Refugee Health Branch](#). Data related to these diseases can be found on their respective websites. Case counts for all diseases monitored by PHS are available in a Five-Year Table of Reportable Diseases and Conditions on the [Epidemiology Program Statistics and Reports](#) website.

## Data Sources

### **Communicable Disease Data**

Title 17, [California Code of Regulations](#) (CCR), requires that health care providers (Sections 2500, 2593, 2641.5-2643.20, 2800-2812, and 2593) report over 80 diseases and conditions, as well as the occurrence of any unusual disease, and outbreaks of any disease, to the local health department. [Health care providers](#), as defined by Section 2500, can include physicians, surgeons, veterinarians, podiatrists, nurse practitioners, physician assistants, registered nurses, nurse midwives, school nurses, infection control practitioners, medical examiners, coroners, and dentists. [Laboratories](#) are also required to report certain communicable diseases (Section 2505). Local health departments may make additional diseases locally reportable. Not all diseases and conditions reportable at the state or local level are nationally notifiable. For a list of diseases

# INTRODUCTION

and conditions reportable in California, see [Reportable Diseases and Conditions](#) at the end of this document. The list of reportable diseases and conditions is subject to periodic change. For a current list of locally reportable diseases and conditions, refer to pages 2-4 of the [Confidential Morbidity Report](#).

EISB enters the information from these reports, as well as information gathered during public health follow-up, into a local surveillance system. The San Diego County disease data presented in this report come from this local surveillance system.

Communicable disease data collected by EISB are reported to the California Department of Public Health (CDPH), and CDPH, in turn, reports cases to the Centers for Disease Control and Prevention (CDC). CDPH produces annual disease summaries, aggregating data from the 61 local health departments in the state. National data are made available each week and in annual summaries through the CDC Wonder website. State and national disease data for this report were obtained from these sources. Final California and United States data for select diseases in 2018 were not available at the time of publication of this report; preliminary data were used when available. See [Resources](#) at the end of this document.

Communicable disease data are subject to some limitations. The number of cases reported to the local health department is likely an underestimate of the true burden

of disease in the community. This can be due to several factors. Diseases that are asymptomatic or have less severe symptoms may be underreported as individuals may not present to a provider for care. Additionally, providers who are unaware of legal requirements may fail to report cases to the health department. This effect may be mitigated by dual-reporting laws in California, which also require reporting by laboratories. Many laboratories have automated reporting systems in place. However, providers may not order diagnostic tests, and for some diseases, diagnosis is based on clinical findings rather than laboratory tests.

Completeness of demographic data, such as race and ethnicity, may also vary by disease. While all diseases in this report are monitored by the health department, some require additional follow-up and investigation. Diseases that are investigated have more complete demographic information because interviews with case-patients provide opportunities to obtain additional information that may not have been provided in the original reports.

The data presented in this report are provisional as changes may occur due to late reporting or updated case information.

## **Surveillance Case Definitions**

Except where otherwise noted in the disease-specific sections of this report, cases are classified based on the CDC/Council of State and Territorial

# INTRODUCTION

Epidemiologists (CDC/CSTE) [surveillance case definitions](#). Case criteria are national standards that allow for comparisons across jurisdictions. Cases can be defined based on a combination of clinical criteria and laboratory criteria. Case definitions are reviewed regularly and are subject to change, which can affect case counts. Links to case definitions are listed in the “For more information” box of each disease-specific section as applicable.

## **Population Data**

Population estimates of San Diego County residents, used in the calculation of rates of disease incidence, were obtained from annual population estimates provided by the [San Diego Association of Governments \(SANDAG\)](#). SANDAG’s methodology is described on their [website](#). The 2018 SANDAG estimates were used for calculating rates for demographic and geographic groups (e.g., age, zip code).

When sources for national and statewide data provided case counts but not incidence rates, rates were calculated using United States and California population estimates obtained from the United States Census Bureau [American FactFinder](#) website. Information on the Census Bureau population estimate methodology is available on their [website](#).

## **Disease Information**

Each disease-specific section includes information on the infectious agent, incubation period, mode of transmission, and symptoms. Most of this disease

information was obtained from the [Diseases and Conditions](#) pages of the CDC website and the *Control of Communicable Diseases Manual*. The CDC [Epidemiology and Prevention of Vaccine-Preventable Diseases](#), also known as the “Pink Book,” was used as an additional source of information. Links to the CDC website corresponding to the disease of interest, as well as links to relevant chapters of the “Pink Book,” are included in the “For more information” box of the disease-specific pages in this report.

## **Methods**

The analyses presented in this report are descriptive and include counts, proportions, and rates. These measures are presented for several different groups: for San Diego County overall, by time period (year, month), by age group, and by zip code of residence.

Most rates presented are incidence rates. Incidence is a measure of the number of new cases of disease in a population within a given time period (in this report, a year). For a few chronic conditions (e.g., chronic hepatitis B, chronic hepatitis C, coccidioidomycosis), where it may not be known when the infection was acquired, the rates could more realistically be described as report rates. All rates are calculated per 100,000 population for ease of comparison. None of the rates are age-adjusted. Rates are generally not calculated for counts below five, and rates should be interpreted with caution when counts are

# INTRODUCTION

below 20. When counts are small, even small changes in the count can cause large changes in the rate, producing unstable rates. The San Diego County rates tend to vary more from year to year than the California and United States rates, which are based on larger overall numbers.

Most of the data included in this report are presented by [CDC disease year](#), rather than calendar year. CDC uses disease years, with numbered weeks, for ease of comparing data from year to year. These weeks run from Sunday to Saturday. The disease year may differ by a few days from the calendar year. For example, disease year 2018 began on 12/31/2017 and ended on 12/29/2018.

San Diego County groups cases on the basis of the “episode date,” which is the earliest available of onset, laboratory specimen collection, diagnosis, death, and report received dates. California also uses “episode date” to group cases. When reporting to CDC, states can choose which of several dates to use for grouping cases into weeks. This may vary from state to state and condition to condition. The only national data presented in this report are annual data, so these differences are less likely to be noticeable. Unless otherwise noted, the San Diego County data in this report are presented by disease year based on episode date.

Analysis was done using SAS software, Version 9.4. Copyright © 2002-2012 SAS Institute Inc. SAS and all other SAS

Institute Inc. product or service names are registered trademarks of SAS Institute Inc., Cary, NC, USA. Maps were created using ArcPro 2.2. Copyright © 2018 Environmental Systems Research Institute, Inc.

## Organization and Content

The report begins with a section giving an overview of the San Diego County population. This section presents SANDAG population estimates grouped into the same demographic categories used throughout the report; it provides context for the data presented in the disease sections. The individual disease sections follow, with one-to-three page summaries of 29 diseases, listed in alphabetical order. These are followed by an influenza season summary and an outbreak summary. Near the end of the report are demographic tables including counts by gender, age group, race/ethnicity, and HHS service region for each disease highlighted in this report. The counts are included in these tables regardless of whether the subgroup counts were sufficient to display graphically in the disease sections. Finally, additional information, including zip codes by HHS service region, reportable diseases and conditions, and resources are included at the end of the document.

The content and layout of the disease sections vary somewhat based on disease characteristics and case volume. However, there are some common components. All sections begin with some basic “Disease

# INTRODUCTION

Info”: infectious agent, incubation, mode of transmission, and symptoms. Other common components include a “Key Points” box, which includes summary bullets of the data presented, and a “For more information” box, which includes links to websites (usually CDC, CDPH, and, when available, San Diego County) where readers can find more in-depth information about the disease, as well as the CDC/CSTE case criteria. These websites are also the primary sources for the disease information presented. Each section also contains “Notes” with additional details about case criteria, how long the disease has been reportable, caveats, and any other information necessary to understand the data presented.

Below are descriptions of the graphs and tables that may appear in the disease sections.

## ***Number of Cases by Year***

Each disease section features a bar graph with case count trends over time. The number of years included depends on when the disease became reportable and the number of years of reliable data in the San Diego County disease registry.

## ***Incidence, San Diego County, California, and United States***

Incidence rates per 100,000 population for 2014-2018 are presented in line graphs, which are included in most disease sections. These graphs compare incidence in San Diego County to incidence in California and the United States. National

data may be omitted if the disease is not nationally notifiable. The graph may not be included at all if five years of data are not available or if neither California nor United States data are available. Incidence rates are calculated for San Diego County even if case counts are low. However, when case counts are low, rates should be considered unstable and interpreted with caution; they may vary considerably from year to year.

## ***Cases by Month of Onset***

This graph, included in most disease sections, displays case counts by month for 2018 as bars, compared to a line showing the average count by month over the previous three years. While all other data in this report are presented by CDC disease year, this graph presents the data by calendar year, grouped by “episode date” (see *Methods* for a definition of “episode date”). Usually, this will be the onset date, but in cases where onset date is unavailable (e.g., no interview with the case-patient was completed) or where the case is asymptomatic, another date is used. Which date is used most frequently may vary by disease. This graph may not be included if there are insufficient cases.

## ***Cases and Rates by Age***

Counts and rates by age group are presented using a bar and line graph. Case counts for six age groups (0-4 years, 5-14 years, 15-24 years, 25-44 years, 45-64 years, and 65+ years) are displayed as bars, compared to a line showing the rates per 100,000 population by age group. When case counts are very low, this graph

# INTRODUCTION

is not included. If counts are less than five across all age groups, rates are not calculated and only counts by age group are presented. When some of the age group counts are five or above, but others are below five, rates are presented for all groups. However, the rates for groups with low counts should be considered unstable and interpreted with caution.

## **Map of Rates by Zip Code**

Choropleth maps display the rate per 100,000 population by zip code of residence at the time of report. The zip code of residence may not be the location where a person was exposed. In the case of chronic conditions, it also may not be the residence at time of diagnosis. Rates are calculated for each zip code with at least five cases. These are displayed using a color scheme where darker colors represent higher rates. Maps are only included when enough zip codes have case counts of at least five. A limited number of maps are presented. Whenever possible, maps include only 2018 data, but in some instances, multiple years of data are aggregated in order to allow for a geographic display. One disease section includes a different type of map: the animal rabies map displays the points where rabid animals were found.

## **Clinical, Risk, and Laboratory Data**

Whenever possible, clinical and risk data are presented. Generally, this requires sufficient case counts to make a summary of clinical or risk data possible and meaningful. Data must also be available,

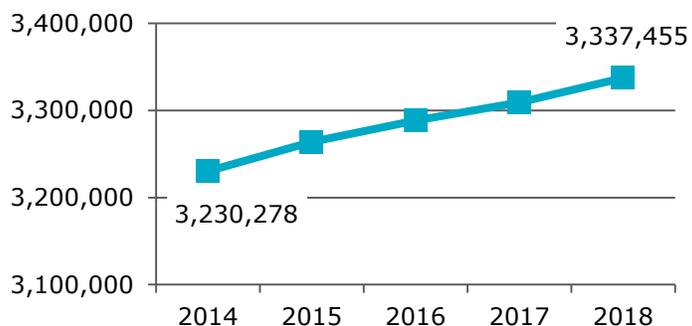
which may not be the case for diseases where an interview of case-patients is not conducted. In some cases, laboratory data are also included (e.g., etiology of meningitis cases). The specific variables summarized, as well as how the data are presented, depend on the characteristics of the disease and what information is available. Clinical, risk, and laboratory data are presented using tables, graphs, and infographics. When case counts are low and graphic representation is not possible, some clinical or risk data may be summarized in the “Key Points.”

## **Special Sections**

The influenza season summary and the outbreak summaries are organized differently. The influenza season summary and norovirus and influenza outbreak summaries present data by fiscal year, focusing on fiscal year 2018-19. This convention better illustrates the seasonal nature of influenza and norovirus, both of which peak during the winter months. An overall outbreak summary covering all outbreaks investigated by EISB in 2018 is also included. Some of the graphs in the influenza summary section are adapted from the [Influenza Watch](#), which the Epidemiology Program publishes weekly during the influenza season. Similar to the disease sections, these sections include “Key Points,” “For more information,” “Notes,” and “Disease Info,” where applicable.

# SAN DIEGO COUNTY POPULATION

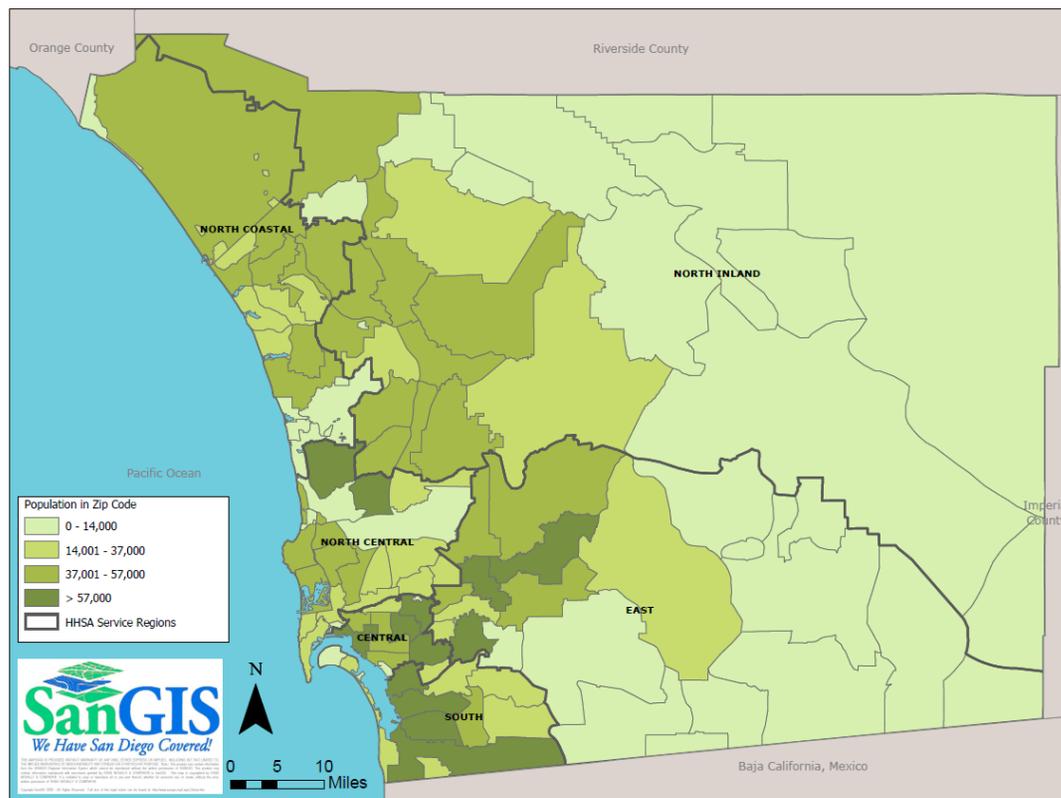
**San Diego County Population  
2014-2018**



HHSA Regions, 2018	Population	Percent
Central	517,791	15.5
East	485,507	14.6
North Central	665,375	19.9
North Coastal	562,268	16.9
North Inland	607,606	18.2
South	498,908	14.9
Total County Population	3,337,455	100.0

Demographics, 2018	Population	Percent
<b>Gender</b>		
Female	1,659,017	49.7
Male	1,678,438	50.3
<b>Age</b>		
0-4 years	220,967	6.6
5-14 years	448,627	13.4
15-24 years	492,562	14.8
25-44 years	877,636	26.3
45-64 years	815,913	24.4
65+ years	481,750	14.4
<b>Race/Ethnicity</b>		
American Indian or Alaska Native	15,164	0.5
Asian	364,144	10.9
Black	147,717	4.4
Hispanic	1,150,784	34.5
Native Hawaiian/Pacific Islander	14,712	0.4
White	1,525,400	45.7
Other	7,374	0.2
Two or More Races	112,160	3.4

**San Diego County Population by Zip Code, 2018**



**Source:**

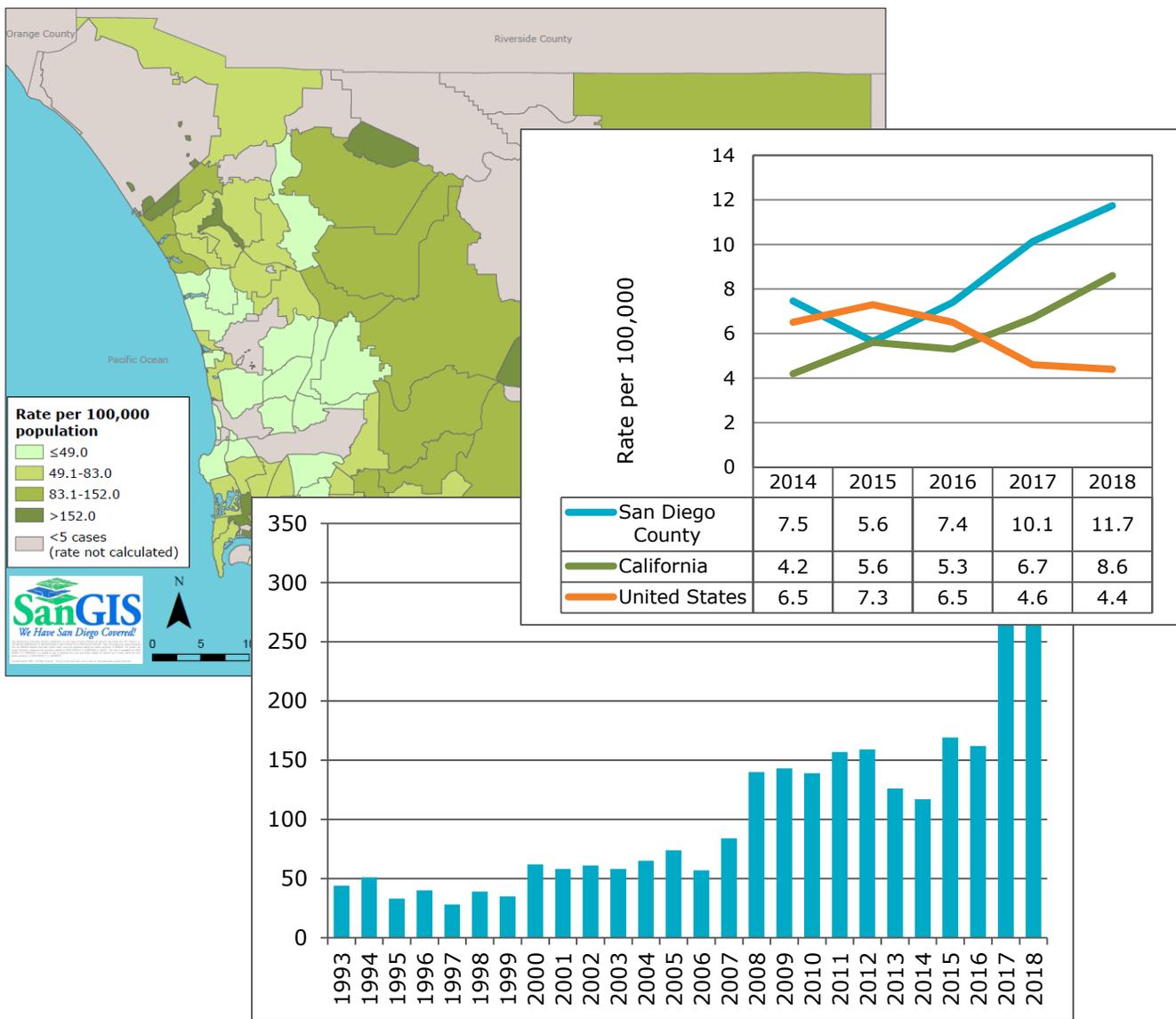
SANDAG population estimates, prepared July 2019. For more information on population estimates, including methodology, see [www.sandag.org](http://www.sandag.org).

**Notes:**

1. Race/ethnicity combines two variables collected separately, race and ethnicity. Persons of any race with Hispanic ethnicity are included in the Hispanic category. The other categories are non-Hispanic.
2. Population estimates by Health and Human Services Agency (HHSA) service regions are based on zip code of residence. See [Zip Codes by HHSA Service Region](#) at the end of the document.

# COMMUNICABLE DISEASE SUMMARIES

The following individual disease sections, listed alphabetically, are one-to-three page summaries that provide information and data about each disease using text, tables, and graphs. These descriptive summaries highlight 29 diseases that are commonly reported or are of particular public health interest.

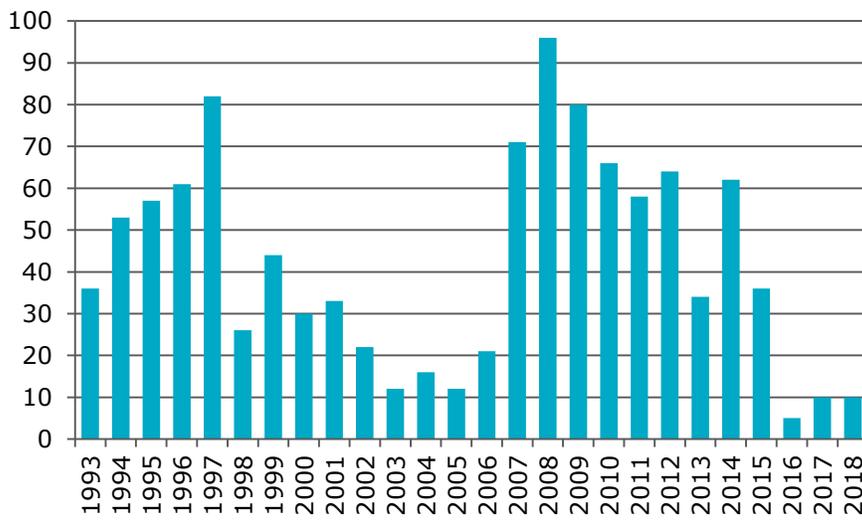


# AMEBIASIS

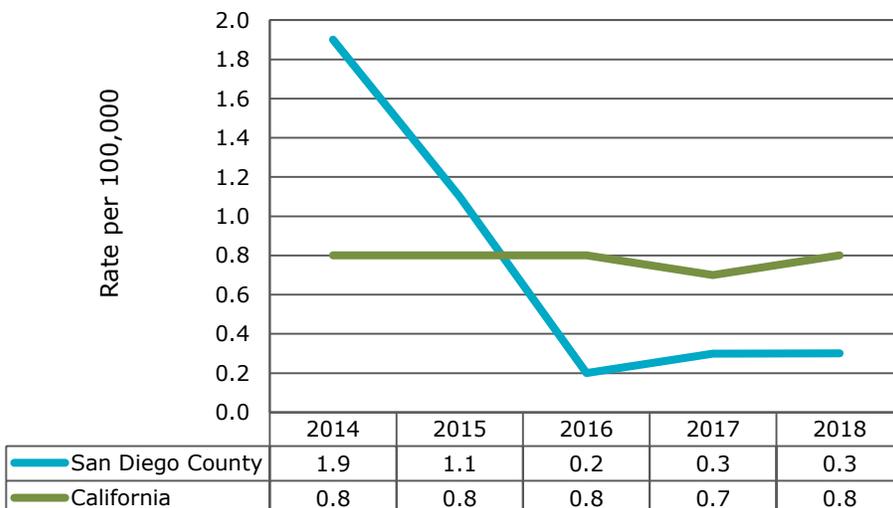
## Disease Info

**Infectious agent:** *Entamoeba histolytica*, a protozoan parasite  
**Incubation:** Usually 2-4 weeks, range of days to months or years  
**Mode of transmission:** Fecal-oral, either person-to-person contact or ingestion of food or water containing amebic cysts  
**Symptoms:** Frequently asymptomatic; gastrointestinal symptoms ranging from mild abdominal pain and diarrhea to severe abdominal pain, fever, and bloody or mucoid diarrhea; can cause extra-intestinal infection

**Amebiasis Cases, San Diego County  
1993-2018**



**Amebiasis Incidence, San Diego County and  
California, 2014-2018**



US incidence data are not available. Amebiasis is no longer nationally notifiable.

## Key Points

- There were 10 cases of amebiasis among San Diego County residents in 2018. The significant decline after 2015 was due to a change in the case review criteria used by the County of San Diego Epidemiology and Immunization Services Branch.
- The incidence rate of amebiasis among San Diego County residents, which dropped substantially in 2016, remained low at 0.3 per 100,000 population in 2018. Incidence in California was stable just below 1.0 per 100,000 population during the past five years.
- The increase in San Diego County cases in the mid-2000s was largely the result of initiation of reporting by a County-sponsored refugee health screening program.
- All 2018 San Diego County cases were in adults aged 25 years or older.

## For more information:

- [Centers for Disease Control and Prevention \(CDC\) Amebiasis website](#)
- [CDC Health Information for International Travel \(the Yellow Book\) - Amebiasis](#)
- [California Department of Public Health \(CDPH\) Amebiasis website](#)

## Notes:

1. The parasite *Entamoeba histolytica* cannot be distinguished by microscopy, which was long the standard diagnostic test, from *Entamoeba dispar*, which is not thought to cause similar disease. In 2016, San Diego County began counting confirmed cases with laboratory evidence of *E. histolytica* (e.g., via EIA, PCR) only. Counts for previous years include cases with laboratory results not distinguishing between *E. histolytica* and *E. dispar*.
2. Amebiasis is no longer nationally notifiable; it was notifiable between 1933 and 1994.

# CAMPYLOBACTERIOSIS

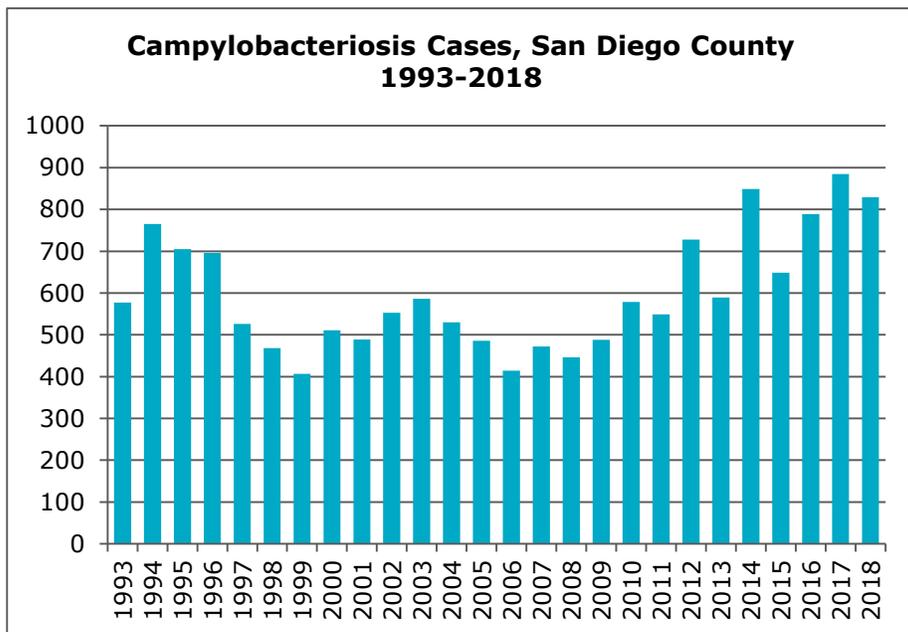
## Disease Info

**Infectious agent:** *Campylobacter* bacteria, most often *C. jejuni*

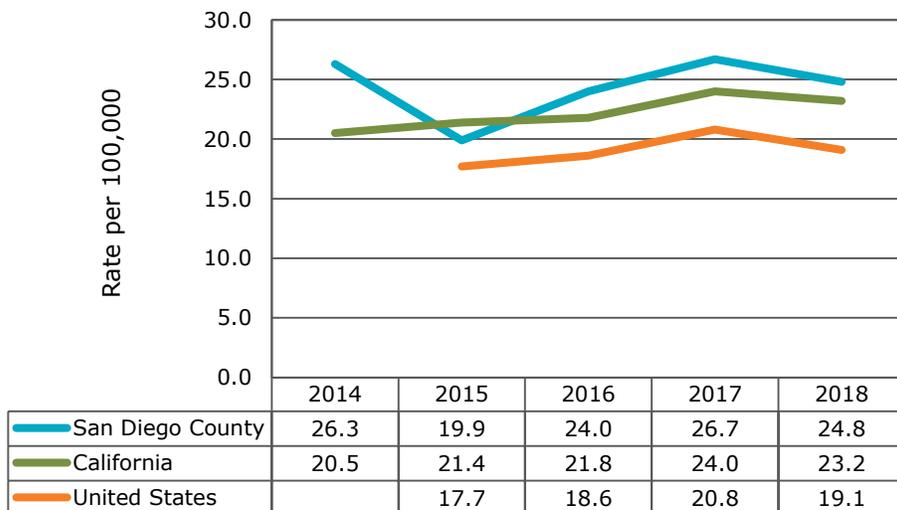
**Incubation:** Usually 2-5 days, range 1-10 days

**Mode of transmission:** Ingestion of raw or undercooked poultry, unpasteurized milk products, or other contaminated food/beverages; contact with an infected animal; rarely person-to-person via fecal-oral route

**Symptoms:** Diarrhea, sometimes bloody; abdominal cramps; fever; nausea; vomiting; may be asymptomatic



**Campylobacteriosis Incidence, San Diego County, California, and United States, 2014-2018**



## Key Points

- There were 829 campylobacteriosis cases reported among San Diego County residents in 2018. Counts have been higher in recent years, possibly related to increased use of culture-independent diagnostic testing (CIDT) methods.
- The San Diego County incidence rate decreased to 24.8 per 100,000 population in 2018. California incidence was slightly lower at 23.4. Since campylobacteriosis became nationally notifiable, county and state incidence rates have been consistently higher than national rates.
- Campylobacteriosis cases are most common during the summer and early fall in San Diego County; cases peaked in August in 2018.
- Although the highest case counts are among adults aged 25-64 years, the rate of infection is highest among young children under 5 years of age (37.1 per 100,000 population).
- Zip codes with higher incidence of campylobacteriosis can be found in many areas of the county.

## For more information:

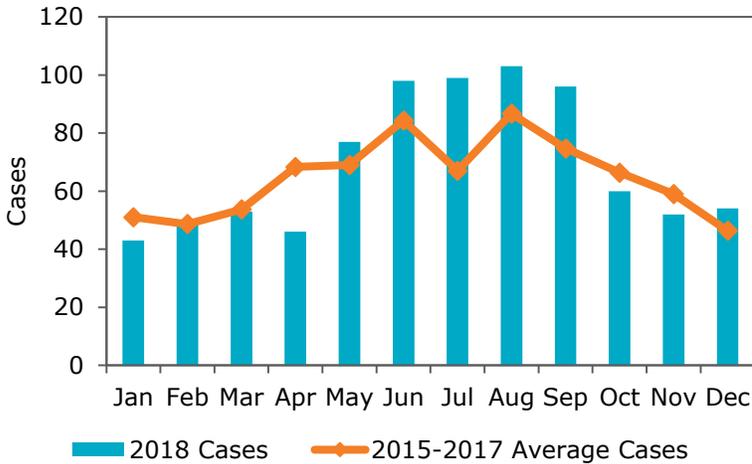
- [Centers for Disease Control and Prevention \(CDC\) Campylobacter website](#)
- [CDC/CSTE Campylobacteriosis Case Definition](#)
- [California Department of Public Health \(CDPH\) Campylobacteriosis website](#)
- [CDPH Food and Drug Branch Food Safety Program website](#)

## Notes:

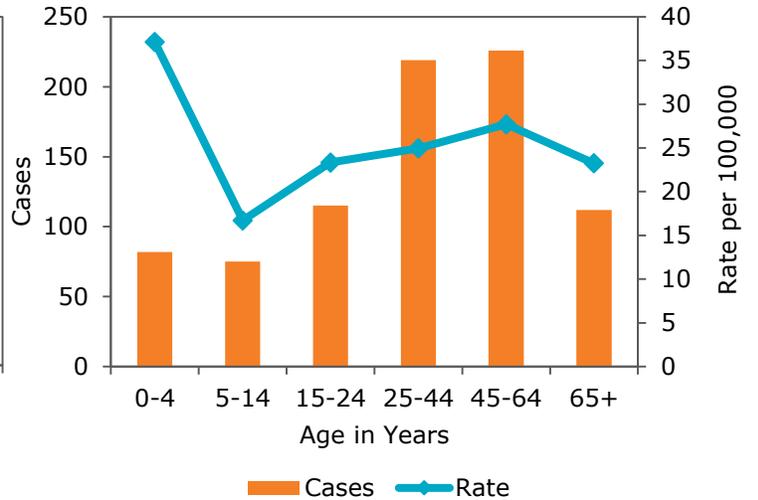
1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Campylobacteriosis has been nationally notifiable since 2015.
3. The Epidemiology Program tracks, but does not investigate most campylobacteriosis cases; clinical and epidemiological information is not available for San Diego County cases.

# CAMPYLOBACTERIOSIS

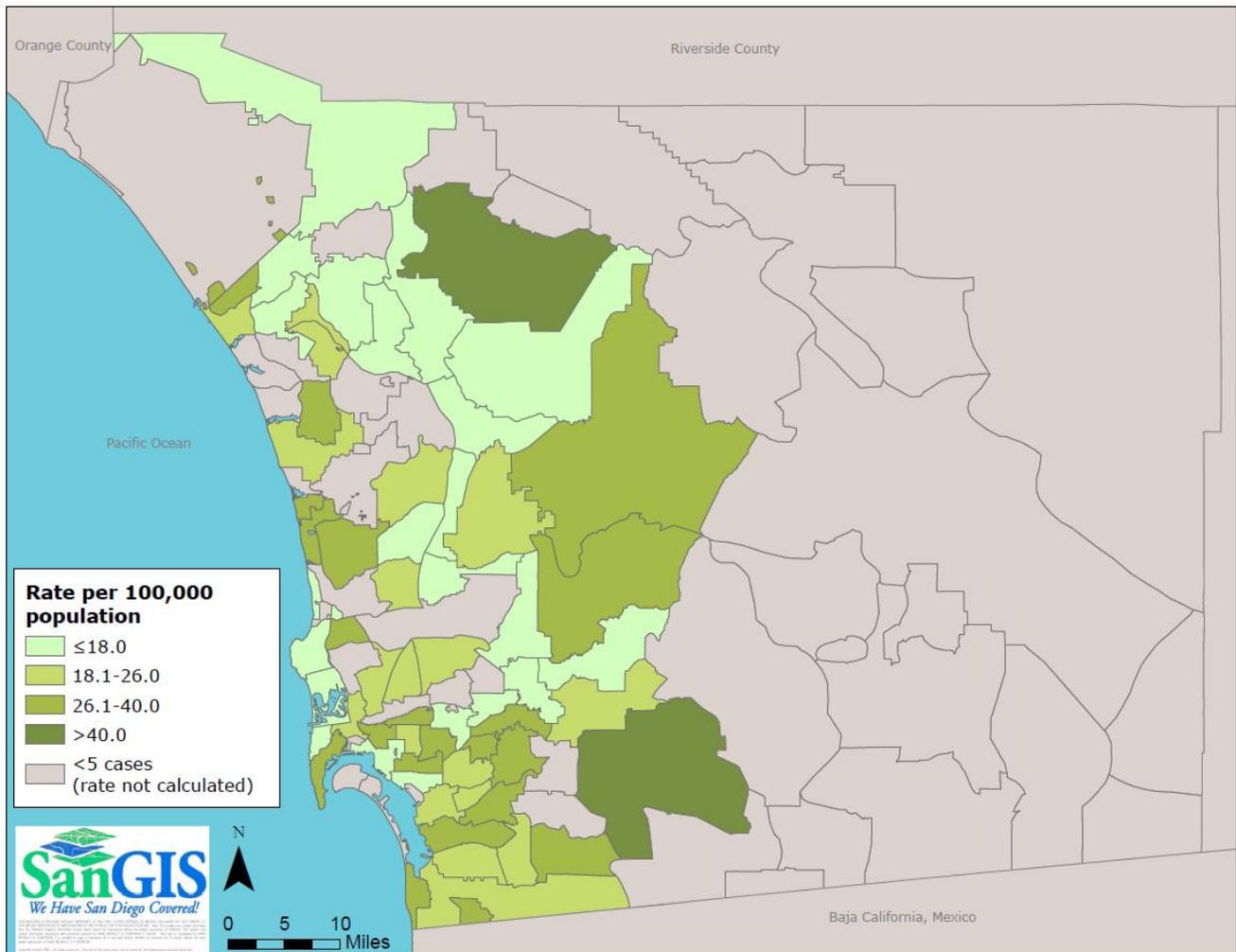
**Campylobacteriosis Cases by Month of Onset, San Diego County, 2018**



**Campylobacteriosis Cases and Rates by Age, San Diego County, 2018**



**Campylobacteriosis Rates by Zip Code, San Diego County, 2018**



# CHIKUNGUNYA VIRUS INFECTION

## Disease Info

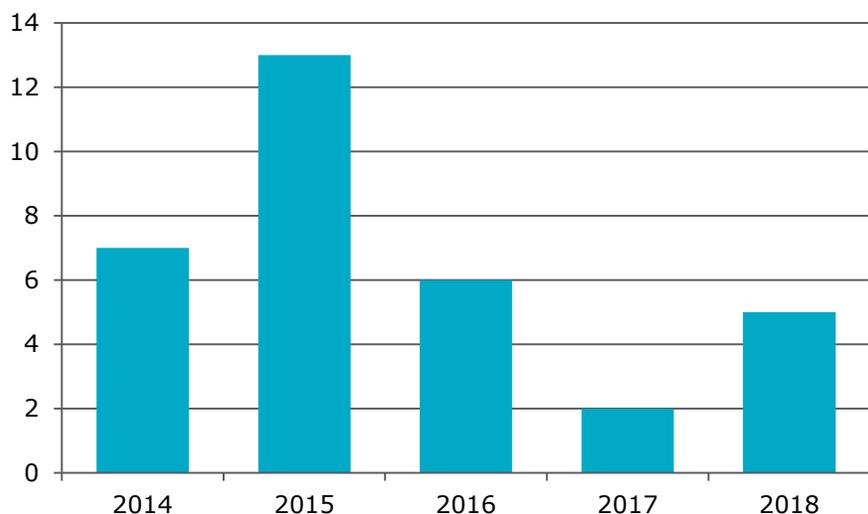
**Infectious agent:** Chikungunya virus, an RNA virus of the family *Togaviridae*

**Incubation:** Usually 3-7 days, range 1-12 days

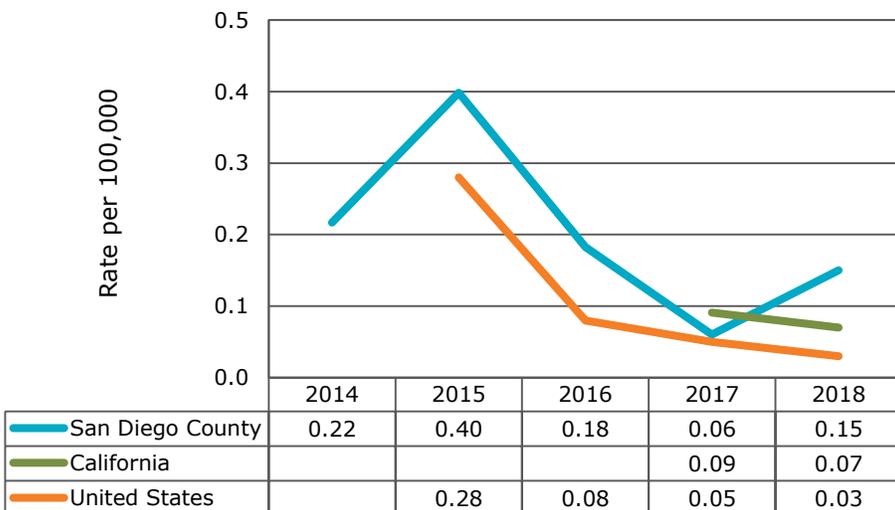
**Mode of transmission:** Bite of an infected *Aedes* mosquito, primarily *Aedes aegypti* and *Aedes albopictus*

**Symptoms:** Most commonly, fever and severe joint pain; also headaches, joint swelling, muscle pain, rash

**Chikungunya Cases, San Diego County  
2014-2018**



**Chikungunya Incidence, San Diego County,  
California, and United States, 2014-2018**



## Key Points

- There were five cases of chikungunya virus infection among San Diego County residents in 2018.
- There have been 33 chikungunya cases among San Diego County residents since the Epidemiology and Immunization Services Branch began tracking chikungunya in 2014. The virus was found in the Americas for the first time in late 2013.
- There were two San Diego County cases of chikungunya virus infection in 25-44 year-old adults and three cases in 45-64 year-old adults in 2018.
- Chikungunya virus is not endemic in San Diego County. Although invasive *Aedes* mosquitoes have been detected in the county, the 2018 cases were acquired during travel to Mexico, Central and South America, South Asia, and Oceania.

## For more information:

- [Centers for Disease Control and Prevention \(CDC\) Chikungunya website](#)
- [CDC Health Information for International Travel \(the Yellow Book\) - Chikungunya](#)
- [CDC/CSTE Chikungunya Case Definition \(Arboviral Diseases\)](#)
- [California Department of Public Health \(CDPH\) Chikungunya website](#)
- [CDPH Aedes Aegypti and Aedes Albopictus Mosquitos website](#)
- [County of San Diego Department of Environmental Health Invasive Aedes Mosquitoes website](#)
- [World Health Organization Chikungunya website](#)

## Notes:

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Chikungunya has been nationally notifiable since 2015. It was added to the list of diseases reportable under the umbrella of arboviral diseases, neuroinvasive and non-neuroinvasive.
3. Required reporting in California began in June 2016; thus, complete data for California are only available starting 2017.

# COCCIDIOIDOMYCOSIS

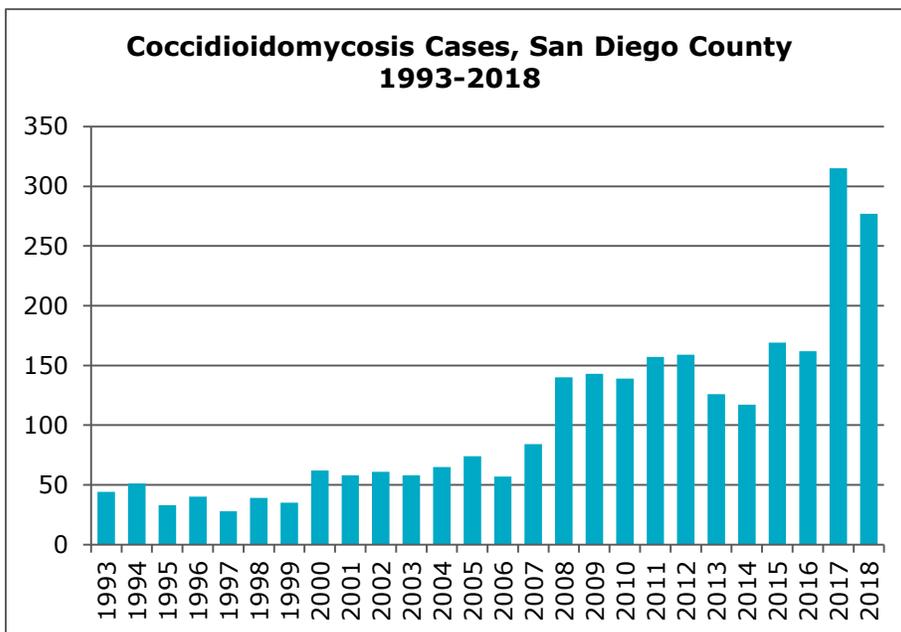
## Disease Info

**Infectious agent:** *Coccidioides immitis* and *Coccidioides posadasii*, fungi

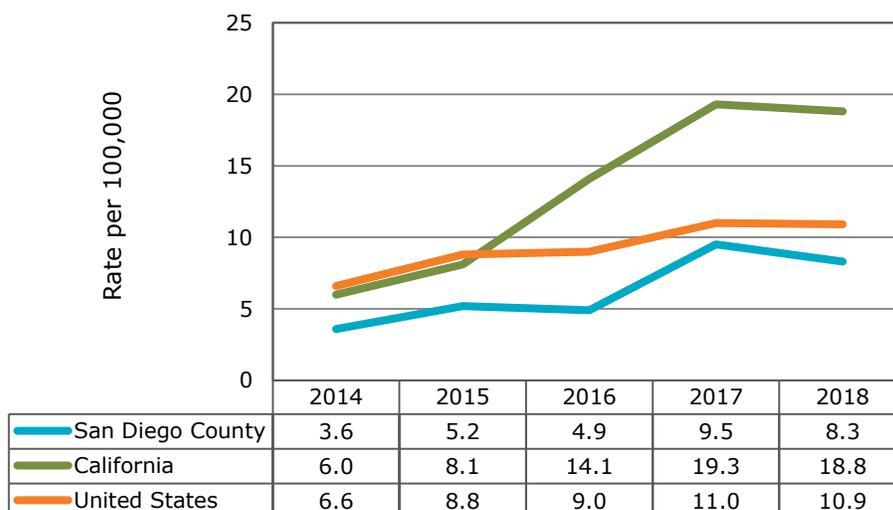
**Incubation:** Range 1-3 weeks

**Mode of transmission:** Inhalation of fungal spores from soil or airborne dust

**Symptoms:** Fatigue, cough, fever, shortness of breath, headache, night sweats, muscle aches or joint pain, rash; in rare instances, disseminated disease involves skin and soft tissues, bones, joints, or central nervous system. Disease can be acute or chronic. Approximately 60% of infections are asymptomatic.



**Coccidioidomycosis Incidence, San Diego County, California, and United States, 2014-2018**

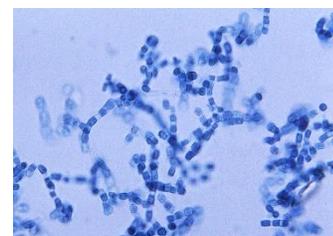


## Key Points

- A total of 277 coccidioidomycosis cases were reported among San Diego County residents in 2018. Case counts increased sharply starting in 2017 and remained high in 2018. This increase may be attributed to changes in a combination of factors related to the environment, human activity, and diagnostics.
- In 2018, the incidence rate was lower in San Diego County (8.3 per 100,000) compared to California (18.8 per 100,000) and the United States (10.9 per 100,000).
- In 2018, the onset of disease for almost half (45.8%) of acute coccidioidomycosis cases occurred during the months of January and February.
- Incidence rates were highest among older age groups. The incidence rate among 45-64 year olds was 15.7 per 100,000 population; the incidence rate among persons ages 65 years and over was 16.4 per 100,000 population.
- Incidence rates of coccidioidomycosis are highest in the southern part of the county.
- In 2018, three percent of case-patients were reported to be incarcerated.

## For more information:

- [Centers for Disease Control and Prevention \(CDC\) Coccidioidomycosis website](#)
- [California Department of Public Health \(CDPH\) Coccidioidomycosis website](#)
- [CDC/CSTE Coccidioidomycosis Case Definition](#)

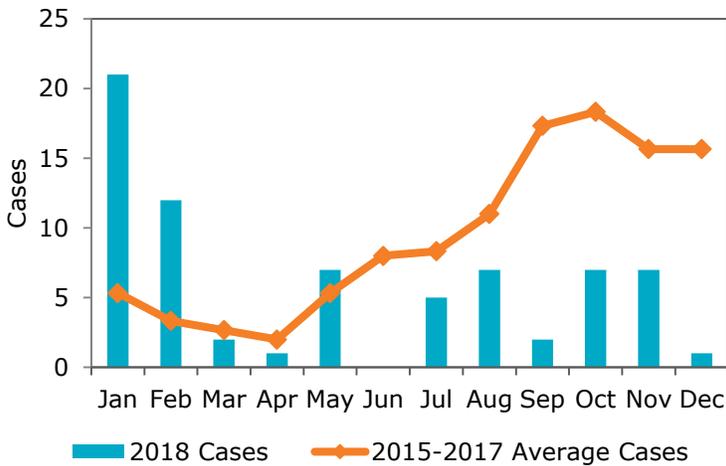


Photomicrograph of *Coccidioides* (environmental form).

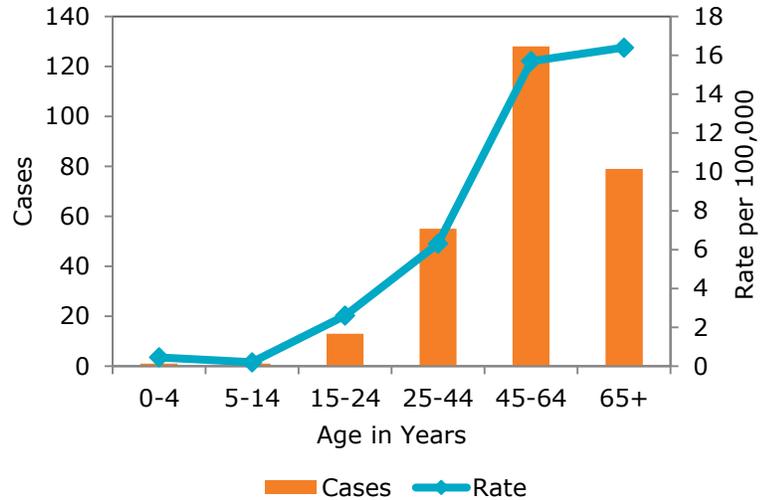
Content from: CDC/Dr. Lucille K. Georg, CDC Public Health Image Library

# COCCIDIOIDOMYCOSIS

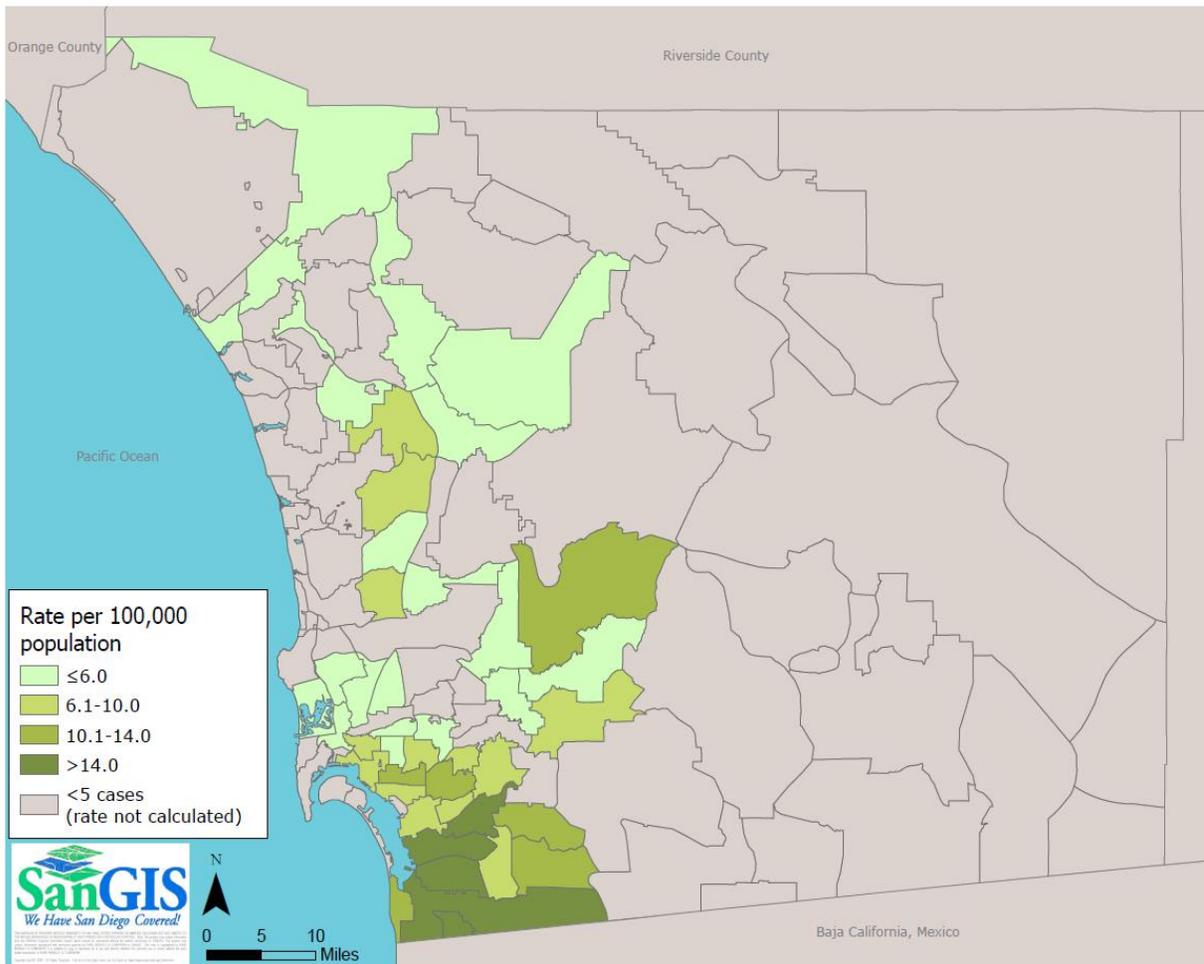
**Acute Coccidioidomycosis Cases by Month of Onset, San Diego County, 2018**



**Coccidioidomycosis Cases and Rates by Age, San Diego County, 2018**



**Coccidioidomycosis Rates by Zip Code of Residence, San Diego County, 2016-2018**



**Notes:**

1. Counts include confirmed cases (acute and chronic) following the CDC/CSTE case criteria.
2. Coccidioidomycosis became nationally reportable in 1995.
3. Case criteria were revised in 2008, removing the requirement for a rising titer for coccidioidal immunoglobulin G results.
4. Date of symptom onset is available for acute cases (n=72 in 2018).
5. San Diego County reports case counts to CDPH. CDPH deduplicates reported cases from across the state. San Diego County works with CDPH to align case counts by removing cases previously reported in another jurisdiction. Differences may still exist between CDPH and county counts at any point in time.

Cases indicating a detention facility as the address of residence are excluded from the calculation of rates by zip code.

# CRYPTOSPORIDIOSIS

## Disease Info

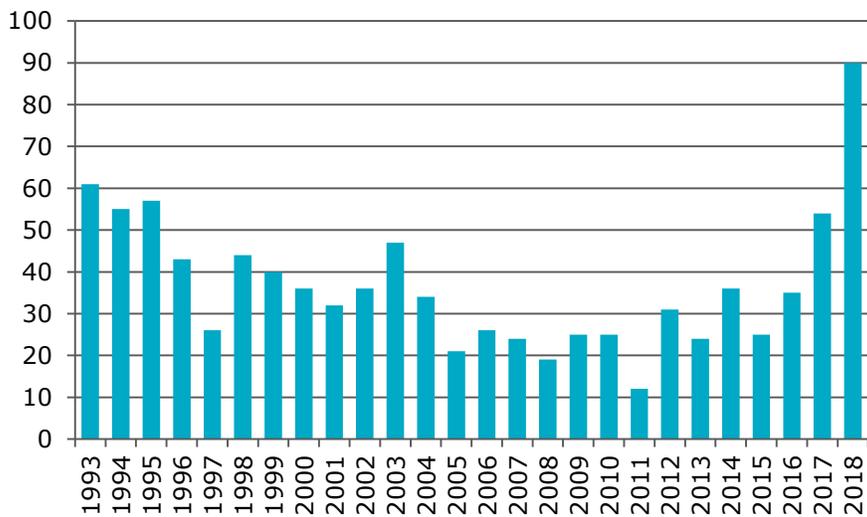
**Infectious agent:** *Cryptosporidium* parasites, most frequently *C. parvum* or *C. hominis*

**Incubation:** Usually about 7 days, range 1-12 days

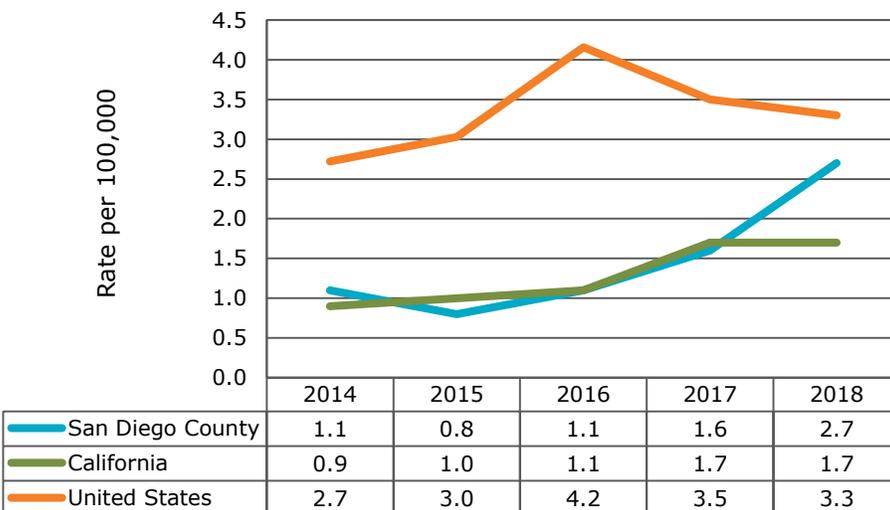
**Mode of transmission:** Fecal-oral route; person-to-person, food or water contaminated by feces, exposure to recreational water

**Symptoms:** Watery diarrhea, abdominal cramps, nausea, vomiting, dehydration, fever; people with compromised immune systems may experience more serious illness

**Cryptosporidiosis Cases, San Diego County  
1993-2018**



**Cryptosporidiosis Incidence, San Diego County,  
California, and United States, 2014-2018**



## Key Points

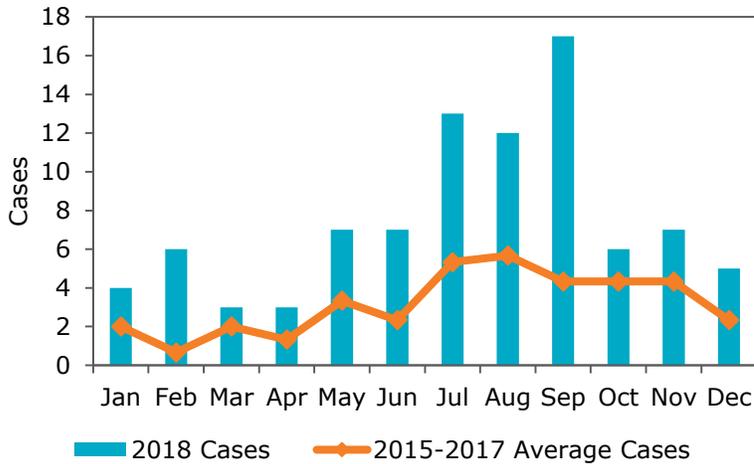
- There were 90 reported cases of cryptosporidiosis among San Diego County residents in 2018, almost three times the average of 29 cases per year over the previous 10 years.
- The national incidence rate of cryptosporidiosis dropped to 3.3 per 100,000 population in 2018 after peaking in 2016. California incidence rates remained steady in 2018 at 1.7 per 100,000 population while San Diego County increased to 2.7 per 100,000 in 2018.
- San Diego County cases peaked during September 2018. Cryptosporidiosis cases are most commonly seen during the summer months.
- The highest cryptosporidiosis case count and rate in 2018 were among 25-44 year olds (3.4 per 100,000).
- Most San Diego County residents infected with cryptosporidiosis in 2018 had diarrhea (90%). Other common symptoms, reported by more than 50% of case-patients, were abdominal pain and nausea.
- Thirty-eight percent of cases were immune compromised and approximately 17% were hospitalized. There were fewer hospitalizations in 2018 compared with 2017 (33%). Those who were immune compromised were more likely to be hospitalized—32% compared to 9% of the immunocompetent.

## For more information:

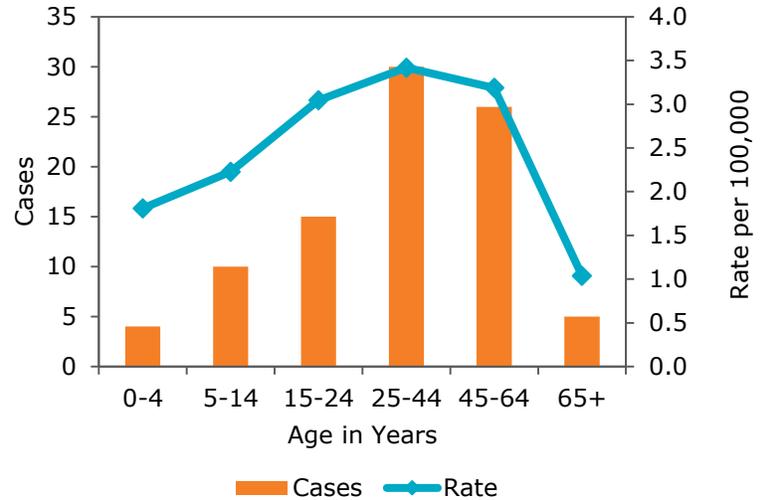
- [Centers for Disease Control and Prevention \(CDC\) Cryptosporidiosis website](#)
- [CDC Healthy Water website](#)
- [CDC Health Information for International Travel \(the Yellow Book\) – Cryptosporidiosis](#)
- [CDC/CSTE Cryptosporidiosis Case Definition](#)
- [California Department of Public Health \(CDPH\) Cryptosporidiosis website](#)

# CRYPTOSPORIDIOSIS

**Cryptosporidiosis Cases by Month of Onset, San Diego County, 2018**

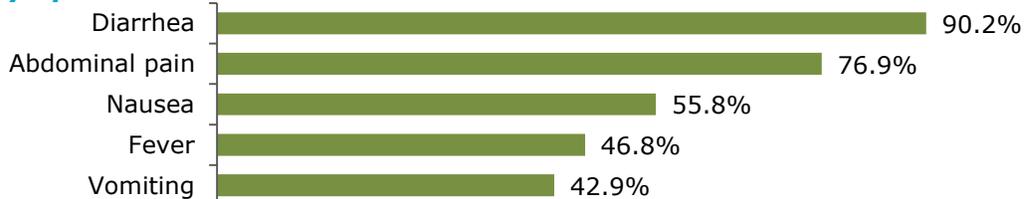


**Cryptosporidiosis Cases and Rates by Age, San Diego County, 2018**



**Clinical and Risk Characteristics Reported by Cryptosporidiosis Case-Patients, San Diego County, 2018**

**Symptoms**



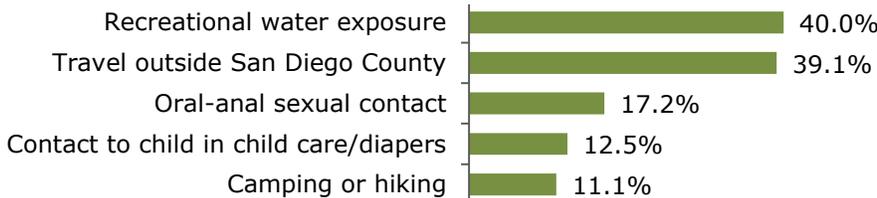
**Other Clinical Features**



**Hospitalization by Immune Status**



**Risk Factors**



**Notes:**

- Counts include confirmed and probable cases following the CDC/CSTE case criteria.
- Cryptosporidiosis has been nationally notifiable since 1995.
- Denominators for clinical and risk characteristics calculations are cases with available information, ranging from 58-82 of 90 total cases. Seventy-one cases had complete information for both hospitalization and immune status; different denominators are used for calculation of these percentages. Risk factors are potential exposures mentioned by case-patients, not confirmed sources of infection.

# DENGUE VIRUS INFECTION

## Disease Info

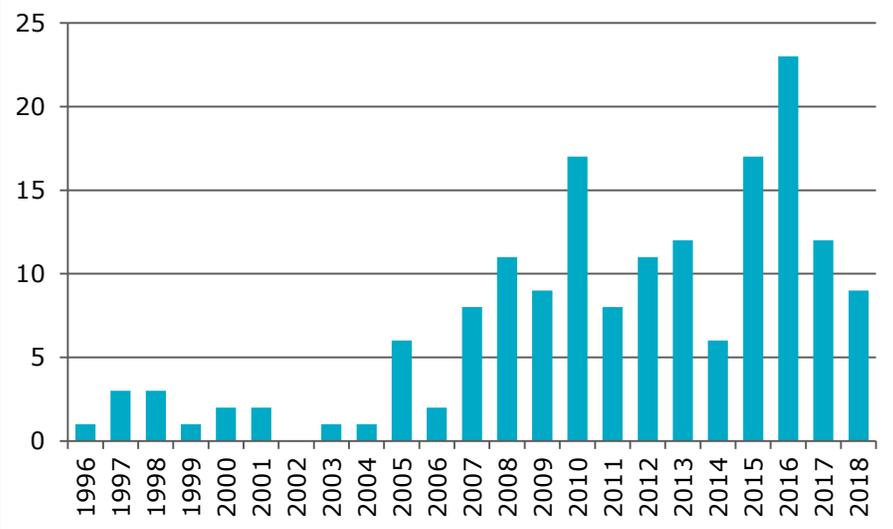
**Infectious agent:** Four closely related dengue virus serotypes (DENV1-4), flaviviruses

**Incubation:** Usually 4-7 days, range 3-14 days

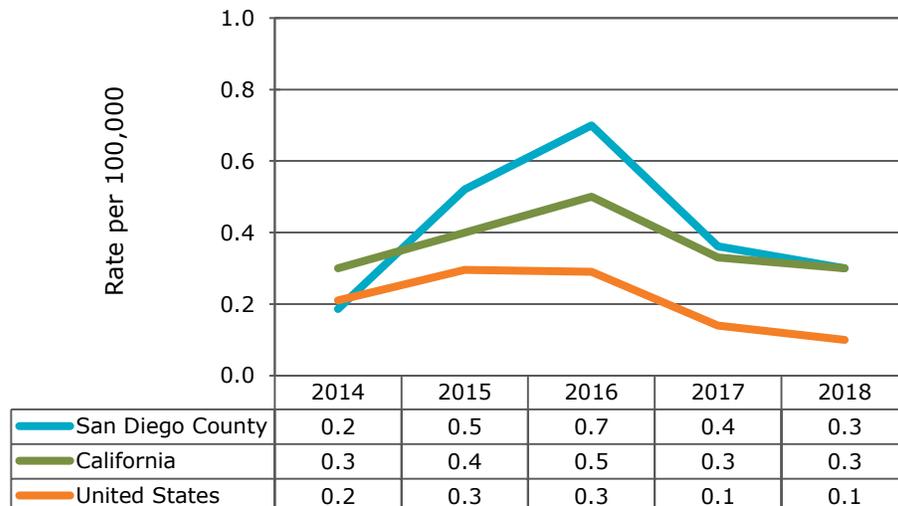
**Mode of transmission:** Bite of an infected *Aedes* mosquito, primarily *Aedes aegypti* and *Aedes albopictus*

**Symptoms:** Fever, headaches, eye pain, joint pain, muscle pain, rash, minor bleeding, nausea and vomiting; the more severe, hemorrhagic form of disease may result in shock, fluid accumulation, and respiratory distress

**Dengue Cases, San Diego County  
1996-2018**



**Dengue Incidence, San Diego County, California,  
and United States, 2014-2018**



## Key Points

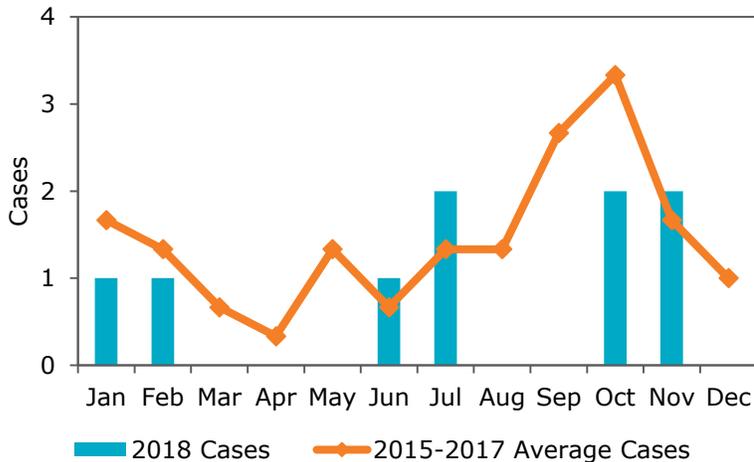
- There were 9 cases of dengue virus infection among San Diego County residents in 2018, lower than the average of 14 cases per year over the previous 5 years.
- After increasing to 0.7 cases per 100,000 population in 2016, the incidence rate of dengue among San Diego County residents dropped to 0.4 per 100,000 in 2017 and then to 0.3 per 100,000 in 2018. Trends were similar, though less pronounced, in California and the United States, with California and San Diego County incidence rates converging in 2018.
- Dengue is not endemic in San Diego County. Although invasive *Aedes* mosquitos have been detected in the county, all 9 cases in 2018 were acquired during travel to Asia and the Pacific, Mexico, Africa, the Caribbean, and South America.
- Although more San Diego County cases were reported during the summer and fall in 2018, the seasonal trend was not as strong as previous years.
- In 2018, dengue case-patients ranged in age from 15 to 64 years (median=34 years). The highest number was among those aged 25-44 years.
- The most common symptom was fever, reported by 78% of San Diego County case-patients.



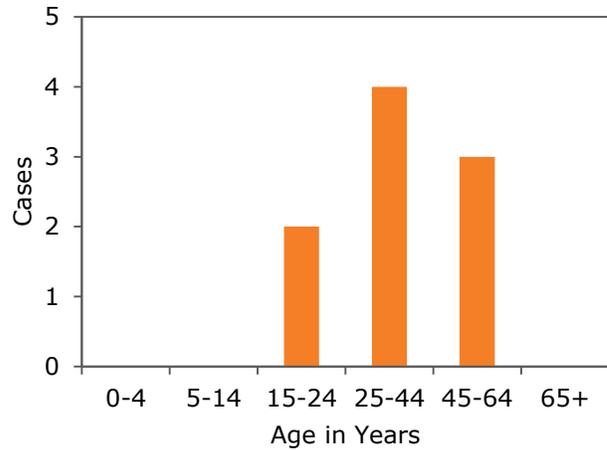
Female *Aedes aegypti* mosquito  
Photo credit: CDC/James Gatheny, Public Health Image Library

# DENGUE VIRUS INFECTION

**Dengue Cases by Month of Onset, San Diego County, 2018**



**Dengue Cases by Age, San Diego County, 2018**



**Select Characteristics of Dengue Cases, San Diego County, 2018**

Characteristic	Cases	Percent
<b>Symptoms</b>		
Fever (and/or sweats/chills)	7	77.8
Headache	6	66.7
Rash	4	44.4
Muscle pain	4	50.0
Diarrhea	4	50.0
Joint pain	3	37.5
Nausea or vomiting	3	42.9
Eye pain	2	25.0
Abdominal pain	2	25.0
<b>Hospitalized</b>		
	3	33.3
<b>Travel location</b>		
Asia/Pacific	4	44.4
Mexico	2	22.2
Africa	1	11.1
Caribbean	1	11.1
South America	1	11.1

**Notes:**

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Dengue has been nationally notifiable since 2010.
3. Rates not calculated by age group due to counts <5.
4. An outbreak of Zika virus, another flavivirus, in the Americas beginning in 2015 may have resulted in increased testing for and detections of dengue virus as well as Zika virus, due to their similar clinical presentations and transmission by the same mosquitos.
5. Travel information was available for all 9 cases and clinical information was available for most cases; 9 is the denominator for the travel calculations and the denominator ranged from 7-9 for the clinical calculations.
6. Information on dengue serotype was not available for most cases.

**For more information:**

- [Centers for Disease Control and Prevention \(CDC\) Dengue website](#)
- [CDC Health Information for International Travel \(the Yellow Book\) – Dengue](#)
- [CDC/CSTE Dengue Case Definition](#)
- [California Department of Public Health \(CDPH\) Dengue website](#)
- [CDPH Aedes Aegypti and Aedes Albopictus Mosquitos website](#)
- [County of San Diego Department of Environmental Health Invasive Aedes Mosquitos website](#)
- [World Health Organization Dengue website](#)

# ENCEPHALITIS

## Disease Info

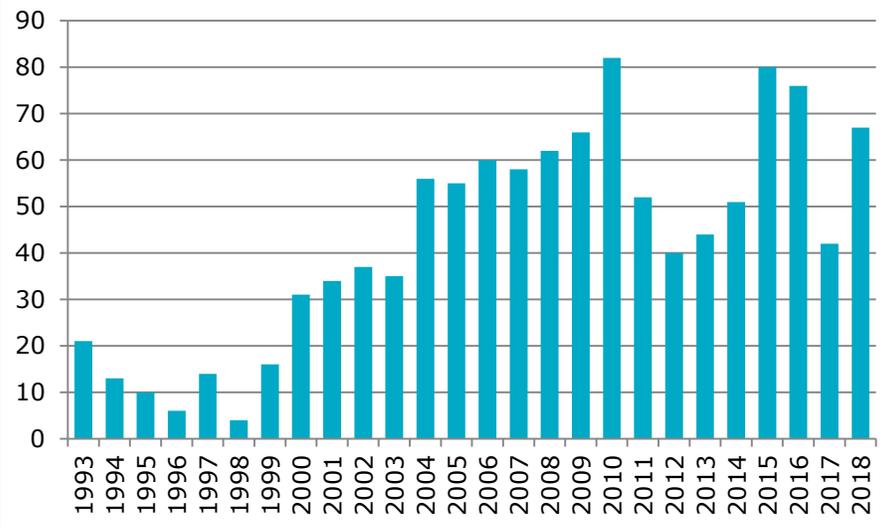
**Infectious agent:** Causes of encephalitis include viruses, bacteria, fungus, and parasites; the etiology is often not identified

**Incubation:** Depends on the agent

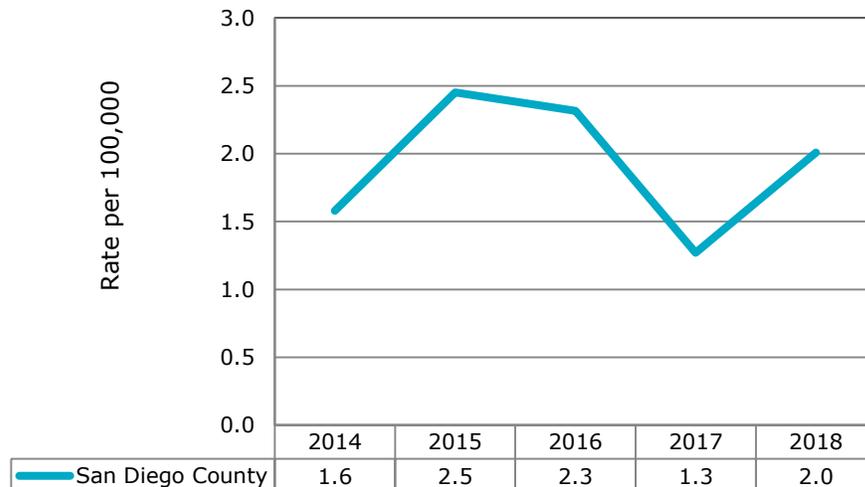
**Mode of transmission:** Depends on the agent

**Symptoms:** Sudden onset of fever, headache, vomiting, sensitivity to light, stiff neck and back; more severe cases can develop problems with speech or hearing, vision problems, and hallucinations; can progress to loss of consciousness, seizures, muscle weakness, or sudden severe dementia

**Encephalitis Cases, San Diego County  
1993-2018**



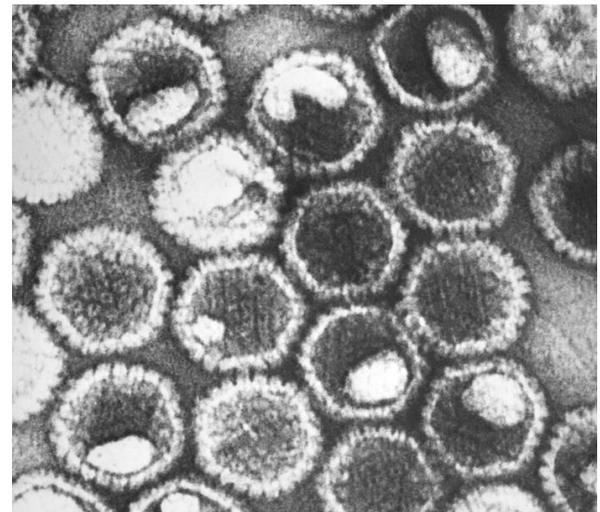
**Encephalitis Incidence, San Diego County,  
2014-2018**



US and CA incidence data are not available. Encephalitis is not nationally reportable.

## Key Points

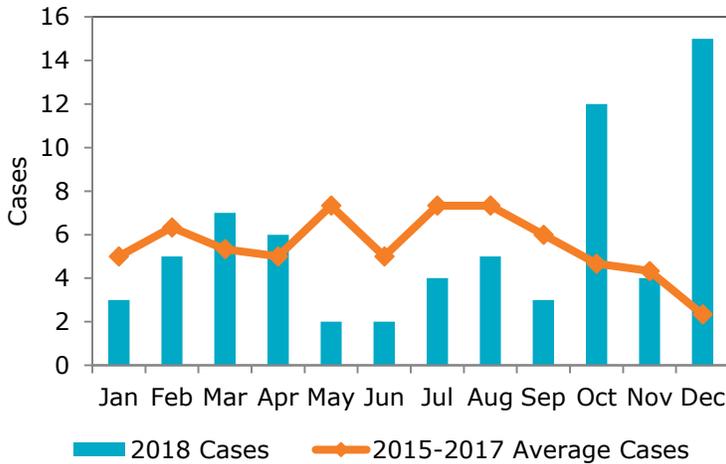
- In 2018, 67 cases of encephalitis were reported among residents of San Diego County. This is an increase of 60% compared to the previous year (42 cases).
- The incidence rate of encephalitis in San Diego County in 2018 was 2.0 per 100,000 population.
- A seasonal trend for encephalitis cases was not observed in 2018. Case counts were highest in October (12 cases) and December (15 cases).
- The majority of case-patients (70%) in 2018 were aged 45 years and older. Incidence rates were highest among those aged 65 years and older (5.8 per 100,000).
- The majority of cases in 2018 (70%) did not have a causative agent identified.
- Viral/aseptic infections accounted for 31% of cases, ten of which had herpes simplex virus identified as a causative agent. Viral/aseptic infections include non-bacterial and non-fungal infections; not all have a causative agent identified.



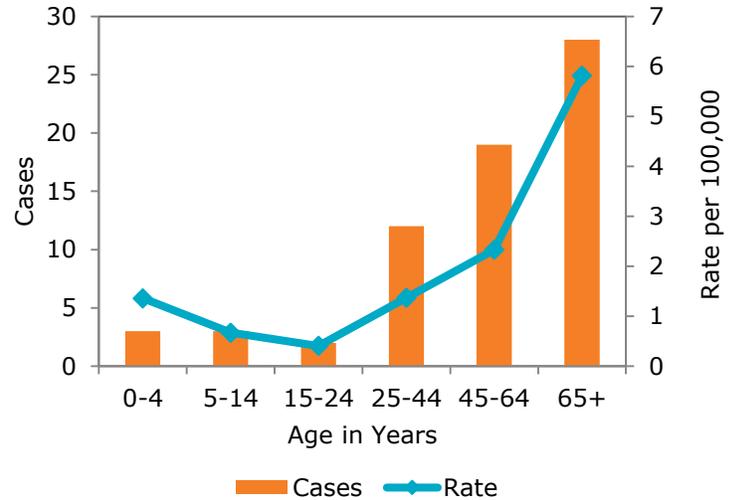
Negative-stained transmission electron microscopic (TEM) image of numerous herpes simplex virions, members of the Herpesviridae virus family. Photo credit: CDC/ Dr. Fred Murphy; Sylvia Whitfield, Public Health Image Library

# ENCEPHALITIS

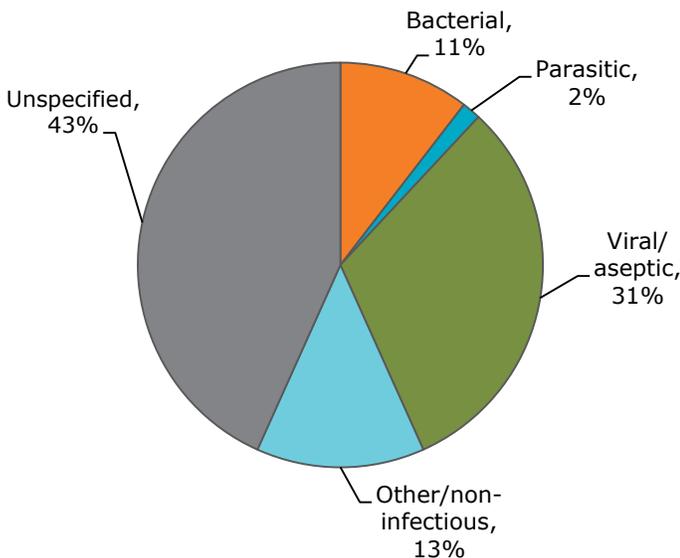
**Encephalitis Cases by Month of Onset, San Diego County, 2018**



**Encephalitis Cases and Rates by Age, San Diego County, 2018**



**Encephalitis Cases by Type, San Diego County, 2018**



**Notes:**

1. Counts include confirmed cases of encephalitis of specific arboviral etiology following the CDC/CSTE case criteria and confirmed cases of aseptic/viral, bacterial, fungal, parasitic, non-infectious/other, and unknown etiologies following local case criteria.
2. Data presented for encephalitis do not include cases of encephalitis due to other infectious reportable diseases. For example, these data do not include cases of West Nile virus. Information on West Nile virus encephalitis is provided in a separate section of this report.
3. Non-infectious/other etiologies include cancer, lupus, certain drugs, head injury, brain surgery, leaking shunt, postinfectious or postimmunization encephalitis or encephalomyelitis including acute disseminated encephalomyelitis, and anti-N-methyl-D-aspartate receptor.
4. Encephalitis, of all types, was removed from the list of nationally notifiable diseases and conditions in 1995, though encephalitis caused by arboviruses remains notifiable.

**For more information:**

- [Centers for Disease Control and Prevention \(CDC\) Tick-borne Encephalitis website](#)
- [CDC Eastern Equine Encephalitis website](#)
- [CDC Japanese Encephalitis website](#)
- [CDC La Crosse Encephalitis website](#)
- [CDC Saint Louis Encephalitis website](#)
- [California Department of Public Health \(CDPH\) Saint Louis Encephalitis website](#)
- [CDC/CSTE Encephalitis Case Definition](#)
- [National Institute of Neurological Disorders and Stroke Meningitis and Encephalitis Information Page](#)

# GIARDIASIS

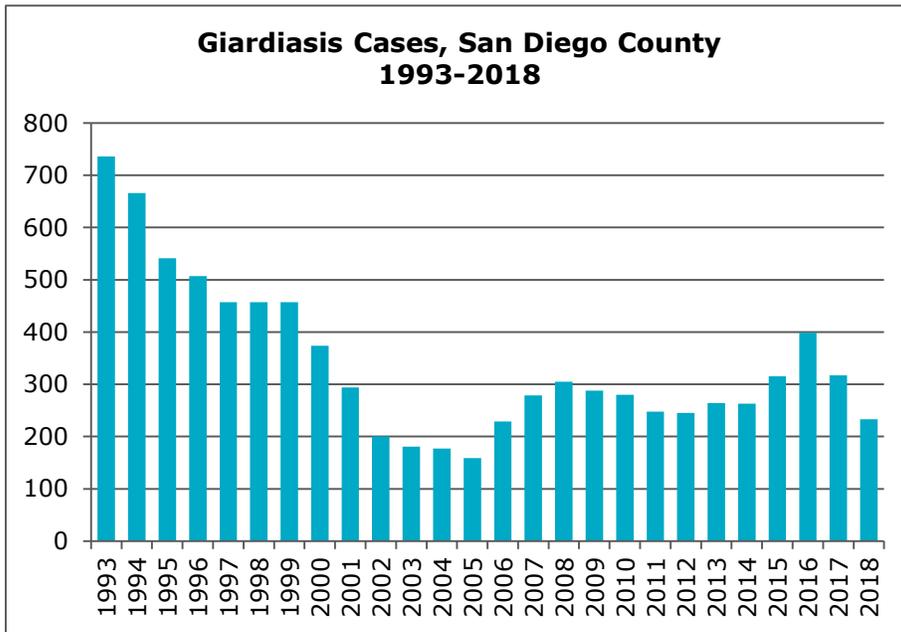
## Disease Info

**Infectious agent:** *Giardia lamblia*, also known as *Giardia intestinalis* and *Giardia duodenalis*, a parasite

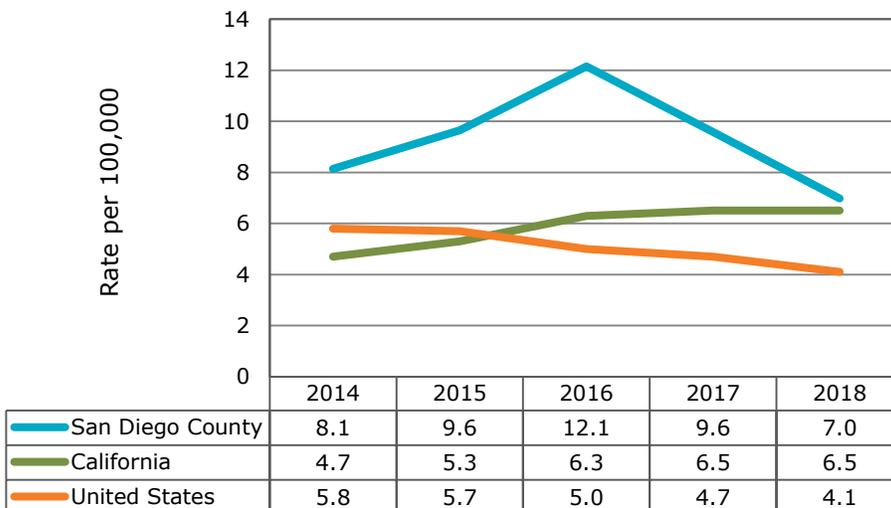
**Incubation:** Usually 3-25 days

**Mode of transmission:** Fecal-oral; ingestion of contaminated food or water, including untreated drinking water or recreational water sources; person-to-person (e.g., day care/diapers, sexual activity)

**Symptoms:** Diarrhea, abdominal cramps, nausea, gas, fatigue, weight loss, dehydration; can be asymptomatic



**Giardiasis Incidence, San Diego County, California, and United States, 2014-2018**



## Key Points

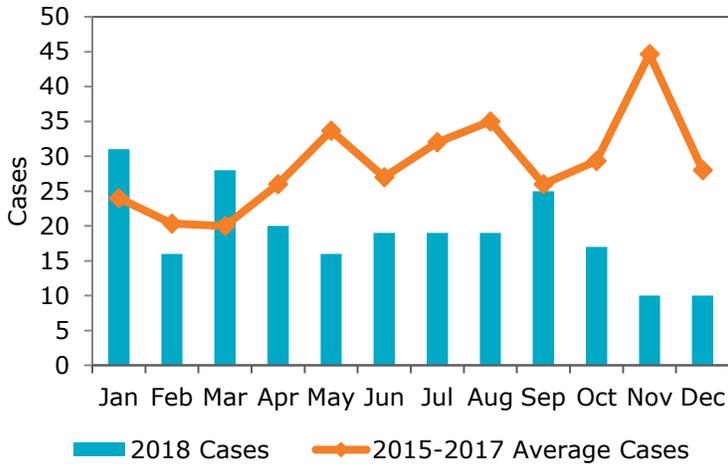
- In 2018, there were 233 cases of giardiasis in San Diego County. This is a decrease of 26% compared to the previous year (317 cases).
- The incidence rate of giardiasis in San Diego County decreased in 2018 (7.0 per 100,000) and was similar to that of California (6.5 per 100,000). This rate was higher than the national rate.
- In recent years, there has been no consistent seasonal pattern in giardiasis cases in San Diego County.
- In San Diego County, while case counts were highest among 25-44 year olds (77 cases), rates were highest among children aged four years and younger (10.0 per 100,000).
- A County-sponsored refugee health screening program began reporting cases of giardiasis in mid-2006. In 2018, 8% of cases reported in San Diego County were among refugees.
- Risk factors reported by case-patients included eating out (73%), eating fresh fruits (76%) and raw vegetables (63%), exposure to animals (59%), and travel (47%). Another group at risk are men who have sex with men (21%).
- Rates of giardiasis were highest among residents of the Central and South HHS Regions of San Diego County.

## Notes:

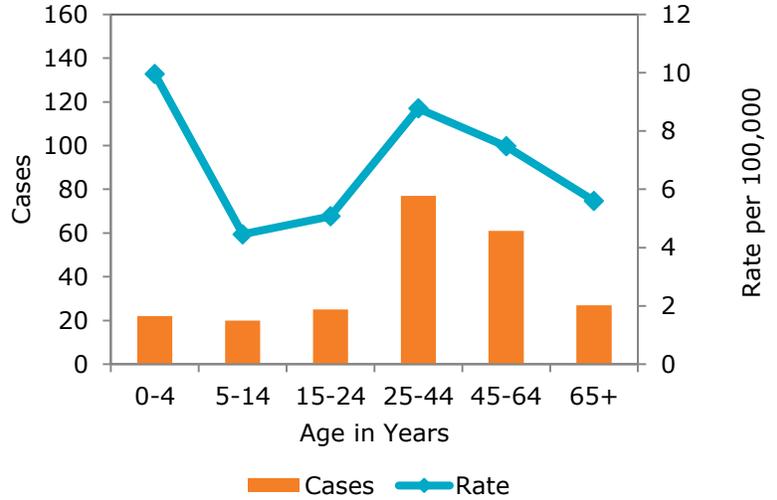
1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Giardiasis became nationally notifiable in 2002.
3. Denominators for risk factor calculations are cases with available information, ranging from 122-233 of 233 total cases.
4. Risk factors are potential sources as reported by case-patients, not confirmed sources of infection.

# GIARDIASIS

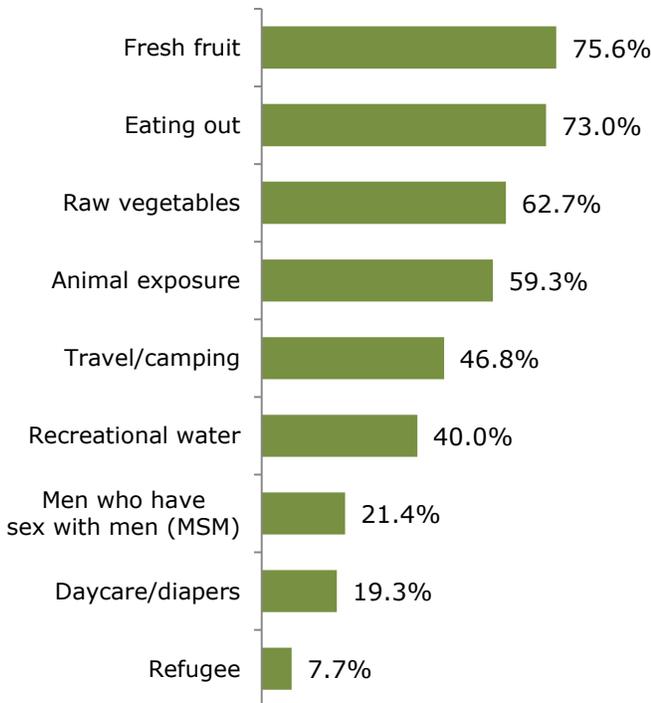
**Giardiasis Cases by Month of Onset, San Diego County, 2018**



**Giardiasis Cases and Rates by Age, San Diego County, 2018**



**Risk Factors Reported by Giardiasis Case-Patients, San Diego County, 2018**



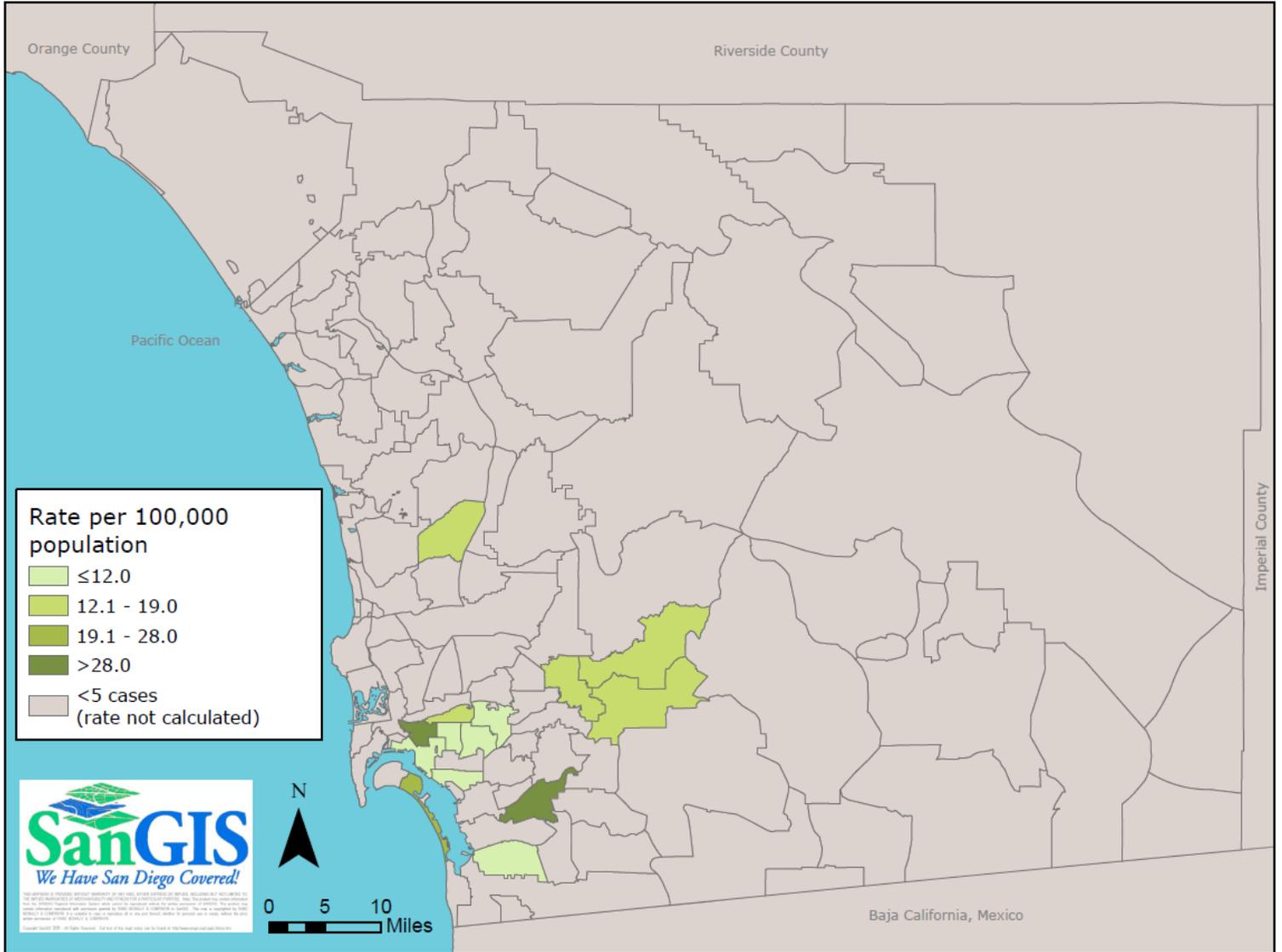
Scanning electron microscopic (SEM) image depicting the dorsal (upper) surface of a *Giardia* protozoan. Photo credit: Dr. Stan Erlandsen, Dr. Dennis Feely, Public Health Image Library

**For more information:**

- [Centers for Disease Control and Prevention \(CDC\) Giardia website](#)
- [CDC Health Information for International Travel \(the Yellow Book\) – Giardiasis](#)
- [California Department of Public Health \(CDPH\) Giardiasis website](#)
- [CDC/CSTE Giardiasis Case Definition](#)

# GIARDIASIS

## Giardiasis Rates by Zip Code of Residence, San Diego County, 2018



# HEPATITIS A

## Disease Info

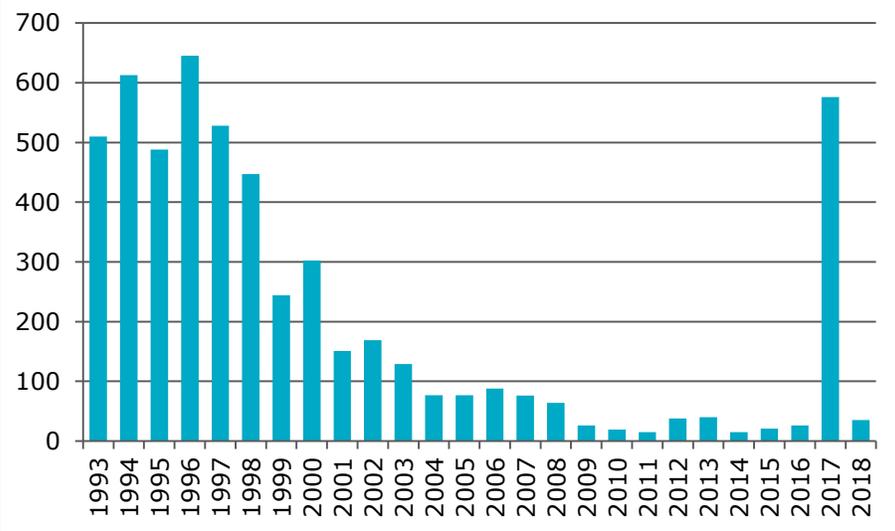
**Infectious agent:** Hepatitis A virus, a picornavirus

**Incubation:** Usually 28-30 days, range 15-50 days

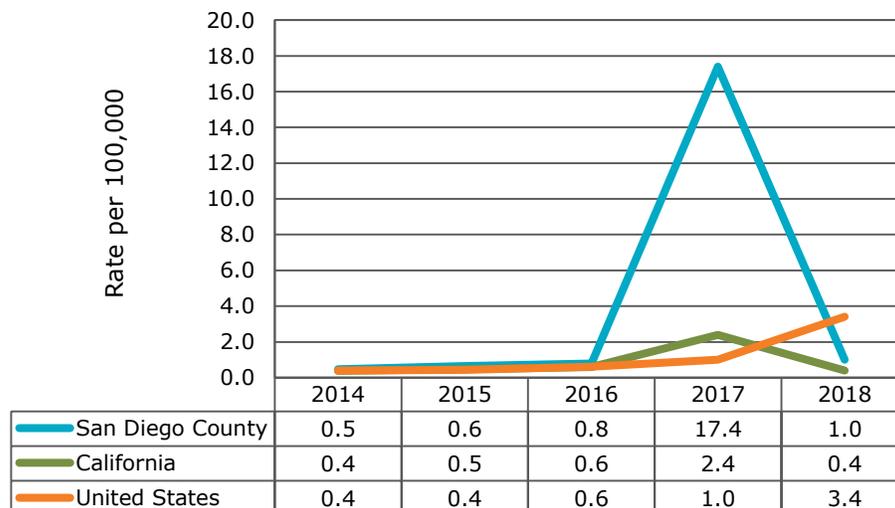
**Mode of transmission:** Person-to-person via the fecal-oral route; food or water contaminated by feces

**Symptoms:** Jaundice, fever, fatigue, loss of appetite, nausea, vomiting, abdominal pain, dark urine, clay-colored stool; may be asymptomatic, particularly in young children

**Hepatitis A Cases, San Diego County  
1993-2018**



**Hepatitis A Incidence, San Diego County,  
California, and United States, 2014-2018**



## Key Points

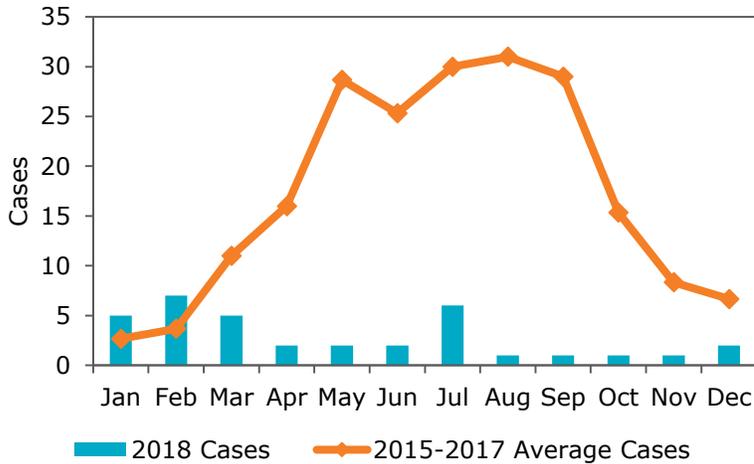
- There were 35 cases among San Diego County residents in 2018. Introduction of the hepatitis A vaccine in 1995 and adoption of routine vaccination of children in California in 1999 resulted in a reduction of case counts until 2017. A large outbreak associated primarily with persons experiencing homelessness and persons using illicit drugs started in November 2016 and ended in October 2018.
- San Diego County incidence decreased to 1.0 per 100,000 in 2018, while national incidence increased to 3.4 per 100,000 population.
- In 2018, case counts peaked between January and March and again in July.
- Since children are routinely vaccinated against hepatitis A, most cases are now in adults; in 2018, the highest counts and rates were among adults aged 25-44 years.
- Symptoms reported by at least two-thirds of San Diego County case-patients in 2018 included jaundice, abdominal pain, dark urine, loss of appetite, and fatigue.
- Although the outbreak is over, persons experiencing homelessness and persons using illicit drugs remain at increased risk for hepatitis A. Fifty percent of all 2018 cases were either homeless or illicit drug users.

## For more information:

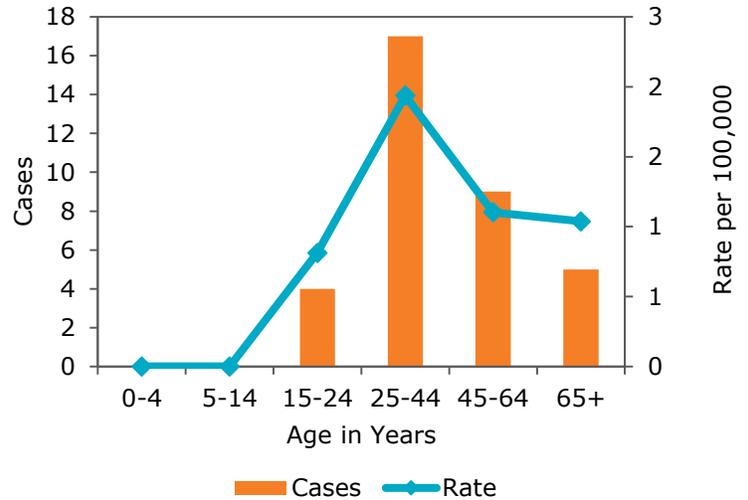
- [Centers for Disease Control and Prevention \(CDC\) Hepatitis A website](#)
- [Epidemiology and Prevention of Vaccine-Preventable Diseases \(the Pink Book\) – Hepatitis A](#)
- [CDC Health Information for International Travel \(the Yellow Book\) – Hepatitis A](#)
- [CDC/CSTE Hepatitis A Case Definition](#)
- [California Department of Public Health \(CDPH\) Hepatitis A website](#)
- [County of San Diego Hepatitis A website](#)

# HEPATITIS A

**Hepatitis A Cases by Month of Onset, San Diego County, 2018**

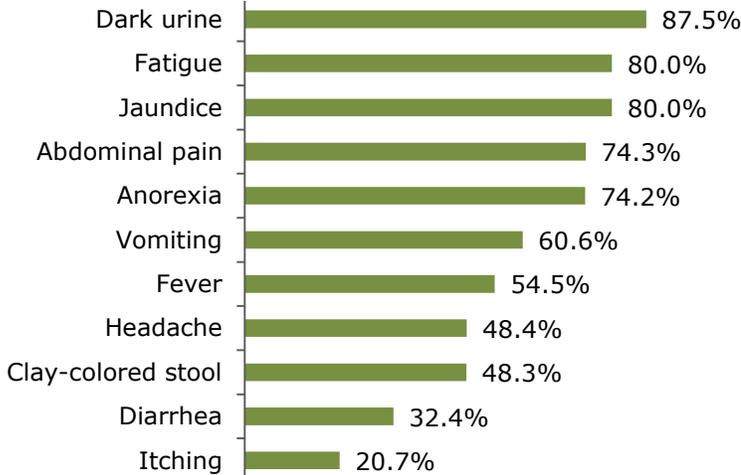


**Hepatitis A Cases and Rates by Age, San Diego County, 2018**

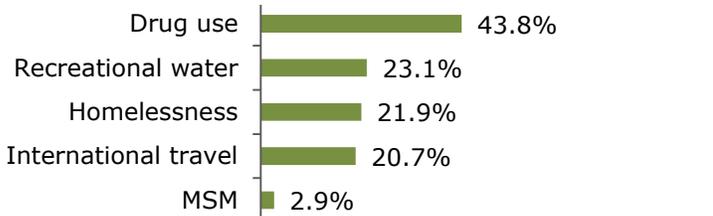


**Select Characteristics Reported by Hepatitis A Case-Patients, San Diego County, 2018**

**Symptoms**



**Risk Factors**



**71% HOSPITALIZED  
2018**

**Notes:**

- Counts include confirmed cases following the CDC/CSTE case criteria. Hepatitis A has been nationally notifiable since 1966.
- Hepatitis A is vaccine-preventable. The vaccine became available in the United States in 1995, was recommended as a routine vaccination for children in high-incidence states (including California) starting in 1999, and was recommended as a routine vaccination for all children beginning in 2006.
- Denominators for symptom and risk factor calculations are cases with available information, ranging from 26 to 35 of 35 total cases. MSM refers to men who had sex with men during their exposure period.
- Risk factors are potential sources as reported by case-patients, not confirmed sources of infection. Categories are not mutually exclusive. Recreational water refers to participation in aquatic activities such as surfing or swimming in the ocean, water parks, etc.

# HEPATITIS B

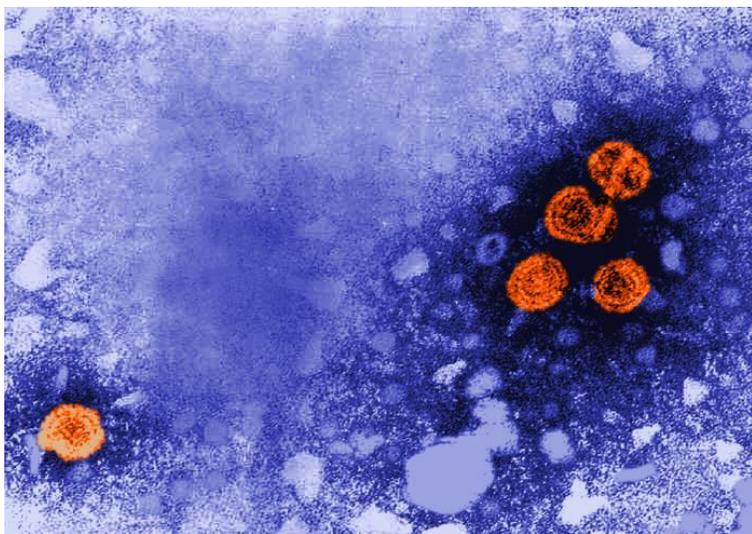
## Disease Info

**Infectious agent:** Hepatitis B virus, a member of the family Hepadnaviridae

**Incubation:** Usually 45-180 days, range 2 weeks-9 months

**Mode of transmission:** Person-to-person through percutaneous or mucosal contact with infected blood, semen, or other body fluid. This includes activities such as sex with an infected partner, sharing of drug-injection equipment (needles, syringes, etc.), birth to an infected mother (perinatal), direct contact with blood or open sores of an infected person, needle sticks, sharing of items such as razors or toothbrushes with an infected person.

**Symptoms:** Acute symptoms include fever, fatigue, loss of appetite, nausea, vomiting, abdominal pain, dark urine, light or gray stools, joint pain, jaundice; 1-2% of infected persons develop fulminant hepatitis; approximately 50% of acute infections are asymptomatic. Can lead to chronic infection, which is often asymptomatic. Complications can include cirrhosis, liver failure, and hepatocellular carcinoma.



Digitally-colored transmission electron microscopic (TEM) image showing the presence of hepatitis B virions. The large round orange-colored virions are known as Dane particles.

Photo credit: CDC/Dr. Erskine Palmer, Public Health Image Library

## Key Points

### Acute Hepatitis B

- There were nine cases of acute hepatitis B infection in San Diego County in 2018, a decrease of 90% from 92 cases in 1993.
- In 1991, a national strategy was implemented to eliminate hepatitis B virus infection in the United States, which included the routine vaccination of children. This has resulted in a decline in acute hepatitis B cases since the early 1990s, particularly among children born since 1991.
- In recent years, incidence rates of acute hepatitis B in San Diego County have been low and are comparable to rates for California. In 2018, the incidence in San Diego County was 0.3 per 100,000 population.
- All 9 cases of acute hepatitis B in 2018 were among adults aged 25 years and older.

### Chronic Hepatitis B

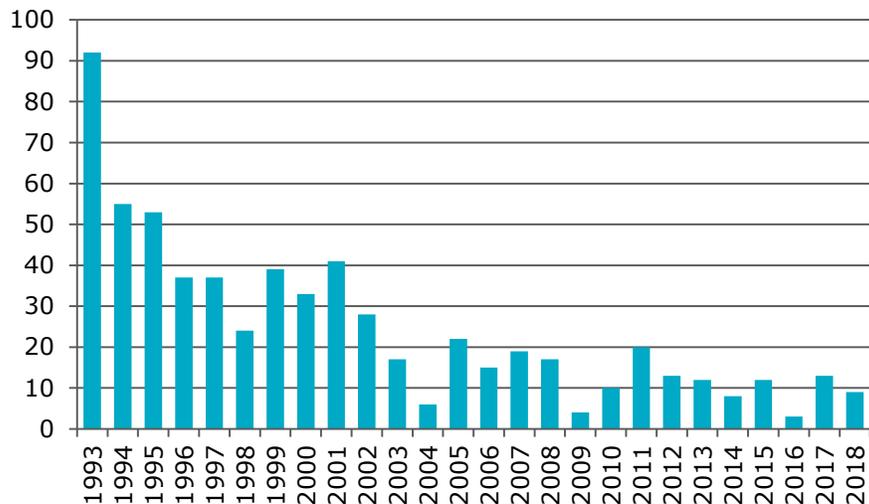
- In 2018, there were 866 cases of chronic hepatitis B reported among residents of San Diego County.
- The greatest number of newly reported cases in 2018 was in persons between the ages of 25-44 years and 45-64 years (328 cases).
- Rates of newly reported cases were highest in the Central and North Central HHS Regions of San Diego County.

## For more information:

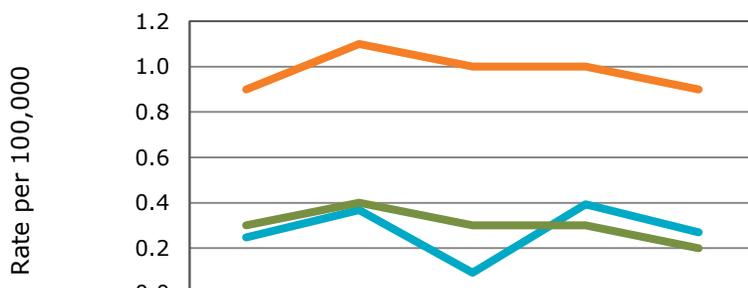
- [Centers for Disease Control and Prevention \(CDC\) Hepatitis B website](#)
- [California Department of Public Health \(CDPH\) Hepatitis B website](#)
- [CDC Hepatitis B Perinatal Transmission webpage](#)
- [CDC/CSTE Acute Hepatitis B Case Definition](#)
- [CDC/CSTE Chronic Hepatitis B Case Definition](#)
- [CDC/CSTE Perinatal Hepatitis B Virus Infection Case Definition](#)
- [Epidemiology and Prevention of Vaccine-Preventable Diseases \(the Pink Book\) – Hepatitis B Virus](#)
- [CDC Hepatitis B Vaccination webpage](#)

# HEPATITIS B, ACUTE

**Acute Hepatitis B Cases, San Diego County, 1993-2018**



**Acute Hepatitis B Incidence, San Diego County, California, and United States, 2014-2018**



	2014	2015	2016	2017	2018
San Diego County	0.2	0.4	0.1	0.4	0.3
California	0.3	0.4	0.3	0.3	0.2
United States	0.9	1.1	1.0	1.0	0.9

**Notes:**

1. Acute hepatitis B case counts include confirmed cases following the CDC/CSTE case criteria. In 2012, the case definition was changed, eliminating the requirement of acute clinical presentation for patients with a negative hepatitis B surface antigen laboratory test within six months prior to a positive hepatitis B virus test.
2. Acute hepatitis B infections became nationally notifiable in 1966.
3. Chronic hepatitis B case counts include confirmed and probable cases following the CDC/CSTE case criteria. Changes have been made to the case definition as additional laboratory testing became available.
4. Chronic hepatitis B virus infection became nationally notifiable in 2003.
5. San Diego County chronic hepatitis B case counts include the first report of a diagnosis of chronic hepatitis B infection for a unique individual to the health department. National case counts for chronic hepatitis B may include duplicate case reports.
6. Counts and rates for acute and chronic hepatitis B infections include perinatal hepatitis B virus infections that meet case criteria.
7. In 2017, the case definition for perinatal HBV infections was changed to include HBeAg and HBV DNA laboratory tests.
8. Hepatitis B infection is vaccine-preventable. Currently, recombinant hepatitis B vaccines are used in the U.S., the first of which was licensed in the U.S. in 1986. In 1981, a plasma-derived vaccine was licensed in the U.S., but was removed from the market in 1992.

**Perinatal Hepatitis B Infections**

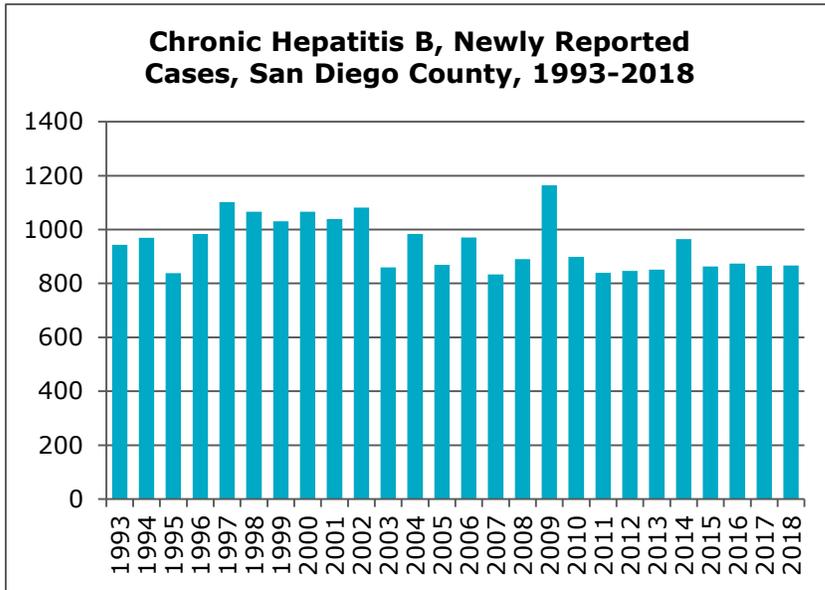
Pregnant women infected with the hepatitis B virus (HBV) can transmit the infection to their infant at birth, either through vaginal delivery or through cesarean section. To prevent perinatal transmission, national guidelines in the United States include the following recommendations:

1. Universal screening of pregnant women at each pregnancy.
2. HBV DNA screening of pregnant women positive for HBsAg to guide the use of maternal antiviral therapy.
3. Case management of mothers who test positive for HBV surface antigen as well as their infants.
4. Postexposure immunoprophylaxis within 12 hours of birth for infants born to HBV-infected mothers.
5. Routine vaccination of all infants with the HBV vaccine series, starting with the first dose at birth.
6. HBsAg and anti-HBs testing should be performed one to two months after completion of the vaccine series at age nine to 12 months.

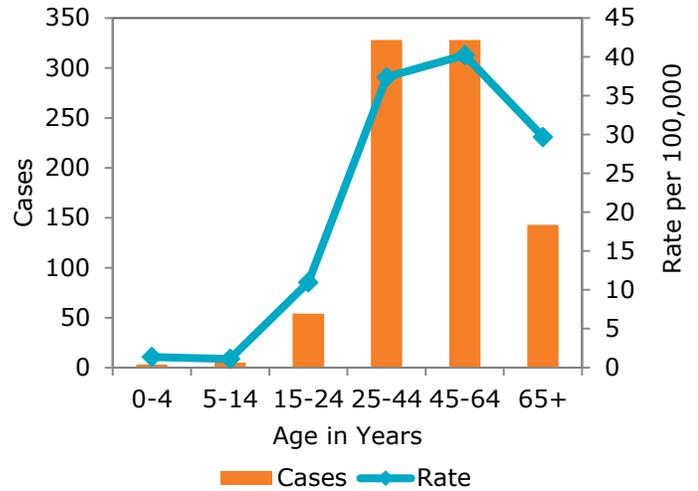
In 2018, there were no cases of perinatal HBV infection in San Diego County. Nationally, 15 cases of perinatal infection were reported.

# HEPATITIS B, CHRONIC

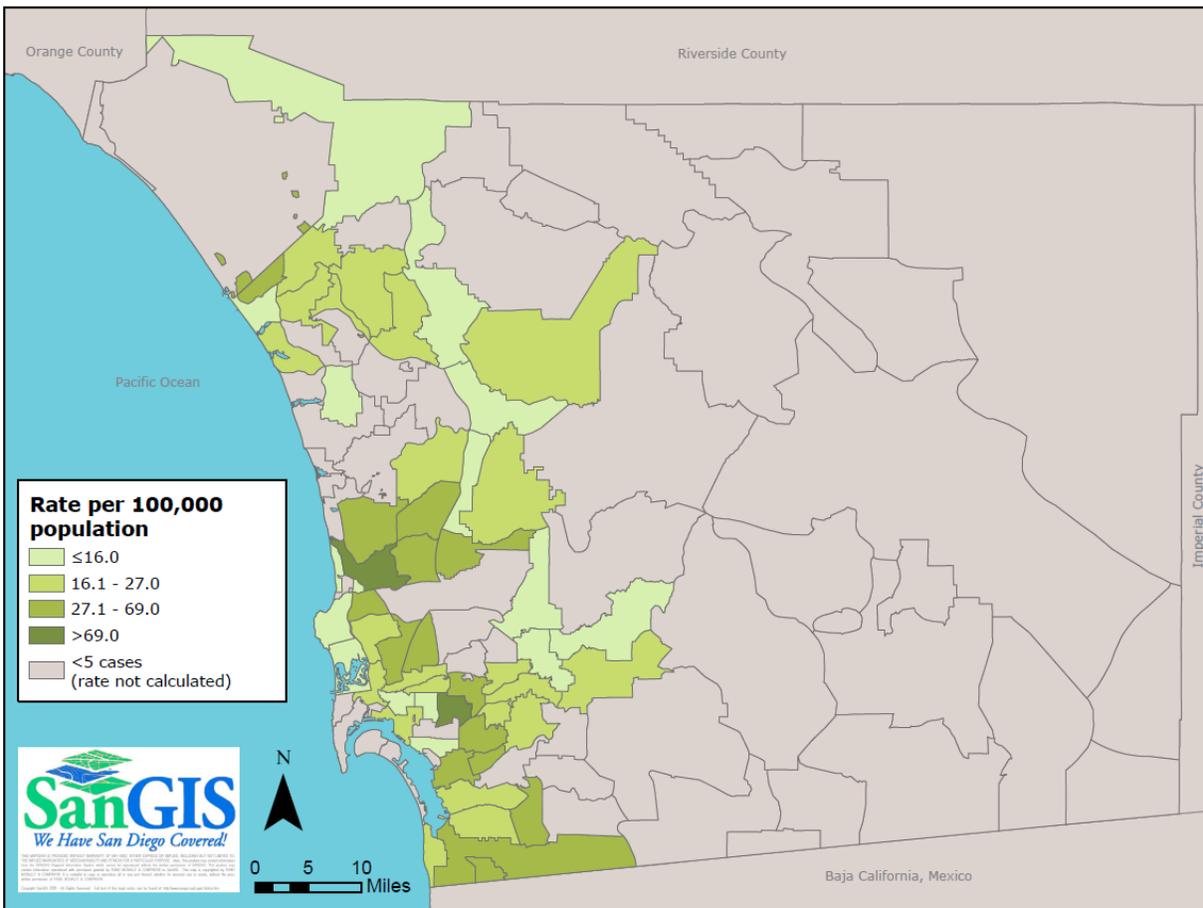
**Chronic Hepatitis B, Newly Reported Cases, San Diego County, 1993-2018**



**Chronic Hepatitis B, Newly Reported Cases and Rates by Age, San Diego County, 2018**



**Chronic Hepatitis B, Rates of Newly Reported Cases by Zip Code of Residence, San Diego County, 2018**



Cases indicating a detention facility as the address of residence are excluded from the calculation of rates by zip code.

# HEPATITIS C, CHRONIC

## Disease Info

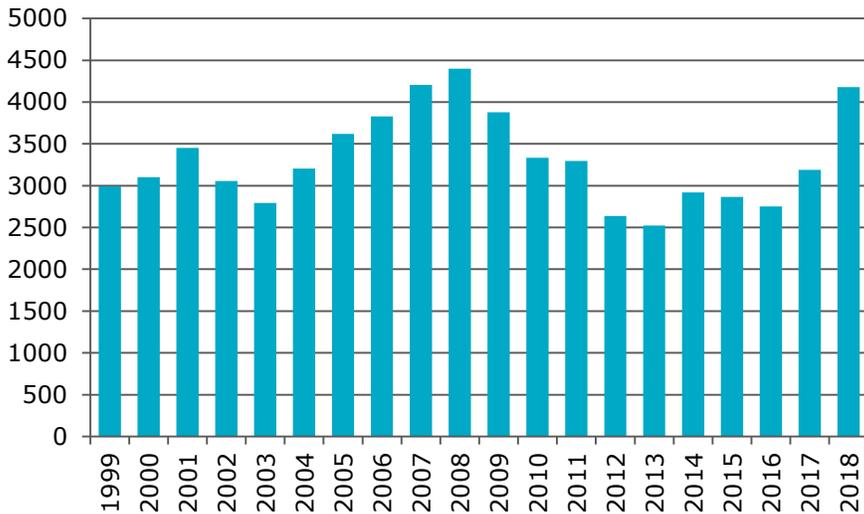
**Infectious agent:** Hepatitis C virus, an enveloped RNA virus

**Incubation:** 2 weeks to 6 months, average 4-12 weeks

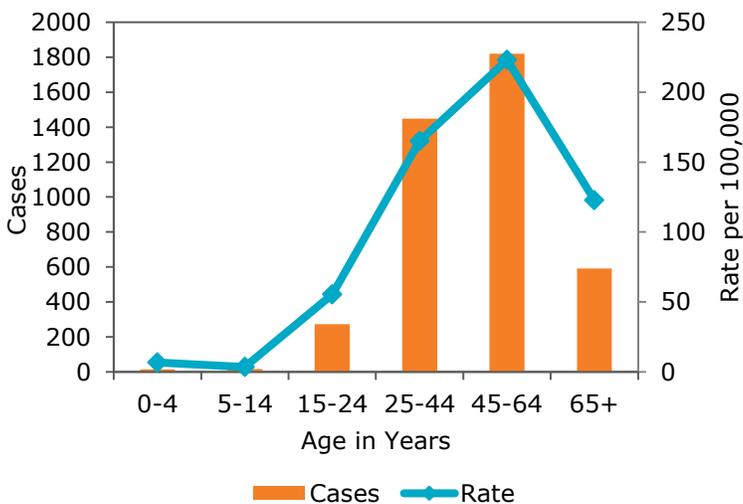
**Mode of transmission:** Exposure to infected blood, frequently via injection drug use (shared equipment); infrequently, via sex, shared personal items (e.g., razors, toothbrushes), or health care procedures (e.g., injections)

**Symptoms:** Most chronic hepatitis C infections are asymptomatic until there is clinically apparent liver disease such as cirrhosis or cancer. Only 20-30% of acute infections will cause symptoms of hepatitis including jaundice, abdominal pain, fatigue, or poor appetite, but 75-85% of acute cases will become chronic.

**Chronic Hepatitis C, Newly Reported Cases, San Diego County, 1999-2018**



**Chronic Hepatitis C, Newly Reported Cases and Rates by Age, San Diego County, 2018**



## Key Points

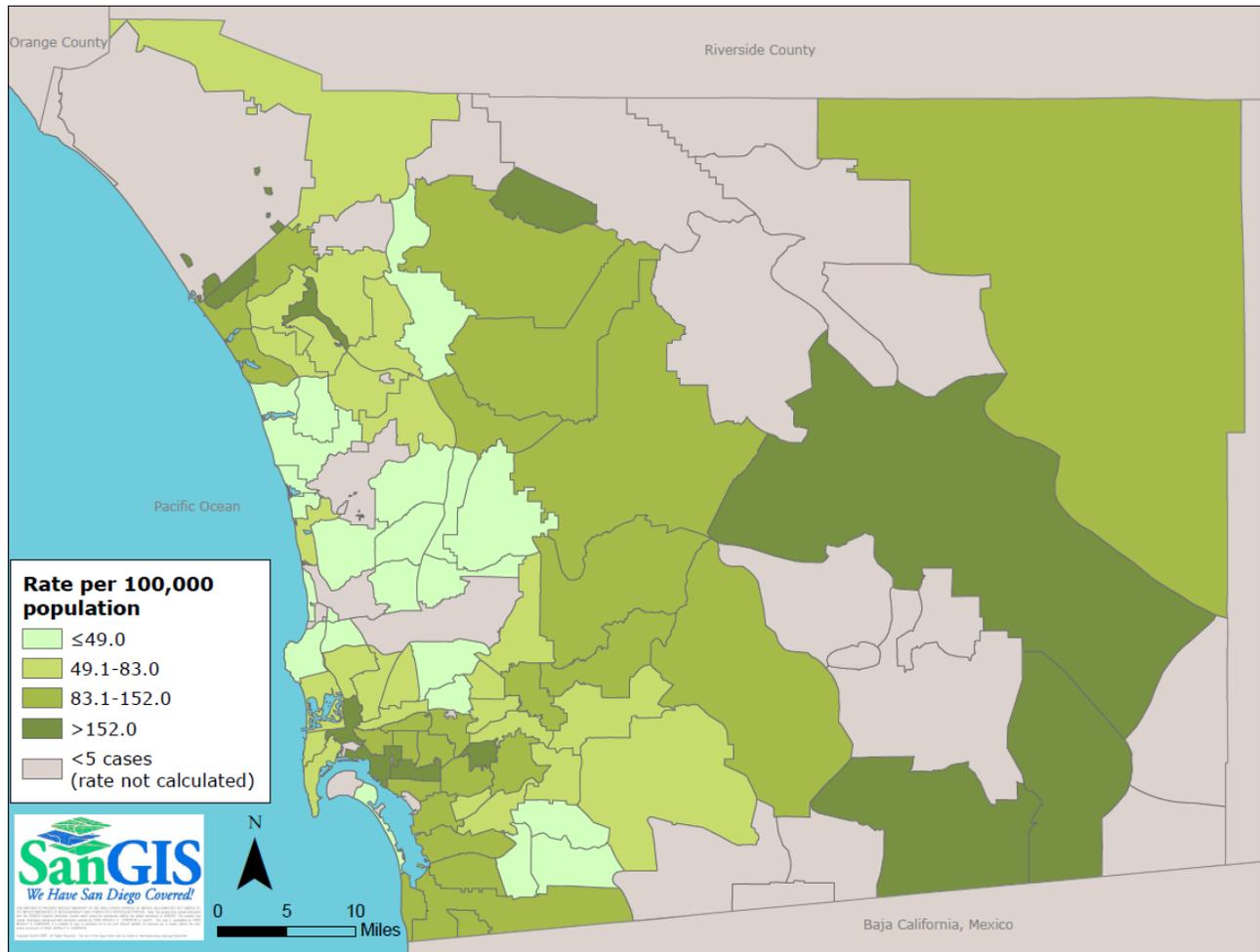
- There were 4,180 newly reported cases of chronic hepatitis C in San Diego County in 2018, higher than the average of 2,800 cases over the previous five years and slightly below the peak of 4,399 cases in 2008.
- The rate of newly reported cases of chronic hepatitis C among San Diego County residents has ranged from 83.8-125.2 per 100,000 population between 2014 and 2018.
- In 2018, both the number of cases (1,820) of chronic hepatitis C and the rate of newly reported cases (223.1 per 100,000 population) were higher among those aged 45-64 years than in any other age group. There were very few cases in children.
- High rates of newly reported chronic hepatitis C were distributed around the county. However, the high rates in some rural areas of the county with low populations should be interpreted with caution due to small case counts.

## For more information:

- [Centers for Disease Control and Prevention \(CDC\) Hepatitis C website](#)
- [CDC Viral Hepatitis Surveillance and Statistics website](#)
- [Know More Hepatitis Campaign website](#)
- [CDC/CSTE Hepatitis C, Chronic Case Definition](#)
- [California Department of Public Health \(CDPH\) Office of Viral Hepatitis Prevention website](#)

# HEPATITIS C, CHRONIC

## Chronic Hepatitis C, Rates of Newly Reported Cases by Zip Code of Residence, San Diego County, 2018



Reports where a state or federal detention facility is indicated as the address of residence are excluded from the calculation of rates by zip code.

### Notes:

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Chronic hepatitis C became nationally notifiable in 2003. Over the past 15 years, it has alternately been referred to as Hepatitis C, Past or Present and Hepatitis C, Chronic, with varying case definitions. The term chronic hepatitis C is used here for all years.
3. Available tests and testing criteria have changed over the years.
4. Chronic hepatitis C reports are not investigated and are minimally evaluated; numbers should be interpreted with caution.
5. Cases are grouped into the year of first report to the San Diego County Epidemiology Program; this may not represent the year of infection or diagnosis and case-patients may not have been infected in San Diego County. Cases should be considered neither incident nor prevalent.
6. San Diego County counts include reports from Robert J. Donovan Correctional Facility (state facility), Western Region Detention Facility (federal facility), and Metropolitan Correctional Center (federal facility), although inmates may have originally come from other jurisdictions. These cases are excluded from the zip code map, but included in other counts.
7. Numbers differ from counts published by the California Department of Public Health (CDPH). CDPH obtains data from other sources, including the correctional system, and de-duplicates cases across local health jurisdictions.
8. Case counts in some rural areas with small populations are five or above, but still small; rates may be unstable and should be interpreted with caution.

# LEGIONELLOSIS

## Disease Info

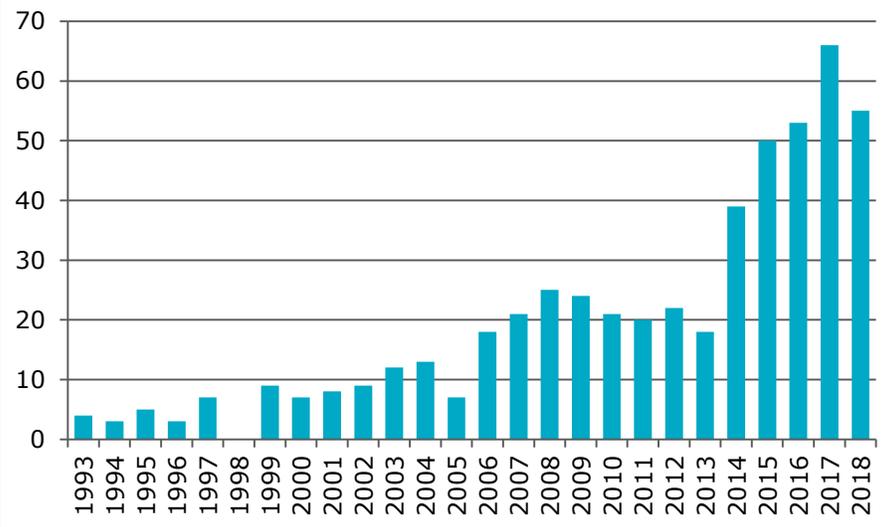
**Infectious agent:** *Legionella* bacteria, most commonly in North America *L. pneumophila, serogroup 1*

**Incubation:** Legionnaires' Disease usually 5-6 days, range 2-10 days; Pontiac Fever usually 24-48 hours, range 5-72 hours

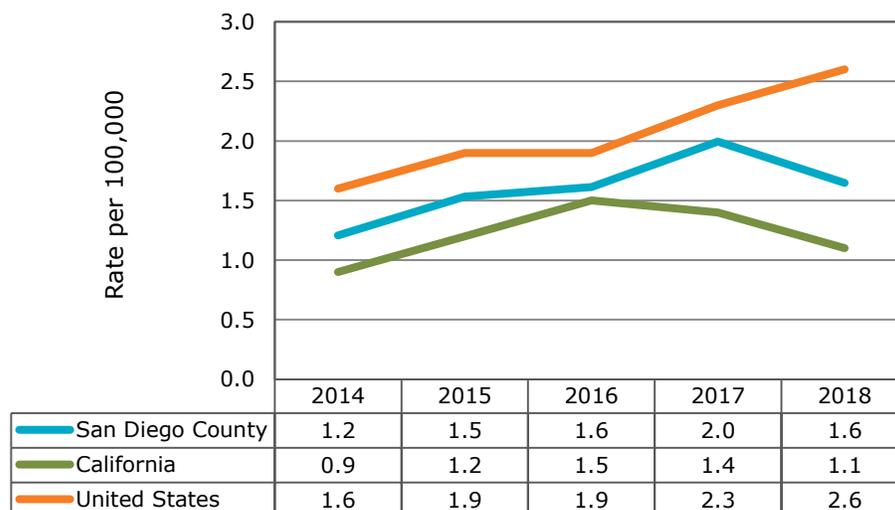
**Mode of transmission:** Inhalation of small droplets of water in the air that contain the bacteria; less commonly by aspiration of drinking water

**Symptoms:** Two distinct syndromes: Legionnaires' Disease with symptoms of pneumonia, including cough, shortness of breath, fever, muscle aches, and headaches; Pontiac Fever, a milder infection without pneumonia, with symptoms of fever and muscle aches

**Legionellosis Cases, San Diego County  
1993-2018**



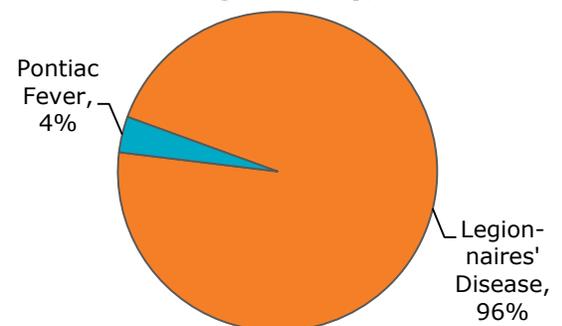
**Legionellosis Incidence, San Diego County,  
California, and United States, 2014-2018**



## Key Points

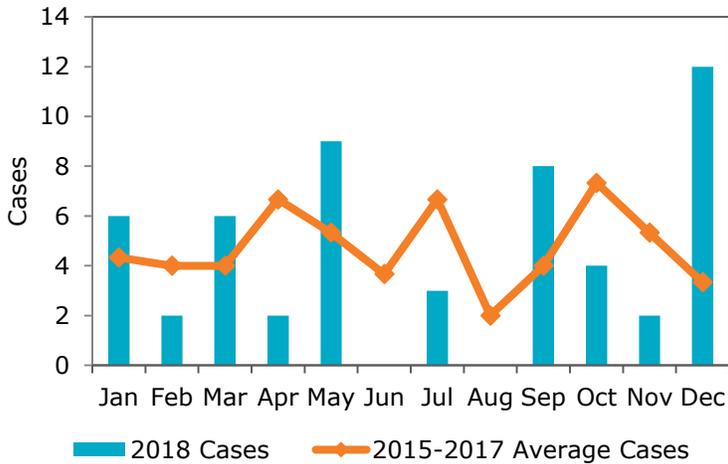
- In 2018, there were 55 cases of legionellosis in San Diego County. This is a decrease of 17% compared to 2017 (66 cases) and a 120% increase compared to 2008 (25 cases). The increase in cases is likely attributable to increased testing (urine and antigen test) by providers.
- The 2018 incidence rate of legionellosis in San Diego County (1.6 per 100,000) was slightly higher than the California rate but lower than that for the United States.
- In 2018, the majority of legionellosis case-patients were diagnosed with Legionnaires' Disease (96%). Pontiac Fever is infrequently diagnosed due to mild symptoms.
- There was no seasonal trend for case counts in 2018. The greatest number of cases occurred in December (12).
- The majority of cases, and the highest rates, were seen among older adults. A total of 31 cases were among persons aged 65 years and older (incidence rate of 6.4 per 100,000).
- Most cases (75%) were community-acquired. Sixteen percent of cases were possibly travel-associated.
- In 2018, the case-fatality rate among legionellosis cases in San Diego County was 4.0%.

**Legionellosis Cases  
by Disease Classification,  
San Diego County, 2018**

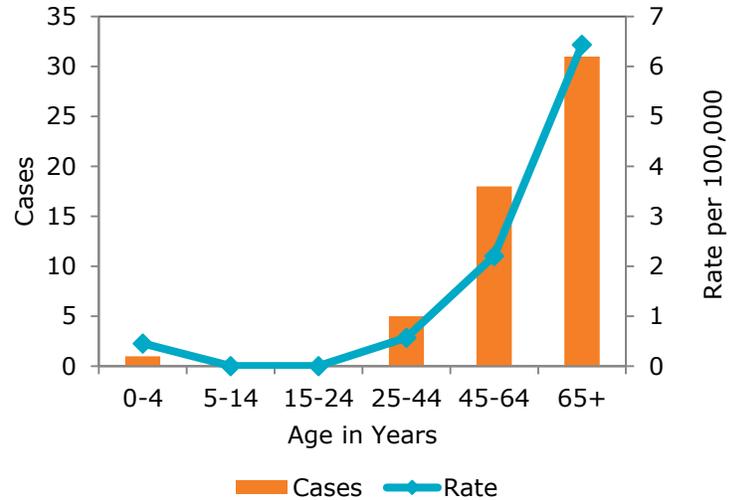


# LEGIONELLOSIS

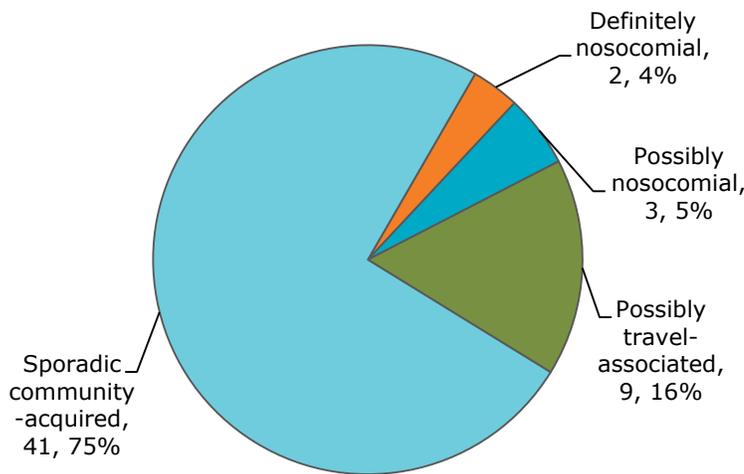
**Legionellosis Cases by Month of Onset, San Diego County, 2018**



**Legionellosis Cases and Rates by Age, San Diego County, 2018**



**Legionellosis Cases by Transmission Type, San Diego County, 2018**



**Notes:**

- Counts include confirmed cases following the CDC/CSTE case criteria.
- Legionellosis became nationally notifiable in 1976.
- In 2005, the CDC/CSTE case criteria were revised to include classification criteria for travel-associated cases of legionellosis. A case that has a history of spending at least one night away from home, either in the country of residence or abroad, in the ten days before onset of illness is classified as "travel-associated".
- Nosocomial transmissions are defined as follows: A case is classified as "definitely nosocomial" if the patient was hospitalized continuously for  $\geq 10$  days before the onset of *Legionella* infection. A case is classified as "possibly nosocomial" if the patient was hospitalized 2-9 days before the onset of *Legionella* infection. Cases with no inpatient or outpatient hospital visits in the 10 days prior to onset of symptoms are not nosocomial.
- Denominators for case classification and case-fatality rate calculations are cases with available information, ranging from 50-55 of 55 total cases.

**For more information:**

- [Centers for Disease Control and Prevention \(CDC\) Legionella website](#)
- [California Department of Public Health \(CDPH\) Legionellosis website](#)
- [CDC/CSTE Legionellosis Case Definition](#)

# LISTERIOSIS

## Disease Info

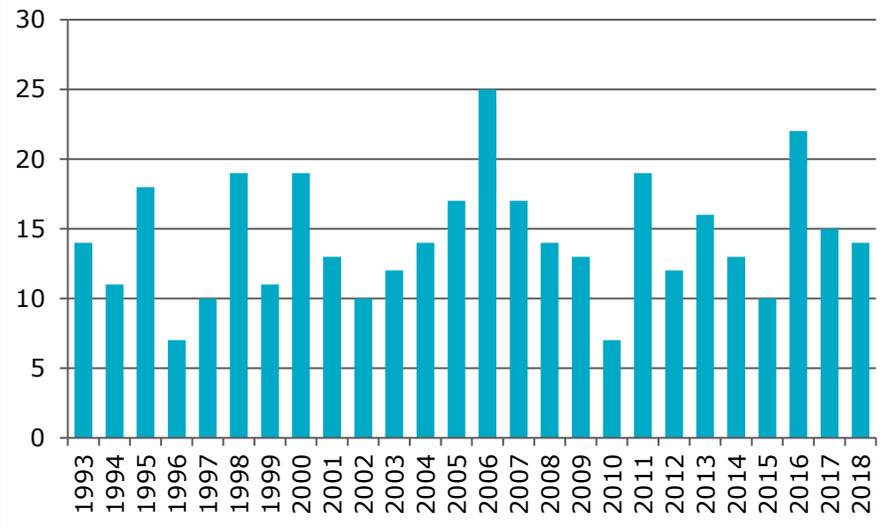
**Infectious agent:** *Listeria monocytogenes*, a bacterium

**Incubation:** Usually 1-4 weeks, range 3-70 days

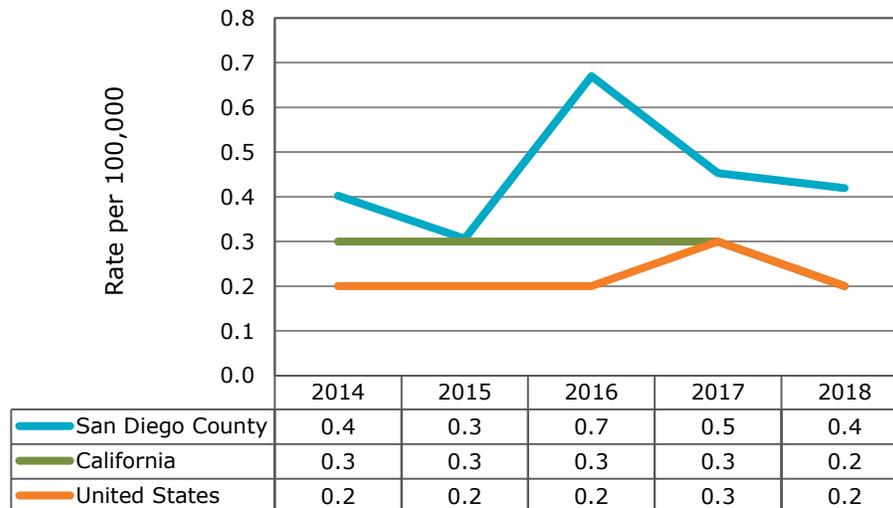
**Mode of transmission:** Consumption of contaminated foods such as raw sprouts; deli meats and hot dogs; raw milk; soft cheeses; and ready-to-eat cold, smoked, or raw seafood

**Symptoms:** High fever, headache, neck stiffness, confusion, sometimes diarrhea; infections during pregnancy can lead to miscarriage, stillbirth, premature delivery, or infection of the newborn

**Listeriosis Cases, San Diego County  
1993-2018**

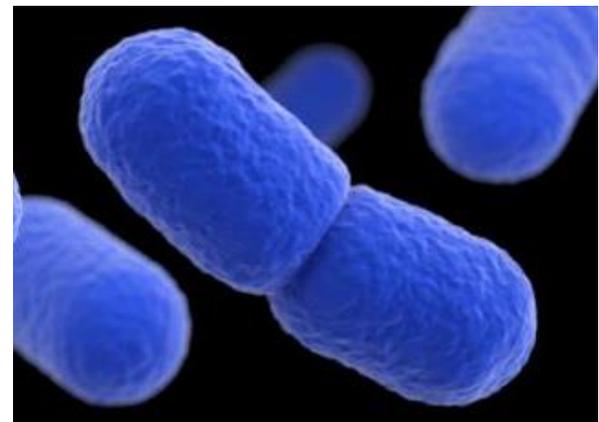


**Listeriosis Incidence, San Diego County,  
California, and United States, 2014-2018**



## Key Points

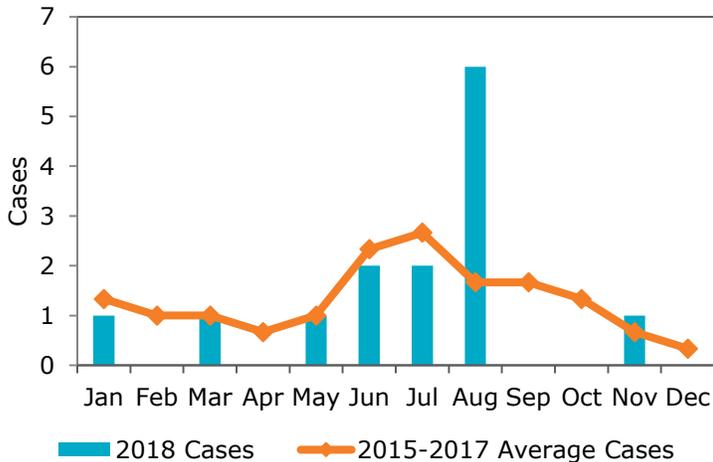
- In 2018, there were 14 cases of listeriosis in San Diego County, comparable to the average annual case count over the last ten years (14.1).
- The incidence rate of listeriosis in 2018 was higher in San Diego County (0.4 per 100,000) than in California (0.2 per 100,000) and the United States (0.2 per 100,000).
- As in previous years, on average, case counts in 2018 were highest during the summer months.
- The majority of cases in San Diego County (79%) were among persons aged 25 years and older.
- Listeriosis case-patients reported consuming foods such as cold cuts (78%), nut butter or cheeses (56%), and prepared dips (44%).
- The most common risk factor among case-patients was a weakened immune system (58%).
- Two listeriosis case-patients in San Diego County in 2018 were pregnant women. One pregnancy resulted in fetal death.
- In 2018, one case-patient died due to listeriosis in San Diego County (7.7% case-fatality rate).



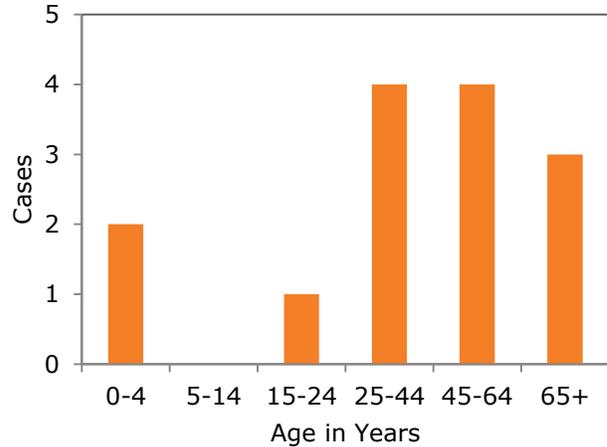
3D computer-generated image of a grouping of *Listeria monocytogenes* bacteria.  
Photo credit: CDC/ James Archer, Public Health Image Library

# LISTERIOSIS

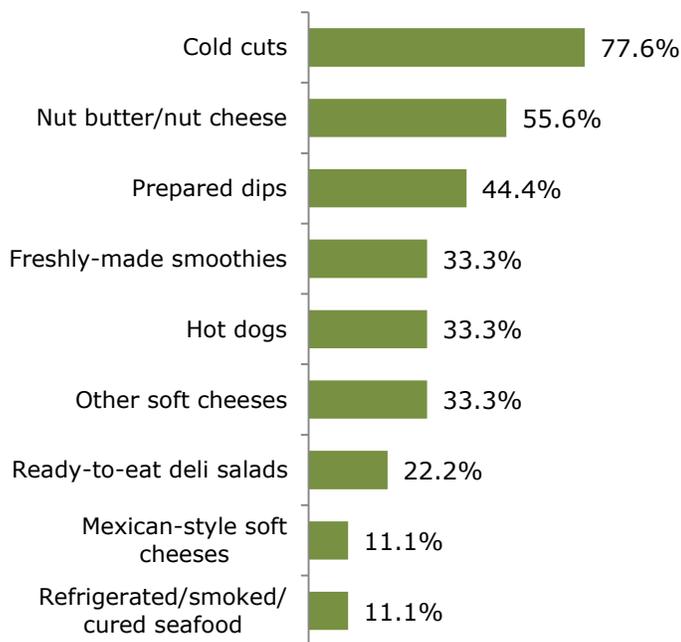
**Listeriosis Cases by Month of Onset, San Diego County, 2018**



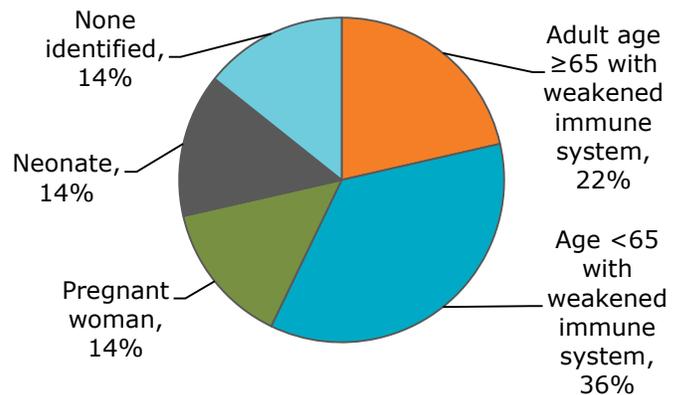
**Listeriosis Cases by Age, San Diego County, 2018**



**Food Consumption Reported by Listeriosis Case-Patients, San Diego County, 2018**



**Listeriosis Risk Groups, San Diego County, 2018**



**Notes:**

1. Counts include confirmed cases following the CDC/CSTE case criteria.
2. Listeriosis became nationally notifiable in 2000.
3. Denominators for case-fatality rate and food consumption calculations are cases with available information, ranging from 7-13 of 14 total cases.
4. Food consumption includes items consumed in the 4 weeks prior to illness based on self-report. Food items are potential sources as reported by case-patients, not confirmed sources of infection. Neonates are not included in food consumption calculations.

**For more information:**

- [Centers for Disease Control and Prevention \(CDC\) Listeriosis website](#)
- [California Department of Public Health \(CDPH\) Listeriosis website](#)
- [CDC/CSTE Listeriosis Case Definition](#)

# LYME DISEASE

## Disease Info

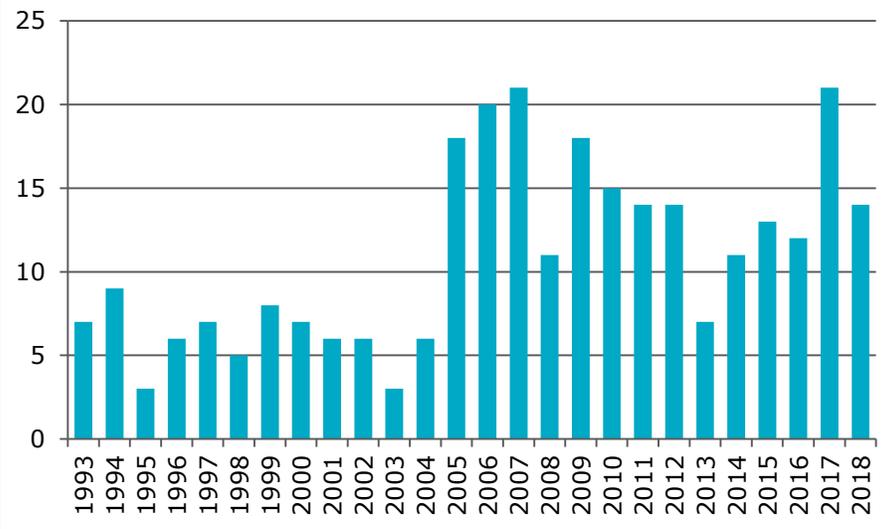
**Infectious agent:** *Borrelia burgdorferi*, a bacterium of the spirochete class

**Incubation:** Usually 7-10 days, range 3-30 days

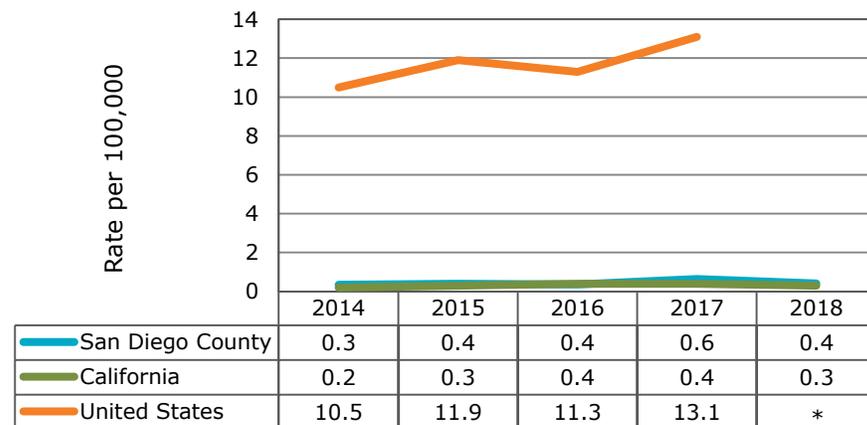
**Mode of transmission:** Vectorborne, through the bite of infected ticks: *Ixodes scapularis* (the blacklegged tick, or deer tick) in the northeastern, mid-Atlantic, and north-central US; *Ixodes pacificus* (the Western blacklegged tick) on the Pacific coast

**Symptoms:** Early stage (3-30 days after tick bite) symptoms include fever, chills, headache, fatigue, muscle and joint aches, swollen lymph nodes, and a red, expanding skin rash (erythema migrans). Later stage symptoms include arthritis with joint swelling, particularly of the knees and other large joints, and nervous system signs, such as numbness, tingling, or pain in the arms and legs, or difficulties with memory and concentration.

**Lyme Disease Cases, San Diego County  
1993-2018**



**Lyme Disease Incidence, San Diego County,  
California, and United States, 2014-2018**



\*United States data for 2018 were not available at publication.

## Key Points

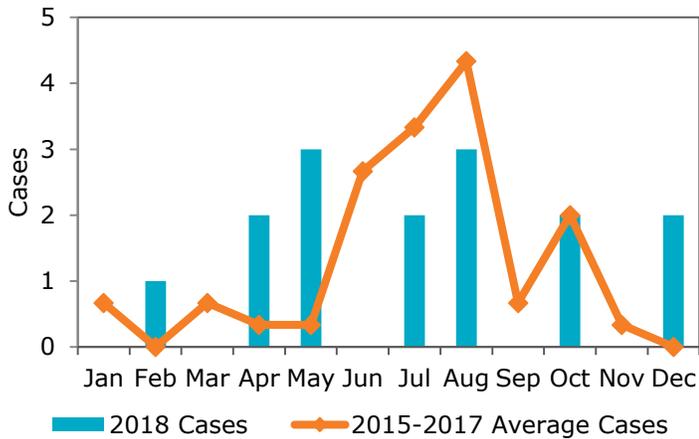
- In 2018, 14 cases of Lyme disease were reported among residents of San Diego County. This is a 33% decrease from the prior year (21 cases).
- The incidence rate of Lyme disease among San Diego County residents has remained low between 2014 and 2018 (range 0.3-0.6 per 100,000).
- In 2018, the incidence of Lyme disease in San Diego County (0.4 per 100,000) was similar to California incidence (0.3 per 100,000), but much lower than United States incidence.
- The majority of case-patients had an onset of illness during the spring and summer months in 2018. Human infections occur most often in the late spring to summer months when ticks are in the nymph stage of their life cycle and are difficult to detect due to their small size (less than 2mm).
- Two case-patients (14%) reported engaging in outdoor activities in San Diego County. One of these patients also had exposure in the Western Mountain region of the United States. Overall, 64% of case-patients reported engaging in outdoor activities outside of San Diego County.
- Signs and symptoms among case-patients varied. Ten case-patients (83%) reported having symptoms. The most commonly reported symptom was an erythema migrans (EM) rash, reported by four case-patients.



The Western blacklegged tick, *Ixodes pacificus*, (shown here) is a known vector for the spirochetal bacteria *Borrelia burgdorferi*, which is the pathogen responsible for Lyme disease. Photo credit: CDC/ James Gathany, Public Health Image Library

# LYME DISEASE

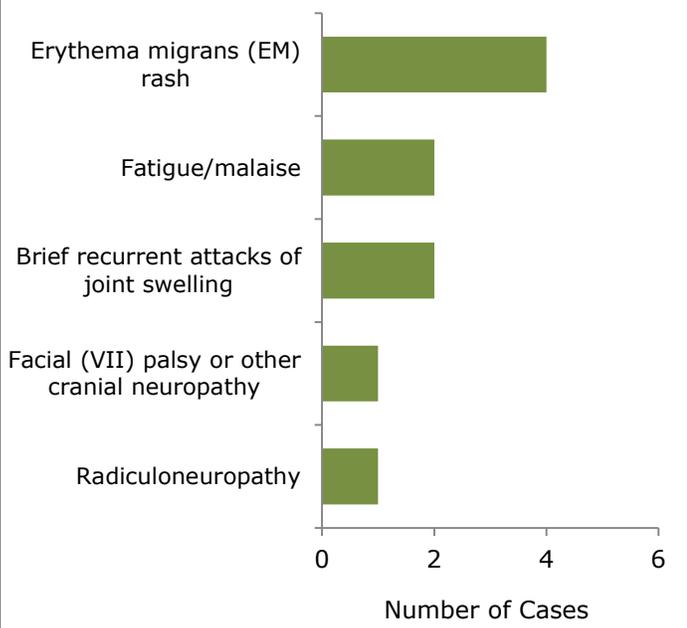
**Lyme Disease Cases by Month of Onset, San Diego County, 2018**



**Outdoor Activity Locations Reported by Lyme Disease Cases, San Diego County, 2018**

Location of Outdoor Activity	Cases	Percent
Northeastern United States	4	28.7
Western Pacific United States	3	21.4
San Diego County	2	14.3
Western Mountain United States	2	14.3
Unknown	4	28.7

**Signs and Symptoms Reported by Lyme Disease Case-Patients, San Diego County, 2018 (N=13)**



**Notes:**

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Lyme disease became nationally notifiable in 1991.
3. Prior to 2008, the case definition included criteria for confirmed cases only. In 2008, the definition was expanded to include criteria for suspected and probable classifications. Laboratory criteria for diagnosis have changed over time.
4. A specific onset date could not be determined for 12 out of the 14 cases. In these instances, the date of laboratory specimen collection was used as a surrogate.
5. Outdoor activity locations total more than 100% due to one person who reported two locations.
6. Data on signs/symptoms is presented for patients for whom information could be obtained, ranging from 8-12 of 14 total cases by sign/symptom type.

**For more information:**

- [Centers for Disease Control and Prevention \(CDC\) Lyme Disease website](#)
- [California Department of Public Health \(CDPH\) Lyme Disease website](#)
- [CDC/CSTE Lyme Disease Case Definition](#)
- [County of San Diego Department of Environmental Health Lyme Disease website](#)

# MALARIA

## Disease Info

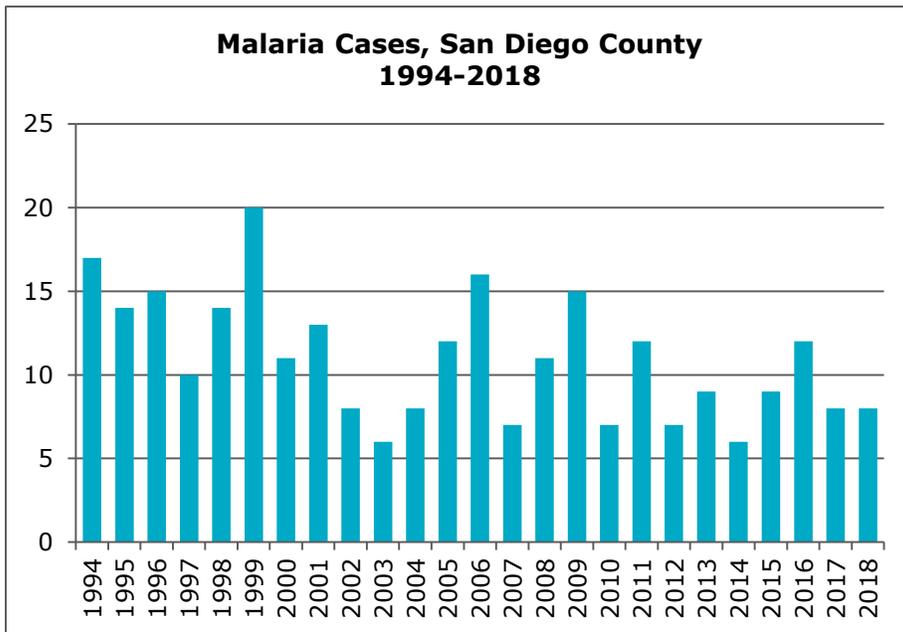
**Infectious agent:** *Plasmodium* species, protozoan parasites:

*P. falciparum*, *P. vivax*, *P. ovale*, *P. malariae*, *P. knowlesi*

**Incubation:** Usually 7-30 days, depending on *Plasmodium* species (approximately 7-14 days for *P. falciparum*, 12-18 days for *P. vivax* and *P. ovale*, and 18-40 days for *P. malariae*)

**Mode of transmission:** Bite of an *Anopheles* mosquito

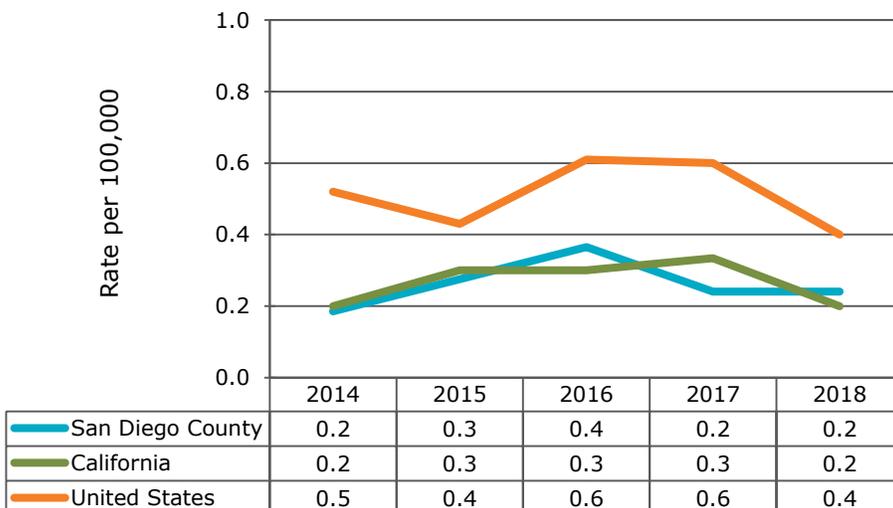
**Symptoms:** Fever, chills, sweats, headaches, body aches, general malaise, nausea and vomiting



## Key Points

- There were eight cases of malaria among San Diego County residents in 2018, just below the average of 9.6 cases over the previous ten years.
- The incidence of malaria among San Diego County residents has been relatively stable between 2014 and 2018, ranging from 0.2-0.4 cases per 100,000 population.
- Malaria incidence in California was similar to San Diego, but United States incidence was marginally higher.
- Malaria is not endemic to the United States; all of the San Diego County cases in 2018 were imported from either Africa, Afghanistan, or Pakistan.
- There is no clear seasonal distribution and most cases were in adults.
- Four of the eight cases were caused by *P. falciparum*, two by *P. ovale*, and one by *P. malariae*. The species for one case could not be determined.
- None of the case-patients took consistent chemoprophylaxis.

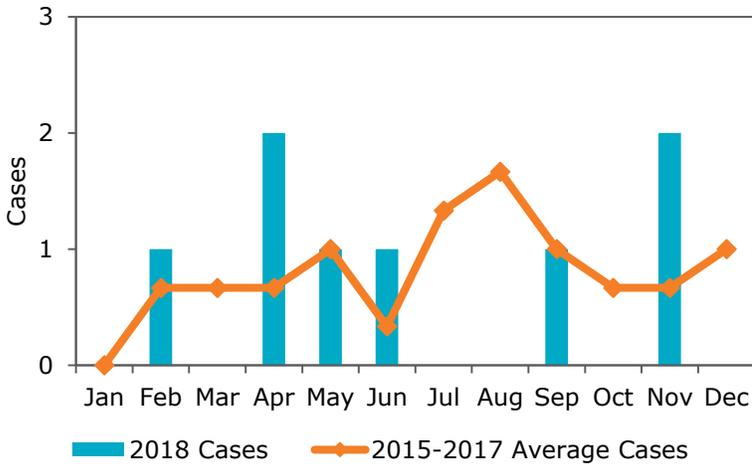
**Malaria Incidence, San Diego County, California, and United States, 2014-2018**



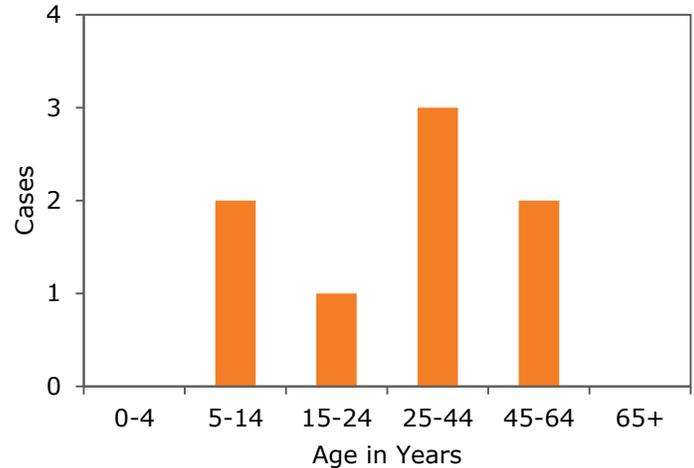
*Anopheles quadriannulatus* mosquito  
Photo credit: CDC/ James Gathany, Public Health Image Library

# MALARIA

**Malaria Cases by Month of Onset, San Diego County, 2018**



**Malaria Cases by Age, San Diego County, 2018**



**Select Characteristics of Malaria Cases, San Diego County, 2018**

Characteristic	Cases	Percent
<b>Plasmodium species</b>		
<i>P. falciparum</i>	4	50.0
<i>P. ovale</i>	2	25.0
<i>P. malariae</i>	1	12.5
Could not be determined	1	12.5
Symptomatic	7	100.0
Hospitalized	5	62.5
<b>Took chemoprophylaxis</b>		
Yes	1*	20.0
No	4	80.0
<b>Travel location</b>		
Africa	6	75.0
Afghanistan	1	12.5
Pakistan	1	12.5
<b>Reason for travel</b>		
Visiting friends/relatives	4	66.7
Refugee/immigrant to U.S.	2	33.3

\*Missed doses

**Notes:**

1. Counts include confirmed cases following the CDC/CSTE case criteria.
2. Malaria has been nationally notifiable since 1944.
3. Rates not calculated by age group due to counts <5.
4. Laboratory information was available for all eight cases. Clinical information was available for eight cases, except for chemoprophylaxis information, which was available for five cases. Travel location was available for eight cases and travel reason was available for six cases. Denominators for these calculations will vary based on availability of information as described above.

**For more information:**

- [Centers for Disease Control and Prevention \(CDC\) Malaria website](#)
- [CDC Health Information for International Travel \(the Yellow Book\) – Malaria](#)
- [CDC/CSTE Malaria Case Definition](#)
- [California Department of Public Health \(CDPH\) Malaria website](#)
- [World Health Organization Malaria website](#)

# MEASLES (RUBEOLA)

## Disease Info

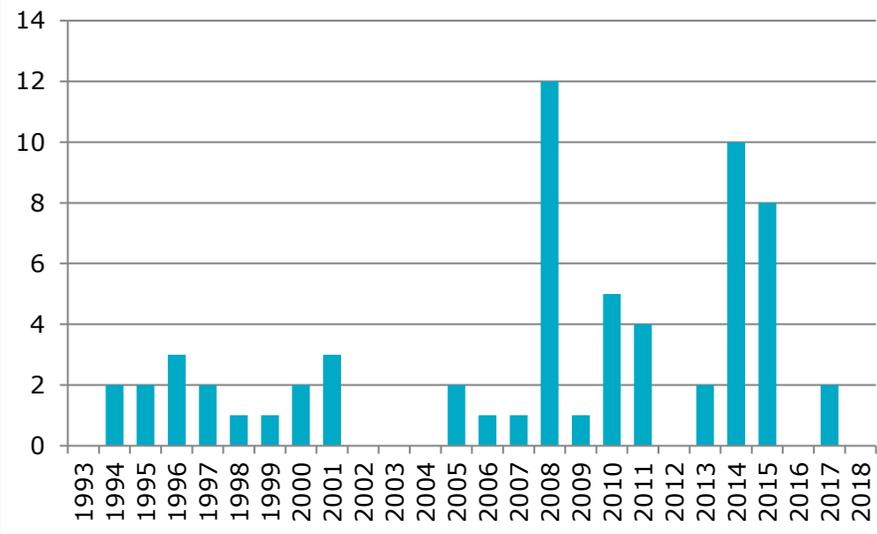
**Infectious agent:** Measles virus, an enveloped RNA virus of the genus *Morbillivirus* and the family Paramyxoviridae

**Incubation:** Usually 10 days, range 8-12 days

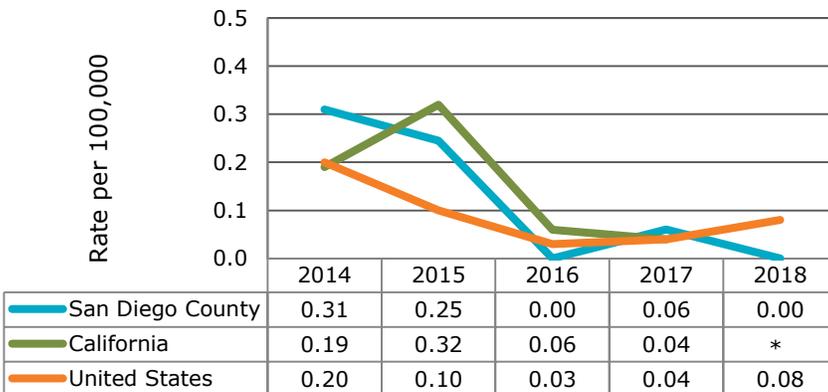
**Mode of transmission:** Primarily person-to-person by respiratory transmission, highly infectious

**Symptoms:** High fever ( $\geq 104^{\circ}\text{F}$ ), runny nose, cough, red eyes, and sore throat; followed by rash that begins as flat red spots appearing on the face at the hairline and spreading downward to the neck, trunk, arms, legs, and feet

**Measles Cases, San Diego County  
1993-2018**



**Measles Incidence, San Diego County,  
California, and United States, 2014-2018**



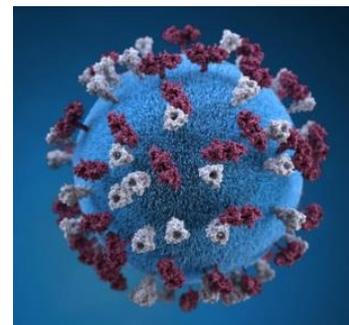
\*California data for 2018 were not available at publication.

**Notes:**

1. Counts include confirmed cases following the CDC/CSTE case criteria.
2. Measles became nationally notifiable in 1944.
3. Measles is vaccine-preventable; a measles vaccine first became available in the U.S. in 1963.

## Key Points

- In 2018, there were no cases of measles in San Diego County.
- In 2008, 12 cases were reported in San Diego County, all of which were associated with a single outbreak. Case-patients ranged in age from zero to nine years (median six years). All but one of the case-patients (92%) were unimmunized.
- Eighteen cases were reported in 2014-2015, 14 of which were part of a multi-jurisdictional outbreak that originated at the Disneyland amusement park in Orange County, California. San Diego County case-patients associated with this outbreak ranged in age from 0-49 years (median 9.5 years). The majority of the case-patients (86%) were unvaccinated. This outbreak, which occurred from December 2014 to April 2015, included at least 131 cases in California as well as residents of six other states, Mexico, and Canada.



3D graphical representation of a measles virus particle studded with glycoprotein tubercles. Photo credit: CDC/Allison M. Maiuri, MPH, CHES, Public Health Image Library

## For more information:

- [Centers for Disease Control and Prevention \(CDC\) Measles website](#)
- [California Department of Public Health \(CDPH\) Measles website](#)
- [CDC/CSTE Measles Case Definition](#)
- [Epidemiology and Prevention of Vaccine-Preventable Diseases \(the Pink Book\) – Measles](#)
- [CDC Health Information for International Travel \(the Yellow Book\) – Measles](#)

# MENINGITIS

## Disease Info

**Infectious agent:** Various viruses (e.g., non-polio enteroviruses and herpesviruses), bacteria (e.g., *Streptococcus pneumoniae*), fungus (e.g., *Cryptococcus*), and parasites, as well as some non-infectious causes; the etiology cannot always be identified

**Incubation:** Depends on the agent; for bacterial meningitis, usually 3-7 days

**Mode of transmission:** Bacteria and viruses are usually transmitted person-to-person (the specific mode varies by infectious agent), but most people infected with these bacteria and viruses will not develop meningitis

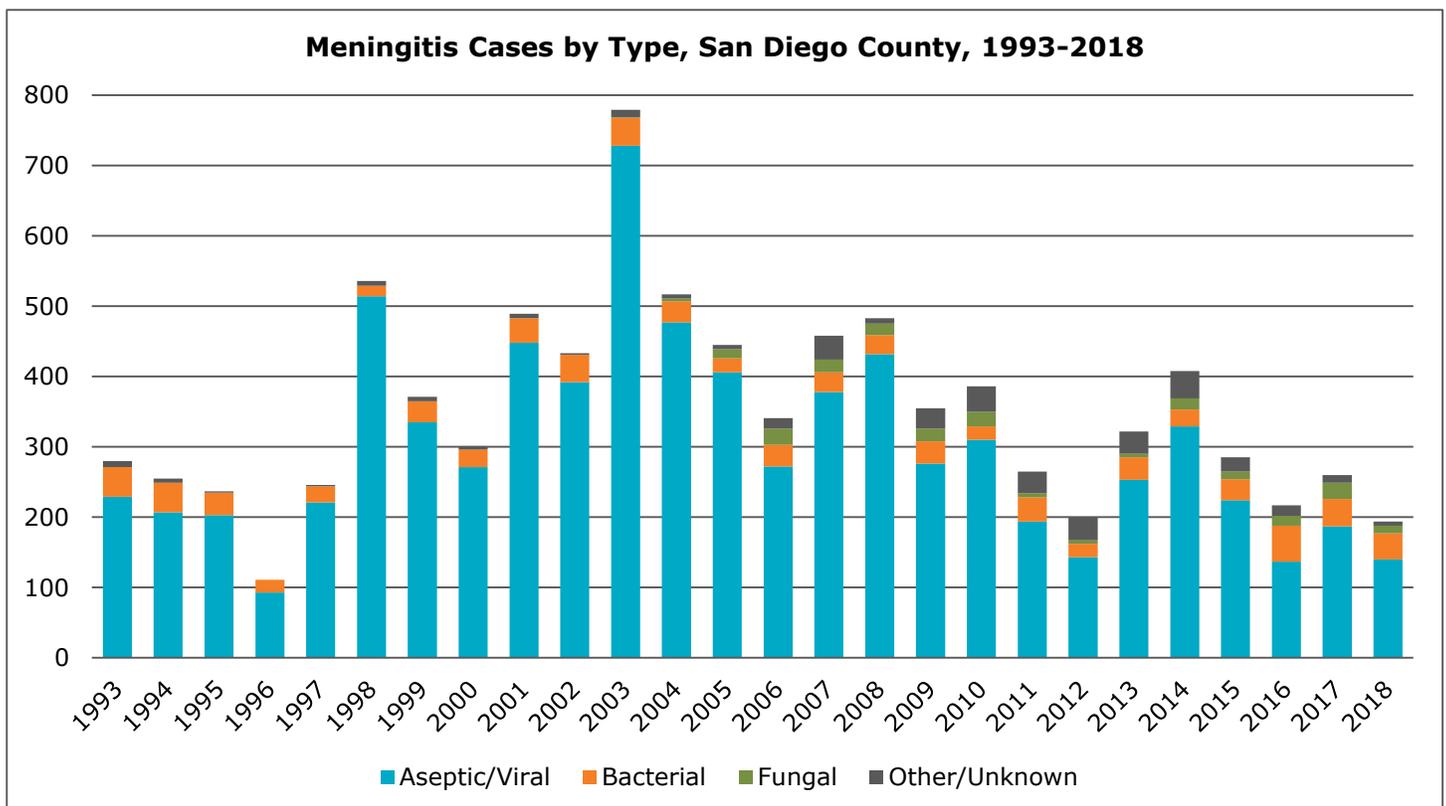
**Symptoms:** Meningitis is inflammation of the protective membranes around the brain and spinal cord; symptoms include fever, headache, stiff neck, photophobia, nausea, vomiting, altered mental status

### For more information:

- [Centers for Disease Control and Prevention \(CDC\) Meningitis website](#)
- [California Department of Public Health Viral Meningitis fact sheet](#)

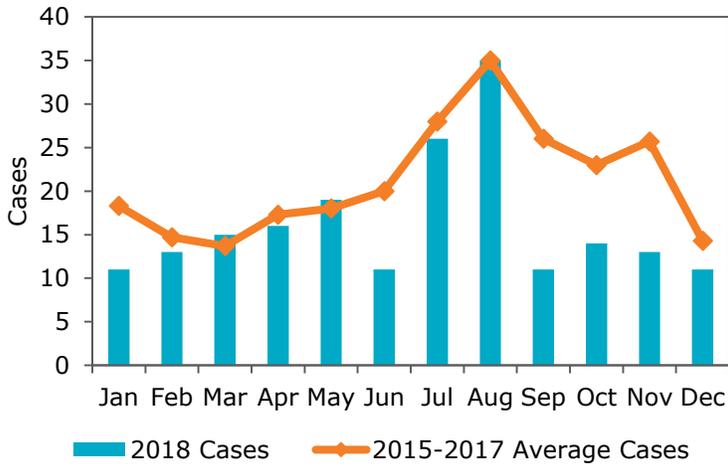
## Key Points

- In 2018, there were 194 cases of meningitis reported in San Diego County: 140 (72%) viral/aseptic, 37 (19%) bacterial, 11 (6%) fungal, and 6 (3%) other or unknown cause.
- Non-polio enteroviruses were the most common cause of viral meningitis in 2018. The most common etiology of bacterial meningitis was *Streptococcus pneumoniae*. Most fungal meningitides were caused by *Cryptococcus*, particularly *C. neoformans*.
- San Diego County experienced peak meningitis cases during the summer in 2018.
- While the largest number of cases was among adults ages 25-44 years, the highest rate (20.8 per 100,000 population) was in children under five years old.

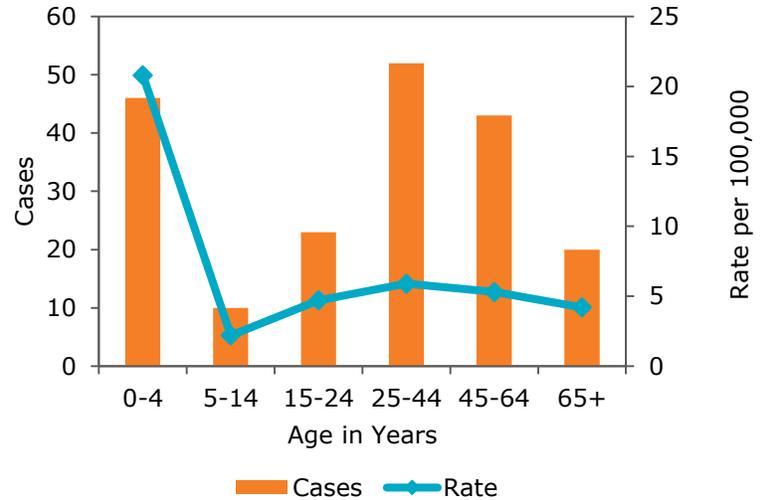


# MENINGITIS

**Meningitis Cases by Month of Onset, San Diego County, 2018**



**Meningitis Cases and Rates by Age, San Diego County, 2018**



**Etiology of Meningitis Cases, San Diego County, 2018**

Etiology	Cases
<b>Viral (n=140)</b>	
Enterovirus	49
Herpes Simplex Virus	24
Varicella Zoster Virus	7
Other virus	1
Unknown etiology	59
<b>Bacterial (n=37)</b>	
<i>Streptococcus pneumoniae</i>	9
Group B <i>Streptococcus</i>	5
<i>Haemophilus influenzae</i>	4
<i>Escherichia coli</i>	3
<i>Staphylococcus aureus</i>	2
Other bacteria	8
Unknown etiology	6
<b>Fungal (n=11)</b>	
<i>Cryptococcus</i>	9
Other fungus	2
<b>Other/Unknown (n=6)</b>	

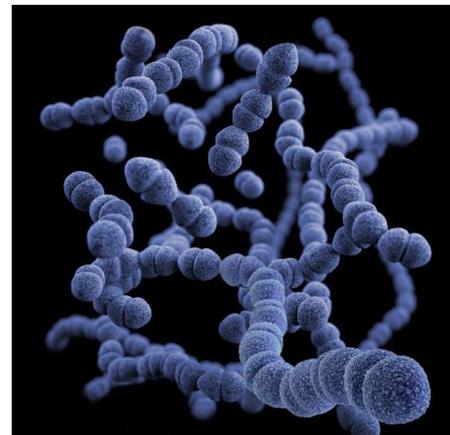


Illustration based upon scanning electron microscopic imagery of *Streptococcus pneumoniae* bacteria.

Content from:  
 CDC/Sarah Bailey  
 Cutchin/Illustrator Dan  
 Higgins, CDC Public  
 Health Image Library

**Notes:**

1. Counts include confirmed, probable, and suspect cases based on California Department of Public Health recommendations for reporting viral and bacterial meningitis, which consider clinical findings, cerebral spinal fluid (CSF) cell counts, CSF glucose, and CSF protein, in addition to confirmed etiology.
2. Meningitis is not nationally notifiable. Specific causes of meningitis, such as arboviruses and meningococcus, are reportable at the national level. Meningitis of any etiology is reportable in California.
3. Counts do not include meningitis cases caused by infections that are separately reportable (e.g., West Nile virus, *Neisseria meningitidis*, *Listeria monocytogenes*, *Haemophilus influenzae* in children, tuberculosis, mumps).

# MENINGOCOCCAL DISEASE

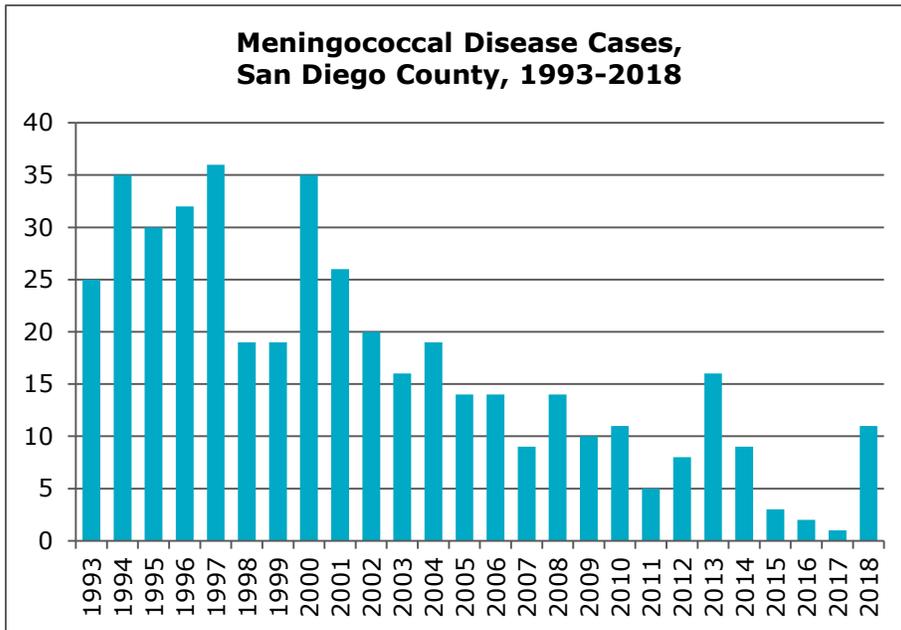
## Disease Info

**Infectious agent:** *Neisseria meningitidis*, a gram-negative bacterium; 5 serogroups—A,B,C,W,Y—cause most invasive disease

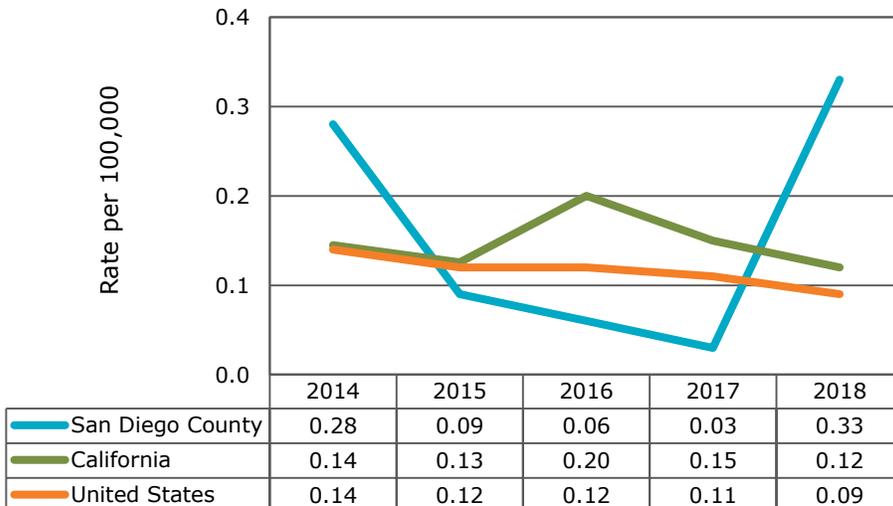
**Incubation:** Usually 3-4 days, range 2-10 days

**Mode of transmission:** Shared respiratory and throat secretions, generally via close contact such as coughing or kissing

**Symptoms:** There are two common clinical syndromes: meningitis symptoms include fever, headache, stiff neck; septicemia (meningococemia) symptoms include fever, fatigue, vomiting, body aches, cold hands/feet, dark purple rash



**Meningococcal Disease Incidence, San Diego County, California, and United States, 2014-2018**



## Key Points

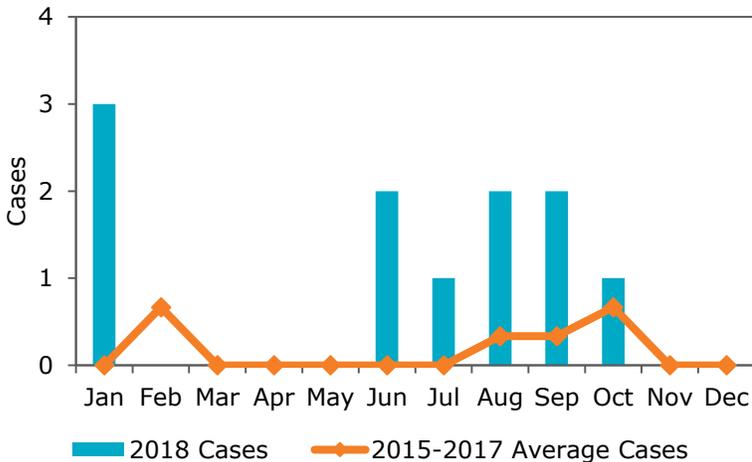
- There were eleven cases of meningococcal disease reported among San Diego County residents in 2018. This is an increase from the annual average of two cases over the previous three years.
- Incidence of meningococcal disease in San Diego County increased from 0.09 cases per 100,000 population or below in 2015-2017 to 0.33 cases per 100,000 population in 2018. This is higher than the rate for the United States, which has remained historically low.
- The majority of 2018 cases in San Diego County were caused by serogroup B. Serogroups C and Y were also responsible for cases.
- Over half the cases were in those aged 15-24 years. All case-patients survived the illness, which is often severe and can be deadly. Of the eleven cases, three cases had meningococemia, three cases had meningococcal meningitis, and four cases were diagnosed with both.
- Two cases in San Diego County in 2018 were part of a university-associated outbreak caused by serogroup B meningococcal disease.

## For more information:

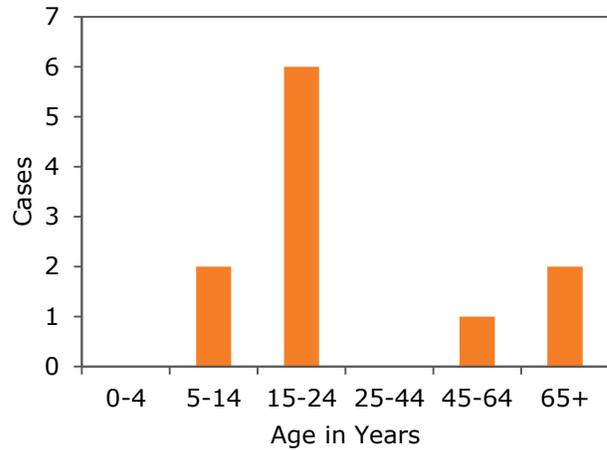
- [Centers for Disease Control and Prevention \(CDC\) Meningococcal Disease website](#)
- [Epidemiology and Prevention of Vaccine-Preventable Diseases \(the Pink Book\) – Meningococcal Disease](#)
- [CDC/CSTE Meningococcal Disease Case Definition](#)
- [California Department of Public Health \(CDPH\) Meningococcal Disease website](#)
- [County of San Diego Meningococcal Disease Fact Sheet](#)

# MENINGOCOCCAL DISEASE

**Meningococcal Disease Cases by Month of Onset, San Diego County, 2018**



**Meningococcal Disease Cases by Age, San Diego County, 2018**



**Select Characteristics, San Diego County Cases, 2018**



**3** CASES WERE UNIVERSITY-ASSOCIATED.



**MEDIAN AGE**

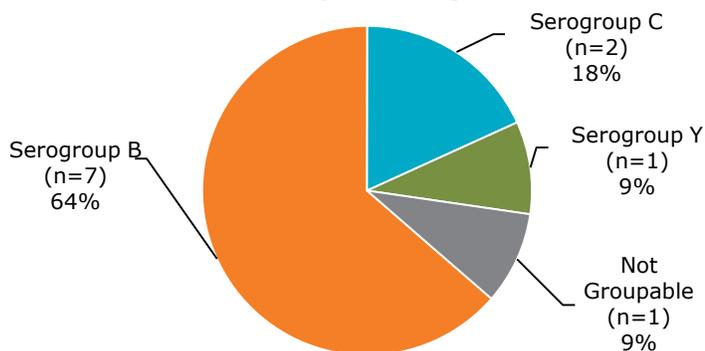
**22**  
YEARS

**HOSPITALIZATIONS**

**11**



**Serogroups of Meningococcal Disease Cases, San Diego County, 2018**



**Notes:**

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Meningococcal disease has been nationally notifiable since 1944.
3. Rates not calculated by age due to counts <5.
4. Meningococcal disease is vaccine-preventable. A quadrivalent vaccine protective against serogroups A,C,W,Y was licensed in the United States (U.S.) in 2005. It is recommended for all 11-12-year-olds, with a booster at age 16. Serogroup B meningococcal vaccine was licensed in the U.S. in 2014. It is recommended for people 10 years or older who are at increased risk for serogroup B meningococcal disease.

# MUMPS

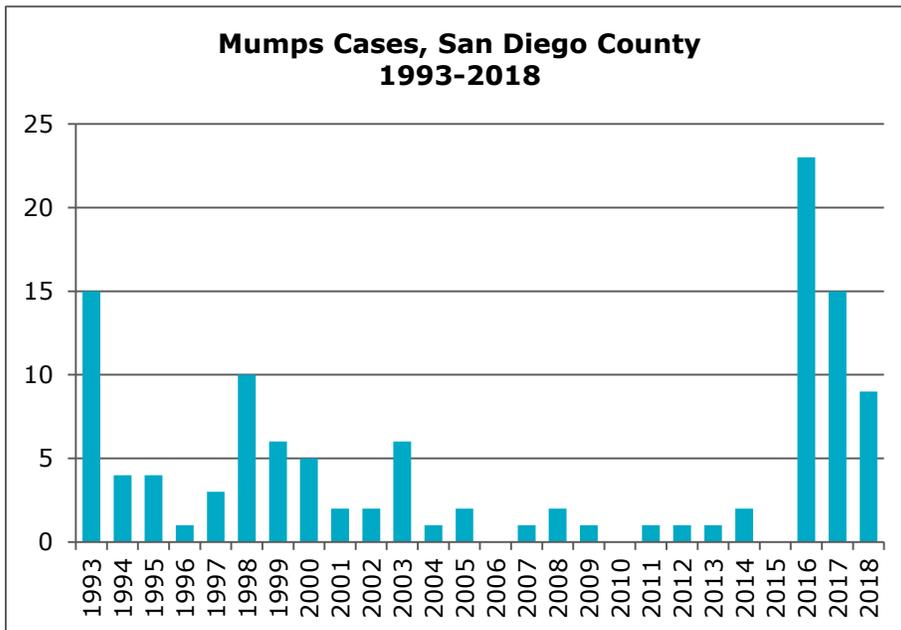
## Disease Info

**Infectious agent:** Mumps virus, an RNA virus and member of the family Paramyxoviridae

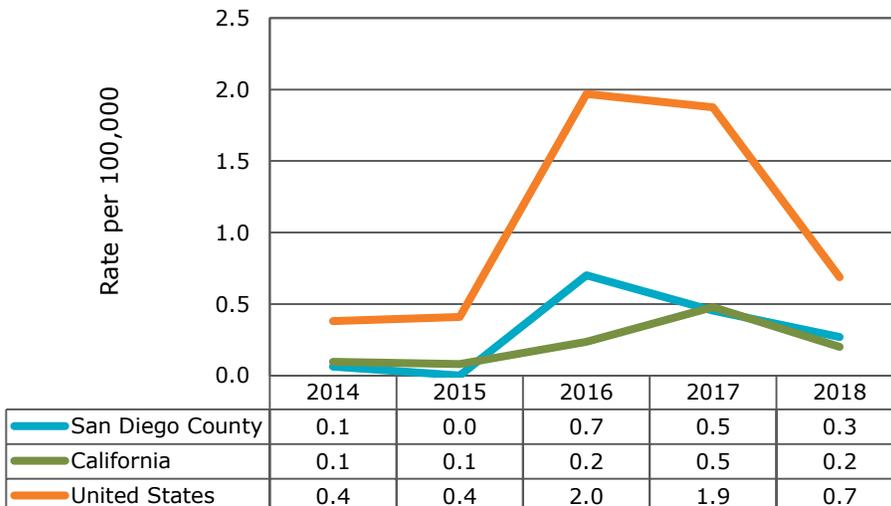
**Incubation:** Usually 16-18 days, range 12-25 days

**Mode of transmission:** Respiratory droplets (e.g., saliva and mucous via sneezing, coughing, talking)

**Symptoms:** Fever, swelling and tenderness of one or more salivary glands (usually the parotid—parotitis), headaches, muscle aches, fatigue, earache, sore throat, anorexia, testicular pain in males; may also be asymptomatic



**Mumps Incidence, San Diego County, California, and United States, 2014-2018**



## Key Points

- There were nine cases of mumps among San Diego County residents in 2018, a decrease from the previous two years, but still higher than any other year in the previous decade.
- The mumps incidence rate in San Diego County was 0.3 per 100,000 population in 2018, and remains higher than California incidence, but lower than United States incidence. Incidence in the United States and San Diego County rose sharply in 2016, followed by a slight decrease in 2017 and a further decrease in 2018.
- There was no distinct seasonal pattern in mumps cases in San Diego County in 2018.
- The median age of case-patients was 31 years, with a range of 23-48 years. The highest number and rate (five cases, 0.6 per 100,000 population) were in the 25-44-year-old age group.
- Although there were no university-associated clusters of mumps cases in San Diego County in 2018 (compared to two in 2016), one case-patient was a college or university student. In addition, no case-patients had traveled internationally prior to onset of illness, and one case was hospitalized.

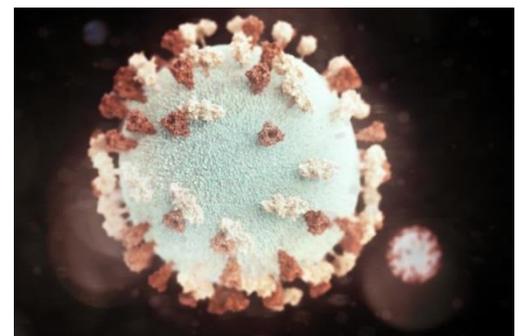
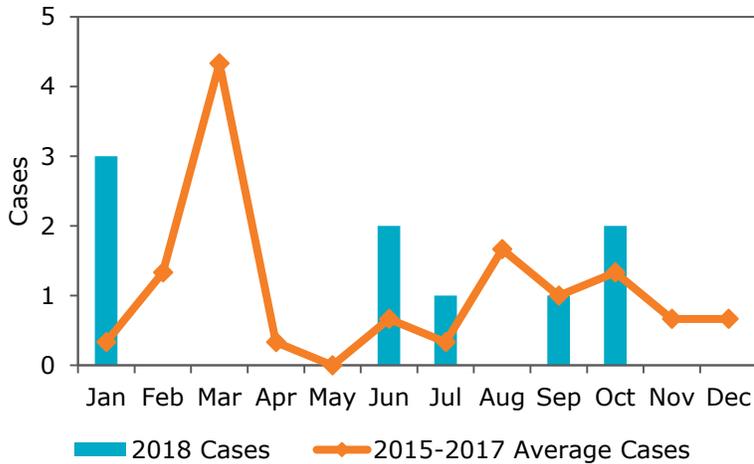


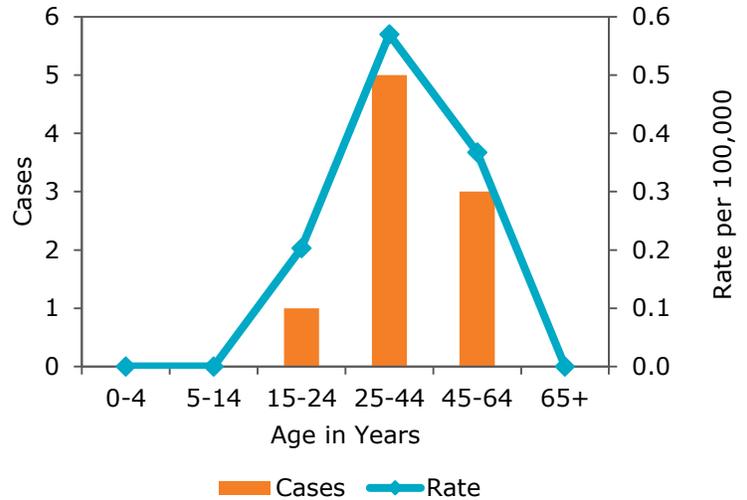
Illustration of a mumps virus particle studded with glycoprotein tubercles. Credit: CDC/Alissa Eckert, Public Health Image Library

# MUMPS

**Mumps Cases by Month of Onset, San Diego County, 2018**



**Mumps Cases and Rates by Age, San Diego County, 2018**



**Select Characteristics, San Diego County Cases, 2018**



**1**

**COLLEGE OR UNIVERSITY STUDENT (No clusters)**



**MEDIAN AGE**

**31 YEARS**

**0**

**TRAVELED INTERNATIONALLY**



**HOSPITALIZATIONS**

**1**



**Notes:**

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Mumps has been nationally notifiable since 1968.
3. Mumps is vaccine-preventable; the vaccine became available in the United States in 1967.
4. Characteristics are not mutually exclusive, nor are they confirmed sources of exposure. A case-patient may have traveled internationally and been a college student. Colleges and universities, like other crowded environments, are settings with increased risk that infection will spread rapidly once introduced.

**For more information:**

- [Centers for Disease Control and Prevention \(CDC\) Mumps website](#)
- [Epidemiology and Prevention of Vaccine-Preventable Diseases \(the Pink Book\) – Mumps](#)
- [CDC/CSTE Mumps Case Definition](#)
- [California Department of Public Health \(CDPH\) Mumps website](#)
- [County of San Diego Immunization Program website](#)

# PERTUSSIS

## Disease Info

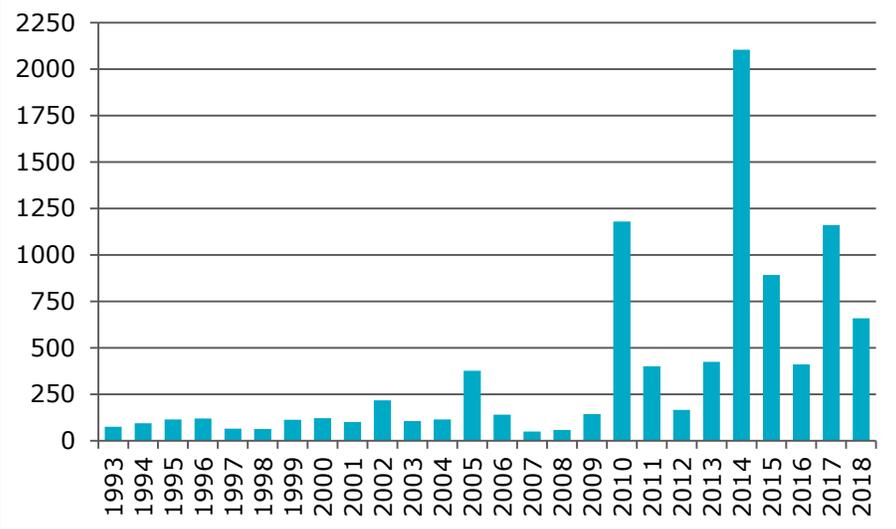
**Infectious agent:** *Bordetella pertussis*, a bacterium

**Incubation:** Usually 7-10 days, range 4-21 days

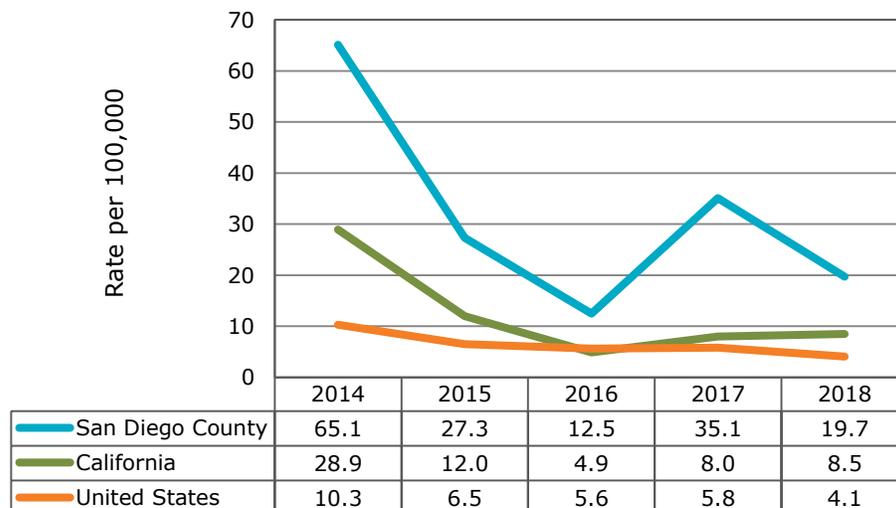
**Mode of transmission:** Person-to-person by the respiratory route, commonly by coughing or sneezing

**Symptoms:** Early symptoms include runny nose, low-grade fever, mild, occasional cough, apnea; later-stage symptoms include bursts of numerous, rapid coughs, after which the patient may produce a characteristic high-pitched inspiratory “whoop.” Vomiting or exhaustion can occur after coughing. Symptoms can last 6-10 weeks, duration of cough may extend longer for some.

**Pertussis Cases, San Diego County  
1993-2018**



**Pertussis Incidence, San Diego County, California,  
and United States, 2014-2018**

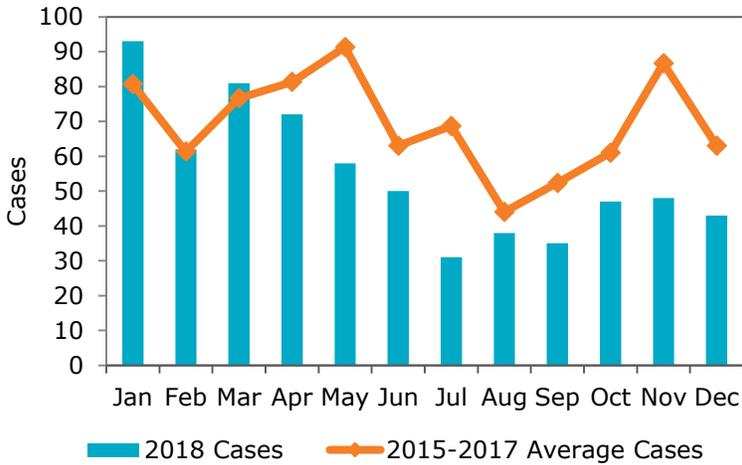


## Key Points

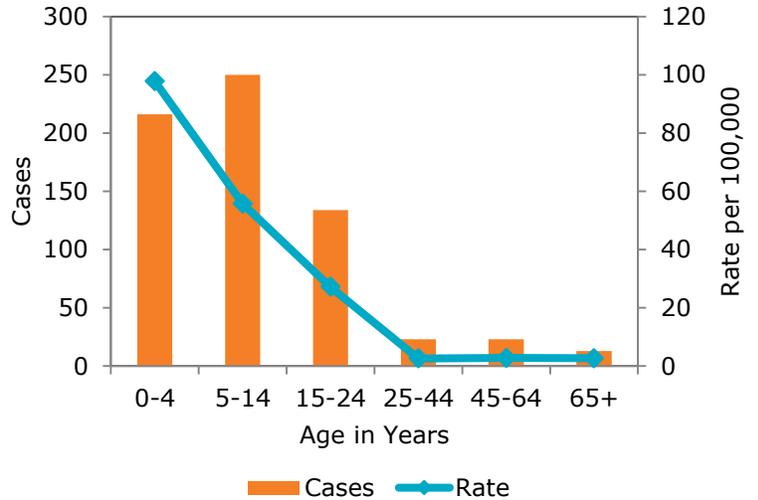
- In 2018, there were 659 cases of pertussis in San Diego County. Peaks in incidence occur every three to five years.
- The incidence rate of pertussis in 2018 was higher in San Diego County (19.7 per 100,000) than in California (8.5 per 100,000) and the United States (4.1 per 100,000).
- After the introduction of a whole-cell vaccine in the United States in the 1940s, the incidence rate of pertussis decreased from 150 cases per 100,000 in the early 1940s to eight per 100,000 population in 1960. In recent years, the incidence of pertussis has increased. More cases have been reported among children 7-10 and 13-14 years of age, and increases have been noted among children and adolescents who were fully-vaccinated. These increases are likely due to the transition to acellular vaccine use in the 1990s.
- In late 2013-2014, a national media outreach campaign, along with local press releases, raised awareness about pertussis. This may have led to increased pertussis case identification and treatment by providers in 2014.
- Pertussis has no distinct seasonality, though, in 2018, higher case counts were noted during the months of January through April.
- In 2018, the majority of case-patients were under the age of 15 years.
- Rates of infection were highest among white (215.3 per 100,000) and Hispanic/Latino children (206.1 per 100,000) under the age of six months.
- In 2018, incidence rates of pertussis were highest among residents of the North Coastal HHS Region of the county.

# PERTUSSIS

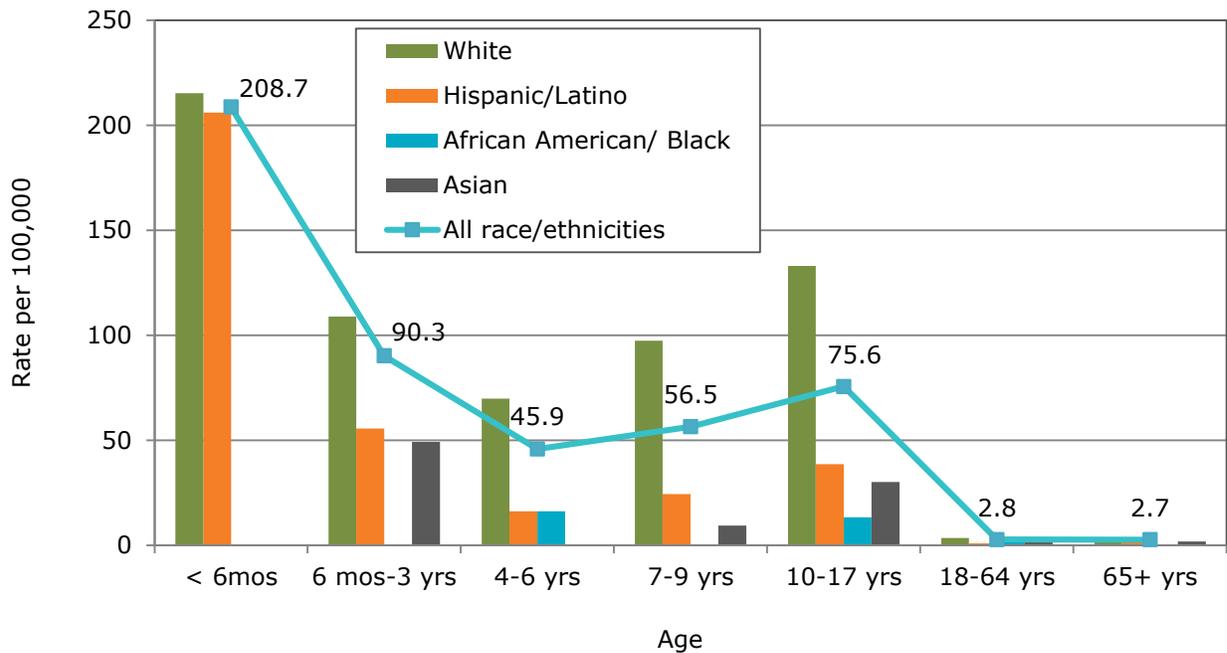
**Pertussis Cases by Month of Onset, San Diego County, 2018**



**Pertussis Cases and Rates by Age, San Diego County, 2018**



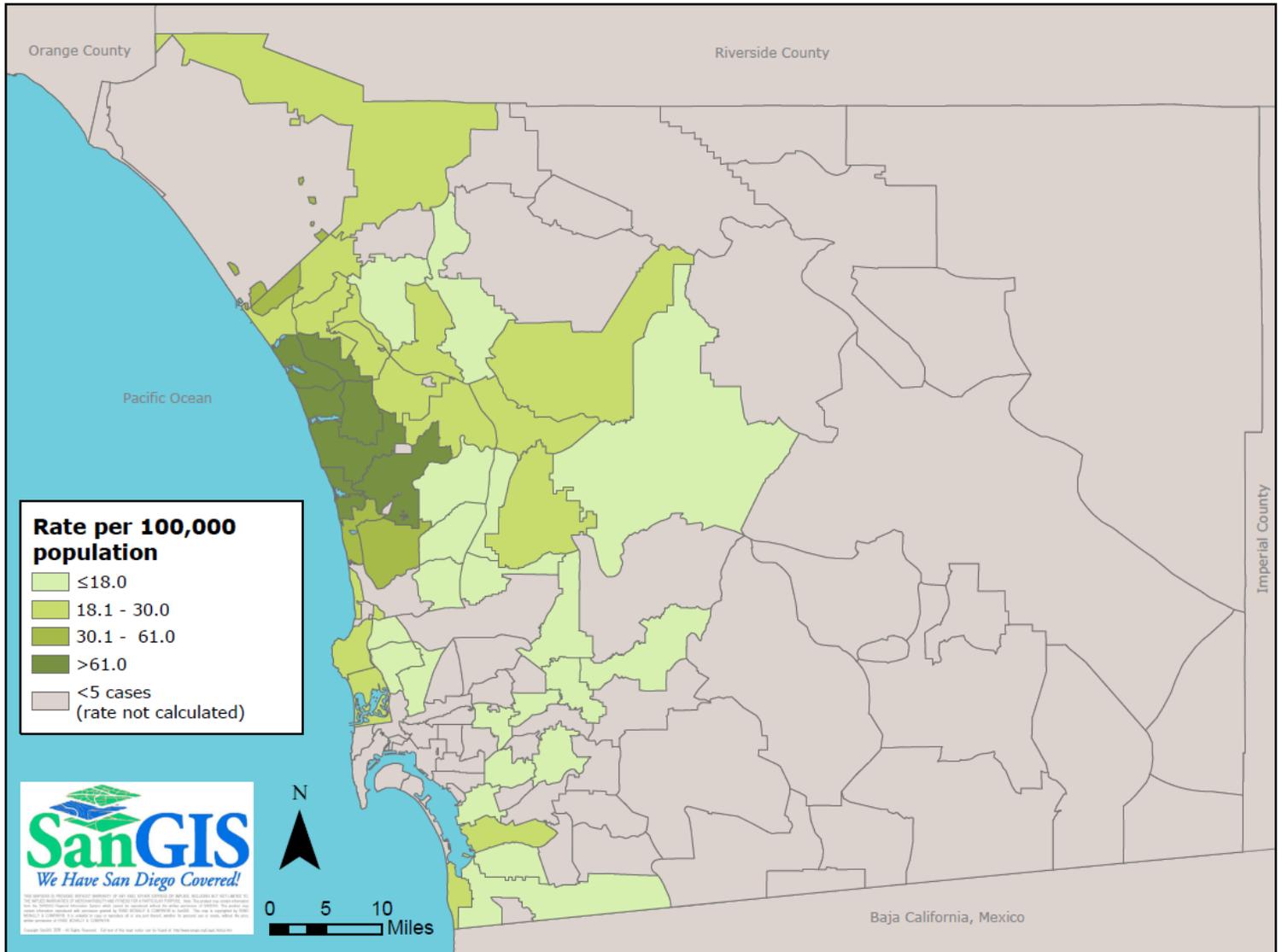
**Pertussis Rates by Age and Race/Ethnicity, San Diego County, 2018**



**For more information:**

- [Centers for Disease Control and Prevention \(CDC\) Pertussis website](#)
- [Epidemiology and Prevention of Vaccine-Preventable Diseases \(the Pink Book\) – Pertussis](#)
- [California Department of Public Health \(CDPH\) Pertussis website](#)
- [CDC/CSTE Pertussis Case Definition](#)
- [CDPH Pertussis Case Definition](#)
- [CDC Immunization Schedules](#)

## Pertussis Rates by Zip Code of Residence, San Diego County, 2018



### Notes:

1. San Diego County and California counts include confirmed, probable, and suspect cases following the California Department of Public Health case definition. US counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Pertussis became nationally notifiable in 1973.
3. Pertussis is vaccine-preventable. In the United States, whole-cell pertussis vaccines were first licensed in 1914 and became available in 1948 as the combined DTP vaccine, which provides protection against diphtheria, tetanus, and pertussis. Acellular pertussis vaccines are currently available in combination with tetanus and diphtheria toxoids as DTaP (pediatric formulation) or Tdap (adolescent and adult formulation).
4. CDC recommends vaccination of infants, children, adolescents, and adults. It is recommended that pregnant women receive the Tdap vaccine during each pregnancy between 27-36 weeks of gestation.

# RABIES, ANIMAL

## Disease Info

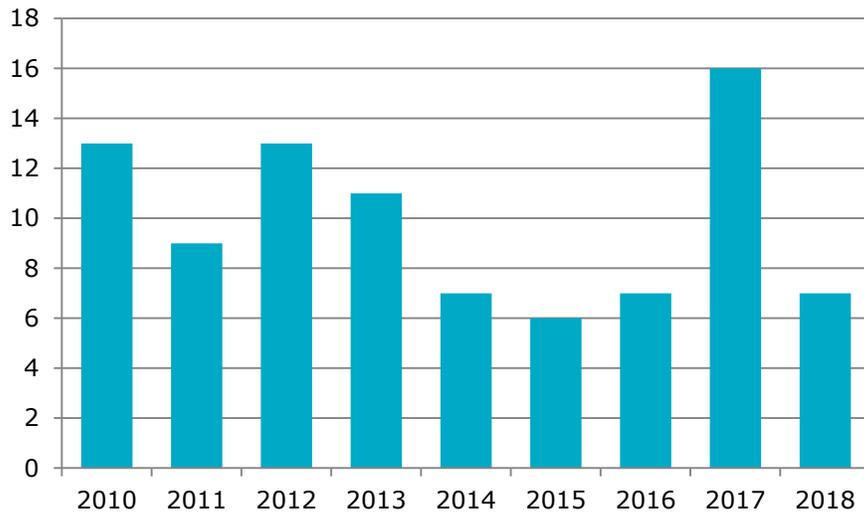
**Infectious agent:** Rabies virus, a lyssavirus in the family Rhabdoviridae

**Incubation:** Highly variable, weeks to months in animals; in humans, usually 3-8 weeks, but ranging from a few days to several years

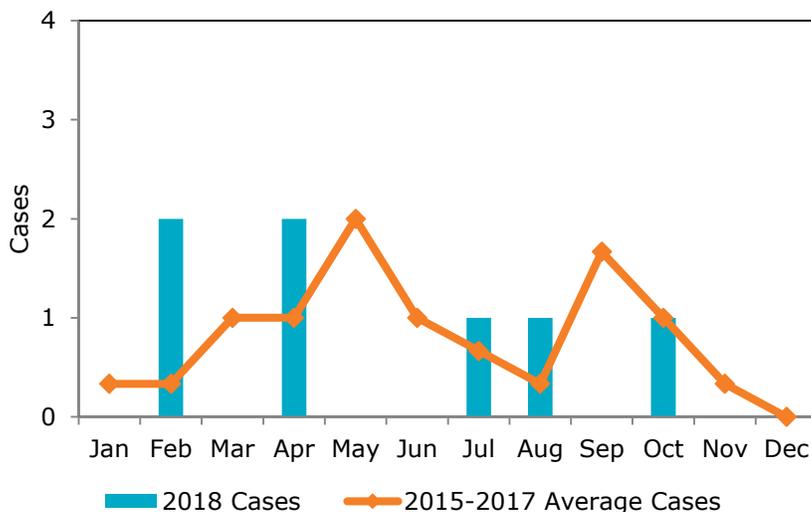
**Mode of transmission:** Exposure to saliva of a rabid mammal, usually introduced through a bite or scratch

**Symptoms:** Early signs in animals may include lethargy, fever, anorexia, progressing to abnormal or uncoordinated movement, weakness, paralysis, difficulty swallowing and breathing, hypersalivation, abnormal or aggressive behavior, followed by death

**Animal Rabies Cases, San Diego County  
2010-2018**



**Animal Rabies Cases by Month of Report,  
San Diego County, 2018**



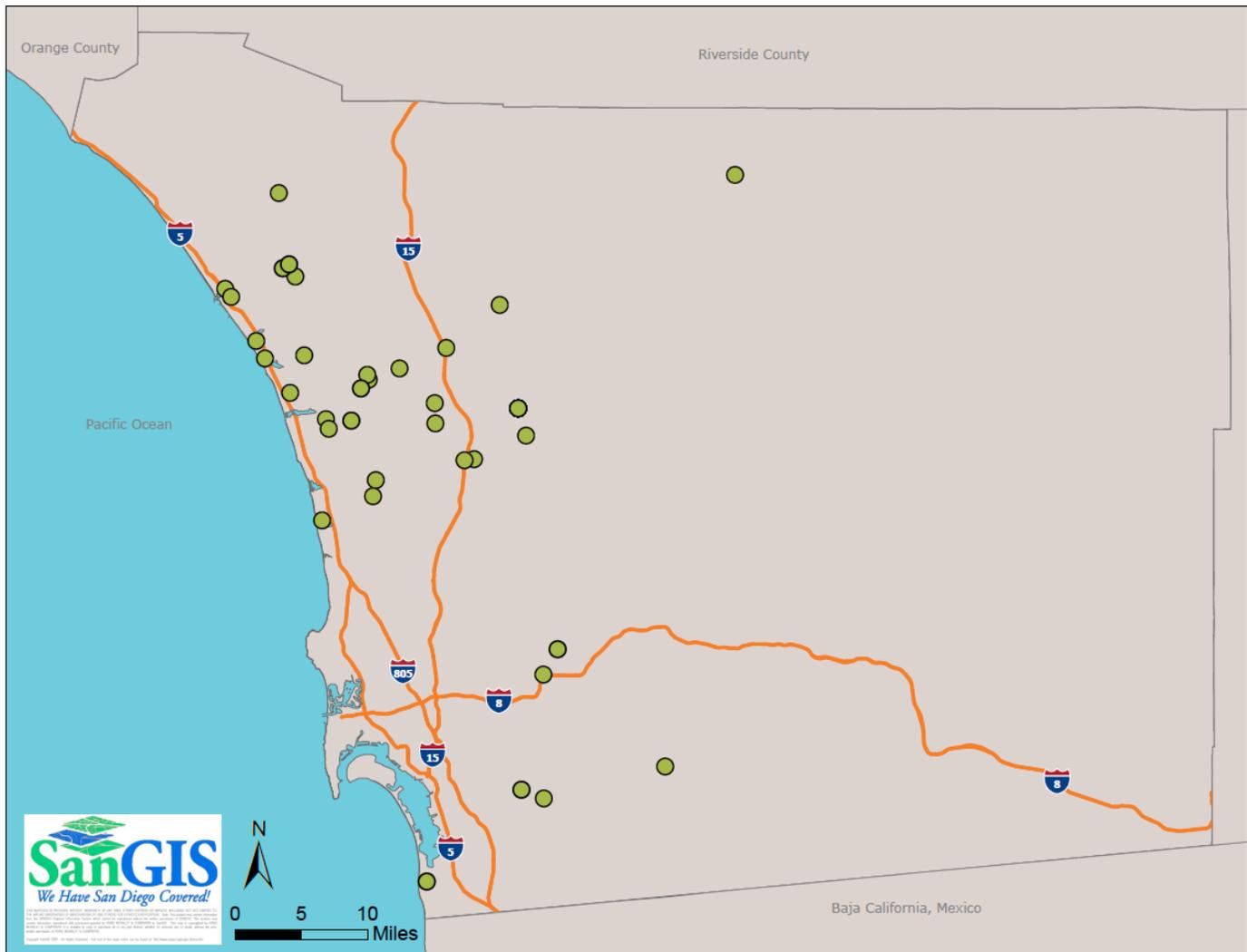
## Key Points

- Eighty-nine animals tested positive for rabies in San Diego County between 2010 and 2018. Annual counts ranged from six to 16.
- All animals testing positive for rabies were bats, with the exception of a grey fox infected with a bat variant of rabies in 2010.
- A domestic animal (e.g., dog, cat) has not tested positive for rabies in San Diego County since 1968. However, San Diego County pets remain at risk for rabies from contact with bats.
- Many of the bats testing positive for rabies in San Diego County are found during the summer and early fall months when bat activity increases and warmer weather and outdoor activities provide opportunities for humans and pets to have contact with wild animals. However, bats test positive for rabies throughout the year.
- The last human case in San Diego County was in 2001, in a person who sustained a dog bite in the Philippines.
- Rabies-positive bats have been found in many areas of San Diego County.



# RABIES, ANIMAL

**Bats Testing Positive for Rabies by Location Found, San Diego County, 2014-2018**



**Notes:**

1. Counts include confirmed cases following the CDC/CSTE case criteria.
2. Animal rabies has been nationally notifiable since 1944.
3. Data on animal rabies cases in San Diego County were collected and recorded differently prior to 2010. Thus, those data are not comparable and are not reflected in this summary.
4. Generally, only animals that have come into contact with humans or pets are tested; counts are not reflective of all animal rabies in the county.
5. Nine positive bats were found at San Diego Zoo Safari Park in Escondido during the 5-year period; they appear as a single dot on the map.
6. Location of bats testing positive for rabies is from the San Diego County communicable disease registry.

**For more information:**

- [Centers for Disease Control and Prevention \(CDC\) Rabies website](#)
- [Compendium of Animal Rabies Prevention and Control, 2016 \(NASPHV\)](#)
- [Rabies Surveillance in the United States during 2014](#)
- [California Department of Public Health \(CDPH\) Rabies Surveillance and Prevention website](#)
- [CDPH California Compendium of Rabies Control and Prevention, 2012](#)
- [CDC/CSTE Animal Rabies Case Definition](#)
- [CDC/CSTE Human Rabies Case Definition](#)
- [County of San Diego Rabies website](#)

# SALMONELLOSIS

## Disease Info

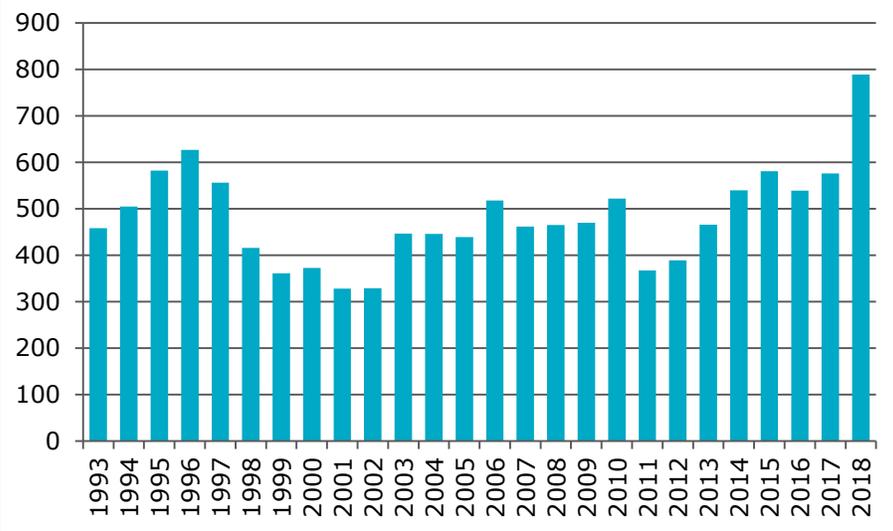
**Infectious agent:** *Salmonella*, non-typhi bacteria

**Incubation:** Usually 12-36 hours, range 6 hours-7 days

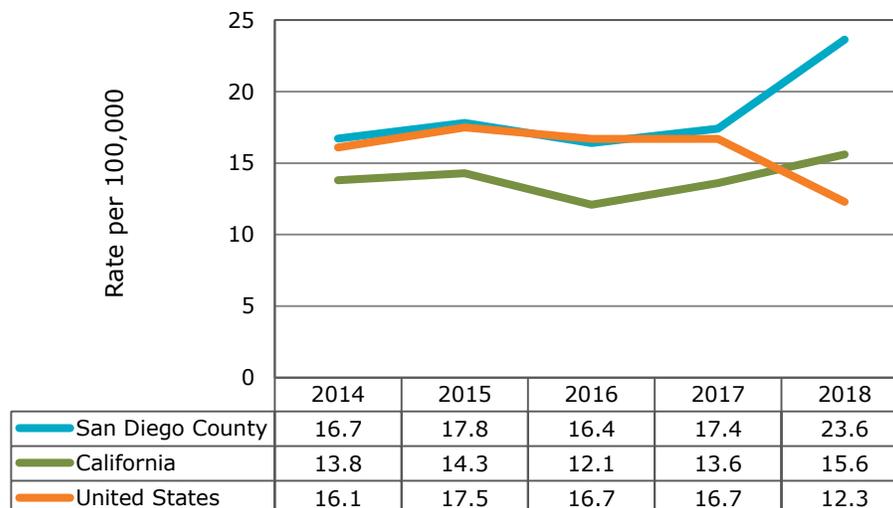
**Mode of transmission:** Fecal-oral; raw or undercooked eggs; contaminated poultry; cross-contamination; contact with animals, reptiles, or birds; person-to-person (e.g., day care/diapered children/sexual activity)

**Symptoms:** Acute diarrhea, abdominal cramps, fever, sometimes vomiting

**Salmonellosis Cases, San Diego County  
1993-2018**



**Salmonellosis Incidence, San Diego County,  
California, and United States, 2014-2018**



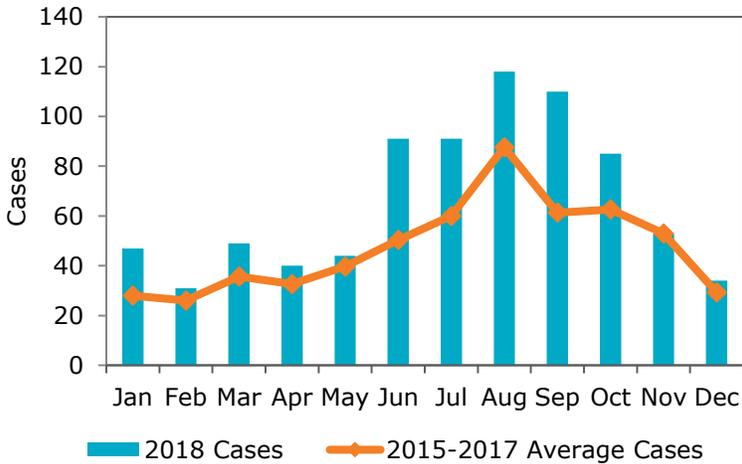
## Key Points

- In 2018, there were 789 cases of salmonellosis in San Diego County. This is an increase of 37% percent compared to the previous year (576 cases). In 2017, the case definition was changed to include cases detected by culture-independent diagnostic testing (CIDT) as probable cases.
- The incidence rate of salmonellosis in 2018 was higher in San Diego County (23.6 per 100,000) than in California and the United States.
- In 2018, 24% of salmonellosis case-patients in San Diego County were hospitalized for their infections.
- Onsets of illness peaked during the summer months in 2018. This is consistent with trends seen in previous years.
- The greatest number of cases in 2018 were in persons between the ages of 25-44 years (209 cases), followed by persons aged 45-64 years (158 cases). The highest rates, however, were among children under five years of age (61.5 per 100,000).
- *Salmonella* Enteritidis was the most frequently reported serotype among San Diego County cases in 2018.
- Commonly reported risk factors included eating food prepared outside of the home (71%) and consuming fresh fruit (68%), poultry (59%), and eggs (59%). Travel was reported by 35% of case-patients.

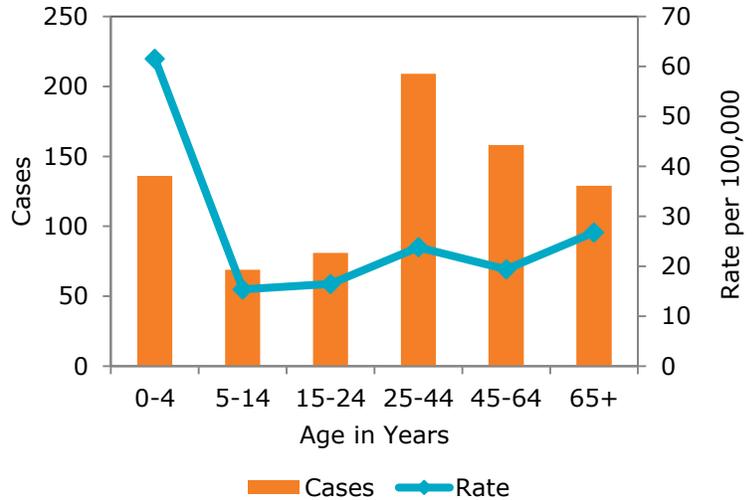
**24% HOSPITALIZED  
2017**

# SALMONELLOSIS

**Salmonellosis Cases by Month of Onset, San Diego County, 2018**



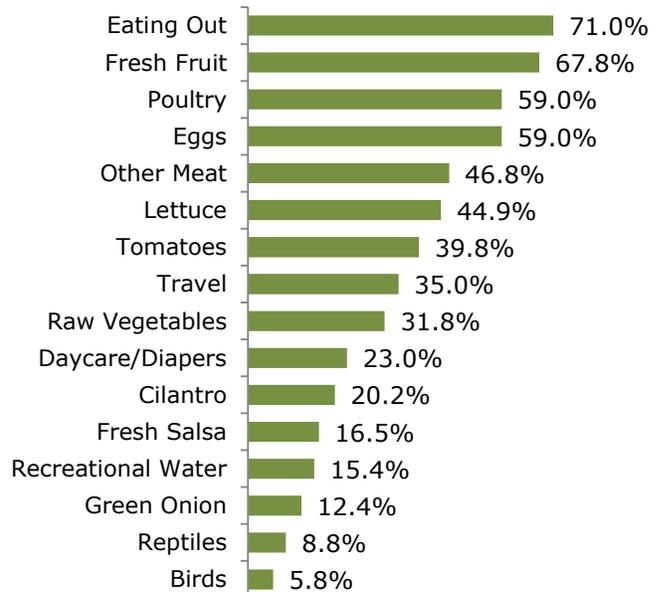
**Salmonellosis Cases and Rates by Age, San Diego County, 2018**



**Reported Salmonella Serotypes, San Diego County, 2018**

Serotype	Cases	Percent
Enteritidis	126	16.0
Newport	65	8.2
Infantis	49	6.2
Montevideo	46	5.8
Manhattan	22	2.8
Muenchen	18	2.3
Typhimurium	18	2.3
Braenderup	15	1.9
All other serotypes	176	22.3
Unknown serotype	254	32.2
Total	789	100.0

**Risk Factors Reported by Salmonellosis Case-Patients, San Diego County, 2018**

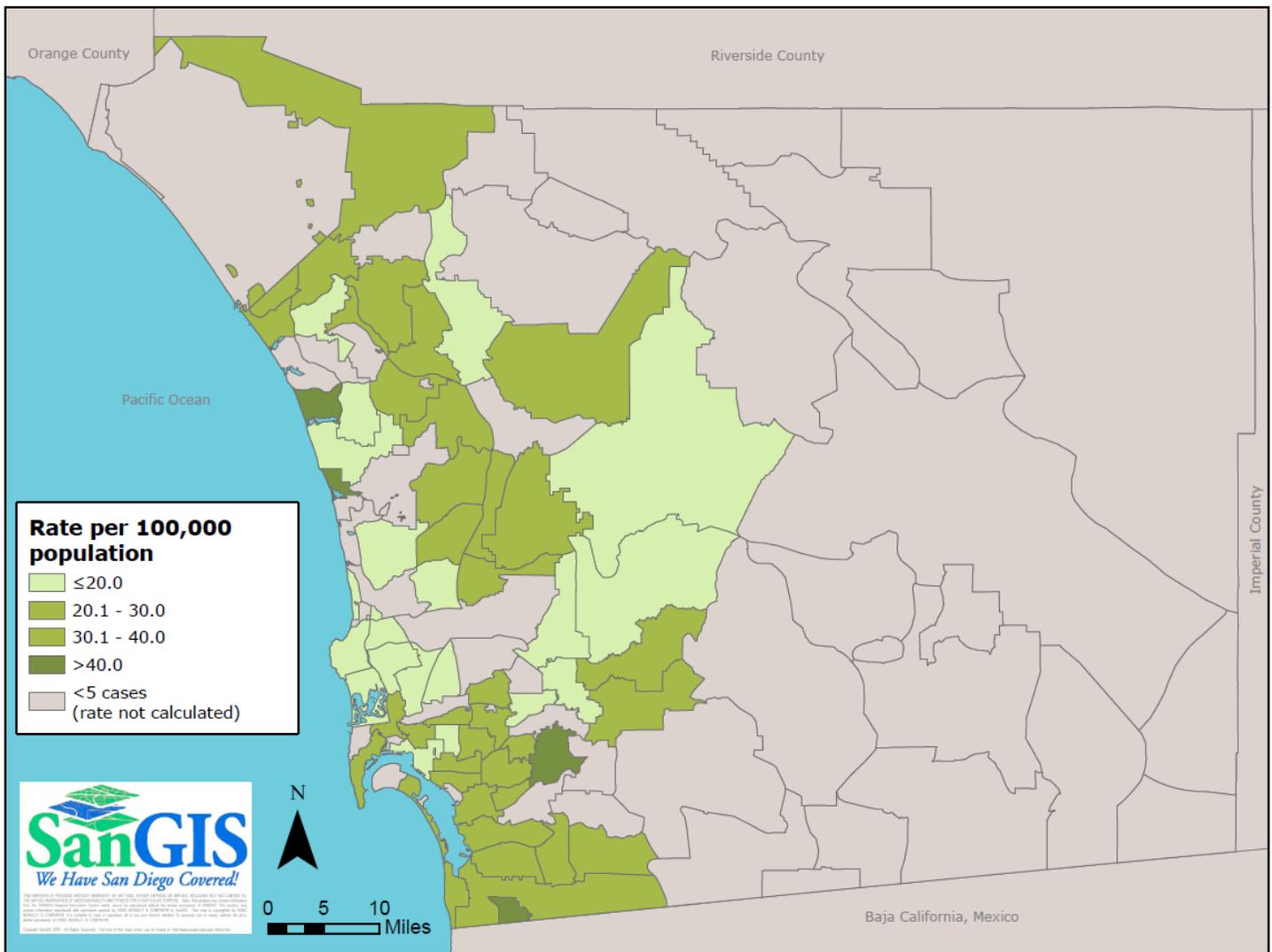


**Notes:**

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria. In 2017, the case definition was changed to include cases detected by culture-independent diagnostic testing (CIDT) as probable cases. Use of CIDT detection methods is increasing.
2. Salmonellosis became nationally notifiable in 1944.
3. Denominators for hospitalization and risk factor calculations are cases with available information, ranging from 525-676 of 789 total cases.
4. Risk factors are potential sources as reported by case-patients, not confirmed sources of infection.

# SALMONELLOSIS

**Salmonellosis Rates by Zip Code of Residence, San Diego County, 2018**



**For more information:**

- [Centers for Disease Control and Prevention \(CDC\) Salmonellosis website](#)
- [California Department of Public Health \(CDPH\) Salmonellosis website](#)
- [CDC/CSTE Salmonellosis Case Definition](#)
- [Salmonella Outbreak Investigations CDC webpage](#)
- [Take Care with Pet Reptiles and Amphibians CDC webpage](#)
- [PulseNet](#)

# SHIGA TOXIN-PRODUCING *E. COLI*

## Disease Info

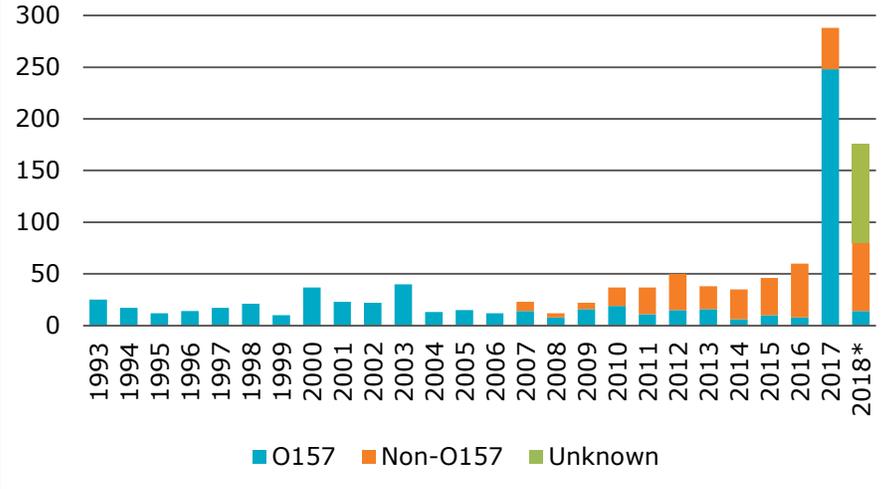
**Infectious agent:** Strains of *Escherichia coli* (*E. coli*) bacteria that produce Shiga toxin; *E. coli* O157 is the best known, but many other serogroups (referred to as non-O157 *E. coli*) cause disease

**Incubation:** Average 3-4 days, range 1-10 days

**Mode of transmission:** Fecal-oral; food/beverage/water contaminated by ruminant feces (often ground beef, sprouts, leafy greens, unpasteurized milk products); contact with ruminants; person-to-person in households, child care settings

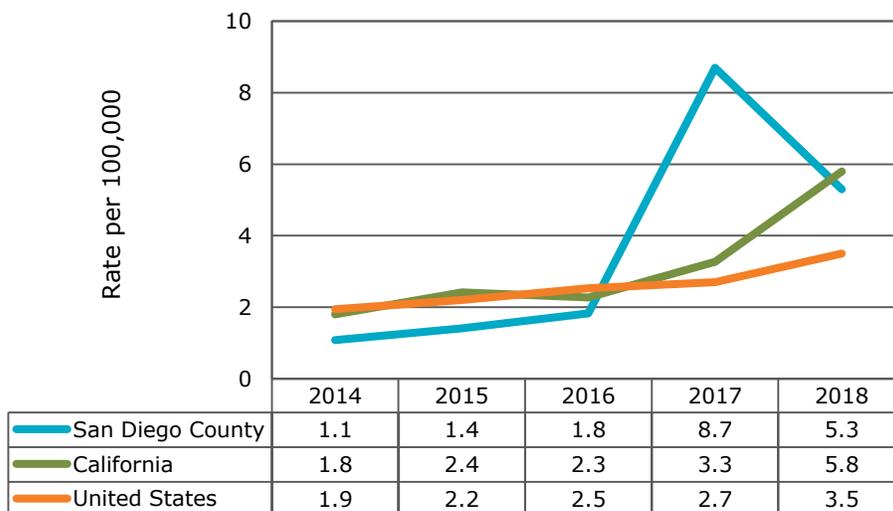
**Symptoms:** Acute diarrhea, often bloody; abdominal cramps; sometimes vomiting and low-grade fever

**Shiga Toxin-Producing *E. coli* Cases by Serogroup, San Diego County, 1993-2018**



\*There was a case definition change in 2018 that began including culture-independent diagnostic test results as probable cases. Due to this change, there are cases that had unknown serogroup information in 2018.

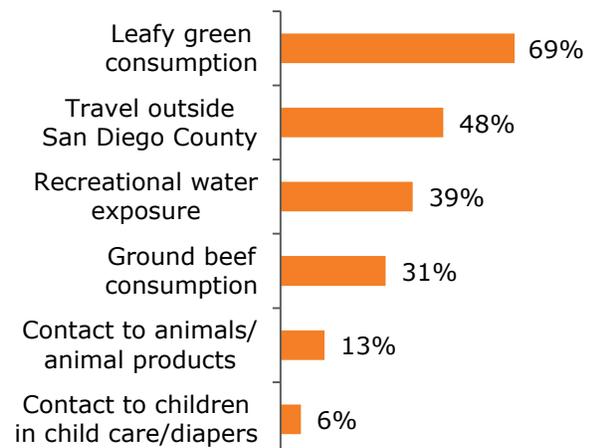
**Shiga Toxin-Producing *E. coli* Incidence, San Diego County, California, and United States, 2014-2018**



## Key Points

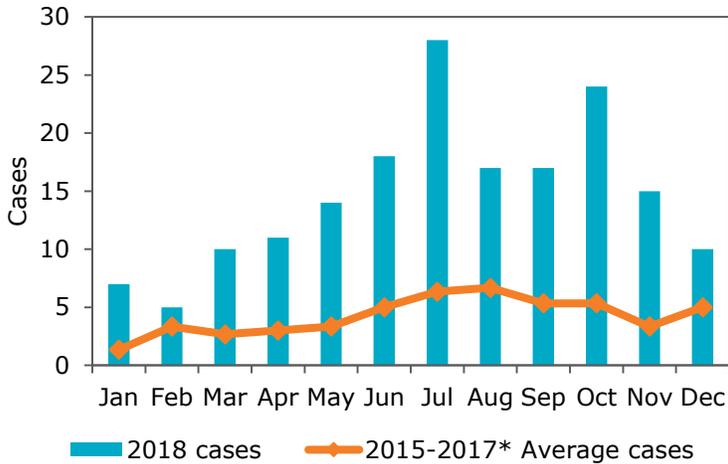
- In 2018, there were 176 cases of Shiga toxin-producing *E. coli* (STEC) reported in San Diego County.
- There were three cases of post-STEC hemolytic uremic syndrome.
- Among STEC cases in 2018, 14 cases (8%) were serogroup O157. Other common serogroups were O103, O111 and O26. Due to the increase in culture-independent diagnostic testing methods for STEC, 55% of cases had an unknown serogroup.
- Incidence of reported STEC in San Diego County had been lower than in California and the United States in recent years, but due to an outbreak in the military population, increased dramatically in 2017. In 2018, San Diego County was similar to California in incidence.
- The rates of STEC in San Diego County were highest among children under five years old, with the next highest rate among adults over 65 years old.
- Consumption of leafy greens (69%) and travel outside of San Diego County (48%) were the most commonly reported exposures in 2018.

**Risk Factors Reported by Case-patients, Shiga Toxin-Producing *E. coli*, San Diego County, 2018**



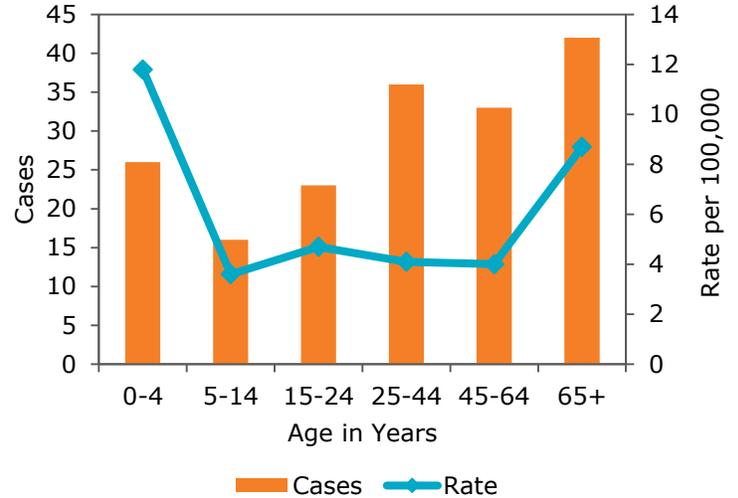
# SHIGA TOXIN-PRODUCING *E. COLI*

**Shiga Toxin-Producing *E. coli* Cases by Month of Onset, San Diego County, 2018**

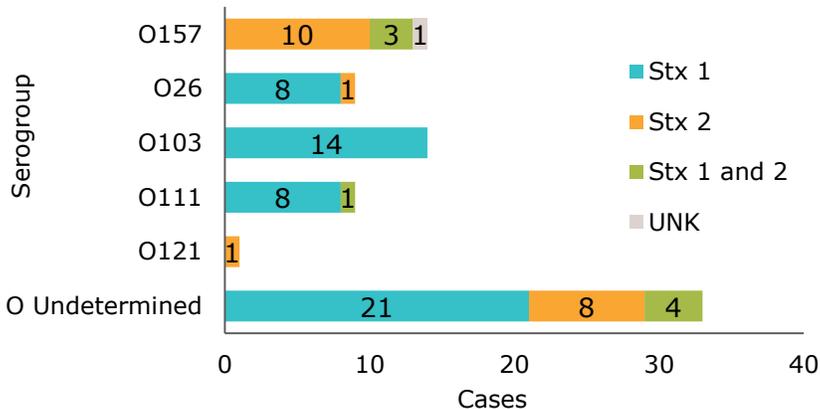


\*Excludes cases that were part of the large outbreak at Marine Corps Recruit Depot.

**Shiga Toxin-Producing *E. coli* Cases and Rates by Age, San Diego County, 2018**



**Serogroups of Culture-Confirmed Shiga Toxin-Producing *E. coli* Cases by Shiga Toxin (Stx) Type, San Diego County, 2018**



**36%** EMERGENCY DEPARTMENT VISIT  
**22%** HOSPITALIZED  
**2018**  
**3** CASES OF HEMOLYTIC UREMIC SYNDROME

**For more information:**

- [Centers for Disease Control and Prevention \(CDC\) \*E. coli\* website](#)
- [CDC/CSTE Shiga toxin-Producing \*E. coli\* Case Definition](#)
- [California Department of Public Health \(CDPH\) \*E. coli\* O157 website](#)
- [U. S. Department of Agriculture Food Safety and Inspection Service \*E. coli\* website](#)

**Notes:**

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria. In 2018, the case definition was changed to include cases detected by culture-independent diagnostic testing (CIDT) as probable cases. In these cases, serogroup information is not available.
2. *E. coli* O157 has been nationally notifiable since 1995. Non-O157 Shiga toxin-producing *E. coli* became reportable as Enterohemorrhagic *E. coli* (EHEC) in 2001 and as Shiga toxin-producing *E. coli* (STEC) in 2006.
3. Shiga toxin specimens and potential STEC isolates from San Diego County cases are sent to the California Department of Public Health Microbial Diseases Laboratory for confirmation and serogroup and Shiga toxin identification.
4. Denominators for clinical/risk factor calculations are cases with available information, ranging from 138-176 of 176 cases.
5. Risk factors are potential exposures mentioned by case-patients, not confirmed sources of infection.
6. There was a [large outbreak](#) of *E. coli* O157 among recruits at the Marine Corp Recruit Depot San Diego in late 2017, including 242 cases of STEC and 14 cases of hemolytic uremic syndrome.

# SHIGELLOSIS

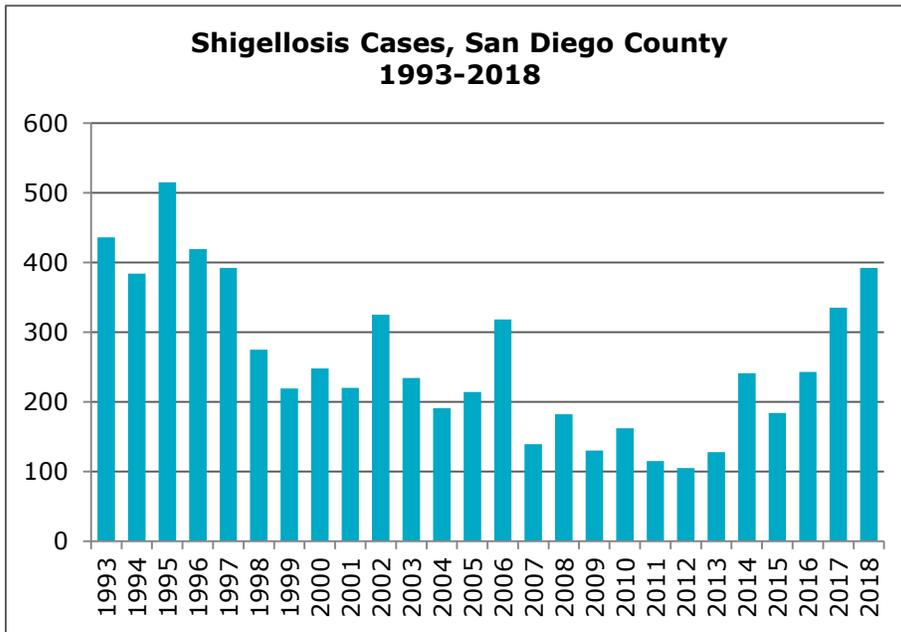
## Disease Info

**Infectious agent:** Four species, or serogroups, of *Shigella* bacteria: *S. dysenteriae* (Group A), *S. flexneri* (Group B), *S. boydii* (Group C), and *S. sonnei* (Group D)

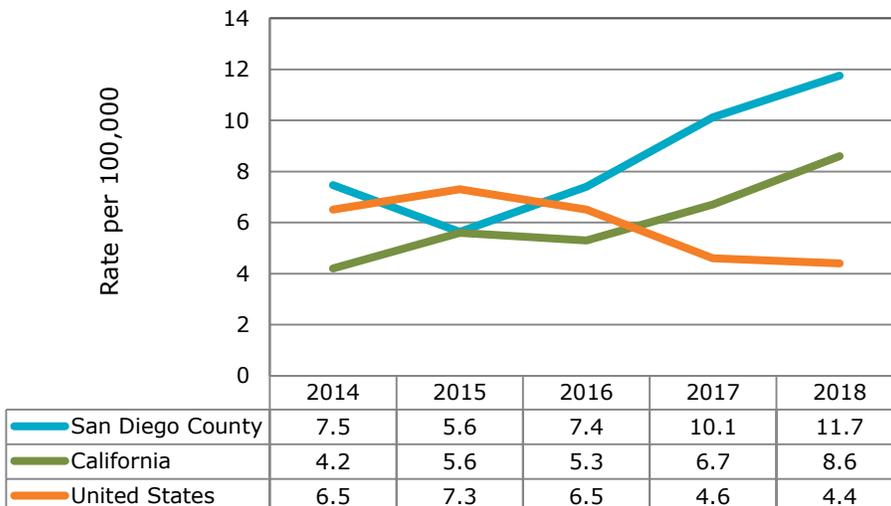
**Incubation:** Usually 1-3 days, range 12 hours-4 days

**Mode of transmission:** Fecal-oral; ingestion of contaminated food or water; person-to-person (e.g., day care/diapered children/sexual activity)

**Symptoms:** Diarrhea (often bloody), abdominal cramps, and fever



**Shigellosis Incidence, San Diego County, California, and United States, 2014-2018**



## Key Points

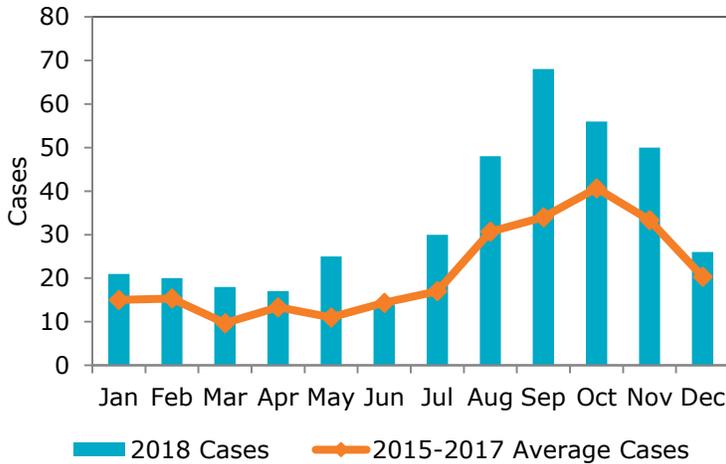
- In 2018, there were 392 cases of shigellosis in San Diego County. This is an increase of 17% compared to the previous year (335 cases). In 2017, the case definition was changed to include cases detected by culture-independent diagnostic testing (CIDT) as probable cases.
- The incidence rate of shigellosis in 2018 was higher in San Diego County (11.7 per 100,000) than in California (8.6 per 100,000) and the United States (4.4 per 100,000).
- Similar to prior years, cases of shigellosis increased through the end of the summer months and declined after October.
- The greatest number of cases and the highest incidence rates were among persons 25-64 years of age.
- Commonly reported risk factors included eating food prepared outside of the home (74%), and consuming fresh fruit (66%), raw vegetables (49%), and cheese (44%). Travel was reported by 48% of case-patients.
- In San Diego County, the most frequently reported species were *S. sonnei* (25%) and *S. flexneri* (25%).
- Incidence rates were highest among residents of the Central and South HHS Regions of San Diego County.



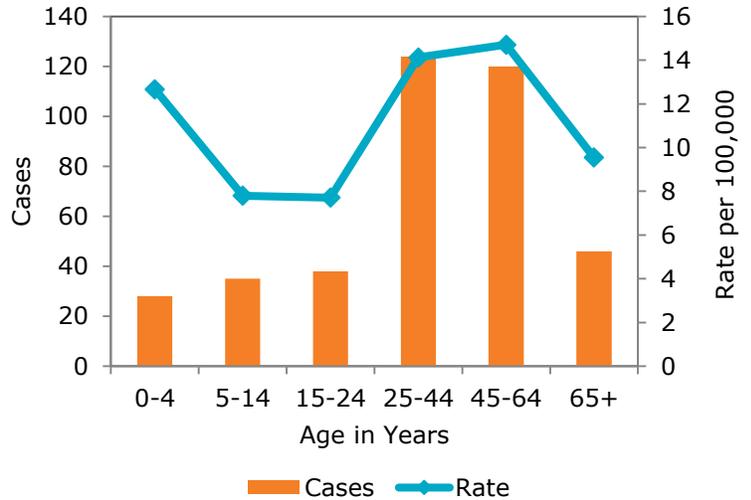
3D computer-generated image of a number of rod-shaped, drug-resistant *Shigella* bacteria.  
Photo credit: CDC/James Archer, Public Health Image Library

# SHIGELLOSIS

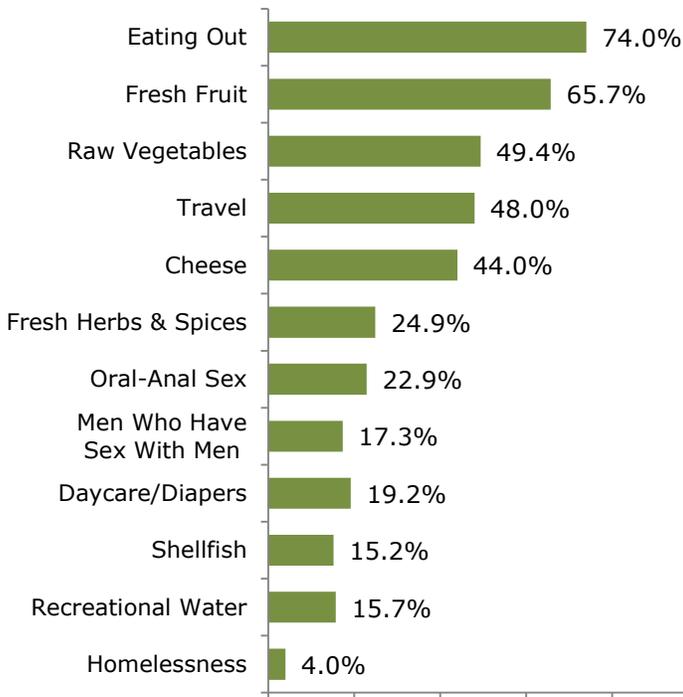
**Shigellosis Cases by Month of Onset, San Diego County, 2018**



**Shigellosis Cases and Rates by Age, San Diego County, 2018**



**Risk Factors Reported by Shigellosis Cases, San Diego County, 2018**



**Reported Shigella Species (Serogroups), San Diego County, 2018**

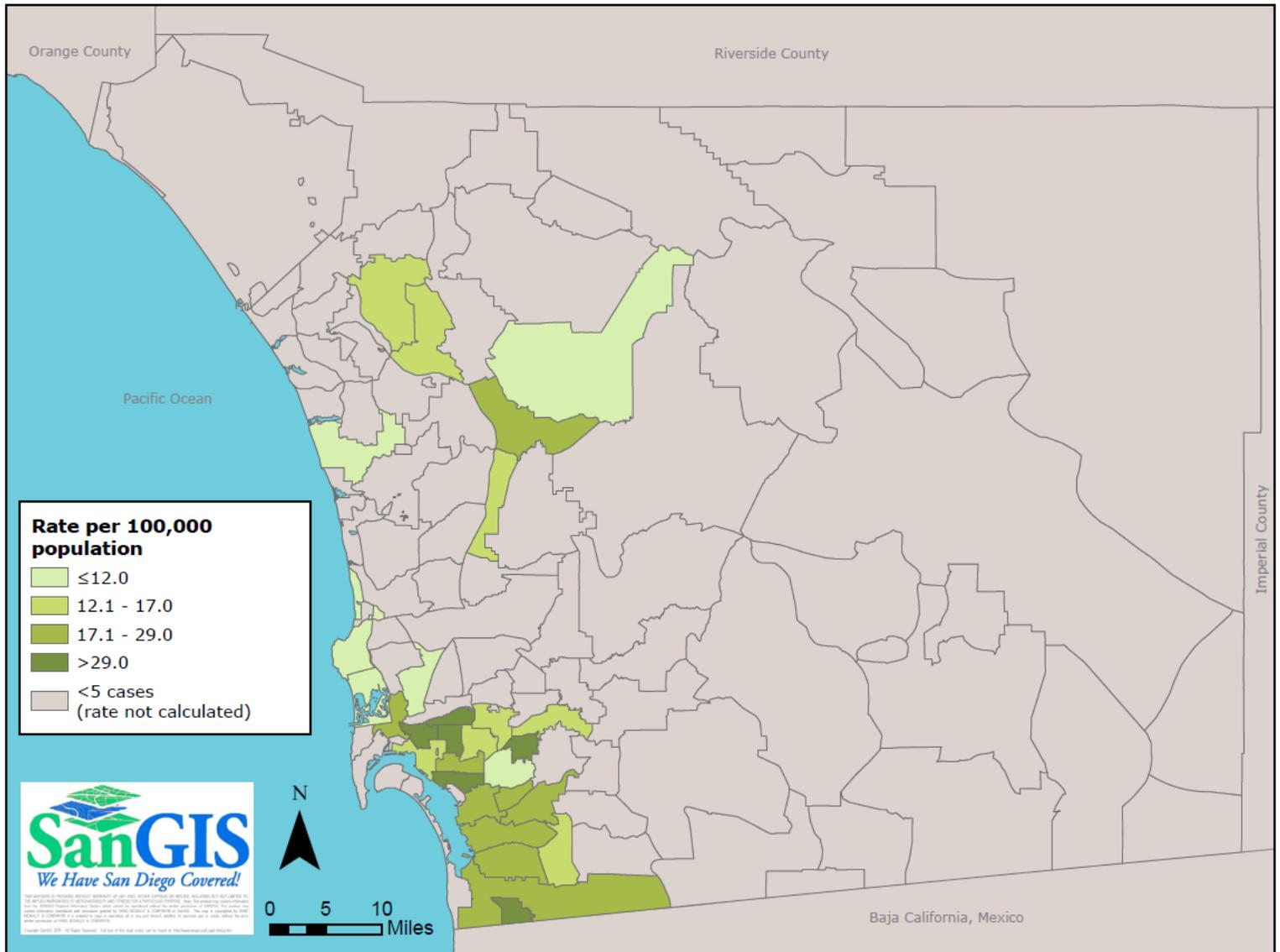
Species	Cases	Percent
<i>S. sonnei</i> (D)	99	25.3
<i>S. flexneri</i> (B)	96	24.5
<i>S. dysenteriae</i> (A)	5	1.3
<i>S. boydii</i> (C)	3	0.8
Unspecified	189	48.2
Total	392	100.0

**Notes:**

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria. In 2017, the case definition was changed to include cases detected by culture-independent diagnostic testing (CIDT) as probable cases. Use of CIDT detection methods is increasing.
2. Shigellosis became nationally reportable in 1944.
3. Denominators for risk factor calculations are cases with available information, ranging from 179-319 of 392 total cases.
4. Risk factors are potential sources as reported by case-patients, not confirmed sources of infection.

# SHIGELLOSIS

## Shigellosis Rates by Zip Code of Residence, San Diego County, 2018



### For more information:

- [Centers for Disease Control and Prevention \(CDC\) Shigellosis website](#)
- [California Department of Public Health \(CDPH\) Shigellosis website](#)
- [CDC/CSTE Shigellosis Case Definition](#)

# TYPHOID FEVER

## Disease Info

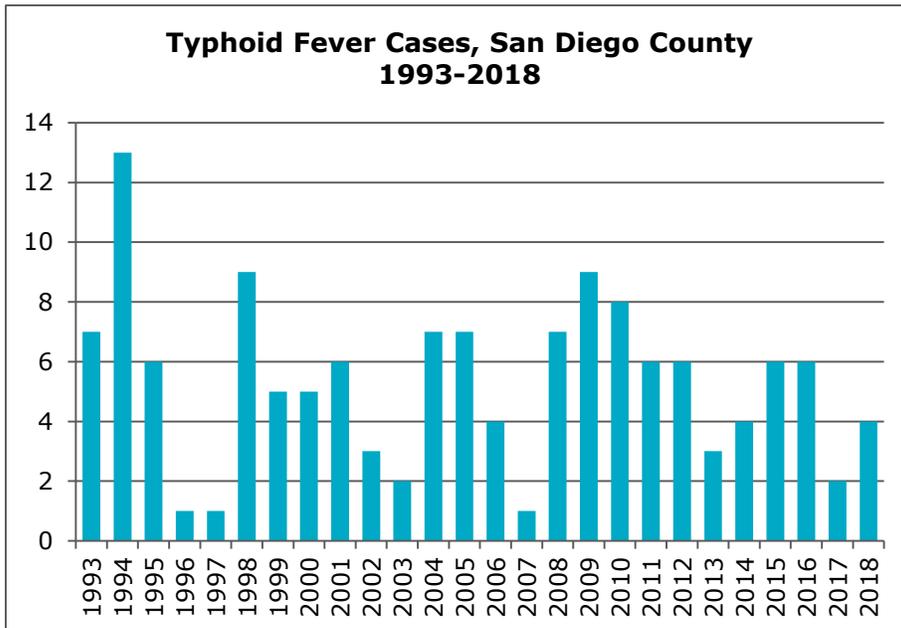
**Infectious agent:** *Salmonella enterica* serotype Typhi, a bacterium

**Incubation:** Usually 8-14 days, range 3-30 days

**Mode of transmission:** Person-to-person through contact with an infected person's feces or urine; contaminated food or drink

**Symptoms:** High fever (103° or 104° F), stomach pain, headache, fatigue, loss of appetite; sometimes a rash of flat, rose-colored spots

**Typhoid Fever Cases, San Diego County  
1993-2018**



**Typhoid Fever Incidence, San Diego County,  
California, and United States, 2014-2018**



## Key Points

- In 2018, there were four cases of typhoid fever in San Diego County.
- The incidence rate of typhoid fever in San Diego County has remained low. In 2018, the rate in San Diego County was 0.1 per 100,000 population, similar to the rate for California (0.2 per 100,000) and the United States (0.1 per 100,000).
- All case-patients lived or traveled internationally prior to the onset of their illnesses, primarily to Southeast Asia.



3D computer-generated image of a number of *Salmonella* serotype Typhi bacteria.  
Photo credit: CDC/ James Archer, Public Health Image Library

## Notes:

1. Counts include confirmed and probable cases with acute illness following the CDC/CSTE case criteria. Chronic carriers are not included.
2. Typhoid fever became nationally notifiable in 1944.

## For more information:

- [Centers for Disease Control and Prevention \(CDC\) Typhoid Fever website](#)
- [California Department of Public Health \(CDPH\) Typhoid Fever website](#)
- [CDC/CSTE Typhoid Fever Case Definition](#)
- [CDC Health Information for International Travel \(the Yellow Book\) – Typhoid & Paratyphoid Fever](#)

# VIBRIOSIS

## Disease Info

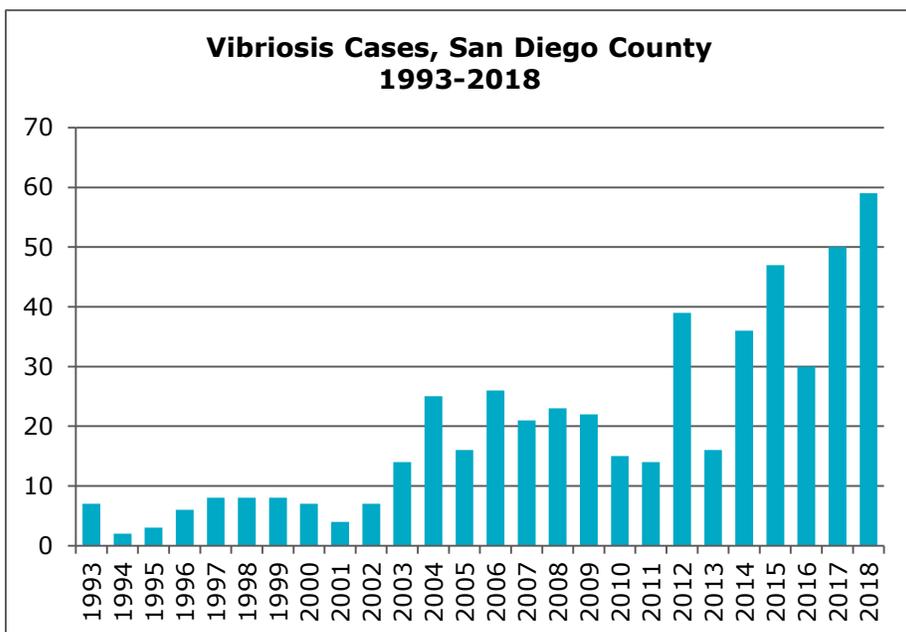
**Infectious agent:** Numerous bacteria in the *Vibrionaceae* family, including *V. parahaemolyticus*, *V. alginolyticus*, nontoxigenic *V. cholerae*, *V. vulnificus*, *Grimontia spp.*, *Photobacterium spp.*

**Incubation:** Usually 10-72 hours

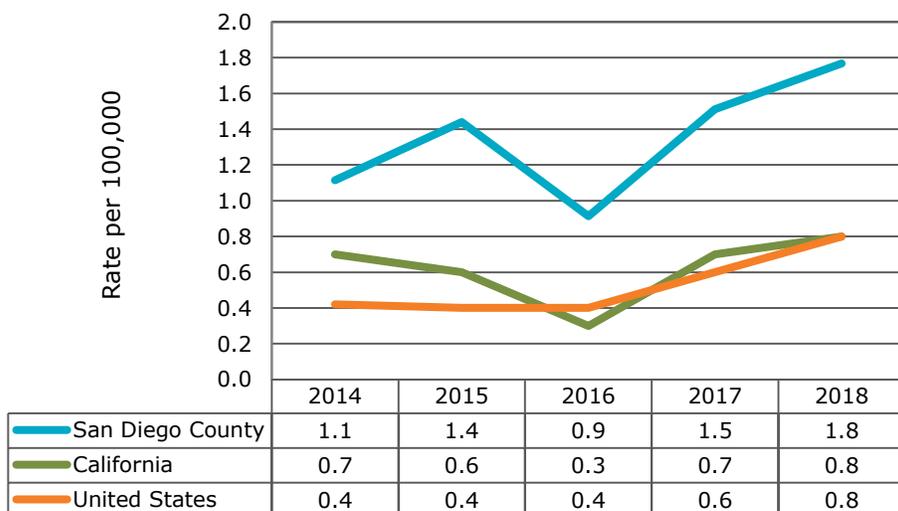
**Mode of transmission:** Ingestion of raw or undercooked seafood, especially shellfish; skin infection by exposure of wounds to brackish or salt water

**Symptoms:** Watery diarrhea, abdominal cramps, nausea, vomiting, fever; septicemia; skin infection; ear infection; can be asymptomatic

**Vibriosis Cases, San Diego County  
1993-2018**



**Vibriosis Incidence, San Diego County, California,  
and United States, 2014-2018**



## Key Points

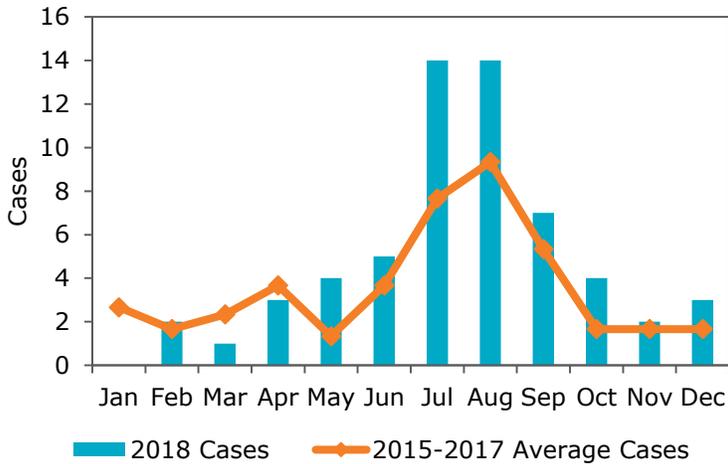
- In 2018, there were 59 cases of vibriosis in San Diego County. This is an increase of 18% compared to the previous year (50 cases). The case definition was changed in 2017 to include cases detected by culture-independent diagnostic testing (CIDT) as probable cases.
- In San Diego County, the incidence rate of vibriosis in 2018 was 1.8 per 100,000 population. In recent years, the incident rate has been higher in San Diego County than in California and the United States.
- As in previous years, cases of vibriosis peaked in the summer months in 2018.
- The largest number of cases were among persons aged 25-44 years, followed by persons aged 45-64 years. Incidence rates were highest among those aged 25-44 years (3.0 per 100,000).
- In San Diego County, the most frequently reported species were *Vibrio parahaemolyticus* (46%) and *Vibrio alginolyticus* (24%).
- The majority of cases were in the non-Hispanic population (84%). These cases were infected with *Vibrio* species associated with both ingestion and wound/ear transmission.

## Notes:

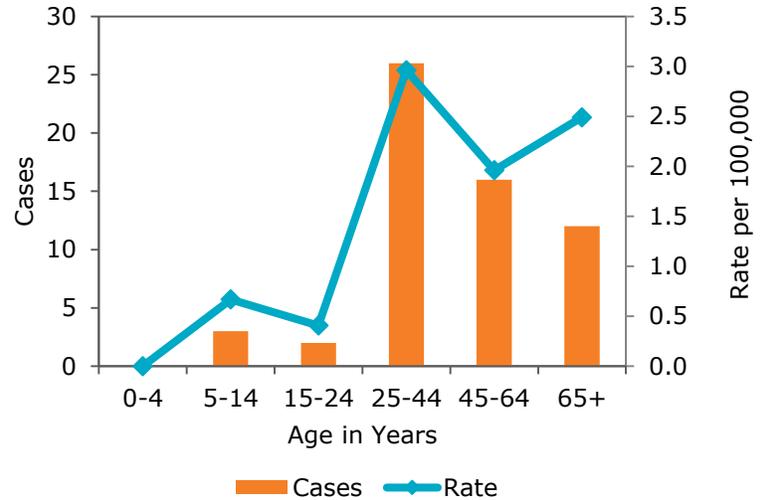
1. Counts include confirmed and probable cases following the CDC/CSTE case criteria. Vibriosis does not include infections with toxigenic *Vibrio cholerae* O1 and O139, which are reportable as cholera.
2. In 2017, the case definition changed to include cases detected by culture-independent diagnostic testing (CIDT) as probable cases. In previous years, these cases were not included in the case counts. Use of CIDT detection methods is increasing.
3. Vibriosis became a nationally notifiable condition in 2007.

# VIBRIOSIS

**Vibriosis Cases by Month of Onset, San Diego County, 2018**



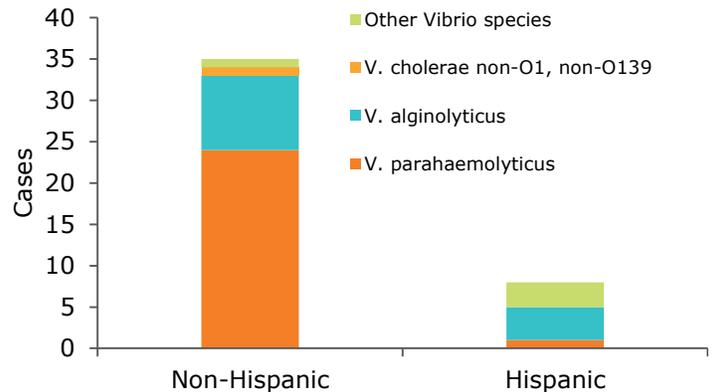
**Vibriosis Cases and Rates by Age, San Diego County, 2018**



**Reported *Vibrio* Species, San Diego County, 2018**

Species	Cases	Percent
<i>V. parahaemolyticus</i>	27	45.8
<i>V. alginolyticus</i>	14	23.7
<i>V. fluvialis</i>	2	3.4
<i>V. cholerae</i> non-O1, non-O139	1	1.7
<i>V. furnissii</i>	1	1.7
<i>V. mimicus</i>	1	1.7
Unspecified	13	22.0
Total	59	100.0

**Vibriosis Cases by Species and Ethnicity, San Diego County, 2018**



**Types of Transmission and Presentation Typically Associated with Commonly Reported *Vibrio* Species in San Diego County\*\***

Species	Transmission		Clinical Presentation		
	Ingestion	Wound /Ear	Gastro-enteritis	Wound/Ear Infection	Septicemia
<i>V. parahaemolyticus</i>	●●	○	●●	●	○
<i>V. alginolyticus</i>		●●		●●	
<i>V. vulnificus</i>	●	●	●	●●	●●
<i>V. cholerae</i> non-O1/ non-O139	●●	●	●●	●	●

●● most common ● potential ○ very rare

\*\*Adapted from Chapter 5.8 "Noncholera" *Vibrio* Species, Table 8 Clinical Syndromes Due to *Vibrio* Species (p. 124) in AS Evans & PS Brachman (Eds.) *Bacterial Infections of Humans: Epidemiology and Control* (3rd edition, 1998); New York: Plenum Medical Book Company.

**For more information:**

- [Centers for Disease Control and Prevention \(CDC\) Vibriosis website](#)
- [California Department of Public Health \(CDPH\) Vibriosis website](#)
- [CDC/CSTE Vibriosis Case Definition](#)

# WEST NILE VIRUS INFECTION

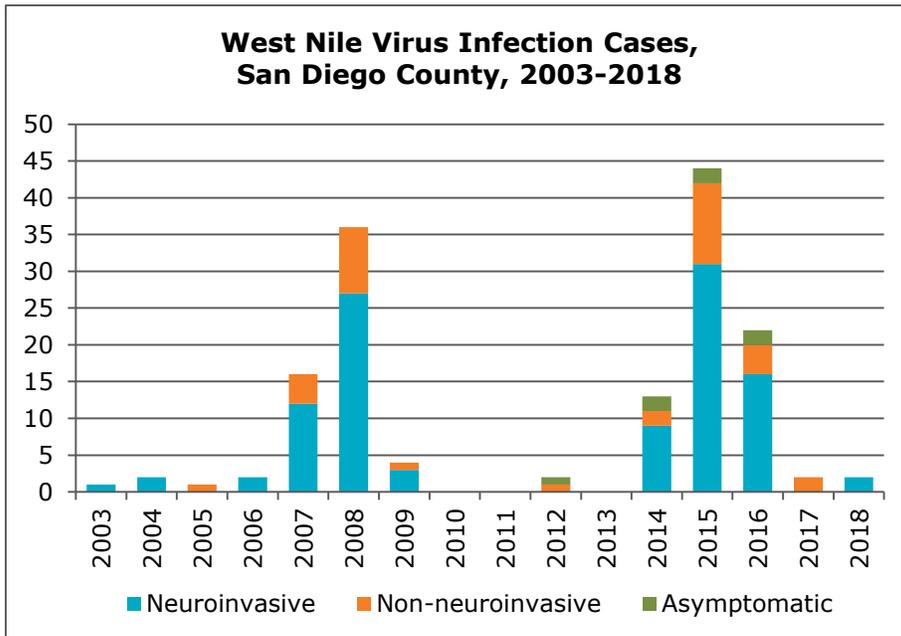
## Disease Info

**Infectious agent:** West Nile virus, a flavivirus

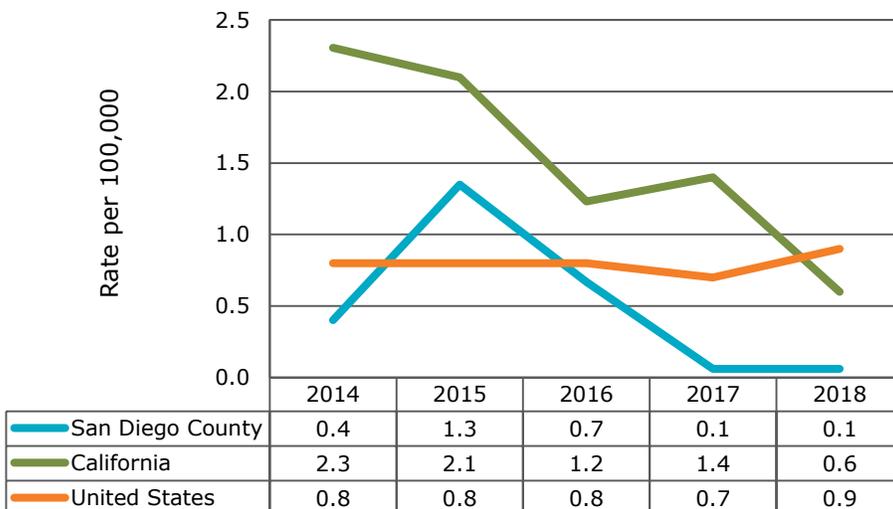
**Incubation:** Usually 2-6 days, range 2-14 days

**Mode of transmission:** Bite of infected mosquitoes, primarily *Culex* mosquitoes

**Symptoms:** Frequently asymptomatic (70-80%); West Nile fever (20%), causing fever, headache, body aches, joint pain; neuroinvasive disease (<1%), such as meningitis, encephalitis, or acute flaccid paralysis, characterized by headache, high fever, stiff neck, disorientation, seizures



**West Nile Virus Infection Incidence, San Diego County, California, and United States, 2014-2018**



## Key Points

- There were two cases of West Nile virus infection among San Diego County residents reported in 2018.
- Both cases presented as neuroinvasive disease and both required hospitalization. Illness onsets were in September and November.
- Incidence of West Nile virus infection in California remains down from a peak in 2014-2015, and dropped below incidence in the United States in 2018. San Diego County incidence remained steady at 0.1 per 100,000 in 2018.
- In 2018, both San Diego County cases were in adults over 45 years old.
- West Nile virus infections are frequently locally-acquired in San Diego County. Both case-patients in 2018 had potential exposures both in San Diego County and elsewhere.

## For more information:

- [Centers for Disease Control and Prevention \(CDC\) West Nile Virus website](#)
- [CDC/CSTE West Nile Virus Disease Case Definition](#)
- [California West Nile Virus website](#)
- [County of San Diego \(COSD\) West Nile Virus website](#)
- [COSD Department of Environmental Health Fight the Bite! website](#)

## Notes:

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria, as well as asymptomatic cases detected during screening of blood donors.
2. West Nile virus encephalitis/meningitis has been nationally notifiable since 2002 as part of arboviral disease reporting. West Nile virus disease has been nationally notifiable as part of Arboviral Diseases, Neuroinvasive and Non-neuroinvasive since 2005.
3. True incidence of West Nile virus infection is likely much higher. Symptomatic, and especially severe, cases are more likely to be reported.

# YERSINIOSIS

## Disease Info

**Infectious agent:** *Yersinia enterocolitica*, a bacterium

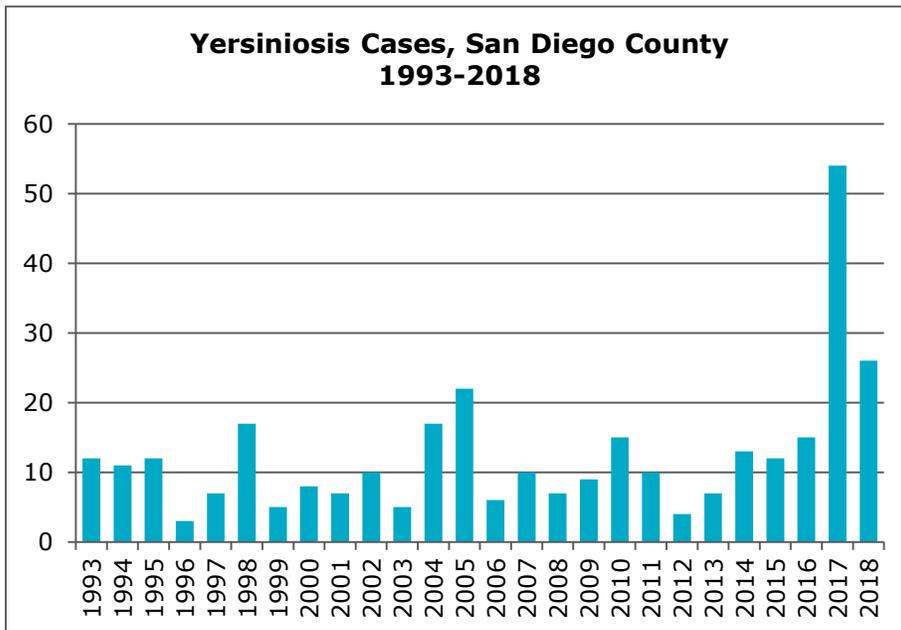
**Incubation:** Range 4-7 days

**Mode of transmission:** Consumption of contaminated food, especially raw or undercooked pork products; cross-contamination; drinking contaminated unpasteurized milk or untreated water; contact with infected animals or their feces; person-to-person (e.g., handling of diapers)

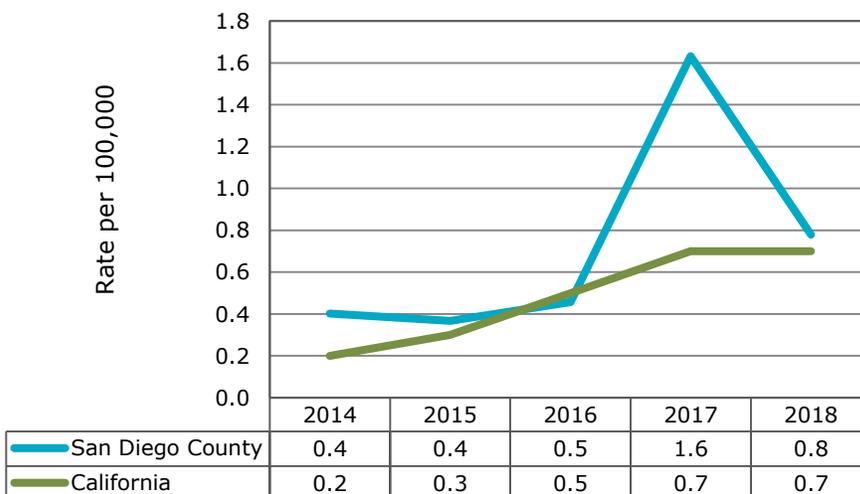
**Symptoms:** Fever, abdominal pain, diarrhea, pain on the right side of the abdomen

## Key Points

- In 2018, there were 26 cases of yersiniosis in San Diego County. This is a decrease of 52% compared to the previous year (54 cases). The increase in cases beginning in 2017 is due to a change in the case definition. Cases detected by culture-independent diagnostic testing (CIDT) are now included as probable cases.
- The incidence rate of yersiniosis in San Diego County (0.8 per 100,000) was similar to the rate for California (0.7 per 100,000) in 2018.
- In 2018, most case-patients had an onset of disease in the spring and summer months.
- In San Diego County, case counts were higher among adults. Thirteen cases (50%) were reported among persons between the ages of 45 and 64 years.



**Yersiniosis Incidence, San Diego County and California, 2014-2018**



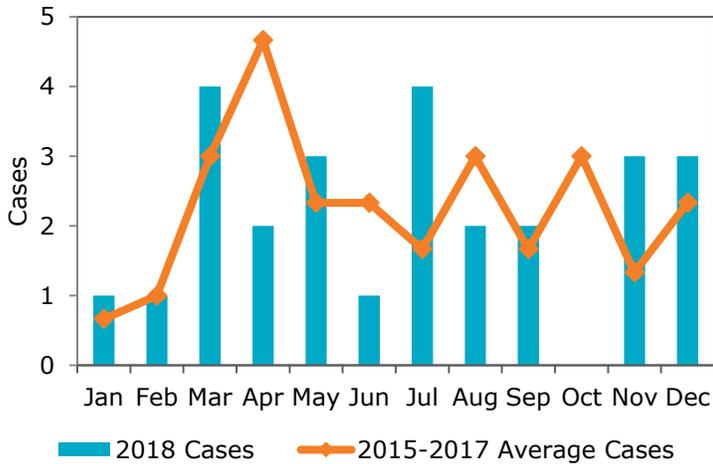
US incidence data are not available. Yersiniosis is not nationally reportable.



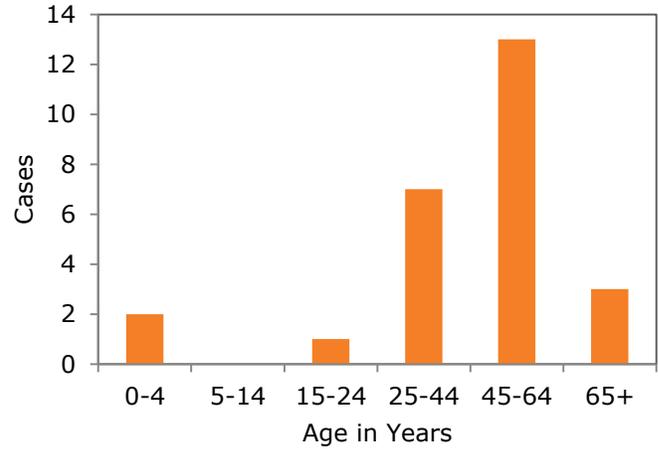
This illustration depicts a three-dimensional (3D) computer-generated image of a number of oblong-shaped *Yersinia enterocolitica* bacteria. The artistic recreation was based upon scanning electron microscopic (SEM) imagery. Photo credit: CDC/James Archer, Jennifer Oosthuizen, Public Health Image Library

# YERSINIOSIS

**Yersiniosis Cases by Month of Onset, San Diego County, 2018**



**Yersiniosis Cases by Age, San Diego County, 2018**



**Notes:**

1. Counts include confirmed and probable cases following local case criteria.
2. Yersiniosis is not a nationally notifiable condition. Yersiniosis became reportable in California in 1996.
3. In 2017, the County of San Diego included cases detected by culture-independent diagnostic testing (CIDT) as probable cases. In previous years, these cases were not included in the case counts. Use of CIDT detection methods is increasing.

**For more information:**

- [Centers for Disease Control and Prevention \(CDC\) Yersiniosis website](#)

# ZIKA VIRUS INFECTION

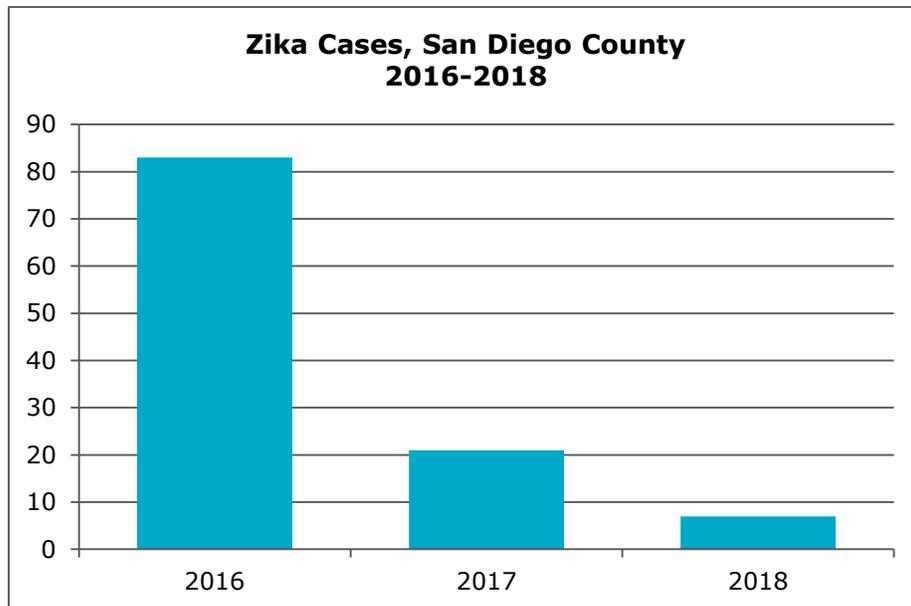
## Disease Info

**Infectious agent:** Zika virus, a member of the family Flaviviridae

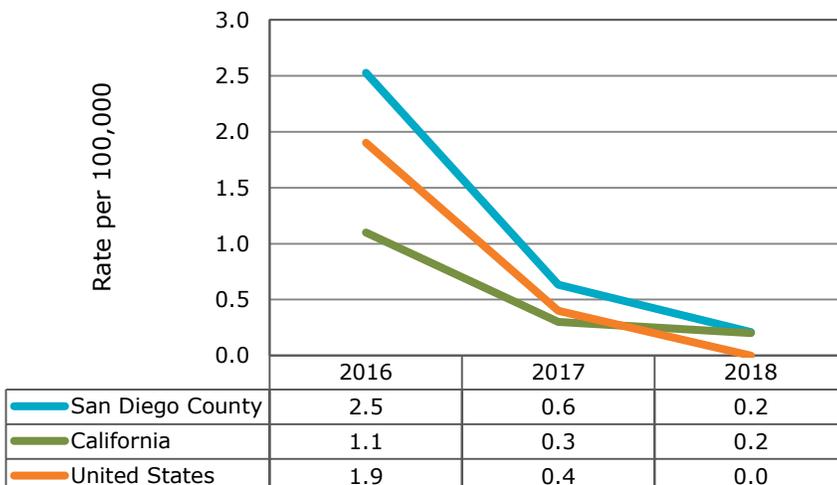
**Incubation:** Usually 3-7 days, range 2-12 days

**Mode of transmission:** Primarily transmitted through the bite of an infected *Aedes aegypti* or *Aedes albopictus* mosquito; person-to-person through sex with an infected person, perinatal (mother-to-child) transmission, and by blood transfusion

**Symptoms:** Fever, rash, headache, joint pain, conjunctivitis, muscle pain; often asymptomatic. Zika virus infection during pregnancy can lead to pregnancy loss, microcephaly, other severe fetal brain defects, eye defects, hearing loss, and impaired growth in infants.



**Zika Incidence, San Diego County, California, and United States, 2016-2018**



## Key Points

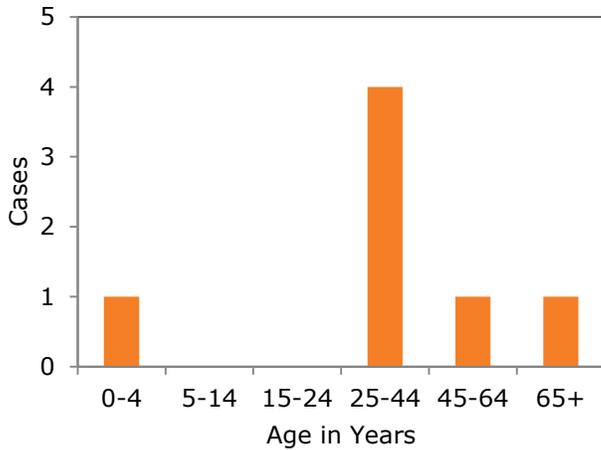
- In 2018, there were seven cases of Zika virus infection in San Diego County residents. This is a decrease of 67% compared to the previous year (21 cases), and a 92% decrease from 2016.
- The incidence rate of Zika virus infection in San Diego County in 2018 (0.2 per 100,000) was similar to that of California (0.2 per 100,000).
- In San Diego County, the majority (71%) of cases reported were symptomatic. Asymptomatic cases are less likely to be detected. Two case-patients were hospitalized.
- In San Diego County, Zika case counts were highest among persons ages 25-44 years (four cases).
- In 2018, two cases of Zika virus infection were among pregnant women.
- One case (14%) was in an infant with congenital exposure to the virus.
- The remaining six cases (86%) can be attributed to travel outside of the United States. The most commonly reported international travel location was Mexico (67%).



Female *Aedes albopictus* mosquito feeding on a human host. Photo credit: CDC/James Gatheny, Public Health Image Library

# ZIKA VIRUS INFECTION

**Zika Cases by Age,  
San Diego County, 2018**



**San Diego County Zika Cases, 2018**



**71% SYMPTOMATIC**  
**14% VISITED EMERGENCY ROOM**  
**29% HOSPITALIZED**



**2 PREGNANT  
FEMALES**

**33% of female cases  
were pregnant**

**Travel Locations Reported By Zika Case-  
Patients, San Diego County, 2018**

Location	Cases	Percent
Mexico	4	66.7
Caribbean	1	16.7
South America	1	16.7

**86% REPORTED  
TRAVEL OUTSIDE  
OF THE U.S.**



**14% CONGENITAL  
EXPOSURE**

**For more information:**

- [Centers for Disease Control and Prevention \(CDC\) Zika Virus website](#)
- [CDC Zika Virus and Pregnancy website](#)
- [CDC Zika Travel Information](#)
- [California Department of Public Health \(CDPH\) Zika website](#)
- [CDPH Aedes Aegypti and Aedes Albopictus Mosquitos website](#)
- [CDC/CSTE Zika Virus Disease and Zika Virus Infection Case Definition](#)
- [County of San Diego Zika Virus website](#)
- [County of San Diego Fight the Bite! Website](#)

**Notes:**

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Zika virus infections became nationally notifiable in 2016.
3. Congenital cases not included in the denominator for travel locations.
4. Travel to the U.S. Virgin Islands and Puerto Rico is included in counts for travel to the Caribbean.

# INFLUENZA SEASON SUMMARY, 2018-19

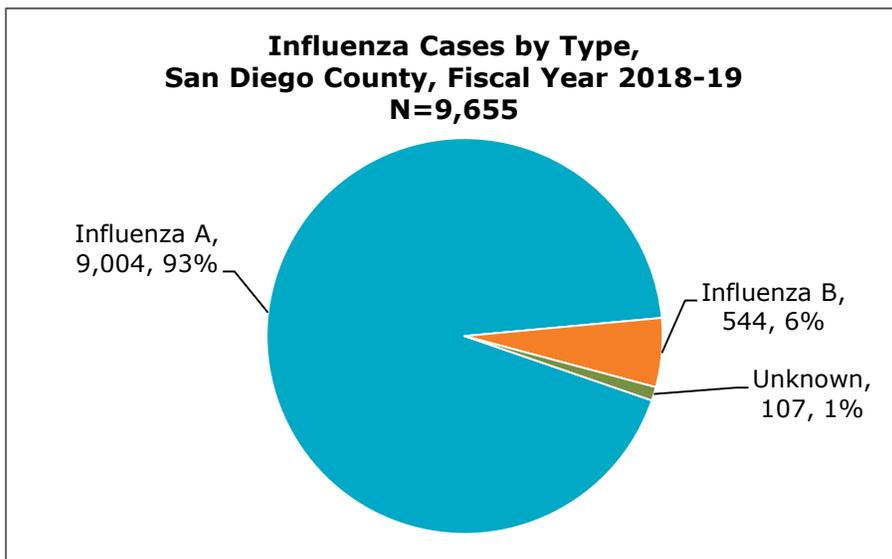
## Disease Info

**Infectious agent:** Influenza viruses; the two main types causing seasonal epidemics are A and B. Influenza A viruses can be separated into subtypes based on the proteins on the surface of the virus; the influenza A subtypes currently circulating are H1N1 and H3N2. Influenza B viruses are divided into lineages; the lineages currently circulating are Yamagata and Victoria.

**Incubation:** Typically 1-4 days, with an average of 2 days

**Mode of transmission:** Large-particle respiratory droplets, spread through close contact or contact with contaminated surfaces

**Symptoms:** Fever, cough, sore throat, nasal congestion, muscle pain, headache, malaise; young children and the elderly may have atypical presentations (e.g., diarrhea or no fever)



**Subtypes of Influenza Detections,  
San Diego County, Fiscal Year 2018-19**

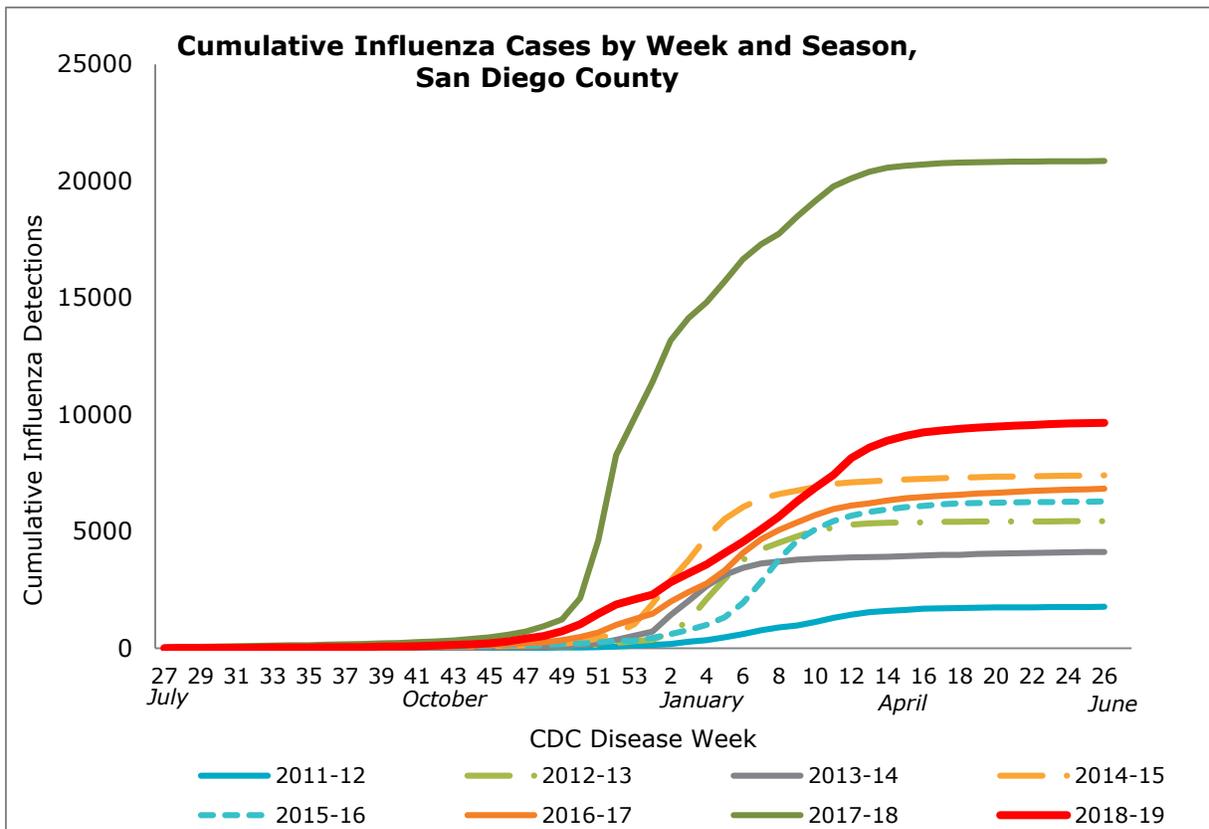
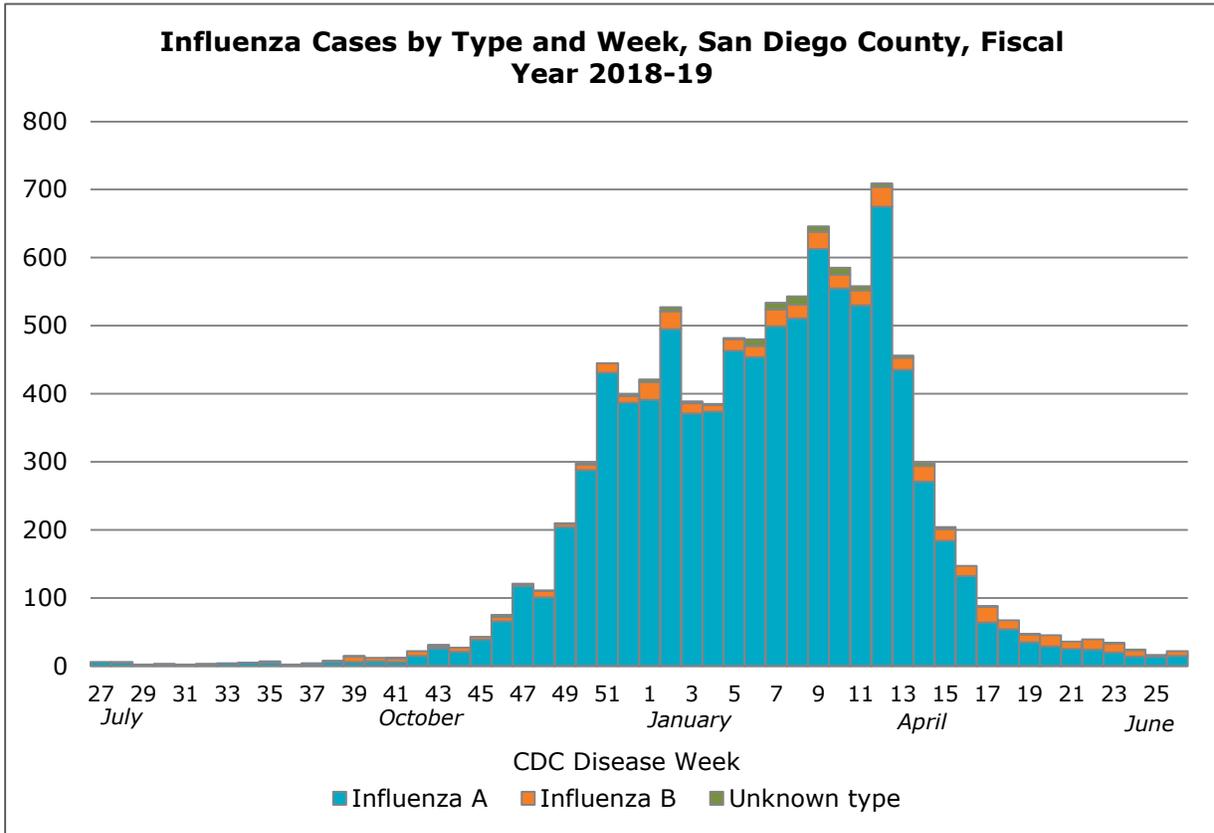
Flu Type	Detections	Percent
<b>Influenza A</b>		
Total Cases	9,004	100.0
Subtyped	691	7.7
<i>Among those subtyped</i>		
H1N1-pdm09	507	73.4
H3	184	26.6
<b>Influenza B</b>		
Total Cases	544	100.0
Subtyped	4	0.7
<i>Among those subtyped</i>		
Yamagata	3	75.0
Victoria	1	25.0

## Key Points

- There were 9,655 influenza cases reported in San Diego County during the 2018-19 season (fiscal year 2018-19). This was the second highest cumulative count in the past eight seasons.
- Over 90% of the cases reported were influenza A, while only six percent were influenza B. A small percentage of influenza cases were not typed.
- Among the influenza A viruses that were subtyped (eight percent), 73% were H1N1-pdm09.
- Of the four influenza B viruses that were subtyped, 75% were of the Yamagata lineage.
- The 2018-19 influenza season in San Diego County was a long season with a peak in mid-March, 2019.
- The highest proportions of reported cases were children aged 1-9 (22%) and adults aged 20-39 (22%).
- There were 77 influenza-related deaths during the 2018-19 season in San Diego County. Three deaths were in unvaccinated children with underlying conditions.
- Persons aged 65 and older are at higher risk for influenza complications; 51% of the influenza deaths in San Diego County in 2018-19 were among persons 65 years old or older.
- Overall, 34% percent of the persons who died from influenza-related illness had received the seasonal influenza vaccine, and 94% had an underlying medical condition.
- A total of 960,238 influenza vaccinations were administered in San Diego County in 2018-19. This was an increase of 25% from 2017-18\*.

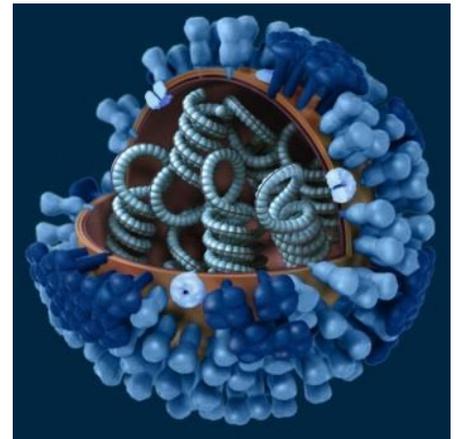
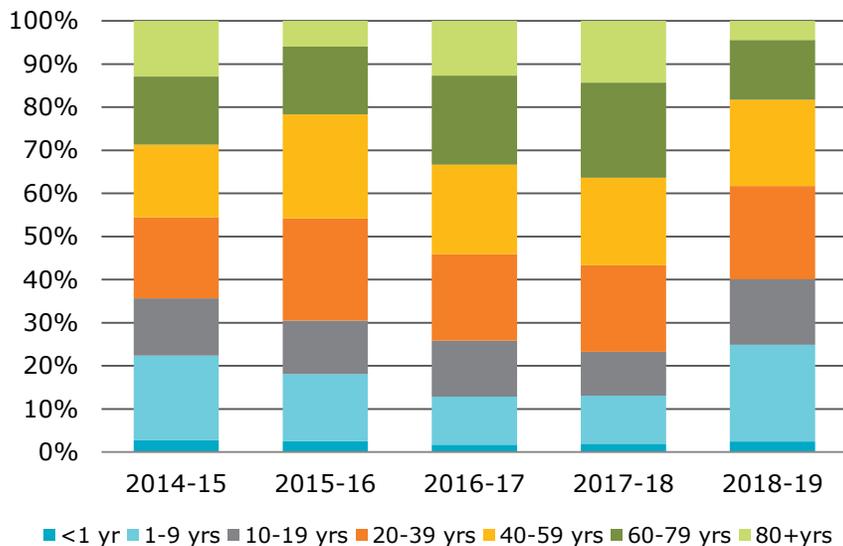
\*Influenza vaccinations administered and entered into the San Diego Immunization Registry (SDIR)

# INFLUENZA SEASON SUMMARY, 2018-19



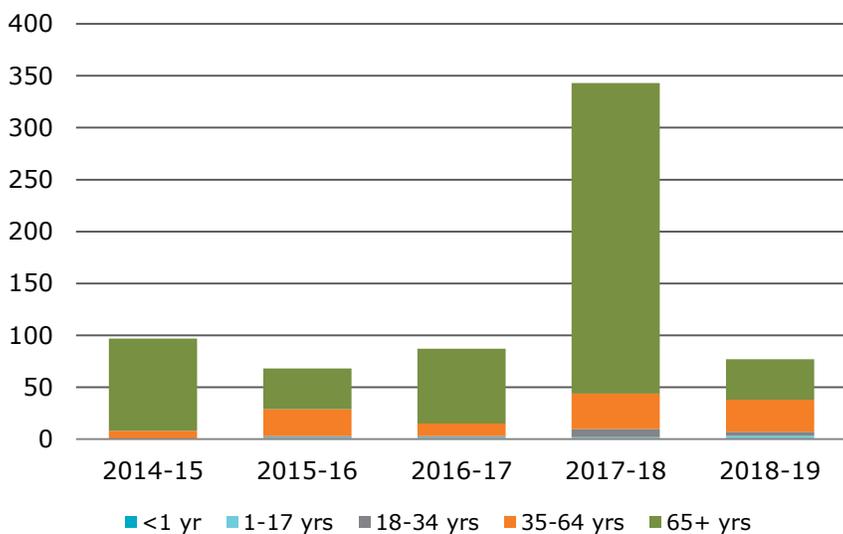
# INFLUENZA SEASON SUMMARY, 2018-19

**Proportion of Influenza Cases by Age, San Diego County, FYs 2014-15 to 2018-19**



3D graphical representation of a generic Influenza virion's ultrastructure, with a portion of the virion's outer protein coat cut away  
Illustrator: Dan Higgins, CDC Public Health Image Library

**Influenza Deaths by Age, San Diego County, FYs 2014-15 to 2018-19**



**For more information:**

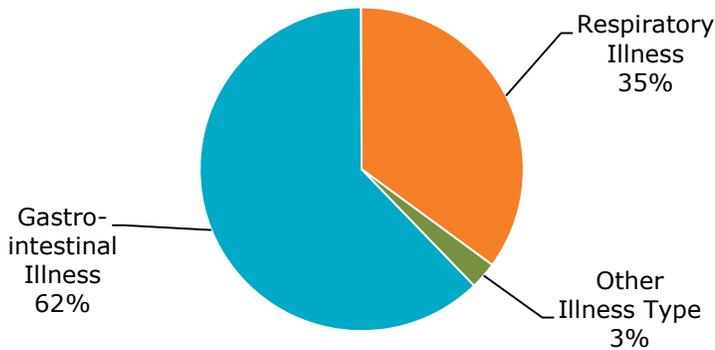
- [Centers for Disease Control and Prevention \(CDC\) Influenza website](#)
- [Epidemiology and Prevention of Vaccine-Preventable Diseases \(the Pink Book\) – Influenza](#)
- [CDC Flu Activity and Surveillance website](#)
- [CDC Influenza Vaccination website](#)
- [California Department of Public Health \(CDPH\) Influenza \(Flu\) website](#)
- [County of San Diego Influenza website](#)

**Notes:**

1. Influenza is not a legally reportable condition in California except in cases of death in persons under age 18, outbreaks, and detections of novel strains of influenza. However, County of San Diego Public Health Services requests that local providers and laboratories report all laboratory-confirmed cases (using any type of appropriate laboratory test, including rapid diagnostic tests) and all influenza-related deaths, regardless of age.
2. Cases/detections reported here are incidents of disease, not persons. One person may have more than one type of influenza during a season or multiple infections across seasons; each infection is counted as a separate case.
3. Influenza data are presented using fiscal years (the County fiscal year is July-June) rather than calendar years because this convention better illustrates the seasonal nature of influenza.
4. Influenza is vaccine-preventable. Inactivated vaccines have been available since the 1940s. The vaccine does not provide long-lasting immunity and efficacy varies by season; vaccination is recommended each season for all persons >6 months of age.

## 109 San Diego County Outbreaks, 2018

**Outbreaks by Clinical Syndrome, San Diego County, 2018**



**Outbreaks by Clinical Syndrome and Etiology, San Diego County, 2018**

Outbreak Etiology	Outbreaks
<b>Gastrointestinal Illness (n=68)</b>	
Norovirus	34
Gastroenteritis of undetermined etiology	13
Salmonellosis	6
Toxin-producing bacteria of undetermined etiology	5
<i>Bacillus cereus</i>	2
Scombroid fish poisoning	2
Shigellosis	2
Cryptosporidiosis	1
Rotavirus	1
Shiga toxin-producing <i>E. coli</i>	1
Vibrio infections (non-cholera)	1
<b>Respiratory Illness (n=38)</b>	
Influenza	33
Respiratory Illness (undetermined etiology)	4
Legionellosis	1
<b>Other Illness Type (n=3)</b>	
Chickenpox	2
Meningococcal disease	1

### Key Points

- The Epidemiology and Immunization Services Branch investigated 109 outbreaks in 2018.
- In the majority (62%) of outbreaks, the ill experienced gastrointestinal (GI) symptoms. Half (50%) of these outbreaks were caused by norovirus. Other etiologies include salmonellosis (9%) and toxin-producing bacteria (7%). Etiology was undetermined for 19% of GI outbreaks.
- Of the 68 gastrointestinal illness outbreaks, 54% were attributed to foodborne transmission. Foodborne etiologies included norovirus (10), salmonellosis (6), toxin-producing bacteria of unknown etiology (5), *Bacillus cereus* (2), scombroid fish poisoning (2), shigellosis (2), cryptosporidiosis (1), Shiga toxin-producing *E. coli* (1), and vibriosis (1). In 7 outbreaks, the etiology was unknown.
- In 35% of the outbreaks, the ill experienced respiratory symptoms. The majority (87%) of these outbreaks were caused by influenza.
- The three remaining outbreaks were due to vaccine-preventable infections (chickenpox and meningococcal disease).

### Notes:

1. Outbreak counts include those investigated and classified as confirmed, probable, or suspect by the Epidemiology and Immunization Services Branch and do not represent all outbreaks in San Diego County.
2. Criteria for determining the occurrence of an outbreak and for confirming outbreak etiology vary by disease. See the sections on norovirus and influenza outbreaks for disease-specific outbreak criteria.
3. Outbreaks of any disease are reportable by law to the local public health department.
4. Outbreaks are grouped into calendar year on the basis of earliest onset date.

### For more information:

- [Centers for Disease Control and Prevention \(CDC\) Current Outbreak List](#)
- [CDC Foodborne Outbreaks website](#)
- [California Department of Public Health \(CDPH\) Foodborne Diseases and Outbreaks website](#)

# NOROVIRUS OUTBREAKS, 2018-19

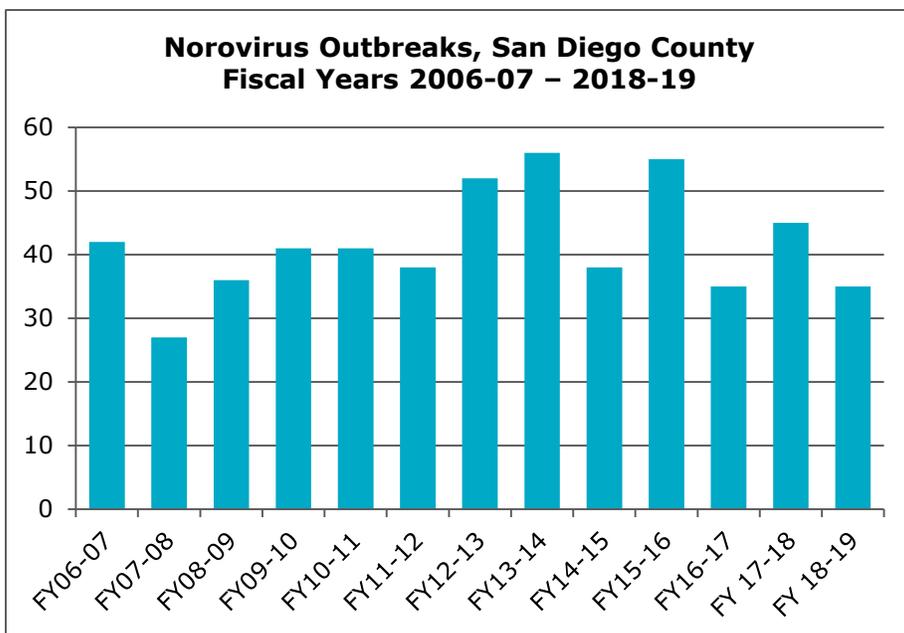
## Disease Info

**Infectious agent:** Norovirus, a non-enveloped, single-stranded RNA virus in the family Caliciviridae; 3 genogroups (GI, GII, GIV) cause disease in humans

**Incubation:** Typically 12-48 hours, median in outbreaks is 33-36 hours

**Mode of transmission:** Fecal-oral route: either direct person-to-person contact, ingestion of food or water contaminated by feces, contact with contaminated environmental surfaces or objects, or ingestion of aerosolized vomitus

**Symptoms:** Vomiting, non-bloody diarrhea, nausea, abdominal pain, low-grade fever



### Notes:

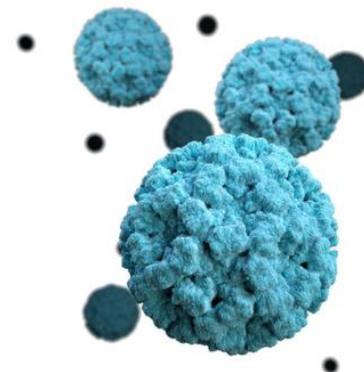
1. A confirmed norovirus outbreak requires that at least two cases are laboratory-confirmed; a probable norovirus outbreak requires one laboratory-confirmed case; in a suspect norovirus outbreak, at least 50% of cases report vomiting, average incubation is 24-48 hours, and average duration of illness is 12-60 hours.
2. Norovirus outbreak data are presented using fiscal years (the County fiscal year is July-June) rather than calendar years because this convention better illustrates the seasonal nature of norovirus outbreaks.

### For more information:

- [Centers for Disease Control and Prevention \(CDC\) Norovirus website](#)
- [CDC Norovirus U.S. Trends and Outbreaks website](#)
- [California Department of Public Health \(CDPH\) Norovirus website](#)
- [County of San Diego Norovirus website](#)

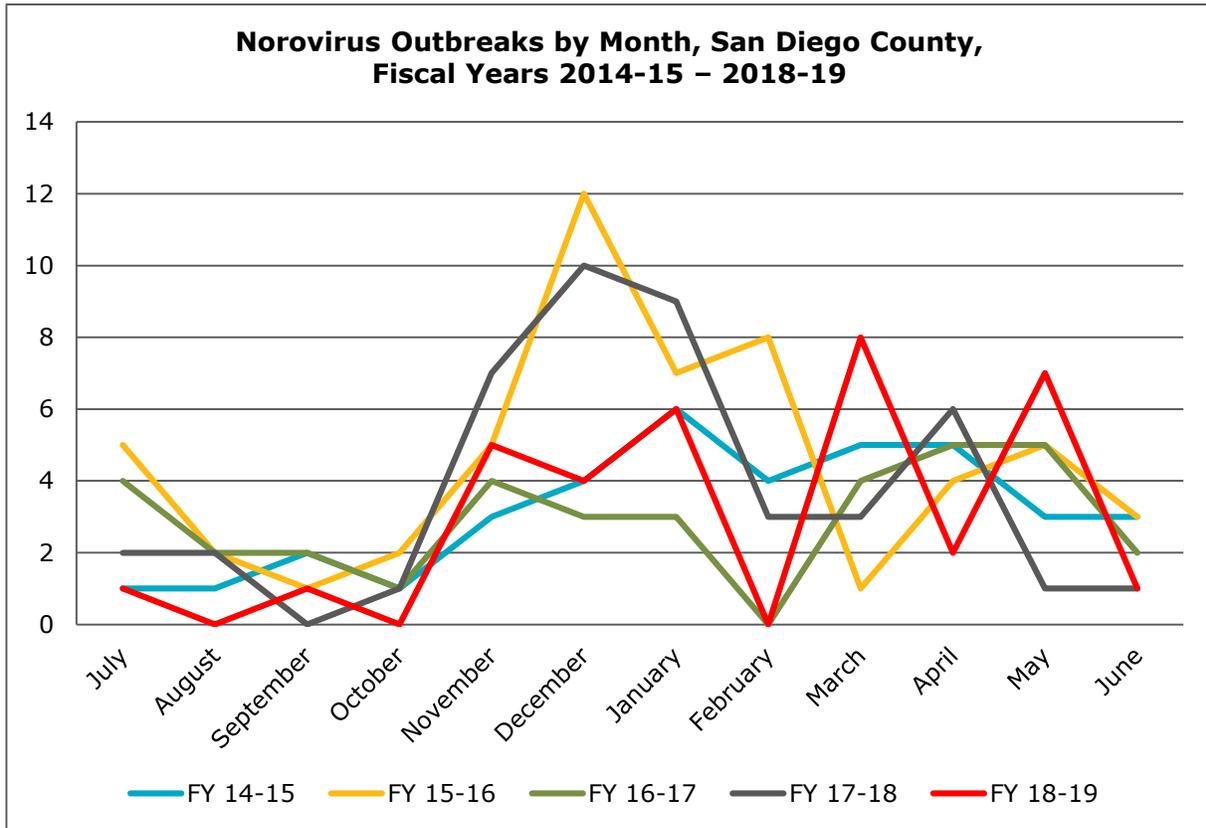
## Key Points

- There were 35 norovirus outbreaks investigated by the Epidemiology Program in Fiscal Year (FY) 2018-19, below the average of 46 outbreaks over the previous five seasons.
- In 54% of the outbreaks, at least one human specimen tested positive for norovirus. The remaining outbreaks were classified as suspect norovirus based on clinical characteristics.
- Although norovirus infections and norovirus outbreaks occur year-round, and the peak may vary from year to year, the largest number of outbreaks usually occurs between December and February. In FY 2018-19, there were peaks in the number of outbreaks investigated in March and May.
- In FY 2018-19, 31% of norovirus outbreaks were attributed to foodborne transmission; the rest were likely person-to-person, although contaminated surfaces and fomites may have also played a role.
- Of the suspect person-to-person norovirus outbreaks, 62% were in congregate living facilities, such as long-term care or assisted living facilities. An additional 17% were in schools, child care facilities, or camps.
- The median number of cases per norovirus outbreak in FY 2018-19 was 16, with a range of 2-321 cases.



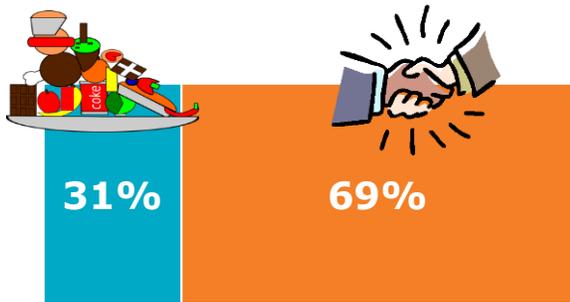
3D representation of norovirus virions based on electron microscopic imagery.  
Illustrator: Alissa Eckert, MS, CDC Public Health Image Library

# NOROVIRUS OUTBREAKS, 2018-19



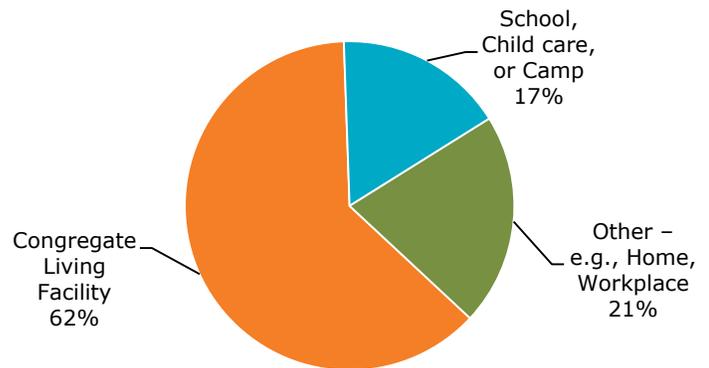
## Norovirus Outbreaks, San Diego County, Fiscal Year 2018-19

### Mode of Transmission



Foodborne | Suspect person-to-person

### Location of Suspect Person-to-Person Norovirus Outbreaks



Congregate Living Facilities include long-term care facilities, assisted living facilities, and independent living facilities for seniors.

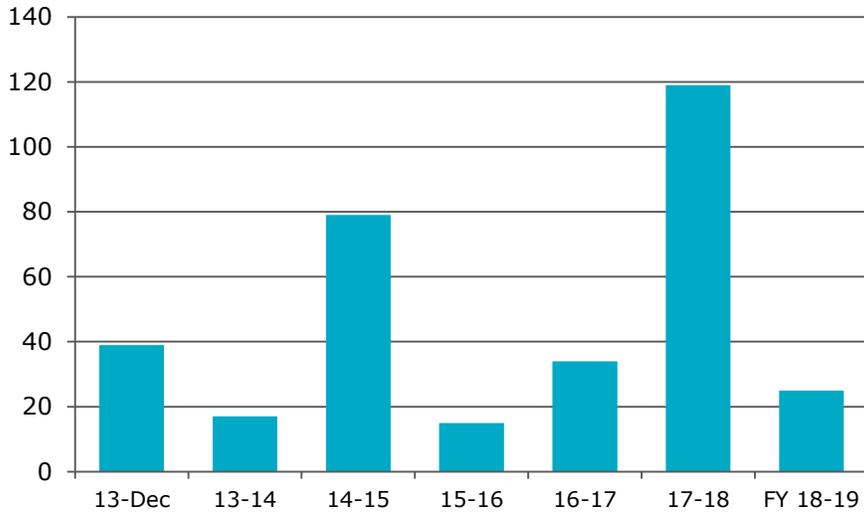
### Number of cases per outbreak



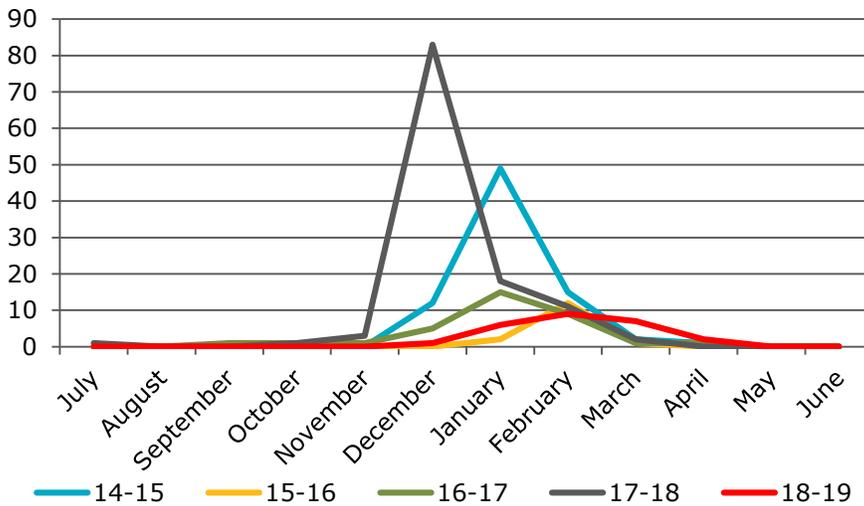
**Median: 16**  
**Range: 2-321**

# INFLUENZA OUTBREAKS, 2018-19

**Influenza Outbreaks, San Diego County  
Fiscal Years 2012-13 – 2018-19**



**Influenza Outbreaks by Month of Report, San Diego County, Fiscal Years 2014-15 – 2018-19**



**Notes:**

1. Influenza outbreaks in institutions (e.g., long term care facilities, prisons, sleepover camps) require at least one case of laboratory-confirmed influenza in the setting of a cluster (at least two cases of influenza-like illness (ILI) with onset within a 72-hour period).
2. Influenza outbreak data are presented using fiscal years (the County fiscal year is July-June) rather than calendar years because this convention better illustrates the seasonal nature of influenza outbreaks.
3. The Epidemiology Program began active surveillance for influenza outbreaks in the 2012-13 influenza season; data for prior years are not comparable and are not presented here.
4. See the Influenza Season Summary section for more information on influenza, including disease information and resources.

**Key Points**

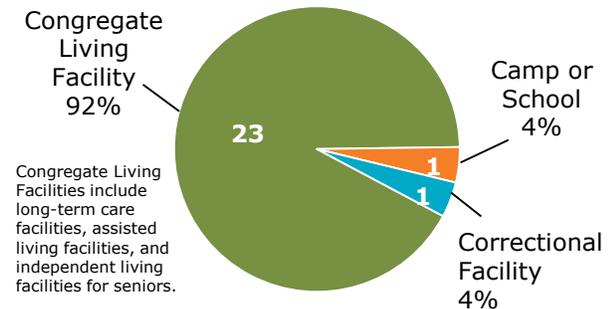
- In Fiscal Year (FY) 2018-19, there were 25 influenza outbreaks in San Diego County investigated by the Epidemiology Program, one-fifth the number of outbreaks in FY 2017-18.
- Most influenza outbreaks (92% in FY 2018-19) occur in congregate living facilities.
- The majority of outbreaks in FY 2018-19 were caused by influenza A (92%); one outbreak was caused by influenza B. The remaining outbreak included cases of both influenza A and B.
- The number of influenza outbreaks in FY 2018-19 peaked in February.
- In FY 2018-19, the median number of cases per influenza outbreak was six, with a range of 2-28 cases.

**Number of cases per outbreak**



**Median: 6  
Range: 2-28**

**Location of Influenza Outbreaks**



# DEMOGRAPHICS BY DISEASE

	Amebiasis <sup>C</sup>	Campylobacteriosis <sup>C,P</sup>	Chikungunya Virus Infection <sup>C,P</sup>	Coccidioidomycosis <sup>C</sup>	Cryptosporidiosis <sup>C,P</sup>	Dengue Virus Infection <sup>C,P</sup>	Encephalitis <sup>C</sup>	Giardiasis <sup>C,P</sup>
<b>Total</b>	10	829	5	277	90	9	67	233
<b>Gender</b>								
Female	4	398	3	125	34	5	23	97
Male	6	429	2	152	56	4	43	136
Other/Transgender	0	0	0	0	0	0	1	0
Unknown/Missing	0	2	0	0	0	0	0	0
<b>Age in Years</b>								
0-4	0	82	0	1	4	0	3	22
5-14	0	75	0	1	10	0	3	20
15-24	0	115	0	13	15	2	2	25
25-44	3	219	2	55	30	4	12	77
45-64	3	226	3	128	26	3	19	61
65+	4	112	0	79	5	0	28	27
Unknown/Missing	0	0	0	0	0	0	0	1
<b>Race/Ethnicity</b>								
American Indian/Alaska Native	0	1	0	1	0	0	0	1
Asian	2	20	1	20	2	3	3	4
Black/African-American	0	3	0	17	0	0	4	7
Hispanic/Latino	2	111	1	77	26	2	12	49
Native Hawaiian/Other Pacific Islander	0	0	0	0	0	0	0	0
White	4	110	3	70	51	4	13	133
Other	0	27	0	11	1	0	1	6
Two or More Races	0	2	0	2	1	0	0	1
Unknown/Missing	2	555	0	79	9	0	34	32
<b>HHS Service Region</b>								
Central	3	119	0	51	29	0	10	56
East	0	103	0	35	10	0	4	37
North Central	2	126	4	27	16	3	13	35
North Coastal	3	100	0	17	13	3	11	22
North Inland	0	109	1	27	6	3	17	37
South	2	129	0	114	15	0	10	40
Unknown/Missing	0	143	0	6	1	0	2	6

**Notes:**

1. Inclusion criteria are based on CDC/CSTE surveillance case criteria (C,P,S = Confirmed, Probable, Suspect). See individual sections for further details.
2. Cases grouped into CDC disease years based on earliest date of onset, lab specimen collection, diagnosis, death, report received dates.
3. Race/ethnicity combines two variables collected separately, race and ethnicity. Persons of any race with Hispanic ethnicity are included in the Hispanic category. The other categories are non-Hispanic.
4. Health and Human Services Agency (HHS) service regions are based on zip code of residence.

# DEMOGRAPHICS BY DISEASE

	Hepatitis A, Acute <sup>C</sup>	Hepatitis B, Acute <sup>C</sup>	Hepatitis B, Chronic <sup>C,P</sup>	Hepatitis C, Chronic <sup>C,P</sup>	Legionellosis <sup>C</sup>	Listeriosis <sup>C</sup>	Lyme Disease <sup>C,P</sup>
<b>Total</b>	35	9	866	4,180	55	14	14
<b>Gender</b>							
Female	16	1	362	1,318	22	6	9
Male	19	8	482	2,572	33	8	5
Other/Transgender	0	0	0	1	0	0	0
Unknown/Missing	0	0	22	289	0	0	0
<b>Age in Years</b>							
0-4	0	0	3	15	1	2	0
5-14	0	0	5	16	0	0	1
15-24	4	0	54	273	0	1	2
25-44	17	2	328	1,449	5	4	5
45-64	9	4	328	1,820	18	4	3
65+	5	3	143	592	31	3	3
Unknown/Missing	0	0	5	15	0	0	0
<b>Race/Ethnicity</b>							
American Indian/Alaska Native	0	1	3	7	0	0	0
Asian	1	0	133	46	0	0	0
Black/African-American	0	0	23	55	2	0	0
Hispanic/Latino	11	1	31	216	11	7	0
Native Hawaiian/Other Pacific Islander	0	0	1	2	0	0	0
White	15	5	68	480	34	5	7
Other	3	0	44	99	2	1	0
Two or More Races	0	0	1	2	0	0	0
Unknown/Missing	5	2	562	3,273	6	1	7
<b>HHSA Service Region</b>							
Central	4	0	148	672	7	2	3
East	2	3	71	465	11	2	2
North Central	5	0	183	337	14	5	2
North Coastal	8	0	76	449	12	1	5
North Inland	10	2	91	420	6	2	0
South	4	3	114	910	5	2	2
Unknown/Missing	2	1	183	927	0	0	0

**Notes:**

1. Inclusion criteria are based on CDC/CSTE surveillance case criteria (C,P,S = Confirmed, Probable, Suspect). See individual sections for further details.
2. Cases grouped into CDC disease years based on earliest date of onset, lab specimen collection, diagnosis, death, report received dates.
3. Race/ethnicity combines two variables collected separately, race and ethnicity. Persons of any race with Hispanic ethnicity are included in the Hispanic category. The other categories are non-Hispanic.
4. Health and Human Services Agency (HHSA) service regions are based on zip code of residence.

# DEMOGRAPHICS BY DISEASE

	Malaria <sup>C</sup>	Measles (Rubeola) <sup>C</sup>	Meningitis <sup>C,P,S</sup>	Meningococcal Disease <sup>C,P</sup>	Mumps <sup>C,P</sup>	Pertussis <sup>C,P,S</sup>	Salmonellosis <sup>C,P</sup>
<b>Total</b>	8	0	194	11	9	659	789
<b>Gender</b>							
Female	4	0	101	5	2	327	415
Male	4	0	93	6	7	332	371
Other/Transgender	0	0	0	0	0	0	1
Unknown/Missing	0	0	0	0	0	0	2
<b>Age in Years</b>							
0-4	0	0	46	0	0	216	136
5-14	2	0	10	2	0	250	69
15-24	1	0	23	6	1	134	81
25-44	3	0	52	0	5	23	209
45-64	2	0	43	1	3	23	158
65+	0	0	20	2	0	13	129
Unknown/Missing	0	0	0	0	0	0	7
<b>Race/Ethnicity</b>							
American Indian/Alaska Native	0	0	0	0	0	2	1
Asian	1	0	11	0	1	22	38
Black/African-American	4	0	10	1	0	5	26
Hispanic/Latino	0	0	35	4	2	158	313
Native Hawaiian/Other Pacific Islander	0	0	1	0	0	4	1
White	1	0	53	4	3	342	285
Other	2	0	6	0	0	23	20
Two or More Races	0	0	0	1	0	23	8
Unknown/Missing	0	0	78	1	3	80	97
<b>HHS Service Region</b>							
Central	0	0	27	5	1	38	138
East	5	0	23	0	0	52	109
North Central	1	0	41	4	4	91	119
North Coastal	0	0	37	0	0	283	112
North Inland	2	0	38	0	2	121	134
South	0	0	23	2	2	62	169
Unknown/Missing	0	0	5	0	0	12	8

**Notes:**

1. Inclusion criteria are based on CDC/CSTE surveillance case criteria (C,P,S = Confirmed, Probable, Suspect). See individual sections for further details.
2. Cases grouped into CDC disease years based on earliest date of onset, lab specimen collection, diagnosis, death, report received dates.
3. Race/ethnicity combines two variables collected separately, race and ethnicity. Persons of any race with Hispanic ethnicity are included in the Hispanic category. The other categories are non-Hispanic.
4. Health and Human Services Agency (HHS) service regions are based on zip code of residence.

# DEMOGRAPHICS BY DISEASE

	Shiga toxin-Producing <i>E. coli</i> C,P	Shigellosis C,P	Typhoid Fever C,P	Vibriosis C,P	West Nile Virus Infection C,P	Yersiniosis C,P	Zika Virus Infection C,P
<b>Total</b>	176	392	4	59	2	26	7
<b>Gender</b>							
Female	98	166	2	22	0	14	6
Male	78	226	2	37	2	12	1
Other/Transgender	0	0	0	0	0	0	0
Unknown/Missing	0	0	0	0	0	0	0
<b>Age in Years</b>							
0-4	26	28	1	0	0	2	1
5-14	16	35	1	3	0	0	0
15-24	23	38	2	2	0	1	0
25-44	36	124	0	26	0	7	4
45-64	33	120	0	16	1	13	1
65+	42	46	0	12	1	3	1
Unknown/Missing	0	1	0	0	0	0	0
<b>Race/Ethnicity</b>							
American Indian/Alaska Native	1	1	0	0	0	0	0
Asian	5	12	1	6	0	1	0
Black/African-American	4	12	0	1	0	0	0
Hispanic/Latino	63	173	0	9	0	2	6
Native Hawaiian/Other Pacific Islander	0	0	0	0	0	0	0
White	69	122	0	35	2	3	1
Other	5	5	1	2	0	2	0
Two or More Races	4	5	0	3	0	0	0
Unknown/Missing	25	62	2	3	0	18	0
<b>HHS Service Region</b>							
Central	32	111	1	11	0	3	1
East	22	32	0	7	0	0	0
North Central	36	51	0	15	2	2	1
North Coastal	36	40	1	9	0	3	0
North Inland	29	50	1	10	0	3	1
South	20	101	0	7	0	2	4
Unknown/Missing	1	7	1	0	0	13	0

**Notes:**

1. Inclusion criteria are based on CDC/CSTE surveillance case criteria (C,P,S = Confirmed, Probable, Suspect). See individual sections for further details.
2. Cases grouped into CDC disease years based on earliest date of onset, lab specimen collection, diagnosis, death, report received dates.
3. Race/ethnicity combines two variables collected separately, race and ethnicity. Persons of any race with Hispanic ethnicity are included in the Hispanic category. The other categories are non-Hispanic.
4. Health and Human Services Agency (HHS) service regions are based on zip code of residence.

# ZIP CODES BY HHSa SERVICE REGION

San Diego County is divided into six Health and Human Services Agency (HHSa) service regions, which were created by grouping contiguous zip codes. The zip codes that make up each region are listed below. The list only includes current geographic zip codes, not P.O. boxes or historic zip codes; however, case-patients with these zip codes in their address are included in the counts for the enclosing zip code and region.

## ***Central Region***

92101, 92102, 92103, 92104, 92105, 92113, 92114, 92115, 92116, 92134, 92136, 92139, 92182

## ***East Region***

91901, 91905, 91906, 91916, 91917, 91931, 91934, 91935, 91941, 91942, 91945, 91948, 91962, 91963, 91977, 91978, 91980, 92019, 92020, 92021, 92040, 92071

## ***North Central Region***

92037, 92093, 92106, 92107, 92108, 92109, 92110, 92111, 92117, 92119, 92120, 92121, 92122, 92123, 92124, 92126, 92130, 92131, 92140, 92145, 92161

## ***North Coastal Region***

92007, 92008, 92009, 92010, 92011, 92014, 92024, 92054, 92055, 92056, 92057, 92058, 92067, 92075, 92081, 92083, 92084, 92091, 92672

## ***North Inland Region***

92003, 92004, 92025, 92026, 92027, 92028, 92029, 92036, 92059, 92060, 92061, 92064, 92065, 92066, 92069, 92070, 92078, 92082, 92086, 92096, 92127, 92128, 92129, 92259, 92536

## ***South Region***

91902, 91910, 91911, 91913, 91914, 91915, 91932, 91950, 92118, 92135, 92154, 92155, 92173

# REPORTABLE DISEASES AND CONDITIONS

The following reporting information and list of diseases and conditions reportable in California can be found on pages 2-4 of the [Confidential Morbidity Report](#).

## **Title 17, California Code of Regulations (CCR) §2500, §2593, §2641.5-2643.20, and §2800-2812 Reportable Diseases and Conditions\***

### § 2500. REPORTING TO THE LOCAL HEALTH AUTHORITY.

- § 2500(b) It shall be the duty of every health care provider, knowing of or in attendance on a case or suspected case of any of the diseases or condition listed below, to report to the local health officer for the jurisdiction where the patient resides. Where no health care provider is in attendance, any individual having knowledge of a person who is suspected to be suffering from one of the diseases or conditions listed below may make such a report to the local health officer for the jurisdiction where the patient resides.
- § 2500(c) The administrator of each health facility, clinic, or other setting where more than one health care provider may know of a case, a suspected case or an outbreak of disease within the facility shall establish and be responsible for administrative procedures to assure that reports are made to the local officer.
- § 2500(a)(14) "Health care provider" means a physician and surgeon, a veterinarian, a podiatrist, a nurse practitioner, a physician assistant, a registered nurse, a nurse midwife, a school nurse, an infection control practitioner, a medical examiner, a coroner, or a dentist.

### URGENCY REPORTING REQUIREMENTS [17 CCR §2500(h)(i)]

- ⓪ ! = Report immediately by telephone (designated by a ♦ in regulations).
- † = Report immediately by telephone when two or more cases or suspected cases of foodborne disease from separate households are suspected to have the same source of illness (designated by a • in regulations).
- ⓪ = Report by telephone within one working day of identification (designated by a + in regulations).
- FAX ⓪ ☒ = Report by electronic transmission (including FAX), telephone, or mail within one working day of identification (designated by a + in regulations).
- WEEK = All other diseases/conditions should be reported by electronic transmission (including FAX), telephone, or mail within seven calendar days of identification.

### REPORTABLE COMMUNICABLE DISEASES §2500(j)(1)

Disease Name	Urgency	Disease Name	Urgency
Amebiasis	FAX ⓪ ☒	Listeriosis	FAX ⓪ ☒
Anaplasmosis	WEEK	Lyme Disease	WEEK
Anthrax, human or animal	⓪ !	Malaria	FAX ⓪ ☒
Babesiosis	FAX ⓪ ☒	Measles (Rubeola)	⓪ !
Botulism (Infant, Foodborne, wound, Other)	⓪ !	Meningitis, Specify Etiology: Viral, Bacterial, Fungal, Parasitic	FAX ⓪ ☒
Brucellosis, animal (except infections due to <i>Brucella canis</i> )	WEEK	Meningococcal Infections	⓪ !
Brucellosis, human	⓪ !	Mumps	WEEK
Campylobacteriosis	FAX ⓪ ☒	Novel Virus Infection with Pandemic Potential	⓪ !
Chancroid	WEEK	Paralytic Shellfish Poisoning	⓪ !
Chickenpox (Varicella) (outbreaks, hospitalizations and deaths)	FAX ⓪ ☒	Pertussis (Whooping Cough)	FAX ⓪ ☒
Chikungunya Virus Infection	FAX ⓪ ☒	Plague, human or animal	⓪ !
<i>Chlamydia trachomatis</i> infections, including lymphogranuloma venereum (LGV)	WEEK	Poliovirus Infection	FAX ⓪ ☒

# REPORTABLE DISEASES AND CONDITIONS

Disease Name	Urgency	Disease Name	Urgency
Cholera	☉ !	Psittacosis	FAX ☉ ☒
Ciguatera Fish Poisoning	☉ !	Q Fever	FAX ☉ ☒
Coccidioidomycosis	WEEK	Rabies, human or animal	☉ !
Creutzfeldt-Jakob Disease (CJD) and other Transmissible Spongiform Encephalopathies (TSE)	WEEK	Relapsing Fever	FAX ☉ ☒
Cryptosporidiosis	FAX ☉ ☒	Respiratory Syncytial Virus (only report a death in a patient less than less than five years of age)	WEEK
Cyclosporiasis	WEEK	Rickettsial Diseases (non-Rocky Mountain Spotted Fever), including Typhus and Typhus-like illnesses	WEEK
Cysticercosis or taeniasis	WEEK	Rocky Mountain Spotted Fever	WEEK
Dengue Virus Infection	☉ !	Rubella (German Measles)	WEEK
Diphtheria	☉ !	Rubella Syndrome, Congenital	WEEK
Domoic Acid Poisoning (Amnesic Shellfish Poisoning)	☉ !	Salmonellosis (Other than Typhoid Fever)	FAX ☉ ☒
Ehrlichiosis	WEEK	Scombroid Fish Poisoning	☉ !
Encephalitis, Specify Etiology: Viral, Bacterial, Fungal, Parasitic	FAX ☉ ☒	Shiga toxin (detected in feces)	☉ !
<i>Escherichia coli</i> : shiga toxin producing (STEC) including <i>E. coli</i> O157	☉ !	Shigellosis	FAX ☉ ☒
Flavivirus infection of undetermined species	☉ !	Smallpox(Variola)	☉ !
Foodborne Disease	+ FAX ☉ ☒	Streptococcal Infections (Outbreaks of Any Type and Individual Cases in Food Handlers and Dairy Workers Only)	FAX ☉ ☒
Giardiasis	WEEK	Syphilis	FAX ☉ ☒
Gonococcal Infections	WEEK	Tetanus	WEEK
<i>Haemophilus influenzae</i> , invasive disease, all serotypes (report an incident less than 5 years of age)	FAX ☉ ☒	Trichinosis	FAX ☉ ☒
Hantavirus Infections	FAX ☉ ☒	Tuberculosis	FAX ☉ ☒
Hemolytic Uremic Syndrome	☉ !	Tularemia, animal	WEEK
Hepatitis A, acute infection	FAX ☉ ☒	Tularemia, human	☉ !
Hepatitis B (specify acute case or chronic)	WEEK	Typhoid Fever, Cases and Carriers	FAX ☉ ☒
Hepatitis C (specify acute case or chronic)	WEEK	<i>Vibrio</i> Infections	FAX ☉ ☒
Hepatitis D (Delta) (specify acute case or chronic)	WEEK	Viral Hemorrhagic Fevers, human or animal (e.g., Crimean-Congo, Ebola, Lassa, and Marburg viruses)	☉ !
Hepatitis E, acute infection	WEEK	West Nile Virus (WNV) Infection	FAX ☉ ☒
Human Immunodeficiency Virus (HIV) infection, stage 3 (AIDS)	WEEK	Yellow Fever	☉ !
Human Immunodeficiency Virus (HIV), acute infection	☉	Yersiniosis	FAX ☉ ☒

# REPORTABLE DISEASES AND CONDITIONS

Disease Name	Urgency	Disease Name	Urgency
Influenza, deaths in laboratory-confirmed cases for age 0-64 years	WEEK	Zika Virus Infection	⊙!
Influenza, novel strains (human)	⊙!	OCCURRENCE of ANY UNUSUAL DISEASE	⊙!
Legionellosis	WEEK	OUTBREAKS of ANY DISEASE (Including diseases not listed in §2500). Specify if institutional and/or open community.	⊙!
Leprosy (Hansen Disease)	WEEK		
Leptospirosis	WEEK		

## HIV REPORTING BY HEALTH CARE PROVIDERS §2641.30-2643.20

Human Immunodeficiency Virus (HIV) infection at all stages is reportable by traceable mail, person-to-person transfer, or electronically within seven calendar days. For complete HIV-specific reporting requirements, see [Title 17, CCR, §2641.30-2643.20](#) and the [California Department of Public Health's HIV Surveillance and Case Reporting Resource page](https://www.cdph.ca.gov/Programs/CID/DOA/Pages/OA_case_surveillance_resources.aspx) ([https://www.cdph.ca.gov/Programs/CID/DOA/Pages/OA\\_case\\_surveillance\\_resources.aspx](https://www.cdph.ca.gov/Programs/CID/DOA/Pages/OA_case_surveillance_resources.aspx))

## REPORTABLE NONCOMMUNICABLE DISEASES AND CONDITIONS §2800–2812 and §2593(b)

Disorders Characterized by Lapses of Consciousness

(§2800-2812) Pesticide-related illness or injury (known or suspected cases)\*\*

Cancer, including benign and borderline brain tumors (except (1) basal and squamous skin cancer unless occurring on genitalia, and (2) carcinoma in-situ and CIN III of the Cervix) (§2593)\*\*\*

## LOCALLY REPORTABLE DISEASES (If Applicable):

Necrotizing fasciitis

NOTE: For diseases that require "immediate" reporting on weekends/holidays, please call (858) 565-5255.

\* This form is designed for health care providers to report those diseases mandated by Title 17, California Code of Regulations (CCR). Failure to report is a misdemeanor (Health & Safety Code §120295) and is a citable offense under the Medical Board of California Citation and Fine Program (Title 16, CCR, §1364.10 and 1364.11).

\*\* Failure to report is a citable offense and subject to civil penalty (\$250) (Health and Safety Code §105200).

\*\*\* The Confidential Physician Cancer Reporting Form may also be used. See Physician Reporting Requirements for Cancer Reporting in CA at: [www.ccrca.org](http://www.ccrca.org)

# RESOURCES

## ***United States Disease Data***

Adams DA, Thomas KR, Jajosky RA, et al. Summary of Notifiable Infectious Diseases and Conditions – United States, 2014. MMWR Morb Mortal Wkly Rep 2016;63:1-152 DOI: <http://dx.doi.org/10.15585/mmwr.mm6354a1>

Adams DA, Thomas KR, Jajosky RA, et al. Summary of Notifiable Infectious Diseases and Conditions – United States, 2015. MMWR Morb Mortal Wkly Rep 2017;64:1-143. DOI: <http://dx.doi.org/10.15585/mmwr.mm6453a1>

Centers for Disease Control and Prevention. National Notifiable Diseases Surveillance System, Weekly Tables of Infectious Disease Data. Atlanta, GA. CDC Division of Health Informatics and Surveillance. Available at: <https://www.cdc.gov/nndss/infectious-tables.html>

West Nile Virus Disease Cases and Presumptive Viremic Blood Donors by State – United States. Centers for Disease Control and Prevention West Nile Virus Statistics and Maps webpage. <https://www.cdc.gov/westnile/statsmaps/index.html>

## ***California Disease Data***

Yearly Summaries of Selected General Communicable Diseases in California, 2011-2018. Surveillance and Statistics Section, Infectious Diseases Branch, Division of Communicable Disease Control, Center for Infectious Diseases, California Department of Public Health. June 2019. <https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/YearlySummariesofSelectedCommDiseasesinCA.pdf>

Vaccine-Preventable Disease Surveillance in California, 2017 Annual Report. Vaccine-Preventable Diseases Epidemiology Section, Immunization Branch, Division of Communicable Disease Control, Center for Infectious Diseases, California Department of Public Health. December 20, 2018. <https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/Immunization/VPD-AnnualReport2017.pdf>

Human West Nile Virus Activity, California, 2003-2018. <http://www.westnile.ca.gov/>

Pertussis Snapshot, CDPH. <https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/Immunization/PertussisReport19August19.pdf>

# RESOURCES

## **Population Data**

Table 1. Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2010 to July 1, 2017 (NST-EST2017-01)

Source: U.S. Census Bureau, Population Division. Release Date: December 2017.

United States Census Bureau, American Fact Finder

<https://factfinder.census.gov>

SANDAG vintage 2016 population estimates. Prepared by: Rachel Cortes, 3/15/2017.

San Diego Association of Governments

<http://www.sandag.org/>

State of California, Department of Finance, E-2. California County Population Estimates and Components of Change by Year — July 1, 2010–2017, December 2017.

<http://www.dof.ca.gov/Forecasting/Demographics/Estimates/>

## **Disease Information**

Centers for Disease Control and Prevention. Diseases and Conditions website.

<https://www.cdc.gov/DiseasesConditions/>

Heymann DL, editor. Control of Communicable Diseases Manual. 20th ed. Washington, DC: American Public Health Association;2015.

Centers for Disease Control and Prevention. Epidemiology and Prevention of Vaccine-Preventable Diseases. Hamborsky J, Kroger A, Wolfe S, eds. 13th ed. Washington DC: Public Health Foundation;2015. [The Pink Book]

<https://www.cdc.gov/vaccines/pubs/pinkbook/index.html>

Centers for Disease Control and Prevention. CDC Yellow Book 2018: Health Information for International Travel. New York: Oxford University Press;2017. [The Yellow Book]

<https://wwwnc.cdc.gov/travel/page/yellowbook-home>

Centers for Disease Control and Prevention and Council of State and Territorial Epidemiologists. National Notifiable Diseases Surveillance System (NNDSS) Surveillance Case Definitions.

<https://wwwn.cdc.gov/nndss/default.aspx>

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