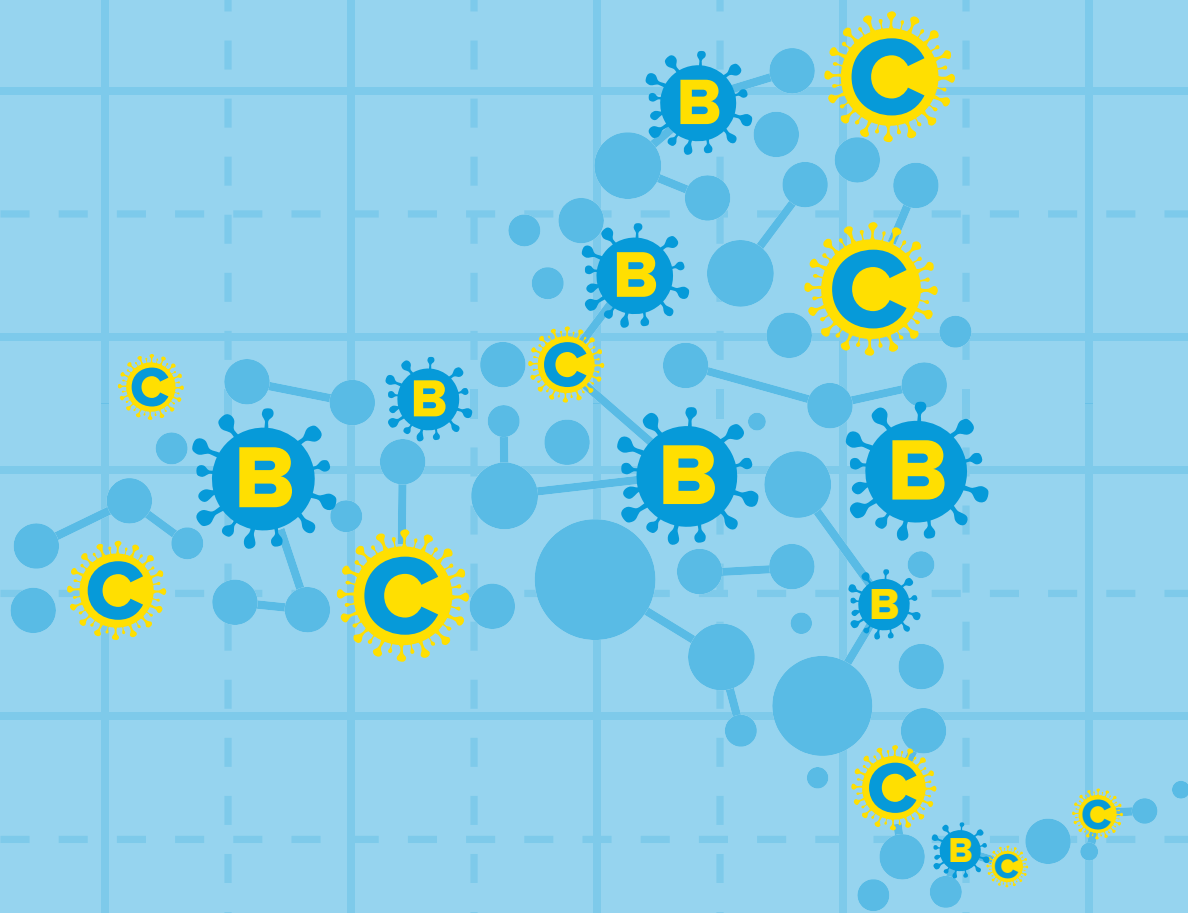


New York State Department of Health

# Hepatitis B and C Annual Report 2019



Surveillance, Prevention, Programs and Special Projects

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## Hepatitis B Surveillance

- During 2019, 1,870 cases of hepatitis B were newly reported to the New York State Department of Health (NYSDOH), including 52 acute cases and 1,818 chronic cases.
- Case rates (cases per 100,000 persons) were highest in males and in persons 30-39 years of age. Asian/Pacific Islanders account for one-quarter of cases and five percent of the population.
- The number of newly reported cases has increased over the last eight years.
- The median age at the time of case report is gradually increasing for males, but not for females for whom it has remained relatively stable. Females are, on average, younger than males at the time of report.
- The most commonly reported risk factor for cases of chronic hepatitis B was close contact (i.e., sexual, injection drug use, or household) with a person who has hepatitis B. A large majority of cases with a reported vaccination status were in persons who had never been vaccinated against hepatitis B.

## Perinatal Hepatitis B Prevention Program

- The program enrolled 246 infants born with hepatitis B in 2018. Nearly all infants (97%) received timely post-exposure prophylaxis; 92% also completed the hepatitis B vaccine series by 12 months of age, and 80% had completed post-vaccination serologic testing (PVST) by the end of 2019.
- The 2019 hepatitis B vaccine birth dose rate for New York State (NYS) hospitals (outside of New York City (NYC)) is 87%. Rates, since 2012, are posted on [Health Data NY](#).

## Hepatitis C Surveillance

- During 2019, 6,175 cases of hepatitis C were reported to the NYSDOH, including 11 perinatal cases, 253 acute cases and 5,911 newly reported chronic cases. The number of chronic cases newly reported decreased by 14% compared to 2018. However, in 2019 the number of acute cases, indication of a more recent infection, increased by 7% compared to the previous year.
- Case rates were highest in males and persons 30-39 years of age. Case rates were higher in young adults than in “baby boomers” (persons born during 1945-1965).
- Where race was reported, 84% of acute hepatitis cases and 77% of chronic hepatitis cases were among White persons.
- Recent case trends are difficult to discern for at least two reasons. Beginning in 2016, the surveillance case definition changed dramatically relative to the previous definition making case counts difficult to compare. Also, implementation of the NYS Hepatitis C Testing Law, beginning in 2014, resulted in reporting of more cases that year, particularly in persons born during 1945-1965.

- The median age at the time of report has decreased by 10 years since 2012 and during 2019 was 38 for females and 41 for males. Females are, on average, younger than males at the time of report.
- The two most commonly reported risk factors for chronic hepatitis C cases were injection drug use and non-injection drug use. Other common risk factors included close contact (e.g., sexual or household) with a person who has hepatitis C, and incarceration.

### **Hepatitis C Programs and Initiatives**

- In 2019, 49 agencies across the state participated in the NYS Hepatitis C Testing Program. These programs tested 6,539 high-risk clients and identified 951 with reactive hepatitis C antibody tests who either received or were referred for follow-up hepatitis C virus (HCV) ribonucleic acid (RNA) testing. The antibody reactivity rate was 14.5%.
- The NYS Hepatitis C Patient Navigation initiative provides funding to seven Drug User Health Hubs, in upstate NY, to increase the number of HCV-infected persons who inject drugs who are successfully linked to medical care and treated for HCV. Between November 2018 and October 2019, the initiative enrolled 365 patients, 86% of whom received an HCV RNA test. Of the clients enrolled, diagnosed with hepatitis C and linked to care, 83% initiated treatment.
- The NYS Hepatitis C Care and Treatment Initiative funds 15 primary care sites across the state to provide linkage to care activities and integrate hepatitis C care, treatment, and supportive services into their primary care structure. Between April 2015 and March 2019, a total of 6,640 patients had been enrolled in the initiative. Seventy-four percent of those linked to care initiated treatment, and 98% of those who completed treatment and were assessed for a sustained virologic response (SVR) were found to be cured.
- The Hepatitis C Criminal Justice Initiative funds eight community-based organizations to provide in-facility pre-release planning to persons with HCV who initiate HCV treatment while in NYS Department of Corrections and Community Supervision (DOCCS) custody and will be released before treatment completion and people who will begin HCV treatment after release to the community. A total of 173 releasees were enrolled between August 2018 and July 2019; 39 initiated HCV treatment while incarcerated, and 134 were released prior to treatment initiation.

Viral hepatitis refers to a viral infection that affects the liver. There are at least five different types of viral hepatitis (A-E). The most common types of viral hepatitis in the United States are hepatitis A, hepatitis B, and hepatitis C. These viruses can cause a short-term (acute) illness characterized by fever, nausea, abdominal pain, malaise, and jaundice; however, in some cases, these acute infections are mild or do not cause any symptoms. Hepatitis A virus is usually spread when a person ingests fecal matter - even in microscopic amounts - from objects, food, or drinks contaminated by feces from an infected person. Hepatitis A infections do not become long-term (chronic). In contrast, [hepatitis B](#) and [hepatitis C](#) can cause lifelong, chronic infections without symptoms. Many people with chronic hepatitis B or hepatitis C do not know that they are infected. Eventually, chronic hepatitis B or hepatitis C infection can cause cirrhosis (scarring) of the liver, liver cancer, liver failure, and death. Hepatitis B and hepatitis C are the leading causes of liver cancer and the most common reason for liver transplantation in the United States. Hepatitis B and C viruses are both blood-borne pathogens.

Hepatitis B virus (HBV) is transmitted through contact with blood or body fluids from an infected person, most often through sexual contact; sharing drug injection equipment such as needles, syringes or other works; sharing razors or medical equipment such as glucometers; or from an infected mother to her newborn during birth (perinatal transmission). Transmission can also occur through close contact with an infected person (e.g., household contact) or when health care infection control is inadequate. The risk for a hepatitis B infection becoming chronic becomes lower with age: approximately 90% of infants infected at birth, 25-50% of children infected at age 1-5, and 5% of persons infected as adults will become chronically infected. Infants born to infected mothers can be given prophylactic treatment at birth to prevent infection, and the Centers for Disease Control and Prevention (CDC) recommends vaccination of all infants at birth and anyone else at risk who had not already been vaccinated. Most adults are infected through sex with an infected person. People with chronic hepatitis B can be treated with medications that cause viral suppression and reduce liver damage but typically need to take medication for life.

Hepatitis C virus is transmitted most often through contact with blood from an infected person, such as through sharing drug injection equipment, including needles, syringes or other works; sharing equipment used to snort drugs; needlestick injuries involving blood; receiving blood transfusions or blood products prior to the availability of blood supply screening in 1992; and inadequate infection control in health care settings. Less often, HCV can be transmitted through sexual contact or during birth from an infected woman to her newborn. Perinatal transmission occurs in approximately 5.8% of births among hepatitis C infected mothers. The best way to prevent infection is to avoid behaviors that can spread the disease such as sharing injection drug use (IDU) equipment. About 75-85% of newly infected people do not spontaneously clear HCV from their body and develop chronic infection. People with hepatitis C can be treated with medications that can cure >90% of people after 8-12 weeks of therapy.

## Case Reporting

Reporting of communicable diseases is mandated under the NYS Sanitary Code (10NYCRR 2.10). The NYSDOH requires health care providers, laboratories, and others to report suspected or confirmed cases of communicable disease, including viral hepatitis, to the local health department (LHD) where the patient resides. The LHDs conduct investigations and, for the 57 counties located outside of NYC, report case data to the NYSDOH via the Communicable Disease Electronic Surveillance System (CDESS). A large majority of investigations are triggered by receipt of clinical laboratory reports, which are electronically transmitted from laboratories to the NYSDOH through the Electronic Clinical Laboratory Reporting System (ECLRS). Laboratories report all positive markers of viral hepatitis infection to ECLRS. Since 2016, negative tests for HCV RNA are also reportable. Laboratories are also asked to report other negative hepatitis results or the results of liver enzyme assays (e.g., alanine aminotransferase (ALT)). In addition to patient name and date of birth, laboratories often report additional demographic information such as sex or race.

Case investigation involves case ascertainment, case classification, and the collection, when available, of demographic, clinical, and exposure or risk factor information.

## Case Definitions, Ascertainment, and Classification

Case ascertainment and classification are made according to the current CDC/Council of State and Territorial Epidemiologists (CSTE) case definitions using available laboratory testing results and clinical symptoms. Cases of acute hepatitis B, chronic hepatitis B, perinatal hepatitis B, acute hepatitis C, chronic hepatitis C, and perinatal hepatitis C, are recorded in CDESS. Cases that meet the definition for a confirmed or probable case are summarized in this report.

Case definitions change from time to time. The case definitions in effect during 2019 are:

|                       |   |
|-----------------------|---|
| Acute hepatitis B     | <a href="https://wwwn.cdc.gov/nndss/conditions/hepatitis-b-acute/case-definition/2012">https://wwwn.cdc.gov/nndss/conditions/hepatitis-b-acute/case-definition/2012</a>                               |
| Chronic hepatitis B   | <a href="https://wwwn.cdc.gov/nndss/conditions/hepatitis-b-chronic/case-definition/2012">https://wwwn.cdc.gov/nndss/conditions/hepatitis-b-chronic/case-definition/2012</a>                           |
| Acute hepatitis C     | <a href="https://wwwn.cdc.gov/nndss/conditions/hepatitis-c-acute/case-definition/2016">https://wwwn.cdc.gov/nndss/conditions/hepatitis-c-acute/case-definition/2016</a>                               |
| Chronic hepatitis C   | <a href="https://wwwn.cdc.gov/nndss/conditions/hepatitis-c-chronic/case-definition/2016">https://wwwn.cdc.gov/nndss/conditions/hepatitis-c-chronic/case-definition/2016</a>                           |
| Perinatal hepatitis C | <a href="https://wwwn.cdc.gov/nndss/conditions/hepatitis-c-perinatal-infection/case-definition/2018/">https://wwwn.cdc.gov/nndss/conditions/hepatitis-c-perinatal-infection/case-definition/2018/</a> |

Under case definitions utilized in 2019, ascertainment of acute cases of hepatitis B and C depends on the presence of either 1) symptoms consistent with viral hepatitis along with either jaundice or an elevated ALT value, or 2) the documented conversion of a viral hepatitis test from negative to positive within a specified time frame. Chronic cases include any case that does not meet the definition for an acute case or for which symptoms or prior test results are unavailable.

Note that changes in standardized case definitions result in counting cases differently and can profoundly impact the number of cases reported in each year. The new 2016 case definitions for acute and chronic hepatitis C were substantially different from the previous case definition.



Consequently, comparing counts or rates of hepatitis C cases reported during 2016-2019 to those reported during 2015 and earlier years should be done with caution.<sup>1</sup>

## Variable Definitions

*Case Year:* Cases are recorded in the year during which the case was first reported, typically the year during which the first positive laboratory test for the patient was electronically reported to NYSDOH.

*Sex at birth:* Sex at birth is defined as male, female, or unknown/missing. Gender information is not collected. Sex at birth is, in general, obtained from the laboratory report and is known for >99% of cases.

*Race and Ethnicity:* For surveillance data, race and ethnicity are recorded separately. For this report, races are White, Black, Asian/Pacific Islander, American Indian/Alaska Native, and other race, including more than one race, or unknown/missing. Ethnicities are Hispanic, non-Hispanic, and unknown/missing. Race and ethnicity are not required variables for laboratory reporting, and health care provider reporting of race and ethnicity is incomplete. A large percentage of cases, particularly chronic cases, are missing this information, and caution should be used when evaluating race and ethnicity patterns.

*Case county:* The case county is typically the county in which the patient resided at the time the case was first reported. Cases identified among persons incarcerated upon intake screening to NYS DOCCS prisons are assigned to the county where the intake facility is located rather than the county where the patient resided prior to incarceration. To avoid overrepresenting cases in counties and regions with DOCCS intake facilities, cases among persons incarcerated in DOCCS are excluded from county and region-level data. However, persons incarcerated at county jails are included in these geographic summaries.

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<sup>1</sup> In 2019, the Council of Territorial and State Epidemiologist, in collaboration with the Centers for Disease Prevention and Control revised hepatitis C case definitions for both acute and chronic cases. The revised 2020 case definition for hepatitis C is in effect January 1, 2020

*Region:* Program areas within NYSDOH define regions of the state differently. The regions presented here are grouped by county/LHD based on Communicable Disease Surveillance Regions and Ryan White HIV/AIDS Program service areas. There are four Communicable Disease Surveillance Regions: Western, Central, Capital, and Metropolitan. Ryan White regions further subdivide the Western region into Western and Finger Lakes regions, and the Metropolitan region into Hudson Valley and Nassau/Suffolk regions.

| Communicable Disease surveillance | Central NY   | Metropolitan Region   |                   | Capital District   | Western Region  |   |
|-----------------------------------|--|---|-------------------|--|---|---|
| Ryan White Program                | Central NY   | Hudson Valley   | Nassau/Suffolk    | Northeastern   | Western NY  | Finger Lakes  |
| <b>County</b>                     | Broome<br>Cayuga<br>Chenango<br>Cortland<br>Herkimer<br>Jefferson<br>Lewis<br>Madison<br>Oneida<br>Onondaga<br>Oswego<br>St. Lawrence<br>Tioga<br>Tompkins | Dutchess<br>Orange<br>Putnam<br>Rockland<br>Sullivan<br>Ulster<br>Westchester | Nassau<br>Suffolk | Albany<br>Clinton<br>Columbia<br>Delaware<br>Essex<br>Franklin<br>Fulton<br>Greene<br>Hamilton<br>Montgomery<br>Otsego<br>Rensselaer<br><br>Saratoga<br>Schenectady<br>Schoharie<br>Warren<br>Washington | Allegany<br>Cattaraugus<br>Chautauqua<br>Erie<br>Genesee<br>Niagara<br>Orleans<br>Wyoming | Chemung<br>Livingston<br>Monroe<br>Ontario<br>Schuyler<br>Seneca<br>Steuben<br>Wayne<br>Yates |

Crude Case Rates: Population estimates for each year (2012-2019) are used as denominators for overall case rates per 100,000 and rates by geographic area, age, sex. Estimates used for the resident population by county are annual estimates from US Census Bureau, (Population Division) for the resident population for selected age groups by sex for the United States, states, counties and Puerto Rico Commonwealth. April 1, 2010 to July 1, 2019. Release date: June 2020

## Risk Factor Information

Risk factor information is collected by LHDs during investigation when available. Methods of data collection vary including a standard one-page survey of the patient's health care provider, phone interview with the health care provider, medical record review, review of records in the NYS Immunization Information System (NYSIIS), patient interview, or proxy interview. Therefore, surveillance data quality is affected by, for example, a provider's incomplete knowledge of the patient's risks, transposition errors, misinterpretation of the question, intentionally misleading answers, recall bias, uncertain timelines, and other forms of inaccuracies.

Risk factor data are often incomplete, particularly for chronic cases. Depending on disease and risk factor, the proportion of cases with unknown or missing information can be >80%. For these reasons, caution should be taken when interpreting risk information.

For acute cases, except where noted, risk factors and exposures are determined for the 6-month period before illness onset or test conversion. For chronic cases, lifetime risk is assessed.

## Data on this Report

This report contains information about hepatitis B and hepatitis C gathered by the NYSDOH. Information about residents of NYC are excluded except where noted. NYC data are available from the NYC Department of Health and Mental Hygiene (DOHMH) at: <https://www1.nyc.gov/assets/doh/downloads/pdf/cd/hepatitis-abc-annual-report-2019.pdf>

The surveillance data summarize confirmed and probable cases of acute hepatitis B, chronic hepatitis B, perinatal hepatitis B, acute hepatitis C, chronic hepatitis C, and perinatal hepatitis C in NYS (excluding NYC) reported during 2019. Trend data are also presented for cases reported during 2012 through 2019. Surveillance data for hepatitis C are current as of October 25, 2020. For hepatitis B, data are current as of April 9, 2021. All surveillance data should be considered preliminary and subject to change. Case data reflect only newly reported cases and are not intended to represent disease incidence (all new infections) nor prevalence (all persons currently infected). Data from sources other than surveillance are described in the sections in which they are presented.

This report was developed by the NYSDOH Division of Epidemiology, Hepatitis B and C Surveillance Program and the NYSDOH AIDS Institute, Bureau of Hepatitis Health Care. For questions about this report, email NYSDOH at [HepBC.Surveillance@health.ny.gov](mailto:HepBC.Surveillance@health.ny.gov).

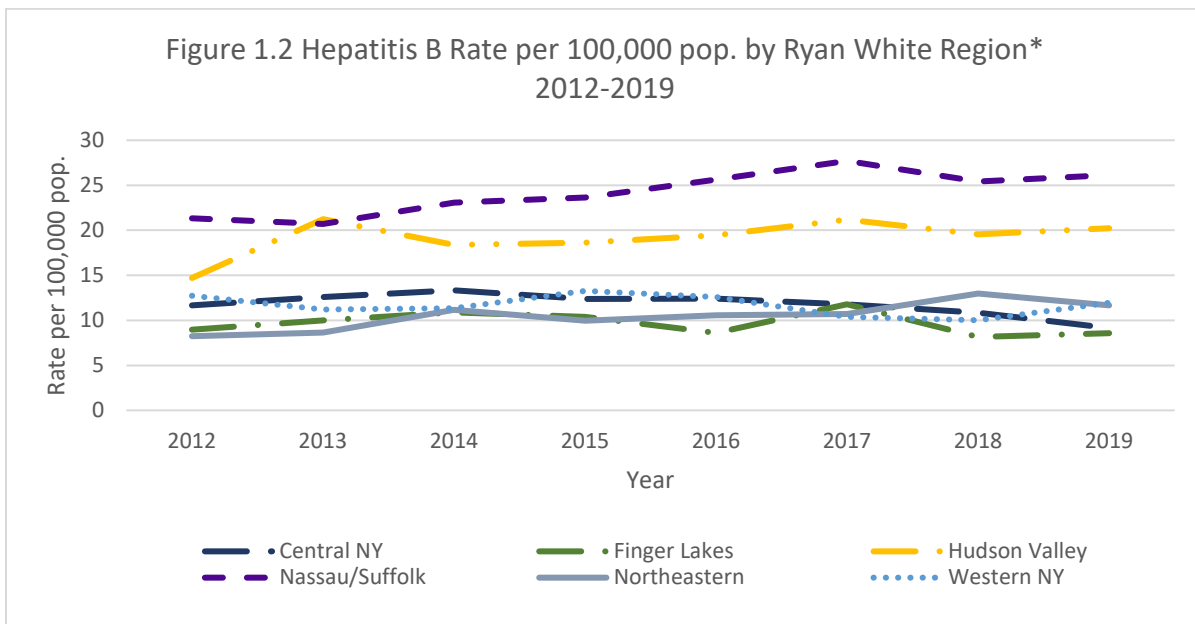
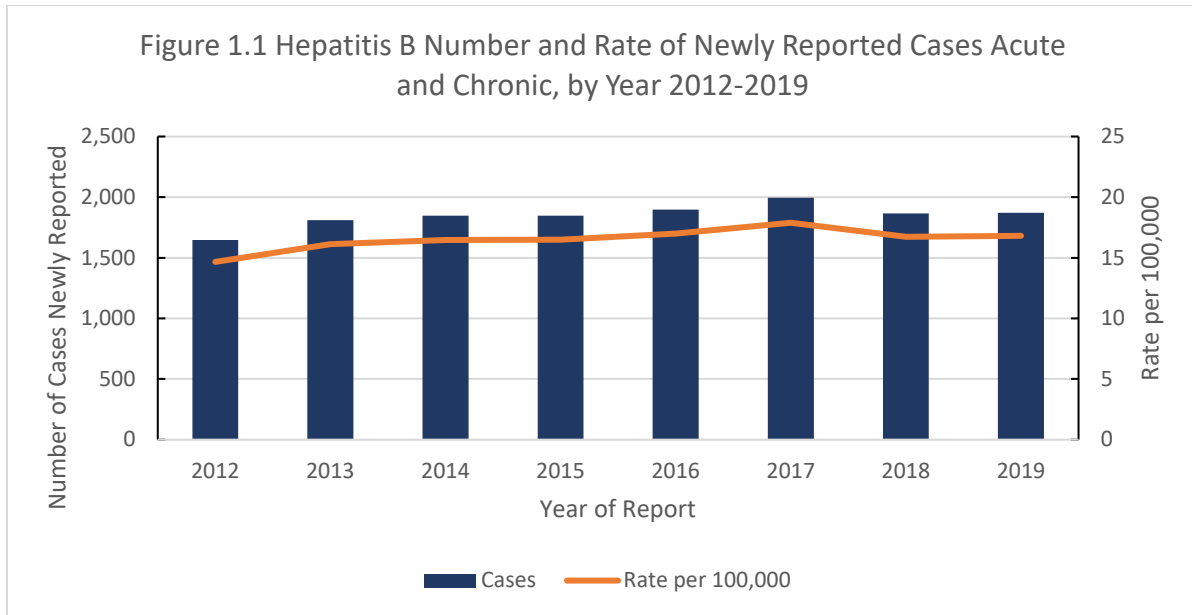
During 2019, 1,870 cases of hepatitis B were newly reported to NYSDOH; 97% of cases were classified as chronic. Demographic characteristics of hepatitis B cases are in Table 1.1. The majority of cases (57%) were in males, and 63% of the acute cases were in males. The case rates were highest in males aged 40-49 years, and in highest in females age 30-39. Case rates in the Metropolitan Region are double those observed in the rest of the regions (Table 1.1)

|                             | Female          |                  | Male            |                  | Total           |                  |
|-----------------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|
|                             | Number of Cases | Rate per 100,000 | Number of Cases | Rate per 100,000 | Number of Cases | Rate per 100,000 |
| Total                       | 794             | 14.1             | 1,074           | 19.6             | 1,870           | 16.8             |
| Acute                       | 19              | 0.3              | 33              | 0.6              | 52              | 0.5              |
| Chronic                     | 775             | 13.7             | 1,041           | 19.0             | 1,818           | 16.4             |
| <b>Age group (years)</b>    |                 |                  |                 |                  |                 |                  |
| 0-19                        | 19              | 1.5              | 22              | 1.6              | 41              | 1.6              |
| 20-29                       | 135             | 19.0             | 101             | 13.4             | 236             | 16.2             |
| 30-39                       | 205             | 31.0             | 248             | 36.7             | 453             | 33.9             |
| 40-49                       | 152             | 23.0             | 261             | 40.1             | 415             | 31.6             |
| 50-59                       | 135             | 16.6             | 189             | 24.3             | 324             | 20.4             |
| 60-69                       | 81              | 11.2             | 146             | 21.6             | 227             | 16.2             |
| 70+                         | 67              | 8.5              | 107             | 18.1             | 174             | 12.6             |
| <b>Region of Residence*</b> |                 |                  |                 |                  |                 |                  |
| Western Region              | 132             | 9.3              | 157             | 11.6             | 289             | 10.4             |
| Finger Lakes                | 47              | 7.3              | 61              | 9.9              | 108             | 8.6              |
| Western NY                  | 85              | 11.0             | 96              | 13.0             | 181             | 12.0             |
| Central NY                  | 66              | 7.7              | 89              | 10.6             | 155             | 9.1              |
| Northeastern                | 74              | 9.9              | 100             | 13.5             | 174             | 11.7             |
| Metropolitan Region         | 519             | 19.8             | 689             | 27.2             | 1,210           | 23.5             |
| Hudson Valley               | 209             | 17.7             | 261             | 22.8             | 470             | 20.2             |
| Nassau-Suffolk              | 310             | 21.5             | 428             | 30.8             | 740             | 26.1             |
|                             | Number of Cases | Percent of Cases | Number of Cases | Percent of Cases | Number of Cases | Percent of Cases |
| <b>Race**</b>               |                 |                  |                 |                  |                 |                  |
| White                       | 130             | 16.4%            | 181             | 16.9%            | 311             | 16.6%            |
| Black                       | 106             | 13.4%            | 158             | 14.7%            | 264             | 14.1%            |
| Asian                       | 214             | 27.0%            | 255             | 23.7%            | 469             | 25.1%            |
| American Indian/Alaskan     | 2               | 0.3%             | 2               | 0.2%             | 4               | 0.2%             |
| Other                       | 45              | 5.7%             | 59              | 5.5%             | 104             | 5.6%             |
| Unknown                     | 297             | 37.4%            | 419             | 39.0%            | 718             | 38.4%            |
| <b>Ethnicity**</b>          |                 |                  |                 |                  |                 |                  |
| Hispanic                    | 39              | 4.9%             | 57              | 5.3%             | 96              | 5.1%             |
| Non-Hispanic                | 269             | 33.9%            | 300             | 27.9%            | 569             | 30.4%            |
| Unknown                     | 486             | 61.2%            | 717             | 66.8%            | 1,205           | 64.4%            |

Notes. Totals include 2 cases where sex is unknown. \*Geographic assessments exclude persons incarcerated in DOCCS

\*\*Rates per 100,000 population are not calculated due to the large number of missing values

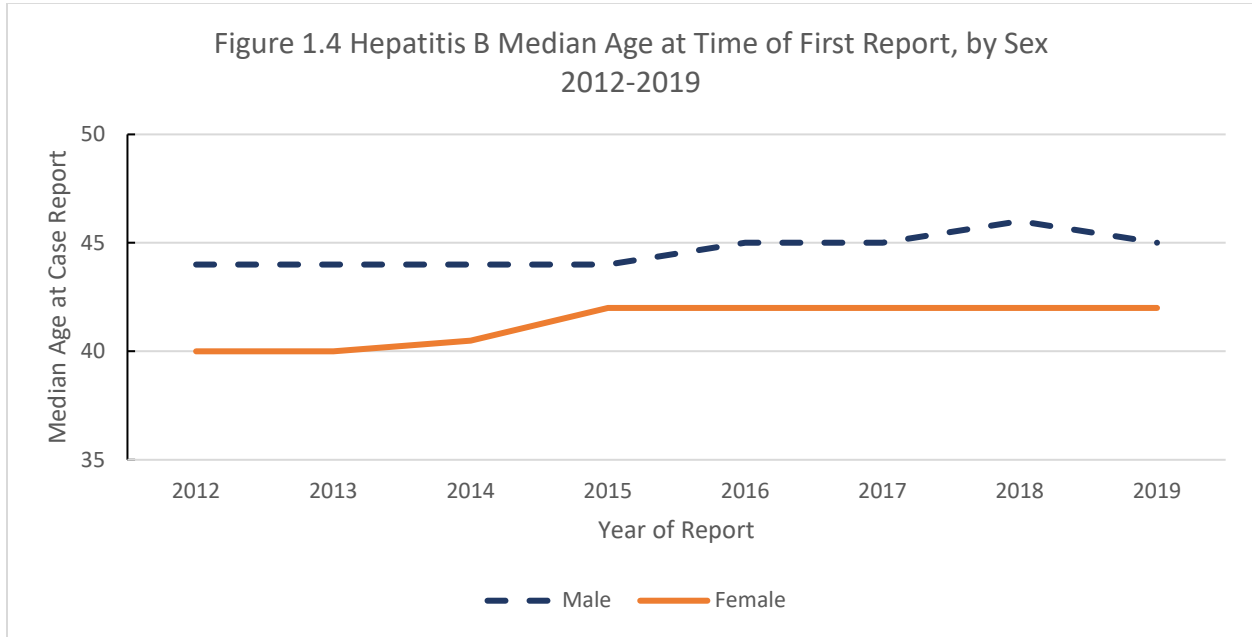
The number and rates per 100,000 population, of newly reported hepatitis B cases between 2012 and 2019 has remained relatively stable (Fig. 1.1), particularly in the Nassau/Suffolk and Hudson Valley Ryan White (Metropolitan) regions (Fig. 1.2). During 2019, case rates were highest in the Metropolitan region (23.5 per 100,000 population). In Ryan White regions, the Nassau/Suffolk region had the highest rate (26.1 per 100,000 population).



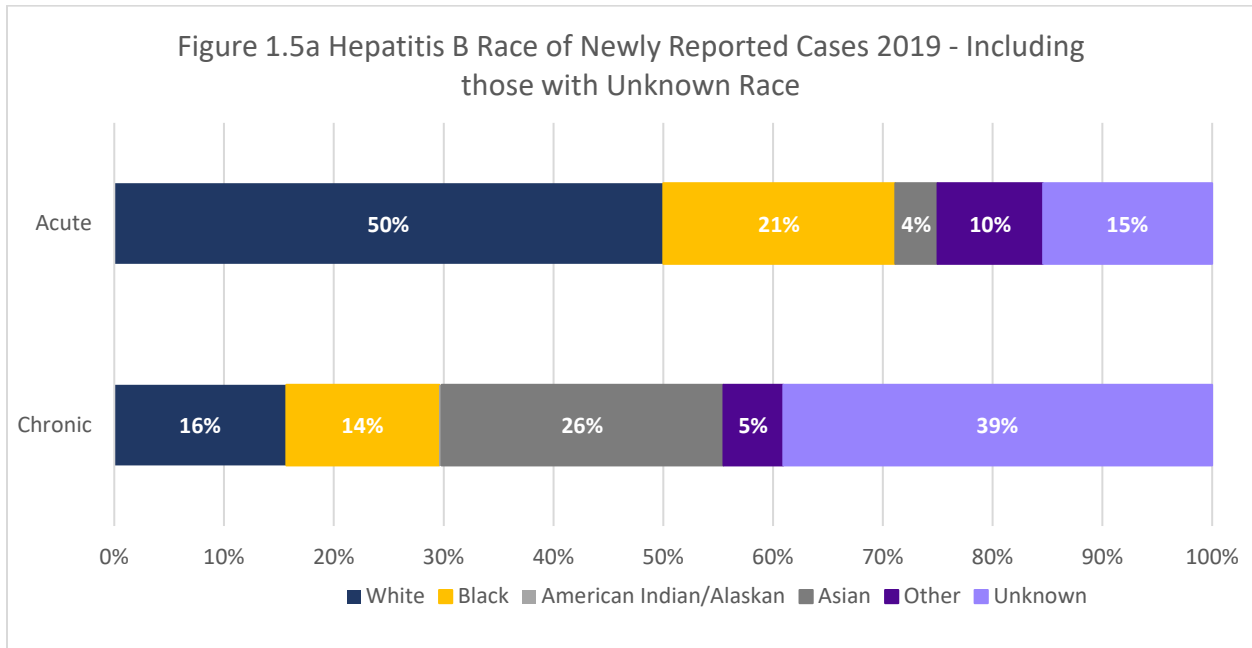
\* Geographic assessments exclude persons incarcerated in DOCCS



The median age for females newly reported with hepatitis B during 2019 was 42, and the median age for males was 45. These ages are slightly older than among cases newly reported during 2012-14 (Fig. 1.4). Because women are routinely screened for hepatitis B with each pregnancy, chronic cases might be identified at a younger age (i.e., earlier) among females.

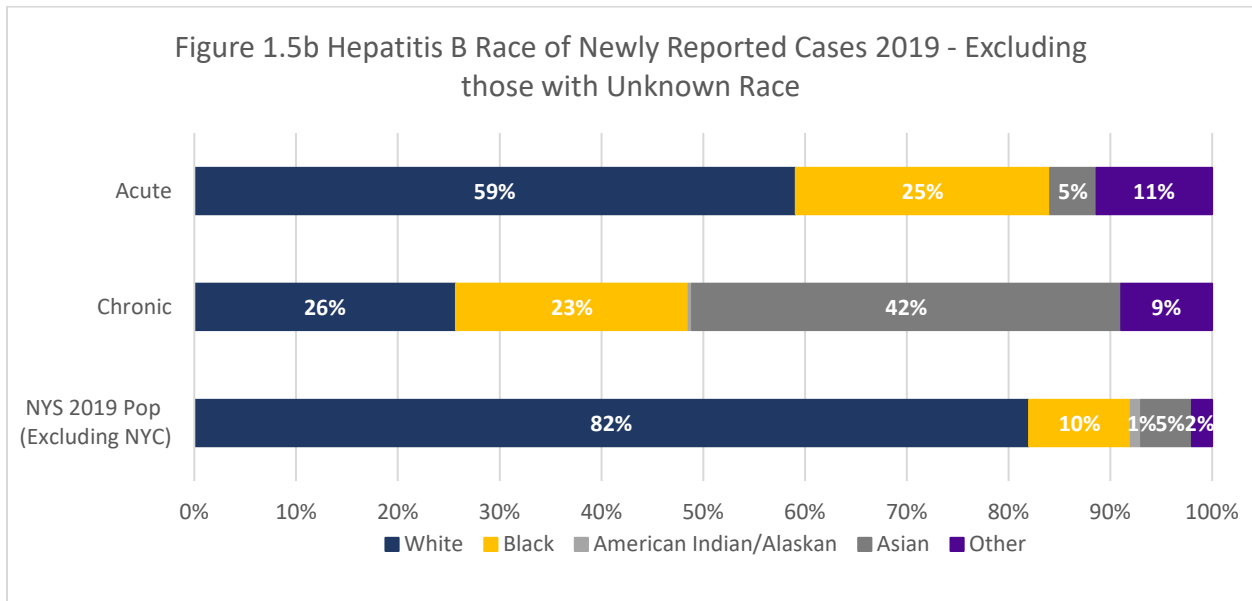


The distribution of race varied with whether the case was classified as acute or chronic hepatitis B. Figure 1.5a shows the distribution among all cases of hepatitis B reported during 2019. Note that race data were missing or unknown for 15% of acute and 39% of chronic hepatitis B cases.



Note. The percentage of cases of acute and chronic hepatitis B among American Indian/Alaskan is less than 1%

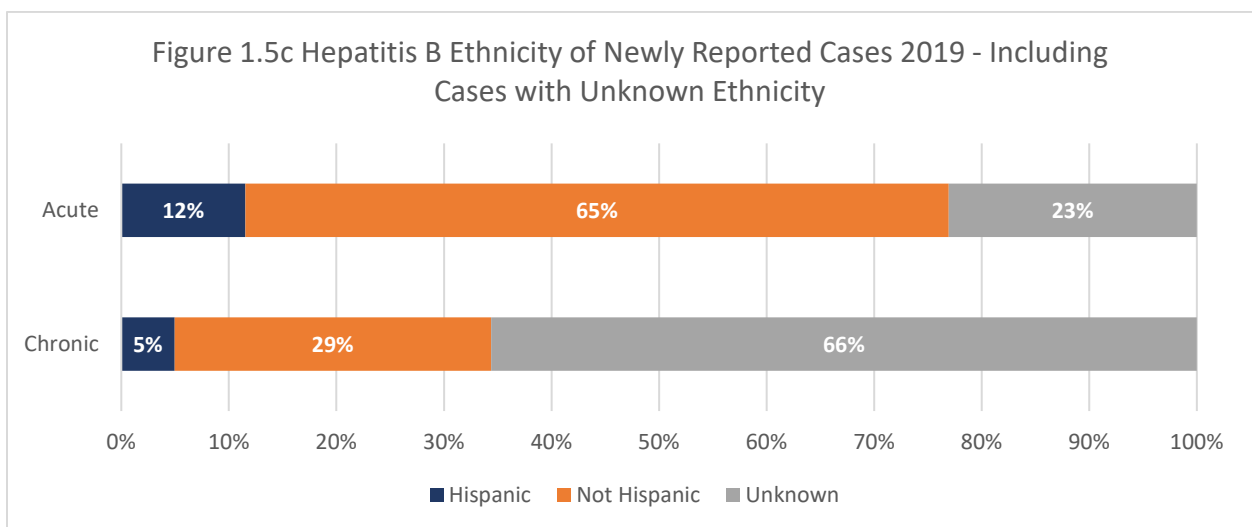
Figure 1.5b provides information on race for acute and chronic hepatitis B cases where race is reported (i.e., not missing or unknown). Among acute cases where race was reported, race was predominately White, followed by Black, and then Asian/Pacific Islander.



Note. The percentage of cases of acute and chronic hepatitis B among American Indian/Alaskan is less than 1%

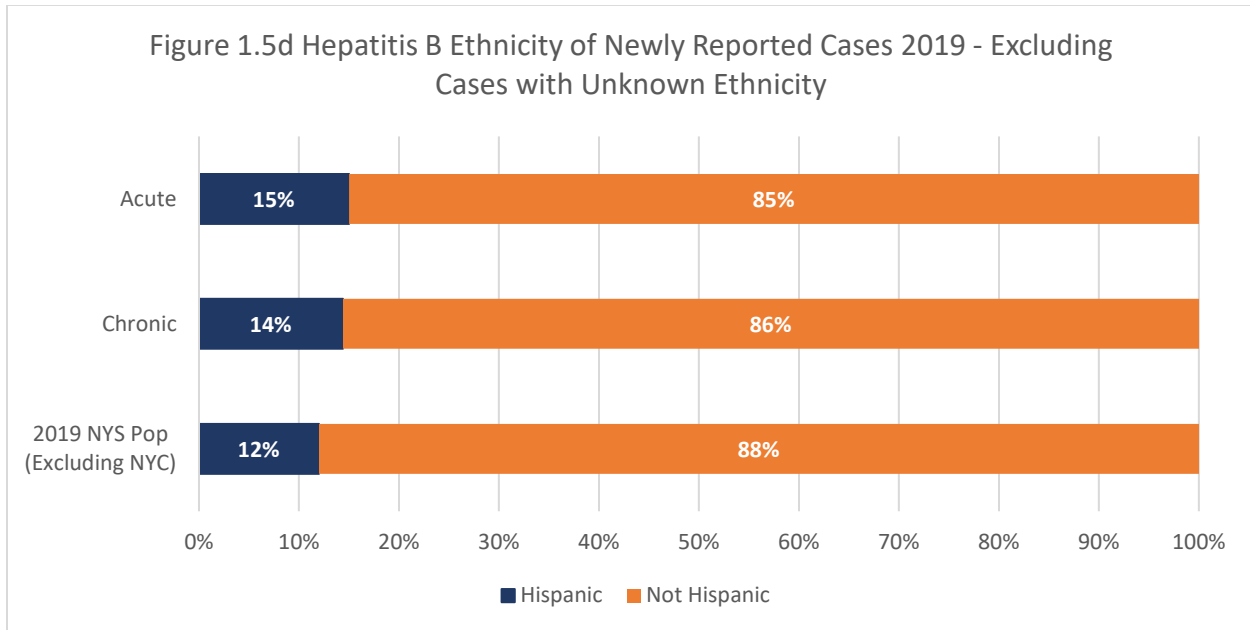
Among chronic hepatitis B cases where race was reported, race was predominately Asian/Pacific Islander, followed by White, and then Black. Prevalence of hepatitis B is >2% in most countries in Asia and Africa; perinatal transmission resulting in chronic infection is more common in these areas.

Figure 1.5c shows the distribution of Hispanic ethnicity among all hepatitis B cases reported during 2019. Note that ethnicity data were missing for a large proportion of acute (23%) and chronic (66%) hepatitis B cases.





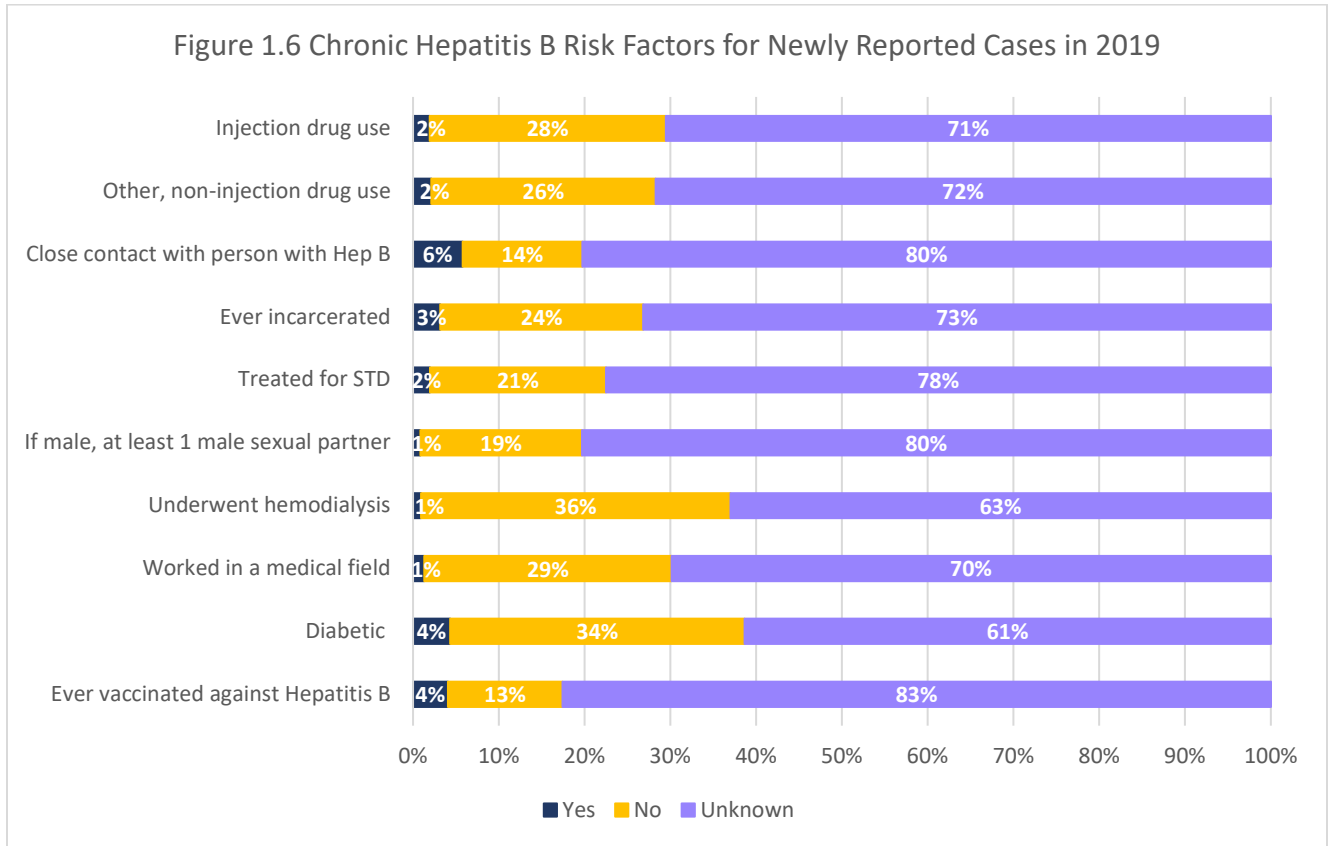
Where ethnicity was reported (i.e., not missing or unknown), ethnicity was recorded as non-Hispanic for 86% of chronic hepatitis B cases, and 85% of acute hepatitis B cases (Fig. 1.5d). The data may be subject to recording error and biases related to the ability of laboratories to report race and ethnicity.



Risk factor and exposure information for acute hepatitis B cases are not presented in this report given the small number of cases (N=52) and large percentage of cases with unknown or missing information. For chronic cases, risk factors and exposures are determined over the patient’s lifetime. Selected risk factor information for chronic hepatitis B cases are summarized in Table 1.6.

|   | Yes | No  | Unknown | Total |
|---|-----|-----|---------|-------|
| Injection drug use                      | 35  | 501 | 1,282   | 1,818 |
| Other, non-injection drug use           | 39  | 475 | 1,304   | 1,818 |
| Close contact with person with Hep B    | 105 | 254 | 1,459   | 1,818 |
| Ever incarcerated                       | 58  | 430 | 1,330   | 1,818 |
| Treated for STD                         | 36  | 373 | 1,409   | 1,818 |
| If male, at least 1 male sexual partner | 9   | 196 | 836     | 1,041 |
| Underwent hemodialysis                  | 17  | 656 | 1,145   | 1,818 |
| Worked in a medical field               | 24  | 524 | 1,270   | 1,818 |
| Diabetic                                | 79  | 624 | 1,115   | 1,818 |
| Ever vaccinated against Hepatitis B     | 74  | 243 | 1,501   | 1,818 |

Depending on risk factor, the percent of cases with unknown or missing information ranges from 61-83% (Fig. 1.6). Given the large percentage of cases with unknown or missing information, available risk factor information should be interpreted with caution.



In the 57 counties outside NYC, NYSDOH implements a Perinatal Hepatitis B Prevention Program (PHBPP) consistent with CDC guidance and NYSDOH laws and regulations.

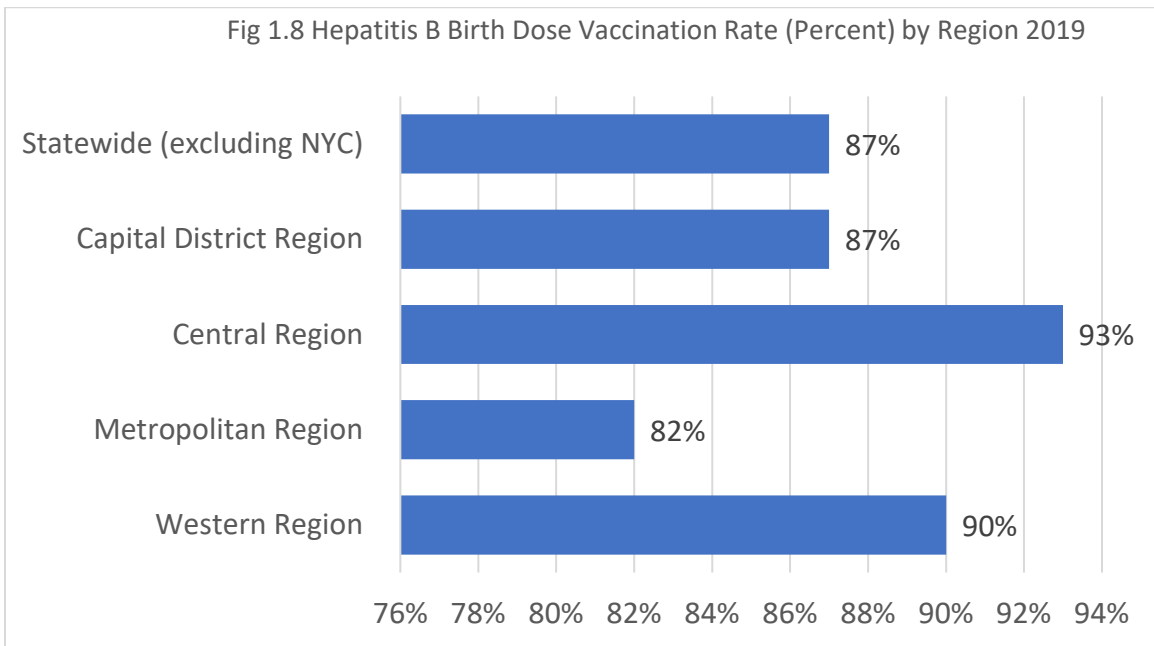
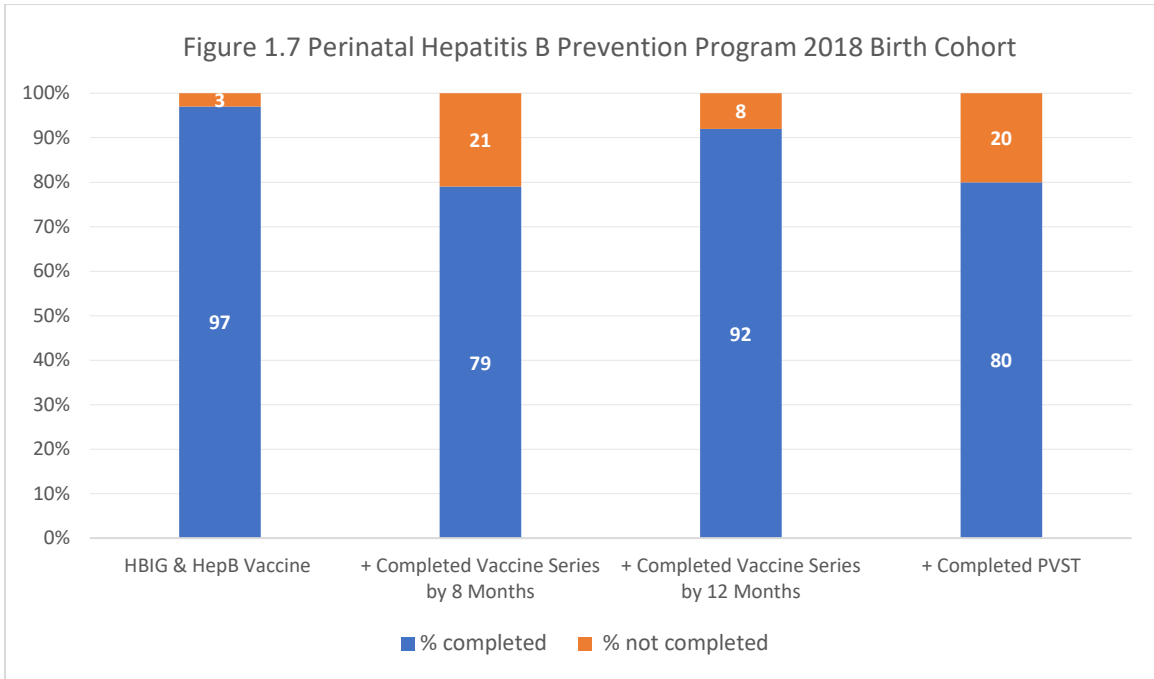
Program Goals are:

1. Screen every woman during every pregnancy for the presence of hepatitis B surface antigen (HBsAg) and record the test result prominently in the pregnant woman's and infant's hospital medical record.
2. Identify all pregnant women who have hepatitis B (positive HBsAg, positive hepatitis B e antigen [HBeAg], and/or detectable hepatitis B virus deoxyribonucleic acid [DNA]), and pregnant women with unknown status, and provide case management for their infant to ensure that the infant receives timely post exposure prophylaxis (hepatitis B immune globulin [HBIG] and hepatitis B vaccine), completes the hepatitis B vaccine series, and PVST consistent with [CDC guidance](#).
3. Adopt the universal hepatitis B vaccine birth dose by all birthing hospitals, which provides a "safety net" for the prevention of perinatal and early childhood infection.

For infants born during 2018 (Fig. 1.7):

- 246 infants were enrolled in the PHBPP.
- 239 infants (97%) received hepatitis B vaccine and HBIG within one calendar day of birth.
- 3 infants received hepatitis B vaccine only; 4 infants did not receive hepatitis B vaccine and HBIG within one calendar day of birth.
- 195 infants (79%) received hepatitis B vaccine and HBIG within one calendar day of birth and completed the hepatitis B vaccine series by eight months of age.
- 226 infants (92%) received hepatitis B vaccine and HBIG within one calendar day of birth and completed the hepatitis B vaccine series by 12 months of age.
- 197 infants (80%) completed PVST by the end of the reporting period (December 31, 2019).

The overall 2019 birth dose rate for 85 NYS birth hospitals (not including NYC) is 87%. Rates, since 2012, can be viewed on [Health Data NY](#). The percentage of infants who were born at a hospital during 2019 and received a dose of hepatitis B vaccine within three days of birth are represented in Fig. 1.8 by region. Rates range from 93% in the Central Region to 82% in the Metropolitan Region. Forty-two birth hospitals have a birth dose rate of 90% and above.



During 2019, 6,175 cases of hepatitis C were reported to the NYSDOH, including 11 perinatal cases (<1%), 253 acute cases (4%) and 5,911 newly reported chronic cases (96%). While this represents an overall 14% decrease since 2018, there was a 7% increase in acute cases, which are likely due to recent transmission, unlike chronic hepatitis C, which may have been transmitted decades earlier. Demographic characteristics of hepatitis C cases are in Table 2.1. Sixty-one percent of cases were among males. For both sexes, the largest number of cases, and the highest case rates, were in persons aged 30–39 years of age. Although persons born during 1945-1965 (“baby boomers”; age 54-74 years) have historically been considered to have the highest rates of hepatitis C infection, during 2019, rates of newly reported cases among baby boomers was 61.2/100,000 persons, compared with 121.5/100,000 persons among those aged 30-39 years.

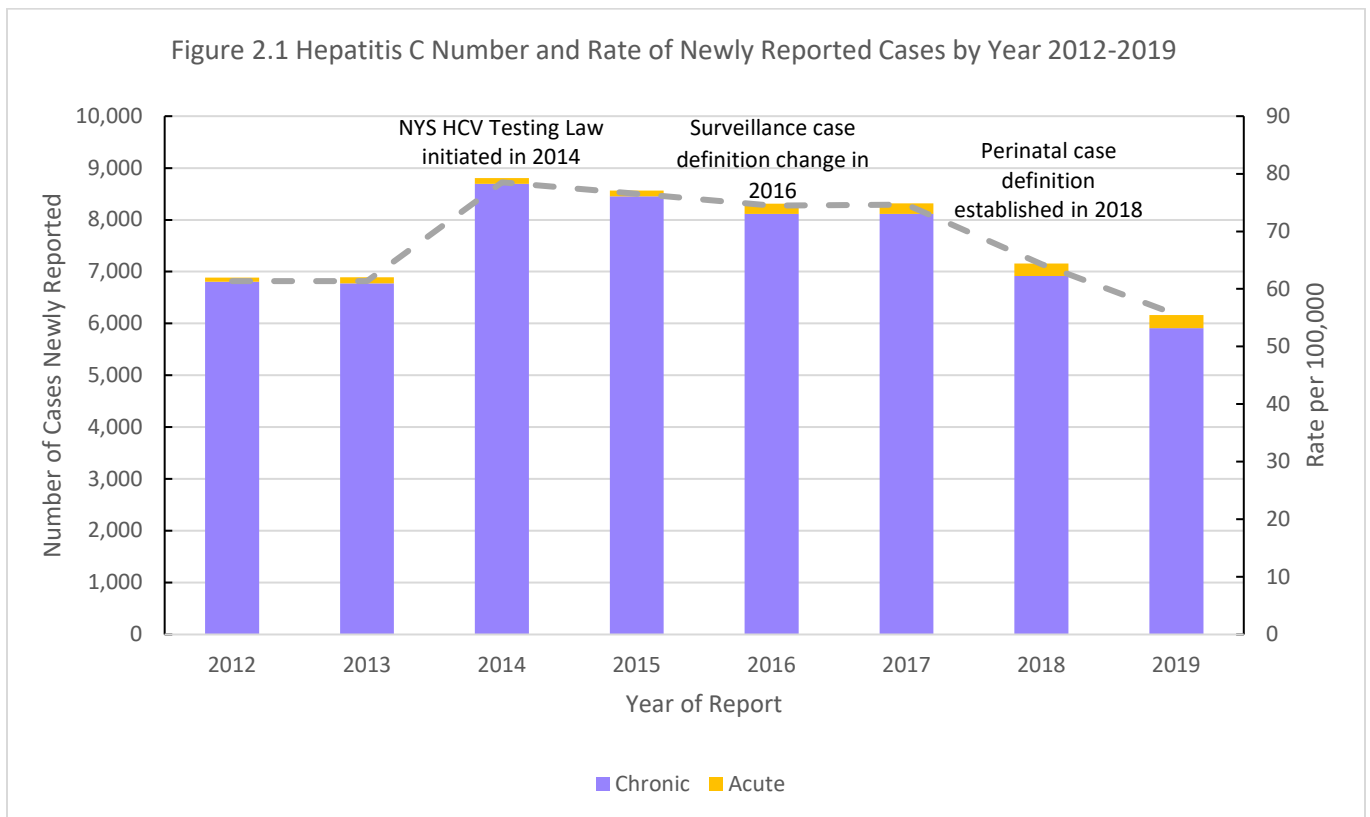
Race was unknown or missing for 34% of cases. Where race was reported, 78% of cases were among White persons. Ethnicity was unknown or missing for 63% of cases. Where ethnicity was known, 89% of cases were among non-Hispanic persons.

Three hundred eight hepatitis C cases were newly reported among persons incarcerated in DOCCS facilities (5.0% of all cases) and were typically identified upon intake screening. Thirty-nine cases were identified as female, and 269 as male. Cases among persons incarcerated in DOCCS facilities are excluded from the geographic analyses in this report, (i.e., analyses presenting counts by NYS region and/or county).

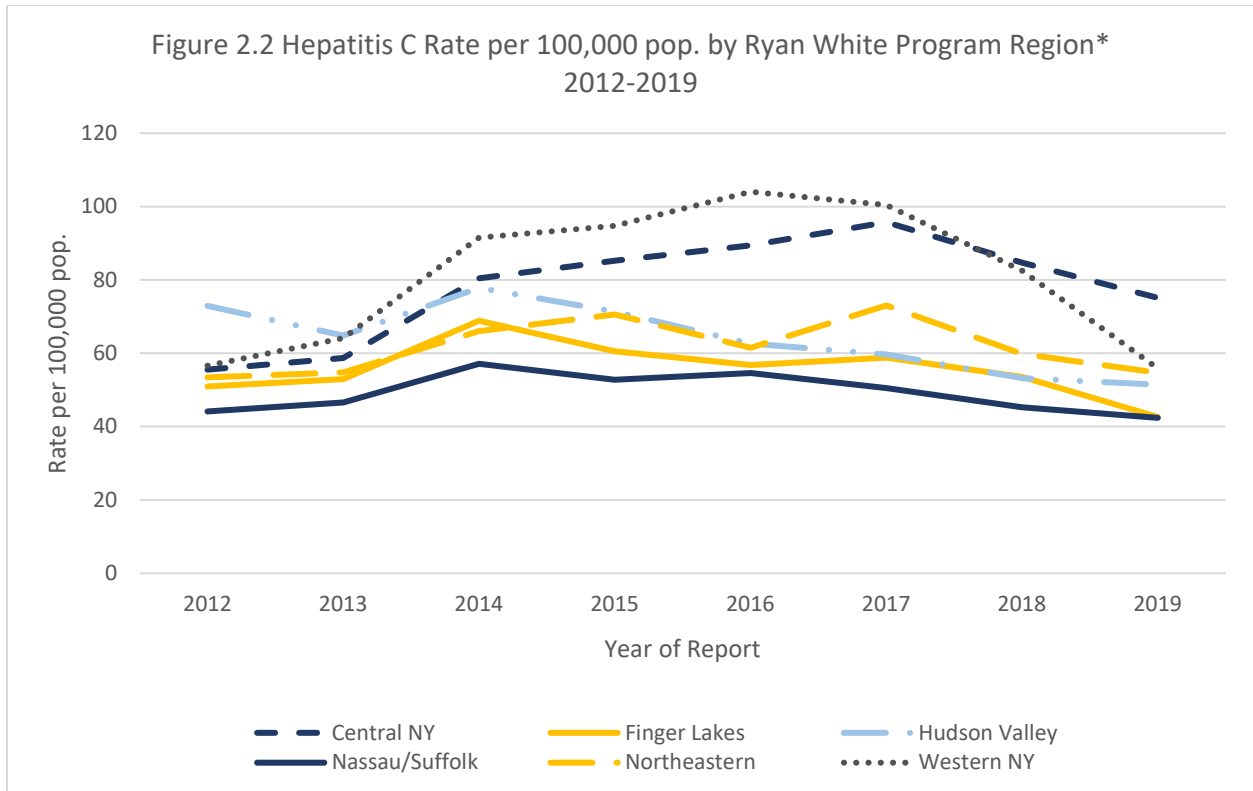
| Table 2.1 Hepatitis C Cases Newly Reported in 2019 |                 |                       |                 |                       |                 |                       |
|--|-----------------|-----------------------|-----------------|-----------------------|-----------------|-----------------------|
|  | Female          |                       | Male            |                       | Total           |                       |
|  | Number of Cases | Rate per 100,000 pop. | Number of Cases | Rate per 100,000 pop. | Number of Cases | Rate per 100,000 pop. |
| Total  | 2,378           | 42.1                  | 3,787           | 69.2                  | 6,175           | 55.5                  |
| Perinatal  | 3               | 1.7                   | 8               | 4.4                   | 11              | 3.1                   |
| Acute  | 115             | 2.1                   | 138             | 2.6                   | 253             | 2.4                   |
| Chronic  | 2,260           | 41.3                  | 3,641           | 68.9                  | 5,911           | 54.9                  |
| Age Groups (years)                                 |                 |                       |                 |                       |                 |                       |
| < 3 years (perinatal)                              | 3               | 1.7                   | 8               | 4.4                   | 11              | 3.1                   |
| 3-9  | 2               | 0.5                   | 0               | N/A                   | 3               | 0.3                   |
| 10-19  | 36              | 5.3                   | 29              | 4.1                   | 65              | 4.7                   |
| 20-29  | 595             | 83.9                  | 732             | 97.3                  | 1,329           | 91.0                  |
| 30-39  | 632             | 95.5                  | 993             | 146.9                 | 1,626           | 121.5                 |
| 40-49  | 320             | 48.4                  | 556             | 85.4                  | 878             | 66.9                  |
| 50-59  | 313             | 38.5                  | 586             | 75.4                  | 901             | 56.6                  |
| 60-69  | 305             | 42.0                  | 657             | 97.1                  | 963             | 68.7                  |
| 70+  | 169             | 21.3                  | 219             | 37.1                  | 388             | 28.1                  |
| Unknown  | 3               | N/A                   | 7               | N/A                   | 11              | N/A                   |
| Region*  |                 |                       |                 |                       |                 |                       |
| Western Region                                     | 520             | 36.7                  | 859             | 63.3                  | 1,383           | 49.8                  |
| Finger Lakes                                       | 199             | 30.9                  | 337             | 54.8                  | 537             | 42.6                  |
| Western NY   | 321             | 41.5                  | 522             | 70.5                  | 846             | 55.9                  |
| Central NY   | 512             | 59.9                  | 760             | 90.5                  | 1,273           | 75.1                  |
| Northeastern                                       | 340             | 45.3                  | 473             | 63.9                  | 815             | 54.7                  |
| Metropolitan Region                                | 967             | 36.8                  | 1,426           | 56.3                  | 2,396           | 46.5                  |
| Hudson Valley                                      | 467             | 39.6                  | 728             | 63.6                  | 1,195           | 51.4                  |
| Nassau-Suffolk                                     | 500             | 34.6                  | 698             | 50.3                  | 1,201           | 42.4                  |
|  | Number of Cases | Percent of Cases      | Number of Cases | Percent of Cases      | Number of Cases | Percent of Cases      |
| Race**   |                 |                       |                 |                       |                 |                       |
| White  | 1,242           | 52.2%                 | 1,911           | 50.5%                 | 3,155           | 51.1%                 |
| Black  | 151             | 6.3%                  | 327             | 8.6%                  | 478             | 7.7%                  |
| American Indian                                    | 15              | 0.6%                  | 24              | 0.6%                  | 39              | 0.6%                  |
| Asian/Pacific Islander                             | 35              | 1.5%                  | 38              | 1.0%                  | 74              | 1.2%                  |
| Other  | 112             | 4.7%                  | 193             | 5.1%                  | 305             | 4.9%                  |
| Unknown  | 823             | 34.6%                 | 1,294           | 34.2%                 | 2,124           | 34.4%                 |
| Ethnicity**  |                 |                       |                 |                       |                 |                       |
| Hispanic   | 63              | 2.6%                  | 197             | 5.2%                  | 260             | 4.2%                  |
| Non-Hispanic                                       | 828             | 34.8%                 | 1,196           | 31.6%                 | 2,026           | 32.8%                 |
| Unknown  | 1,487           | 62.5%                 | 2,394           | 63.2%                 | 3,889           | 63.0%                 |

Notes. Totals include 10 cases where sex is unknown \*Geographic assessments exclude persons incarcerated in DOCCS facilities  
 \*\*Rates per 100,000 population are not calculated due to the large number of cases with missing values

Figure 2.1 displays the number and annual rate of newly reported hepatitis C cases during 2019 and the previous seven years. Recent hepatitis C case trends are difficult to discern for at least two reasons. First, since January 2014, a state law (the “Hepatitis C Testing Law”) requires a one-time offer of an HCV screening test to all persons born during 1945-1965 who are receiving services as an inpatient of a hospital or in a primary care setting. An increase in the number of newly reported hepatitis C cases starting in 2014, in all regions, is attributable in part to changes in testing practices resulting from the law. Second, starting in 2016, a new case definition for hepatitis C has been in effect and has resulted in major changes to the way hepatitis C cases are counted based on laboratory results. Because the case definitions vary substantially, caution should be exercised when comparing numbers of cases of hepatitis C reported during 2016-2019 to cases reported during 2012-2015. There is a 14% decrease in the number of cases reported in 2019 (N=6,175) compared to the ones reported during 2018 (N=7,165). However, in 2019 there is a 7% increase in the number of newly reported acute cases, which is an indication of more recent infection.



Case rates varied widely by region during 2019. The largest number of cases was in the Central New York (N=1,273) and Nassau/Suffolk (N=1,201) regions. The highest case rates were reported in the Central (75.1/100,000 persons) and in Western New York (55.9/100,000 persons; Table 2.1 and Fig 2.2).



\* Geographic assessments exclude persons incarcerated in DOCCS

However, case rates also varied by county and were not evenly distributed within a region (Fig. 2.3a). The counties with the highest rates were Broome, Chautauqua, Essex, Franklin, and Sullivan. The counties with the highest case counts were Erie, Nassau, Onondaga, Suffolk, and Westchester (Figure 2.3b).



Figure 2.3a Hepatitis C Rate per 100,000 pop. by County New York State, Including Chronic, Acute, and Perinatal cases, Excluding Cases in Persons Incarcerated in DOCCS facilities, 2019 Newly Diagnosed Cases

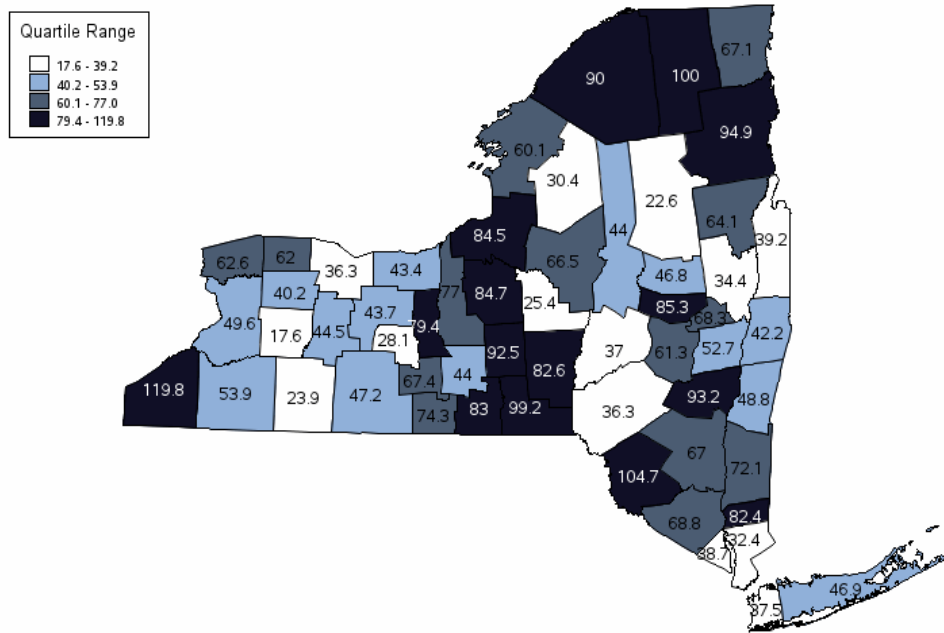
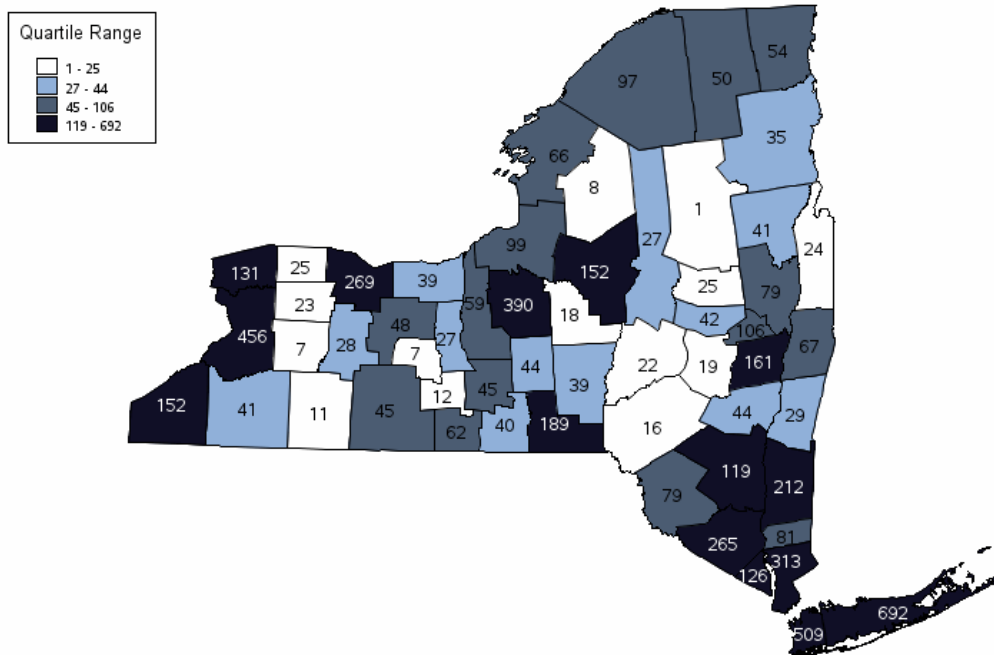


Figure 2.3b Hepatitis C Newly Reported Cases by County New York State, Including Chronic, Acute, and Perinatal Cases, Excluding Cases in Persons Incarcerated in DOCCS, 2019



Figures 2.4a-c display the number of hepatitis C cases newly reported during 2008, 2012, and 2019 by sex and birth year. A similar trend can be observed for both males and females. During 2008, 67% of reported cases were in baby boomers (persons born 1945-1965), and 15% were in persons aged 15-35 years. During 2012, 53% of cases were in baby boomers, and 28% were in persons aged 15-35. By 2019, more cases were reported in the younger ages than in the baby boomers. In 2019, 29% of reported cases were among baby boomers while the proportion of cases in persons aged 15-35 years of age had increased to approximately 40%.

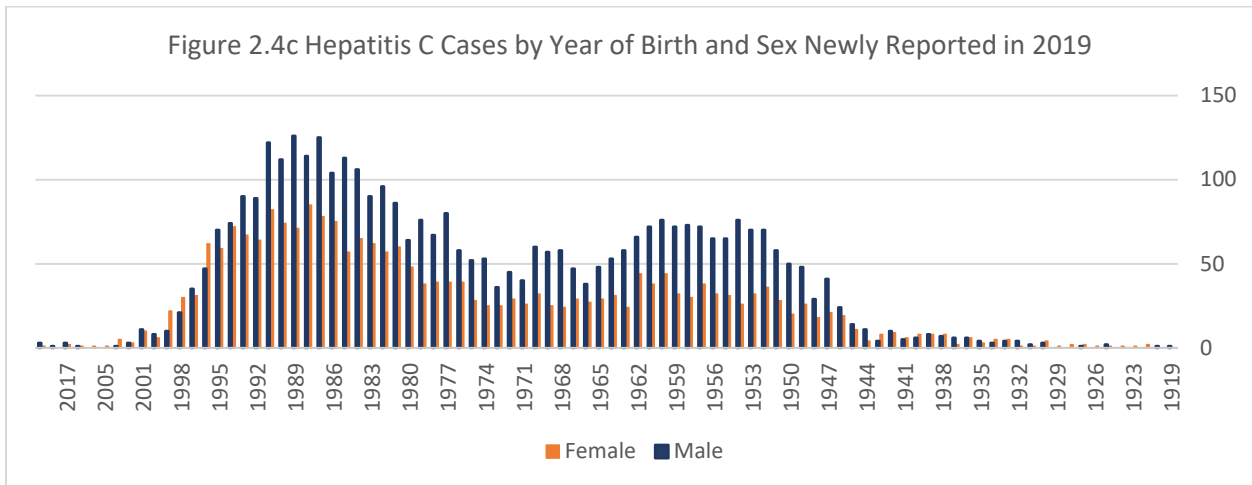
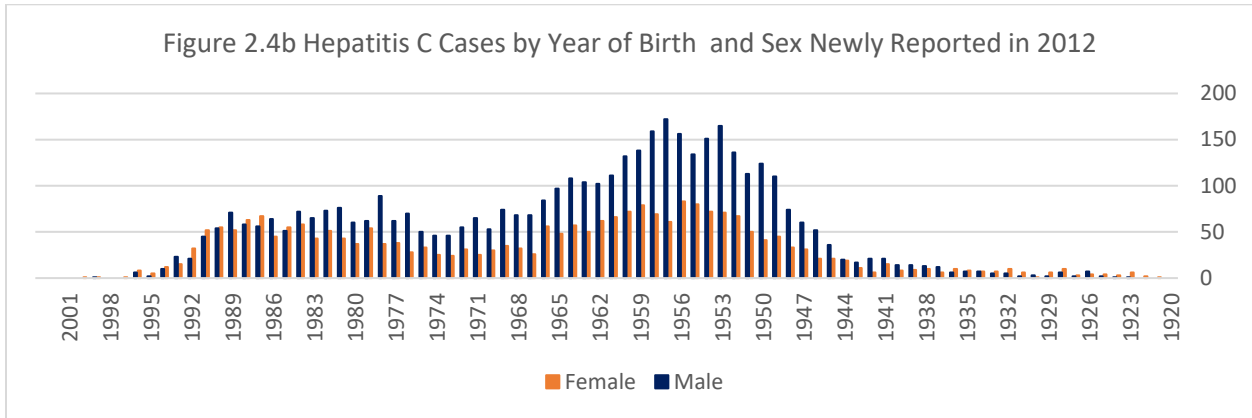
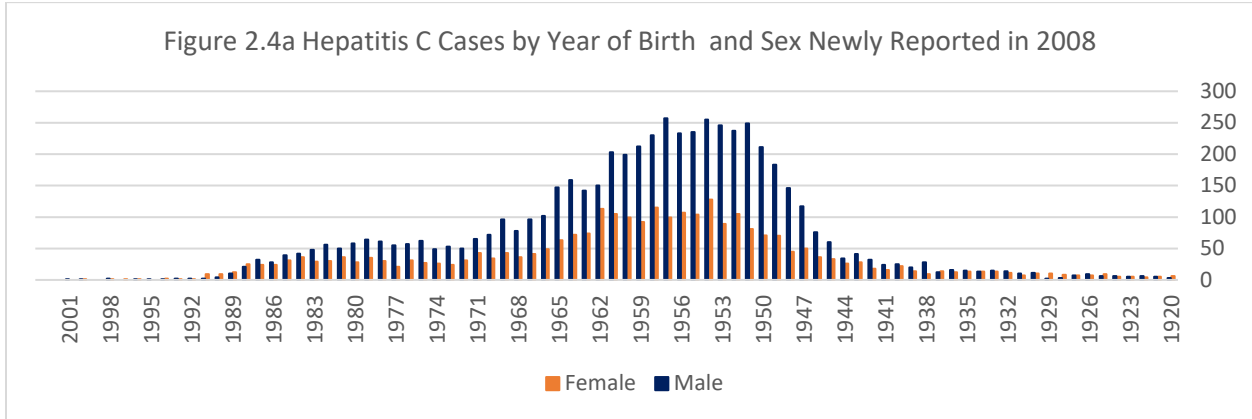


Figure 2.4d shows the steady decline in the median age of cases at time of report during 2012-2019. The median age for females is a few years younger than for males during each year. The increase in median age during 2014 compared with 2013 is likely a result of the initiation of the Hepatitis C Testing Law, which targeted baby boomers. For both sexes, the median age at the time of report has declined by about 10 years between 2012-2019.

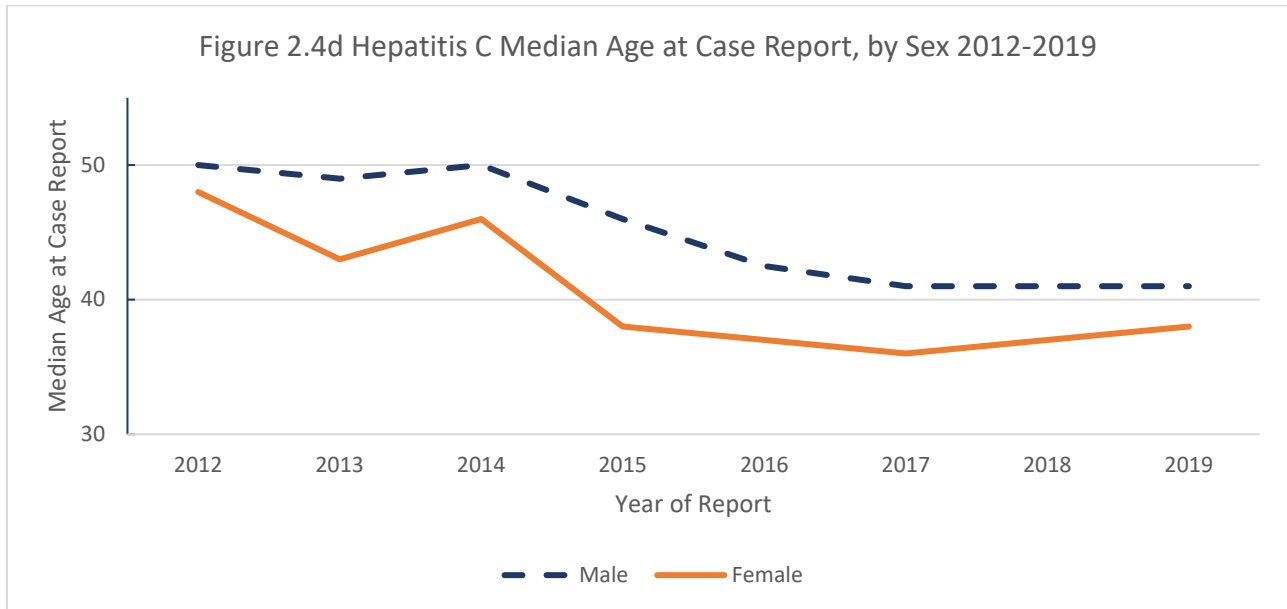
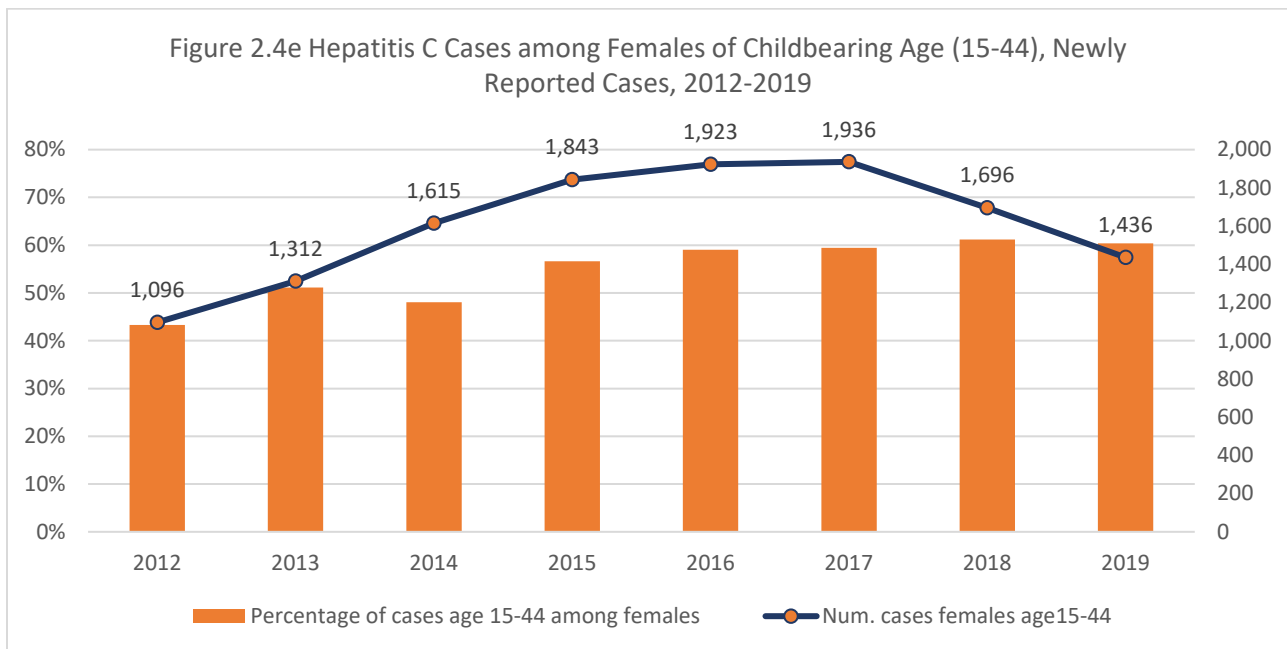
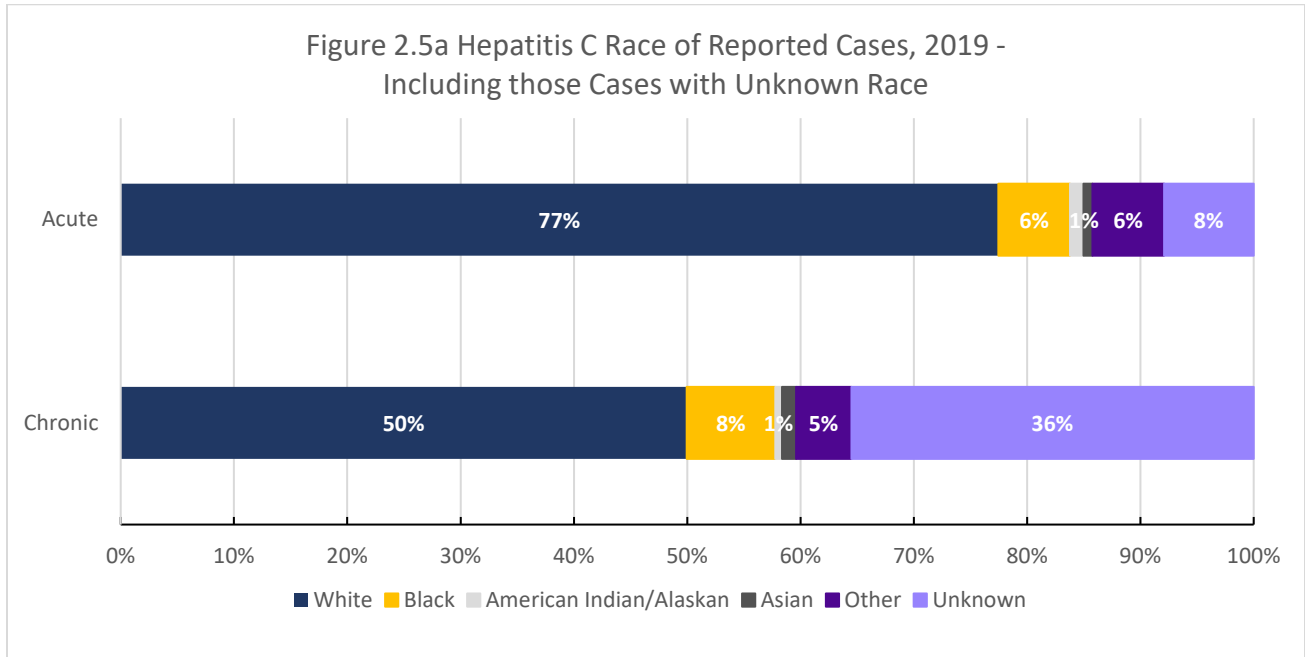


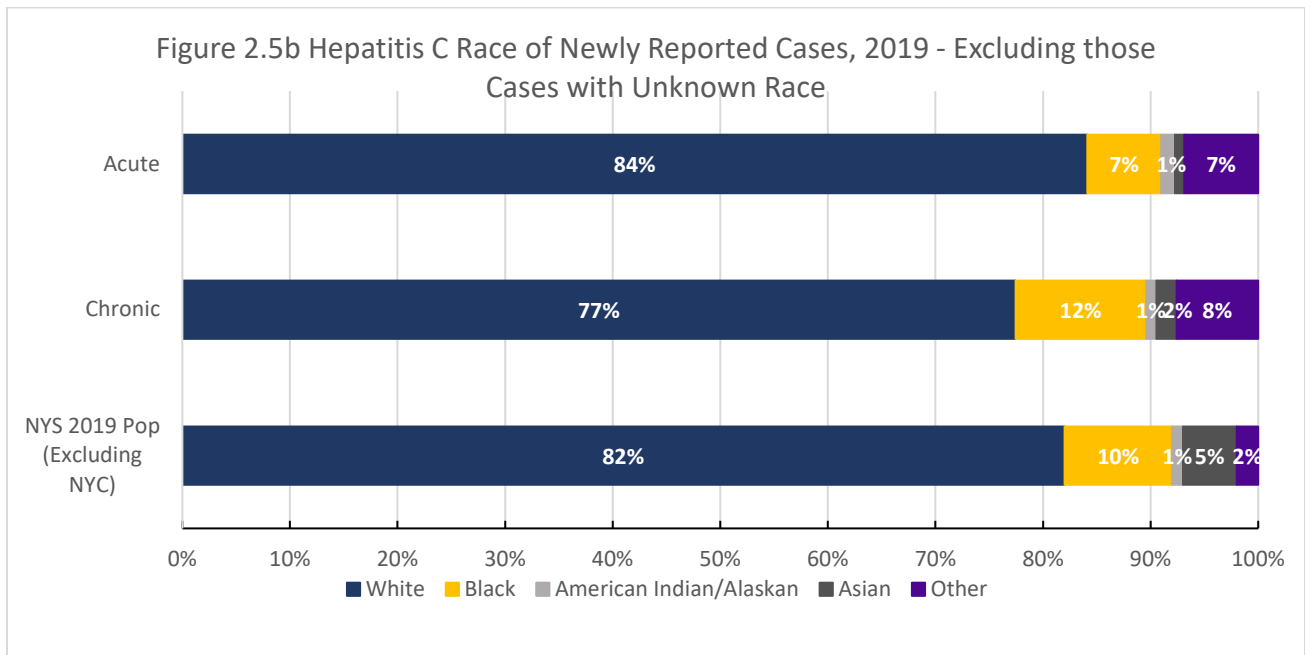
Figure 2.4e presents the trend in newly reported cases among females. Almost 40% of all cases are among females, of those 60% are among females of childbearing age.



The distribution of race varied with whether the case was classified as acute or chronic hepatitis C. Figure 2.5a shows the distribution of race among all cases of hepatitis C reported during 2019. Note that race data were missing for 8% of acute and 36% of chronic hepatitis C cases.

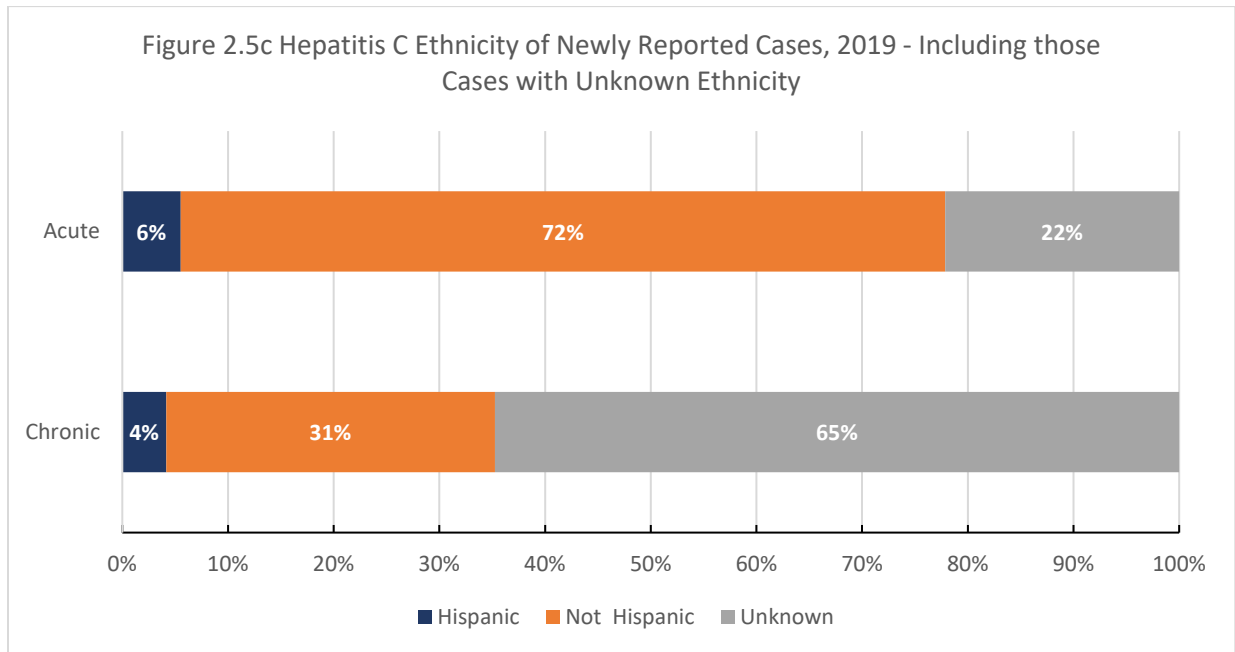


Note. The percentage of acute hepatitis C cases among American Indian/Alaskan and Asian is 1%. The percentage of chronic hepatitis C cases among American Indian/Alaskan and Asian is 1%.

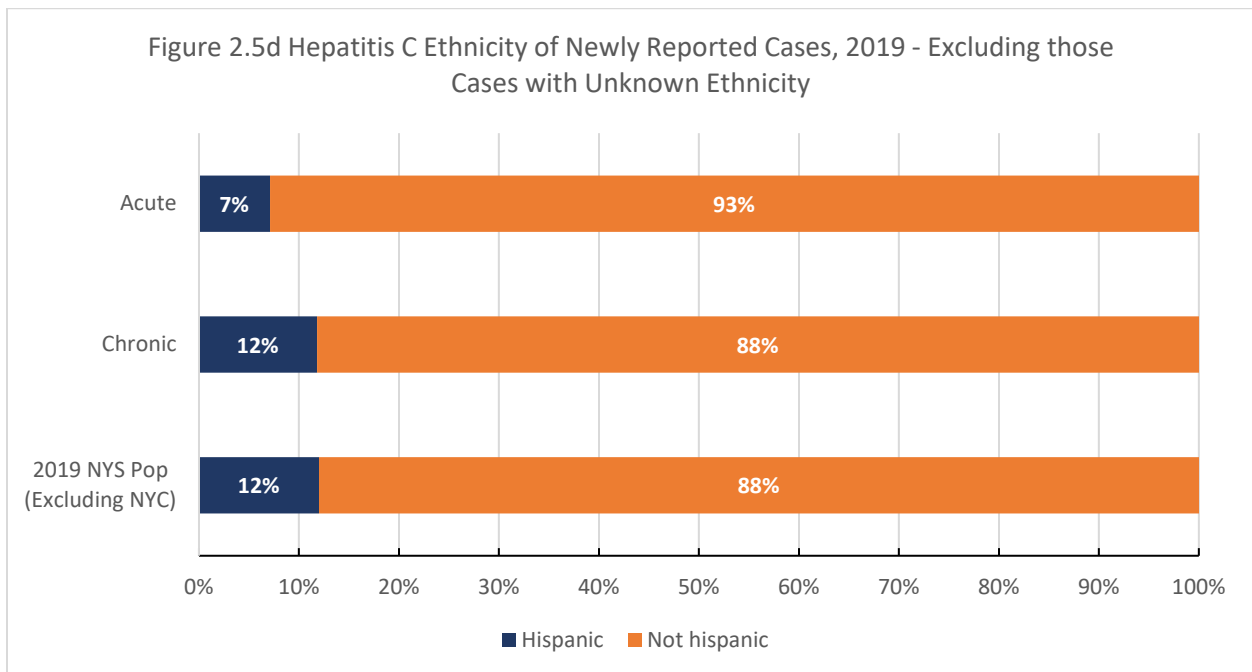


Note. The percentage of acute hepatitis C cases among American Indian/Alaskan and Asian is 1%. The percentage of chronic hepatitis C cases among American Indian/Alaskan is 1% and among Asian is 2%.

Figure 2.5c shows the distribution of Hispanic ethnicity among all hepatitis C cases reported during 2019. Note that ethnicity data were missing for 22% of acute hepatitis C and 65% of chronic hepatitis C cases.

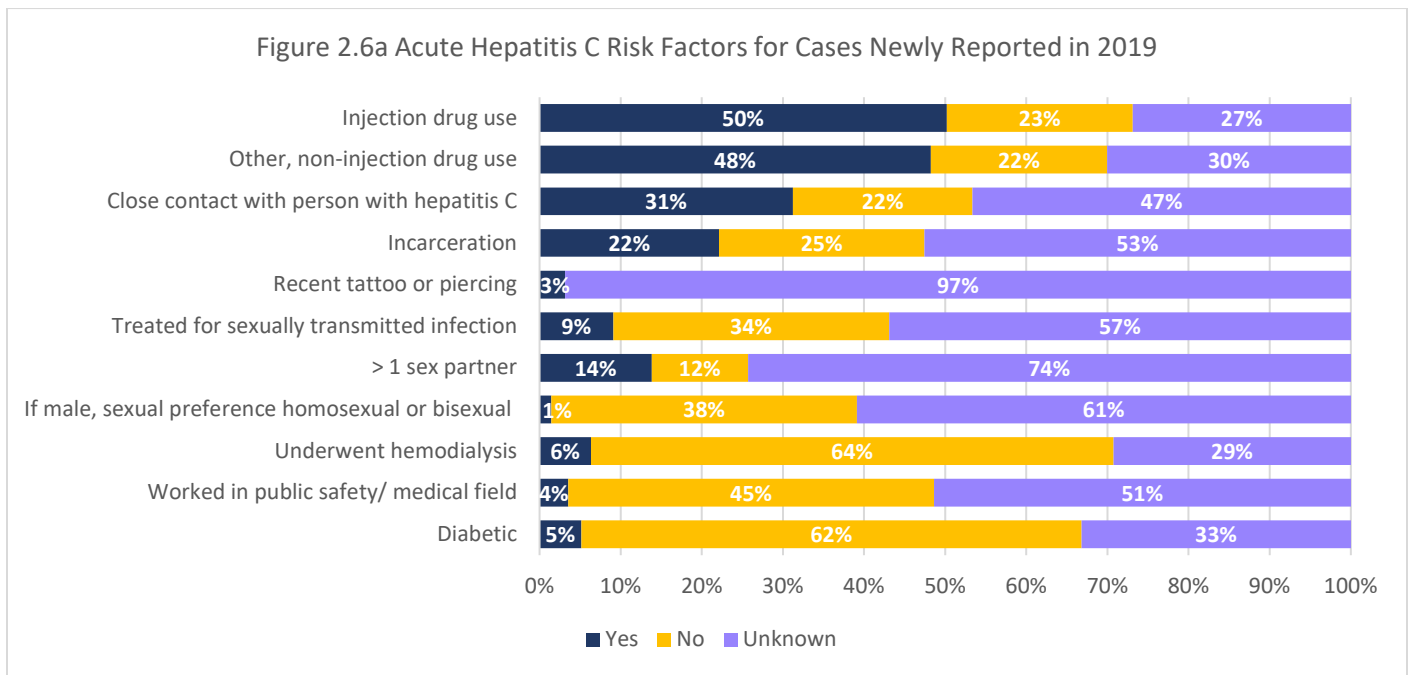


Where ethnicity was reported (i.e., not missing or unknown), ethnicity was non-Hispanic for 93% of acute hepatitis C cases and 88% of chronic hepatitis C cases (Fig 2.5d). Data may be subject to recording error and biases related to the ability of laboratories to report race and ethnicity.



For acute cases, risk factors and exposures are determined for the six-month period before illness onset or test conversion. Selected risk factor information for acute hepatitis C cases are summarized in Table 2.6a. Risk factors are not mutually exclusive, multiple risks can be reported for a single case. Depending on risk factor, the percent of cases with unknown or missing information ranged from 27-97% (Fig. 2.6a).

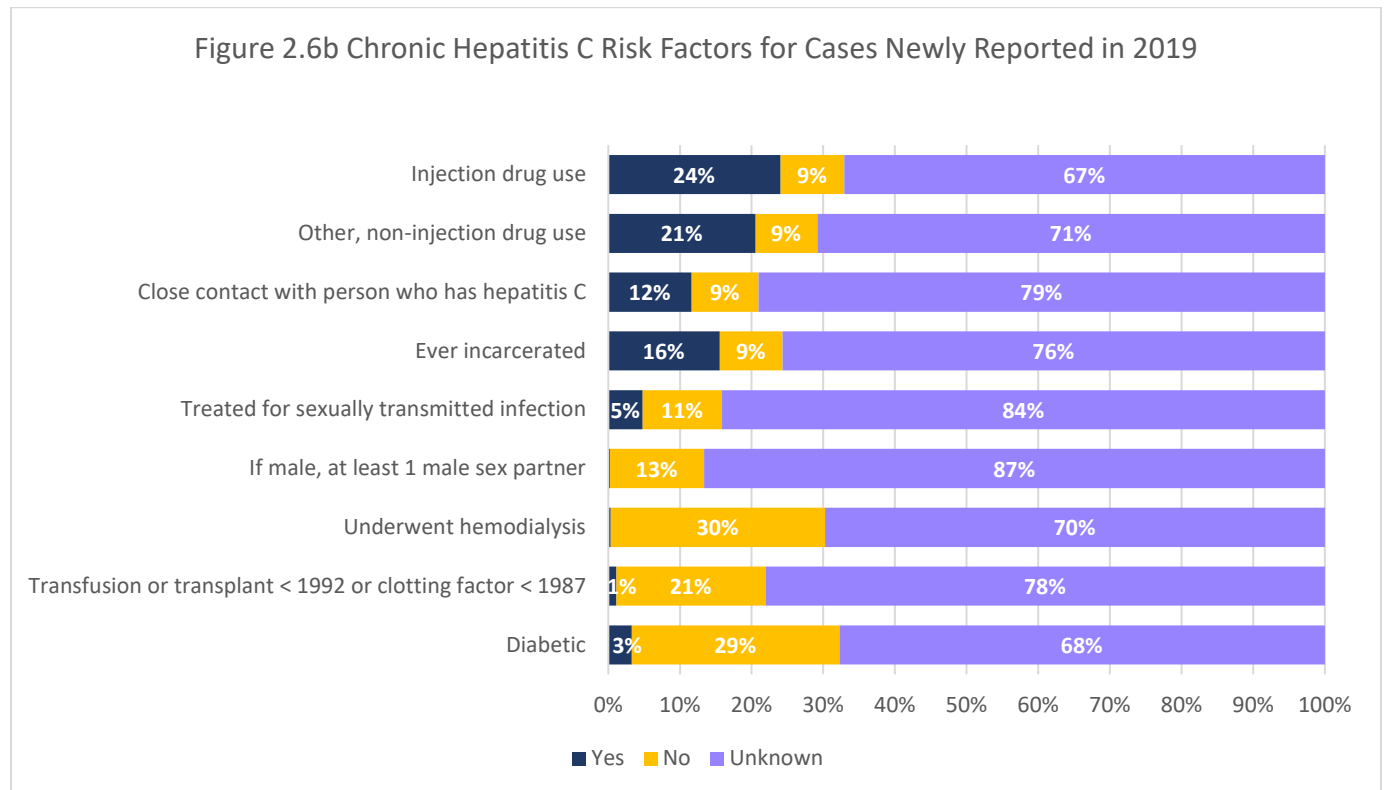
|   | Number of cases |     |         | Total |
|---|-----------------|-----|---------|-------|
|   | Yes             | No  | Unknown |       |
| Injection drug use                                | 127             | 58  | 68      | 253   |
| Other, non-injection drug use                     | 122             | 55  | 76      | 253   |
| Close contact with person with hepatitis C        | 79              | 56  | 118     | 253   |
| Incarceration                                     | 56              | 64  | 133     | 253   |
| Recent tattoo or piercing                         | 8               | 0   | 245     | 253   |
| Treated for sexually transmitted infection        | 23              | 86  | 144     | 253   |
| > 1 sex partner                                   | 35              | 30  | 188     | 253   |
| If male, sexual preference homosexual or bisexual | 2               | 52  | 84      | 138   |
| Underwent hemodialysis                            | 16              | 163 | 74      | 253   |
| Worked in public safety/medical field             | 9               | 114 | 130     | 253   |
| Diabetic  | 13              | 156 | 84      | 253   |



For chronic cases, risk factors and exposures are determined over the patient's lifetime. Selected risk factor information for chronic hepatitis C cases are summarized in Table 2.6b.

|  | Number of cases |       |         | Total |
|--|-----------------|-------|---------|-------|
|  | Yes             | No    | Unknown |       |
| Injection drug use   | 1,420           | 526   | 3,965   | 5,911 |
| Other, non-injection drug use  | 1,214           | 510   | 4,187   | 5,911 |
| Close contact with person who has hepatitis C                          | 688             | 552   | 4,671   | 5,911 |
| Ever incarcerated  | 920             | 517   | 4,474   | 5,911 |
| Treated for sexually transmitted infection                             | 284             | 655   | 4,972   | 5,911 |
| If male, at least 1 male sex partner                                   | 9               | 478   | 3,154   | 3,641 |
| Underwent hemodialysis   | 19              | 1,769 | 4,123   | 5,911 |
| Blood transfusion or organ transplant < 1992 or clotting factor < 1987 | 67              | 1,230 | 4,614   | 5,911 |
| Diabetic   | 195             | 1,711 | 4,005   | 5,911 |

Depending on risk factor, the percent of cases with unknown or missing information ranges from 67-87% (Fig. 2.6b).



## Hepatitis C Testing Program

The NYSDOH AIDS Institute Hepatitis C Testing Program provides free hepatitis C virus (HCV) rapid antibody test kits and HCV ribonucleic acid (RNA) testing by dried blood spot (DBS) to agencies serving underinsured individuals at highest risk for HCV infection. A more detailed description of this program is available online.<sup>2</sup> In 2019, 49 agencies were enrolled across the state, with at least one in each region (including New York City).

The HCV Testing Program enrolls a variety of agencies including: local health departments, syringe exchange programs, community-based organizations, community health clinics, hospitals performing community outreach, and local county jails.

Clients with a reactive HCV antibody test must also receive an HCV RNA test in order to diagnose current infection. Twenty-three agencies offered referrals for follow-up RNA testing to other offsite providers. The remaining 26 programs offered free onsite HCV RNA testing with 7 collection whole-blood specimens via venipuncture and 19 collecting specimens through DBS.

DBS testing uses drops of blood collected by a finger stick, making onsite HCV RNA testing more feasible. The less invasive DBS test may be more acceptable to clients.

In 2019, of 6,539 clients tested for HCV as part of the HCV Testing Program, 951 (14.5%) were found to have a reactive HCV antibody test. There was variation in reactivity rates by gender, race, ethnicity, age, injection drug use history, insurance and housing status. (Table 3.1)

- Reactivity rates were slightly higher among females (15.8%) and were lowest for those identifying as transgender (3.0%).
- Among those with a known race, reactivity rates were highest among clients reporting a non-specified 'other' race (32.7%), multiple races (19.2%) and White race (18.2%), but lower among Blacks (6.6%).
- Among those with a known ethnicity, Hispanics had higher reactivity rates (17.8%) than non-Hispanics (13.2%).
- Among those with a known age, reactivity rates were lowest in the youngest age groups (5.0% in those 19 years or younger) and highest among clients in their 30s (18.1%) and 40s (16.0%).
- Injection drug use (IDU) was the most commonly reported HCV risk factor (33.9%). Clients reporting a history of IDU had reactivity rate of 37.5%.
- Clients reporting homelessness had higher reactivity rates (24.5%) than clients with other types of housing.
- Reactivity rates were also higher among clients covered by Medicaid or Medicare (25.7%) than those with other types of insurance.

Acceptance of HCV RNA testing was more common at agencies offering onsite RNA testing collected via DBS than via venipuncture or referrals for RNA testing by another provider (Figure

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<sup>2</sup> See New York State Department of Health Hepatitis C Testing Program fact sheet at:  
<https://www.health.ny.gov/publications/1805.pdf>.



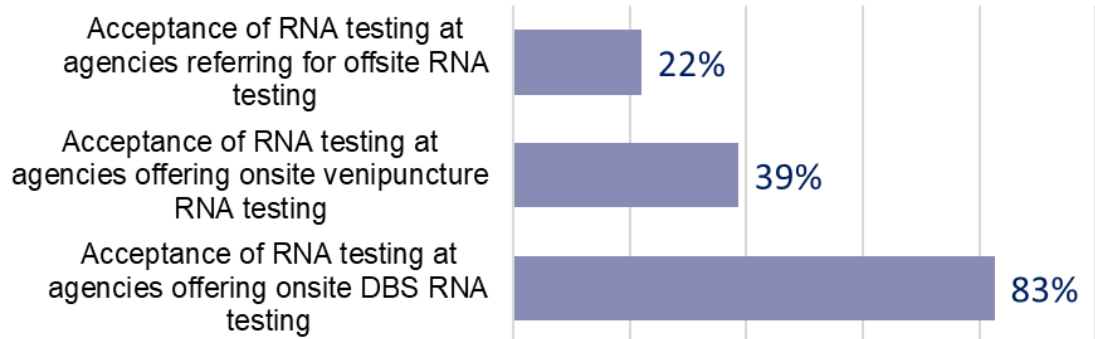
3.1). This is consistent with the results of a client survey conducted through 2019 by the AIDS Institute as part of the pilot test of DBS testing that found:

- 94% said the fact that they were able to get both the HCV antibody and RNA tests done at the same visit was helpful.
- 80% stated they accepted the HCV RNA test because it was offered by a fingerstick.
- 95% said they would recommend DBS testing to a friend or peer.

| Table 3.1 Client Characteristics and HCV Rapid Testing Reactivity of all Clients Tested for HCV Antibodies (Ab)<br>NYSDOH HCV Testing Program: 2019 |                                     |               |                               |                    |                            |                                  |
|---|-------------------------------------|---------------|-------------------------------|--------------------|----------------------------|----------------------------------|
| Characteristic  |                                     | Number Tested | Percent of All Clients Tested | Number Ab+ Clients | Percent of All Ab+ Clients | Reactivity Rate (# Ab+/# Tested) |
| Total   |                                     | 6,539         | 100.0%                        | 951                | 100.0%                     | 14.5                             |
| <b>Gender</b>   |                                     |               |                               |                    |                            |                                  |
|   | Male                                | 4,015         | 61.4%                         | 559                | 58.8%                      | 13.9                             |
|   | Female                              | 2,269         | 34.7%                         | 359                | 37.7%                      | 15.8                             |
|   | Transgender                         | 100           | 1.5%                          | 3                  | 0.3%                       | 3.0                              |
|   | Not sure/Questioning                | 41            | 0.6%                          | 6                  | 0.6%                       | 14.6                             |
|   | NonBinary/Nonconforming             | 11            | 0.2%                          | 0                  | 0.0%                       | 0.0                              |
|   | Unknown/Refused                     | 103           | 1.6%                          | 24                 | 2.5%                       | 23.3                             |
| <b>Race</b>   |                                     |               |                               |                    |                            |                                  |
|   | White                               | 3,791         | 58.0%                         | 691                | 72.7%                      | 18.2                             |
|   | Black                               | 2,227         | 34.1%                         | 148                | 15.6%                      | 6.6                              |
|   | Multiple Races                      | 245           | 3.7%                          | 47                 | 4.9%                       | 19.2                             |
|   | Other Race                          | 107           | 1.6%                          | 35                 | 3.7%                       | 32.7                             |
|   | Native American/Alaskan Native      | 72            | 1.1%                          | 13                 | 1.4%                       | 18.1                             |
|   | Asian                               | 65            | 1.0%                          | 1                  | 0.1%                       | 1.5                              |
|   | Hawaiian                            | 10            | 0.2%                          | 3                  | 0.3%                       | 30.0                             |
|   | Unknown/Refused                     | 22            | 0.3%                          | 13                 | 1.4%                       | 59.1                             |
| <b>Ethnicity</b>  |                                     |               |                               |                    |                            |                                  |
|   | Hispanic                            | 1,667         | 25.5%                         | 296                | 31.1%                      | 17.8                             |
|   | Non-Hispanic                        | 4,849         | 74.2%                         | 642                | 67.5%                      | 13.2                             |
|   | Unknown                             | 23            | 0.4%                          | 13                 | 1.4%                       | 56.5                             |
| <b>Age</b>  |                                     |               |                               |                    |                            |                                  |
|   | ≤19 years                           | 221           | 3.4%                          | 11                 | 1.2%                       | 5.0                              |
|   | 20-29 years                         | 1,655         | 25.3%                         | 192                | 20.2%                      | 11.6                             |
|   | 30-39 years                         | 1,712         | 26.2%                         | 310                | 32.6%                      | 18.1                             |
|   | 40-49 years                         | 1,118         | 17.1%                         | 179                | 18.8%                      | 16.0                             |
|   | 50+ years                           | 1,810         | 27.7%                         | 246                | 25.9%                      | 13.6                             |
|   | Unknown                             | 23            | 0.4%                          | 13                 | 1.4%                       | 56.5                             |
| <b>History of Injection Drug Use (IDU)</b>  |                                     |               |                               |                    |                            |                                  |
|   | Yes                                 | 2,218         | 33.9%                         | 831                | 87.4%                      | 37.5                             |
|   | No                                  | 4,321         | 66.1%                         | 120                | 12.6%                      | 2.8                              |
| <b>Insurance*</b>   |                                     |               |                               |                    |                            |                                  |
|   | Medicaid or Medicare                | 1,240         | 27.6%                         | 321                | 42.3%                      | 25.9                             |
|   | Private(Employer or Individual)     | 288           | 6.4%                          | 27                 | 3.6%                       | 9.4                              |
|   | Other(other/no insurance, self-pay) | 283           | 6.3%                          | 36                 | 4.7%                       | 12.7                             |
|   | Other Insurance                     | 107           | 2.4%                          | 15                 | 2.0%                       | 14.0                             |
|   | Unknown                             | 2,567         | 57.2%                         | 360                | 47.4%                      | 14.0                             |
| <b>Housing*</b>   |                                     |               |                               |                    |                            |                                  |
|   | Permanent Housing: Owns/Rents       | 2,131         | 47.5%                         | 294                | 38.7%                      | 13.8                             |
|   | Temporary or Institutional Housing  | 1,011         | 22.5%                         | 187                | 24.6%                      | 18.5                             |
|   | Unstable Housing: Homeless/Shelter  | 641           | 14.3%                         | 157                | 20.7%                      | 24.5                             |
|   | Transitional Housing                | 331           | 7.4%                          | 65                 | 8.6%                       | 19.6                             |
|   | Correctional Facility (Jail/Prison) | 167           | 3.7%                          | 22                 | 2.9%                       | 13.2                             |
|   | Unknown                             | 204           | 4.5%                          | 34                 | 4.5%                       | 16.7                             |

\* Status shown for 4,485 clients recorded in AIRS, where information on insurance and housing is collected.  
Data as of 10/23/2020

**Figure 3.1 Acceptance of RNA Testing Among Clients with Positive HCV Antibody Test by Availability and Type of Onsite RNA Testing\***



\* NYSDOH HCV Testing Program, 2019

## **NYS Hepatitis C Patient Navigation Initiative**

The NYS Hepatitis C Patient Navigation (PN) initiative aims to increase the number of persons who inject drugs (PWID) who know their HCV status and are linked to HCV medical care and treatment by addressing patient- and systems-level barriers to HCV care and treatment. Additional information about this initiative is available online.<sup>3</sup>

The PN initiative is based in Drug User Health Hubs (Health Hubs) located outside of New York City. These Health Hubs are expansions of Syringe Exchange Programs (SEPs) and are intended to improve the availability and accessibility of an array of appropriate health, mental health, and medication assisted treatment services for people who use drugs, including PWID.

Since November 2018, the NYSDOH AIDS Institute has funded seven Health Hubs, to increase the number of HCV-infected PWID who are successfully linked to medical care and treated for their HCV disease.

A description of clients enrolled during the first year of the initiative (Nov. 1, 2018 through Oct. 31, 2019), can be seen in Table 4.1.

- 76.7% were identified as White, 11.8% were Hispanic, and 7.4% were Black.
- Most (66.8%) identified their gender as man/boy, 32.6% identified as woman/girl, and 0.3% identified as transgender male.
- The majority of clients (69.3%) were under the age of 40.
- Almost all (95.0%) reported a history of injection drug use.
- Many (41.6%) were on medication-assisted therapy for opioid dependence.
- Over half (56.4%) were enrolled in Medicaid or Medicare.
- Less than half (42.7%) had permanent housing, 34.8% were in temporary or institutional housing (living with friends or relations, residential group home or drug treatment facility), and 13.2% had unstable housing (sheltered or unsheltered homeless).

The HCV Care Continuum (Figure 4.1) describes key steps patients must take to complete the treatment process and be cured of their HCV. A summary of the results for clients enrolled during the first year of the initiative (Nov. 1, 2018 through Oct. 31, 2019), reflecting their status as of Aug. 3, 2020 follows.

- Of 365 patients enrolled, 86% received an HCV RNA test.
- Of 312 patients who had an RNA test, 83% were found to be infected with HCV.
- Of 259 patients with chronic HCV, 66% were linked to care.
- Of 170 patients who were linked to care, 83% initiated treatment.
- Of 141 patients who initiated treatment, 83% completed treatment.
- Of 117 patients who completed treatment, 45% were assessed for cure.
- Of 53 patients who were assessed for cure, 91% were cured.

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<sup>3</sup> See fact sheet available online at

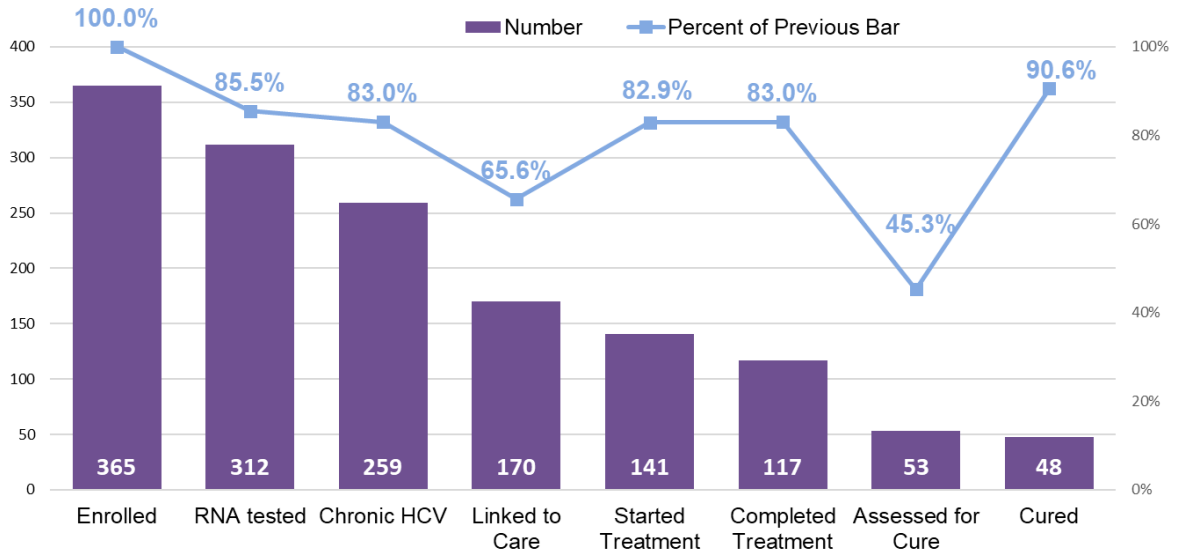
[https://www.health.ny.gov/diseases/communicable/hepatitis/hepatitis\\_c/docs/patient\\_navigation\\_program.pdf](https://www.health.ny.gov/diseases/communicable/hepatitis/hepatitis_c/docs/patient_navigation_program.pdf)

| <b>Table 4.1 Patient Characteristics*</b>                                   |               |                |
|---|---------------|----------------|
| <b>NYSDOH HCV Patient Navigation Initiative, Nov. 1, 2018-Oct. 31, 2019</b> |               |                |
| <b>Characteristic</b>   | <b>Number</b> | <b>Percent</b> |
| Total   | 365           | 100.0%         |
| <b>Gender</b>   |               |                |
| Man/Boy   | 244           | 66.8%          |
| Woman/Girl  | 119           | 32.6%          |
| Transgender Man/Boy   | 1             | 0.3%           |
| Chose not to respond  | 1             | 0.3%           |
| <b>Race/Ethnicity</b>   |               |                |
| White   | 280           | 76.7%          |
| Hispanic  | 43            | 11.8%          |
| Black   | 27            | 7.4%           |
| Native American/Alaskan Native  | 10            | 2.7%           |
| Hawaiian/Pacific Islander   | 3             | 0.8%           |
| Asian   | 1             | 0.3%           |
| Other Race/Ethnicity  | 1             | 0.3%           |
| <b>Age</b>  |               |                |
| ≤ 29  | 83            | 22.7%          |
| 30-39   | 170           | 46.6%          |
| 40-49   | 71            | 19.5%          |
| 50-59   | 30            | 8.2%           |
| 60-69   | 11            | 3.0%           |
| <b>Injection Drug Use (IDU)</b>   |               |                |
| History of IDU  | 347           | 95.0%          |
| No IDU Reported   | 17            | 4.7%           |
| Unknown   | 1             | 0.3%           |
| <b>Any Medication Assisted Therapy (MAT) for Opioid Dependence**</b>        |               |                |
| Yes   | 152           | 41.6%          |
| No  | 114           | 31.2%          |
| Unknown   | 99            | 27.1%          |
| <b>Insurance</b>  |               |                |
| Medicaid or Medicare  | 206           | 56.4%          |
| Private(Employer or Individual)   | 30            | 8.2%           |
| None/Self-Pay   | 25            | 6.8%           |
| Other Insurance   | 6             | 1.6%           |
| Unknown   | 98            | 26.8%          |
| <b>Housing Status</b>   |               |                |
| Permanent Housing: Owns/Rents   | 156           | 42.7%          |
| Temporary or Institutional Housing  | 127           | 34.8%          |
| Unstable Housing: Homeless/Shelter  | 48            | 13.2%          |
| Transitional Housing  | 22            | 6.0%           |
| Correctional Facility (Jail/Prison)   | 9             | 2.5%           |
| Unknown   | 3             | 0.8%           |

\*Unless otherwise noted, data obtained 8/3/2020

\*\* Data obtained 9/1/2020

**Figure 4.1 HCV Care Continuum: NYSDOH Patient Navigation Initiative Year 1\***



\*Includes patients enrolled any time from Nov. 1, 2018 through Oct. 31, 2019 and reflects treatment status as of Aug. 3, 2020.

## NYS Hepatitis C Care and Treatment Initiative

Since April 2015, the NYSDOH AIDS Institute has funded 15 primary care sites across NYS and NYC to integrate linkage to care activities and hepatitis C care, treatment, and supportive services into their existing primary care structure. The purpose of this five-year initiative is to create an innovative hepatitis C care and treatment model that will eliminate patient, provider and health care system barriers and increase the number of HCV-infected people who are linked to care, initiate and complete treatment, and are cured of their disease. Additional information about this initiative is available online.<sup>4</sup>

Funded sites include community health centers, hospital-based clinics and drug treatment programs, including a methadone maintenance treatment program.

Table 5.1 describes the patient population served during this initiative's first four years (April 1, 2015 through March 31, 2019).

- 58.0% identified as non-White.
- Most (67.1%) identified their gender as man/boy, 32.6% identified as woman/girl, 0.1% identified as transgender -man/boy and 0.1% identified as transgender woman/girl.
- A third (33.7%) were under the age of 40 and 26.8% were in their 50s.
- Almost three quarters (74.3%) reported a history of injection drug use.
- Most (96.6%) had some form of health insurance. Most (75.3%) were covered by Medicaid.
- While 62.2% had permanent housing, 23.7% lived in temporary or institutional housing (including living with family/friends, inpatient drug treatment facilities or group homes), and 9.0% had unstable housing (sheltered or unsheltered homeless).

The HCV care continuum describes key steps patients must take to complete the treatment process and be cured of their HCV. Cumulative results from the initiative's first four years can be seen in the HCV care continuum presented in Figure 5.1. Highlights include:

- 6,640 patients were enrolled in the program with a positive HCV antibody test.
- 74% of patients who were linked to care, initiated treatment for hepatitis C.
- Among those who initiated treatment, 92% completed treatment.
- 98% of patients who initiated treatment and completed their final HCV RNA test were cured of hepatitis C.

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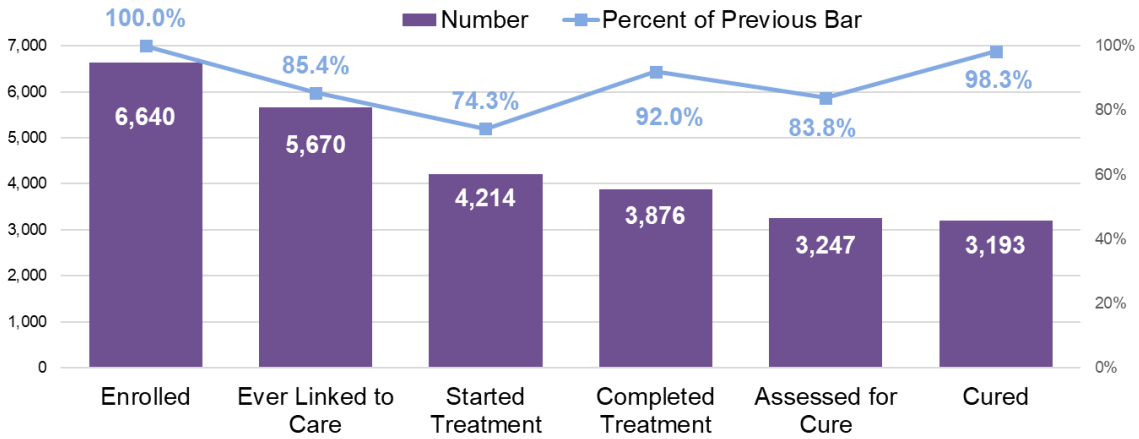
<sup>4</sup> See [https://www.health.ny.gov/diseases/communicable/hepatitis/hepatitis\\_c/providers/programs.htm](https://www.health.ny.gov/diseases/communicable/hepatitis/hepatitis_c/providers/programs.htm)

| <b>Table 5.1 Patient Characteristics</b>                                     |               |                |
|--|---------------|----------------|
| <b>NYS DOH HCV Care and Treatment Initiative, Apr. 1, 2015-Mar. 31, 2019</b> |               |                |
| <b>Characteristic</b>  | <b>Number</b> | <b>Percent</b> |
| Total  | 6,640         | 100.0%         |
| <b>Race</b>  |               |                |
| White  | 2,789         | 42.0%          |
| Hispanic   | 2,150         | 32.4%          |
| Black  | 1,611         | 24.3%          |
| Native American/Alaskan Native   | 34            | 0.5%           |
| Asian  | 30            | 0.5%           |
| Other Race/Ethnicity   | 16            | 0.2%           |
| Hawaiian/Pacific Islander  | 10            | 0.2%           |
| <b>Gender</b>  |               |                |
| Man/Boy  | 4,454         | 67.1%          |
| Woman/Girl   | 2,165         | 32.6%          |
| Chose not to respond   | 10            | 0.2%           |
| Transgender Woman/Girl   | 7             | 0.1%           |
| Transgender Man/Boy  | 4             | 0.1%           |
| <b>Age</b>   |               |                |
| ≤ 29   | 874           | 13.2%          |
| 30-39  | 1,360         | 20.5%          |
| 40-49  | 1,278         | 19.2%          |
| 50-59  | 1,778         | 26.8%          |
| 60-69  | 1,198         | 18.0%          |
| 70+  | 152           | 2.3%           |
| <b>Injection Drug Use (IDU)</b>  |               |                |
| History of IDU   | 4,936         | 74.3%          |
| No IDU Reported  | 1,574         | 23.7%          |
| Unknown IDU Status   | 130           | 2.0%           |
| <b>Insurance</b>   |               |                |
| Medicaid or Medicare   | 4,464         | 67.2%          |
| Private(Employer or Individual)  | 294           | 4.4%           |
| No Insurance, Self-Pay   | 223           | 3.4%           |
| Other Coverage   | 4             | 0.1%           |
| <b>Housing Status</b>  |               |                |
| Permanent Housing: Owns/Rents  | 4,129         | 62.2%          |
| Temporary or Institutional Housing   | 1,576         | 23.7%          |
| Unstable Housing: Homeless/Shelter   | 598           | 9.0%           |
| Transitional Housing   | 301           | 4.5%           |
| Correctional Facility (Jail/Prison)  | 34            | 0.5%           |
| Unknown  | 2             | 0.0%           |

Data as of March 13, 2020



**Figure 5.1 HCV Care Continuum:  
NYSDOH Care and Treatment Initiative Years 1 - 4\***



\*Includes patients enrolled any time from April 1, 2015 through March 31, 2019 and reflects treatment status as of March 13, 2020.

## Hepatitis C Criminal Justice Initiative

State prisons, including NYS Department of Corrections and Community Supervision (DOCCS), house a significant number of incarcerated persons with hepatitis C, presenting an opportunity to screen, diagnose, treat, and cure these individuals and prevent further spread of the disease both during incarceration and upon release to the community. The goal of the NYSDOH Criminal Justice Initiative (CJI) is to facilitate prompt access to HIV/HCV medical care and essential support services during incarceration and shortly after release for people with HCV under NYS DOCCS custody. The CJI provides funding to eight (8) community-based organizations (CBOs) to provide in-facility pre-release planning support both to people with HCV who initiate HCV treatment while in DOCCS custody and will be released before treatment completion and people who will begin HCV treatment after release to the community. CBO staff accept client referrals from DOCCS staff; develop a strengths-based, client-centered comprehensive linkage action plan addressing all medical and community reentry needs; schedule post-release appointments; provide HCV education to clients; and report all post-release outcomes to DOCCS. Additional information about this initiative is available online.<sup>5</sup>

Releasees enrolled in the initiative between Aug. 1, 2018 and July 31, 2019 are described in Table 6.1. A total of 173 releasees were enrolled; 39 initiated HCV treatment while incarcerated, and 134 were released prior to treatment initiation.

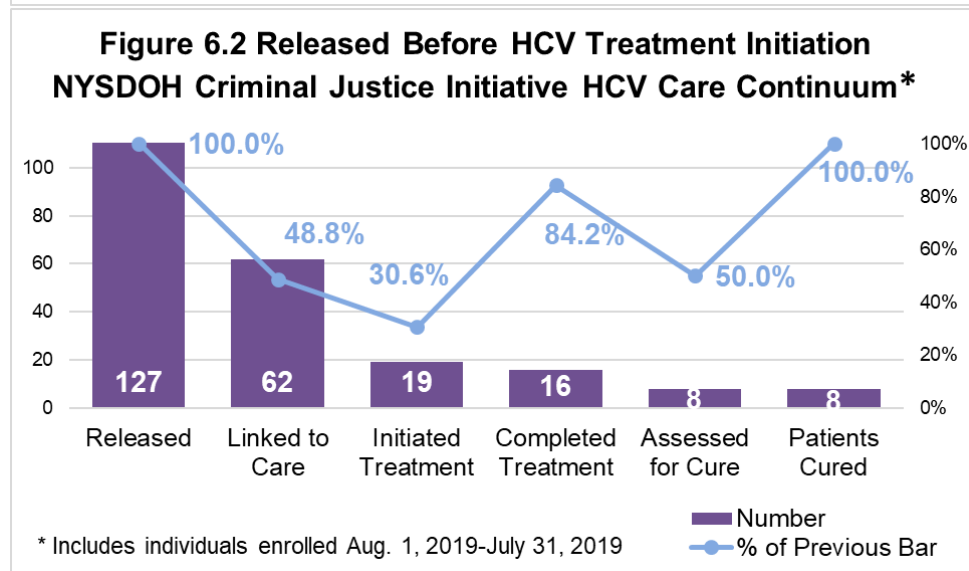
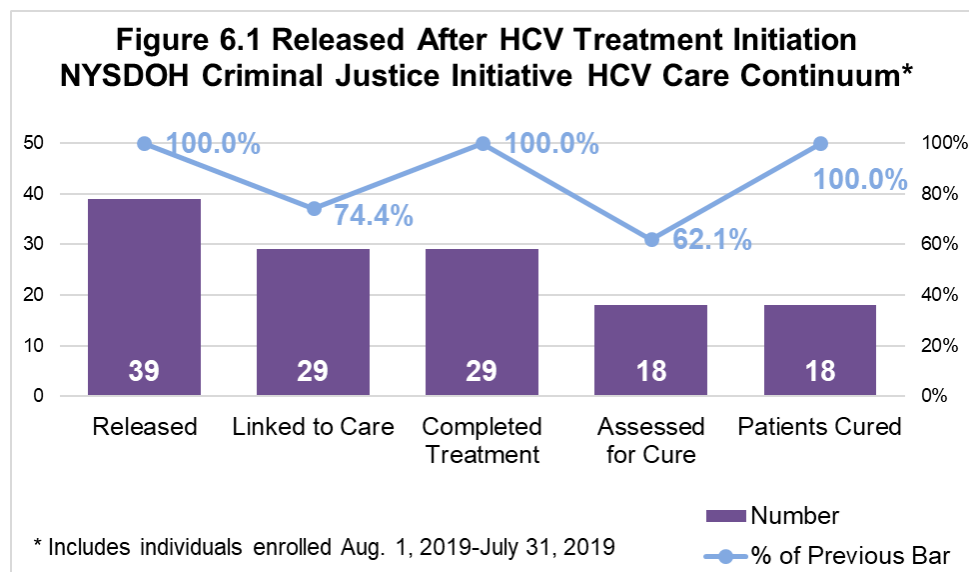
| Characteristic                 | Released After HCV Treatment Initiation |         | Released Before HCV Treatment Initiation |         | Total  |         |
|--------------------------------|---|---------|--|---------|--------|---------|
|                                | Number                                  | Percent | Number                                   | Percent | Number | Percent |
| Total                          | 39                                      | 100%    | 134                                      | 100%    | 173    | 100%    |
| <b>Gender</b>                  |   |         |  |         |        |         |
| Man/Boy                        | 29                                      | 74.4%   | 112                                      | 83.6%   | 141    | 81.5%   |
| Woman/Girl                     | 7                                       | 17.9%   | 22                                       | 16.4%   | 29     | 16.8%   |
| Transgender Woman/Girl         | 1                                       | 2.6%    | 0  | 0.0%    | 1      | 0.6%    |
| Gender Not Listed              | 1                                       | 2.6%    | 0  | 0.0%    | 1      | 0.6%    |
| Chose not to respond           | 1                                       | 2.6%    | 0  | 0.0%    | 1      | 0.6%    |
| <b>Race/Ethnicity</b>          |   |         |  |         |        |         |
| White                          | 27                                      | 69.2%   | 92                                       | 68.7%   | 119    | 68.8%   |
| Hispanic                       | 7                                       | 17.9%   | 28                                       | 20.9%   | 35     | 20.2%   |
| Black                          | 4                                       | 10.3%   | 12                                       | 9.0%    | 16     | 9.2%    |
| Hawaiian/Pacific Islander      | 1                                       | 2.6%    | 0  | 0.0%    | 1      | 0.6%    |
| Native American/Alaskan Native | 0                                       | 0.0%    | 2  | 1.5%    | 2      | 1.2%    |
| <b>Age</b>                     |   |         |  |         |        |         |
| <20                            | 0                                       | 0.0%    | 0  | 0.0%    | 0      | 0.0%    |
| 20-29                          | 7                                       | 17.9%   | 17                                       | 12.7%   | 24     | 13.9%   |
| 30-39                          | 18                                      | 46.2%   | 68                                       | 50.7%   | 86     | 49.7%   |
| 40-49                          | 7                                       | 17.9%   | 31                                       | 23.1%   | 38     | 22.0%   |
| 50-59                          | 4                                       | 10.3%   | 12                                       | 9.0%    | 16     | 9.2%    |
| 60+                            | 3                                       | 7.7%    | 6  | 4.5%    | 9      | 5.2%    |

Data as of April 24, 2021

<sup>5</sup> See <https://www.health.ny.gov/diseases/aids/general/about/prevsup.htm#cji>

Treatment outcomes are described by HCV care continuums for each group of releasees in Figures 6.1 and 6.2.

- Most individuals who initiate HCV treatment while incarcerated were successfully linked to medical care after release (74%) and all (100%) who were linked to care completed treatment.
- Sixty-two percent of those who completed treatment were assessed for cure at least 12 weeks after treatment completion and all (100%) were cured.
- Fewer (49%) of those who are released before treatment initiation were linked to care, and 31% of those who were linked to care initiated treatment. Eighty-four percent of those who initiated treatment after release were documented to have completed their treatment. Fifty percent of those who completed treatment were assessed for cure at least 12 weeks after treatment completion and all (100%) were cured.



## Behavioral Risk Factor Surveillance System (BRFSS) in New York State

The Behavioral Risk Factor Surveillance System (BRFSS) is an annual statewide telephone and cellular surveillance survey designed by CDC and administered by the NYSDOH. BRFSS collects and monitors self-reported information on behaviors, risk factors, and utilization of preventive services related to the leading causes of chronic and infectious diseases, disability, injury, and death among the noninstitutionalized, civilian population aged 18 years and older.

In 2019, the following questions about hepatitis C testing and diagnoses were included in the NYS BRFSS survey.

- Have you ever been tested for hepatitis C (HCV)? Do not count tests you may have had as part of a blood donation.
- Has a doctor, nurse, or other health professional ever told you that you had hepatitis C?

Presented here are the weighted percentages and 95% confidence intervals among the adult population in New York State (including NYC), broken down by age, race/ethnicity and sex.

- 28% of adults reported having ever been tested for hepatitis C. There was no significant difference by age or sex, but testing was more common among non-Hispanic blacks (Table 7.1).
- 1% of adults reported being told that they had hepatitis C. Baby Boomers (born from 1945-1965) were more than five times as likely to report being told they had hepatitis C than younger adults. (Table 7.2)

| <b>Respondent Characteristic</b>    | <b>Percent</b> | <b>95% CI</b>       |
|-------------------------------------|----------------|---------------------|
| <b>All Adults</b>                   | <b>28.0</b>    | <b>(25.7, 30.4)</b> |
| <b>Age</b>                          |                |                     |
| Younger Adults (Born 1966 or later) | 30.1           | (26.7, 33.5)        |
| Baby Boomers (Born 1945-1965)       | 30.5           | (26.7, 34.2)        |
| <b>Race/Ethnicity</b>               |                |                     |
| White Non-Hispanic                  | 28.1           | (25.4, 30.8)        |
| Black Non-Hispanic                  | 41.2           | (33.4, 48.9)        |
| Hispanic                            | 21.2           | (15.9, 26.5)        |
| Other Non-Hispanic <sup>£</sup>     | 21.6           | (13.1, 30.2)        |
| <b>Sex</b>                          |                |                     |
| Male                                | 29.8           | (26.4, 33.1)        |
| Female                              | 26.4           | (23.2, 29.6)        |

Weighted percents and 95% confidence intervals (95% CI) are shown.

\*All adults 18 years and older in New York State, including New York City

<sup>£</sup>Other Non-Hispanic includes Asian, American Indian or Alaskan Native, Native Hawaiian or other Pacific Islander, Multiracial, Other

**Table 7.2 New York State Adults\* Ever Told They Had Hepatitis C Behavioral Risk Factor Surveillance System, 2019 (N=3,620)**

| <b>Respondent Characteristic</b>    | <b>Percent</b> | <b>95% CI</b>     |
|-------------------------------------|----------------|-------------------|
| <b>All Adults</b>                   | <b>1.2</b>     | <b>(0.8, 1.7)</b> |
| <b>Age</b>                          |                |                   |
| Younger Adults (Born 1966 or later) | 0.5            | (0.2, 0.8)        |
| Baby Boomers (Born 1945-1965)       | 2.6            | (1.4, 3.9)        |
| <b>Race/Ethnicity</b>               |                |                   |
| White Non-Hispanic                  | 1.1            | (0.6, 1.6)        |
| Other <sup>£</sup>                  | 1.0            | (0.3, 1.6)        |
| <b>Sex</b>                          |                |                   |
| Male                                | 1.5            | (0.7, 2.2)        |
| Female                              | 1.0            | (0.4, 1.6)        |

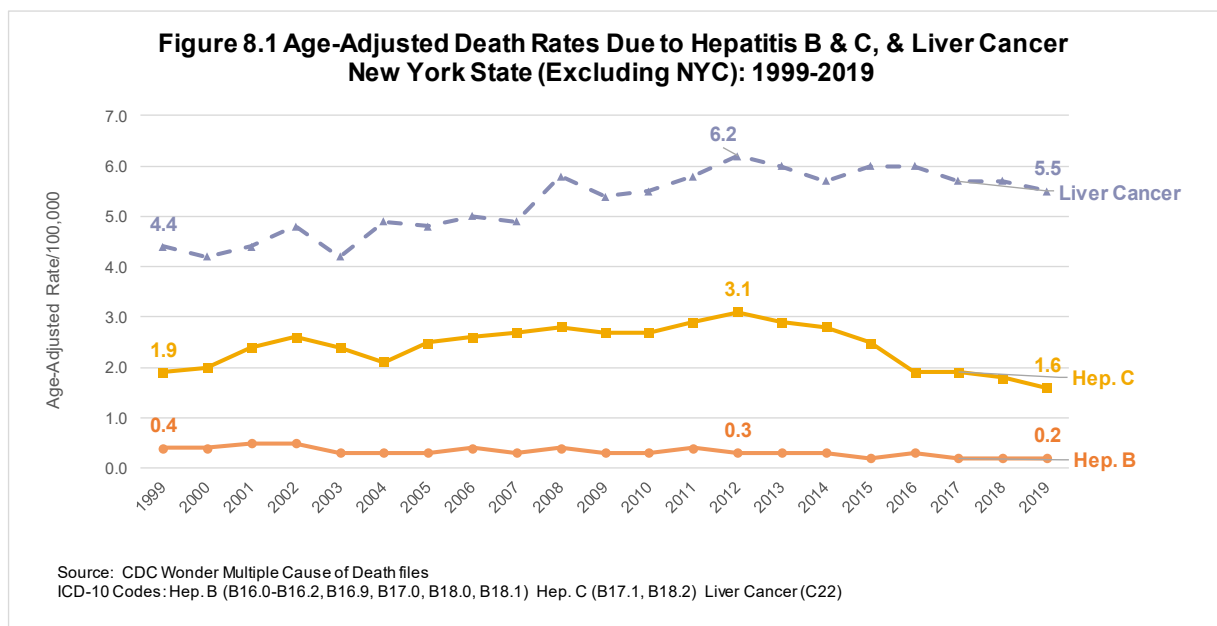
Weighted percents and 95% confidence intervals (95% CI ) are shown.

\*All adults 18 years and older in New York State, including New York City

£Other includes Hispanic; all Non-White/Non-Hispanic races including: Black, Asian, American Indian or Alaskan Native, Native Hawaiian or other Pacific Islander; Multiracial; Other

## Deaths from Liver Cancer, Hepatitis B and Hepatitis C – National Center for Health Statistics

Data on hepatitis deaths and liver cancer were obtained from the National Center for Health Statistics, multiple causes of death file, available at [Wonder.cdc.gov](http://wonder.cdc.gov). At the time of this report, data were available through 2019. The overall trends in age-adjusted death rates are shown in Figure 8.1.



### Liver Cancer

- Age-adjusted rates of liver cancer deaths in New York (excluding NYC) peaked in 2012 at 6.2 per 100,000. By 2019, the age-adjusted rate dropped 11.3% to 5.5 per 100,000.
- The CDC estimates that approximately 65% of liver cancer cases are related to hepatitis B or C, with nearly 50% attributable to hepatitis C alone.<sup>6</sup>

### Hepatitis B

- In New York (excluding NYC), from 2011-2019 the combined age-adjusted rate of death from hepatitis B was 0.3 per 100,000 persons. (Table 8.1) This was a 25% decrease compared to the combined rate from 1999-2010.
- Rates decreased in all sex, racial/ethnic and age categories.
- Rates were highest among, males, Asian/Pacific Islanders, non-Hispanic blacks, and Hispanics.

<sup>6</sup> Centers for Disease Control and Prevention, Viral hepatitis and Liver Cancer Fact Sheet, March 2016 online <https://www.cdc.gov/nchhstp/newsroom/docs/factsheets/viral-hep-liver-cancer.pdf>

**Table 8.1 Deaths Due to Hepatitis B: New York State (Excluding NYC), 1999-2010 and 2011-2019**

|                                | 1999-2010        |                             |  | 2011-2019        |                             |  | Change from 1999-2010 to 2011-2019 |                               |
|--------------------------------|------------------|-----------------------------|--|------------------|-----------------------------|--|------------------------------------|-------------------------------|
|                                | Number of Deaths | % of All Hepatitis B Deaths | Age-Adjusted Rate Per 100,000 Population | Number of Deaths | % of All Hepatitis B Deaths | Age-Adjusted Rate Per 100,000 Population | Change in Age-Adjusted Rate        | % Change in Age-Adjusted Rate |
| Total                          | 556              | 100.0%                      | 0.4                                      | 335              | 100.0%                      | 0.3                                      | -0.1                               | -25.0%                        |
| <b>Sex</b>                     |                  |                             |  |                  |                             |  |                                    |                               |
| Male                           | 421              | 75.7%                       | 0.6                                      | 254              | 75.8%                       | 0.4                                      | -0.2                               | -33.3%                        |
| Female                         | 135              | 24.3%                       | 0.2                                      | 81               | 24.2%                       | 0.1                                      | -0.1                               | -50.0%                        |
| <b>Race/Ethnicity</b>          |                  |                             |  |                  |                             |  |                                    |                               |
| American Indian/Alaskan Native | NA               | NA                          | NA                                       | NA               | NA                          | NA                                       | NA                                 | NA                            |
| Asian or Pacific Islander      | 46               | 8.3%                        | 1.4                                      | 48               | 14.3%                       | 1.2                                      | -0.2                               | -14.3%                        |
| Black, Non-Hispanic            | 115              | 20.7%                       | 1.2                                      | 72               | 21.5%                       | 0.8                                      | -0.4                               | -33.3%                        |
| Hispanic                       | 46               | 8.3%                        | 0.7                                      | 37               | 11.0%                       | 0.5                                      | -0.2                               | -28.6%                        |
| White, Non-Hispanic            | 344              | 61.9%                       | 0.3                                      | 172              | 51.3%                       | 0.2                                      | -0.1                               | -33.3%                        |
| <b>Age at Death**</b>          |                  |                             |  |                  |                             |  |                                    |                               |
| <25                            | NA               | NA                          | NA                                       | NA               | NA                          | NA                                       | NA                                 | NA                            |
| 25-44                          | 81               | 14.6%                       | 0.2                                      | 19               | 5.7%                        | 0.1*                                     | -0.1                               | -50.0%                        |
| 45-64                          | 309              | 55.6%                       | 0.9                                      | 183              | 54.6%                       | 0.6                                      | -0.3                               | -28.6%                        |
| 65-84                          | 141              | 25.4%                       | 0.9                                      | 122              | 36.4%                       | 0.9                                      | 0.0                                | -3.8%                         |
| 85+                            | 24               | 4.3%                        | 0.9                                      | 10               | 3.0%                        | 0.4*                                     | -0.5                               | -55.6%                        |

\* Rates are unreliable when death count is < 20.

\*\* Age-specific rates are not age-adjusted.

Note: Due to small cell sizes and missing data, may not add to total. NA indicates 0-9 deaths.

ICD-10 Codes: Hep. B (B16.0, B16.1, B16.2, B16.9, B17.0, B18.0, B18.1)

Source: CDC Wonder Multiple Cause of Death files (<https://wonder.cdc.gov/mcd.html>)

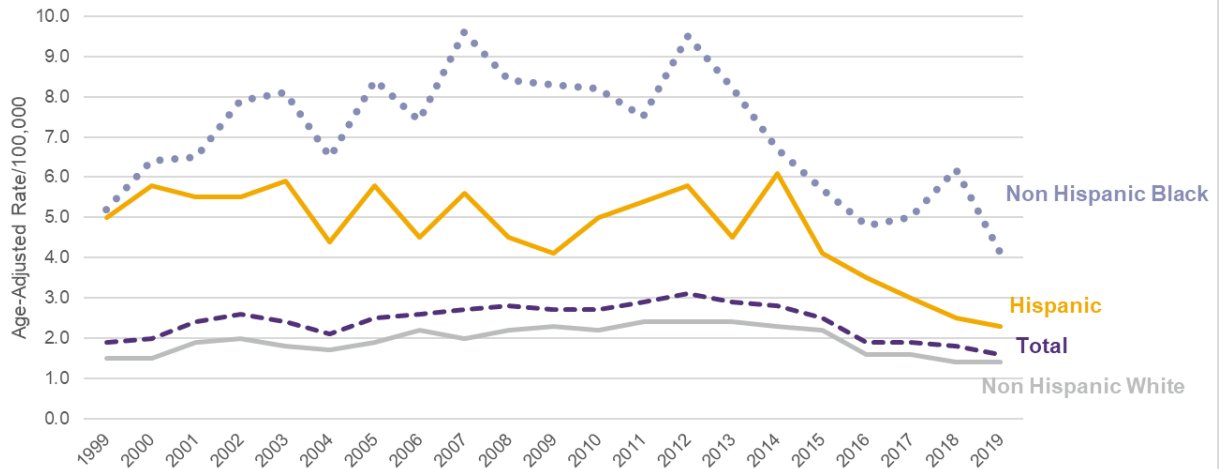
## Hepatitis C

- Nationally, in 2013, hepatitis C-related mortality surpassed deaths from 60 other reportable infectious disease.<sup>7</sup> Yet, it is estimated that as few as one-fifth of hepatitis C patients who die have it listed as a cause of death.<sup>8</sup>
- In New York (excluding NYC), annual age-adjusted rates decreased 48.4% from 3.1 per 100,000 in 2012, when rates were highest, to 1.6 per 100,000 persons in 2019. (Figure 8.1)
- Hepatitis C death rates were disproportionately high among non-Hispanic blacks, American Indian/Alaskan Natives, and Hispanics compared to non-Hispanic Whites. (Figure 8.2) However, the gap has narrowed for non-Hispanic Blacks and Hispanics in 2011-2019 compared to 1999-2010 with age-adjusted rates decreasing 16.9% and 21.9% respectively, while remaining unchanged among non-Hispanic Whites. Age-adjusted rates among American Indian/Alaskan Natives increased 23.1% during the same time period. (Table 8.2)
- Rates were also higher among males and individuals 45-84 years of age.
- The Baby-boomer generation (people born from 1945-1965) have had the highest death rates. Rates in this group peaked at 10.8 per 100,000 in 2012 and have since decreased 35.2% to 7.0 per 100,000 in 2019. (data not shown)

<sup>7</sup> Kathleen N. Ly et al. Rising Mortality Associated with Hepatitis C Virus in the United States, 2003-2013. *Clinical Infectious Diseases*, 62(10), 1287-1288, <https://doi.org/10.1093/cid/ciw111>

<sup>8</sup> Reena Mahajan et al. Mortality Among Persons in Care with Hepatitis C Virus Infection: The Chronic Hepatitis Cohort Study (CHeCS), 2006–2010. *Clinical Infectious Diseases*, 58(8), 1055–1061, <https://doi.org/10.1093/cid/ciu077>

**Figure 8.2 Hepatitis C Age-Adjusted Death Rates/100,000 by Race/Ethnicity New York State (Excluding NYC): 1999-2019**



Source: CDC Wonder Multiple Cause of Death files ICD-10 Codes: Hep. C (B17.1, B18.2)

**Table 8.2 Deaths Due to Hepatitis C: New York State (Excluding NYC), 1999-2010 and 2011-2019**

|                                | 1999-2010        |                             |  | 2011-2019        |                             |  | Change from 1999-2010 to 2011-2019 |                               |
|--------------------------------|------------------|-----------------------------|--|------------------|-----------------------------|--|------------------------------------|-------------------------------|
|                                | Number of Deaths | % of All Hepatitis C Deaths | Age-Adjusted Rate Per 100,000 Population | Number of Deaths | % of All Hepatitis C Deaths | Age-Adjusted Rate Per 100,000 Population | Change in Age-Adjusted Rate        | % Change in Age-Adjusted Rate |
| <b>Sex</b>                     |                  |                             |  |                  |                             |  |                                    |                               |
| Total                          | 3,715            | 100.0%                      | 2.5                                      | 3,251            | 100.0%                      | 2.4                                      | -0.1                               | -4.0%                         |
| Male                           | 2,622            | 70.6%                       | 3.7                                      | 2,355            | 72.4%                       | 3.6                                      | -0.1                               | -2.7%                         |
| Female                         | 1,093            | 29.4%                       | 1.4                                      | 896              | 27.6%                       | 1.3                                      | -0.1                               | -7.1%                         |
| <b>Race/Ethnicity</b>          |                  |                             |  |                  |                             |  |                                    |                               |
| American Indian/Alaskan Native | 20               | 0.5%                        | 3.9                                      | 24               | 0.7%                        | 4.8                                      | 0.9                                | 23.1%                         |
| Asian or Pacific Islander      | 51               | 1.4%                        | 1.9                                      | 57               | 1.8%                        | 1.6                                      | -0.3                               | -15.8%                        |
| Black, Non-Hispanic            | 755              | 20.3%                       | 7.7                                      | 608              | 18.7%                       | 6.4                                      | -1.3                               | -16.9%                        |
| Hispanic                       | 351              | 9.4%                        | 5.1                                      | 320              | 9.8%                        | 4.0                                      | -1.1                               | -21.6%                        |
| White, Non-Hispanic            | 2,530            | 68.1%                       | 2.0                                      | 2,213            | 68.1%                       | 2.0                                      | 0                                  | 0.0%                          |
| <b>Age at Death*</b>           |                  |                             |  |                  |                             |  |                                    |                               |
| <25                            | NA               | NA                          | NA                                       | NA               | NA                          | NA                                       | NA                                 | NA                            |
| 25-44                          | 288              | 7.8%                        | 0.8                                      | 90               | 2.8%                        | 0.4                                      | -0.4                               | -53.7%                        |
| 45-64                          | 2,463            | 66.3%                       | 7.2                                      | 2,048            | 63.0%                       | 7.2                                      | 0.0                                | 0.2%                          |
| 65-84                          | 849              | 22.9%                       | 5.3                                      | 991              | 30.5%                       | 7.0                                      | 1.7                                | 32.3%                         |
| 85+                            | 111              | 3.0%                        | 4.3                                      | 111              | 3.4%                        | 4.5                                      | 0.2                                | 4.7%                          |

\* Age-specific rates are not age-adjusted.

Note: Due to small cell sizes and missing data, may not add to total. NA indicates 0-9 deaths.

ICD-10 Codes: Hep. C (B17.1, B18.2)

Source: CDC Wonder Multiple Cause of Death files (<https://wonder.cdc.gov/mcd.html>)



NYSDOH Viral Hepatitis Information:

<https://www.health.ny.gov/diseases/communicable/hepatitis/>

NYCDOHMH Hepatitis A, B and C in New York City: 2018 Annual Report:

<https://www1.nyc.gov/assets/doh/downloads/pdf/cd/hepatitis-abc-annual-report-2018.pdf>

NYS Hepatitis C Care and Treatment Initiative:

[https://www.health.ny.gov/diseases/communicable/hepatitis/hepatitis\\_c/providers/programs.htm](https://www.health.ny.gov/diseases/communicable/hepatitis/hepatitis_c/providers/programs.htm)

NYS Hepatitis C Continuity Program Fact Sheet:

[https://www.health.ny.gov/diseases/aids/providers/corrections/hcv\\_factsheet.htm](https://www.health.ny.gov/diseases/aids/providers/corrections/hcv_factsheet.htm)

Health Data NY Hepatitis B Birth Dose Vaccination Rates:

<https://healthdata.ny.gov/en/browse?q=birth+dose>

Give birth to the end of Hep B: <http://www.immunize.org/protect-newborns/>

NYS Hepatitis C Elimination:

[https://www.health.ny.gov/diseases/communicable/hepatitis/hepatitis\\_c/elimination.htm](https://www.health.ny.gov/diseases/communicable/hepatitis/hepatitis_c/elimination.htm)

Surveillance Case definitions:

Acute hepatitis B

<https://wwwn.cdc.gov/nndss/conditions/hepatitis-b-acute/case-definition/2012>

Chronic hepatitis B

<https://wwwn.cdc.gov/nndss/conditions/hepatitis-b-chronic/case-definition/2012>

Acute hepatitis C

<https://wwwn.cdc.gov/nndss/conditions/hepatitis-c-acute/case-definition/2016>

Chronic hepatitis C

<https://wwwn.cdc.gov/nndss/conditions/hepatitis-c-chronic/case-definition/2016>

US Census Population Data: <https://factfinder.census.gov/>

CDC Bridged-Race Population Estimates: <https://wonder.cdc.gov/bridged-race-population.html>

AI – AIDS Institute

AIRS – AIDS Institute Reporting System

ALT – alanine aminotransferase

BRFSS - Behavioral Risk Factor Surveillance System

CBO - community-based organization

CDC – Centers for Disease Control and Prevention

CDESS - Communicable Disease Electronic Surveillance System

CJI - Criminal Justice Initiative

CSTE - Council of State and Territorial Epidemiologists

DBS - dried blood spot

DNA – deoxyribonucleic acid

DOCCS - Department of Corrections and Community Supervision

ECLRS - Electronic Clinical Laboratory Reporting System

HBeAg - hepatitis B e antigen

HBIG - hepatitis B immune globulin

HBsAG - hepatitis B surface antigen

HBV – hepatitis B virus

HCV – hepatitis C virus

HIV - human immunodeficiency virus

IDU - injection drug use

LHD - local health department

NHBS - National HIV Behavioral Surveillance

NYC – New York City

NYCDOHMH – New York City Department of Health and Mental Hygiene

NYS – New York State

NYSDOH – New York State Department of Health

NYSIIS – New York State Immunization Information System

PHBPP - Perinatal Hepatitis B Prevention Program

PN - Patient Navigation

PVST - post vaccination serologic testing

PWID - persons who inject drugs

RNA - ribonucleic acid

SEP - Syringe Exchange Program

SVR - sustained virologic response