

VIRAL HEPATITIS SURVEILLANCE

UNITED STATES, 2018



DIVISION OF
VIRAL HEPATITIS



Centers for Disease
Control and Prevention
National Center for HIV/AIDS,
Viral Hepatitis, STD, and
TB Prevention

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VIRAL HEPATITIS



SURVEILLANCE

UNITED STATES, 2018

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BACKGROUND

Hepatitis A is a vaccine-preventable, communicable disease of the liver caused by the hepatitis A virus (HAV). HAV is usually transmitted person-to-person through the fecal-oral route or through consumption of contaminated food or water. Most adults and older children with hepatitis A have symptoms that usually resolve within 2 months of infection; most children less than 6 years of age do not have symptoms or have an unrecognized infection. Signs and symptoms associated with hepatitis A infection may include one or more of the following: fever, fatigue, nausea, vomiting, loss of appetite, abdominal pain, dark urine, and clay-colored stools. Hepatitis A is a self-limited disease that does not result in chronic infection. Treatment for HAV infection may include rest, adequate nutrition, and fluids. Hospitalization may be required for more severe cases. The best way to prevent hepatitis A infection is to get vaccinated⁽¹⁾.

Hepatitis B is a vaccine-preventable liver disease caused by the hepatitis B virus (HBV). HBV is transmitted when blood, semen, or another body fluid from a person infected with the virus enters the body of someone who is not infected. This can happen through sexual contact; sharing needles, syringes, or other drug-injection equipment; or from mother to

baby at birth. For some people, hepatitis B is an acute, or short-term, illness but for others, it can become a long-term, chronic infection. Chronic hepatitis B can lead to serious health issues, including cirrhosis, liver cancer, and death. There are treatments but no cure for hepatitis B. The best way to prevent hepatitis B is by getting vaccinated^(2,3).

Hepatitis C is a liver disease caused by the hepatitis C virus (HCV). HCV is a blood-borne virus. Today, most people become infected with HCV by sharing needles or other equipment to inject drugs⁽⁴⁾. For some people, hepatitis C is a short-term illness but for more than 50% of people who become infected with the hepatitis C virus, it becomes a long-term, chronic infection⁽⁵⁾. Like chronic hepatitis B, chronic hepatitis C is a serious disease that can result in cirrhosis, liver cancer, and death. Many people might not be aware of their infection because they are not clinically ill. Since 2013 there have been highly effective, well-tolerated cures for hepatitis C. There is no vaccine to prevent hepatitis C⁽⁶⁾. The best way to prevent hepatitis C is by avoiding behaviors that can spread the disease, especially injecting drugs.

Key facts about hepatitis A, hepatitis B, and hepatitis C

	Hepatitis A	Hepatitis B	Hepatitis C
Main route(s) of transmission	Fecal-oral	Blood, sexual	Blood
Incubation period	15–50 days (average: 28 days)	60–150 days (average: 90 days)	14–182 days (average range: 14–84 days)
Symptoms of acute infection	Symptoms of all types of viral hepatitis are similar and can include one or more of the following: jaundice, fever, fatigue, loss of appetite, nausea, vomiting, abdominal pain, joint pain, dark urine, clay-colored stool, diarrhea (hepatitis A only)		
Perinatal transmission	No	Yes	Yes
Vaccine available	Yes	Yes	No
Treatment	Supportive care	Yes, not curative	Yes, curative

NATIONAL PROFILE OF VIRAL HEPATITIS, 2018

The Centers for Disease Control and Prevention (CDC) collects, analyzes, and disseminates surveillance data on viral hepatitis. Each week, health departments report cases of viral hepatitis to the CDC through the National Notifiable Diseases Surveillance System (NNDSS). The annual surveillance report, published by the Division of Viral Hepatitis, summarizes information about reported cases of hepatitis A, hepatitis B, and hepatitis C and deaths with either of these hepatitides listed as a cause of death in CDC's National Vital Statistics System (NVSS). These surveillance data are used by public health partners to help focus prevention efforts, plan services, allocate resources, develop policy, and detect and respond to clusters of viral hepatitis infection.

A Hepatitis A

In 2018, 12,474 hepatitis A cases were submitted to CDC, resulting in 24,900 estimated infections (95% CI: 17,500–27,400) after adjusting for case under-ascertainment and under-reporting (see *Technical Notes*)⁽⁷⁾. The reported case count corresponds to a rate of 3.8 cases per 100,000 population, a nearly 850% increase from the reported incidence rate of 0.4 cases per 100,000 population in 2014. This increase was primarily driven by widespread person-to-person outbreaks of hepatitis A that are unprecedented since the introduction of the hepatitis A vaccine. These outbreaks are primarily occurring among people who use drugs and people experiencing homelessness, resulting in prolonged community outbreaks in several states that have been difficult to control. Over 55% of hepatitis A cases reported to CDC in 2018 occurred among persons aged 30–49 years. Among the 8,471 (68%) reported cases that included risk information for injection drug use, 4,247 (50%) reported injection drug use. A total of 6,292 case-patients were hospitalized (58% hospitalization rate among those with hospitalization information available).

Data from death certificates filed in the vital records office of the 50 states and the District of Columbia found that the age-adjusted death rate associated with hepatitis A in 2018 among U.S. residents was 0.05 deaths per 100,000 population, which is more than double the rate of 0.02 deaths per 100,000 population in 2017⁽⁸⁾.

B Hepatitis B

Reported cases of acute hepatitis B declined after routine vaccination of children was recommended in 1991 and became relatively stable from 2010 through 2018. In 2018, a total of 3,322 acute hepatitis B cases were reported to CDC, resulting in 21,600 estimated infections (95% CI: 12,300–52,800) after adjusting for case under-ascertainment and under-reporting (see *Technical Notes*)⁽⁷⁾. The reported case count corresponds to a rate of 1.0 cases per 100,000 population. Over half of acute hepatitis B cases reported to CDC in 2018 occurred among persons aged 30–49 years. Among the 1,518 (46%) reported acute cases that included risk information for injection drug use, 549 (36%) reported injection drug use. A total of 1,483 case-patients with acute hepatitis B were hospitalized (62% hospitalization rate among those with hospitalization information available).

Data from death certificates filed in the vital records office of the 50 states and the District of Columbia found that the age-adjusted death rate associated with hepatitis B in 2018 among U.S. residents was 0.43 deaths per 100,000 population, which decreased slightly from 0.46 deaths per 100,000 population in 2017⁽⁹⁾. Among 28 jurisdictions with data available, hepatitis B-associated death rates increased in 11 jurisdictions from 2017 to 2018.

C Hepatitis C

In 2018, 3,621 acute hepatitis C cases were reported to CDC, resulting in 50,300 estimated infections (95% CI: 39,800–171,600) after adjusting for case underascertainment and under-reporting (see *Technical Notes*)⁽⁷⁾. The reported acute hepatitis C case count corresponds to a rate of 1.2 cases per 100,000 population, an over 71% increase from the reported incidence rate of 0.7 cases per 100,000 population in 2014. Over 65% of acute hepatitis C cases reported to CDC in 2018 were among persons aged 20–39 years. Among the 1,535 (42%) reported acute cases that included risk information for injection drug use, 1,102 (72%) reported injection drug use. A total of 850 case-patients with acute hepatitis C were hospitalized (44% hospitalization rate among those with hospitalization information available).

There were 214 perinatal hepatitis C cases reported to CDC in 2018, which is the first year that standardized surveillance for perinatal hepatitis C was conducted by states and case notifications submitted to CDC.

Data from death certificates filed in the vital records office of the 50 states and the District of Columbia found that the age-adjusted death rate for hepatitis C in 2018 was 3.72 deaths per 100,000 population, representing a nearly 26% decrease from the mortality rate in 2014 (5.01 deaths per 100,000 population)⁽⁹⁾. Despite this improvement, hepatitis C-associated death rates increased in 15 jurisdictions from 2017 to 2018.

TECHNICAL NOTES

Case ascertainment and case reporting

For a health department to report cases of viral hepatitis to the CDC, they must have systems and processes in place that ensure each case is detected. Due to varying state laws, resources, and infrastructure, not all health departments report all cases of acute or newly identified chronic viral hepatitis to the CDC. In addition, it is not possible to diagnose every acute case, because symptoms may be either so mild that the person does not seek care or too vague to prompt a health care provider to suspect and test for viral hepatitis.

Case reporting generally begins when a local or state health department receives a positive laboratory report, indicating an individual has a viral hepatitis infection. Since initial reporting provides limited information and clinical symptoms are frequently needed to classify cases as acute, reported cases may require extensive follow-up to obtain full information for establishing case status and case classification.

Health departments prioritize cases for follow-up using their own protocols and may submit cases to CDC with incomplete or missing information. Additionally, the volume of laboratory reports for chronic viral hepatitis infections may be so large that not all health departments are able to consistently detect and report all chronic cases to the CDC; in 2018, only 14 states (Florida, Georgia, Indiana, Kentucky, Louisiana, Massachusetts, New Jersey, North Carolina, Oklahoma, Ohio, Tennessee, Utah, Washington, and West Virginia) received federal funding to support viral hepatitis surveillance. Under-reporting results in an underestimation of chronic viral hepatitis cases when using state reports based on data from NNDSS. Data on chronic hepatitis B and hepatitis C are in this report where available; however, these are newly identified chronic cases and do not measure prevalence.

All viral hepatitis conditions with no reported cases or characterized as “Not Reportable” or “Data Unavailable” for 2018 in a jurisdiction’s final signed report to CDC’s National Center for Surveillance, Epidemiology, and Laboratory Services (CSELS) were reported according to the following notation used by CSELS:

— : **No reported cases.** The reporting jurisdiction did not submit any cases to CDC.

N : **Not reportable.** The disease or condition was not reportable by law, statute, or regulation in the reporting jurisdiction.

U : **Unavailable.** The data are unavailable.

Case definitions

To ensure consistent reporting across states, the Council for State and Territorial Epidemiologists (CSTE), in collaboration with CDC, developed case definitions for viral hepatitis A, hepatitis B, and hepatitis C. The case definitions facilitate standardized reporting using uniform criteria and differentiate between acute, chronic, and perinatal cases. When new technologies are developed for laboratory testing or better clinical data becomes available, the case definitions are updated. Changes to case definitions should be considered when examining trends over time. For more information on 2018 case definitions, visit the [National Notifiable Diseases Surveillance System's website](#). There were no changes to case definitions implemented for acute or chronic viral hepatitis in 2018; however, the first case definition for perinatal hepatitis C was implemented in 2018.

Estimating incidence of acute viral hepatitis

To account for under-ascertainment and under-reporting, a probabilistic model to estimate the true incidence of acute hepatitis A, hepatitis B, and hepatitis C from reported cases has been published previously⁽⁶⁾. The model includes the probabilities of symptoms, referral to care and treatment, and rates of reporting to local and state health departments. The published multipliers have since been corrected by CDC to indicate that each reported case of acute hepatitis A represents 2.0 estimated infections (95% bootstrap confidence interval [CI]: 1.4–2.2); each reported case of acute hepatitis B represents 6.5 estimated infections (95% bootstrap CI: 3.7–15.9); and each reported case of acute hepatitis C represents 13.9 estimated infections (95% bootstrap CI: 11.0–47.4).

Mortality surveillance

The National Vital Statistics System (NVSS) provides information on deaths that occur in the United States. NVSS data in this report are from the 2014–2018 Multiple Cause of Death files on the CDC WONDER online database⁽⁹⁾. These data are based on information from all death certificates filed in the vital records offices of the 50 states and the District of Columbia through the Vital Statistics Cooperative Program. Deaths of nonresidents (e.g., nonresident aliens, nationals living abroad, residents of U.S. Territories) and fetal deaths are excluded.



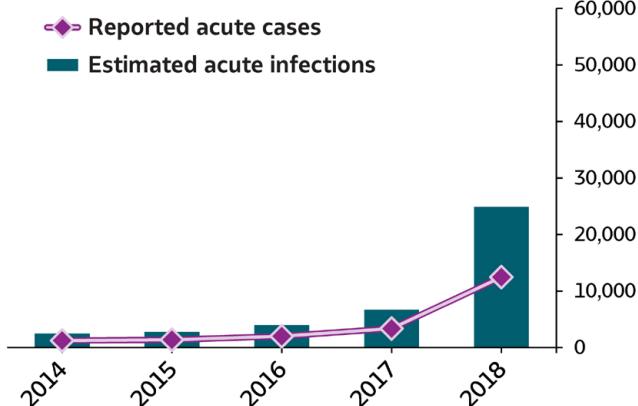
SUMMARY 2018

Viral Hepatitis Acute Infections

A Hepatitis A

12,474 Acute Cases Reported in 2018

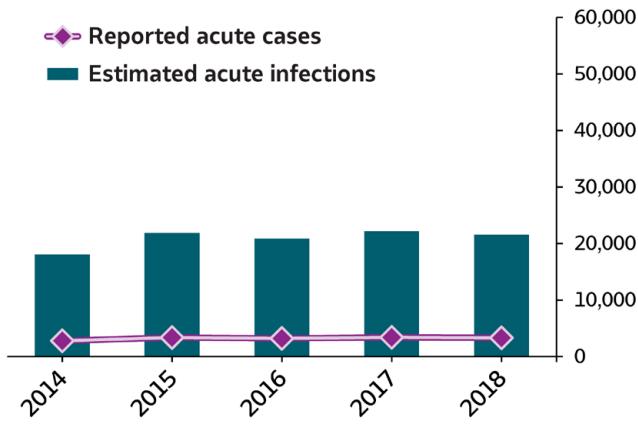
24,900 Acute Infections Estimated in 2018
(17,500 – 27,400)*



B Hepatitis B

3,322 Acute Cases Reported in 2018

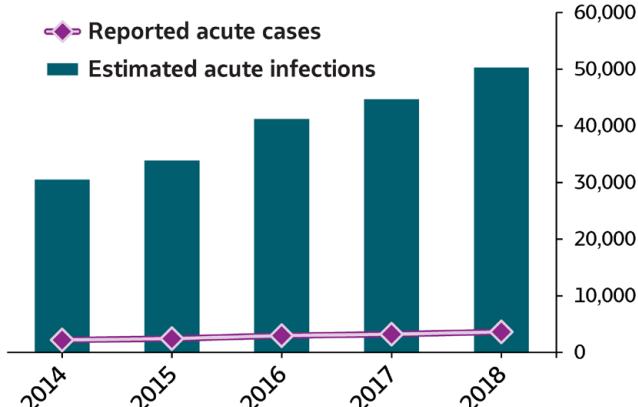
21,600 Acute Infections Estimated in 2018
(12,300 – 52,800)*



C Hepatitis C

3,621 Acute Cases Reported in 2018

50,300 Acute Infections Estimated in 2018
(39,800 – 171,600)*



A HEPATITIS A, 2018

12,474

New cases reported

3.8

Reported cases per 100,000 population

24,900*

Acute infections estimated

AT A GLANCE HEPATITIS A in 2018

Hepatitis A incidence increased **850%** from 2014 to 2018. The increase in 2018 was primarily due to unprecedeted person-to-person outbreaks reported in **24** states among people who use drugs and people experiencing homelessness.

GROUPS MOST AFFECTED BY HEPATITIS A IN 2018

By Age[†]

20–29 years: **6.1** cases per 100,000 people

30–39 years: **9.8** cases per 100,000 people

40–49 years: **6.6** cases per 100,000 people

By Sex[†]

Males: **4.7** cases per 100,000 people

By Race/Ethnicity[†]

White, Non-Hispanic: **4.3** cases per 100,000 people

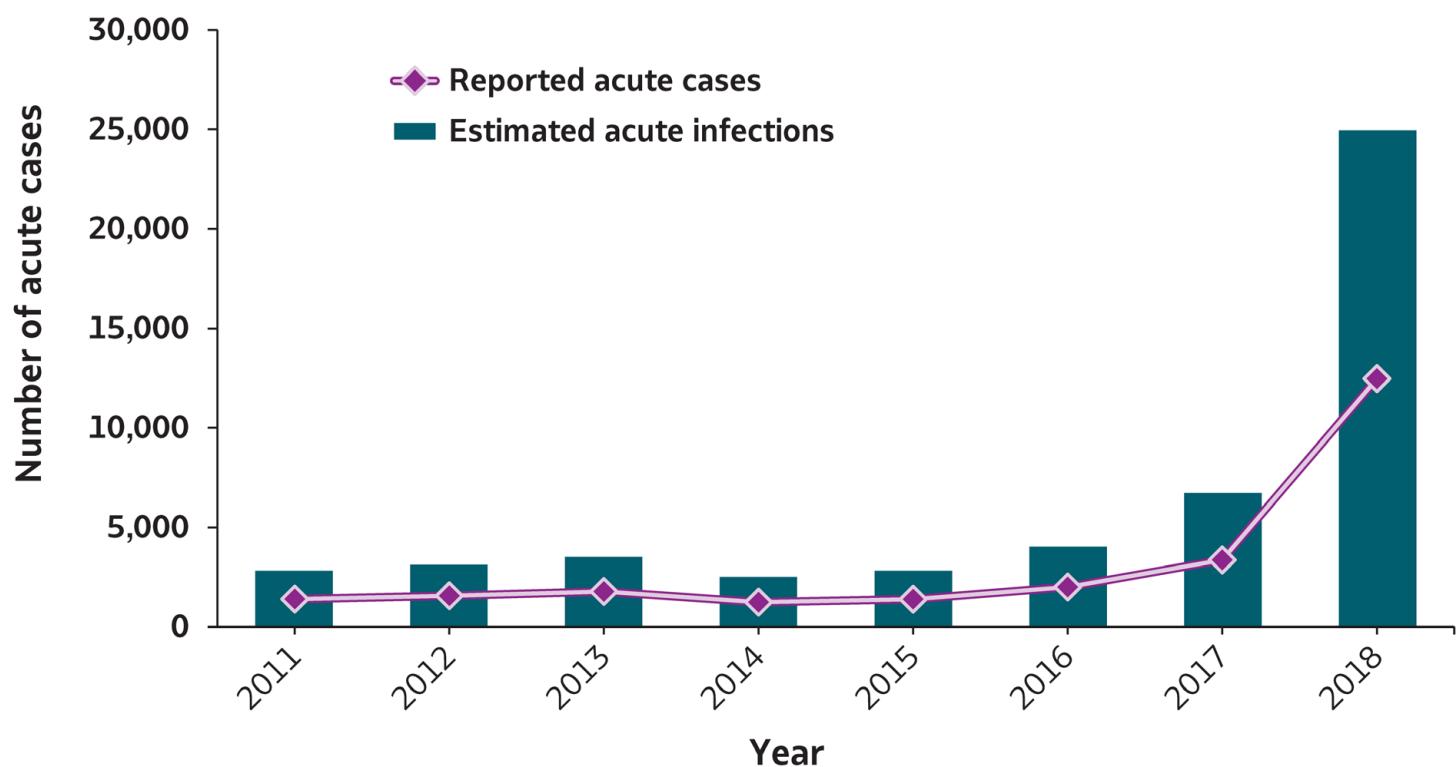
By Risk

Injection Drug Use (IDU): Among the 8,471 reported cases with IDU information available, **4,247 (50%)** report IDU

* 95% Bootstrap Confidence Interval: (17,500–27,400)

[†] Indicates groups above the national average in 2018

Figure 1.1. Number of reported hepatitis A cases and estimated infections* — United States, 2011–2018



Source: CDC, National Notifiable Diseases Surveillance System.

* The number of estimated viral hepatitis infections was determined by multiplying the number of reported cases by a factor that adjusted for under-ascertainment and under-reporting^[7]. The 95% bootstrap confidence intervals for the estimated number of infections are shown in the Appendix.

Table 1.1. Number and rate* of reported cases[†] of hepatitis A, by state or jurisdiction — United States, 2014–2018

State	2014		2015		2016		2017		2018	
	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*
Alabama	15	0.3	23	0.5	19	0.4	23	0.5	38	0.8
Alaska	1	0.1	4	0.5	2	0.3	—	—	1	0.1
Arizona	29	0.4	54	0.8	32	0.5	59	0.8	77	1.1
Arkansas	2	0.1	10	0.3	13	0.4	7	0.2	254	8.4
California	142	0.4	179	0.5	229	0.6	947	2.4	189	0.5
Colorado	23	0.4	25	0.5	22	0.4	65	1.2	31	0.5
Connecticut	23	0.6	9	0.3	16	0.4	17	0.5	15	0.4
Delaware	1	0.1	2	0.2	1	0.1	6	0.6	7	0.7
District of Columbia	U	U	U	U	4	0.6	3	0.4	11	1.6
Florida	90	0.5	108	0.5	115	0.6	261	1.2	548	2.6
Georgia	24	0.2	30	0.3	44	0.4	24	0.2	84	0.8
Hawaii	5	0.4	6	0.4	285	20.0	8	0.6	4	0.3
Idaho	7	0.4	9	0.5	7	0.4	4	0.2	5	0.3
Illinois	82	0.6	57	0.4	71	0.6	73	0.6	93	0.7
Indiana	20	0.3	19	0.3	18	0.3	21	0.3	964	14.4
Iowa	12	0.4	16	0.5	16	0.5	9	0.3	10	0.3
Kansas	7	0.2	7	0.2	5	0.2	6	0.2	14	0.5
Kentucky	19	0.4	16	0.4	9	0.2	71	1.6	3,560	79.7
Louisiana	5	0.1	5	0.1	12	0.3	8	0.2	37	0.8
Maine	8	0.6	8	0.6	8	0.6	7	0.5	9	0.7
Maryland	27	0.5	19	0.3	37	0.6	29	0.5	52	0.9
Massachusetts	43	0.6	34	0.5	64	0.9	52	0.8	364	5.3
Michigan	45	0.5	51	0.5	112	1.1	670	6.7	299	3.0
Minnesota	19	0.3	21	0.4	15	0.3	30	0.5	16	0.3
Mississippi	3	0.1	2	0.1	2	0.1	3	0.1	13	0.4
Missouri	20	0.3	9	0.1	16	0.3	27	0.4	243	4.0
Montana	5	0.5	2	0.2	3	0.3	3	0.3	—	—
Nebraska	9	0.5	6	0.3	21	1.1	4	0.2	6	0.3
Nevada	5	0.2	11	0.4	14	0.5	19	0.6	41	1.4
New Hampshire	5	0.4	2	0.2	8	0.6	7	0.5	12	0.9
New Jersey	59	0.7	59	0.7	74	0.8	71	0.8	70	0.8
New Mexico	8	0.4	6	0.3	4	0.2	4	0.2	23	1.1
New York	84	0.4	123	0.6	99	0.5	218	1.1	165	0.8
North Carolina	38	0.4	45	0.4	52	0.5	29	0.3	103	1.0
North Dakota	9	1.2	5	0.7	2	0.3	—	—	—	—
Ohio	32	0.3	36	0.3	36	0.3	45	0.4	1,687	14.4
Oklahoma	17	0.4	11	0.3	11	0.3	9	0.2	5	0.1
Oregon	13	0.3	28	0.7	15	0.4	20	0.5	23	0.5
Pennsylvania	48	0.4	43	0.3	62	0.5	69	0.5	99	0.8
Rhode Island	8	0.8	4	0.4	4	0.4	6	0.6	7	0.7
South Carolina	6	0.1	16	0.3	21	0.4	21	0.4	30	0.6
South Dakota	3	0.4	2	0.2	1	0.1	1	0.1	1	0.1
Tennessee	12	0.2	14	0.2	7	0.1	6	0.1	654	9.7
Texas	124	0.5	147	0.5	139	0.5	129	0.5	88	0.3
Utah	8	0.3	8	0.3	12	0.4	159	5.1	135	4.3
Vermont	1	0.2	3	0.5	5	0.8	2	0.3	3	0.5
Virginia	27	0.3	50	0.6	190	2.3	46	0.5	82	1.0
Washington	26	0.4	26	0.4	31	0.4	28	0.4	35	0.5
West Virginia	12	0.6	8	0.4	15	0.8	6	0.3	2,247	124.4
Wisconsin	7	0.1	9	0.2	7	0.1	16	0.3	15	0.3
Wyoming	1	0.2	3	0.5	—	—	18	3.1	5	0.9
Total	1,239	0.4	1,390	0.4	2,007	0.6	3,366	1.0	12,474	3.8

Source: CDC, National Notifiable Diseases Surveillance System.

* Rate per 100,000 population.

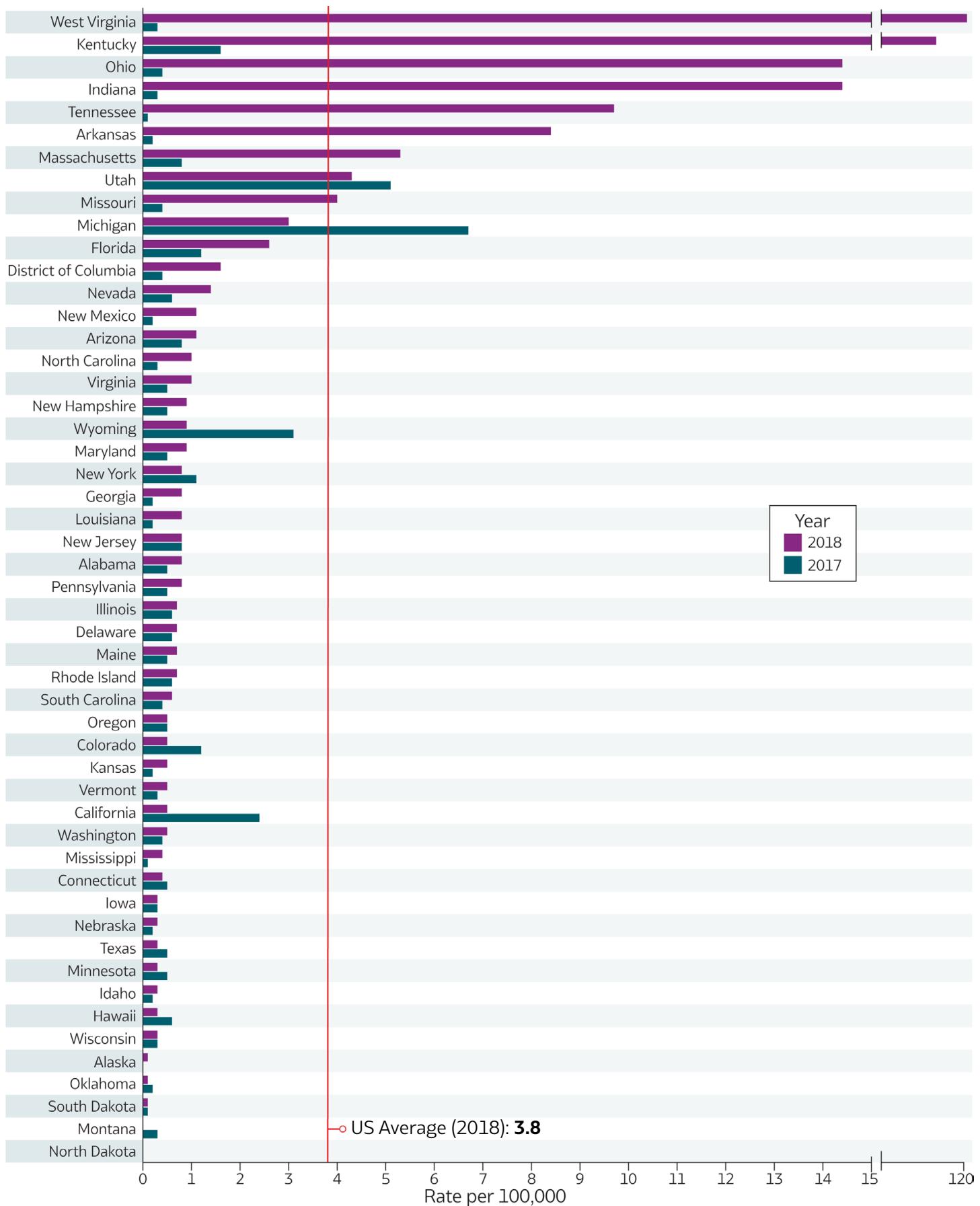
[†]For the case definition, see <https://www.cdc.gov/nndss/conditions/hepatitis-a-acute/>.

—: No reported cases. The reporting jurisdiction did not submit any cases to CDC.

N: Not reportable. The disease or condition was not reportable by law, statute, or regulation in the reporting jurisdiction.

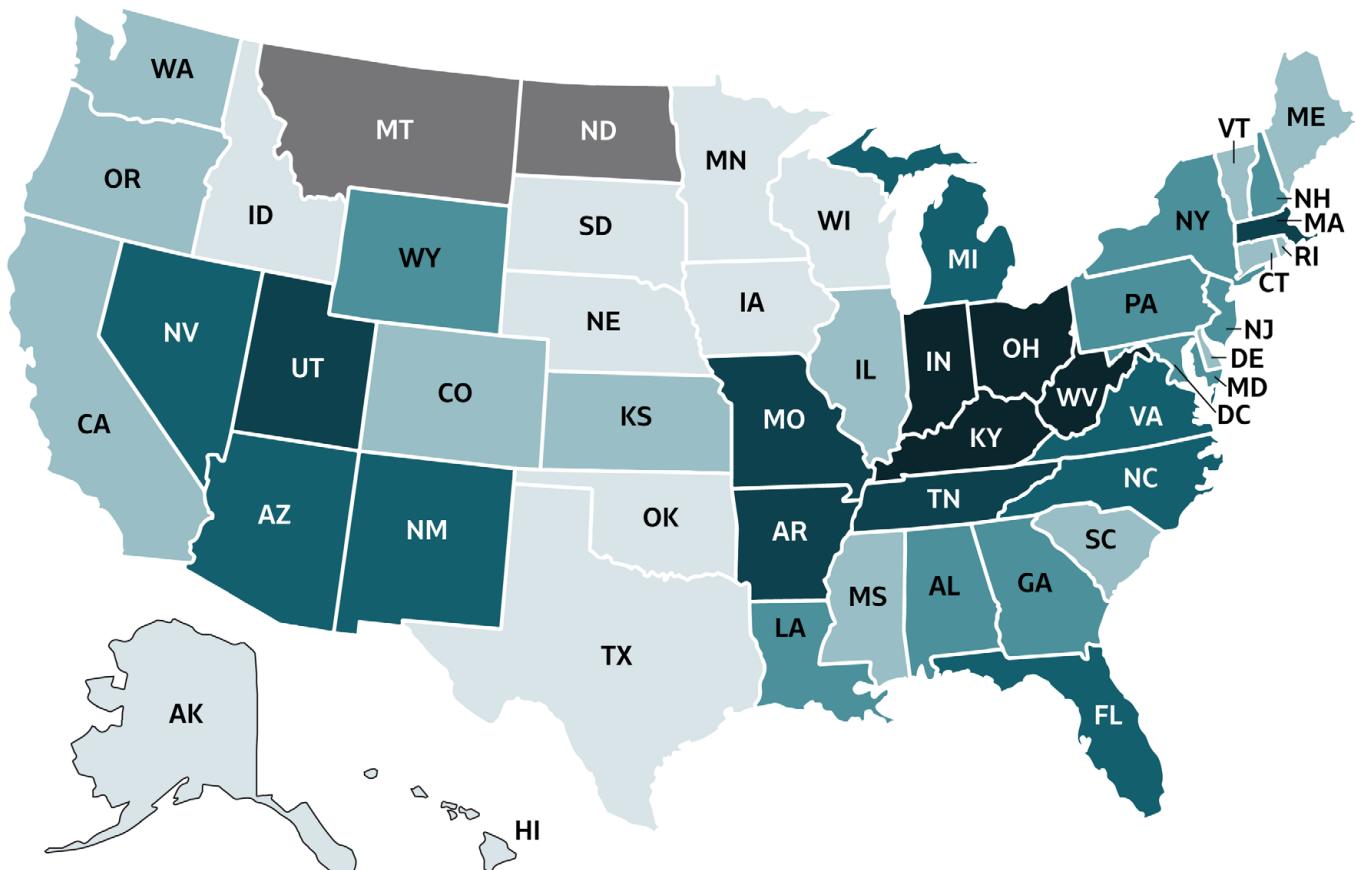
U: Unavailable. The data are unavailable.

Figure 1.2. Rates of reported hepatitis A, by state — United States, 2017–2018



Source: CDC, National Notifiable Diseases Surveillance System.

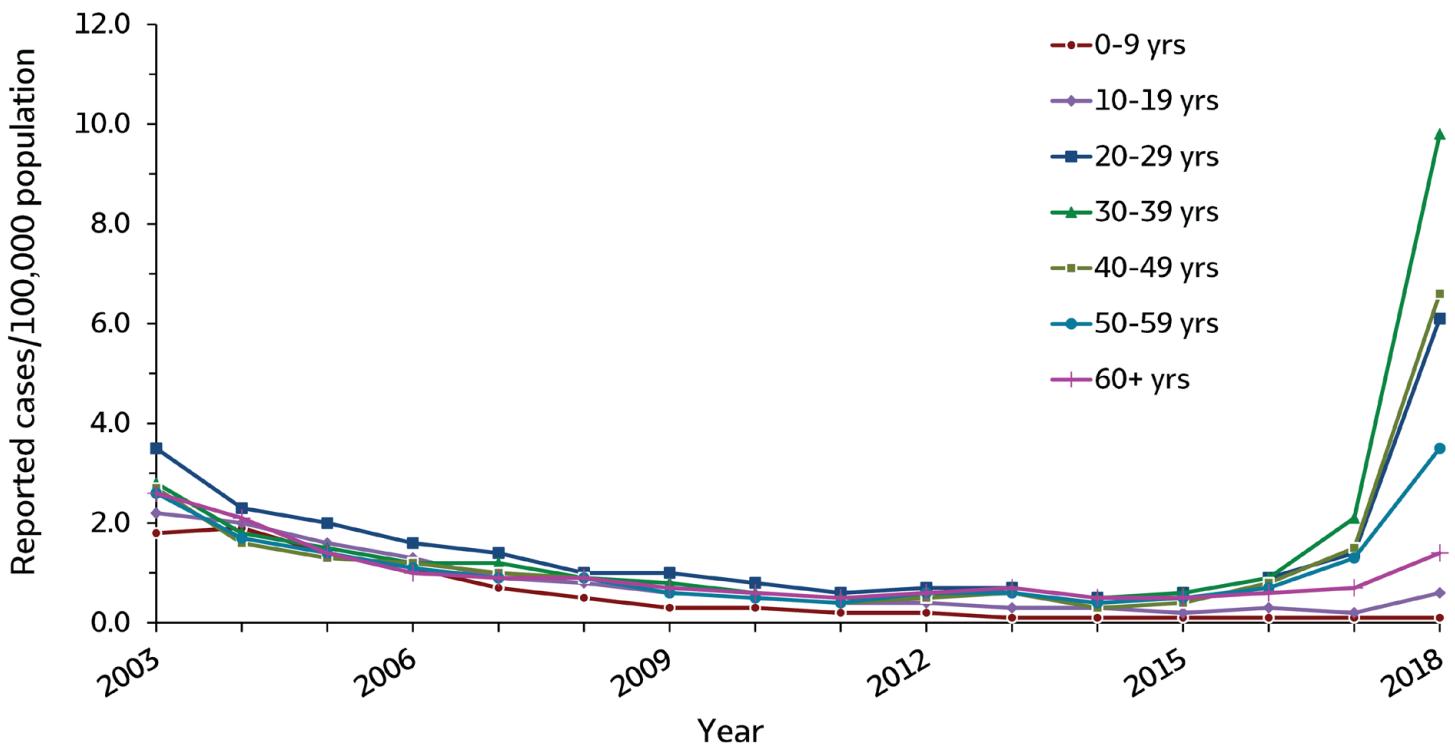
Figure 1.3. Rates of reported hepatitis A, by state or jurisdiction — United States, 2018



Color Key	Cases/100,000 Population	States
	0-0.3	AK, HI, ID, IA, MN, NE, OK, SD, TX, WI
	>0.3-0.7	CA, CO, CT, DE, IL, KS, ME, MS, OR, RI, SC, VT, WA
	>0.7-0.9	AL, GA, LA, MD, NH, NJ, NY, PA, WY
	>0.9-3.9	AZ, DC, FL, MI, NV, NM, NC, VA
	>3.9-9.7	AR, MA, MO, TN, UT
	>9.7-124.4	IN, KY, OH, WV
Grey	No reported cases	MT, ND

Source: CDC, National Notifiable Diseases Surveillance System.

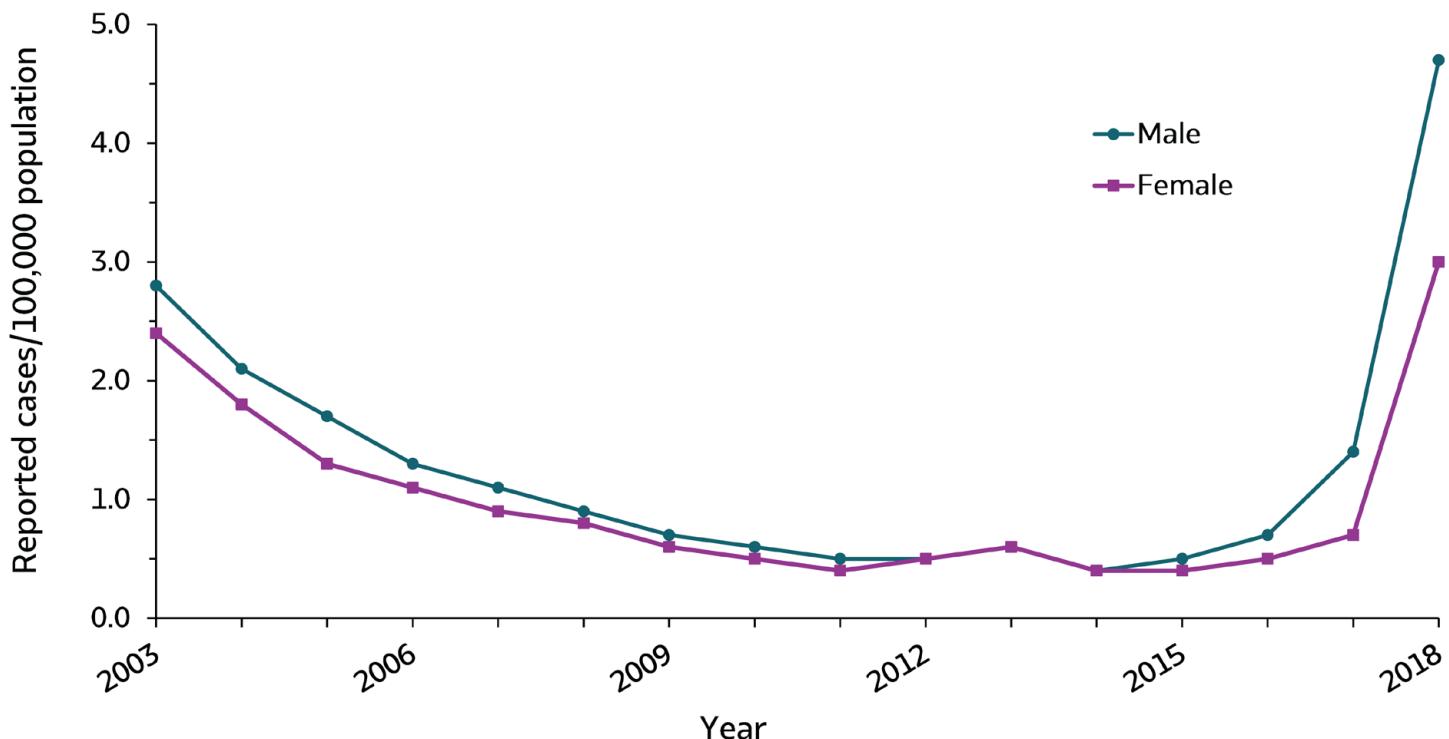
Figure 1.4. Rates of reported hepatitis A, by age group — United States, 2003–2018



Age (years)	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0-9	1.8	1.9	1.4	1.1	0.7	0.5	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
10-19	2.2	2.0	1.6	1.3	0.9	0.8	0.6	0.5	0.4	0.4	0.3	0.3	0.2	0.3	0.2	0.6
20-29	3.5	2.3	2.0	1.6	1.4	1.0	1.0	0.8	0.6	0.7	0.7	0.5	0.6	0.9	1.4	6.1
30-39	2.8	1.8	1.5	1.2	1.2	0.9	0.8	0.6	0.5	0.5	0.7	0.5	0.6	0.9	2.1	9.8
40-49	2.7	1.6	1.3	1.2	1.0	0.9	0.6	0.5	0.4	0.5	0.6	0.3	0.4	0.8	1.5	6.6
50-59	2.6	1.7	1.4	1.1	0.9	0.9	0.6	0.5	0.4	0.6	0.6	0.4	0.5	0.7	1.3	3.5
60+	2.6	2.1	1.4	1.0	0.9	0.9	0.7	0.6	0.5	0.6	0.7	0.5	0.5	0.6	0.7	1.4

Source: CDC, National Notifiable Diseases Surveillance System.

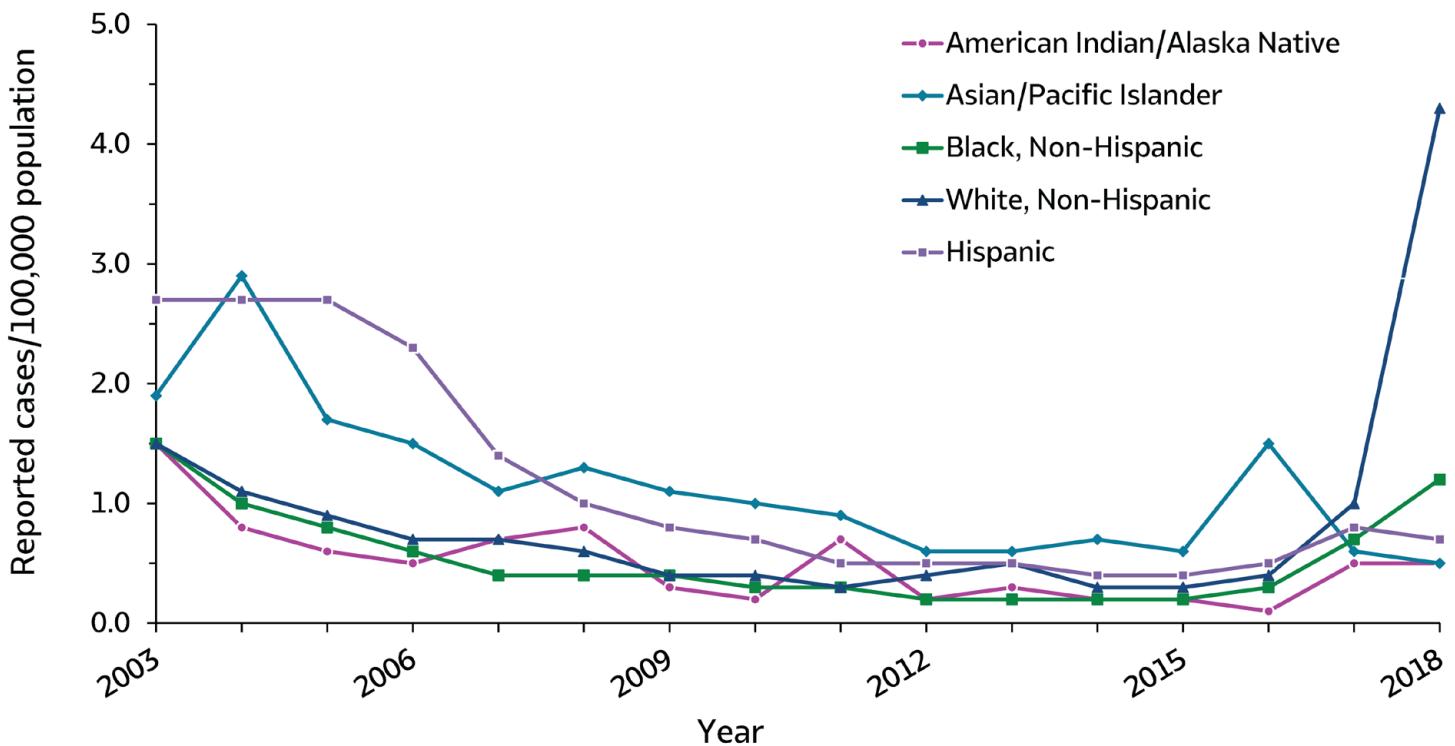
Figure 1.5. Rates of reported hepatitis A, by sex — United States, 2003–2018



Sex	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Male	2.8	2.1	1.7	1.3	1.1	0.9	0.7	0.6	0.5	0.5	0.6	0.4	0.5	0.7	1.4	4.7
Female	2.4	1.8	1.3	1.1	0.9	0.8	0.6	0.5	0.4	0.5	0.6	0.4	0.4	0.5	0.7	3.0

Source: CDC, National Notifiable Diseases Surveillance System.

Figure 1.6. Rates of reported hepatitis A, by race/ethnicity — United States, 2003–2018



Race/Ethnicity	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
American Indian/Alaska Native	1.5	0.8	0.6	0.5	0.7	0.8	0.3	0.2	0.7	0.2	0.3	0.2	0.2	0.1	0.5	0.5
Asian/Pacific Islander	1.9	2.9	1.7	1.5	1.1	1.3	1.1	1.0	0.9	0.6	0.6	0.7	0.6	1.5	0.6	0.5
Black, Non-Hispanic	1.5	1.0	0.8	0.6	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.7	1.2
White, Non-Hispanic	1.5	1.1	0.9	0.7	0.7	0.6	0.4	0.4	0.3	0.4	0.5	0.3	0.3	0.4	1.0	4.3
Hispanic	2.7	2.7	2.7	2.3	1.4	1.0	0.8	0.7	0.5	0.5	0.5	0.4	0.4	0.5	0.8	0.7

Source: CDC, National Notifiable Diseases Surveillance System.

Table 1.2. Number and rate* of reported cases[†] of hepatitis A, by demographic characteristics — United States 2014–2018

Demographic characteristic	2014		2015		2016		2017		2018	
	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*
Total[§]	1,239	0.4	1,390	0.4	2,007	0.6	3,366	1.0	12,474	3.8
Age group (years)										
0–9	41	0.1	48	0.1	47	0.1	40	0.1	54	0.1
10–19	114	0.3	97	0.2	131	0.3	86	0.2	231	0.6
20–29	246	0.5	287	0.6	392	0.9	659	1.4	2,763	6.1
30–39	207	0.5	233	0.6	391	0.9	893	2.1	4,268	9.8
40–49	139	0.3	164	0.4	333	0.8	621	1.5	2,658	6.6
50–59	182	0.4	205	0.5	297	0.7	554	1.3	1,509	3.5
60+	304	0.5	353	0.5	409	0.6	509	0.7	987	1.4
Sex										
Male	645	0.4	726	0.5	1,107	0.7	2,209	1.4	7,497	4.7
Female	591	0.4	662	0.4	897	0.5	1,149	0.7	4,952	3.0
Race/ethnicity										
American Indian/ Alaskan Native	4	0.2	5	0.2	3	0.1	13	0.5	15	0.5
Asian/Pacific Islander	135	0.7	114	0.6	299	1.5	124	0.6	104	0.5
Black, Non-Hispanic	82	0.2	71	0.2	137	0.3	303	0.7	508	1.2
White, Non-Hispanic	566	0.3	701	0.3	865	0.4	1,979	1.0	8670	4.3
Hispanic	211	0.4	219	0.4	293	0.5	471	0.8	413	0.7
HHS Region[¶]										
Region 1	88	0.6	60	0.4	105	0.7	91	0.6	410	2.8
Region 2	143	0.5	182	0.6	173	0.6	289	1.0	235	0.8
Region 3	115	0.4	122	0.4	309	1.0	159	0.5	2,498	8.1
Region 4	207	0.3	254	0.4	269	0.4	438	0.7	5,030	7.6
Region 5	205	0.4	193	0.4	259	0.5	855	1.6	3,074	5.9
Region 6	156	0.4	179	0.4	179	0.4	157	0.4	407	1.0
Region 7	48	0.3	38	0.3	58	0.4	46	0.3	273	1.9
Region 8	49	0.4	45	0.4	40	0.3	246	2.1	172	1.4
Region 9	181	0.4	250	0.5	560	1.1	1,033	2.0	311	0.6
Region 10	47	0.4	67	0.5	55	0.4	52	0.4	64	0.5

Source: CDC, National Notifiable Diseases Surveillance System.

* Rate per 100,000 population.

† For the case definition, see <https://www.cdc.gov/nndss/conditions/hepatitis-a-acute/>.

§ Numbers reported in each category may not add up to the total number of reported cases in a year due to cases with missing data or, in the case of race/ethnicity, cases categorized as “Other.”

¶ Health and Human Services Regions were categorized according to the grouping of states and U.S. Territories assigned under each of the ten Department of Health and Human Services regional offices (<https://www.hhs.gov/about/agencies/iea/regional-offices/index.html>). For the purposes of this report, regions with U.S. territories (Region 2 and Region 9) contain data from states only.

HEPATITIS A RISK BEHAVIORS AND EXPOSURES

Figure 1.7. Availability of information on risk behaviors/exposures* associated with reported cases of hepatitis A — United States, 2018



Table 1.3. Reported risk behaviors/exposures† among reported cases of hepatitis A — United States, 2018

Risk behaviors/exposures	Risk identified*	No risk identified	Risk data missing
Injection drug use	4,247	4,224	4,003
Sexual contact §	299	4,728	7,447
Household contact (non-sexual) §	260	4,767	7,447
Other contact §	312	4,715	7,447
Men who have sex with men †	194	1,362	5,941
International travel	114	6,896	5,464

Source: CDC, Nationally Notifiable Diseases Surveillance System.

* Case reports with at least one of the following risk behaviors/ exposures reported 2–6 weeks prior to symptom onset: 1) injection drug use; 2) sexual, household, or other contact; 3) men who have sex with men; 4) travel to hepatitis A-endemic region.

† Reported cases may include more than one risk behavior/exposure.

§ Cases with more than one type of contact reported were categorized according to a hierarchy: (1) sexual contact; (2) household contact (non-sexual); and (3) other contact with hepatitis A case.

¶ A total of 7,497 hepatitis A cases were reported among males in 2018.

Table 1.4. Number and rate* of deaths with hepatitis A listed as a cause of death[†] among U.S. residents, by demographic characteristic and year — United States, 2014–2018

Demographic characteristic	2014		2015		2016		2017		2018	
	No.	Rate (95% CI)	No.	Rate (95% CI)						
Age group (years)										
0–44	4	UR§	5	UR§	6	UR§	9	UR§	33	0.02 (0.01–0.02)
45–64	35	0.04 (0.03–0.06)	25	0.03 (0.02–0.04)	33	0.04 (0.03–0.06)	35	0.04 (0.03–0.06)	72	0.09 (0.07–0.11)
65+	37	0.08 (0.06–0.11)	37	0.08 (0.05–0.11)	31	0.06 (0.04–0.09)	47	0.09 (0.07–0.12)	66	0.13 (0.10–0.16)
Race/ethnicity										
White, Non-Hispanic	51	0.02 (0.02–0.03)	45	0.01 (0.00–0.01)	50	0.02 (0.01–0.02)	69	0.02 (0.02–0.03)	150	0.06 (0.05–0.07)
Other	25	S¶	22	S¶	20	S¶	22	S¶	21	S¶
Sex										
Male	42	0.02 (0.01–0.03)	38	0.02 (0.01–0.03)	38	0.01 (0.01–0.02)	63	0.03 (0.02–0.03)	115	0.07 (0.06–0.08)
Female	34	0.01 (0.01–0.02)	29	0.01 (0.00–0.01)	32	0.01 (0.01–0.02)	28	0.00 (0.00–0.00)	56	0.02 (0.02–0.03)
Overall	76	0.02 (0.02–0.03)	67	0.01 (0.01–0.02)	70	0.01 (0.00–0.02)	91	0.02 (0.02–0.03)	171	0.05 (0.04–0.06)

Source: CDC, National Center for Health Statistics, Multiple Cause of Death 1999–2018 on CDC WONDER Online Database. Data are from the 2014–2018 Multiple Cause of Death files and are based on information from all death certificates filed in the vital records offices of the fifty states and the District of Columbia through the Vital Statistics Cooperative Program. Deaths of nonresidents (e.g., nonresident aliens, nationals living abroad, residents of Puerto Rico, Guam, the Virgin Islands, and other U.S. Territories) and fetal deaths are excluded. Numbers are slightly lower than previously reported for 2013–2016 due to NCHS standards which restrict displayed data to US residents. Accessed at <http://wonder.cdc.gov/mcd-icd10.html> on February 14, 2020. CDC WONDER dataset documentation and technical methods can be accessed at <https://wonder.cdc.gov/wonder/help/mcd.html#>.

* Rates for race/ethnicity, sex, and the overall total are age-adjusted per 100,000 U.S. standard population in 2000 using the following age group distribution (in years): <1, 1–4, 5–14, 15–24, 25–34, 35–44, 45–54, 55–64, 65–74, 75–84, and 85+. For age-adjusted death rates, the age-specific death rate is rounded to one decimal place before proceeding to the next step in the calculation of age-adjusted death rates for NCHS Multiple Cause of Death on CDC WONDER. This rounding step may affect the precision of rates calculated for small numbers of deaths. Missing data are not included.

† Cause of death is defined as one of the multiple causes of death and is based on the International Classification of Diseases, 10th Revision (ICD-10) codes B15 (hepatitis A).

UR§ Unreliable rate: Rates where death counts were less than 20 were not displayed due to the instability associated with those rates.

S¶ Suppressed: CDC WONDER did not have the functionality to calculate rates for the “Other” race/ethnicity group.

B ACUTE HEPATITIS B, 2018

3,322

New cases reported

1.0

Reported cases per 100,000 population

21,600*

Acute infections estimated

AT A GLANCE ACUTE HEPATITIS B in 2018

Rates of acute hepatitis B remained low in children and adolescents, likely due to childhood vaccinations. However, **over half** of acute hepatitis B cases reported to CDC in 2018 were among persons aged **30–49 years**.

GROUPS MOST AFFECTED BY ACUTE HEPATITIS B IN 2018

By Age[†]

30–39 years: 2.0 cases per 100,000 people

40–49 years: 2.6 cases per 100,000 people

50–59 years: 1.6 cases per 100,000 people

By Sex[†]

Males: 1.3 cases per 100,000 people

By Race/Ethnicity[†]

White, Non-Hispanic: 1.0 cases per 100,000 people

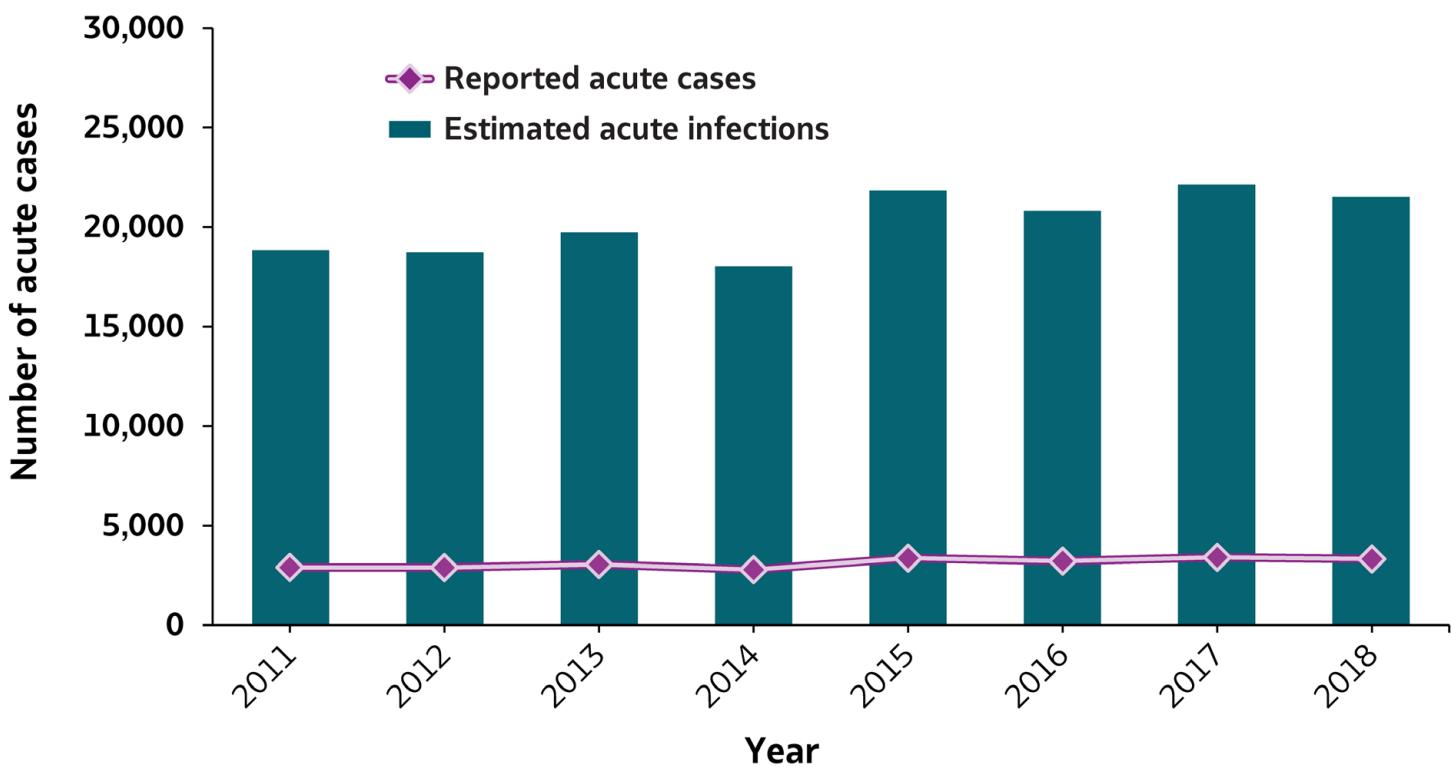
By Risk

Injection Drug Use (IDU): Among the 1,518 reported cases with IDU information available, **549 (36%) report IDU**

* 95% Bootstrap Confidence Interval: (12,300– 52,800)

[†] Indicates groups above the national average in 2018

Figure 2.1. Number of reported acute hepatitis B cases and estimated infections* — United States, 2011–2018



Hepatitis B	2011	2012	2013	2014	2015	2016	2017	2018
Reported cases	2,903	2,895	3,050	2,791	3,370	3,218	3,409	3,322
Estimated cases	18,900	18,800	19,800	18,100	21,900	20,900	22,200	21,600

Source: CDC, National Notifiable Diseases Surveillance System

* The number of estimated viral hepatitis infections was determined by multiplying the number of reported cases by a factor that adjusted for under-ascertainment and under-reporting⁽⁷⁾. The 95% bootstrap confidence intervals for the estimated number of infections are shown in the Appendix.

Table 2.1. Number and rate* of reported cases[†] of acute hepatitis B, by state or jurisdiction — United States, 2014–2018

State	2014		2015		2016		2017		2018	
	No.	Rate*								
Alabama	117	2.4	101	2.1	59	1.2	82	1.7	48	1.0
Alaska	3	0.4	3	0.4	6	0.8	9	1.2	7	0.9
Arizona	31	0.5	25	0.4	14	0.2	26	0.4	23	0.3
Arkansas	28	0.9	36	1.2	49	1.6	46	1.5	47	1.6
California	110	0.3	160	0.4	115	0.3	126	0.3	105	0.3
Colorado	29	0.5	28	0.5	28	0.5	32	0.6	21	0.4
Connecticut	9	0.3	6	0.2	7	0.2	10	0.3	10	0.3
Delaware	8	0.9	8	0.8	3	0.3	9	0.9	7	0.7
District of Columbia	U	U	U	U	U	U	U	U	U	U
Florida	313	1.6	432	2.1	558	2.7	588	2.8	617	2.9
Georgia	103	1.0	119	1.2	100	1.0	106	1.0	179	1.7
Hawaii	6	0.4	14	1.0	—	—	—	—	3	0.2
Idaho	6	0.4	8	0.5	6	0.4	6	0.3	6	0.3
Illinois	58	0.5	55	0.4	37	0.3	27	0.2	25	0.2
Indiana	126	1.9	133	2.0	146	2.2	170	2.5	169	2.5
Iowa	9	0.3	16	0.5	10	0.3	12	0.4	14	0.4
Kansas	11	0.4	19	0.7	21	0.7	24	0.8	16	0.5
Kentucky	164	3.7	162	3.7	222	5.0	236	5.3	260	5.8
Louisiana	87	1.9	87	1.9	48	1.0	73	1.6	57	1.2
Maine	12	0.9	9	0.7	53	4.0	77	5.8	52	3.9
Maryland	40	0.7	40	0.7	27	0.4	34	0.6	53	0.9
Massachusetts	30	0.4	25	0.4	31	0.5	51	0.7	46	0.7
Michigan	50	0.5	56	0.6	45	0.5	61	0.6	77	0.8
Minnesota	16	0.3	19	0.3	21	0.4	23	0.4	16	0.3
Mississippi	48	1.6	50	1.7	31	1.0	44	1.5	40	1.3
Missouri	31	0.5	35	0.6	40	0.7	31	0.5	18	0.3
Montana	—	—	4	0.4	1	0.1	3	0.3	1	0.1
Nebraska	8	0.4	3	0.2	8	0.4	10	0.5	3	0.2
Nevada	21	0.7	25	0.9	22	0.7	30	1.0	23	0.8
New Hampshire	4	0.3	—	—	—	—	—	—	4	0.3
New Jersey	77	0.9	85	0.9	59	0.7	57	0.6	64	0.7
New Mexico	2	0.1	2	0.1	1	0.0	1	0.0	2	0.1
New York	95	0.5	80	0.4	103	0.5	81	0.4	56	0.3
North Carolina	100	1.0	165	1.6	170	1.7	190	1.8	220	2.1
North Dakota	—	—	2	0.3	2	0.3	—	—	2	0.3
Ohio	171	1.5	409	3.5	299	2.6	285	2.4	310	2.7
Oklahoma	57	1.5	37	0.9	32	0.8	41	1.0	6	0.2
Oregon	32	0.8	24	0.6	20	0.5	23	0.6	18	0.4
Pennsylvania	68	0.5	61	0.5	43	0.3	69	0.5	61	0.5
Rhode Island	U	U	U	U	U	U	U	U	U	U
South Carolina	37	0.8	30	0.6	34	0.7	40	0.8	45	0.9
South Dakota	3	0.4	2	0.2	2	0.2	2	0.2	1	0.1
Tennessee	232	3.5	243	3.7	204	3.1	215	3.2	192	2.8
Texas	122	0.5	159	0.6	156	0.6	106	0.4	102	0.4
Utah	11	0.4	10	0.3	5	0.2	18	0.6	36	1.1
Vermont	4	0.6	3	0.5	2	0.3	1	0.2	3	0.5
Virginia	61	0.7	69	0.8	56	0.7	61	0.7	58	0.7
Washington	44	0.6	34	0.5	45	0.6	45	0.6	51	0.7
West Virginia	186	10.1	272	14.7	268	14.6	212	11.7	132	7.3
Wisconsin	11	0.2	5	0.1	9	0.2	14	0.2	14	0.2
Wyoming	U	U	U	U	U	U	2	0.3	2	0.3
Total	2,791	0.9	3,370	1.1	3,218	1.0	3,409	1.1	3,322	1.0

Source: CDC, National Notifiable Diseases Surveillance System.

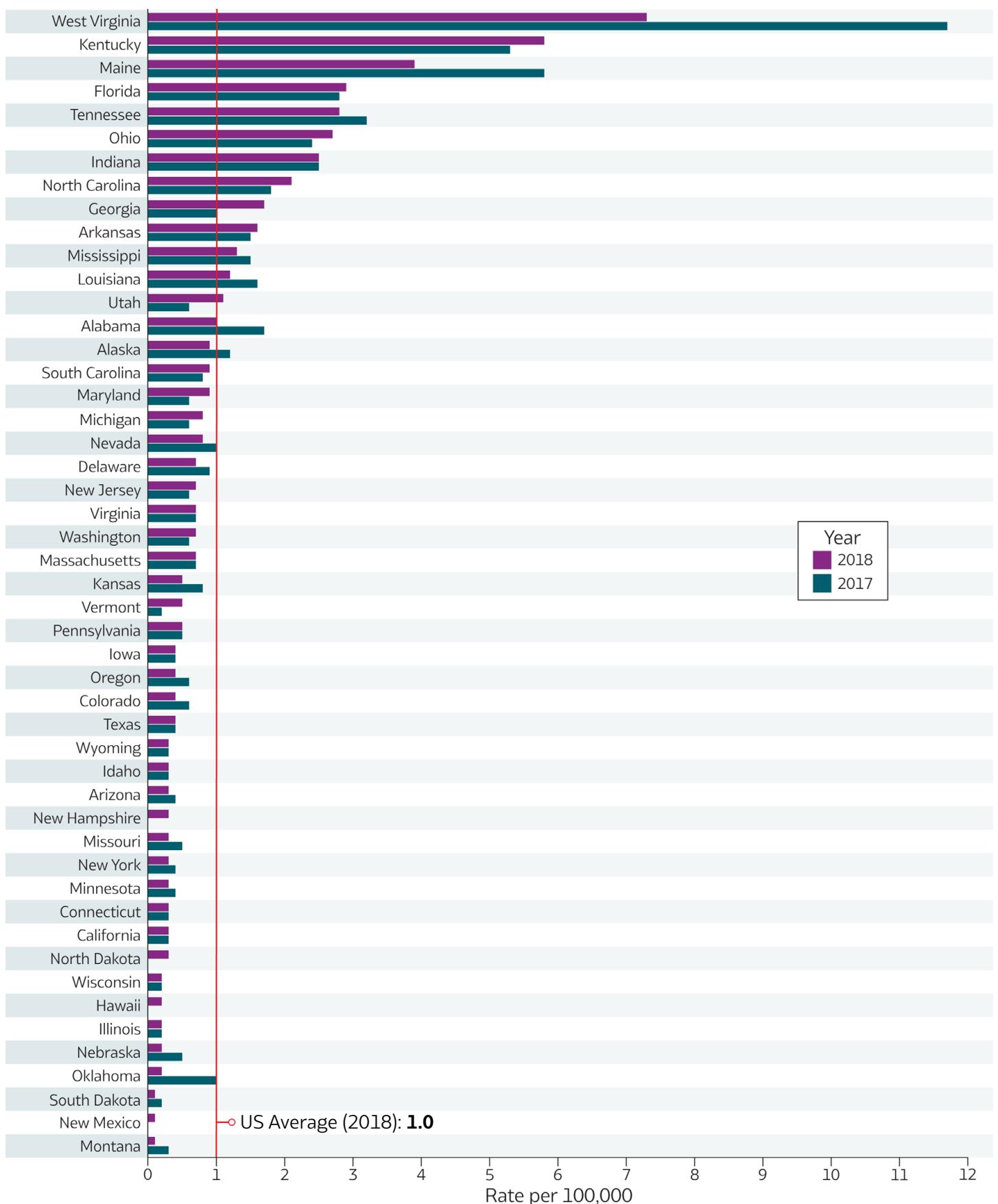
* Rate per 100,000 population.

[†]For case definition see <https://www.cdc.gov/nndss/conditions/hepatitis-b-acute/case-definition/2012/>.

—: No reported cases. The reporting jurisdiction did not submit any cases to CDC.

N: Not reportable. The disease or condition was not reportable by law, statute, or regulation in the reporting jurisdiction.

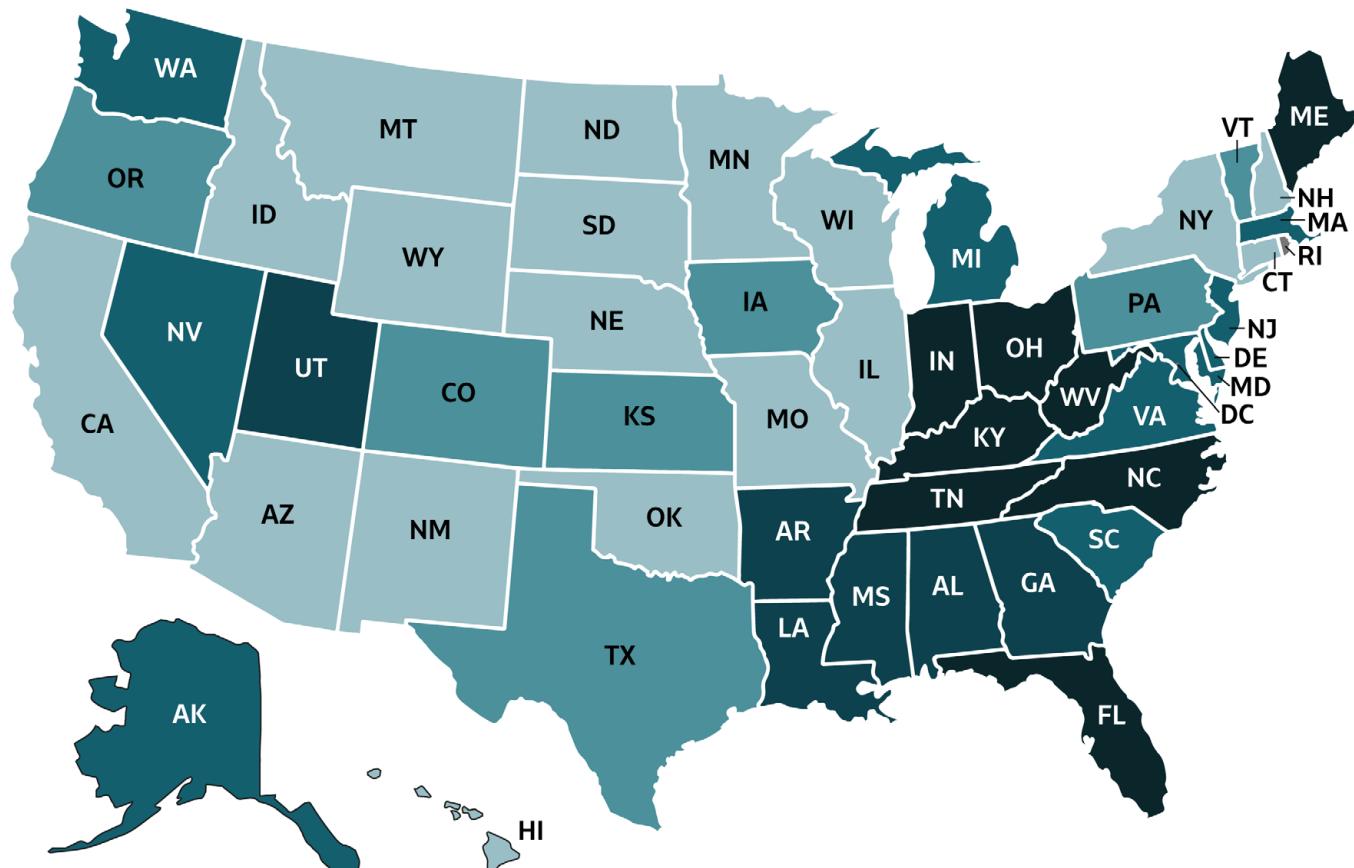
U: Unavailable. The data are unavailable.

Figure 2.2. Rates of reported acute hepatitis B, by state* — United States, 2017–2018

Source: CDC, National Notifiable Diseases Surveillance System.

* Excludes District of Columbia and Rhode Island.

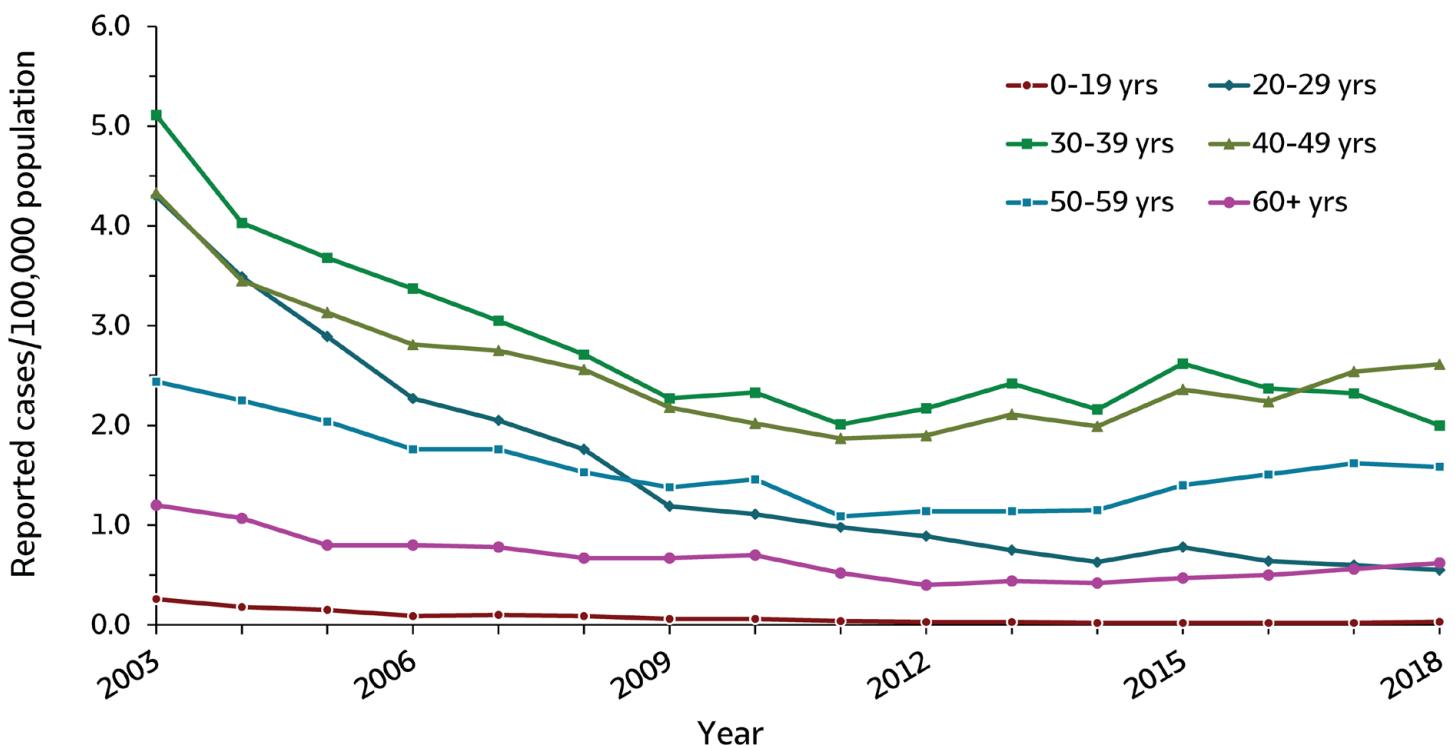
Figure 2.3. Rates of reported acute hepatitis B, by state or jurisdiction — United States, 2018



Color Key	Cases/100,000 Population	States
	0-0.3	AZ, CA, CT, HI, ID, IL, MN, MO, MT, NE, NH, NM, NY, ND, OK, SD, WI, WY
	>0.3-0.6	CO, IA, KS, OR, PA, TX, VT
	>0.6-0.9	AK, DE, MD, MA, MI, NV, NJ, SC, VA, WA
	>0.9-2.0	AL, AR, GA, LA, MS, UT
	>2.0-7.3	FL, IN, KY, ME, NC, OH, TN, WV
	Data Not Available	DC, RI

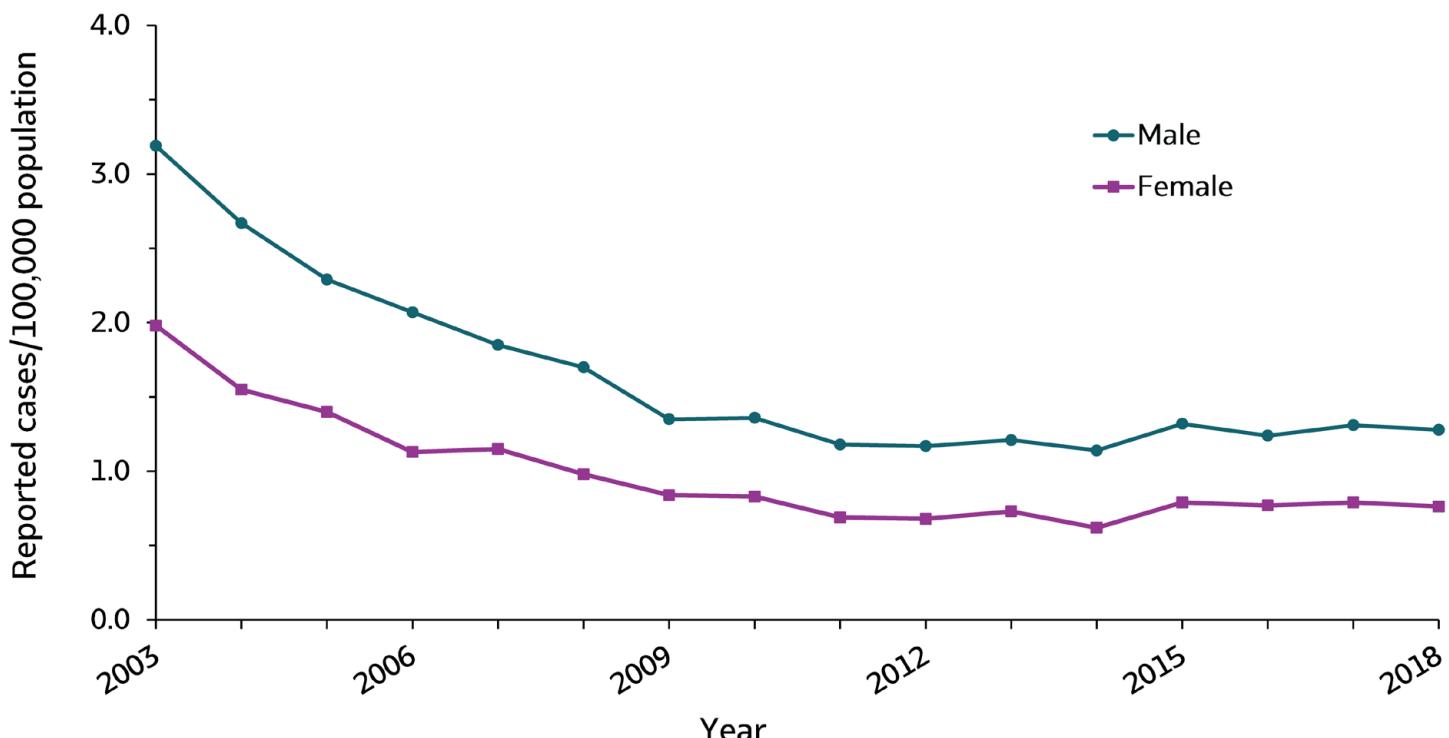
Source: CDC, National Notifiable Diseases Surveillance System.

Figure 2.4. Rates of reported acute hepatitis B, by age group — United States, 2003–2018



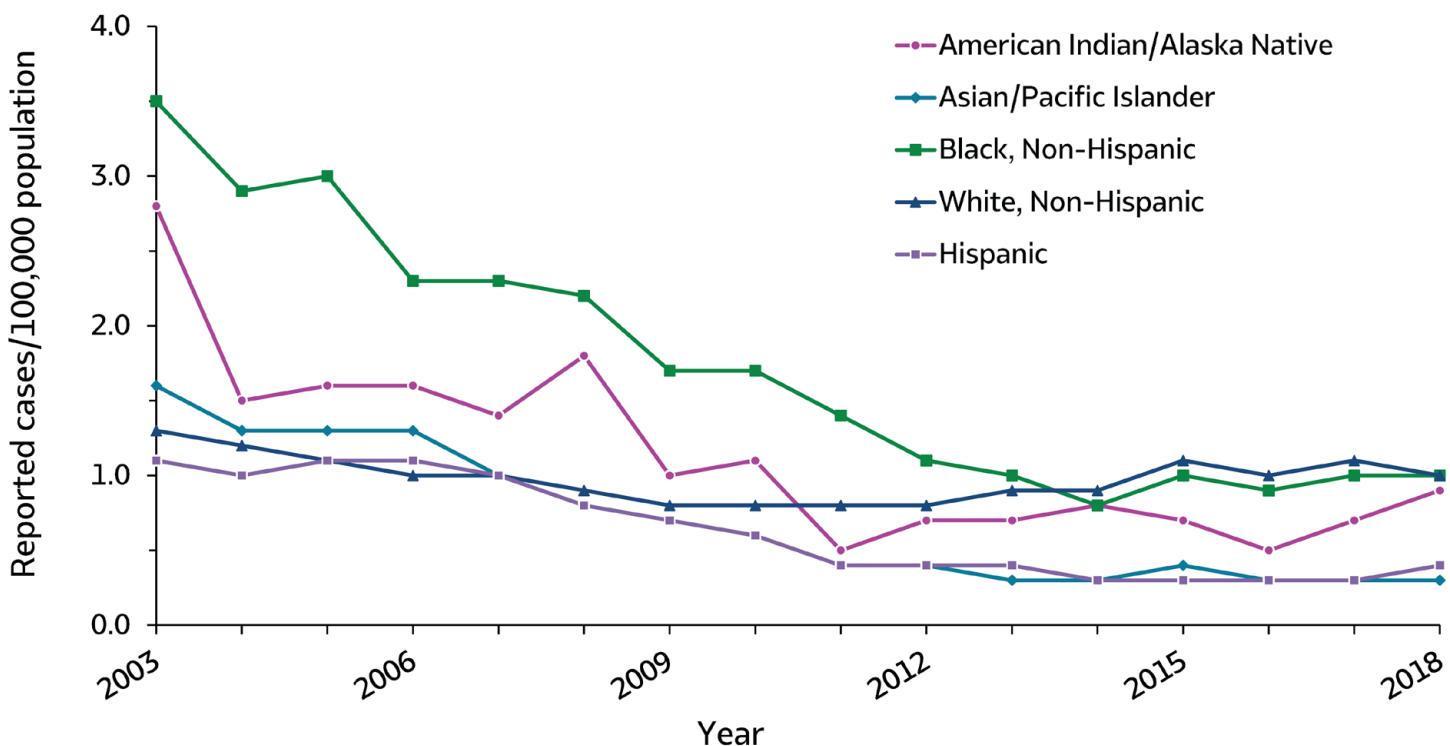
Source: CDC, National Notifiable Diseases Surveillance System.

Figure 2.5. Rates of reported acute hepatitis B, by sex — United States, 2003–2018



Source: CDC, National Notifiable Diseases Surveillance System.

Figure 2.6. Rates of reported acute hepatitis B, by race/ethnicity — United States, 2003–2018



Race/Ethnicity	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
American Indian/Alaska Native	2.8	1.5	1.6	1.6	1.4	1.8	1.0	1.1	0.5	0.7	0.7	0.8	0.7	0.5	0.7	0.9
Asian/Pacific Islander	1.6	1.3	1.3	1.3	1.0	0.8	0.7	0.6	0.4	0.4	0.3	0.3	0.4	0.3	0.3	0.3
Black, Non-Hispanic	3.5	2.9	3.0	2.3	2.3	2.2	1.7	1.7	1.4	1.1	1.0	0.8	1.0	0.9	1.0	1.0
White, Non-Hispanic	1.3	1.2	1.1	1.0	1.0	0.9	0.8	0.8	0.8	0.8	0.9	0.9	1.1	1.0	1.1	1.0
Hispanic	1.1	1.0	1.1	1.1	1.0	0.8	0.7	0.6	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.4

Source: CDC, National Notifiable Diseases Surveillance System.

Table 2.2. Number and rate* of reported cases[†] of acute hepatitis B, by demographic characteristics, region — United States 2014–2018

Demographic characteristic	2014		2015		2016		2017		2018	
	No.	Rate*								
Total[§]	2,791	0.9	3,370	1.1	3,218	1.1	3,409	1.1	3,322	1.0
Age group (years)										
0–19	14	0.0	19	0.0	18	0.0	16	0.0	27	0.0
20–29	282	0.6	348	0.8	286	0.6	271	0.6	249	0.6
30–39	888	2.2	1,094	2.6	1,000	2.4	998	2.3	868	2.0
40–49	818	2.0	961	2.4	906	2.2	1,028	2.5	1,052	2.6
50–59	504	1.2	615	1.4	655	1.5	700	1.6	675	1.6
60+	272	0.4	312	0.5	342	0.5	395	0.6	450	0.6
Sex										
Male	1,778	1.1	2,080	1.3	1,957	1.2	2,095	1.3	2,050	1.3
Female	1,001	0.6	1,280	0.8	1,252	0.8	1,301	0.8	1,260	0.8
Race/ethnicity										
American Indian/Alaskan Native	21	0.8	18	0.7	14	0.5	19	0.7	25	0.9
Asian/Pacific Islander	53	0.3	67	0.4	56	0.3	64	0.3	55	0.3
Black, Non-Hispanic	343	0.8	398	1.0	386	0.9	411	1.0	405	1.0
White, Non-Hispanic	1,713	0.9	2,150	1.1	2,059	1.0	2,197	1.1	2,084	1.0
Hispanic	158	0.3	175	0.3	194	0.3	196	0.3	222	0.4
HHS Region[¶]										
Region 1	59	0.4	43	0.3	93	0.7	139	1.0	115	0.8
Region 2	172	0.6	165	0.6	162	0.6	138	0.5	120	0.4
Region 3	363	1.2	450	1.5	397	1.3	385	1.3	311	1.0
Region 4	1,114	1.8	1,302	2.0	1,378	2.1	1,501	2.3	1,601	2.4
Region 5	432	0.8	677	1.3	557	1.1	580	1.1	611	1.2
Region 6	296	0.7	321	0.8	286	0.7	267	0.6	214	0.5
Region 7	59	0.4	73	0.5	79	0.6	77	0.5	51	0.4
Region 8	43	0.4	46	0.4	38	0.3	57	0.5	63	0.5
Region 9	168	0.3	224	0.4	151	0.3	182	0.4	154	0.3
Region 10	85	0.6	69	0.5	77	0.6	83	0.6	82	0.6

Source: CDC, National Notifiable Diseases Surveillance System.

* Rate per 100,000 population.

† For the case definition, see <https://www.cdc.gov/nndss/conditions/hepatitis-b-acute/>.

§ Numbers reported in each category may not add up to the total number of reported cases in a year due to cases with missing data or, in the case of race/ethnicity, cases categorized as “Other.”

¶ Health and Human Services Regions were categorized according to the grouping of states and U.S. Territories assigned under each of the ten Department of Health and Human Services regional offices (<https://www.hhs.gov/about/agencies/iea/regional-offices/index.html>). For the purposes of this report, regions with US territories (Region 2 and Region 9) contain data from states only.

HEPATITIS B RISK BEHAVIORS AND EXPOSURES

Figure 2.7. Availability of information on risk behaviors/exposures* associated with reported cases of acute hepatitis B — United States, 2018

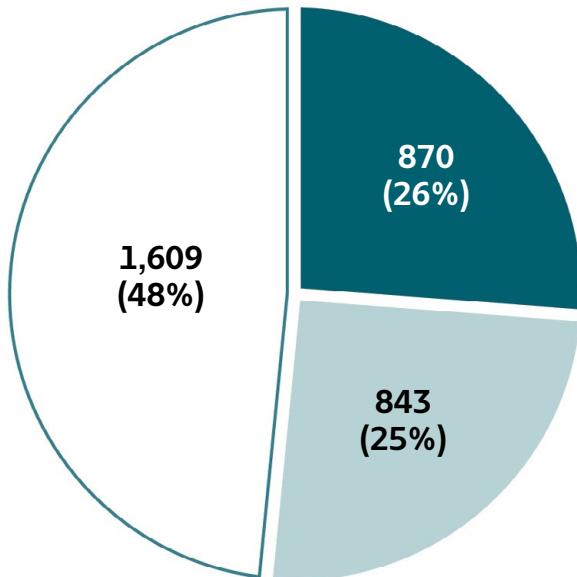


Table 2.3. Reported risk behaviors/exposures† among reported cases of acute hepatitis B — United States, 2018

Risk behaviors/exposures	Risk identified*	No risk identified	Risk data missing
Injection drug use	549	969	1,804
Multiple sex partners	199	671	2,452
Surgery	117	962	2,243
Men who have sex with men §	49	353	1,648
Sexual contact ¶	42	603	2,677
Needlestick	71	959	2,292
Household contact (non-sexual) §	12	633	2,677
Occupational	4	1,369	1,949
Dialysis patient	13	1,022	2,287
Transfusion	1	1,103	2,218

Source: CDC, Nationally Notifiable Diseases Surveillance System.

* Case reports with at least one of the following risk behaviors/ exposures reported 6 weeks to 6 months prior to symptom onset: 1) injection drug use; 2) multiple sex partners; 3) underwent surgery; 4) men who have sex with men; 5) sexual contact with suspected/confirmed hepatitis B case; 6) sustained a percutaneous injury; 7) household contact with suspected/confirmed hepatitis B case; 8) occupational exposure to blood; 9) dialysis; and 10) transfusion.

† Reported cases may include more than one risk behavior/exposure.

§ A total of 2,050 acute hepatitis B cases were reported among males in 2018.

¶ Cases with more than one type of contact reported were categorized according to a hierarchy: (1) sexual contact; (2) household contact (non-sexual).

Table 2.4. Number of newly reported cases* of perinatal hepatitis B, by state or jurisdiction — United States, 2018

State	Perinatal Hepatitis B
Alabama	—
Alaska	1
Arizona	1
Arkansas	—
California	4
Colorado	—
Connecticut	—
Delaware	—
District of Columbia	U
Florida	2
Georgia	1
Hawaii	—
Idaho	—
Illinois	—
Indiana	—
Iowa	—
Kansas	—
Kentucky	1
Louisiana	—
Maine	—
Maryland	—
Massachusetts	—
Michigan	1
Minnesota	—
Mississippi	—
Missouri	—
Montana	—
Nebraska	—
Nevada	—
New Hampshire	—
New Jersey	—
New Mexico	—
New York	4
North Carolina	—
North Dakota	—
Ohio	1
Oklahoma	1
Oregon	—
Pennsylvania	3
Rhode Island	U
South Carolina	—
South Dakota	—
Tennessee	1
Texas	1
Utah	—
Vermont	—
Virginia	—
Washington	1
West Virginia	—
Wisconsin	—
Wyoming	—
Total	23

Table 2.5. Number of newly reported cases of chronic hepatitis B, by state or jurisdiction — United States, 2018**

State	Chronic Hepatitis B
Alabama	N
Alaska	30
Arizona	180
Arkansas	N
California	—
Colorado	186
Connecticut	N
Delaware	140
District of Columbia	U
Florida	2,090
Georgia	1,421
Hawaii	U
Idaho	72
Illinois	545
Indiana	342
Iowa	54
Kansas	41
Kentucky	N
Louisiana	274
Maine	70
Maryland	690
Massachusetts	308
Michigan	329
Minnesota	305
Mississippi	N
Missouri	450
Montana	15
Nebraska	51
Nevada	U
New Hampshire	U
New Jersey	407
New Mexico	28
New York	1,806
North Carolina	509
North Dakota	41
Ohio	683
Oklahoma	53
Oregon	96
Pennsylvania	834
Rhode Island	U
South Carolina	184
South Dakota	21
Tennessee	644
Texas	N
Utah	95
Vermont	13
Virginia	446
Washington	391
West Virginia	304
Wisconsin	42
Wyoming	17
Total	14,207

Table 2.6. Number and rate* of deaths with hepatitis B listed as a cause of death[†] among U.S. residents, by jurisdiction and year — United States, 2014–2018

State	2014		2015		2016		2017		2018	
	No.	Rate*								
Alabama	20	0.37	15	UR§	19	UR§	19	UR§	19	UR§
Alaska	S¶	UR§								
Arizona	38	0.48	30	0.36	29	0.34	19	UR§	31	0.34
Arkansas	18	UR§	12	UR§	10	UR§	22	0.60	17	UR§
California	406	0.96	355	0.82	337	0.78	346	0.80	304	0.67
Colorado	23	0.38	23	0.40	23	0.39	32	0.51	26	0.39
Connecticut	14	UR§	17	UR§	S¶	UR§	S¶	UR§	13	UR§
Delaware	S¶	UR§								
District of Columbia	15	UR§	S¶	UR§	11	UR§	12	UR§	S¶	UR§
Florida	105	0.40	108	0.40	98	0.36	129	0.45	109	0.41
Georgia	51	0.47	43	0.37	35	0.30	34	0.28	40	0.35
Hawaii	25	1.47	13	UR§	26	1.50	15	UR§	14	UR§
Idaho	S¶	UR§								
Illinois	31	0.21	30	0.21	40	0.28	30	0.19	31	0.20
Indiana	26	0.35	21	0.27	26	0.32	29	0.34	16	UR§
Iowa	12	UR§	S¶	UR§	16	UR§	15	UR§	19	UR§
Kansas	S¶	UR§	S¶	UR§	15	UR§	11	UR§	12	UR§
Kentucky	30	0.66	26	0.54	36	0.72	35	0.75	47	0.98
Louisiana	49	0.88	36	0.63	26	0.49	30	0.53	36	0.60
Maine	S¶	UR§								
Maryland	29	0.44	25	0.38	31	0.43	31	0.43	37	0.52
Massachusetts	38	0.47	46	0.54	32	0.37	36	0.47	28	0.36
Michigan	33	0.27	35	0.29	27	0.18	28	0.22	33	0.25
Minnesota	18	UR§	31	0.45	25	0.42	21	0.30	33	0.51
Mississippi	23	0.65	20	0.61	22	0.64	23	0.67	20	0.61
Missouri	18	UR§	20	0.25	13	UR§	19	UR§	24	0.31
Montana	S¶	UR§	S¶	UR§	S¶	UR§	S¶	UR§	S¶	UR¶
Nebraska	S¶	UR§	S¶	UR§	S¶	UR§	S¶	UR§	10	UR§
Nevada	10	UR§	18	UR§	23	0.66	13	UR§	20	0.51
New Hampshire	S¶	UR§	S¶	UR§	S¶	UR§	S¶	UR§	S¶	UR¶
New Jersey	49	0.44	48	0.45	39	0.34	43	0.43	41	0.39
New Mexico	11	UR§	S¶	UR§	S¶	UR§	S¶	UR§	S¶	UR¶
New York	147	0.64	115	0.50	138	0.60	123	0.50	115	0.47
North Carolina	34	0.29	40	0.34	42	0.37	36	0.29	35	0.27
North Dakota	S¶	UR§								
Ohio	58	0.41	58	0.44	44	0.34	55	0.42	42	0.32
Oklahoma	31	0.71	34	0.77	43	0.95	40	0.95	54	1.16
Oregon	28	0.59	35	0.67	27	0.54	29	0.52	23	0.45
Pennsylvania	46	0.29	44	0.27	41	0.25	35	0.20	34	0.22
Rhode Island	S¶	S¶	S¶	UR§	S¶	UR§	S¶	UR§	11	UR§
South Carolina	30	0.54	22	0.35	38	0.60	26	0.39	26	0.42
South Dakota	S¶	UR§								
Tennessee	54	0.68	54	0.70	55	0.71	63	0.83	50	0.61
Texas	140	0.49	130	0.43	149	0.51	150	0.51	119	0.40
Utah	S¶	UR§	10	UR§	S¶	UR§	11	UR§	S¶	UR§
Vermont	S¶	UR§								
Virginia	23	0.23	25	0.26	23	0.24	29	0.30	28	0.28
Washington	56	0.66	48	0.53	47	0.55	47	0.56	53	0.57
West Virginia	16	UR§	21	0.89	11	UR§	14	UR§	23	1.26
Wisconsin	16	UR§	18	UR§	19	UR§	21	0.31	19	UR§
Wyoming	S¶	UR§								
Total	1,837	0.50	1,707	0.46	1,690	0.45	1,727	0.46	1,649	0.43

Source: CDC, National Center for Health Statistics, Multiple Cause of Death 1999–2018 on CDC WONDER Online Database. Data are from the 2014–2018 Multiple Cause of Death files and are based on information from all death certificates filed in the vital records offices of the fifty states and the District of Columbia through the Vital Statistics Cooperative Program. Deaths of nonresidents (e.g., nonresident aliens, nationals living abroad, residents of Puerto Rico, Guam, the Virgin Islands, and other U.S. Territories) and fetal deaths are excluded. Numbers are slightly lower than previously reported for 2013–2016 due to NCHS standards which restrict displayed data to U.S. residents. Accessed at <http://wonder.cdc.gov/mcd-icd10.html> on February 14, 2020. CDC WONDER dataset documentation and technical methods can be accessed at <https://wonder.cdc.gov/wonder/help/mcd.html#>.

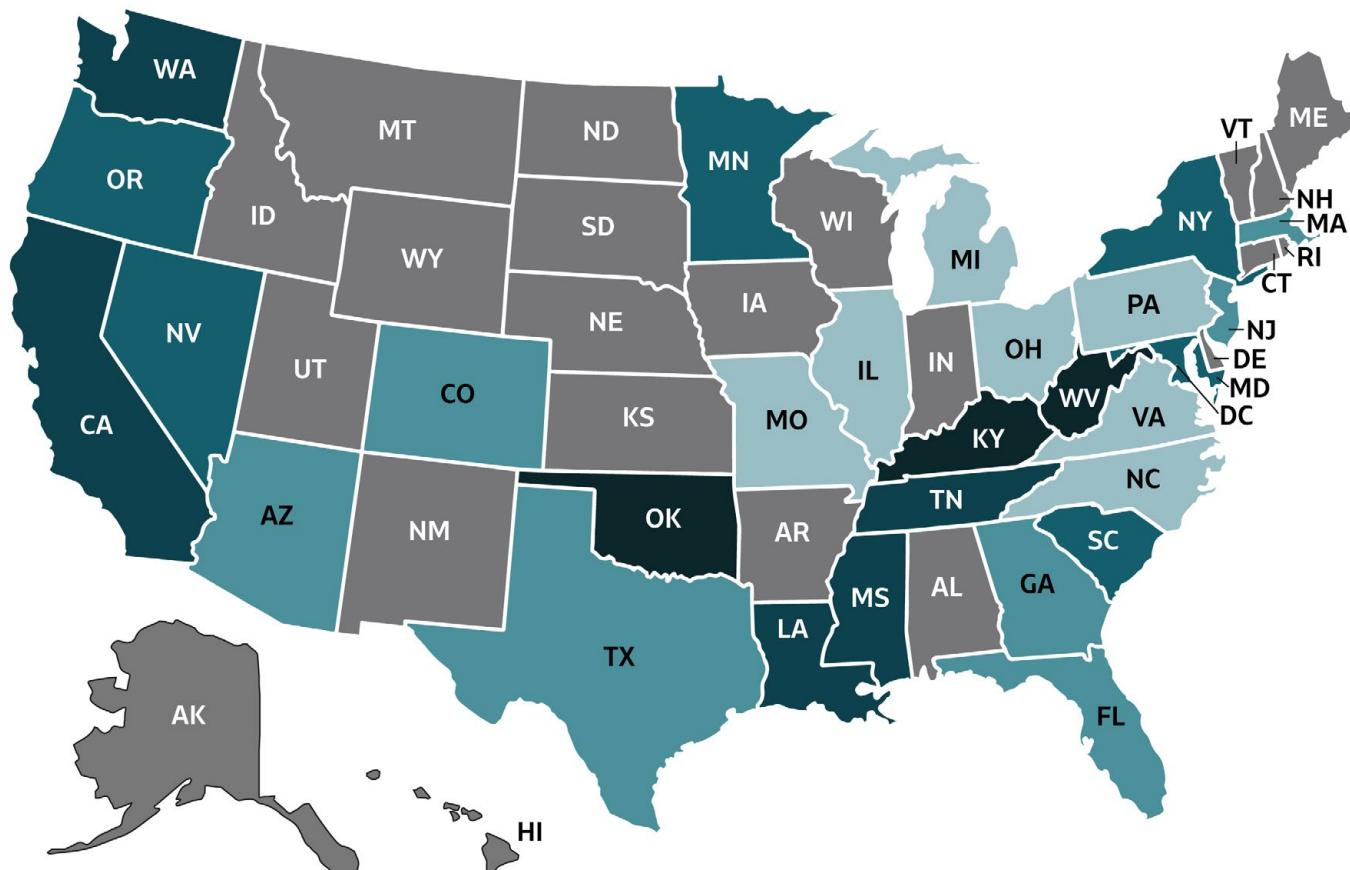
* Rates are age-adjusted per 100,000 U.S. standard population in 2000 using the following age group distribution (in years): <1, 1–4, 5–14, 15–24, 25–34, 35–44, 45–54, 55–64, 65–74, 75–84, and 85+. For age-adjusted death rates, the age-specific death rate is rounded to one decimal place before proceeding to the next step in the calculation of age-adjusted death rates for NCHS Multiple Cause of Death on CDC WONDER. This rounding step may affect the precision of rates calculated for small numbers of deaths. Missing data are not included.

[†] Cause of death is defined as one of the multiple causes of death and is based on the International Classification of Diseases, 10th Revision (ICD-10) codes B16, B17.0, B18.0, B18.1 (hepatitis B).

UR§ Unreliable rate: Rates where death counts were less than 20 were not displayed due to the instability associated with those rates.

[¶] Suppressed: Sub-national data representing fewer than ten deaths (0-9) are suppressed or CDC WONDER did not have the functionality to calculate rates.

Figure 2.8. Rate of deaths with hepatitis B listed as a cause of death among U.S. residents, by jurisdiction and year — United States, 2018



Color Key	Cases/100,000 Population	States
	0-0.33	IL, MI, MO, NC, OH, PA, VA
	>0.33-0.41	AZ, CO, FL, GA, MA, NJ, TX
	>0.41-0.52	MD, MN, NV, NY, OR, SC
	>0.52-0.68	CA, LA, MS, TN, WA
	>0.68-1.26	KY, OK, WV
	Unreliable rate	AL, AK, AR, CT, DE, DC, HI, ID, IN, IA, KS, ME, MT, NE, NH, NM, ND, RI, SD, UT, VT, WI, WY

Source: CDC, National Center for Health Statistics, Multiple Cause of Death 2018 on CDC WONDER Online Database. Unreliable rates where death counts were less than 20 were not displayed due to the instability associated with those rates.

Table 2.7. Number and rate* of deaths with hepatitis B listed as a cause of death[†] among U.S. residents, by demographic characteristics, region, and year — United States, 2014–2018

Demographic characteristic	2014		2015		2016		2017		2018	
	No.	Rate (95% CI)	No.	Rate (95% CI)	No.	Rate (95% CI)	No.	Rate (95% CI)	No.	Rate (95% CI)
Age group (years)										
0–34	35	0.02 (0.02-0.03)	30	0.02 (0.01- 0.03)	39	0.03 (0.02-0.04)	29	0.02 (0.01-0.03)	32	0.02 (0.01-0.03)
35–44	126	0.31 (0.26-0.37)	118	0.29 (0.24-0.34)	116	0.29 (0.23-0.34)	106	0.26 (0.21-0.31)	122	0.3 (0.24-0.35)
45–54	384	0.88 (0.80-0.97)	330	0.76 (0.68-0.85)	324	0.76 (0.67-0.84)	323	0.76 (0.68-0.85)	283	0.68 (0.60-0.76)
55–64	682	1.7 (1.57-1.83)	610	1.49 (1.37-1.61)	576	1.39 (1.28-1.50)	548	1.3 (1.20-1.41)	520	1.23 (1.12-1.34)
65–74	356	1.35 (1.21-1.49)	382	1.39 (1.25-1.53)	383	1.34 (1.20-1.47)	417	1.4 (1.27-1.54)	422	1.38 (1.25-1.52)
75+	254	1.28 (1.12-1.44)	236	1.17 (1.02-1.32)	252	1.22 (1.07-1.37)	303	1.43 (1.27-1.59)	270	1.23 (1.08-1.38)
Race/ethnicity										
White, Non-Hispanic	851	0.33 (0.30-0.46)	805	0.28 (0.26-0.30)	767	0.29 (0.27-0.31)	776	0.28 (0.26-0.30)	760	0.27 (0.25-0.29)
Black, Non-Hispanic	330	0.81 (0.72-0.89)	318	0.75 (0.67-0.84)	315	0.73 (0.65-0.81)	320	0.74 (0.66-0.83)	304	0.7 (0.62-0.79)
Hispanic	156	0.4 (0.33-0.46)	136	0.32 (0.27-0.38)	128	0.3 (0.25-0.36)	109	0.26 (0.21-0.32)	122	0.28 (0.23-0.33)
Asian/Pacific Islander, Non-Hispanic	475	2.69 (2.44-2.93)	419	2.23 (2.01-2.45)	454	2.38 (2.16-2.60)	492	2.45 (2.23-2.67)	439	2.1 (1.90-2.30)
American Indian/Alaska Native, Non-Hispanic	10	UR [§]	13	UR [§]	16	UR [§]	17	UR [§]	6	UR [§]
Sex										
Male	1,301	0.74 (0.70-0.78)	1,270	0.7 (0.66-0.74)	1,231	0.67 (0.64-0.71)	1,275	0.7 (0.66-0.74)	1,191	0.65 (0.61-0.69)
Female	536	0.27 (0.24-0.29)	437	0.21 (0.19-0.23)	459	0.22 (0.20-0.24)	452	0.23 (0.20-0.25)	458	0.22 (0.20-0.24)
DHHS Region										
Region 1: Boston	76	0.42 (0.33-0.54)	81	0.43 (0.34-0.54)	56	0.28 (0.21-0.37)	60	0.35 (0.27-0.46)	64	0.34 (0.26-0.45)
Region 2: New York	196	0.58 (0.50-0.67)	163	0.48 (0.41-0.56)	177	0.51 (0.43-0.59)	166	0.47 (0.39-0.54)	156	0.44 (0.36-0.51)
Region 3: Philadelphia	137	0.38 (0.31-0.44)	126	0.35 (0.28-0.41)	118	0.32 (0.26-0.38)	128	0.32 (0.27-0.38)	130	0.35 (0.29-0.41)
Region 4: Atlanta	347	0.46 (0.41-0.51)	328	0.43 (0.38-0.48)	345	0.44 (0.39-0.49)	365	0.45 (0.41-0.50)	346	0.45 (0.40-0.50)
Region 5: Chicago	182	0.3 (0.25-0.34)	193	0.32 (0.27-0.36)	181	0.29 (0.25-0.33)	184	0.29 (0.24-0.33)	174	0.28 (0.24-0.33)
Region 6: Dallas	249	0.58 (0.51-0.66)	220	0.5 (0.43-0.56)	230	0.51 (0.44-0.57)	247	0.55 (0.48-0.62)	230	0.47 (0.41-0.53)
Region 7: Kansas City	41	0.27 (0.19-0.37)	44	0.26 (0.19-0.36)	52	0.33 (0.24-0.44)	50	0.29 (0.22-0.39)	65	0.38 (0.29-0.48)
Region 8: Denver	39	0.33 (0.23-0.45)	42	0.35 (0.25-0.47)	35	0.27 (0.19-0.38)	48	0.37 (0.27-0.49)	34	0.25 (0.17-0.35)
Region 9: San Francisco	479	0.88 (0.80-0.97)	416	0.72 (0.65-0.79)	415	0.73 (0.66-0.80)	393	0.69 (0.62-0.76)	369	0.62 (0.56-0.69)
Region 10: Seattle	91	0.57 (0.45-0.70)	94	0.56 (0.45-0.69)	81	0.51 (0.40-0.63)	86	0.52 (0.41-0.64)	81	0.47 (0.37-0.59)
Overall	1,837	0.5 (0.47-0.52)	1,707	0.46 (0.44-0.49)	1,690	0.45 (0.43-0.48)	1,727	0.46 (0.44-0.49)	1,649	0.43 (0.41-0.45)

Source: CDC, National Center for Health Statistics, Multiple Cause of Death 1999–2018 on CDC WONDER Online Database. Data are from the 2014–2018 Multiple Cause of Death files and are based on information from all death certificates filed in the vital records offices of the fifty states and the District of Columbia through the Vital Statistics Cooperative Program. Deaths of nonresidents (e.g., nonresident aliens, nationals living abroad, residents of Puerto Rico, Guam, the Virgin Islands, and other U.S. Territories) and fetal deaths are excluded. Numbers are slightly lower than previously reported for 2013–2016 due to NCHS standards which restrict displayed data to U.S. residents. Accessed at <http://wonder.cdc.gov/mcd-icd10.html> on February 14, 2020. CDC WONDER dataset documentation and technical methods can be accessed at <https://wonder.cdc.gov/wonder/help/mcd.htm#l>.

* Rates for race/ethnicity, sex, and the overall total are age-adjusted per 100,000 U.S. standard population in 2000 using the following age group distribution (in years): <1, 1–4, 5–14, 15–24, 25–34, 35–44, 45–54, 55–64, 65–74, 75–84, and 85+. For age-adjusted death rates, the age-specific death rate is rounded to one decimal place before proceeding to the next step in the calculation of age-adjusted death rates for NCHS Multiple Cause of Death on CDC WONDER. This rounding step may affect the precision of rates calculated for small numbers of deaths. Missing data are not included.

[†] Cause of death is defined as one of the multiple causes of death and is based on the International Classification of Diseases, 10th Revision (ICD-10) codes B16, B17.0, B18.0, B18.1 (hepatitis B).

UR[§] Unreliable rate: Rates where death counts were less than 20 were not displayed due to the instability associated with those rates.

ACUTE HEPATITIS C, 2018

3,621

New cases reported

1.2

Reported cases per 100,000 population

50,300*

Acute infections estimated

AT A GLANCE ACUTE HEPATITIS C in 2018

Rates of acute hepatitis C **increased** in 2018, particularly among those aged **20–39 years**, consistent with age groups most impacted by the nation's opioid crisis.

GROUPS MOST AFFECTED BY ACUTE HEPATITIS C IN 2018

By Age[†]

20–29 years: 3.1 cases per 100,000 people

30–39 years: 2.6 cases per 100,000 people

40–49 years: 1.3 cases per 100,000 people

By Sex[†]

Males: 1.3 cases per 100,000 people

By Race/Ethnicity[†]

American Indian/Alaska Native:
3.6 cases per 100,000 people

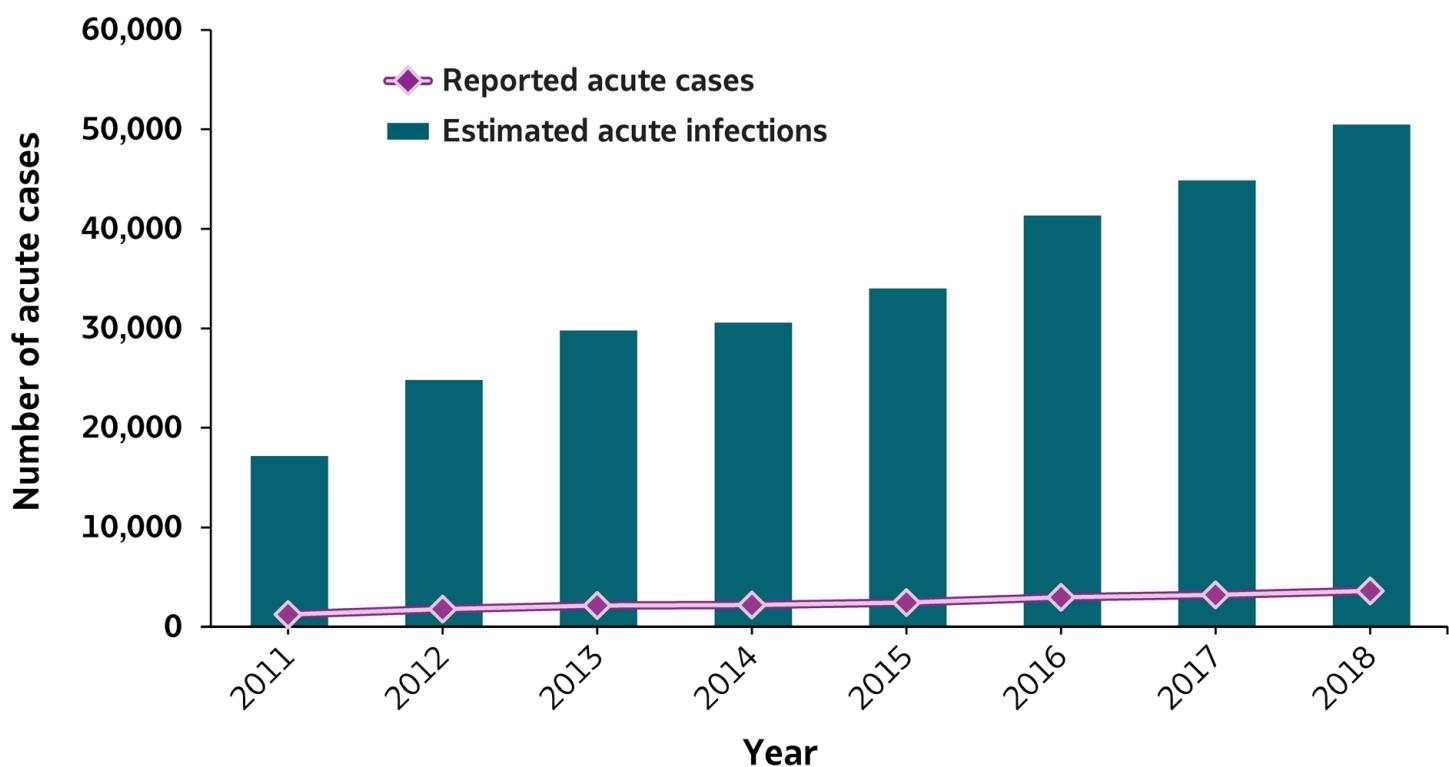
By Risk

Injection Drug Use (IDU):
Among the 1,535 reported cases with IDU information available, **1,102 (72%) report IDU**

* 95% Bootstrap Confidence Interval: (39,800-171,600)

[†] Indicates groups above the national average in 2018

Figure 3.1. Number of reported acute hepatitis C cases and estimated infections* — United States, 2011–2018



Source: CDC, National Notifiable Diseases Surveillance System.

* The number of estimated viral hepatitis infections was determined by multiplying the number of reported cases by a factor that adjusted for under-ascertainment and under-reporting⁽⁷⁾. The 95% bootstrap confidence intervals for the estimated number of infections are shown in the Appendix.

Table 3.1. Number and rate* of reported cases of acute hepatitis C, by state or jurisdiction — United States, 2014–2018

State	2014		2015		2016		2017		2018	
	No.	Rate*								
Alabama	35	0.7	70	1.4	32	0.7	17	0.3	52	1.1
Alaska	N	N	N	N	N	N	N	N	N	N
Arizona	U	U	U	U	U	U	U	U	U	U
Arkansas	13	0.4	2	0.1	—	—	1	0.0	10	0.3
California	73	0.2	59	0.2	60	0.2	103	0.3	114	0.3
Colorado	33	0.6	40	0.7	35	0.6	42	0.7	46	0.8
Connecticut	—	—	—	—	17	0.5	9	0.3	10	0.3
Delaware	U	U	4	0.4	25	2.6	4	0.4	U	U
District of Columbia	U	U	U	U	U	U	U	U	U	U
Florida	93	0.5	126	0.6	236	1.1	357	1.7	435	2.0
Georgia	57	0.6	84	0.8	93	0.9	100	1.0	84	0.8
Hawaii	—	—	—	—	—	—	—	—	—	—
Idaho	6	0.4	4	0.2	7	0.4	8	0.5	4	0.2
Illinois	27	0.2	31	0.2	21	0.2	39	0.3	93	0.7
Indiana	122	1.8	138	2.1	146	2.2	191	2.9	266	4.0
Iowa	U	U	U	U	U	U	U	U	U	U
Kansas	28	1.0	22	0.8	15	0.5	19	0.7	13	0.4
Kentucky	176	4.0	119	2.7	103	2.3	83	1.9	164	3.7
Louisiana	22	0.5	24	0.5	5	0.1	7	0.1	8	0.2
Maine	31	2.3	30	2.3	25	1.9	21	1.6	23	1.7
Maryland	42	0.7	38	0.6	35	0.6	32	0.5	38	0.6
Massachusetts	228	3.4	249	3.7	424	6.2	327	4.8	110	1.6
Michigan	78	0.8	83	0.8	107	1.1	152	1.5	142	1.4
Minnesota	40	0.7	37	0.7	51	0.9	57	1.0	60	1.1
Mississippi	U	U	U	U	U	U	U	U	U	U
Missouri	6	0.1	8	0.1	24	0.4	49	0.8	74	1.2
Montana	13	1.3	15	1.5	20	1.9	14	1.3	8	0.8
Nebraska	2	0.1	8	0.4	2	0.1	2	0.1	2	0.1
Nevada	6	0.2	12	0.4	16	0.5	35	1.2	19	0.6
New Hampshire	N	N	N	N	N	N	25	1.9	25	1.8
New Jersey	113	1.3	130	1.5	122	1.4	125	1.4	96	1.1
New Mexico	16	0.8	40	1.9	18	0.9	16	0.8	22	1.0
New York	126	0.6	121	0.6	179	0.9	188	0.9	236	1.2
North Carolina	111	1.1	144	1.4	82	0.8	114	1.1	149	1.4
North Dakota	—	—	—	—	1	0.1	1	0.1	10	1.3
Ohio	105	0.9	122	1.1	187	1.6	159	1.4	282	2.4
Oklahoma	45	1.2	35	0.9	32	0.8	46	1.2	28	0.7
Oregon	15	0.4	13	0.3	19	0.5	35	0.8	14	0.3
Pennsylvania	69	0.5	129	1.0	225	1.8	224	1.7	249	1.9
Rhode Island	U	U	U	U	U	U	U	U	U	U
South Carolina	4	0.1	5	0.1	10	0.2	13	0.3	15	0.3
South Dakota	—	—	—	—	20	2.3	19	2.2	19	2.2
Tennessee	123	1.9	173	2.6	150	2.3	142	2.1	157	2.3
Texas	47	0.2	48	0.2	40	0.1	35	0.1	46	0.2
Utah	38	1.3	30	1.0	76	2.5	81	2.6	120	3.8
Vermont	4	0.6	1	0.2	5	0.8	9	1.4	4	0.6
Virginia	54	0.6	52	0.6	43	0.5	62	0.7	47	0.6
Washington	82	1.2	63	0.9	62	0.9	52	0.7	101	1.3
West Virginia	62	3.4	63	3.4	94	5.1	102	5.6	70	3.9
Wisconsin	49	0.9	64	1.1	103	1.8	94	1.6	134	2.3
Wyoming	U	U	U	U	U	U	5	0.9	22	3.8
Total	2,194	0.7	2,436	0.8	2,967	1.0	3,216	1.0	3,621	1.2

Source: CDC, National Notifiable Diseases Surveillance System.

* Rate per 100,000 population.

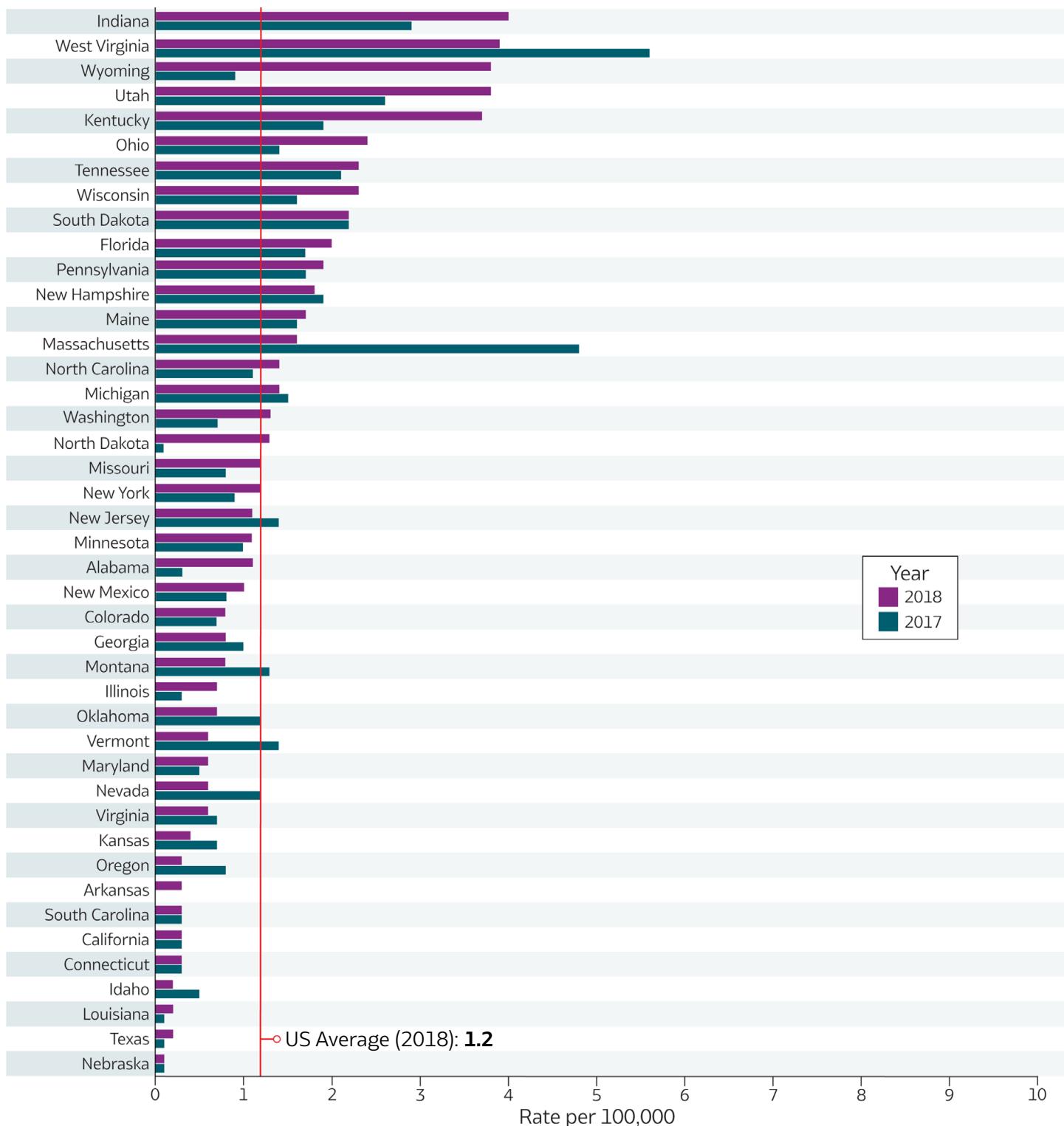
[†] For case definition, see <https://www.cdc.gov/nndss/conditions/hepatitis-c-acute/>

—: No reported cases. The reporting jurisdiction did not submit any cases to CDC.

N: Not reportable. The disease or condition was not reportable by law, statute, or regulation in the reporting jurisdiction.

U: Unavailable. The data are unavailable.

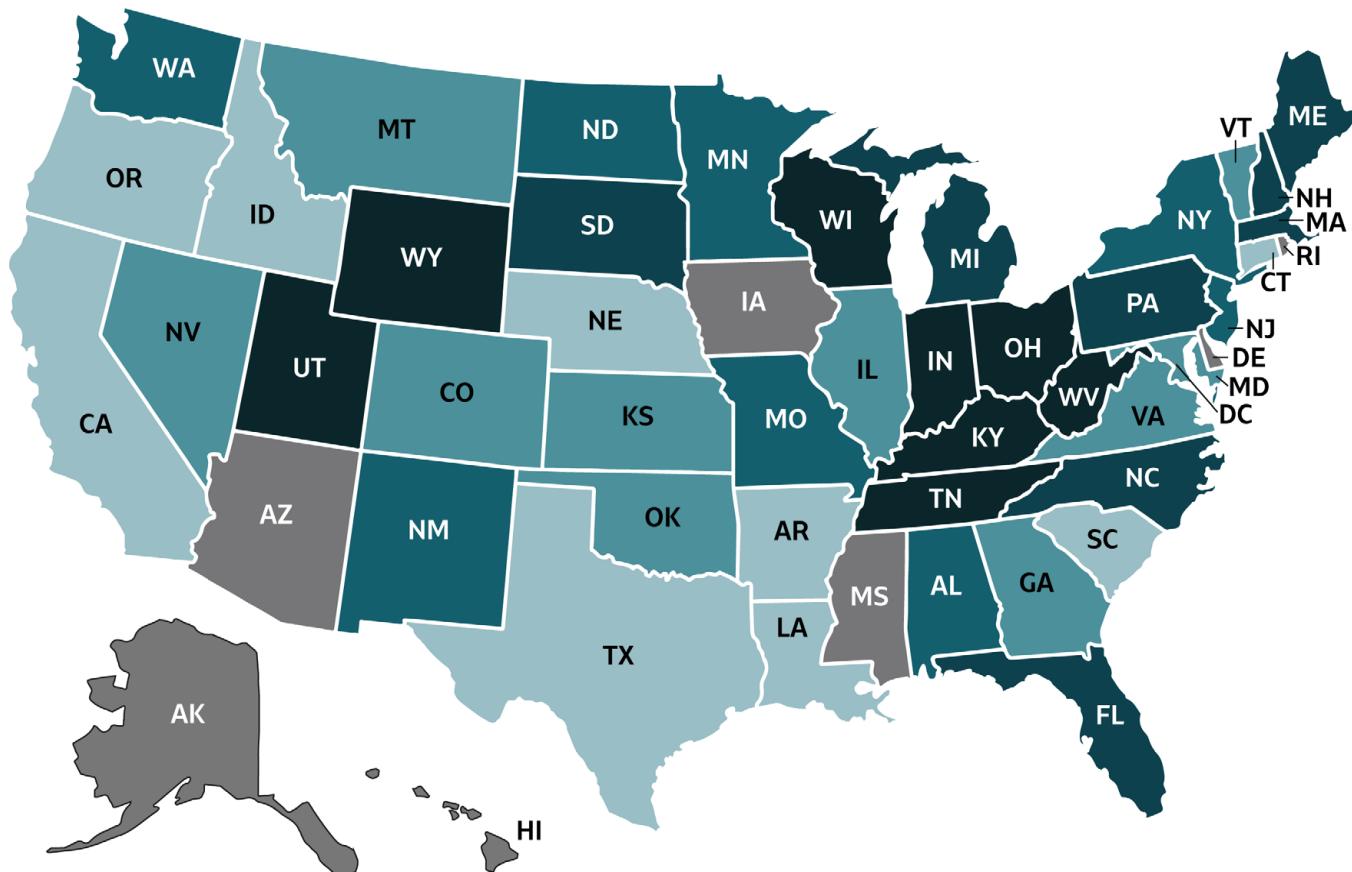
Figure 3.2. Rates of reported acute hepatitis C, by state* — United States, 2017–2018



Source: CDC, National Notifiable Diseases Surveillance System.

* Excludes Alaska, Arizona, Delaware, District of Columbia, Hawaii, Iowa, Mississippi, and Rhode Island.

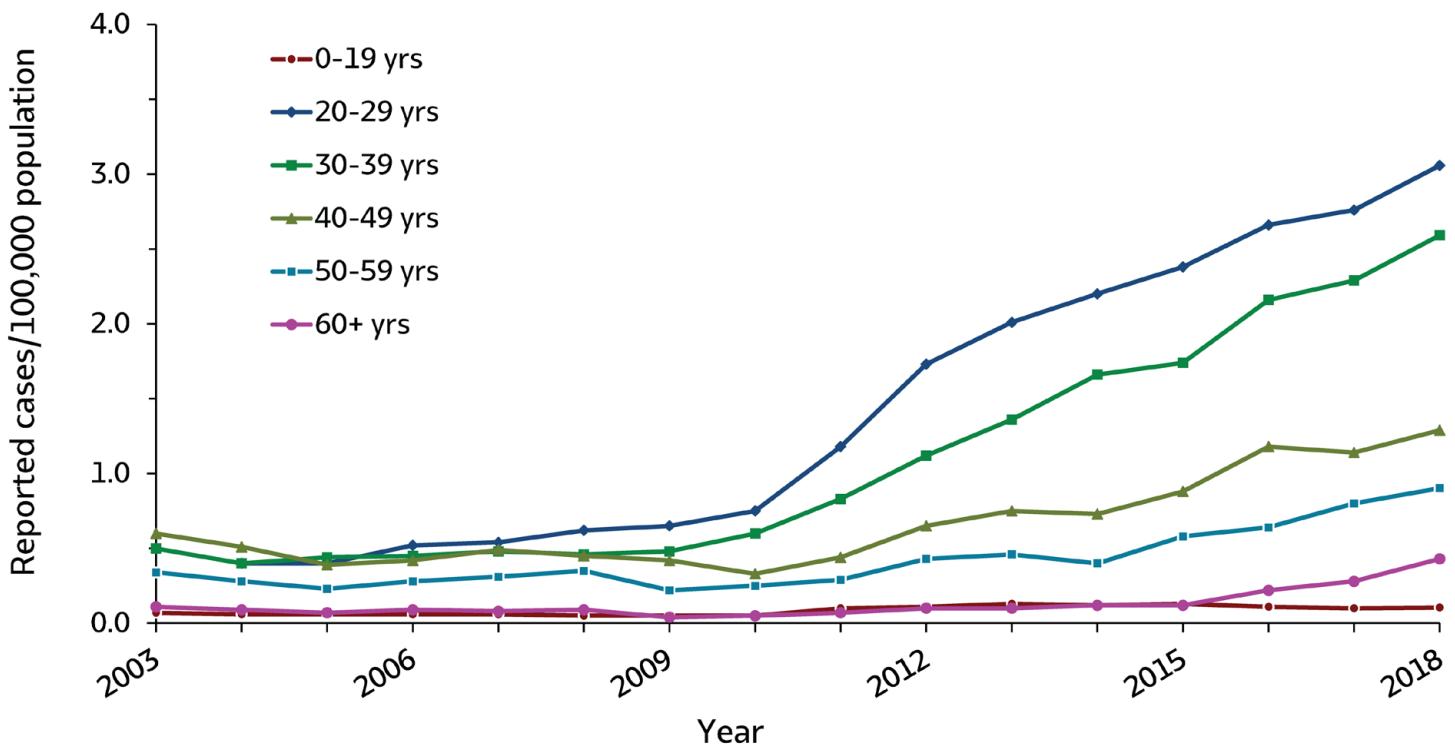
Figure 3.3. Rates of reported acute hepatitis C, by state or jurisdiction — United States, 2018



Color Key	Cases/100,000 Population	States
	0-0.3	AR, CA, CT, ID, LA, NE, OR, SC, TX
	>0.3-0.9	CO, GA, IL, KS, MD, MT, NV, OK, VT, VA
	>0.9-1.3	AL, MN, MO, NJ, NM, NY, ND, WA
	>1.3-2.2	FL, ME, MA, MI, NH, NC, PA
	>2.2-4.0	IN, KY, OH, SD, TN, UT, WV, WI, WY
	Data Not Available	AK, AZ, DE, DC, HI, IA, MS, RI

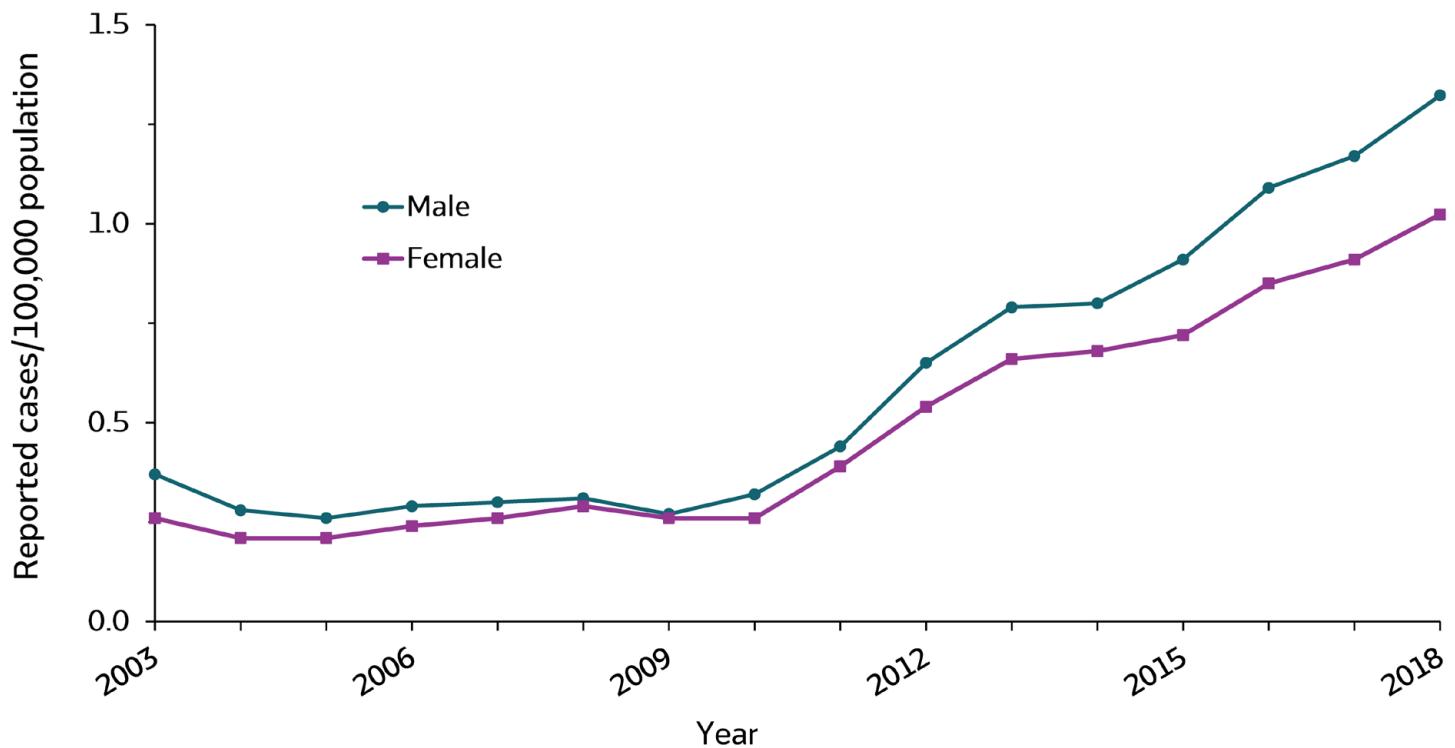
Source: CDC, National Notifiable Diseases Surveillance System.

Figure 3.4. Rates of reported acute hepatitis C, by age group — United States, 2003–2018



Age (years)	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0-19	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
20-29	0.5	0.4	0.4	0.5	0.5	0.6	0.7	0.8	1.2	1.7	2.0	2.2	2.4	2.7	2.8	3.1
30-39	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.8	1.1	1.4	1.7	1.7	2.2	2.3	2.6
40-49	0.6	0.5	0.4	0.4	0.5	0.5	0.4	0.3	0.4	0.7	0.8	0.7	0.9	1.2	1.1	1.3
50-59	0.3	0.3	0.2	0.3	0.3	0.4	0.2	0.3	0.3	0.4	0.5	0.4	0.6	0.6	0.8	0.9
60+	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.4

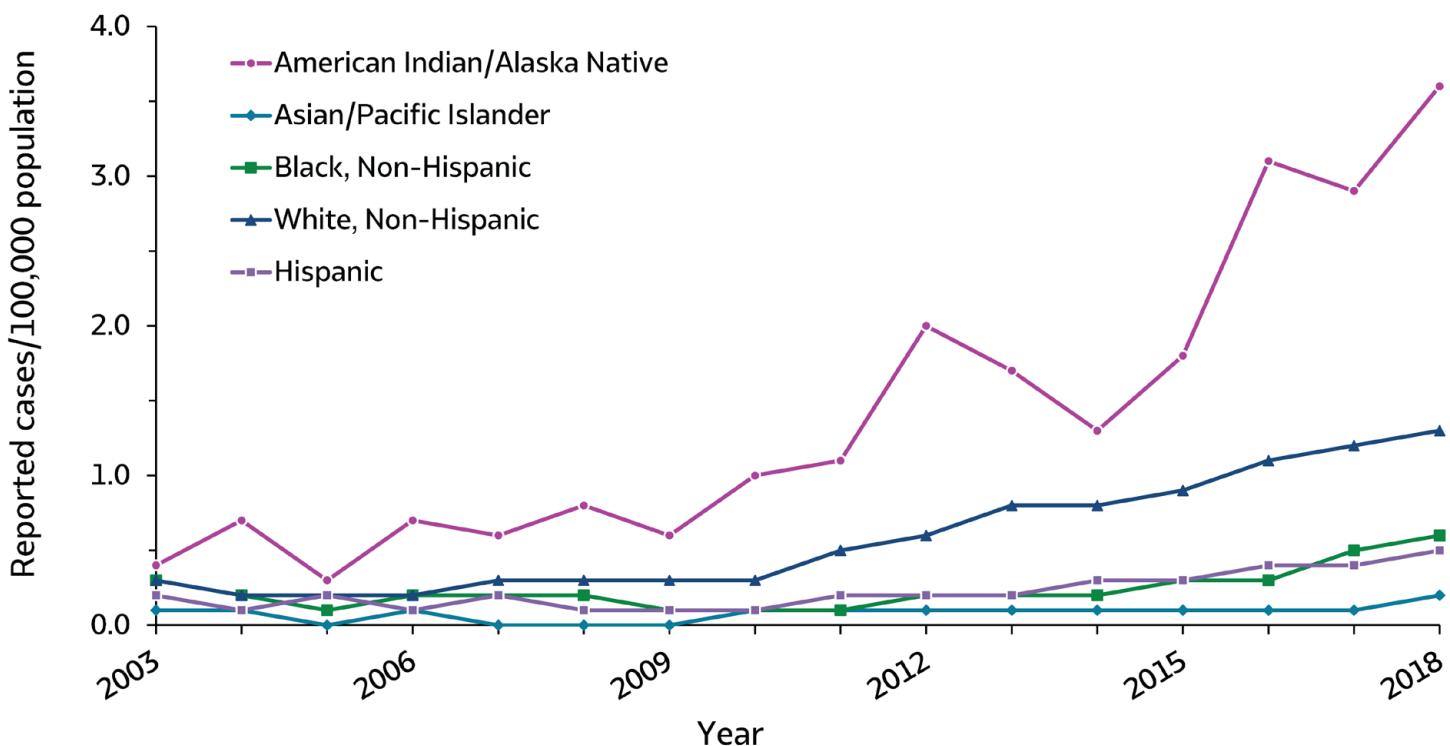
Source: CDC, National Notifiable Diseases Surveillance System.

Figure 3.5. Rates of reported acute hepatitis C, by sex — United States, 2003–2018

Sex	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Male	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.7	0.8	0.8	0.9	1.1	1.2	1.3
Female	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.5	0.7	0.7	0.7	0.9	0.9	1.0

Source: CDC, National Notifiable Diseases Surveillance System.

Figure 3.6. Rates of reported acute hepatitis C, by race/ethnicity — United States, 2003–2018



Race/Ethnicity	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
American Indian/Alaska Native	0.4	0.7	0.3	0.7	0.6	0.8	0.6	1.0	1.1	2.0	1.7	1.3	1.8	3.1	2.9	3.6
Asian/Pacific Islander	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Black, Non-Hispanic	0.3	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.5	0.6
White, Non-Hispanic	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.5	0.6	0.8	0.8	0.9	1.1	1.2	1.3
Hispanic	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5

Source: CDC, National Notifiable Diseases Surveillance System.

Table 3.2. Number and rate* of reported cases[†] of acute hepatitis C, by demographic characteristics and region — United States 2014–2018

Demographic characteristic	2014		2015		2016		2017		2018	
	No.	Rate*								
Total[§]	2,194	0.7	2,436	0.8	2,967	1.0	3,216	1.0	3,621	1.2
Age group (years)										
0–19	88	0.1	99	0.1	86	0.1	103	0.1	81	0.1
20–29	918	2.2	999	2.4	1,135	2.7	1,189	2.8	1,310	3.1
30–39	643	1.7	682	1.7	868	2.2	937	2.3	1,070	2.6
40–49	282	0.7	337	0.9	452	1.2	441	1.1	494	1.3
50–59	166	0.4	240	0.6	264	0.6	332	0.8	366	0.9
60+	70	0.1	77	0.1	141	0.2	185	0.3	295	0.4
Sex										
Male	1,167	0.8	1,334	0.9	1,627	1.1	1,775	1.2	2,012	1.3
Female	1,025	0.7	1,093	0.7	1,310	0.8	1,431	0.9	1,605	1.0
Race/ethnicity										
American Indian/Alaskan Native	29	1.3	39	1.7	70	3.1	67	2.9	83	3.6
Asian/Pacific Islander	11	0.1	16	0.1	25	0.1	23	0.1	29	0.2
Black, Non-Hispanic	74	0.2	112	0.3	130	0.3	202	0.5	231	0.6
White, Non-Hispanic	1,569	0.8	1,724	0.9	2,109	1.1	2,227	1.2	2,405	1.3
Hispanic	124	0.2	148	0.3	191	0.4	234	0.4	280	0.5
HHS Region[¶]										
Region 1	263	3.0	280	3.2	471	3.8	391	2.8	172	1.2
Region 2	239	0.8	251	0.9	301	1.0	313	1.1	332	1.2
Region 3	227	0.8	286	1.0	422	1.4	424	1.4	404	1.4
Region 4	599	1.0	721	1.2	706	1.1	826	1.3	1,056	1.7
Region 5	421	0.8	475	0.9	615	1.2	692	1.3	977	1.9
Region 6	143	0.4	149	0.4	95	0.2	105	0.2	114	0.3
Region 7	36	0.3	38	0.3	41	0.4	70	0.6	89	0.8
Region 8	84	0.8	85	0.8	152	1.4	162	1.4	225	1.9
Region 9	79	0.2	71	0.2	76	0.2	138	0.3	133	0.3
Region 10	103	0.8	80	0.6	88	0.7	95	0.7	119	0.9

Source: CDC, National Notifiable Diseases Surveillance System.

* Rate per 100,000 population.

† For the case definition, see <https://www.cdc.gov/nndss/conditions/hepatitis-c-acute/>

§ Numbers reported in each category may not add up to the total number of reported cases in a year due to cases with missing data or, in the case of race/ethnicity, cases categorized as “Other.”

¶ Health and Human Services Regions were categorized according to the grouping of states and U.S. Territories assigned under each of the ten Department of Health and Human Services regional offices (<https://www.hhs.gov/about/agencies/iea/regional-offices/index.html>). For the purposes of this report, regions with U.S. territories (Region 2 and Region 9) contain data from states only.

HEPATITIS C RISK BEHAVIORS AND EXPOSURES

Figure 3.7. Availability of information on risk behaviors/exposures* associated with reported cases of acute hepatitis C — United States, 2018

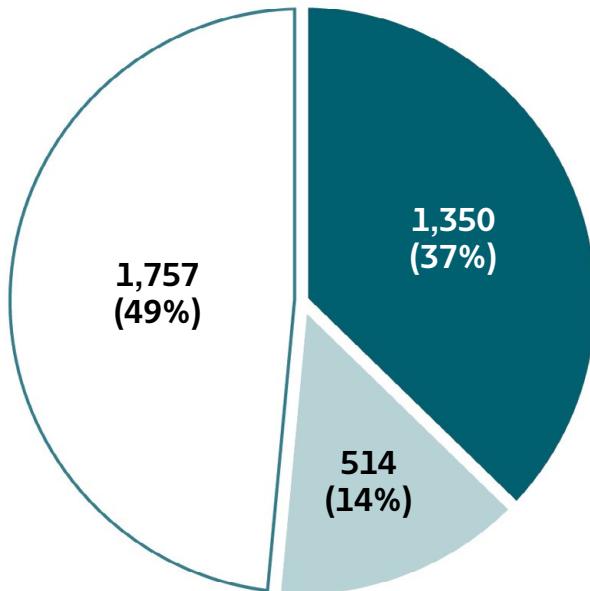


Table 3.3. Reported risk behaviors/exposures† among reported cases of acute hepatitis C — United States, 2018

Risk behaviors/exposures	Risk identified*	No risk identified	Risk data missing
Injection drug use	1,102	433	2,086
Multiple sex partners	212	462	2,947
Surgery	124	832	2,665
Sexual contact§	105	278	3,238
Needlestick	91	781	2,749
Men who have sex with men¶	33	277	1,702
Household contact (non-sexual)§	30	353	3,238
Dialysis patient	18	1,041	2,562
Occupational	7	1,145	2,469
Transfusion	1	956	2,664

Source: CDC, Nationally Notifiable Diseases Surveillance System.

* Case reports with at least one of the following risk behaviors/ exposures reported 6 weeks to 6 months prior to symptom onset: 1) injection drug use; 2) sexual contact with suspected/confirmed hepatitis C patient; 3) men who have sex with men; 4) multiple sex partners; 5) occupational exposure to blood; 6) dialysis patient; 7) receive blood transfusion; and 8) underwent surgery.

† Reported cases may include more than one risk behavior/exposure.

§ Cases with more than one type of contact reported were categorized according to a hierarchy: (1) sexual contact; (2) household contact (non-sexual).

¶ A total of 2,012 acute hepatitis C cases were reported among males in 2018.

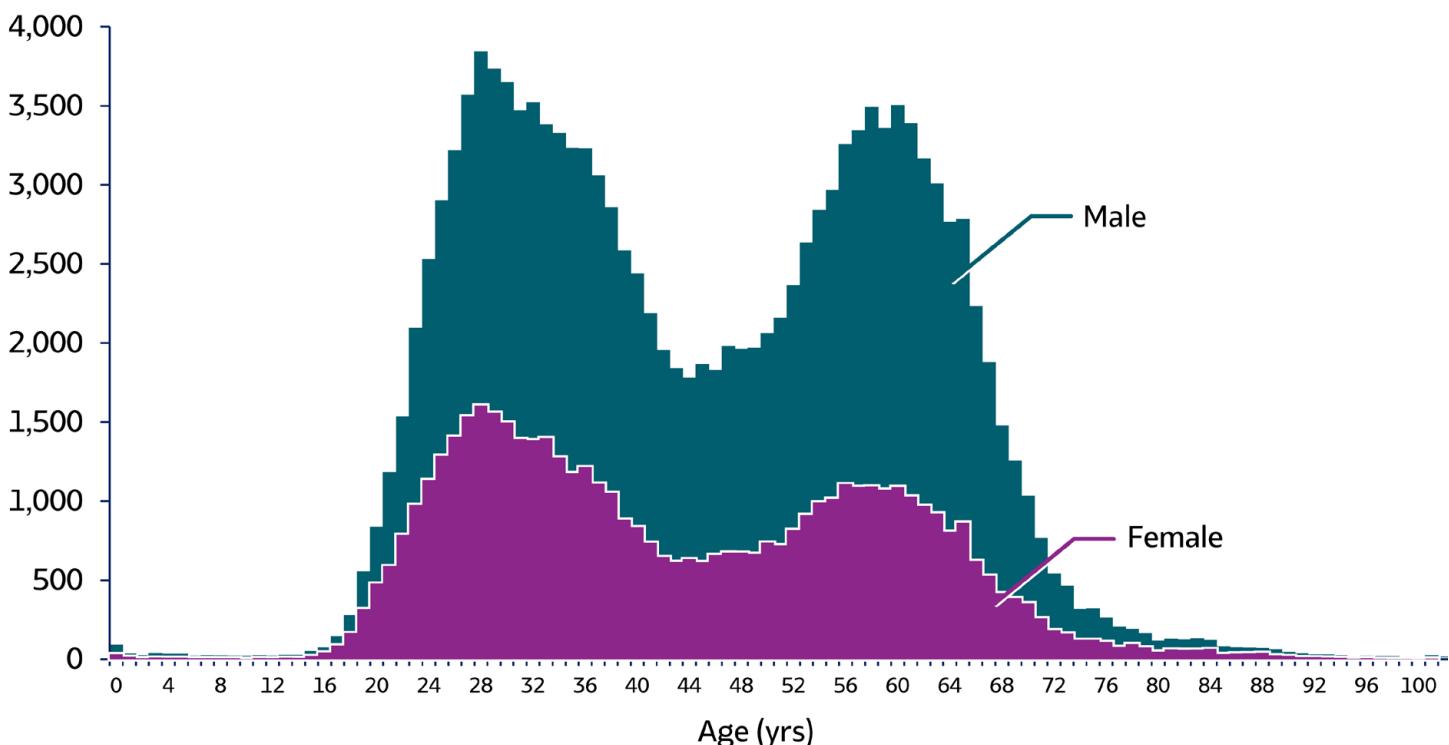
Table 3.4. Number of newly reported cases* of perinatal hepatitis C, by state or jurisdiction — United States, 2018

State	Perinatal Hepatitis C
Alabama	—
Alaska	1
Arizona	—
Arkansas	1
California	14
Colorado	2
Connecticut	—
Delaware	U
District of Columbia	—
Florida	36
Georgia	3
Hawaii	—
Idaho	—
Illinois	6
Indiana	20
Iowa	—
Kansas	1
Kentucky	—
Louisiana	3
Maine	—
Maryland	3
Massachusetts	10
Michigan	11
Minnesota	1
Mississippi	—
Missouri	—
Montana	1
Nebraska	—
Nevada	2
New Hampshire	—
New Jersey	10
New Mexico	—
New York	3
North Carolina	—
North Dakota	—
Ohio	44
Oklahoma	—
Oregon	—
Pennsylvania	20
Rhode Island	U
South Carolina	—
South Dakota	—
Tennessee	4
Texas	N
Utah	4
Vermont	—
Virginia	8
Washington	4
West Virginia	—
Wisconsin	2
Wyoming	—
Total	214

Table 3.5. Number of newly reported cases of chronic hepatitis C, by state or jurisdiction — United States, 2018**

State	Chronic Hepatitis C
Alabama	N
Alaska	872
Arizona	U
Arkansas	N
California	—
Colorado	2,871
Connecticut	1,897
Delaware	U
District of Columbia	U
Florida	16,193
Georgia	5,451
Hawaii	U
Idaho	872
Illinois	4,965
Indiana	N
Iowa	1,498
Kansas	1,272
Kentucky	N
Louisiana	6,640
Maine	888
Maryland	3,882
Massachusetts	4,772
Michigan	4,058
Minnesota	1,225
Mississippi	—
Missouri	4,658
Montana	967
Nebraska	696
Nevada	U
New Hampshire	224
New Jersey	3,882
New Mexico	956
New York	8,047
North Carolina	N
North Dakota	717
Ohio	10,582
Oklahoma	1,569
Oregon	3,000
Pennsylvania	12,874
Rhode Island	U
South Carolina	3,071
South Dakota	422
Tennessee	9,949
Texas	N
Utah	1,012
Vermont	463
Virginia	4,772
Washington	5,219
West Virginia	4,832
Wisconsin	2,090
Wyoming	355
United States	137,713

Figure 3.8. Number of newly reported* chronic hepatitis C cases[†] by sex and age — United States, 2018 (N=137,713)



This graph shows the number of newly reported chronic hepatitis C cases by sex and age in the United States for 2018. Males overall had higher rates of hepatitis C than females. Both males and females showed a biphasic pattern of new infections, with infections rising throughout late teens and early twenties, decreasing through the twenties and thirties, rising again in the late forties through early sixties, then declining for the remaining years.

Source: CDC, National Notifiable Diseases Surveillance System.

* During 2018, cases of chronic hepatitis C were either not reportable by law, statute, or regulation; not reported; or otherwise unavailable to CDC from Alabama, Arizona, Arkansas, California, Delaware, District of Columbia, Hawaii, Indiana, Kentucky, Mississippi, Nevada, North Carolina, Rhode Island, and Texas.

[†] Only confirmed, newly diagnosed, chronic hepatitis C cases are included. For the complete case definition, see <https://www.cdc.gov/nndss/conditions/hepatitis-c-chronic/case-definition/2016/>.

Table 3.6. Number and rate* of deaths with hepatitis C listed as a cause of death† among U.S. residents, by jurisdiction and year — United States, 2014–2018

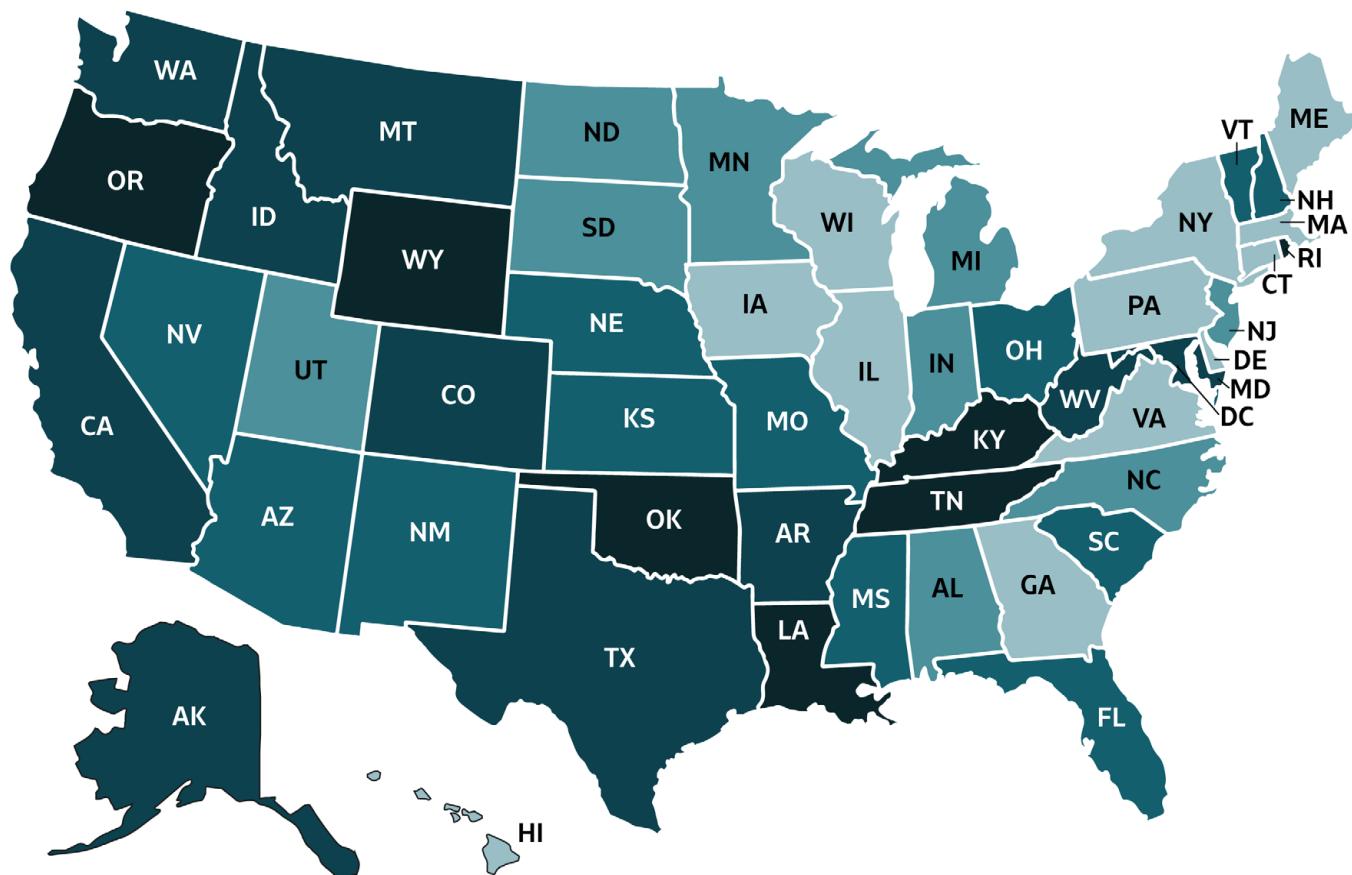
State	2014		2015		2016		2017		2018	
	No.	Rate*								
Alabama	246	3.97	187	3.08	166	2.63	188	2.97	167	2.54
Alaska	60	7.13	41	4.95	50	5.38	38	4.38	40	5.00
Arizona	553	6.90	567	6.90	500	5.81	480	5.45	348	3.84
Arkansas	160	4.39	183	5.01	184	4.91	169	4.43	150	3.86
California	3,409	7.66	3,245	7.19	2,917	6.33	2,630	5.58	2,391	4.98
Colorado	352	5.49	362	5.51	385	5.74	386	5.62	387	5.48
Connecticut	156	3.25	153	3.20	123	2.52	130	2.61	89	1.72
Delaware	50	3.91	45	3.41	47	3.63	49	3.80	34	2.33
District of Columbia	92	13.21	101	13.93	95	13.37	83	11.42	70	9.40
Florida	1,266	4.71	1,270	4.62	1,222	4.26	1,222	4.16	1,005	3.34
Georgia	426	3.58	396	3.26	368	2.98	344	2.66	326	2.46
Hawaii	87	4.99	68	3.70	70	3.75	67	3.48	49	2.42
Idaho	110	5.44	99	4.79	115	5.40	84	3.82	108	4.87
Illinois	364	2.33	399	2.56	354	2.18	288	1.72	279	1.67
Indiana	263	3.26	270	3.26	295	3.60	269	3.16	259	2.98
Iowa	112	3.04	125	3.19	109	2.67	122	3.01	98	2.40
Kansas	126	3.62	141	4.11	148	4.20	141	3.83	130	3.48
Kentucky	250	4.70	270	5.09	269	5.05	306	5.58	319	5.77
Louisiana	400	7.25	396	7.15	383	6.60	382	6.49	352	5.92
Maine	59	3.42	57	3.05	40	1.87	32	1.60	34	1.69
Maryland	335	4.42	366	4.84	327	4.32	340	4.41	352	4.44
Massachusetts	303	3.65	317	3.71	261	2.98	267	3.00	211	2.33
Michigan	511	3.88	512	3.77	415	3.06	368	2.61	384	2.72
Minnesota	245	3.50	234	3.40	240	3.28	235	3.19	209	2.81
Mississippi	171	4.82	162	4.57	183	5.08	159	4.38	141	3.70
Missouri	314	4.13	275	3.50	258	3.23	247	3.06	244	3.09
Montana	55	3.77	77	5.76	75	5.71	68	4.89	76	5.36
Nebraska	77	3.49	82	3.60	78	3.25	79	3.29	72	3.26
Nevada	181	5.33	173	4.80	181	4.97	153	4.00	140	3.59
New Hampshire	62	3.18	65	3.28	68	3.57	57	2.90	64	3.36
New Jersey	446	3.93	400	3.52	378	3.24	342	2.90	309	2.64
New Mexico	205	8.29	195	8.05	203	8.12	175	6.70	163	6.30
New York	1,092	4.42	979	3.89	789	3.06	701	2.71	615	2.40
North Carolina	495	4.08	532	4.19	511	3.92	460	3.44	426	3.11
North Dakota	24	2.78	32	3.55	20	2.25	23	2.88	23	2.52
Ohio	567	3.78	559	3.70	546	3.58	541	3.48	480	3.16
Oklahoma	523	11.62	510	11.02	538	11.46	555	11.84	534	11.00
Oregon	563	10.79	514	9.68	491	8.90	518	9.24	466	8.03
Pennsylvania	629	3.73	726	4.18	564	3.28	563	3.15	417	2.37
Rhode Island	104	7.70	97	7.26	89	6.57	76	5.15	91	6.37
South Carolina	271	4.38	294	4.67	299	4.51	302	4.51	259	3.70
South Dakota	31	3.18	35	3.33	37	3.46	29	2.56	30	2.80
Tennessee	554	6.83	592	7.27	482	5.89	469	5.57	517	6.01
Texas	1,860	6.41	1,996	6.72	1,886	6.12	1,888	6.03	1,708	5.30
Utah	91	3.34	98	3.47	85	2.98	68	2.29	78	2.59
Vermont	33	3.86	43	4.87	35	3.72	40	4.44	30	3.32
Virginia	335	3.27	330	3.15	327	3.03	290	2.68	272	2.48
Washington	644	7.21	651	7.06	517	5.53	528	5.46	466	4.76
West Virginia	110	4.72	107	4.65	118	4.85	116	4.94	108	4.90
Wisconsin	205	2.70	208	2.78	214	2.70	145	1.82	151	1.90
Wyoming	36	4.77	30	3.95	38	4.89	41	5.50	42	5.84
Total	19,613	5.01	19,566	4.91	18,093	4.42	17,253	4.13	15,713	3.72

Source: CDC, National Center for Health Statistics, Multiple Cause of Death 1999–2018 on CDC WONDER Online Database. Data are from the 2014–2018 Multiple Cause of Death files and are based on information from all death certificates filed in the vital records offices of the fifty states and the District of Columbia through the Vital Statistics Cooperative Program. Deaths of nonresidents (e.g., nonresident aliens, nationals living abroad, residents of Puerto Rico, Guam, the Virgin Islands, and other U.S. Territories) and fetal deaths are excluded. Numbers are slightly lower than previously reported for 2013–2016 due to NCHS standards which restrict displayed data to U.S. residents. Accessed at <http://wonder.cdc.gov/mcd-icd10.html> on February 14, 2020. CDC WONDER dataset documentation and technical methods can be accessed at <https://wonder.cdc.gov/wonder/help/mcd.html#>.

* Rates are age-adjusted per 100,000 U.S. standard population in 2000 using the following age group distribution (in years): <1, 1–4, 5–14, 15–24, 25–34, 35–44, 45–54, 55–64, 65–74, 75–84, and 85+. For age-adjusted death rates, the age-specific death rate is rounded to one decimal place before proceeding to the next step in the calculation of age-adjusted death rates for NCHS Multiple Cause of Death on CDC WONDER. This rounding step may affect the precision of rates calculated for small numbers of deaths. Missing data are not included.

† Cause of death is defined as one of the multiple causes of death and is based on the International Classification of Diseases, 10th Revision (ICD-10) codes B17.1, and B18.2 (hepatitis C).

Figure 3.9. Rate of deaths with hepatitis C listed as a cause of death among U.S. residents, by jurisdiction and year — United States, 2018



Color Key	Cases/100,000 Population	States
	0-2.49	CT, DE, GA, HI, IL, IA, ME, MA, NY, PA, VA, WI
	>2.49-3.12	AL, IN, MI, MN, MO, NJ, NC, ND, SD, UT
	>3.12-3.85	AZ, FL, KS, MS, NE, NV, NH, OH, SC, VT
	>3.85-5.49	AK, AR, CA, CO, ID, MD, MT, TX, WA, WV
	>5.49-11.00	DC, KY, LA, NM, OK, OR, RI, TN, WY

Source: CDC, National Center for Health Statistics, Multiple Cause of Death 2018 on CDC WONDER Online Database.

Table 3.7. Number and rate* of deaths with hepatitis C listed as a cause of death[†] among U.S. residents, by demographic characteristics, region, and year — United States, 2014–2018

Demographic characteristic	2014		2015		2016		2017		2018	
	No.	Rate* (95% CI)								
Age group (years)										
0–34	162	0.11 (0.09–0.13)	196	0.13 (0.11–0.15)	164	0.11 (0.09–0.13)	180	0.12 (0.10–0.14)	212	0.14 (0.12–0.16)
35–44	549	1.36 (1.24–1.47)	592	1.46 (1.34–1.58)	532	1.31 (1.20–1.43)	507	1.24 (1.13–1.35)	499	1.21 (1.10–1.31)
45–54	4,108	9.45 (9.16–9.74)	3,659	8.47 (8.20–8.75)	3,026	7.07 (6.82–7.32)	2,556	6.03 (5.80–6.27)	2,040	4.90 (4.69–5.11)
55–64	9,976	24.89 (24.40–25.38)	9,678	23.68 (23.20–24.15)	9,011	21.73 (21.28–22.18)	8,275	19.70 (19.28–20.13)	7,297	17.26 (16.87–17.66)
65–74	3,382	12.81 (12.38–13.24)	4,009	14.55 (14.10–15.00)	4,071	14.22 (13.78–14.66)	4,397	14.81 (14.38–15.25)	4,429	14.52 (14.10–14.95)
75+	1,431	7.21 (6.84–7.58)	1,431	7.08 (6.71–7.45)	1,288	6.25 (5.91–6.59)	1,329	6.28 (5.94–6.61)	1,235	5.63 (5.32–5.94)
Race/ethnicity										
White, Non-Hispanic	12,438	4.42 (4.34–4.50)	12,329	4.35 (4.27–4.43)	11,389	3.95 (3.88–4.03)	10,781	3.70 (3.63–3.78)	9,858	3.35 (3.28–3.42)
Black, Non-Hispanic	3,535	8.12 (7.85–8.39)	3,602	8.13 (7.86–8.40)	3,360	7.42 (7.16–7.68)	3,262	7.03 (6.79–7.28)	2,978	6.31 (6.08–6.54)
Hispanic	2,792	6.90 (6.63–7.16)	2,737	6.48 (6.23–6.74)	2,510	5.76 (5.53–6.00)	2,399	5.29 (5.08–5.51)	2,190	4.64 (4.44–4.84)
Asian/Pacific Islander, Non-Hispanic	419	2.43 (2.19–2.67)	415	2.32 (2.09–2.55)	384	2.03 (1.82–2.24)	368	1.86 (1.67–2.05)	300	1.43 (1.27–1.60)
American Indian/Alaska Native, Non-Hispanic	287	10.05 (8.86–11.24)	324	11.45 (10.18–12.73)	285	9.80 (8.63–10.97)	299	10.24 (9.04–11.44)	264	9.05 (7.93–10.17)
Sex										
Male	13,962	7.38 (7.26–7.51)	14,043	7.27 (7.15–7.40)	12,815	6.48 (6.36–6.59)	12,287	6.12 (6.01–6.23)	11,242	5.53 (5.42–5.63)
Female	5,651	2.82 (2.75–2.90)	5,523	2.71 (2.63–2.78)	5,278	2.54 (2.47–2.61)	4,966	2.32 (2.26–2.39)	4,471	2.09 (2.02–2.15)
DHHS Region										
Region 1: Boston	717	3.77 (3.48–4.05)	732	3.78 (3.50–4.07)	616	3.10 (2.85–3.35)	602	2.97 (2.72–3.21)	519	2.56 (2.33–2.79)
Region 2: New York	1,538	4.27 (4.05–4.49)	1,379	3.78 (3.58–3.98)	1,167	3.12 (2.94–3.30)	1,043	2.76 (2.59–2.93)	924	2.48 (2.31–2.64)
Region 3: Philadelphia	1,551	3.95 (3.75–4.15)	1,675	4.17 (3.96–4.37)	1,478	3.68 (3.48–3.87)	1,441	3.53 (3.35–3.72)	1,253	3.04 (2.87–3.22)
Region 4: Atlanta	3,679	4.61 (4.46–4.76)	3,703	4.53 (4.38–4.68)	3,500	4.18 (4.03–4.32)	3,450	4.03 (3.89–4.16)	3,160	3.60 (3.47–3.72)
Region 5: Chicago	2,155	3.23 (3.10–3.37)	2,182	3.24 (3.11–3.38)	2,064	3.01 (2.88–3.15)	1,846	2.63 (2.51–2.75)	1,762	2.52 (2.40–2.64)
Region 6: Dallas	3,148	6.94 (6.69–7.18)	3,280	7.08 (6.83–7.33)	3,194	6.69 (6.45–6.92)	3,169	6.54 (6.31–6.77)	2,907	5.85 (5.64–6.07)
Region 7: Kansas City	629	3.96 (3.40–3.99)	623	3.58 (3.29–3.87)	593	3.31 (3.04–3.59)	589	3.24 (2.97–3.51)	544	3.04 (2.78–3.30)
Region 8: Denver	589	4.44 (4.07–4.80)	634	4.67 (4.30–5.04)	640	4.69 (4.32–5.06)	615	4.38 (4.02–4.73)	636	4.45 (4.09–4.80)
Region 9: San Francisco	4,230	7.30 (7.07–7.52)	4,053	6.84 (6.63–7.05)	3,668	6.08 (5.88–6.28)	3,330	5.37 (5.19–5.56)	2,928	4.63 (4.46–4.80)
Region 10: Seattle	1,377	8.10 (7.66–8.54)	1,305	7.49 (7.08–7.91)	1,173	6.56 (6.17–6.94)	1,168	6.38 (6.01–6.76)	1,080	5.79 (5.43–6.14)
Overall	19,613	5.01 (4.93–5.08)	19,566	4.91 (4.84–4.98)	18,093	4.42 (4.36–4.49)	17,253	4.13 (4.07–4.20)	15,713	3.72 (3.66–3.78)

Source: CDC, National Center for Health Statistics, Multiple Cause of Death 1999–2018 on CDC WONDER Online Database. Data are from the 2014–2018 Multiple Cause of Death files and are based on information from all death certificates filed in the vital records offices of the fifty states and the District of Columbia through the Vital Statistics Cooperative Program. Deaths of nonresidents (e.g., nonresident aliens, nationals living abroad, residents of Puerto Rico, Guam, the Virgin Islands, and other U.S. Territories) and fetal deaths are excluded. Numbers are slightly lower than previously reported for 2013–2016 due to NCHS standards which restrict displayed data to U.S. residents. Accessed at <http://wonder.cdc.gov/mcd-icd10.html> on February 14, 2020. CDC WONDER dataset documentation and technical methods can be accessed at <https://wonder.cdc.gov/wonder/help/mcd.html#>.

* Rates for race/ethnicity, sex, and the overall total are age-adjusted per 100,000 U.S. standard population in 2000 using the following age group distribution (in years): <1, 1–4, 5–14, 15–24, 25–44, 45–54, 55–64, 65–74, 75–84, and 85+. Missing data are not included. For age-adjusted death rates, the age-specific death rate is rounded to one decimal place before proceeding to the next step in the calculation of age-adjusted death rates for NCHS Multiple Cause of Death on CDC WONDER. This rounding step may affect the precision of rates calculated for small numbers of deaths.

[†] Cause of death is defined as one of the multiple causes of death and is based on the International Classification of Diseases, 10th Revision (ICD-10) codes B17.1, and B18.2 (hepatitis C).

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APPENDIX

Number of reported acute viral hepatitis cases and estimated infections with 95% bootstrap confidence intervals — United States, 2011–2018.

Year	Hepatitis A		Hepatitis B		Hepatitis C	
	Reported	Estimated* (95% bootstrap confidence interval)	Reported	Estimated* (95% bootstrap confidence interval)	Reported	Estimated* (95% bootstrap confidence interval)
2011	1,398	2,800 (2,000–3,100)	2,903	18,900 (10,700–46,200)	1,232	17,100 (13,600–58,400)
2012	1,562	3,100 (2,200–3,400)	2,895	18,800 (10,700–46,000)	1,778	24,700 (19,600–84,300)
2013	1,781	3,500 (2,500–3,900)	3,050	19,800 (11,300–48,500)	2,138	29,700 (23,500–101,400)
2014	1,239	2,500 (1,700–2,800)	2,791	18,100 (10,300–44,400)	2,194	30,500 (24,200–104,200)
2015	1,390	2,800 (1,900–3,100)	3,370	21,900 (12,500–53,600)	2,436	33,900 (26,800–115,500)
2016	2,007	4,000 (2,800–4,400)	3,218	20,900 (11,900–51,200)	2,967	41,200 (32,600–140,600)
2017	3,366	6,700 (4,700–7,400)	3,409	22,200 (12,600–54,200)	3,216	44,700 (35,400–152,400)
2018	12,474	24,900 (17,500–27,400)	3,322	21,600 (12,300–52,800)	3,621	50,300 (39,800–171,600)

Source: CDC, National Notifiable Diseases Surveillance System.

* To account for under-estimation, a probabilistic model to estimate the true incidence (symptomatic and asymptomatic cases) of acute hepatitis A, B, and C from reported (symptomatic) cases has been published previously^[7]. The model includes the probabilities of symptoms, referral to care and treatment, and rates of reporting to local and state health departments. The published multipliers have since been corrected by CDC to indicate that each reported case of hepatitis A represents 2.0 estimated infections (95% bootstrap confidence interval [CI], 1.4–2.2), each reported case of acute hepatitis B represents 6.5 estimated infections (95% CI, 3.7–15.9), and each reported case of hepatitis C represents 13.9 estimated infections (95% CI 11.0–47.4).