



2023 Hepatitis B and C Annual Surveillance Report

- BUREAU OF INFECTIOUS DISEASE PREVENTION - DIVISION OF EMERGING INFECTIOUS DISEASES -
- VIRAL HEPATITIS & TUBERCULOSIS SECTION - VIRAL HEPATITIS EPIDEMIOLOGY UNIT -

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Background and Technical Notes

INTRODUCTION

The Michigan Department of Health and Human Services (MDHHS) requires medical providers and laboratories to report cases of communicable diseases, including viral hepatitis, in accordance with Michigan's Communicable Disease Rules. Cases are reported to MDHHS via the Michigan Disease Surveillance System (MDSS), a web-based communicable disease reporting system developed for the state of Michigan. Providers and laboratories can enter cases manually or send cases via HL7 electronic laboratory report (ELR). The MDSS is compliant with CDC's National Notifiable Disease Surveillance System (NNDSS) and has been in use in Michigan since 2004. Case reporting is accomplished in the MDSS via standard HTML demographic data collection fields with an enhanced viral hepatitis reporting form for disease-specific data. This report will primarily highlight acute, chronic, and perinatal hepatitis B and C surveillance, along with updates regarding populations of higher risk. MDHHS follows the current CDC Guidelines for Viral Hepatitis Surveillance and Case Management for reporting, investigating, and maintaining quality assurance in viral hepatitis surveillance. Viral hepatitis surveillance data is submitted to CDC weekly in accordance with Morbidity and Mortality Weekly Report (MMWR) notification standards. Cases are classified according to the most recently published CDC/CSTE case definitions.

BACKGROUND

"Hepatitis" means inflammation of the liver and can stem from both infectious and non-infectious causes. The most common types of viral hepatitis are hepatitis A (HAV), hepatitis B (HBV), and hepatitis C (HCV). These viruses can produce an acute illness characterized by nausea, malaise, abdominal pain, and jaundice, although many of these acute infections are asymptomatic or cause only mild disease. HAV is transmitted from person to person via ingestion of food and water contaminated with human waste while HBV and HCV are both blood-borne pathogens. Many persons infected with HBV or HCV are unaware they are infected. Unlike HAV, both HBV and HCV can produce chronic infections that often remain clinically silent for decades while increasing the risk for liver disease and hepatocellular carcinoma. Viral hepatitis is the leading cause of liver cancer and the most common reason for liver transplantation in the United States. The CDC estimates that approximately 200,000 Americans are newly infected or identified with chronic infection each year; a significant number may have been unaware of their infection due to the often asymptomatic nature of chronic infections.

Hepatitis B Virus

HBV is transmitted through contact with the blood or body fluids of an infected person, most often through sharing infected injection drug use equipment, from sexual contact with an infected person, or during childbirth. Transmission of HBV also can occur among persons who have prolonged contact with someone who is HBV-infected (e.g., household

contacts). Most people do not experience any symptoms during the acute infection phase. However, some people have acute illness with symptoms that last several weeks, including jaundice, dark urine, extreme fatigue, nausea, vomiting and abdominal pain. In some people, the hepatitis B virus can also cause a chronic liver infection that can later develop into cirrhosis of the liver or liver cancer.

The risk for chronic HBV infection decreases with increasing age at infection. Among infants who acquire HBV infection birth, as many as 90% become chronically infected, whereas 30%–50% of children infected at age 1–5 years become chronically infected. This percentage is smaller among adults, in whom approximately 5% of all acute HBV infections progress to chronic infection.

Estimates indicate that 880,000–1.89 million persons are infected with the virus in the United States, most of whom are unaware of their infection status. The World Health Organization (WHO) estimates that approximately 296 million people worldwide were living with hepatitis B in 2019, resulting in an estimated 820,000 deaths due to the acute or chronic consequences of hepatitis B infection.

Effective hepatitis B vaccines have been available in the United States since 1981, and the CDC recommends vaccination of all infants at birth. Several oral drugs are now available, leading to viral suppression in 90% of patients taking one of these new oral medications.

Hepatitis C Virus

HCV is transmitted primarily through exposure to infected blood, which can result from sharing infected injection drug use equipment, needlestick injuries involving contaminated blood, receipt of blood or blood products before the availability of a standard screening test in 1992 and inadequate infection control in health care settings. Much less often, HCV transmission occurs among infants born to HCV-infected persons or during sexual contact. HCV is not spread by sneezing, coughing, or kissing. The best way to prevent HCV infection is by avoiding behaviors that can spread the virus, especially sharing injection drug use equipment.

The incubation period for HCV is two weeks to six months. Following initial infection, approximately 80% of people do not exhibit any symptoms. Those who are symptomatic may experience fever, fatigue, decreased appetite, nausea, vomiting, abdominal pain, dark urine, and jaundice. No laboratory distinction can be made between acute and chronic HCV infection. Diagnosis of chronic infection is made based on anti-HCV positive results upon repeat testing and the presence of HCV in the blood. About 75–85% of newly infected persons develop chronic infection and 60–70% of chronically infected people develop chronic liver disease; 5–

20% of chronically infected people develop cirrhosis and 1–5% die from cirrhosis or liver cancer.

With an estimate of up to 2.5-4.7 million persons infected persons nationwide, HCV infection is the most common blood-borne infection in the United States. The World Health Organization estimates 50 million people are chronically infected with HCV with one million infections occurring each year, and approximately 242,000 people died in 2022 from HCV-related liver diseases.

Since no vaccine is available for preventing HCV infection, other prevention activities, such as not sharing injection drug equipment and consistently implementing and practicing infection control in health care settings, are vital. Linkage to care and treatment is critical to improving health outcomes for persons found to be infected with HCV. Such linkage is particularly important considering recent advancements in treatment of hepatitis C. HCV direct-acting antivirals have few side effects or contraindications and can clear HCV infection in 8-24 weeks with a success rate of 90-95%.

TECHNICAL NOTES

Michigan Communicable Disease Reporting Requirements

Michigan's communicable disease rules are promulgated under the authority conferred on the Department of Health and Human Services by Section 5111 of Act No. 368 of the Public Health Acts 1978, as amended, being 333.5111 of the Michigan Compiled Laws. MDHHS maintains a list of conditions, which must be reported by physicians, other authorized health care professionals and laboratories to the local health department in which the patient resides.

Michigan is a "home rule state," in which local governments have direct control over local health departments (LHDs). Therefore, LHDs function as administratively autonomous units, separate from MDHHS. MDHHS provides administration of the MDSS, expert consultation and other support as needed to LHDs. Physicians and laboratories report diseases to LHDs, which have authority to investigate and follow-up on the case in accordance with their own priorities and available resources.

Michigan has adopted standardized case definitions for hepatitis A, HIV, perinatal hepatitis B and C, and acute and chronic hepatitis B and C, which were developed and approved by the Council of State and Territorial Epidemiologists and CDC (see page 11). Cases of acute and chronic hepatitis B and C are reported via the MDSS using standardized CDC case report forms (see page 11).

Michigan Disease Surveillance System

Mandatory reporting of communicable diseases can be accomplished via the MDSS, which is a web-based communicable disease reporting system developed for the State of Michigan. The MDSS facilitates coordination among LHDs, MDHHS and federal public health agencies. The MDSS

provides for the secure transfer, maintenance, and analysis of communicable disease surveillance information. The MDSS has the capability to receive electronic laboratory reports directly from laboratories via HL7 messaging. Alternatively, cases can be manually entered into the MDSS via the web portal by medical providers, laboratories or LHD staff. Cases that have been previously entered in the MDSS are matched with incoming cases by a process known as deduplication. The MDSS deduplicates both the client and the disease event based on an algorithm of name, sex, and date of birth. Case reporting is accomplished in the MDSS via standard HTML demographic data collection fields with an enhanced viral hepatitis reporting form for disease-specific data. MDHHS submits weekly de-identified individual case reports to CDC via the National Notifiable Disease Surveillance System Modernization Initiative, a computerized public health surveillance information system. The MDSS is limited by binary sex data fields. Where possible, and when not referring explicitly to data pulled from this database, MDHHS has attempted to use inclusive language around gender that still names key risk factors related to HCV transmission.

The data in this report includes all cases which meet the CDC/CSTE case definitions referenced in "Web Links to Case Definitions and Case Report Forms" on page 7. Data includes cases with referral dates between January 1, 2023, and December 31, 2023, in the MDSS.

Retrospectively, viral hepatitis case counts have been affected by several circumstances including changes to case definitions, improvements in electronic lab reporting, and the COVID-19 pandemic.

Local Health Jurisdiction Structure

The state of Michigan is divided into eight public health preparedness regions that are serviced by 45 health jurisdictions comprised of 84 counties. These local health departments, functioning as administratively autonomous units, provide basic public health services, including communicable disease-related services, to all Michigan citizens and health care providers. The MDHHS provides expert consultation, reference level diagnostic laboratory services, and support to local health departments. MDHHS's public health laboratory performs hepatitis serologic and molecular testing for public health partners.

Determination of Rates

When calculating rates for years prior to 2010, 2000 Michigan Census data was used. 2010 Census data was used to calculate rates in the years 2010 - 2015. In years since, the most current U.S. Census Bureau's American Communities Survey (ACS) five-year population estimates were used to calculate rates. All rates were calculated per 100,000 persons in the Michigan population. Michigan Census data used in the annual report can be found at: <https://data.census.gov/cedsci/>

National Benchmarks

References to national benchmarks come from CDC Division of Viral Hepatitis statistics via the National Notifiable Disease Surveillance System (NNDSS). National statistics used in the annual report can be found at:

<http://www.cdc.gov/hepatitis/Statistics/index.htm>

Data Limitations

There are several limitations to the data presented in this report. As a result, conclusions drawn from the data in this report should be interpreted with caution and with the appropriate recognition of these limitations. As described earlier, this report compiles data on new viral hepatitis diagnoses, which meet CDC/CSTE case definitions, reported to the MDSS in the year 2023. In general, this is not necessarily reflective of the true number of new infections that occurred in 2023 nor the total number of individuals infected with viral hepatitis currently living in Michigan. Rather, these data approximate the number of new viral hepatitis diagnoses for the year. This should not, however, imply that these infections were contracted in the year 2023. Since most newly diagnosed viral hepatitis infections are chronic in nature, our data has limited utility in deciphering the date of exposure or infection acquisition for these cases.

New case definitions and changes in reporting capacity for acute and chronic hepatitis C cases have been implemented since 2016. The 2016 case definition change lowered the threshold for inclusion as a case. As a result, increases in HCV case counts and rates since 2015 may be, at least in part, indicative of the change in case counting methodology. The marked reduction in HCV cases for 2019 when compared with 2018 is the result of electronic lab reporting for nonreactive HCV RNA tests, which began January 1, 2019. Prior to implementation, many cases lacking a known RNA status were classified as probable cases in accordance with the CDC case classification rules. Viral hepatitis case counts were also affected by the COVID-19 pandemic. Due to the volume and nature of COVID-19, accessibility to hepatitis testing was likely restricted and resources for case follow-up were constrained.

Like many reportable diseases, cases of viral hepatitis are largely underreported. CDC estimates suggest that only about 8-10% of acute HBV and 15-17% of acute HCV cases are reported each year. This is mainly due to the infections resulting in subclinical disease in most individuals, thus the infected person never seeks medical care and is not aware of their infection status until symptoms of the chronic infection develop later in life. Indeed, it is estimated that up to 75% of individuals infected with HCV do not know they are infected. CDC data approximates that, nationwide, 850,000 to 2.2 million individuals (about 0.3-0.7% of the U.S. population) and 2.4 million (about 0.7% of the U.S. population) are infected with HBV and HCV respectively. Extrapolating that to the Michigan population, we would then expect

approximately 30,000-70,000 Michiganders to be infected and living with HBV and 70,000 with HCV.

It should be noted that individuals who clear their HCV infection spontaneously (in about 25% of those exposed to the virus) or via antiviral treatment are still counted as cases in our disease surveillance system and are not removed from our case counts. Also, individuals who are repeatedly infected with HCV are only counted once in their lifetime in our surveillance system.

The Michigan Department of Corrections (MDOC) conducts HCV screening for new inmates, and they report cases to the MDSS as with any provider. Inmates who are positive for HCV are entered into the MDSS under the county where their correctional facility is located. All MDOC cases are removed from LHD case counts.

Enhanced Viral Hepatitis Surveillance, 2013-current

Starting in 2013 the Viral Hepatitis Unit initiated a plan to improve viral hepatitis surveillance in Michigan. New surveillance activities in this plan included: additional deduplication of cases in the MDSS, active surveillance of cases of public health importance, recruitment of laboratories to report into the MDSS electronically, and enhanced auditing and quality assurance of acute and chronic viral hepatitis cases. These enhancements to routine surveillance activities resulted in more reliable and complete information on viral hepatitis diagnoses. Large discrepancies in the data between 2013 and prior years may be a result of these enhanced surveillance efforts and not necessarily indicative of true disease trends.

Web Links to Case Definitions and Case Report Forms

Please refer to these [National Notifiable Disease Surveillance System Case Definitions](#).

Michigan Viral Hepatitis Case Report Forms

- Hepatitis A
- [Perinatal Hepatitis B](#)
- [Acute Hepatitis B](#)
- [Chronic Hepatitis B](#)
- [Perinatal Hepatitis C](#)
- [Acute Hepatitis C](#)
- [Chronic Hepatitis C](#)

The Michigan Department of Health and Human Services (MDHHS) does not discriminate against any individual or group on the basis of race, national origin, color, sex, disability, religion, age, height, weight, familial status, partisan considerations, or genetic information. Sex-based discrimination includes, but is not limited to, discrimination based on sexual orientation, gender identity, gender expression, sex characteristics, and pregnancy.

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Viral Hepatitis Data Summary

Table 1. Summary of Demographic Information by Type of Hepatitis, Michigan, 2023

	Acute Hepatitis B	% Acute Hepatitis B	Chronic Hepatitis B	% Chronic Hepatitis B	Acute Hepatitis C	% Acute Hepatitis C	Chronic Hepatitis C	% Chronic Hepatitis C	MI Population	% MI Population
n	45	100%	877	100%	77	100%	2,729	100%	10,057,921	100%
Sex										
Male	33	73%	544	62%	42	55%	1,686	62%	4,993,696	50%
Female	12	27%	327	37%	35	45%	1,034	38%	5,064,225	50%
Unknown	0	0%	6	1%	0	0%	9	0%	0	0%
Race and Ethnicity										
White or Caucasian	26	58%	270	31%	56	73%	1,599	59%	7,394,140	74%
Black or African American	12	27%	237	27%	9	12%	466	17%	1,346,918	13%
Hispanic	2	4%	29	3%	5	6%	84	3%	550,427	5%
Asian	1	2%	158	18%	0	0%	19	1%	325,464	3%
American Indian or Alaska Native	0	0%	4	0%	3	4%	30	1%	35,080	0%
Other*	1	2%	72	8%	2	3%	219	8%	405,892	4%
Unknown	3	7%	107	12%	2	3%	312	11%	0	0%
Age										
Mean	49	-	50	-	40	-	48	-	n/a	-
Median	51	-	50	-	36	-	45	-	40	-
Range	19-89	-	0-92	-	19-78	-	4-100	-	n/a	-
0-19 years	1	2%	13	1%	4	5%	32	1%	2,421,841	24%
20-29 years	6	13%	75	9%	16	21%	270	10%	1,369,256	14%
30-39 years	4	9%	190	22%	28	36%	749	27%	1,248,458	12%
40-49 years	11	24%	150	17%	10	13%	481	18%	1,184,321	12%
50-59 years	11	24%	178	20%	8	10%	353	13%	1,341,146	13%
60+ years	12	27%	271	31%	11	14%	844	31%	2,492,899	25%
Unknown	0	0%	0	0%	0	0%	0	0%	0	0%

Population data extracted from 2022 5-year American Community Survey Estimates

*Other MI population includes estimates of Hawaiian/Pacific Islander, "some other race", and "two or more races"

The summary table above was created to illustrate the differences in the demographic makeup between the various viral hepatitis classifications. For instance, males were more likely to have had a diagnosis of all viral hepatitis classifications in 2021. There are also notable racial differences among reported hepatitis cases. Asian and Black/African American populations both appeared to be disproportionately affected by hepatitis B relative to their proportion of the general population while incident hepatitis C cases tended to be reported more often in White/Caucasian persons. Although American Indians and Alaska Natives make up a minority of all cases, it should be noted that they are more likely to have a hepatitis C diagnosis than a hepatitis B diagnosis. The mean age for cases of acute hepatitis C is lower in comparison to the other viral hepatitis case classifications. More detailed information on each viral hepatitis case classification can be found in subsequent sections of this report.

This report presents hepatitis B and C data collected from case reports submitted to the Michigan Disease Surveillance System for calendar year 2023. Performing surveillance for viral hepatitis infections is important for identifying trends in rates of infection, characterizing high-risk groups, informing and evaluating prevention programs, and identifying outbreaks. Below is a summary of the key findings from this year's report for the various hepatitis B and C case classifications, focus populations, and hepatitis-related health outcomes.

Acute Hepatitis B

- There were 45 cases of acute hepatitis B infection reported in Michigan in 2023 for a rate of 0.45 cases per 100,000 people. This is below the most recent national rate of acute Hepatitis B Virus (HBV) infection (0.70 per 100,000).
- Case follow-up and completion of epidemiological risk factors was completed for 80% of acute hepatitis B cases in 2023.
- Receiving a tattoo and use of street drugs in the six months prior to diagnosis were the most reported risk factors among 2023 acute hepatitis B cases.

Chronic Hepatitis B

- There were 877 new chronic hepatitis B diagnoses reported in Michigan in 2023 resulting in a rate of 8.7 cases per 100,000 people. This was a 48% increase in cases compared to 2022.
- Expansion of hepatitis B screening recommendations is likely a driver, at least partially, of the increase in cases reported in 2023.
- Males continue to exhibit higher rates of chronic hepatitis B than females since 2004.
- Asian persons are disproportionately affected by chronic hepatitis B with an incidence rate of 48.55 per 100,000, more than five times higher than the rate of Michigan as a whole.
- For the seventh consecutive year, the proportion of chronic hepatitis B cases that are foreign-born was 60% or more.

Acute Hepatitis C

- There were 77 cases of acute hepatitis C reported in Michigan in 2023 for a rate of 0.8 cases per 100,000 people. This is nearly a 30% decrease from 2022 and considerably lower than the most recent national acute Hepatitis C Virus (HCV) infection rate of 1.4 cases per 100,000 reported in 2022.
- The median age of acute hepatitis C cases, 36 years old, was at least 9 years younger than that of other viral hepatitis infections and the only condition with a median age lower than that of the Michigan general population.
- Case follow-up and completion of epidemiological risk factors was completed for about 70% of acute hepatitis C cases in 2023.
 - Where data were available, injection drug use (IDU) was reported by 39% of acute hepatitis C cases, reduced from the 43% reported in 2022, while use of street drugs was reported by 44% of acute hepatitis C cases in 2023. This may be indicative of a shift in drug use, with the possibility of reduced HCV transmission via IDU.

Chronic Hepatitis C

- There were 2,729 new chronic hepatitis C diagnoses reported in Michigan in 2023 for a rate of 27.1 cases per 100,000 people. This was the lowest case count reported in Michigan in the past 20 years.
- The rate of chronic hepatitis C is higher in Michigan males (33.8 per 100,000) versus females (20.4 per 100,000).
- American Indian and Alaska Native persons (85.5 per 100,000), persons categorized as "Other" race (54.0 per 100,000), and Black/African American persons (34.6 per 100,000) have a higher rate of chronic hepatitis C infection than the Michigan general population.
- Case follow-up and completion of epidemiological risk factors were completed for approximately 58% of chronic hepatitis C cases in 2023.
 - Where data were available, IDU was a factor shared by 52% of cases, while being in contact with a person with a known HCV infection was documented in 41% of cases, and incarceration was a risk factor in 42% of cases. Note that responses that were unknown or missing were excluded from these proportions.
- Where data were available, 79.6% of chronic hepatitis C cases were reported with genotype 1 infection, 10.1% with genotype 3, and 9.3% with genotype 2.
- Incidence of chronic hepatitis C cases continued to decrease in 2023. This may be due, in part, to more confirmatory RNA testing being performed due to increased efforts by case investigators to link cases to care and/or increased laboratory capacity for automatic reflex testing of specimens reactive for HCV antibodies. Risk factor and drug use data may also be indicative of a shift in drug use, with the possibility of reduced HCV transmission via IDU.

Perinatal Hepatitis C

- There were 9 cases of perinatal hepatitis C reported in Michigan in 2023.
- The approximate average age of infants reported with perinatal hepatitis C was 13 months.
- Most infants with perinatal hepatitis C were female (78%).
- 56% of perinatal hepatitis C cases were White/Caucasian.

Hepatitis C in Adults Under 40 Years of Age

- From 2010 through 2023, the proportion of all chronic hepatitis C cases by year in adults under 40 years old has nearly doubled (from 22% in 2010 to 38% in 2023).
- A concurrent increase in opioid use has been evident within the same timeframe.
 - History of injection drug use was reported in 69.0% of hepatitis C patients aged 18-39 years in 2023, which is decreased from previous years but remains the predominant risk factor in this age group.
- Sex of chronic hepatitis C cases in adults under 40 years tends to be more evenly distributed than the entirety of hepatitis C cases in Michigan (58% male, 41% female in AU40 versus 62% male, 38% female in all cases)
- In this age group, all race cohorts were evenly distributed with regard to sex except for black/African Americans, where 73% of chronic HCV cases aged 18-39 years were male.
- Where data was available, IDU was most prevalent in white/Caucasian cases (77%) and American Indian/Alaska Native cases (88%). In contrast, only 17% of black/African American cases in adults under 40 years old reported history of IDU.
- This population is accounted for 39% of all chronic HCV cases and 62% of all acute HCV cases in 2023.
- Regions of the state experiencing higher chronic hepatitis C burden in adults under 40 included more rural regions such as the Upper Peninsula, northern Lower peninsula and southwest Michigan

Hepatitis C in Baby Boomers (Born between 1945-1965)

- The reason that baby boomers have high rates of Hepatitis C is not completely understood. Most boomers are believed to have become infected in the 1970s and 1980s when rates of Hepatitis C were the highest. Many baby boomers could have gotten infected from contaminated blood and blood products before widespread screening of the blood supply in 1992 and universal precautions were adopted. Others may have become infected from injecting drugs.
- In 2023, 31% of all chronic hepatitis C cases that were in baby boomers.
- The average age of baby boomer cases in 2023 was 66 years old (98% of these cases were chronic hepatitis C cases)
- Sex of chronic hepatitis C cases in baby boomers tends to skew toward males compared to the entirety of hepatitis C cases in Michigan (66% male, 34% female in baby boomers versus 62% male, 38% female in all cases)
- In this age group, the sex distribution remains consistent across race apart from those reported as "Other" race, where 71% are male.
- Southeast Michigan experienced a higher chronic hepatitis C burden in baby boomers when compared with the remainder of the state.

Viral Hepatitis and Human Immunodeficiency Virus (HIV) Co-infection

- From 2004-2022, there were 957 persons in Michigan reported with hepatitis B/HIV co-infection.
 - 89.0% of these persons are male.
 - In 2023, 39 new co-infections were identified and the primary modes of transmission in the HIV/HBV co-infection group were men who have sex with men (MSM) at 48.7%.
- From 2004-2022, there were 1,938 persons in Michigan reported with hepatitis C/HIV co-infection.
 - 73.9% of these persons are male.
 - In 2023, 72 new co-infections were identified and the primary modes of transmission in the HIV/HCV co-infection group were MSM at 54.2% and IDU at 20.8%
- Incidence of HBV/HIV co-infections increased slightly in 2023. This is likely due to expanded risk-based screening recommendations in March 2023.
- Incidence of HIV/HCV co-infection had steadily declined through 2019 but has since remained in the 50-75 case range year over year.

Viral Hepatitis Outcomes

Hospitalization Data

- After a considerable increase in HCV-related hospitalizations from 2005 through 2017, the 2023 yearly total had decreased to its lowest level in 15 years while total hospitalizations due to hepatitis B and HIV have remained steady.

Transplant Data

- Trends in liver transplantation may be indicative of increasing disease progression and morbidity associated with long-term HBV and/or HCV infection. The total of liver transplants has remained fairly stable over the past 15 years. The transplant waitlist had been stable over the same span until 2018, when a downward trend began through 2021 and stabilized through 2023.

Viral Hepatitis and Liver Cancer

- Overall incidence for liver cancer in Michigan remains relatively stable (6.1-6.9 per 100,000 persons from 2011-2021).
- The liver cancer rate among Black/African American males (14.7 cases per 100,000) remains highest, and the gap in rates compared to White/Caucasian males (8.8 cases per 100,000) continues to be pronounced.
- The overall liver cancer mortality has increased by 45% between 2015 and 2022 in Michigan.

Viral Hepatitis-Related Mortality

- Deaths due to acute and chronic hepatitis C continue to decrease year over year, with 231 deaths being the lowest on record in recent history. Hepatitis B related mortality remains stable at around 30 deaths per year.

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Acute Hepatitis B

Acute Hepatitis B—Incidence and Sex

Figure 1.1 Incidence of Acute Hepatitis B in Michigan and United States, 2014-2023

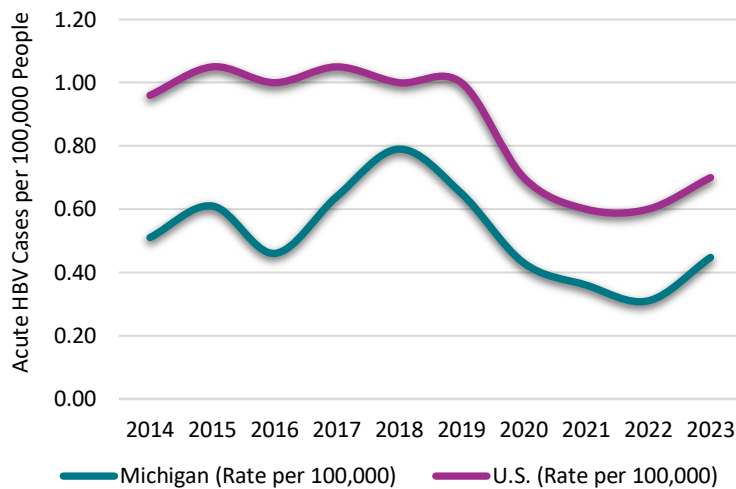


Table 1.1 Incidence of Acute Hepatitis B, Michigan and United States, 2019-2023

Year	Michigan Cases	Michigan (Rate per 100,000)	U.S. (Rate per 100,000)
2019	65	0.7	1.0
2020	43	0.4	0.7
2021	36	0.4	0.6
2022	31	0.3	0.6
2023	45	0.4	0.7

Following a two-year period of increased cases between 2016 and 2018, acute hepatitis B infections in Michigan decreased in unison with national trends through 2022 but began to increase again in 2023. The 45% increase in cases from 2022 to 2023 results in the highest one-year case count since 2019. The pattern in Michigan acute hepatitis B incidence rate continues to be consistent with national rates and continues to be lower than the U.S. incidence rate. Pronounced reductions in case counts and/or rates in 2020 may be due, in part, to the COVID-19 pandemic and subsequent temporary reduction in access to screening.

Figure 1.2 Number of Acute Hepatitis B Cases by Gender in Michigan, 2014-2023

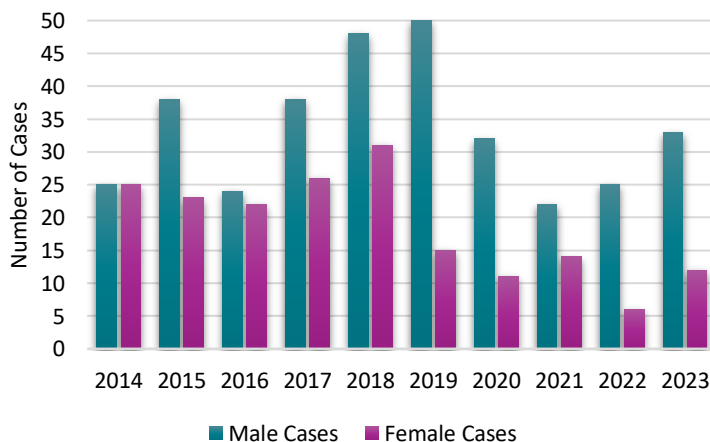


Table 1.2 Acute Hepatitis B Total Cases and Incidence Rate by Sex in Michigan, 2019-2023

Year	Male Cases	Male Incidence	Female Cases	Female Incidence
2019	50	1.0	15	0.3
2020	32	0.7	11	0.2
2021	22	0.5	14	0.3
2022	25	0.5	6	0.1
2023	33	0.7	12	0.2

Acute hepatitis B incidence reached a peak in 2019 before a steady decline the next two years, followed by a modest increase in 2022 and again in 2023. Males have traditionally had a higher rate of acute hepatitis B infections when compared to females, and that trend continues. After an abrupt reduction in female cases of acute hepatitis B in 2022, the incidence returned to a level similar to 2019-2021.

Acute Hepatitis B—Race and Ethnicity

Figure 1.3 Incidence of Acute Hepatitis B by Race in Michigan, 2014-2023

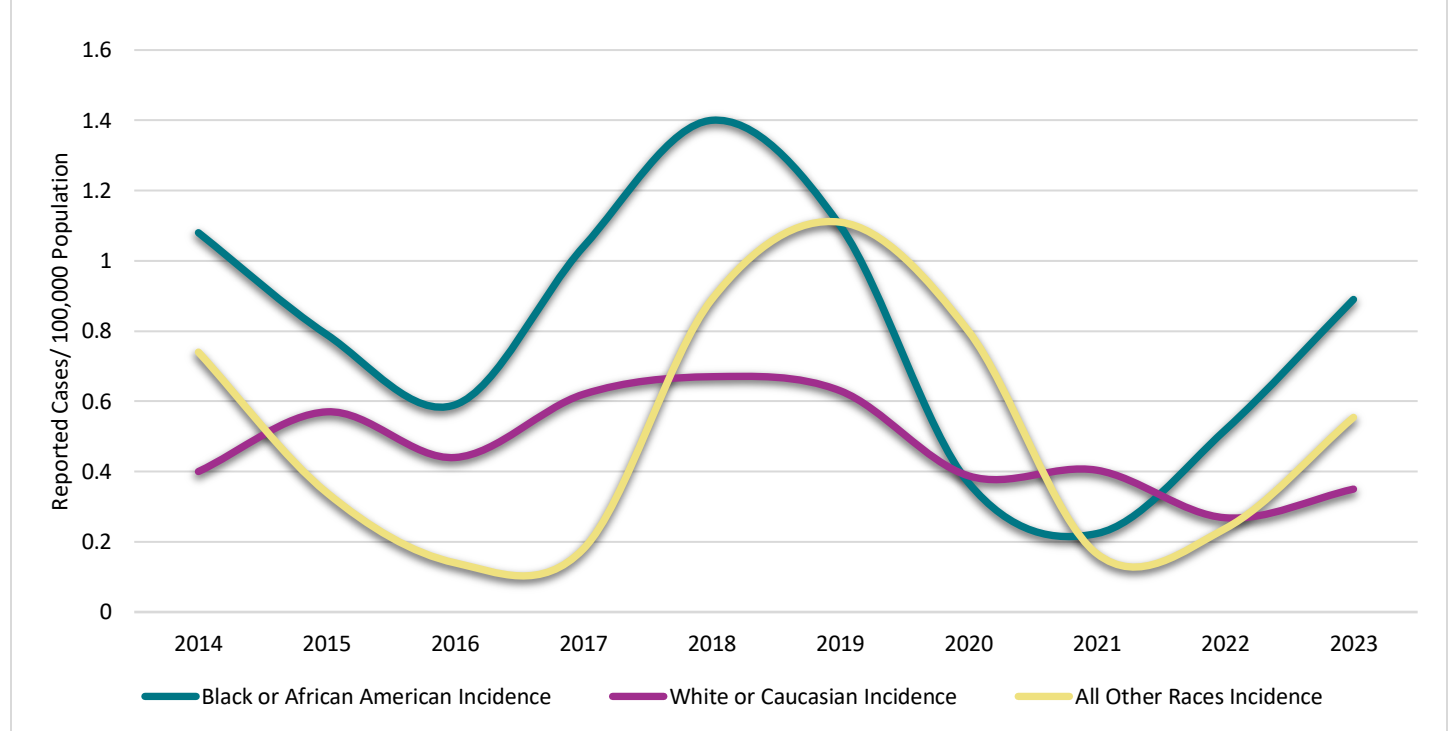


Table 1.3 Incidence of Acute Hepatitis B by Race and Ethnicity in Michigan, 2019-2023

Year	Black or African American Cases	Black or African American Incidence	American Indian or Alaska Native Cases	American Indian or Alaska Native Incidence	Asian Cases	Asian Incidence	White or Caucasian Cases	White or Caucasian Incidence	Hispanic Cases	Hispanic Incidence	Other Cases	Other Incidence
2019	15	1.1	0	0.0	2	1.0	47	0.6	1	0.2	0	0.0
2020	5	0.4	1	2.2	0	0.0	29	0.4	2	0.4	6	2.3
2021	3	0.2	1	2.3	0	0.0	30	0.4	0	0.0	1	0.3
2022	7	0.5	0	0.0	0	0.0	20	0.3	2	0.4	1	0.3
2023	12	0.9	0	0.0	1	0.3	26	0.4	2	0.4	1	0.3

In 2023, the “Other” race (Other race alone, Multiracial, Hawaiian/Pacific Islander) and Black/African American populations experienced acute hepatitis B infection at the highest rate in Michigan, followed by Hispanic, White/Caucasian, and Asian populations. Case increases in 2023 impacted Black/African Americans most, with an incidence rate increase of 71%. Traditionally, the Black/African American and Asian populations have had the highest incidence rates.

Acute Hepatitis B—Risk Behaviors

Table 1.4a Completeness of Acute Hepatitis B Reports by Risk Behavior in Michigan, 2023 (n = 45)

Risk Behavior	Completed
Injection Drug User	84%
Used Street Drugs	82%
Hemodialysis	84%
Received Blood Products	82%
Received a Tattoo	84%
Accidental Needle Stick	84%
Contact of Person with Hepatitis B	87%
Other Surgery	80%
Oral Surgery or Dental Work	80%
Employed in Medical Field	84%
Employed as Public Safety Officer	84%
Incarceration Longer than 6 Months	82%
Any Part of Body Pierced (other than ear)	82%

Table 1.4a shows the percentage of acute HBV risk behavior questions that were completed by local health department disease investigators in the MDSS case report form. A risk behavior was considered completed if the question was marked as “Yes,” “No,” or “Unknown.” Acute HBV epidemiologic information questions were completed for approximately 80% of case reports.

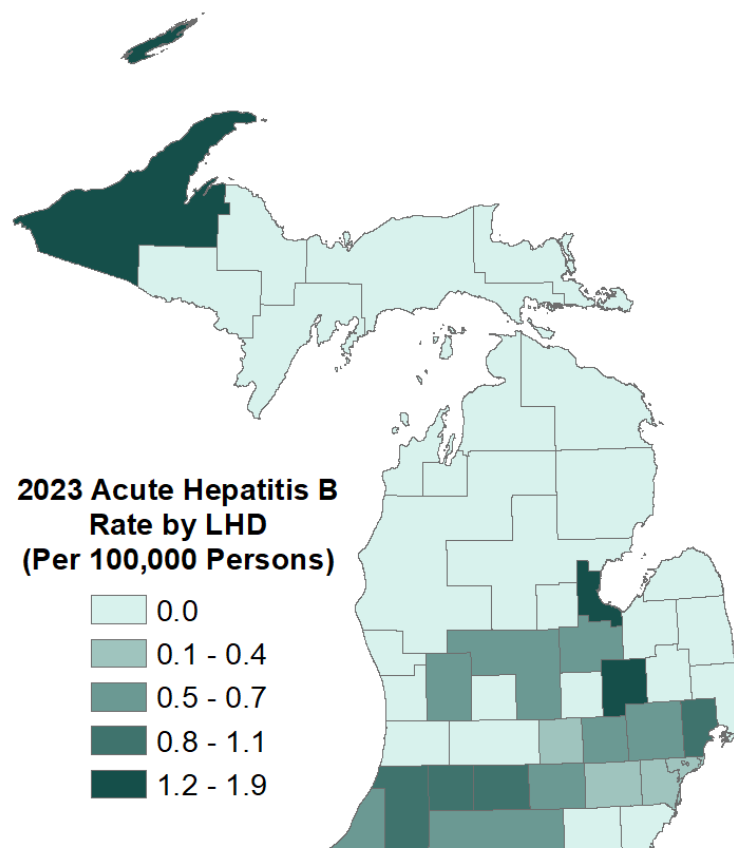
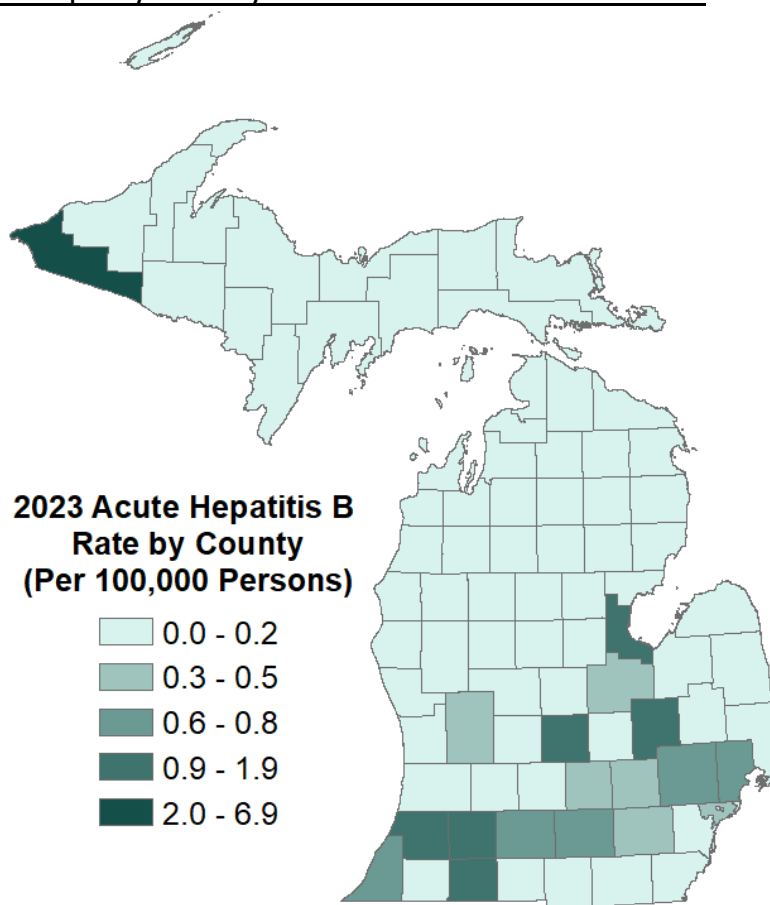
Table 1.4b Response of Completed Acute Hepatitis B Reports* by Risk Behavior in Michigan, 2023

Risk Behavior	Yes*	No*	Unknown*	Yes Responses U.S. Wide 2020
Injection Drug User	8%	74%	18%	36.1%
Used Street Drugs	24%	51%	24%	
Hemodialysis	5%	68%	26%	3.8%
Received Blood Products	5%	65%	30%	0.1%
Received a Tattoo	26%	42%	32%	
Accidental Needle Stick	0%	66%	34%	4.6%
Contact of Person with Hepatitis B	8%	46%	46%	1.7%
Other Surgery	8%	56%	36%	11.7%
Oral Surgery or Dental Work	19%	47%	33%	
Employed in Medical Field	5%	63%	32%	0.1%
Employed as Public Safety Officer	0%	68%	32%	
Incarceration Longer than 6 Months	8%	49%	43%	
Any Part of Body Pierced (other than ear)	8%	59%	32%	

* Percentages calculated based upon those who completed the field; excludes missing data

Table 1.4b shows the HBV acquisition risk factors reported by clients in the six weeks to six months prior to onset of symptoms. “Received a Tattoo” and “Used Street Drugs” were the most common potential exposure, with ‘Yes’ being selected in 26% and 24% of cases with completed risk behavior questions. “Employed as Public Safety Officer” and “Accidental Needle Stick” were the least common reported risk exposures in 2023 with zero acute hepatitis B cases documenting these risks. In comparison to the nationwide proportion reported by the CDC, acute hepatitis B cases in Michigan are reporting “Injection Drug User” at a drastically lower frequency, while being contact of a person with Hepatitis B was a more common exposure in Michigan than nationally.

Acute Hepatitis B Rate Maps by County and Local Health Jurisdiction



A large, stylized graphic of a virus particle, resembling a hepatitis B virus, is centered on the page. It has a circular outer shell with a teal-to-purple gradient and a white center. The background is white with a pattern of small, light gray dots.

Chronic Hepatitis B

Chronic Hepatitis B—Incidence and Sex

Figure 2.1 Chronic Hepatitis B Cases per 100,000 Persons, Michigan, 2014-2023

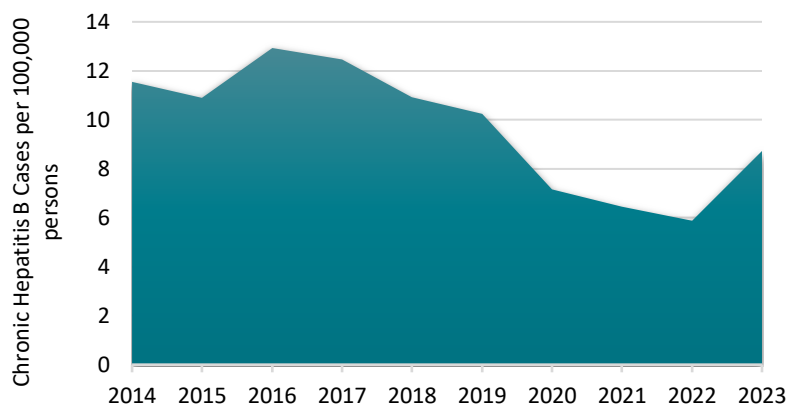


Table 2.1 Chronic Hepatitis B Cases per 100,000 Persons, Michigan, 2019-2023

Year	Michigan Cases	Michigan (Rate per 100,000)
2019	1024	10.2
2020	713	7.2
2021	642	6.4
2022	591	5.9
2023	877	8.7

Following an increase in cases in 2016, chronic hepatitis B cases have decreased through 2022, before increasing again by 48% in 2023. There is no national benchmark for comparing rates of chronic HBV infection. Increases in the number of cases reported from 2015-2016 may be explained by improved laboratory reporting from some Michigan health systems and/or more frequent ordering of hepatitis panels because of a hepatitis A outbreak occurring at that time. Pronounced reductions in case counts and/or rates in 2020 may be due, in part, to the COVID-19 pandemic and subsequent temporary reduction in access to screening, while the 2023 increase may be, in part, due to [expanded hepatitis B screening recommendations](#) in March of 2023.

Figure 2.2 Chronic Hepatitis B Cases per 100,000 Population by Gender, Michigan, 2014-2023

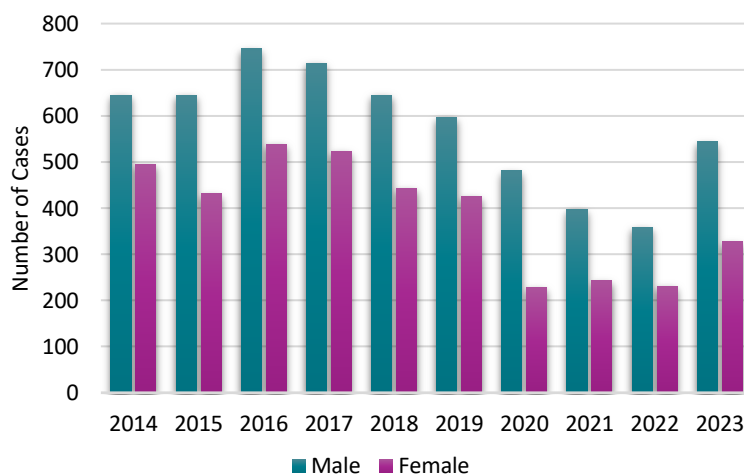


Table 2.2 Chronic Hepatitis B Cases per 100,000 Population by Sex in Michigan, 2019-2023

Year	Male	Male Incidence	Female	Female Incidence
2019	597	12.1	425	8.4
2020	481	9.8	228	4.5
2021	397	8.1	243	4.8
2022	359	7.2	231	4.5
2023	544	10.9	327	6.5

The rate of chronic HBV in males in Michigan has remained higher than the rate in females between the years of 2014 and 2023. In 2022, the rate for males was at its lowest point in recent years before increasing in 2023. A similar increase in incidence rate was evident in female cases (51 % increase in males versus 44% increase in females). Again, the expansion of hepatitis B screening recommendations in March of 2023 to include screening using three laboratory tests at least once during a lifetime for adults aged ≥18 years, as well as expanded risk-based testing recommendations to include the following populations, activities, exposures, or conditions associated with increased risk for HBV infection: persons incarcerated or formerly incarcerated in a jail, prison, or other detention setting; persons with a history of sexually transmitted infections or multiple sex partners; and persons with a history of hepatitis C virus infection, likely influenced the evident increase in chronic hepatitis B cases.

Chronic Hepatitis B—Race and Ethnicity

Figure 2.3 Chronic Hepatitis B Cases per 100,000 by Race and Ethnicity, Michigan, 2014-2023

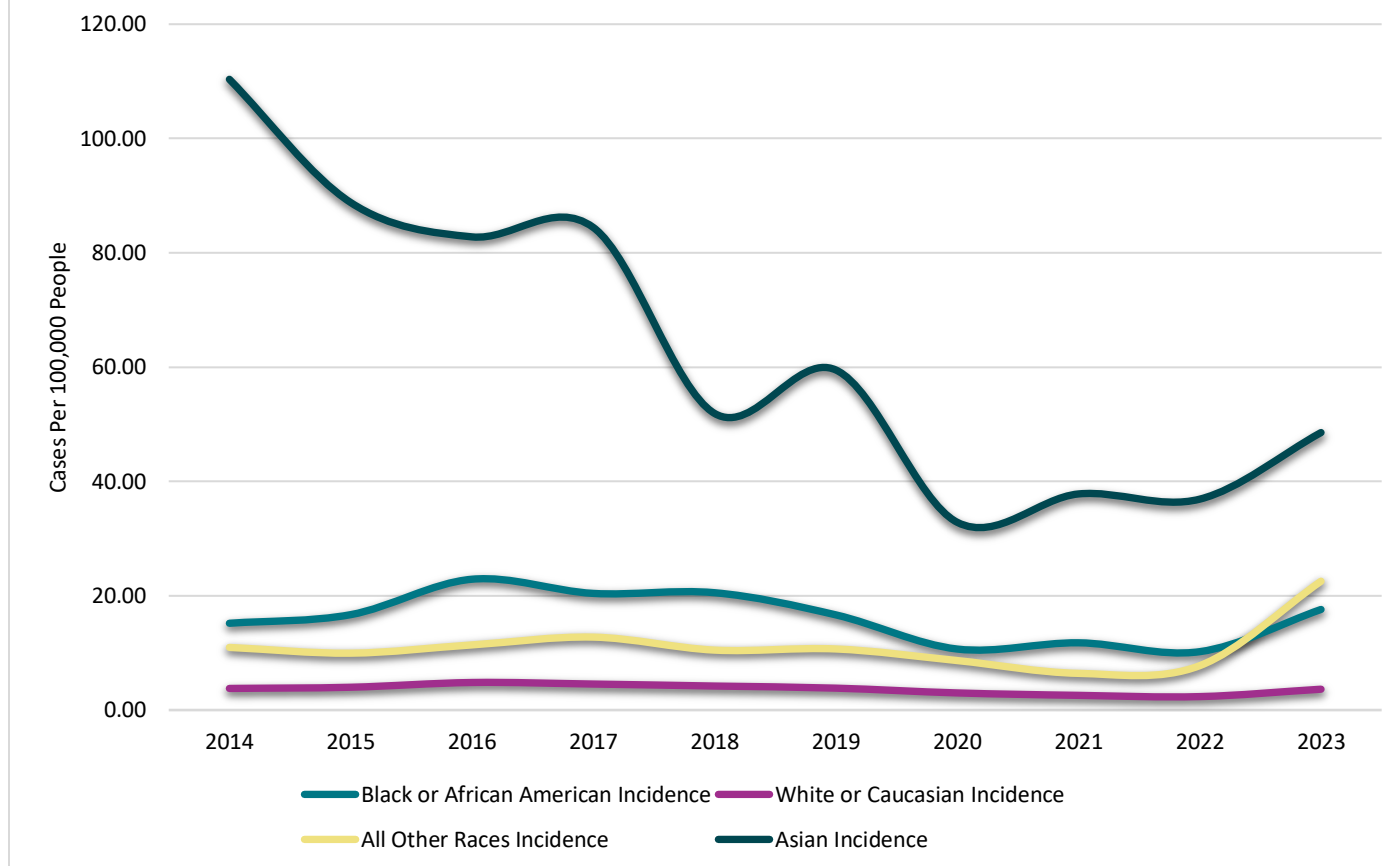
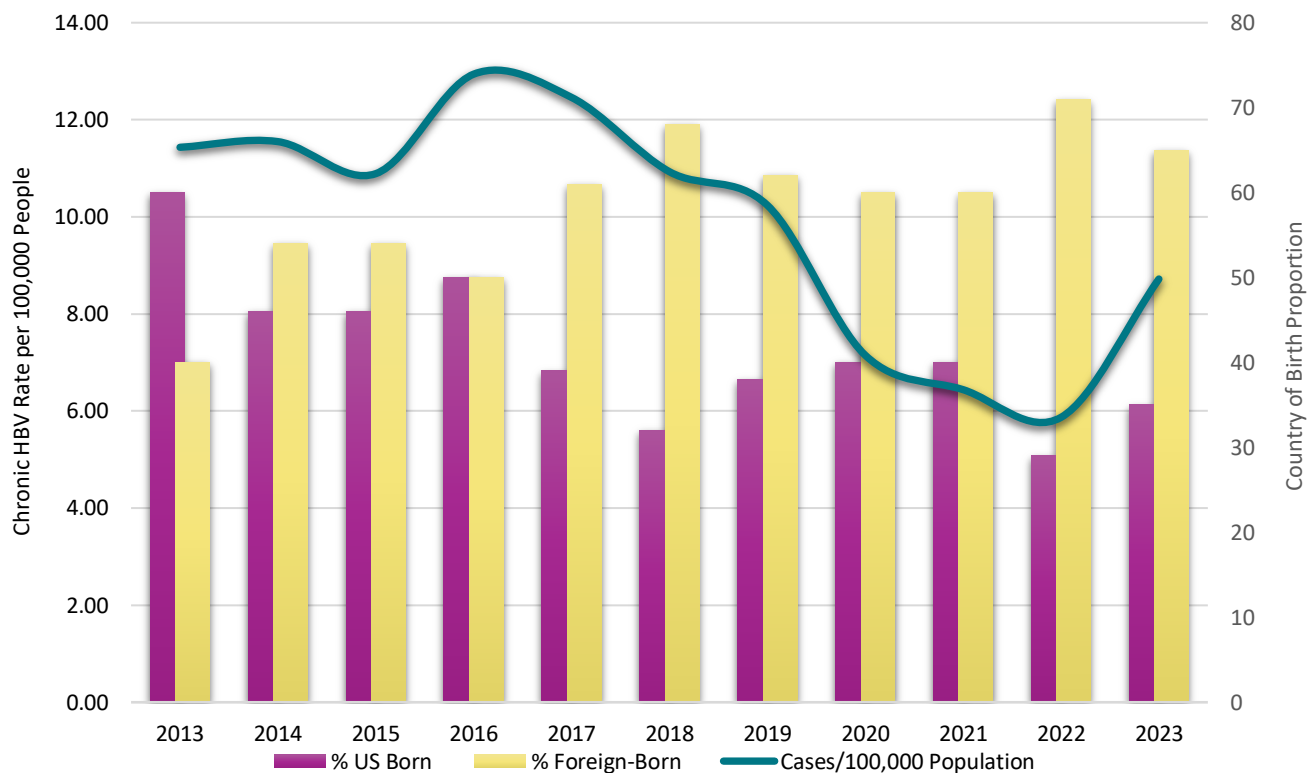


Table 2.3 Chronic Hepatitis B Cases per 100,000 by Race and Ethnicity, Michigan, 2019-2023

Year	Black or African American Cases	Black or African American Incidence	American Indian or Alaska Native Cases	American Indian or Alaska Native Incidence	Asian Cases	Asian Incidence	White or Caucasian Cases	White or Caucasian Incidence	Hispanic Cases	Hispanic Incidence	Other Cases	Other Incidence
2019	227	16.7	4	8.6	193	59.5	286	3.8	18	3.5	67	25.0
2020	145	10.7	2	4.4	102	32.9	224	3.0	14	2.8	55	26.6
2021	158	11.8	2	4.7	119	37.8	191	2.6	14	2.7	41	12.7
2022	138	10.2	4	10.1	119	36.9	175	2.3	16	3.0	53	14.7
2023	237	17.6	4	11.4	158	48.6	270	3.7	29	5.3	72	17.7

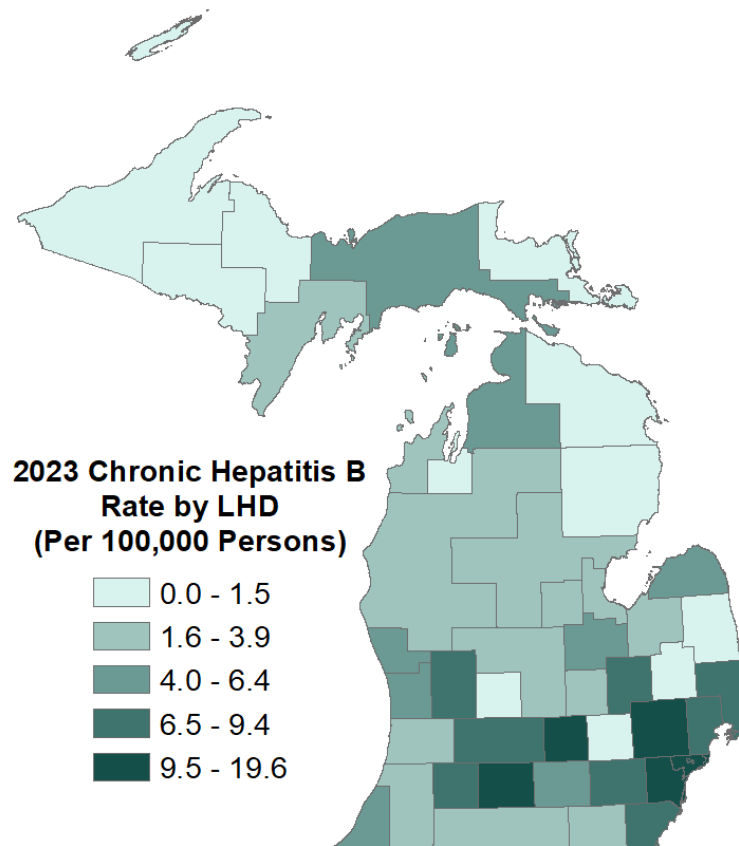
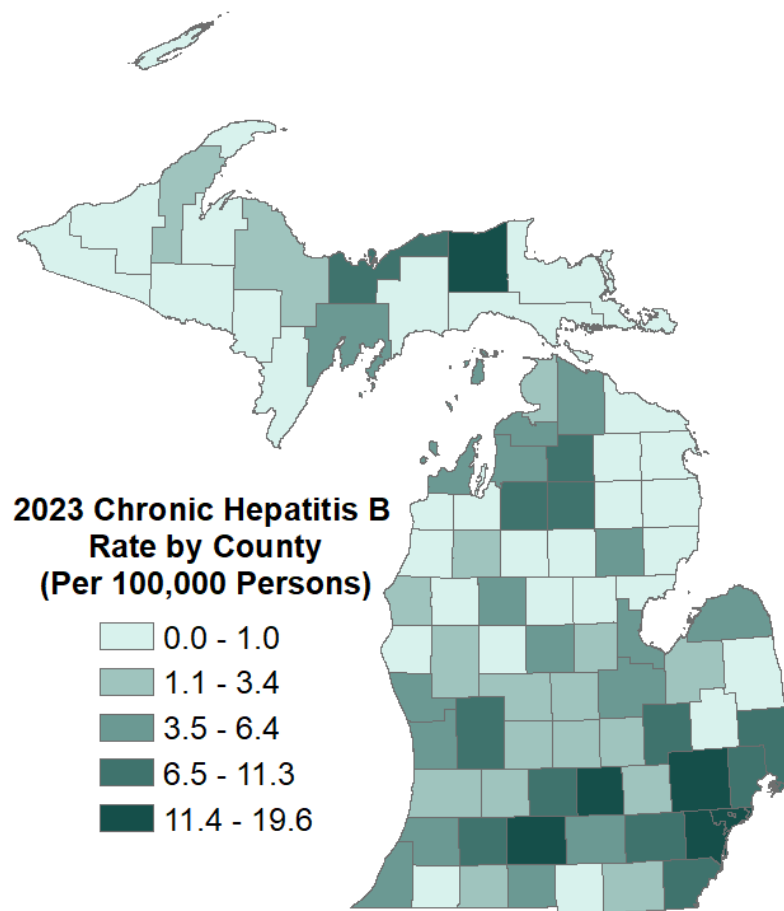
In 2023, Asian persons had the highest incidence rate (48.6 per 100,000) of chronic hepatitis B infection in Michigan, followed by those that classify as “Other” race (17.7 per 100,000). The incidence rate in Asian persons is 13 times higher than that of White/Caucasian persons (2.35 cases per 100,000). The Asian-American population is the target of CDC’s KNOW HEPATITIS B campaign due to a similar disparity occurring nationwide.

Figure 2.4 Chronic Hepatitis B Cases per 100,000 Population and Country of Birth in Michigan, 2014-2023



Hepatitis B is a vaccine preventable disease. While decreases in HBV have been observed in the U.S., other regions around the world are still greatly impacted by HBV infection. To better understand the Michigan HBV population, we have categorized the proportion of incident cases that were born in the U.S. versus those born in other countries. When comparing the country of birth among new chronic hepatitis B cases in Michigan in 2023, the number of cases born in foreign countries was nearly double that of cases born in the United States.

Chronic Hepatitis B Rate Maps by County and Local Health Jurisdiction



A large, stylized circular graphic is centered on the page. It is composed of two thick, curved segments: a teal one on the left and a purple one on the right, which together form a circle. The background of the entire page is white with a pattern of small, light gray dots. A vertical gray band is visible on the left side of the page.

Acute Hepatitis C

Acute Hepatitis C—Incidence and Sex

Figure 3.1 Incidence of Acute Hepatitis C, Michigan and U.S., 2014-2023

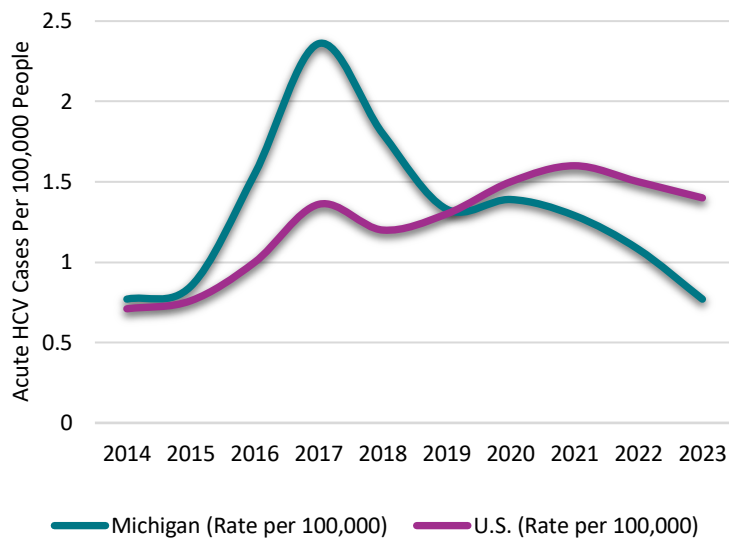


Table 3.1 Incidence of Acute Hepatitis C, Michigan and U.S., 2019-2023

Year	Michigan Cases	Michigan (Rate per 100,000)	U.S. (Rate per 100,000)
2019	133	1.3	1.3
2020	139	1.4	1.5
2021	129	1.3	1.6
2022	109	1.1	1.5
2023	77	0.8	1.4

The number of acute hepatitis C cases in Michigan has fluctuated from 2010 through 2020 but has since decreased through 2023. A CDC/CSTE acute hepatitis C case definition change in January 2016 is at least partially responsible for the sharp increase in 2016 and 2017, along with the concurrent hepatitis A outbreak resulting in an increased ordering of hepatitis panels and, in turn, potentially increased hepatitis C detection. The reduction of cases in 2019 is likely attributable to the introduction of negative HCV RNA electronic lab reporting, which reduced the number of probable acute cases. Michigan acute hepatitis C infection trends had closely followed published national benchmarks through 2020 but have since indicated a more rapid reduction of acute hepatitis C in Michigan versus nationally.

Figure 3.2 Incidence of Acute Hepatitis C by Gender, Michigan, 2014-2023

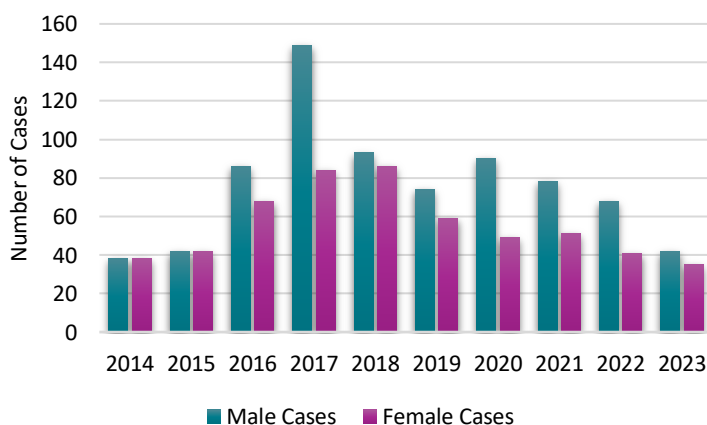


Table 3.2 Incidence of Acute Hepatitis C by Sex in Michigan, 2019-2023

Year	Male Cases	Male Incidence	Female Cases	Female Incidence
2019	74	1.5	59	1.2
2020	90	1.8	49	1.0
2021	78	1.6	51	1.0
2022	68	1.4	41	0.8
2023	42	0.8	35	0.7

Historically, the difference in acute hepatitis C diagnoses between males and females was minimal but became more substantial in 2016 when males began to experience higher rates. In 2018 the difference in acute hepatitis C diagnoses in males and females narrowed, but the gap widened again in 2020 through 2022. The disparity in sex has shrunk again in 2023, returning to a case makeup like 2018 and 2019, but on a smaller overall scale. Again, increases in case counts in 2016-2017 may be related to case counting methodology because of the change in case definition, as well as heightened awareness and testing due to the concurrent hepatitis A outbreak in Michigan.

Acute Hepatitis C—Race and Ethnicity

Figure 3.3 Incidence of Acute Hepatitis C by Race and Ethnicity, Michigan, 2014-2023

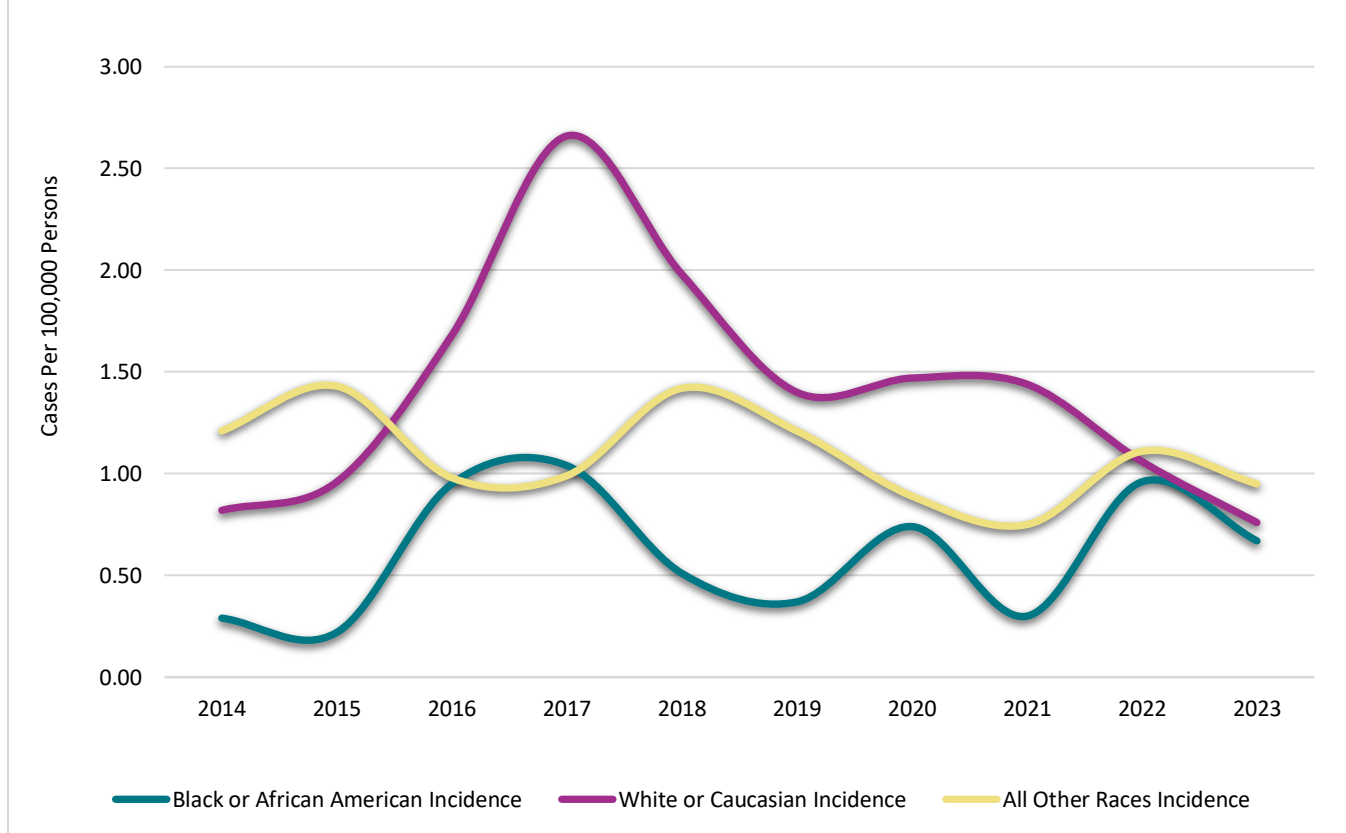


Table 3.3 Incidence of Acute Hepatitis C by Race and Ethnicity, Michigan, 2019-2023

Year	Black or African American Cases	Black or African American Incidence	American Indian or Alaska Native Cases	American Indian or Alaska Native Incidence	Asian Cases	Asian Incidence	White or Caucasian Cases	White or Caucasian Incidence	Hispanic Cases	Hispanic Incidence	Other Cases	Other Incidence
2019	5	0.4	1	2.2	0	0.0	105	1.4	9	1.7	4	1.5
2020	10	0.7	0	0.0	0	0.0	110	1.5	5	1.0	5	1.9
2021	4	0.3	1	2.3	1	0.3	107	1.4	3	0.6	4	1.2
2022	13	1.0	0	0.0	1	0.3	79	1.1	4	0.7	9	2.5
2023	9	0.7	3	8.6	0	0.0	56	0.8	5	0.9	2	0.5

Although the incidence rate in White/Caucasian persons has decreased from a peak of 2.7 cases per 100,000 in 2017 to 0.8 cases per 100,000 Michiganders in 2023, they still comprise over 70% of all the acute hepatitis C cases. Also of note, the incidence rate of acute hepatitis C was highest amongst American Indian or Alaska Natives. Although the overall acute case volume is low for this demographic, this trend is consistent with rates of chronic hepatitis C.

Table 3.4a Completeness of Acute Hepatitis C Reports by Risk Behavior, Michigan, 2023 (n= 77)

Risk Behavior	Completed
Injection Drug User	83%
Used Street Drugs	79%
Hemodialysis	71%
Received Blood Products	70%
Received a Tattoo	75%
Accidental Needle Stick	74%
Contact of Person with Hepatitis C	77%
Other Surgery	69%
Oral Surgery or Dental Work	71%
Employed in Medical Field	74%
Employed as Public Safety Officer	74%
Incarceration Longer than 6 Months	74%
Any Part of Body Pierced (other than ear)	74%

Table 3.4a shows the percentage of acute HCV risk behavior questions that were completed by local health department staff in 2023. A risk behavior was considered completed if the question was marked as “Yes,” “No,” or “Unknown.” Most questions were answered with a response rate of 74% or higher. This proportion has increased steadily since 2020 but is lower in comparison to the 87% completion percentage from 2019; however, the national proportion for completeness of acute HCV case report forms was 47.5% in 2016.

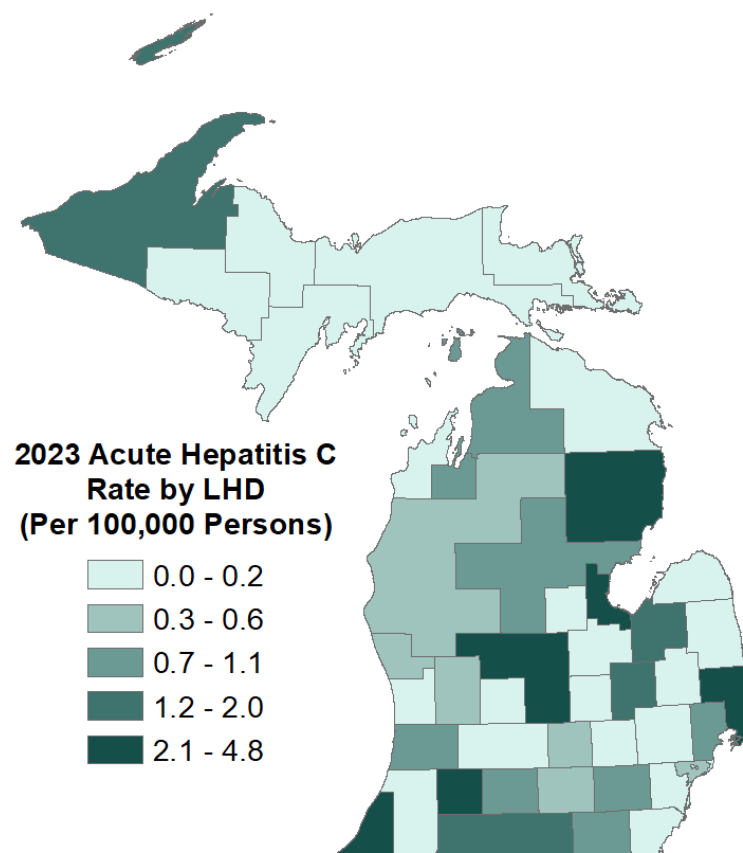
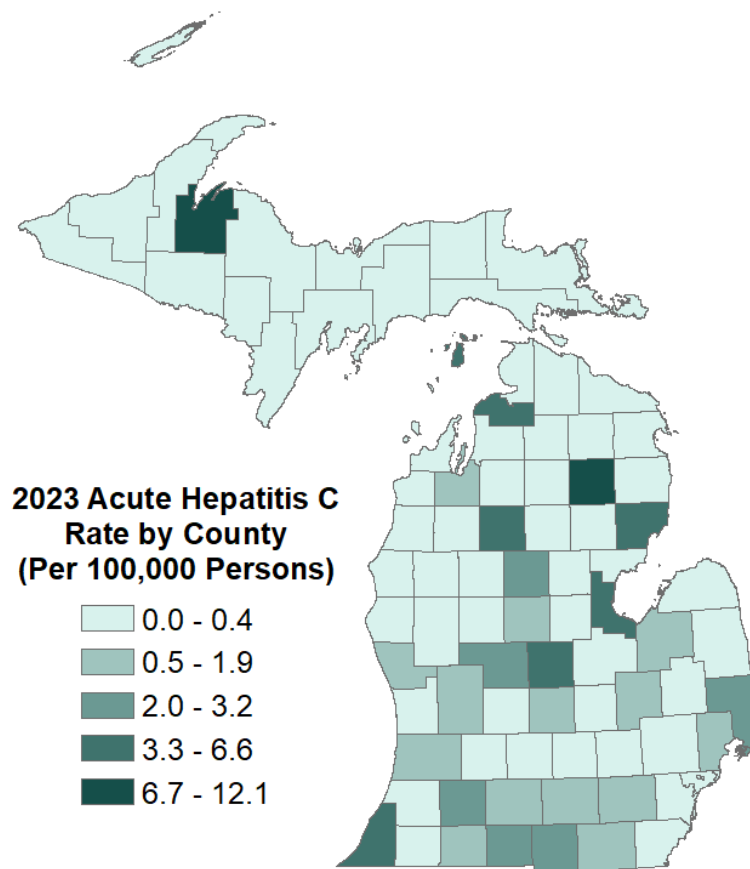
Table 3.4b Response of Completed Acute Hepatitis C Reports* by Risk Behavior, Michigan, 2023

Risk Behavior	Yes*	No*	Unknown*	Yes Responses U.S. Wide 2020
Injection Drug User	39%	42%	19%	66.0%
Used Street Drugs	44%	30%	26%	-
Hemodialysis	0%	78%	22%	6.7%
Received Blood Products	6%	63%	31%	0.1%
Received a Tattoo	28%	33%	40%	-
Accidental Needle Stick	5%	60%	35%	8.3%
Contact of Person with Hepatitis C	22%	37%	41%	11.9%
Other Surgery	13%	51%	36%	16.6%
Oral Surgery or Dental Work	16%	42%	42%	-
Employed in Medical Field	12%	58%	30%	1.0%
Employed as Public Safety Officer	0%	68%	32%	-
Incarceration Longer than 6 Months	23%	42%	35%	-
Any Part of Body Pierced (other than ear)	11%	46%	44%	-

Table 3.4b shows the responses among the completed questions by risk behavior. Since the outset of this report, 2023 is the first year that injection drug use was not the most commonly reported risk for acquiring acute HCV infection, although it does remain the second most prevalent. The use of street drugs was reported most amongst acute hepatitis C cases in 2023.

* Percentages calculated based upon those who completed the field; excludes missing data

Acute Hepatitis C Rate Maps by County and Local Health Jurisdiction



A large, stylized graphic composed of two thick, curved lines in teal and purple, forming a partial circle around the title. The background is white with a pattern of small, light gray dots.

Chronic Hepatitis C

Chronic Hepatitis C—Incidence and Sex

Figure 4.1 Chronic Hepatitis C Cases per 100,000 Persons in Michigan 2014-2023

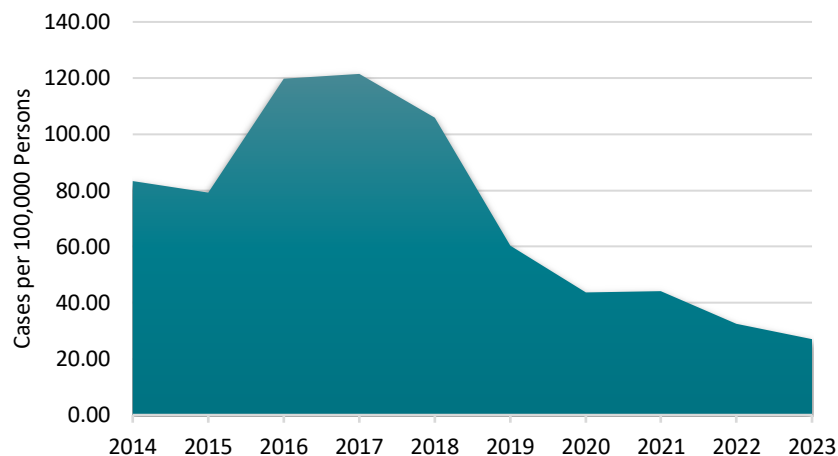


Table 4.1 Chronic Hepatitis C Cases per 100,000 Population in Michigan, 2019-2023

Year	Michigan Cases	Rate per 100,000
2019	6,038	60.4
2020	4,356	43.7
2021	4,412	44.2
2022	3,278	32.6
2023	2,729	27.1

The trend of newly reported chronic hepatitis C infections remained relatively stable through 2015 but underwent a notable 51.1% increase in 2016 before stabilizing again in 2017 before decreasing by 74% from 2018 through 2023. The 2016 increase may be due to the change in the chronic hepatitis C case definition, while the 2019 decrease may be due to the introduction of negative electronic lab reporting of HCV RNA results. This resulted in a more complete diagnostic assessment and ultimately reduced the number of probable chronic hepatitis C cases drastically. The continued decrease in 2020 can, in part, be attributed to the COVID-19 pandemic and its impact on accessibility to routine screening. There is no nationally available benchmark for comparing rates of chronic hepatitis.

Figure 4.2 Chronic Hepatitis C Cases per 100,000 Population by Gender in Michigan, 2014-2023

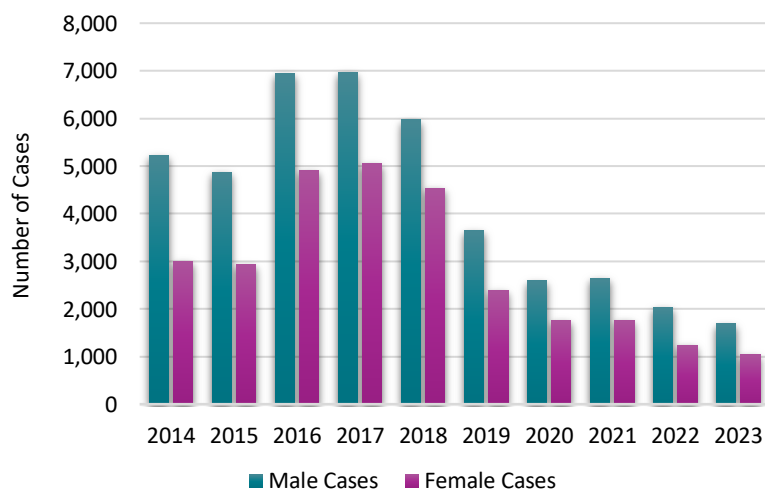


Table 4.2 Chronic Hepatitis C Cases per 100,000 Population by Sex in Michigan 2019-2023

Year	Male Cases	Male Incidence	Female Cases	Female Incidence
2019	3,641	73.9	2,380	47.0
2020	2,588	52.8	1,754	34.7
2021	2,639	53.7	1,758	34.7
2022	2,032	40.8	1,233	24.3
2023	1,686	33.8	1,034	20.4

Males account for most chronic hepatitis C cases reported each year since 2014. In 2023, the rate of chronic hepatitis C reports was over 1.6 times higher in males than females. The overall proportion of chronic hepatitis C cases reported in 2023 was 62% male and 32% female, while the proportion of cases in persons 18-39 years of age is slightly more equal (58% male versus 42% female) and persons born from 1945 through 1965 is more skewed toward males (66% versus 34%).

Chronic Hepatitis C—Race and Ethnicity

Figure 4.3 Chronic Hepatitis C Cases per 100,000 by Race and Ethnicity in Michigan, 2014-2023

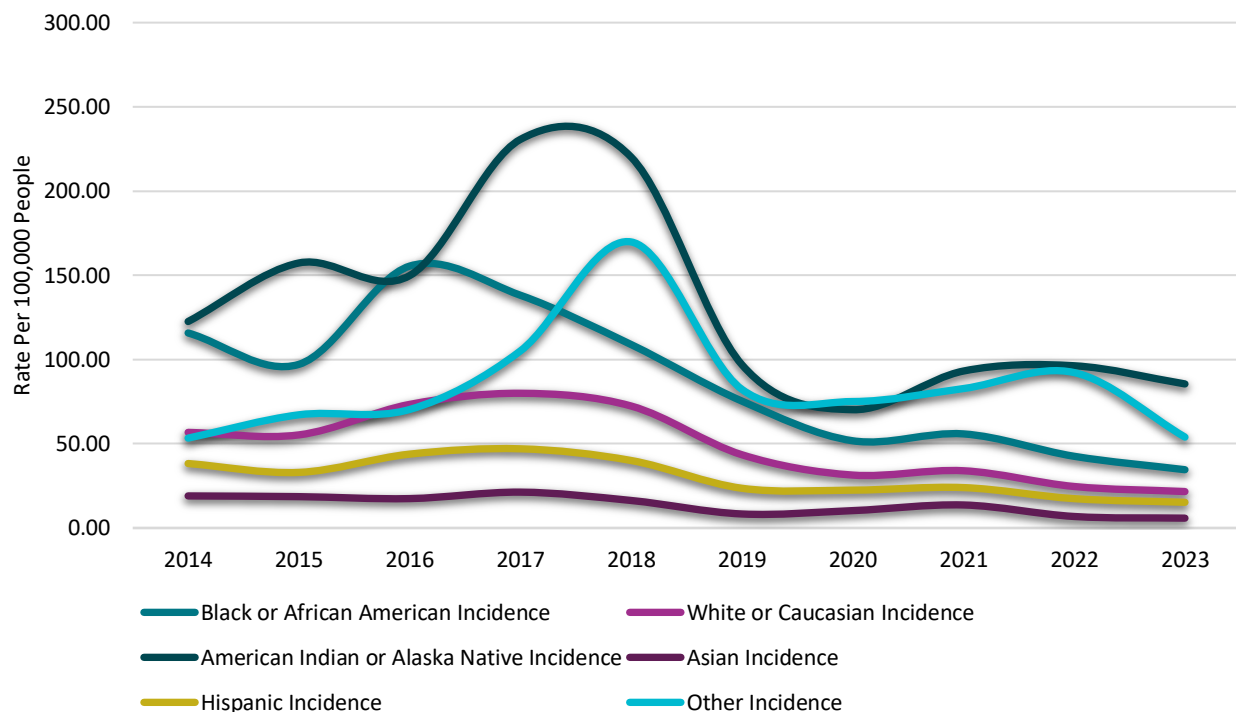


Table 4.3 Chronic Hepatitis C Cases per 100,000 by Race and Ethnicity in Michigan, 2019-2023

Year	Black or African American Cases	Black or African American Incidence	American Indian or Alaska Native Cases	American Indian or Alaska Native Incidence	Asian Cases	Asian Incidence	White or Caucasian Cases	White or Caucasian Incidence	Hispanic Cases	Hispanic Incidence	Other Cases	Other Incidence
2019	1,027	75.3	45	97.0	27	8.3	3,250	43.5	122	23.6	221	82.3
2020	703	51.8	32	70.2	32	10.3	2,349	31.4	114	22.5	200	75.1
2021	750	55.9	40	93.2	43	13.7	2,524	34.0	125	24.0	268	82.8
2022	575	42.6	38	96.3	22	6.8	1,834	24.6	94	17.4	333	92.2
2023	466	34.6	30	85.5	19	5.8	1,599	21.6	84	15.3	219	54.0

In 2023, the American Indian/Alaska Native population had the highest rate of chronic hepatitis C infection (85.5 per 100,000), followed by persons in the “Other” race category (54.0 per 100,000). “Other” race includes multiracial individuals and those reporting some other race alone. These groups are historically disproportionately affected compared to other racial groups in Michigan. The decrease in case counts in 2019 and 2020 may be the result of negative HCV RNA electronic lab reporting and the COVID-19 pandemic and its impact on accessibility to routine screening, respectively.

Chronic Hepatitis C—Risk Behaviors

Table 4.4a Completeness of Chronic Hepatitis C Reports by Risk Behavior, Michigan, 2023 (n = 2,729)

Risk Behavior	Completed
Received Blood Transfusion Prior to 1992	61%
Received an Organ Transplant Prior to 1992	58%
Received Clotting Factor Concentrates Prior to 1992	59%
Hemodialysis	58%
Injection Drug User	65%
Incarcerated in Lifetime	62%
Treated for a Sexually Transmitted Disease in Lifetime	57%
Contact of Person with Hepatitis C	59%
Employed in Medical Field	58%

Table 4.4a shows the percentage of chronic hepatitis C risk behavior questions completed by local health department staff in 2023. A risk behavior was considered completed if the question was marked as ‘Yes’, ‘No’, or ‘Unknown.’ Chronic hepatitis C epidemiologic information questions were completed on 57% of case reports. While this is continuing to increase since 2020, it is still slightly lower compared to previous years. This is at least partially due to the COVID-19 pandemic and the necessary public health response that limited resources for hepatitis C follow-up. In 2012, before viral hepatitis surveillance funding, the chronic HCV risk factor completeness was less than 30%. There is no national comparison for completion of chronic hepatitis C case report forms.

Table 4.4b shows the responses among the completed questions by risk behavior. Injection drug use (IDU), incarceration, and being a contact of a person with hepatitis C were the most common risk behaviors associated with chronic hepatitis C. Notable decreases in IDU have been reported in recent years, as the proportion reporting IDU in 2019 was 69%.

Table 4.4b Response of Completed Chronic Hepatitis C Reports* by Risk Behavior, Michigan, 2023

Risk Behavior	Yes*	No*
Received Blood Transfusion Prior to 1992	6%	94%
Received an Organ Transplant Prior to 1992	0%	100%
Received Clotting Factor Concentrates Prior to 1992	0%	100%
Hemodialysis	4%	96%
Injection Drug User	52%	48%
Incarcerated in Lifetime	42%	58%
Treated for a Sexually Transmitted Disease in Lifetime	20%	80%
Contact of Person with Hepatitis C	41%	59%
Employed in Medical Field	8%	92%

* Percentages calculated based upon those who completed the field; excludes missing/unknown data

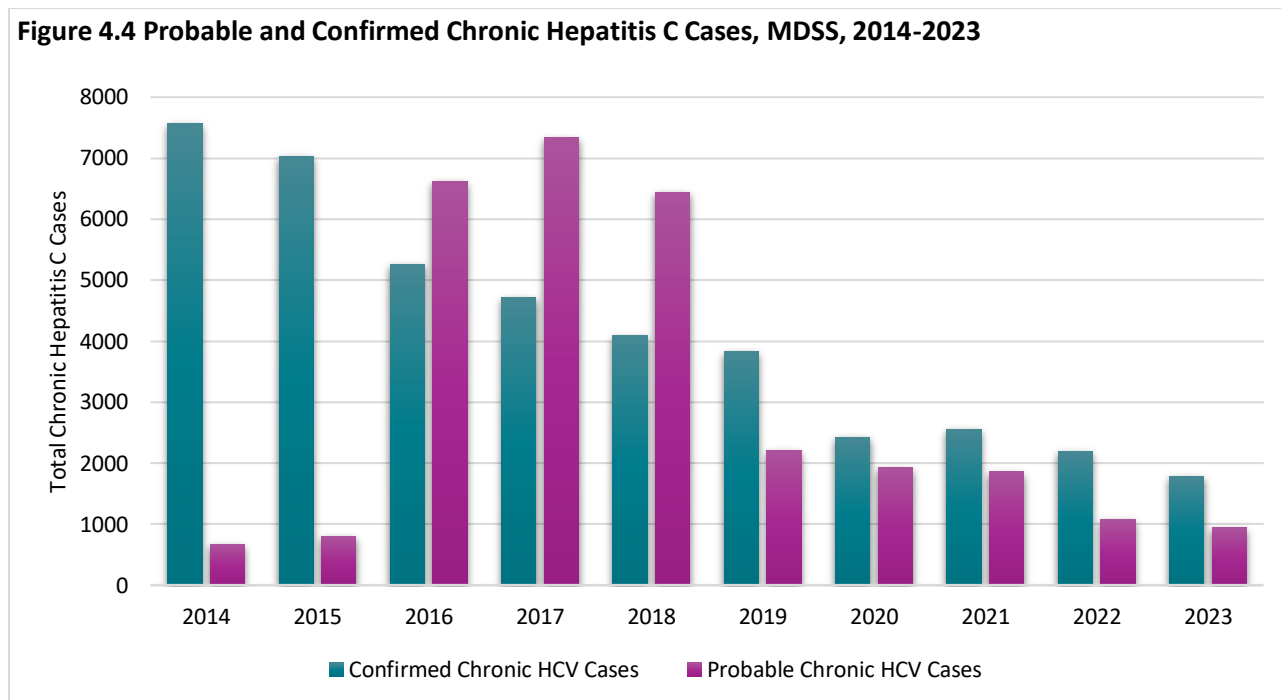
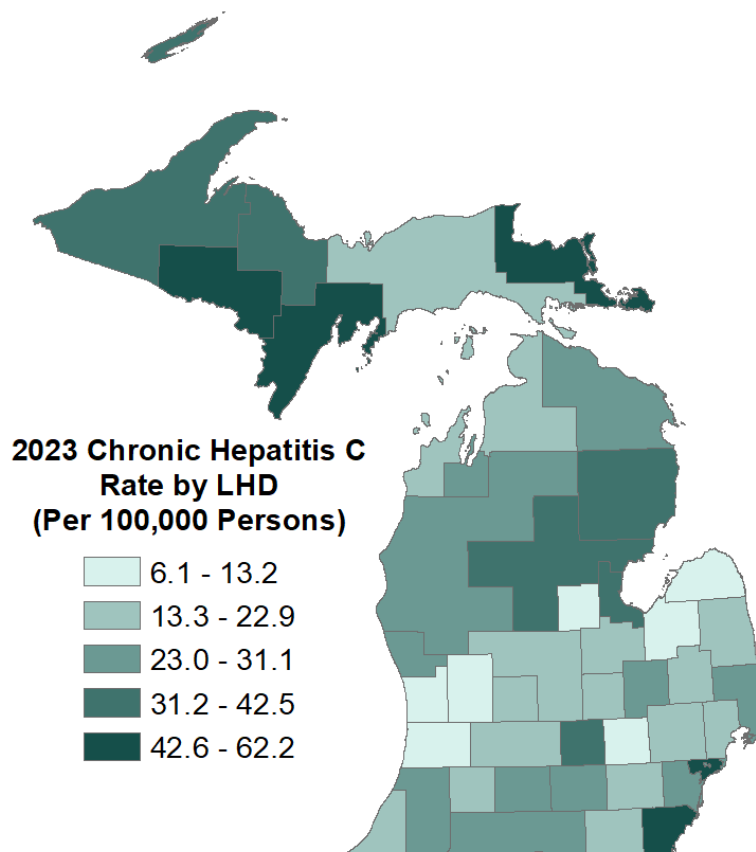
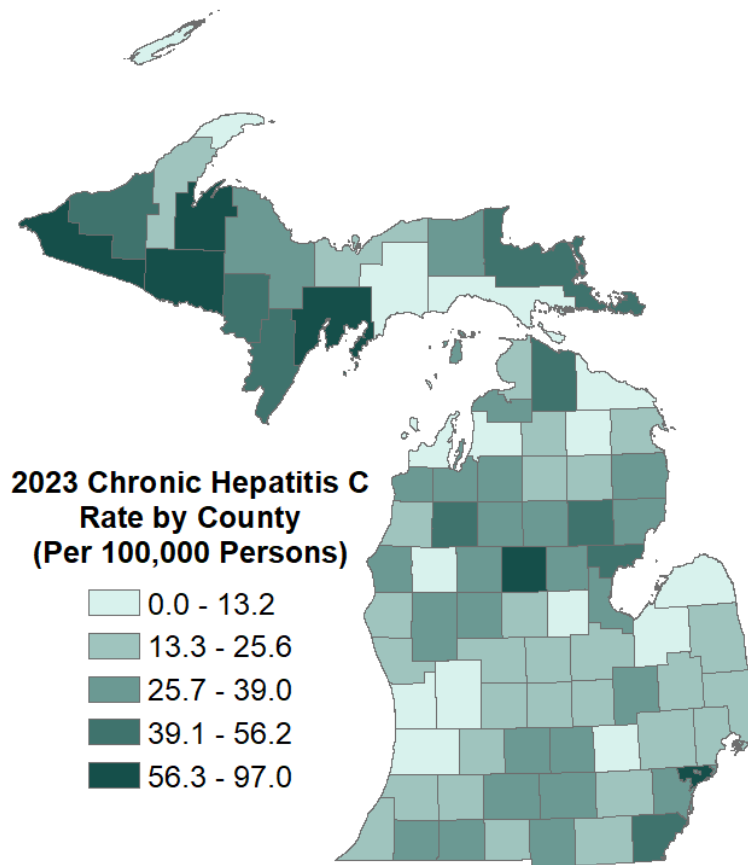
Chronic Hepatitis C—Case Classification**Figure 4.4 Probable and Confirmed Chronic Hepatitis C Cases, MDSS, 2014-2023**

Figure 4.4 illustrates the proportion of all chronic hepatitis C cases year over year in Michigan, stratified by case classification as a probable or confirmed case. Abrupt changes in probable chronic hepatitis C cases are predominately caused by changes to the [CDC/CSTE case definition](#) in 2016 and the rollout of required electronic lab reporting (ELR) of negative HCV RNA results in 2019. In 2016, the probable case definition was adjusted from “A case that does not meet the case definition for acute hepatitis C, is anti-HCV positive (repeat reactive) by EIA, and has alanine aminotransferase (ALT or SGPT) values above the upper limit of normal, but the anti-HCV EIA result has not been verified by an additional more specific assay or the signal to cut-off ratio is unknown.” to “A case that does not meet clinical criteria or has no report of clinical criteria, does not have test conversion within 12 months or has no report of test conversion, and has a positive anti-HCV antibody test, but no report of a positive HCV NAT or positive HCV antigen test.” The advent of required reporting of undetected HCV RNA results in 2019 allowed for the passive confirmation of current RNA status on chronic hepatitis C cases, thus disqualifying a marked number of cases from a probable classification, as they would have been classified in the absence of RNA results from 2019-2018. The volume of cases overall continues to shrink year over year.

Chronic Hepatitis C Rate Maps by County and Local Health Jurisdiction



A large, stylized graphic composed of two thick, curved lines in teal and purple, forming a partial circle around the central text. The background is white with a pattern of small, light gray dots.

Hepatitis C Testing and Treatment

Hepatitis C—Testing and Genotype Data

Figure 5.1 CDC Recommended Testing Algorithm for Hepatitis C Virus Infection

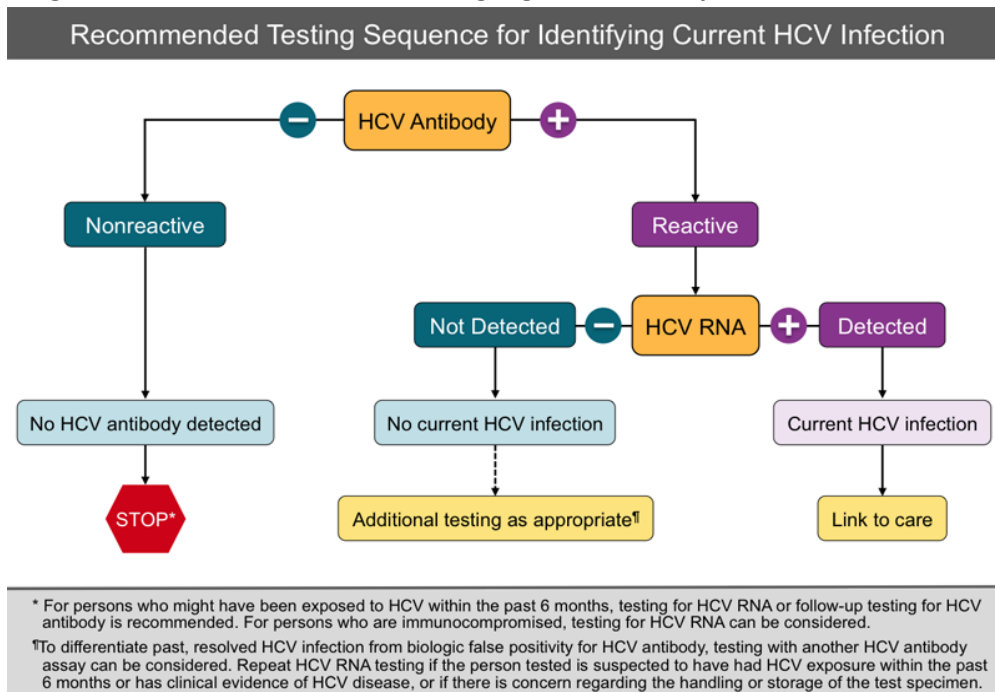
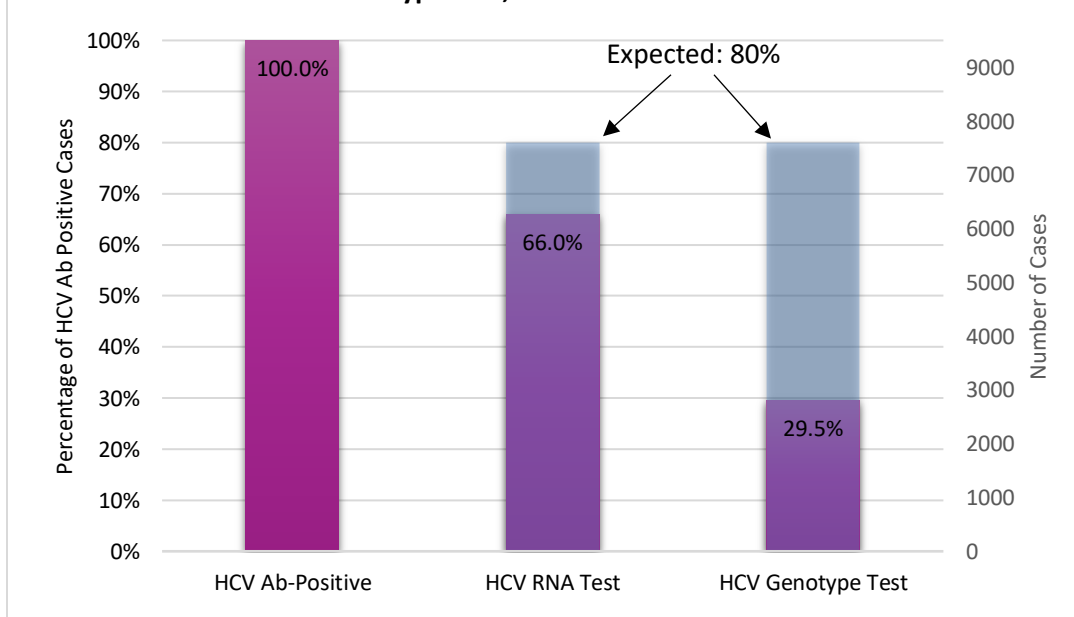
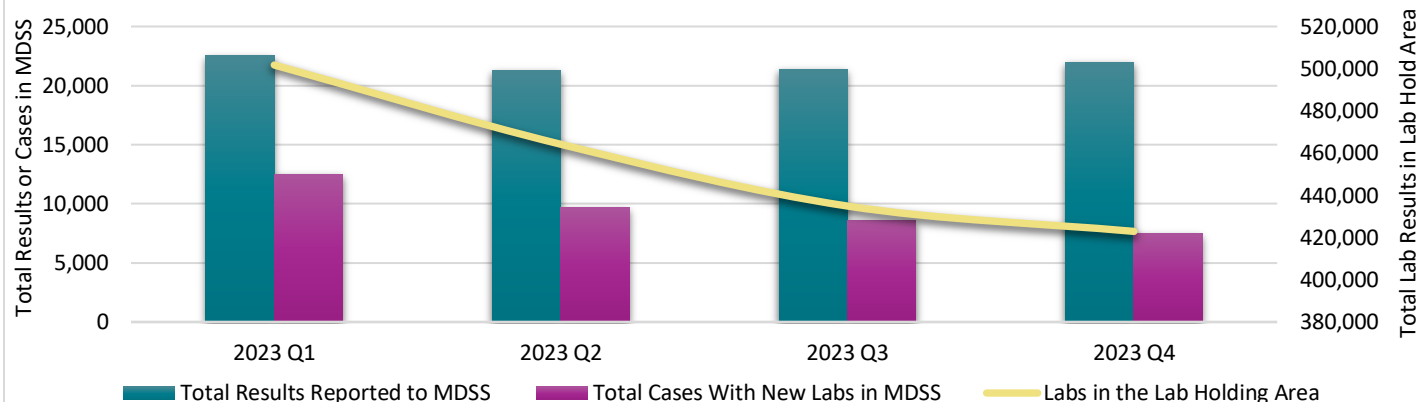


Figure 5.2 Number and Percentage of HCV Antibody Positive Cases with an HCV RNA or HCV Genotype Test, 2023



In 2023 2,601 cases of acute, chronic, and perinatal hepatitis C in Michigan were reported with a positive HCV antibody result. Of those cases, 66.0% were reported with a positive HCV RNA test while 29.5% were reported with genotype results. Starting in 2019, negative HCV RNA lab results became reportable through electronic lab messages. Since 20-25% of persons exposed to HCV clear infection, we would expect 75-80% of those with a positive HCV antibody to have a positive HCV RNA test if the testing algorithm is being followed by all providers.

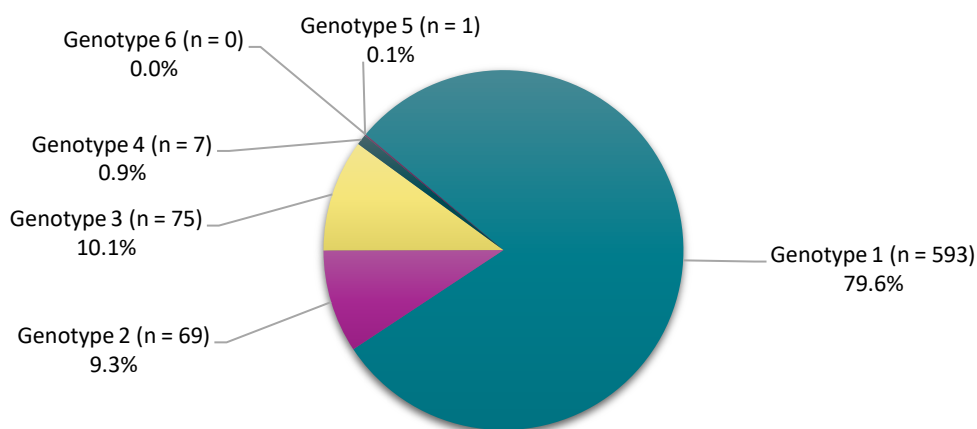
Figure 5.3 HCV Lab Results Reported to the MDSS by CY Quarter, Electronic Reporting, 2023



The introduction of electronic reporting of negative HCV RNA tests in 2019 required a new framework to house results for assessment of inclusion into MDSS cases. This framework is known as the MDSS Lab Holding Area (LHA), where negative hepatitis C tests are housed for a predetermined span of time and routinely matched on a person level to hepatitis C cases within the MDSS. This aids in identifying seroconversions, but also provides an approximation of the quantity of hepatitis C tests performed in a given timeframe. When combining aggregate totals of lab reports added to the MDSS and LHA in 2023, nearly 1.9 million tests were documented. Of these results, 87,205 were added across 38,216 hepatitis C cases in the MDSS.

With the advent of pangenotypic HCV treatment regimens, HCV genotyping is no longer required prior to treatment initiation for all individuals. In those with evidence of cirrhosis and/or past unsuccessful HCV treatment, treatment regimens may differ by genotype and thus pretreatment genotyping is recommended. For noncirrhotic treatment-naïve patients, although genotyping may impact the preferred treatment approach, it is not required if a pangenotypic regimen is used. Of the patients reported to the MDSS with a positive HCV antibody, there was evidence of only 33% receiving an HCV genotype test, suggesting that many patients are not yet being evaluated for HCV therapy.

Figure 5.4 Prevalence of Genotypes of Chronic Hepatitis C Cases Reported, Michigan, 2023 - Chronic Hepatitis C Genotypes (n = 745)



A total of 745 chronic HCV patients had a genotype result reported to MDHHS in 2023. Of these, 79.6% were reported with genotype 1 infection. Genotypes 3 and 2 made up the majority of non-genotype 1 specimens. The remaining specimens were either genotype 4 or 5, which made up nearly 2% of all genotyped specimens in 2023.

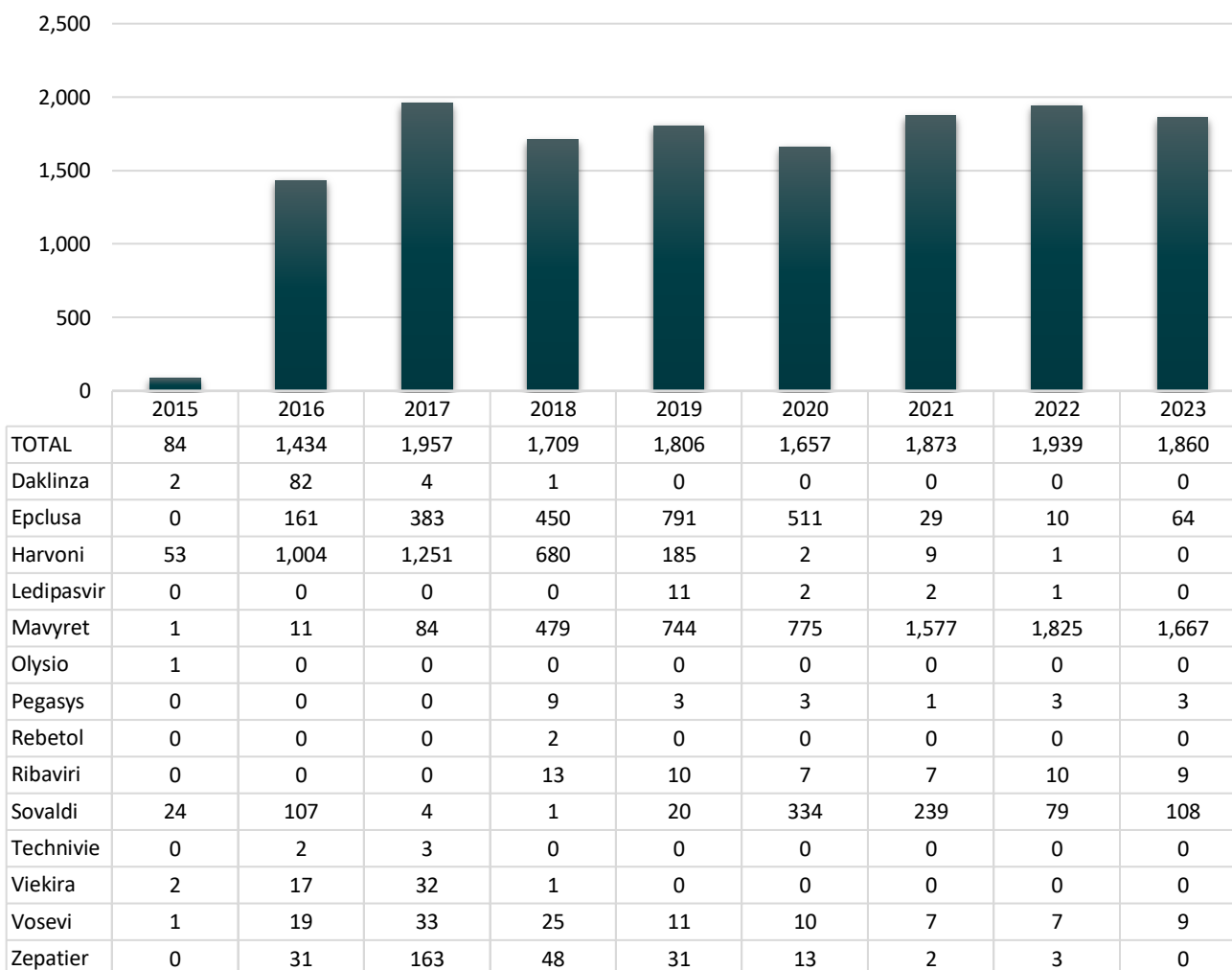
This pattern of genotypes is consistent with the expected annual proportions in Michigan. The data is also consistent with the national distribution, as the predominant genotypes nationwide are 1a, 1b, 2a, 2b, and 3a.

Viral Hepatitis Medicaid Data

With the expansion of newly approved HCV treatments in recent years, we now see many instances in which these direct-acting antivirals can effectively cure a patient of their HCV infection, greatly reducing the risk of cirrhosis, hepatocellular carcinoma, and death. However, as previously described, patients often need to go through a cascade of testing to have an HCV medication prescribed.

Figure 5.5 looks at the number of Michigan Medicaid patients that were prescribed various HCV treatments from 2015 to 2023. Recent data shows that Michigan Medicaid/Child Health Insurance Program covers approximately 2.3 million persons. With an estimated 1-2% HCV infection rate in the population, there would be 23,000-46,000 Medicaid-insured persons with HCV infection. According to these data, with 14,319 unique persons treated for HCV, approximately 27-54% of the HCV-infected Medicaid population has been prescribed an HCV direct-acting antiviral. Again, the data suggest that increased efforts to test and treat HCV infection are needed to help reduce risk of future morbidity and mortality associated with chronic HCV infection.

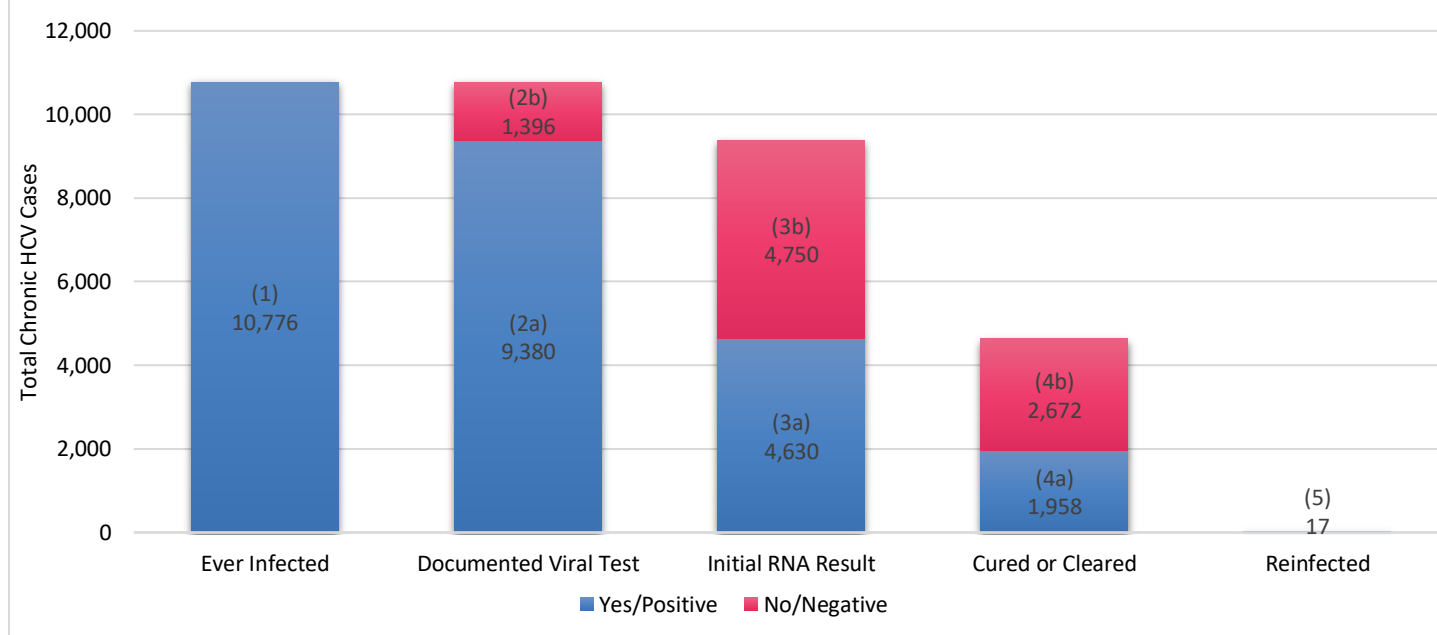
Figure 5.5 Total Number of Prescriptions Filled by Medicaid Members, by Medication, 2015-2023



Chronic Hepatitis C Clearance Cascade

As the United States implements hepatitis C elimination plans, there is evident need for tools to measure the impact of public health interventions and identify opportunities for improvement. One tool is a laboratory-based HCV clearance cascade, which can be developed using a longitudinal, hepatitis C surveillance database, such as the MDSS. An HCV clearance cascade is valuable in visualizing aggregate cohorts of chronic hepatitis C cases along the spectrum of disease, from infection to cure/clearance to reinfection. They can be used at a population level to identify opportunities that need further investigation to improve HCV clearance or possible linkage to care opportunities. Once developed, the cascade can be regularly updated to monitor changes over time by establishing a baseline and tracking progress toward set goals. Deeper analysis of the HCV clearance cascade can help identify disparities in the proportion cured by demographic and other characteristics.

Figure 5.6 Chronic Hepatitis C Laboratory Based Clearance Cascade, June 9, 2022-December 31, 2023



- (1): All persons reported to the MDSS from 6/9/2022 through December 31 of current report year that have any positive HCV lab results (Ab, RNA or Genotype)
- (2a): All persons in group 1 with a valid RNA result documented in MDSS (positive or negative)
- (2b): All persons in group 1 with no RNA test documented in MDSS (indicating opportunity for follow-up testing)
- (3a): All persons from group 2a whose first RNA test result reported to MDSS was positive (indicating active infection at time of report)
- (3b): All persons from group 2a whose first RNA test result reported to MDSS was negative (indicating cured or cleared infection at time of report)
- (4a): All persons from group 3a who have documented negative RNA results after initial positive RNA results in MDSS (indicating clearance of confirmed infection)
- (4b): All persons from group 3a who have not documented negative RNA results after initial positive RNA results in MDSS (indicating opportunity for HCV treatment)
- (5): All persons from group 4a with positive RNA test reported to MDSS after having documented cure or clearance of active infection (indicating reinfection or failed treatment)

Due to adjustments in standardized documentation of lab results within the MDSS, the HCV clearance cascade is limited to chronic hepatitis C cases referred on or after June 9, 2022. Figure 5.6 outlines cases referred from June 9, 2022, through December 31, 2023. Datapoints are arranged in nested fashion to highlight aggregate counts across the spectrum of hepatitis C care from infection to viral clearance (ie. the documented viral test cohort only includes those ever infected, the initial RNA result cohort only includes those with a documented viral test, and so forth). In that timeframe, 10,776 persons were identified as ever infected with HCV (any positive HCV lab result). Of that cohort, 9,380 (87%) had document an HCV RNA test result, resulting in a cohort of 1,396 persons that need assessment of HCV RNA status. Relative to the proportion ever infected, men aged 65 years and over were more likely to lack documentation of RNA testing. Of those documenting an RNA test, 4,630 (49%) were positive for presence of HCV upon first RNA test and 2,672 (58%) of that group had no documentation of cure or viral clearance. This cohort presents opportunities for linkage to care and treatment. In comparison to the demographic structure of the preceding cohort (positive initial RNA test), the proportion of the 2,672 persons not cured or cleared skewed toward White males, aged 18-39 years old. The majority of reinfected persons were also White males, but more distributed toward the 40-64 year age bracket. Based on available insurance data, most linkage to care opportunities presented in persons enrolled in Medicaid.

MDHHS Bureau of Laboratories Hepatitis C Testing

The MDHHS Bureau of Laboratories (BOL) has historically performed testing for HCV antibody (Ab). In 2014, the virology lab began performing HCV RNA testing for all specimens testing positive for HCV Ab in recognition of CDC's HCV testing algorithm. The data below look at the number of tests conducted by the BOL, positivity rates, and the demographic characteristics of patients tested.

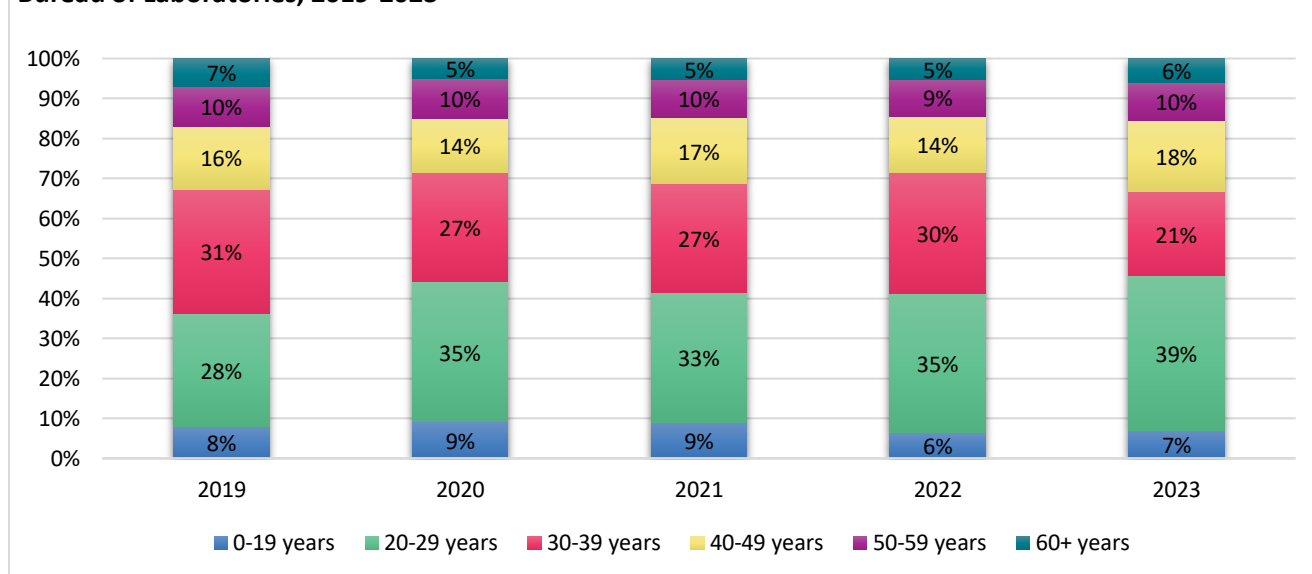
Some samples were deemed “unsatisfactory” because of poor shipping, packaging, or labeling, and therefore not tested.

Table 5.1 BOL HCV Antibody Tests, 2019-2023

Year	# of Samples Tested	# of Unsatisfactory or Not Tested	# Negative	# Positive	% Positive
2019	11,507	63	10,980	527	4.6%
2020	7,286	34	6,915	337	4.6%
2021	7,929	40	7,605	284	3.6%
2022	12,138	63	11,690	446	3.7%
2023	13,954	67	13,411	476	3.4%

In 2016, the number of HCV Ab tests conducted by the MDHHS BOL were approximately twice as many as previous years. Testing continued to increase in 2017-2019, as MDHHS has continually engaged in efforts to increase hepatitis C testing through BOL. Capacity for HCV Ab testing was reduced due to the COVID-19 pandemic. Consequently, the number of samples tested in 2020 was reduced by 36.7%. Testing has since increased, surpassing the volume of all previous years in 2023. HCV Ab positivity rates had traditionally maintained at 4-5% but have steadily decreased since 2020 to a rate of 3.4% in 2023.

Figure 5.7 Proportion of HCV Antibody Tests by Age at Time of Testing, Michigan Bureau of Laboratories, 2019-2023

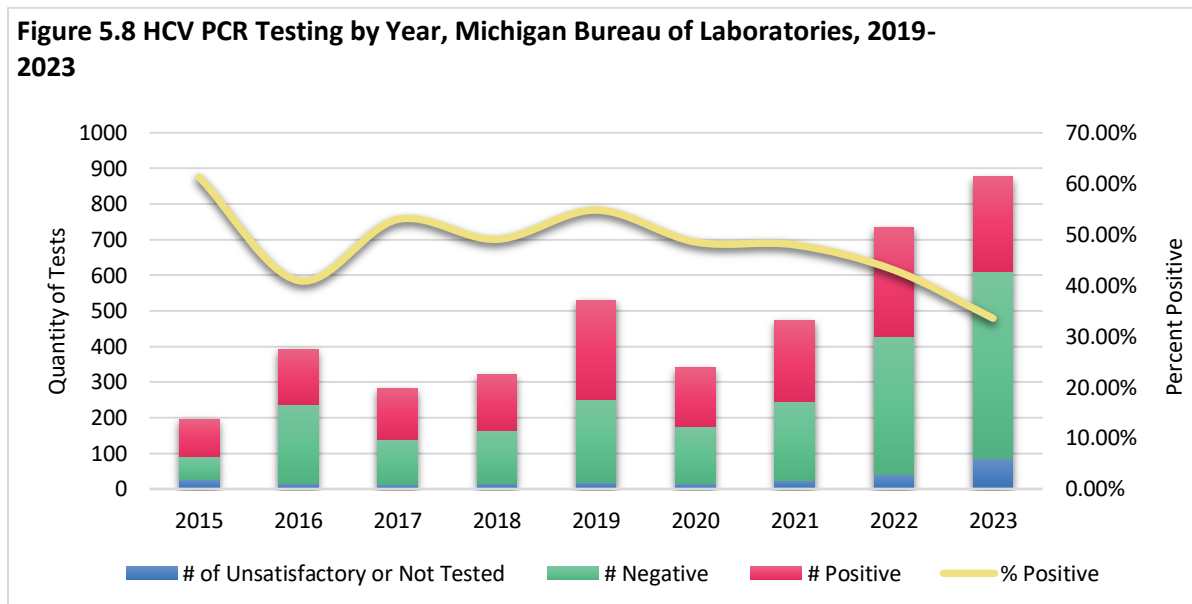


Of the 81,119 HCV Ab tests ran from 2012-2023, most individuals tested were between 20-29 years old. The smallest proportion of tests were run amongst those 60 years of age and older, making up only 4.8% of all individuals tested for HCV Ab. The age structure of patients being tested has remained consistent year over year.

Table 5.2 BOL HCV PCR Testing, 2019-2023

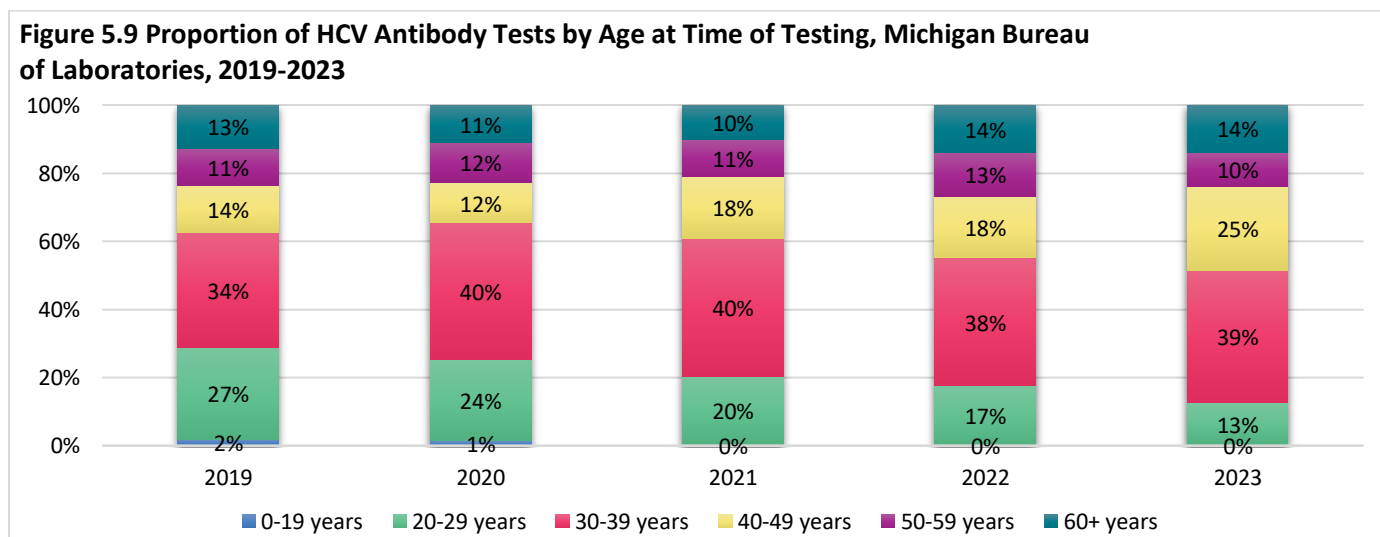
Year	# of Samples Tested	# of Unsatisfactory or Not Tested	# Negative	# Positive	% Positive
2019	511	19	231	280	54.8%
2020	340	15	160	165	48.5%
2021	473	25	221	227	48.0%
2022	711	40	389	306	43.0%
2023	790	86	525	265	33.5%

Figure 5.8 HCV PCR Testing by Year, Michigan Bureau of Laboratories, 2019-2023



The number of PCR tests conducted by the BOL has fluctuated from 2014 through 2022 but continues an upward trend with 790 tests performed in 2023. Hepatitis C testing capacity may have been reduced in 2020 due to necessity to focus resources on COVID-19 testing. The percentage of tests that yielded positive results decreased from 54.8% in 2019 to 35.5% in 2023.

Figure 5.9 Proportion of HCV Antibody Tests by Age at Time of Testing, Michigan Bureau of Laboratories, 2019-2023



Of the 4,077 HCV RNA tests ran by BOL from 2014-2023, the most common cohort being tested were individuals 30-39 years old. An inverse trend is evident between the 20-29 and 40-49 year old age groups. While other cohorts remain fairly steady, BOL performs more HCV PCR tests on 40-49 year old persons year over year, and less tests on persons aged 20-29 years. The smallest proportion of tests were found amongst those 0-19 years old (0%) and those 50-59 years of age (10%) in 2023.

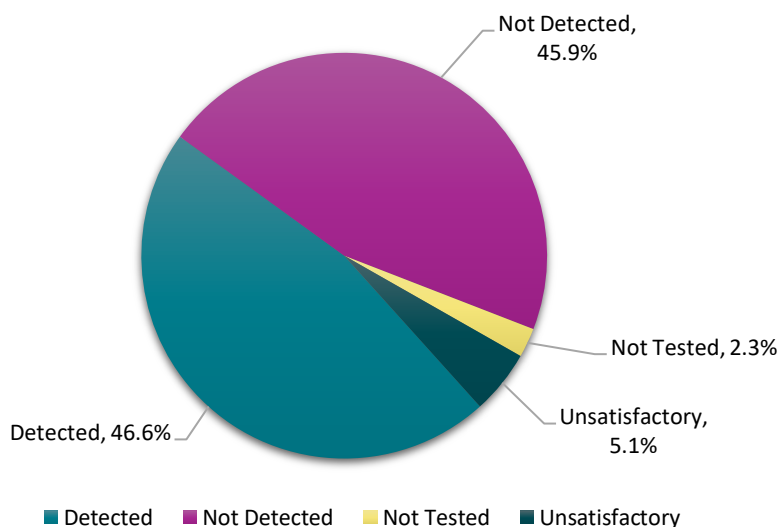
Table 5.3 BOL Patient Demographics for Patients Testing HCV Antibody/RNA Positive 2014-2023

	n	%
N	2,821	
Sex		
Male	1,675	59.4%
Female	1,156	41.0%
Unknown	50	1.8%
Race		
American Indian or Alaskan Native	31	1.1%
Asian	9	0.3%
Black or African American	380	13.5%
Native Hawaiian or Pacific Islander	3	0.1%
White or Caucasian	1,905	67.5%
Multiracial	6	0.2%
Other	53	1.9%
Unknown	436	15.5%
Age		
0-19	49	1.7%
20-29	788	27.9%
30-39	923	32.7%
40-49	428	15.2%
50-59	327	11.6%
60+	280	9.9%

There were 2,821 patients who tested positive for both HCV antibody and RNA at BOL between 2014-2023. Just over half (59.4%) of individuals who tested positive were male. The majority (67.5%) of those who were positive were White/Caucasian persons, which was much higher than Black/African American persons who made up only 13.5% of positive test results. In addition, over half of all individuals testing positive were between ages 20 and 39 years old.

Many of our specimen submitters are local health department health clinics. These data may be indicative of patient populations that often utilize local health departments for health services.

Figure 5.10 PCR Test Results following a Positive HCV Antibody Test 2014-2023



Of the 3,842 positive HCV screening tests accompanied by a PCR test, 46.6% of the PCR results were positive. In contrast 45.9% of those PCR tests were negative. These numbers reflect all BOL HCV RNA results that were preceded by a reactive HCV antibody test through BOL from 2014 through 2023.

Hepatitis C—MI Behavioral Risk Factor Survey Data

The Michigan Behavioral Risk Factor Surveillance System (MiBRFSS) is composed of annual, state-level telephone surveys of Michigan residents, aged 18 years and older. These annual state-level surveys also known as Michigan Behavioral Risk Factor Surveys (MiBRFS) act as the only source of state-specific, population-based estimates of the prevalence of various behaviors, medical conditions, and preventive health care practices among Michigan adults. The MDHHS Viral Hepatitis Unit added the question “Have you ever been tested for Hepatitis C Virus?” to the 2022 MiBRFS to determine demographic and behavioral factors associated with hepatitis C testing. Data collected from the MiBRFS in 2021 (N=4,405) was stratified based on HCV testing status and analyzed by various socio-demographic and behavioral factors.

We hope to monitor trends in these data over time to determine if HCV testing is increasing. In addition, the information provided will help us develop targeted strategies to increase HCV testing.

Figure 5.11 MiBRFS "Have You Ever Been Tested for HCV?", 2022 (n=4,405)

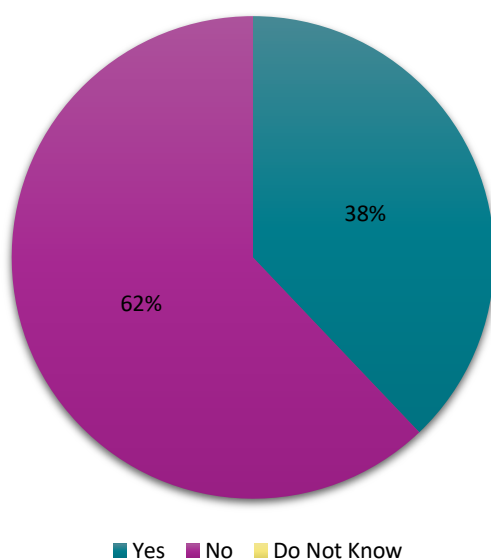
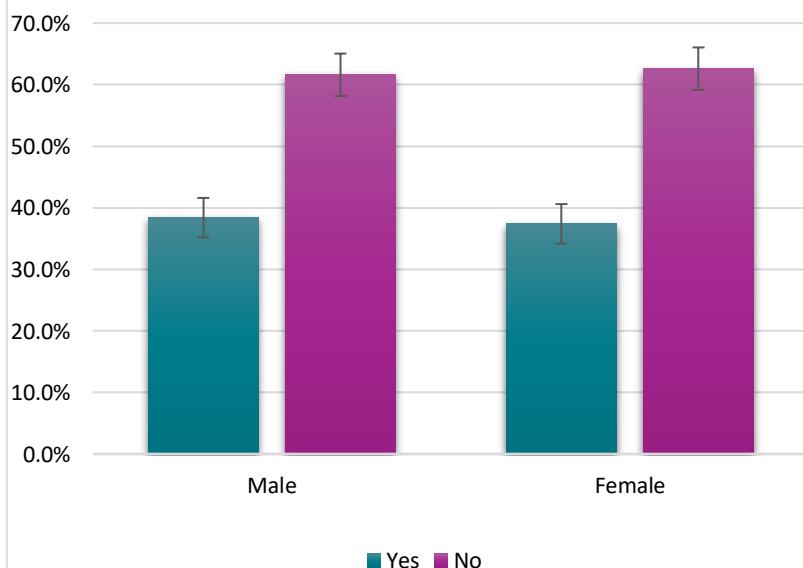


Figure 5.12 MiBRFS "Ever tested for HCV?" by Sex, 2022



A total of 4,405 participants responded to the question “Have you ever been tested for HCV” in the 2021 MiBRFS. Of these participants, 1,647 (38%) reported ever being tested for HCV while 2,758 (62%) respondents had never been tested for HCV. One time hepatitis C testing is recommended for all persons over 18 years of age. When compared to the 2021 iteration of this survey, the proportion of those having been tested increased by 5%.

38.4% of men reported ever being tested for hepatitis C compared to women at 37.4%. Conversely, 62.6% of women reported never being tested versus 61.6% of men.

Table 5.4 MiBRFS “Ever tested for HCV?” by Race, 2022

Race	Yes	No
Caucasian	36.4% (34.4-38.5)	63.6% (61.5-65.6)
African American	48.8% (42.0-55.7)	51.2% (44.3-58.0)
Other/Multiracial	48.5% (35.0-62.3)	51.5% (37.7-65.0)
Hispanic	35.6% (24.9-48.0)	64.4% (52.0-75.1)

Hispanic and Caucasian persons were less likely to have reported being tested for HCV (35.6% and 36.4%, respectively) compared to other racial groups. When compared to the 2021 MiBRFS survey, the proportion ever tested increased across all races except the other/multiracial category.

Table 5.5 MiBRFS “Ever tested for HCV?” by Age, 2022

Age	Yes	No
18-49 years	39.5% (36.2-42.9)	60.5% (57.1-63.8)
50-70 years	42.5% (39.7-45.4)	57.5% (54.6-60.3)
71+ years	25.9% (23.0-29.0)	74.1% (71.0-77.0)

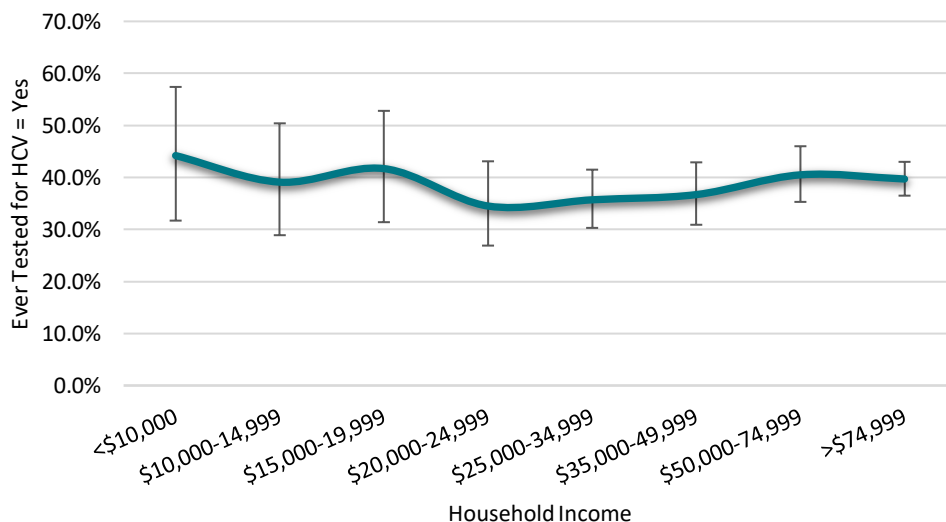
“Baby Boomers,” persons approximately 57 to 77 years old at the time of the survey, were more likely to have reported ever being tested for HCV than those less than 50 years old (42.5% compared to 39.5%). Those over 70 years old were the least likely to report ever being tested for HCV (25.9%). In comparison to the 2021 MiBRFS survey, rates of testing have increased across all ages.

Table 5.6 MiBRFS “Ever tested for HCV?” by Insurance Type, 2022

	No Insurance	Has Insurance	Medicaid
Yes	38.3% (27.8-50.0)	38.4% (36.4-40.4)	47.6% (41.0-54.4)
No	61.7% (50.0-72.2)	61.6% (59.6-63.6)	52.4% (45.6-59.0)

Not having insurance or having public insurance is often seen as a barrier to receiving HCV testing. However, according to the 2022 MiBRFS survey, persons with Medicaid coverage were more likely to be screened than the general insured population, and the difference between insured and noninsured individuals was negligible.

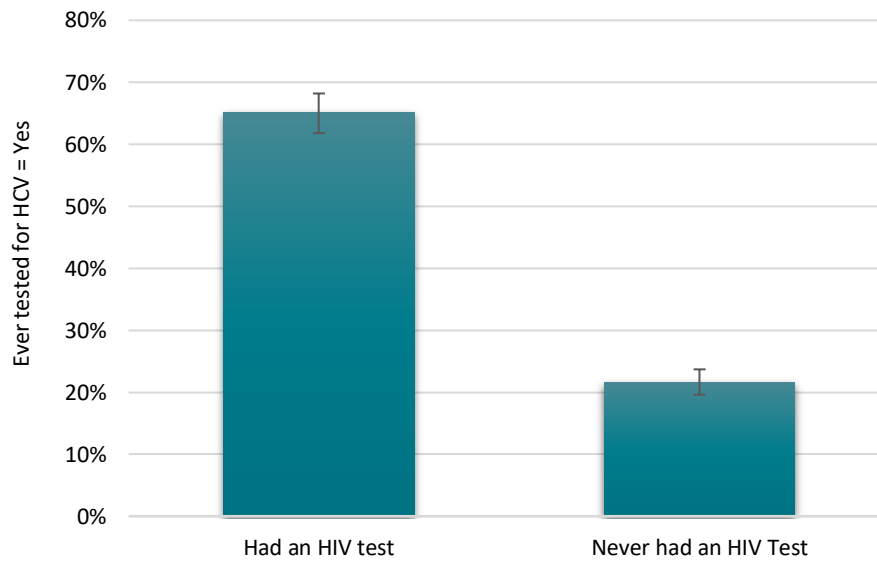
Figure 5.13 MiBRFS Ever tested for HCV? by Household Income, 2022



In past iterations of the survey, there has been a tendency toward an inverse correlation between household income and likelihood of ever being tested for HCV, apart from household income lower than \$10,000. As household income increased, respondents became less likely to have been tested for HCV.

In the 2022 MiBRFS survey, however, the responses indicate a consistent level of HCV screening independent of household income.

Figure 5.14 MiBRFS Ever tested for HCV? by History of being tested for HIV, 2022



HIV and HCV share modes of transmission and many patients have risk factors for both HIV and HCV.

These data show that individuals who had an HIV test were more likely to have ever been tested for HCV than those who never had an HIV test. Of the persons surveyed who had an HIV test, 65% reported also being tested for HCV while only 22% of those that never had an HIV test had ever been tested for HCV.

The information suggests that co-location of HIV and HCV testing services may help increase HCV screening.

A large, stylized graphic of the number "9" is centered on the page. The "9" is composed of two thick, curved lines: a teal line on the left and a purple line on the right. The background is white with a pattern of small, light gray dots. A vertical purple bar is on the left side of the page.

Focus Populations

Adults Under 40 (18-39 years of age)

Figure 6.1 Number of Chronic Hepatitis C Cases Reported to MDHHS by Year of Birth, 2023

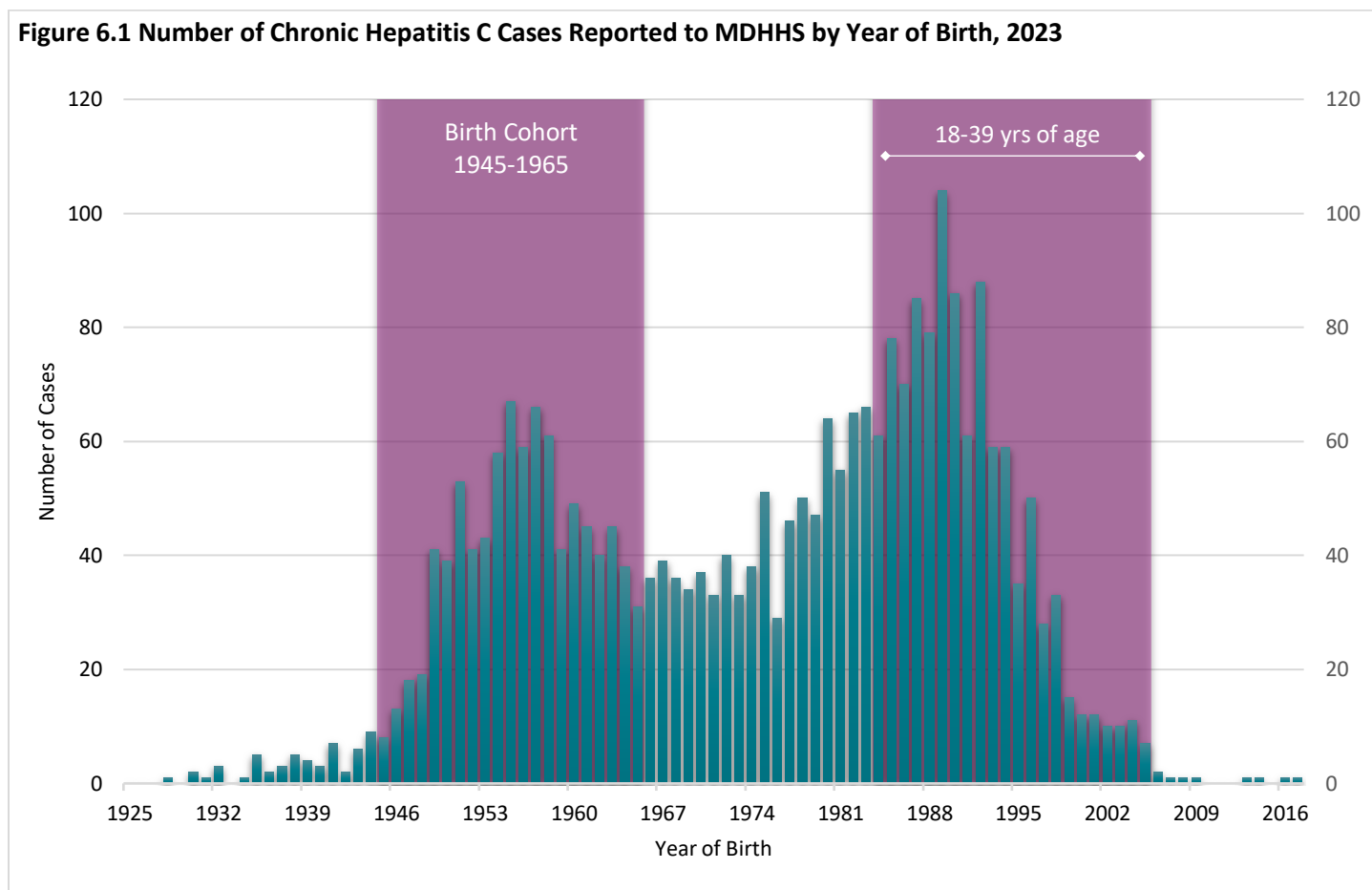


Figure 6.1 depicts the number of chronic hepatitis C cases reported to MDHHS in 2023 by birth year. Since 1998 the CDC has recommended HCV testing for persons with elevated risk of HCV infection, and in 2012 those guidelines were expanded to recommend one time HCV testing for all persons born from 1945 through 1965, regardless of risk factors. More recently, those recommendations have changed to a once in a lifetime screening for all adults aged 18 years and older, as well as all pregnant individuals during each pregnancy. Traditionally, the cohort with birth year from 1945 to 1965 reported more hepatitis C cases each year in Michigan than any other cohort. As the screening recommendations expanded and the landscape has shifted, data indicates a newer focus population.

In recent years a second “peak” of new chronic HCV diagnoses developed in adults under 40 (18-39 years old). An emerging epidemic of hepatitis C infections in adults under 40 has been identified in areas across the U.S. and in Michigan. The primary driver of this increase in hepatitis C cases is sharing of injection drug equipment and works (such as cookers and cotton), which is enhanced by the concurrent opiate and heroin epidemics. In 2021 these factors, among others, caused the 18–39-year-old cohort to eclipse the new case count of the 1945-1965 birth cohort for the first time in Michigan. This trend continued in 2023, as the 1945-1965 birth cohort made up 31.2% of chronic hepatitis C cases versus 38.7% of all chronic hepatitis C cases occurring in persons aged 18-39 years old. In response to the rapid increase of HCV cases in younger populations CDC began recommending one-time hepatitis C testing of all adults (18 years and older) and all pregnant individuals during every pregnancy in 2020.

Figure 6.2 Number of Chronic Hepatitis C Cases Reported to MDHHS by year, 18-39 years of age, 2009-2023

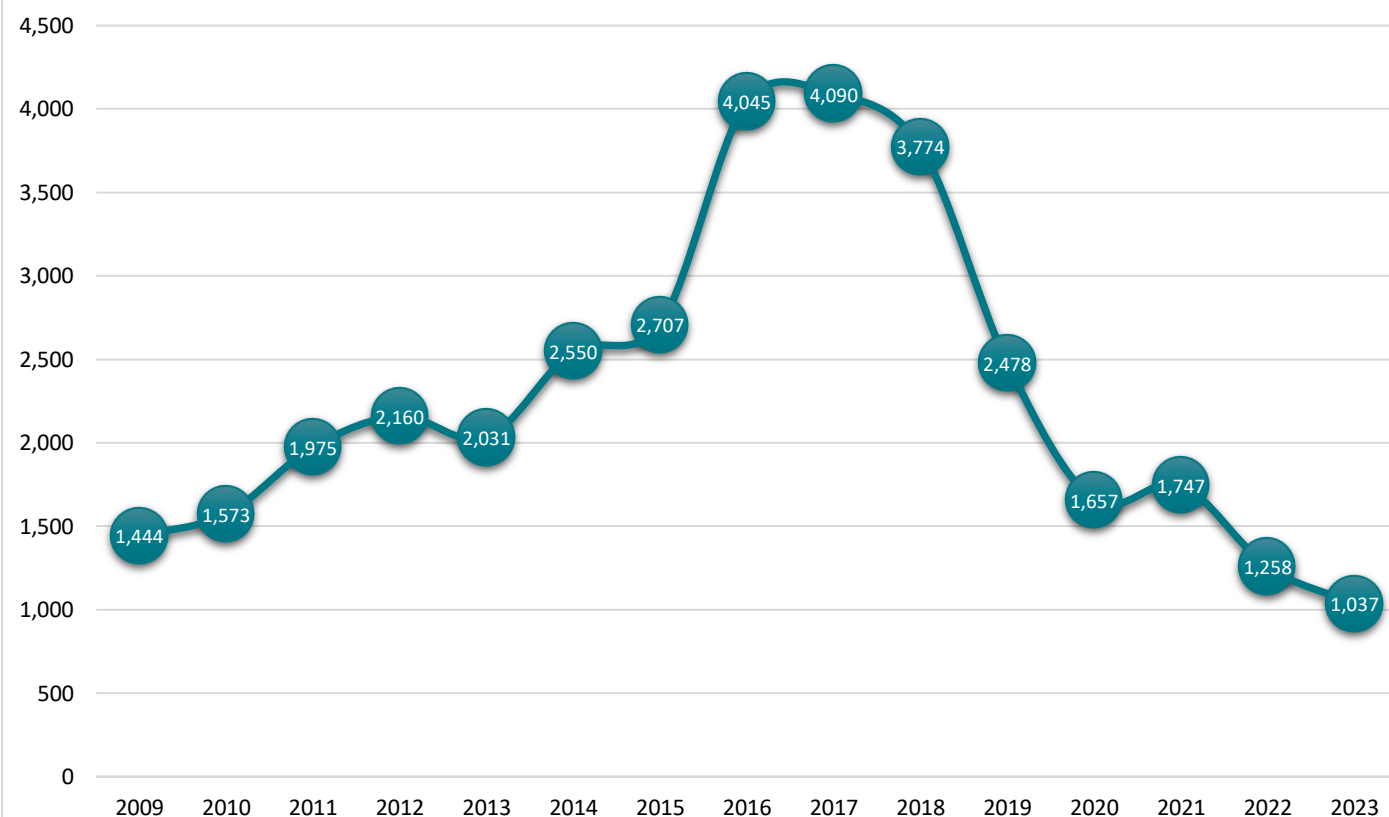


Table 6.1 Number and Percentage of Chronic Hepatitis C cases reported to MDHHS aged 18-39, 2014-2023

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total Cases	8,233	7,833	11,883	12,062	10,545	6,036	4,356	4,412	3,279	2,729
Number of Cases 18-39 Years Old	2,550	2,707	4,045	4,090	3,774	2,478	1,657	1,747	1,258	1,037
Percentage of Total Cases	31%	35%	34%	34%	36%	41%	38%	40%	38%	38%

From 2005 through 2017, the number of new HCV diagnoses among persons 18 to 39 years of age increased year over year before decreasing from 2018-2022 (Figure 7.2). The dramatic rise in new HCV diagnoses in this population from 2015 to 2016 can be largely explained by a change in the case definition. A sharp decrease in 2019 can be attributed to the expanded capacity to receive negative HCV RNA lab results electronically, followed by another reduction in cases attributed to the COVID-19 pandemic and its impact on accessibility to routine screening in 2020. In 2021, the number of reported cases increased compared to 2020, before decreasing again through 2023. Table 7.1 shows that the proportion of all reported cases that were between the ages of 18 and 39 had been increasing over the past decade until 2019; however, that increase appears to have plateaued around 40% from 2020-2023.

Table 6.2 Epidemiologic Summary of 2023 Chronic HCV Cases Aged 18-39 Years Old

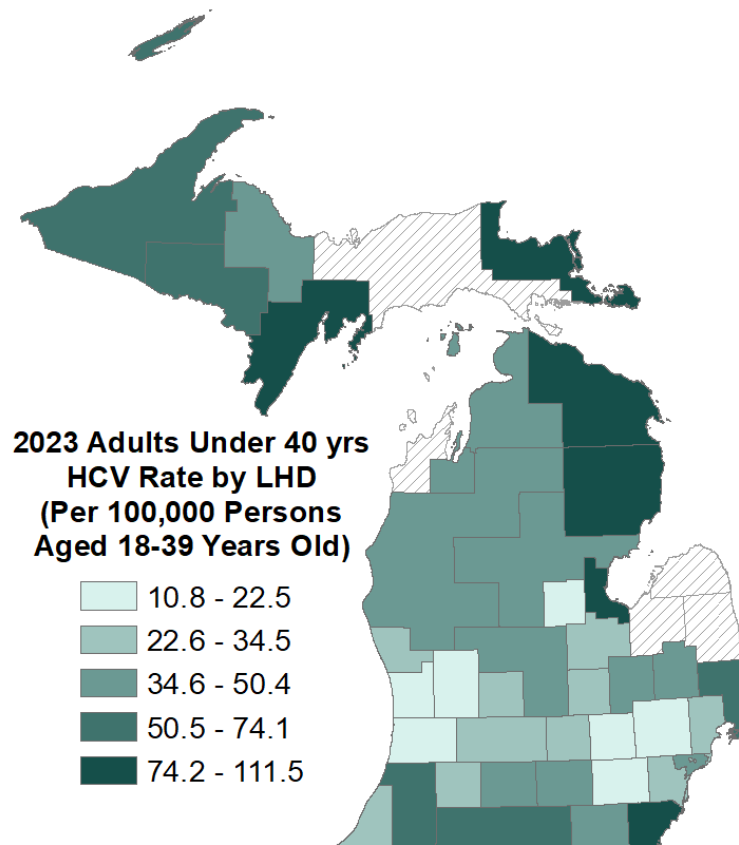
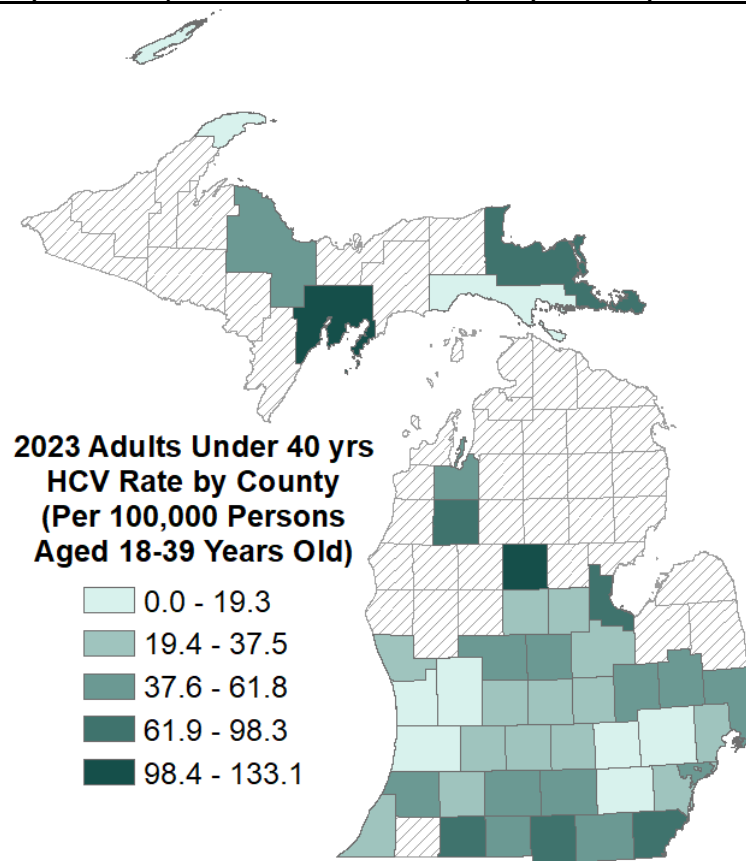
Age (n = 1037)		
Median	33	
Mean	31.97	
Range	18-39	
Sex (n = 1,255)		Rate per 100,000
Female	429 (41.4%)	30.46
Male	607 (58.6%)	41.21
Race (n = 1,108)		
White	683 (75.1%)	33.30
Black	96 (10.6%)	20.61
American Indian or Alaskan Native	17 (1.9%)	73.36
Asian	10 (1.1%)	7.34
Other Race	103 (11.2%)	
Hispanic Ethnicity (n = 886)		Rate per 100,000
Hispanic or Latinx	37 (4.8%)	18.03
Not Hispanic or Latinx	733 (95.2%)	27.39
Arab Ethnicity (n = 389)		
Arab Ethnicity	9 (2.7%)	
Non-Arab	319 (97.3%)	
History of IDU (n = 498)		
Yes	311 (69.0%)	
No	140 (31.0%)	

Previous studies conducted by MDHHS have shown injection drug use to be the primary risk factor for HCV acquisition among those aged 18-39 years. In many instances these clients reported sharing needles, syringes, and other injection drug works which could act as vectors for HCV transmission. Increases in indicators of heroin and opioid use are correlated with the rise in HCV cases in the 18-39 year old population in recent years i.e., more substance use leading to more HCV transmission.

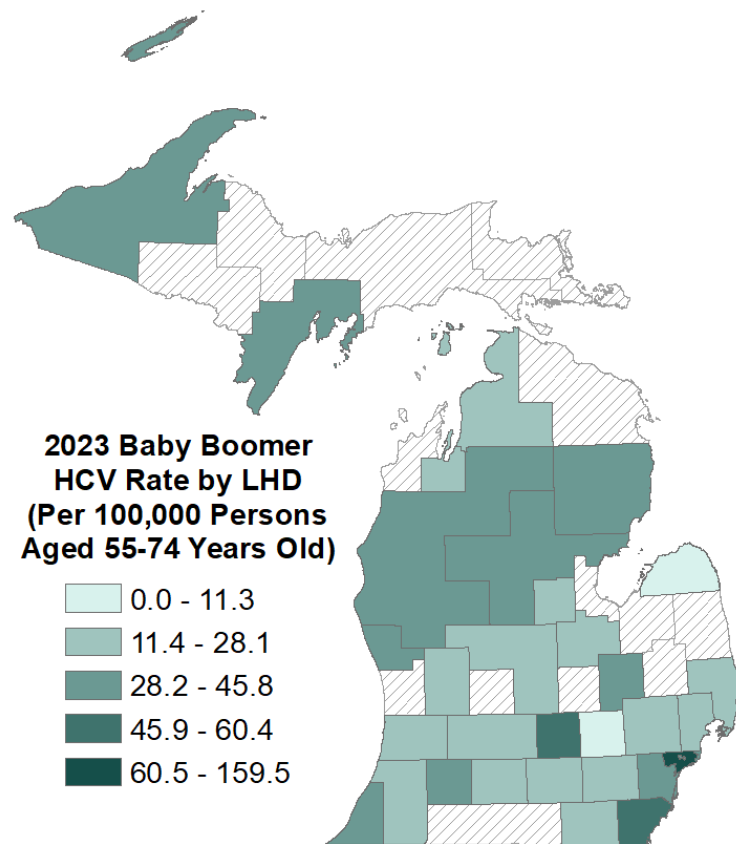
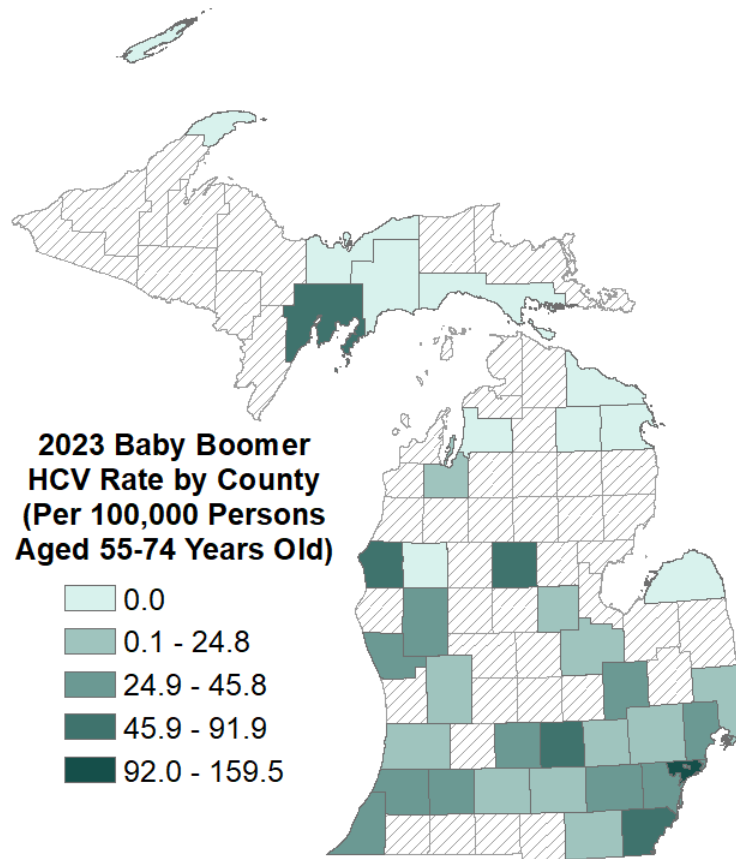
A demographic breakdown of the chronic HCV cases aged 18-39 years old who were diagnosed in 2022 (Table 7.2) shows that the vast majority were non-Hispanic, non-Arab, White/Caucasian persons with a distribution skewed towards males. Where injection drug use information was available on these patients, 69.0% reported a history of IDU. 2023 marks the fourth consecutive year of decrease in the proportion of IDU in hepatitis C cases reported in this population. As the most prevalent mode of HCV transmission amongst the age group, a decrease in reported IDU along with recent decrease in cases reported may indicate a shift in drug use habits resulting in less HCV transmission.

Maps of 2023 chronic HCV incidence rates among those aged 18-39 years can be found on the subsequent pages.

Adults Under 40 (18-39 years old) HCV Case Rate Maps by County and Local Health Jurisdiction



Baby Boomer (Birth Yr 1945-65) HCV Case Rate Maps by County and Local Health Jurisdiction



Perinatal Hepatitis C

MDHHS conducted a review of birth records matched with HCV-infected persons in Michigan, based on name, from 2013-2023. This review provided insight on trends in the rate of infants born to HCV-infected persons and allowed for comparison of demographics and risk factors between HCV-infected vs. non-infected persons.

National data indicates an upward trend in births to HCV-infected persons, which was evident in statewide data from 2012 through 2018 before beginning to decrease in 2019 and then maintaining from 2020-2022 before another decrease in 2023. That decrease in 2019 may be due, in part, to electronic reporting of negative HCV RNA lab results beginning in 2019, and/or the COVID-19 pandemic in 2020 (Figure 11.1).

Figure 6.3 Number of babies born to HCV Infected Persons in Michigan, 2013-2023

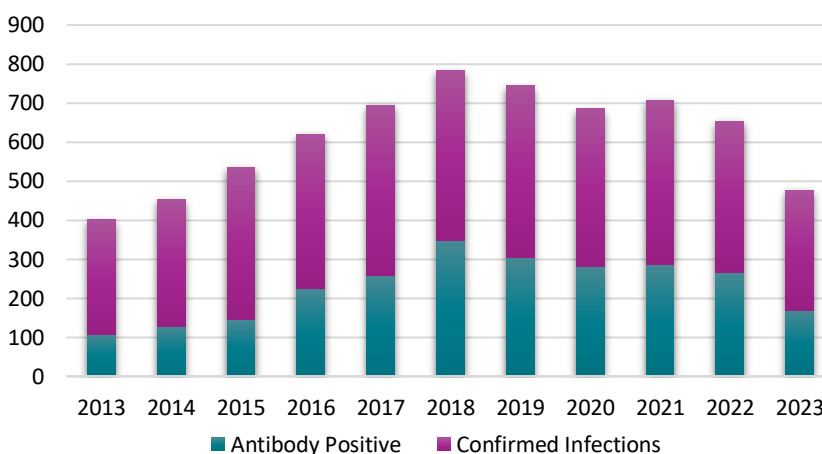


Table 6.3 Demographics from Michigan Birth Records, 2018-2023

Birth Parent Characteristics Age Group (in Years)		Reported for HCV in MDSS?			
		Yes (n= 4,014)		No (n=621,729)	
	<20	37	0.92%	25,046	4.03%
	20-29	1,783	44.42%	303,276	48.78%
	30-39	2,094	52.17%	275,635	44.33%
	40-49	100	2.49%	17,482	2.81%
	>50	0	0.00%	108	0.02%
Race					
	American Indian	115	2.86%	4,271	0.69%
	Asian	40	1.00%	25,965	4.18%
	Black or African American	401	9.99%	115,948	18.65%
	White or Caucasian	3,379	84.18%	446,394	71.80%
	Other	45	1.12%	21,308	3.43%
	Unknown	34	0.85%	7,843	1.26%
Prenatal Care Visits					
	Less than 8 or no care	1,223	30.47%	76,993	12.38%
	8 or greater	2,655	66.14%	485,317	78.06%
Education					
	High school graduate or lower	3,600	89.69%	359,231	57.78%
	Higher degree	333	8.30%	257,265	41.38%
Pay source					
	Medicaid	2,915	72.62%	264,958	42.62%
	Private Insurance	985	24.54%	334,761	53.84%
Smoking					
	Yes	1,928	48.03%	64,037	10.30%
	No	923	22.99%	358,106	57.60%
Married					
	Yes	789	19.66%	370,109	59.53%
	No	3,209	79.95%	251,204	40.40%
Self-Reported HCV					
	Yes	1,819	45.32%	543	0.09%
	No	2,100	52.32%	613,754	98.72%

A review of birth records indicates that persons who give birth and were reported to be HCV-infected are generally more likely than the non-infected population to:

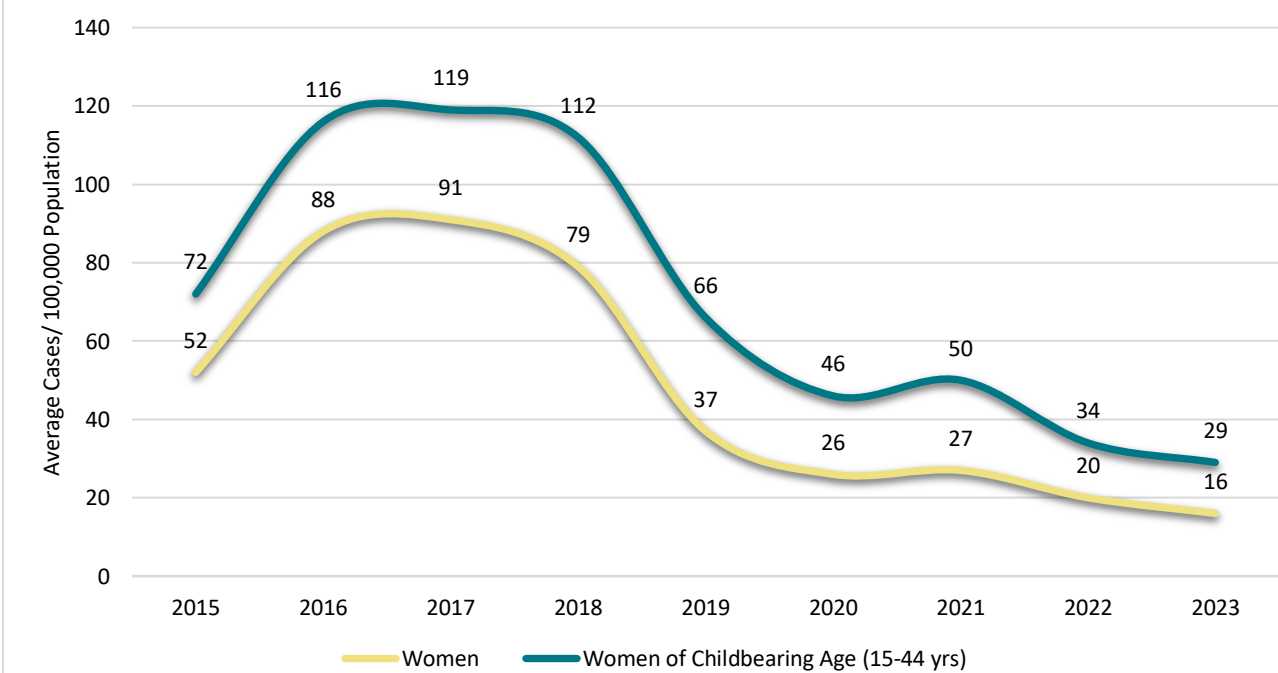
- Be 30-39 years old.
- Be White/Caucasian or American Indian.
- Seek less prenatal care.
- Be less educated.
- Use Medicaid as payment for care.
- Be a smoker.
- Be single.
- Self-report HCV.
- Have previous sexually transmitted disease(s).

It is estimated that perinatal HCV infection occurs in 5 to 15% of babies born to HCV-infected persons. The number of women of childbearing age infected with HCV may be closely related to trends in injection drug use. In fact, the rate of HCV in women aged 15-44 has surpassed that of the rest of Michigan's female population (Figure 6.4). Perinatal HCV, therefore, is becoming an increasingly important public health issue. There is no intervention to reduce the risk of vertical transmission of HCV as there is with perinatal HBV. It is not currently recommended to treat pregnant individuals for HCV infection. However, HCV direct-acting antivirals are now approved to treat children as young as 3 years old.

From 2009-2014 the U.S. has experienced an 89% increase in present HCV infections in persons at the time of birth, increasing from 1.8 to 3.4 instances per 1,000 births. Michigan was estimated to have a rate of 2.6-5.0 HCV infections among pregnant individuals for every 1,000 live births in 2014. Using that estimate, the number of incident perinatal HCV cases in Michigan in 2014 ranged between 15 and 85 cases per year. Although HCV screening is recommended during every pregnancy, these approximations are very likely to be underestimated due to undiagnosed HCV infections in pregnant individuals.

The new case definition for perinatal hepatitis C, established in 2018, states that a perinatal hepatitis C case is between the ages of 2 months and 36 months old and must have record of a positive HCV nucleic acid test (qualitative, quantitative, or genotype). Under this case definition, there were 80 instances of reported perinatal hepatitis C between 2012 and 2023, which is more than twice the number of perinatal HIV and HBV infections combined. The 80 perinatal HCV cases are likely an underestimation because approximately 50-75% of the HCV-infected population is undiagnosed, and infants are often not tested or tested inaccurately. Pronounced fluctuations in case counts may be a result of a case definition change in 2016, electronic reporting of negative HCV RNA lab results beginning in 2019, and/or the COVID-19 pandemic in 2020.

Figure 6.4 Number of Hepatitis C Cases per 100,000 Population, Women of Childbearing Age compared to Total Women, 2015-2023



The MDSS is limited by binary sex data fields and where possible and when not referring explicitly to data pulled from this database, MDHHS has attempted to use inclusive language around gender that still names key risk factors related to HCV transmission.

Perinatal Hepatitis B

Hepatitis B Virus (HBV) infection in a pregnant individual poses inherent risk to the infant at birth, as perinatal transmission is a known risk factor for HBV infection. CDC estimates the number of births to HBV-infected persons (most common test at pregnancy is the hepatitis B surface antigen (HBsAg) test) by using prevalence of HBV infection by race/ethnicity as well as country of birth for persons giving birth. The current CDC estimation of expected births to HBsAg-positive persons nationwide (based on 2021 data) has continued to decrease to 12,965 - 17,827 per year, and 276 - 426 per year in Michigan.

The MDHHS Immunization Division Perinatal Hepatitis B Prevention Program (PHBPP)'s mission is to identify HBV-infected pregnant persons and coordinate proper care and treatment of the babies born to them. Even with our efforts to provide the appropriate prophylaxis, we are not identifying all pregnant HBV-infected persons prior to delivery.

Since 2016, Michigan has required physicians, health care providers and laboratories to report pregnancy status for all persons of childbearing age (10-60 years of age). Identifying HBsAg-positive pregnant persons prenatally is key to protecting babies from getting HBV. However, less than half of the lower level of CDC's estimated births are being identified in Michigan.

More than 98% of all babies, if treated appropriately, will be protected from contracting an HBV infection from their birthing parent. Hepatitis B vaccine has been available in the U.S. since 1981 and has been proven to be safe and effective in preventing HBV transmission. CDC recommends hepatitis B vaccine and hepatitis B immune globulin (HBIG) within 12 hours of birth for all babies born to HBsAg-positive persons. CDC now recommends vaccination within 24 hours of birth for all medically stable babies, weighing more than 2,000 grams and born to HBsAg-negative individuals as a "safety net."

Infants who acquire an HBV infection at birth are 90% more likely to become chronically infected and 25% of these infants will have liver cancer or even die from the effects of the infection. It is extremely important to identify all HBsAg-positive pregnant persons prior to delivery so that their infants can receive HBIG and hepatitis B vaccine within 12 hours of birth for immediate protection against HBV. For lifelong protection, these infants need at least two additional doses of hepatitis B vaccine and a post-vaccination serologic test (PVST) at 9-12 months of age.

Table 6.4 Proportion of Infants Receiving HBV Treatment, Michigan and the United States, 2018-2022

	2018		2019		2020		2021		2022	
	MI	US	MI	US	MI	US	MI	US	MI	US
Percent of Infants Receiving PEP at Birth	99%	97%	100%	96%	98%	95%	100%	96%	99%	-
Percent of Infants with HBIG & Complete HepB Series by 12 Months	93%	84%	92%	82%	95%	84%	99%	82%	95%	-
Percent of Infants with PVST by End of Reporting Period 1	76%	67%	73%	62%	87%	64%	91%	62%	92%	-

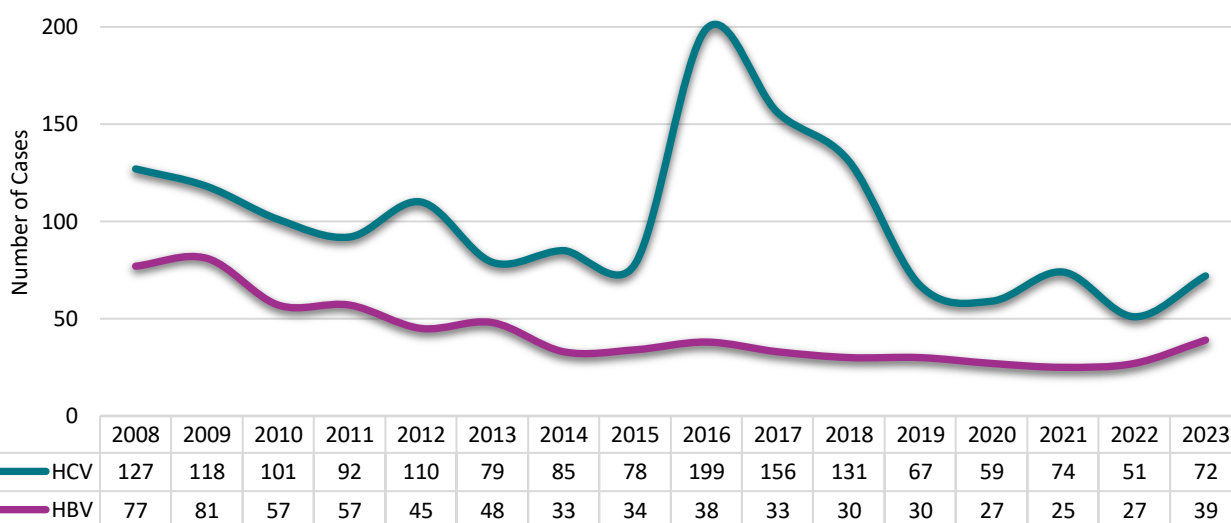
MI's PHBPP consistently performs above the national average in providing the appropriate prophylaxis to the infants born to HBV-infected individuals; however, there is room for improvement. It is extremely important to identify all HBsAg-positive and HBV DNA positive pregnant persons so that we can continue to provide the appropriate prophylaxis starting at birth.

For more information, go to: www.michigan.gov/hepatitisB or call 517-388-4815 or 517-897-3236.

Hepatitis and HIV Co-infections

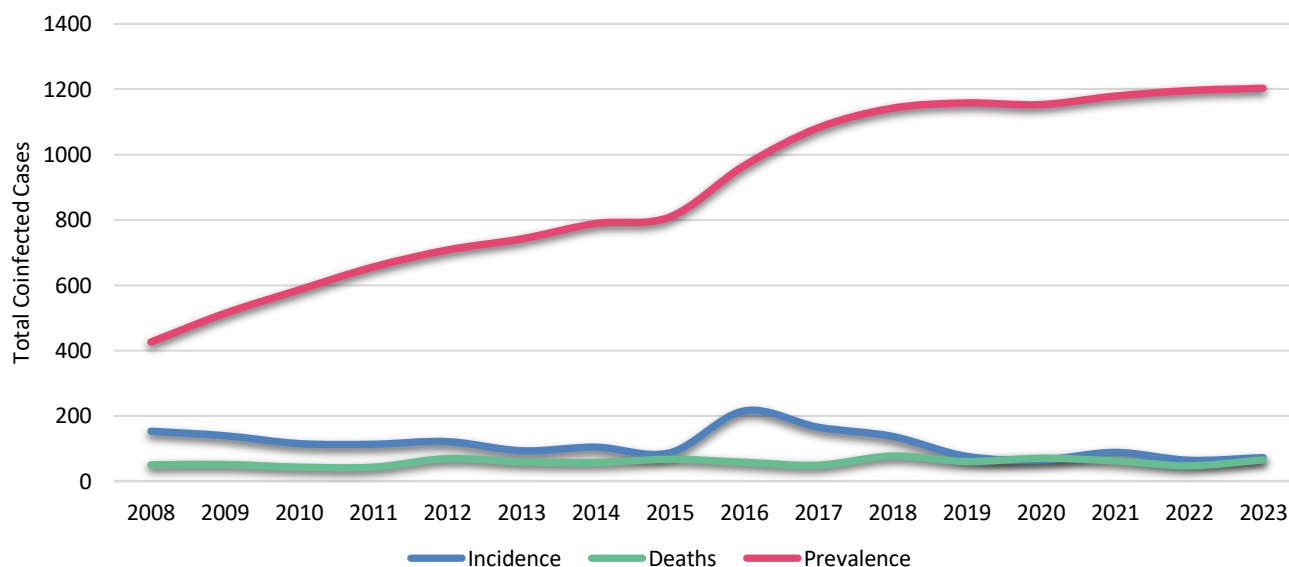
Positive health outcomes for individuals with HIV/HBV or HIV/HCV co-infections are significantly lower than individuals who are mono-infected with either of the viruses. To assess the burden of viral hepatitis and HIV co-infection in Michigan, MDHHS staff performed a match between HIV cases reported in the Enhanced HIV/AIDS Reporting System (eHARS) and viral hepatitis cases reported in the MDSS.

Figure 6.5 Count of Hepatitis B and Hepatitis C Cases Co-infected with HIV in Michigan, 2008-2023



In general, the number of new HBV/HIV matches has trended downward in recent years. HIV/HCV matches also trended downward until 2016 when a new HCV case definition was instituted. This change in case definition is largely responsible for the increase in matches in 2016 and 2017, followed by a marked reduction in cases due to ELR of negative hepatitis C RNA result in 2019 and the COVID-19 pandemic in 2020. In 2023, however, a slight increase in coinfections with HCV and HBV was documented. Individuals who are co-infected are living longer, mainly because of improvements in linkage to care and highly effective therapies, resulting in increased prevalence of both co-infections (Figure 6.6). Tables 6.5 and 6.6 look at the demographic breakdown of both HBV/HIV and HCV/HIV co-infections. HBV/HIV co-infection is more common among the men that have sex with men (MSM) population. HCV/HIV co-infection tends to be most associated with injection drug use and follows the demographics of people who are living with HIV and inject drugs.

Figure 6.6 Prevalence of Diagnosed HCV-HIV Coinfections in Michigan, 2008 - 2023



Between 2004 and 2022, 957 people were reported in Michigan with HBV/HIV co-infection. Table 6.5 shows a breakdown of the HBV/HIV co-infected population in 2023. The 2023 cases were predominately male, but slightly more racially diverse than coinfections from 2004-2022. Traditionally HBV/HIV coinfections reported MSM as the predominant risk factor with an age that tended to be between 30 and 50 years old. In contrast the coinfections reported in 2023 were also predominately MSM, but a considerably higher proportion in the 50-59 year age range than years past.

Table 6.5 Hepatitis B and HIV Co-Infection Data in Michigan, 2023

		2023 HBV/HIV Co-infections		2004-2022 HBV/HIV Co-infections	
Total Co-infections		39		957	
Sex					
	Male	37	(94.9%)	849	(88.7%)
	Female	2	(5.1%)	108	(11.3%)
	Unknown	0	(0.0%)	0	(0.0%)
Race					
	White or Caucasian	9	(23.1%)	277	(28.9%)
	Black or African American	21	(53.8%)	612	(63.9%)
	Hispanic	2	(5.1%)	34	(3.6%)
	Asian	2	(5.1%)	6	(0.6%)
	American Indian or Alaska Native	0	(0.0%)	1	(0.1%)
	Multi/Other/Unknown	4	(10.3%)	27	(2.8%)
HIV Transmission Risk					
	MSM	19	(48.7%)	566	(59.1%)
	IDU	0	(0.0%)	82	(8.6%)
	MSM/IDU	3	(7.7%)	52	(5.4%)
	Blood Recipient	0	(0.0%)	5	(0.5%)
	Heterosexual	2	(5.1%)	93	(9.7%)
	Perinatal	0	(0.0%)	2	(0.2%)
	Unknown/Undetermined	14	(35.9%)	157	(16.4%)
Age at Coinfection					
	0-19	0	(0.0%)	8	(0.8%)
	20-29	6	(15.4%)	108	(11.3%)
	30-39	6	(15.4%)	247	(25.8%)
	40-49	7	(17.9%)	326	(34.1%)
	50-59	15	(38.5%)	201	(21.0%)
	60+	5	(12.8%)	67	(7.0%)

Between 2004 and 2022, 1,938 people were reported in Michigan with HIV/HCV co-infection. Table 6.6 shows a breakdown of the HCV/HIV co-infected population in 2023. Cases reported in 2023 were similar to historical cases regarding sex, but MSM was the predominant risk factor for HCV/HIV co-infection (as was the case in 2022), and the age distribution has shifted toward younger persons. In comparison, IDU was the predominant risk factor in the HCV and HIV co-infected population from 2004-2018, with an age generally over 30 years old. However, in recent years there has been a shift from IDU risk to MSM risk in this co-infected population. While sexual transmission of HCV is rare, it has been reported in HIV-infected MSM populations.

Table 6.6 Hepatitis C and HIV Co-Infection Data in Michigan, 2023

		2023 HCV/HIV Co-infections		2004-2022 HCV/HIV Co-infections	
Total Co-infections		72		1,938	
Sex					
	Male	59	(81.9%)	1,432	(73.9%)
	Female	13	(18.1%)	497	(25.6%)
	Unknown	0	(0.0%)	9	(0.5%)
Race					
	White or Caucasian	27	(37.5%)	665	(34.3%)
	Black or African American	33	(45.8%)	1,102	(56.9%)
	Hispanic	5	(6.9%)	88	(4.5%)
	Asian	0	(0.0%)	13	(0.7%)
	American Indian or Alaska Native	0	(0.0%)	3	(0.2%)
	Multi/Other/Unknown	7	(9.7%)	67	(3.5%)
HIV Transmission Risk					
	MSM	39	(54.2%)	506	(26.1%)
	IDU	15	(20.8%)	742	(38.3%)
	MSM/IDU	9	(12.5%)	247	(12.7%)
	Blood Recipient	0	(0.0%)	43	(2.2%)
	Heterosexual	3	(4.2%)	206	(10.6%)
	Perinatal	0	(0.0%)	4	(0.2%)
	Unknown/Undetermined	6	(8.3%)	190	(9.8%)
Age at Coinfection					
	0-19	1	(1.4%)	11	(0.6%)
	20-29	9	(12.5%)	184	(9.5%)
	30-39	24	(33.3%)	327	(16.9%)
	40-49	14	(19.4%)	499	(25.7%)
	50-59	13	(18.1%)	640	(33.0%)
	60+	11	(15.3%)	277	(14.3%)

Hepatitis C and HIV Co-infections Among MIDAP Beneficiaries

The Michigan Drug Assistance Program (MIDAP) is a Ryan White program that specifically covers the cost of health insurance and/or medication for people living with HIV. MIDAP can be useful for all medical needs – not just HIV. Beginning March 1, 2018, MIDAP began providing treatment assistance for hepatitis C medications for eligible individuals at no cost. To learn more, visit www.Michigan.gov/Dap.

As of December 13, 2021, there were 3,190 active MIDAP beneficiaries, of which approximately 4% were identified to be living with HIV and co-infected with hepatitis C.

Table 6.7 Hepatitis C and HIV MIDAP Co-Infections data in Michigan, 2023

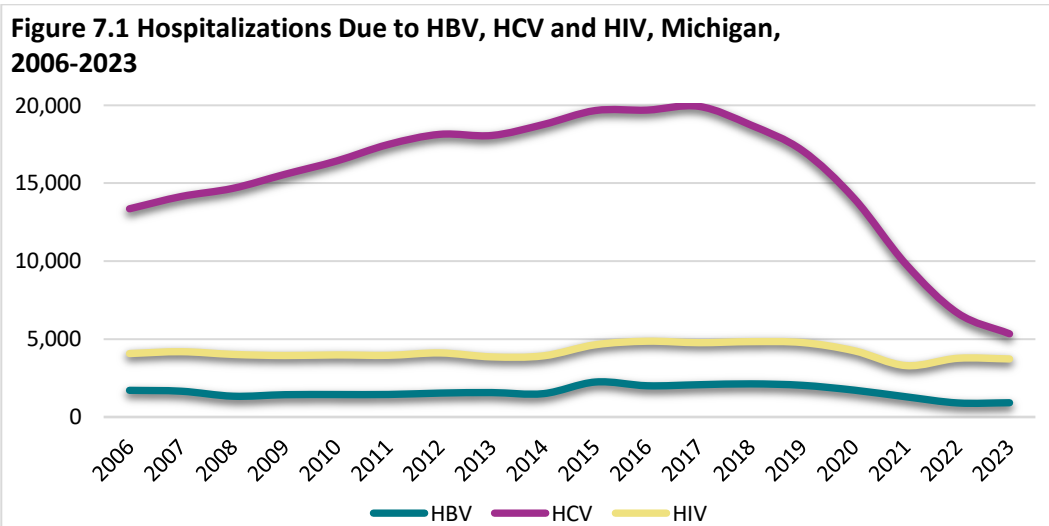
		2023 HCV/MIDAP Co-infections	
Total Co-infections		200	
Sex			
	Male	180	90.0%
	Female	20	10.0%
	Unknown	0	0.0%
Race			
	White or Caucasian	88	44.0%
	Black or African American	64	32.0%
	Hispanic	13	6.5%
	Asian	6	3.0%
	American Indian or Alaska Native	3	1.5%
	Multi/Other/Unknown	26	13.0%
HIV Transmission Risk			
	MSM	98	49.0%
	IDU	50	25.0%
	MSM/IDU	29	14.5%
	Blood Recipient	0	0.0%
	Heterosexual	4	2.0%
	Perinatal	0	0.0%
	Unknown/Undetermined	19	9.5%
Age at Coinfection			
	0-19	3	1.5%
	20-29	19	9.5%
	30-39	27	13.5%
	40-49	36	18.0%
	50-59	72	36.0%
	60+	43	21.5%

A large, stylized graphic composed of several thick, curved segments in teal and purple colors, arranged in a circular pattern around the central text. The background is white with a pattern of small, light gray dots.

Viral Hepatitis Outcomes

Viral Hepatitis Hospitalizations and Liver Transplants

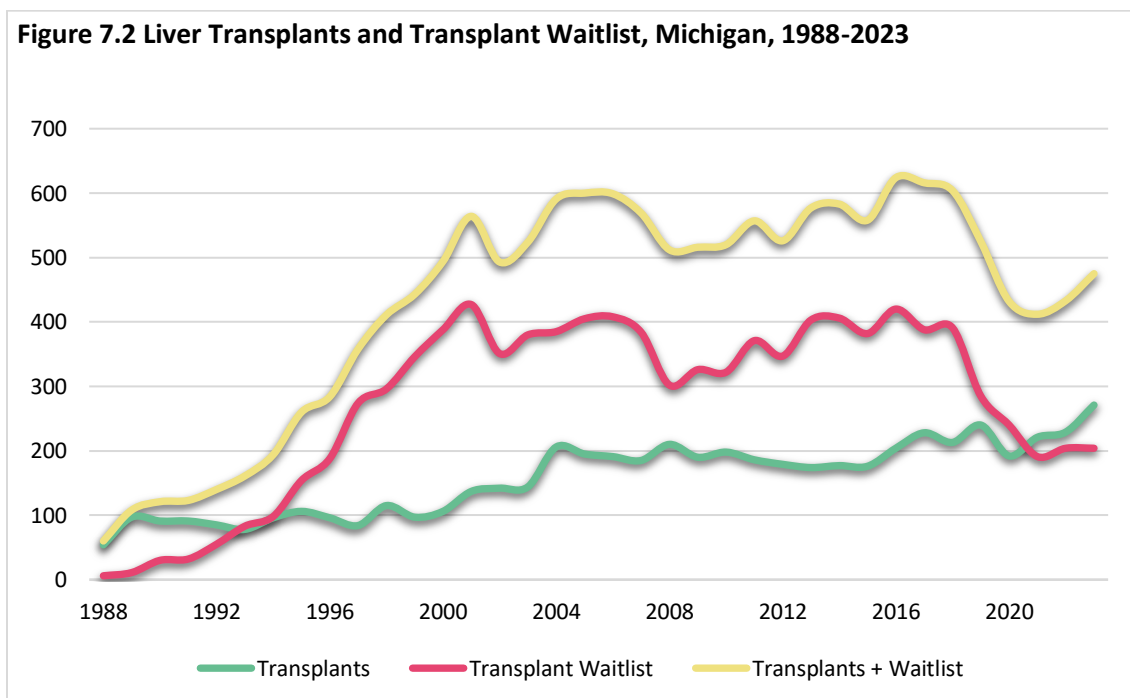
Trends in hospitalization totals are indicative of a marked increase in health complications due to HCV. Figure 7.1 indicates that hospitalizations attributed to hepatitis C increased from 2008-2017 before starting to decrease from 2018 through 2023, while total hospitalizations due to HBV and HIV each remained relatively steady.



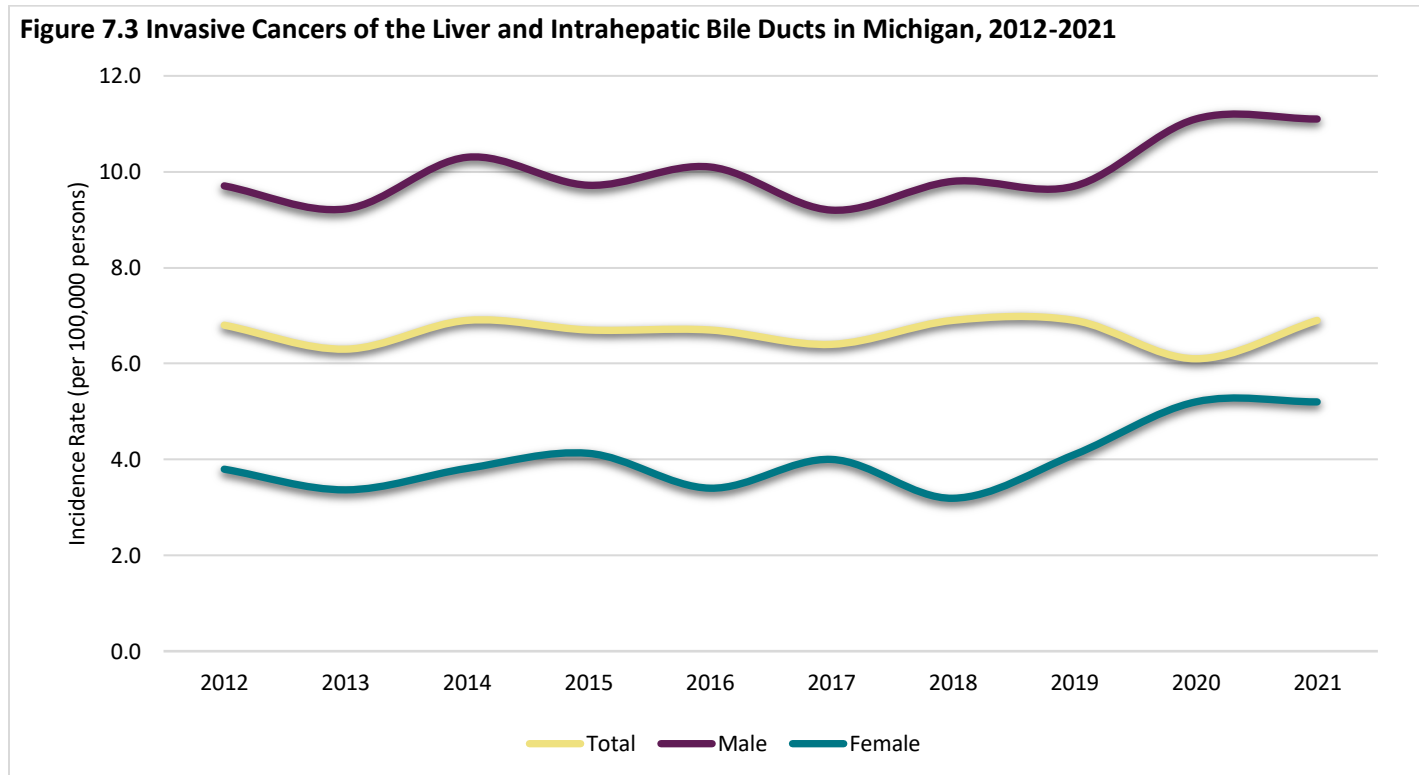
Note: Hospitalizations documenting hepatitis B include inpatient hospitalizations with ICD-9-CM/ICD-10-CM codes for acute, chronic, or unspecified hepatitis B (07020, 07021, 07022, 07023, 07030, 07031, 07032, 07033, V0261, B160, B161, B162, B169, B180, B181, B1910, or B1911). Hospitalizations documenting hepatitis C include ICD-9-CM/ICD-10-CM codes for acute, chronic, or unspecified hepatitis C (07041, 07044, 07054, 07059, 07070, 07071, V0262, B1710, B1711, B182, B1920, or B1921). Hospitalizations documenting HIV include inpatient hospitalizations with ICD-9-CM/ICD-10-CM codes 042, 07953, 79571, V08, B20, 098711, 098712, 098713, 098719, 19872, 09873, or Z21.

Liver transplantation may be indicated for individuals with hepatocellular carcinoma (HCC). HBV and HCV infection increases the risk of development of HCC; therefore, trends in liver transplantation may be indicative of increasing disease progression and morbidity associated with long-term HBV and/or HCV infection. However, these data should be interpreted with caution as there are many other indicators for liver transplantation independent of viral hepatitis (e.g., alcoholic cirrhosis).

Counts of the number of individuals on the liver transplant waitlist and the number of liver transplants conducted in Michigan between 1988 and 2023 were requested through the United Network of Organ Sharing (UNOS, <https://www.unos.org/>).



Viral Hepatitis-Related Cancer and Mortality



Viral hepatitis is a primary risk factor for the development of liver cancer. Figure 7.3 shows the age-adjusted rate of liver and intrahepatic bile duct cancer by sex. The rate of invasive cancers of the liver and bile ducts is approximately 2.1 times higher in males than females.

Table 7.1 Incidence Rates of Invasive Cancers of the Liver and Intrahepatic Bile Ducts by Age-adjusted Rates of Race and Sex in Michigan, 2012-2021

Year of Diagnosis	Total		White or Caucasian Male		White or Caucasian Female		Black or African American Male		Black or African American Female	
	Incidence	Rate	Incidence	Rate	Incidence	Rate	Incidence	Rate	Incidence	Rate
2012	867	6.9	415	8.2	204	3.7	154	22.7	47	5.6
2013	863	6.8	437	8.5	192	3.3	145	20.5	48	6.0
2014	897	7.0	479	9.2	205	3.6	135	19.7	46	5.3
2015	930	7.2	475	9.0	214	3.7	138	20.5	71	8.3
2016	999	7.4	559	10.5	212	3.6	119	16.5	56	6.2
2017	1023	7.5	539	9.8	258	4.3	136	18.8	62	7.1
2018	942	6.9	485	8.7	222	3.7	133	18.7	49	5.5
2019	969	6.9	486	8.5	251	4.1	135	19.0	38	4.2
2020	860	6.1	464	8.2	223	3.6	91	12.7	40	4.0
2021	971	6.9	507	8.8	238	4.1	108	14.7	71	7.8

Table 7.1 shows the rate of new cases of liver and intrahepatic bile duct cancer per year from 2012 to 2021 in Michigan per 100,000 people. The number of cases per year of liver and bile duct cancer has fluctuated from 2012-2021, but Black/African American males remain disproportionately affected, experiencing an incidence rate that is approximately 1.7 times higher than White/Caucasian males. In 2021, the incidence rate in White males and females remained relatively similar to historical data, while Black/African American incidence rates experience more fluctuation, resulting in a rate below the 10 year average in males and a rate above the 10 year average in females. Without improved efforts to test and treat persons with HBV and HCV infection, the rate of liver cancer may continue to remain elevated, particularly as the population with significant viral hepatitis prevalence (those born between 1945-1965) ages.

Figure 7.4 Mortality Due to Invasive Cancer of the Liver and Intrahepatic Bile Ducts and Age-Adjusted Death Rates by Race and Sex in Michigan, 2013 - 2022

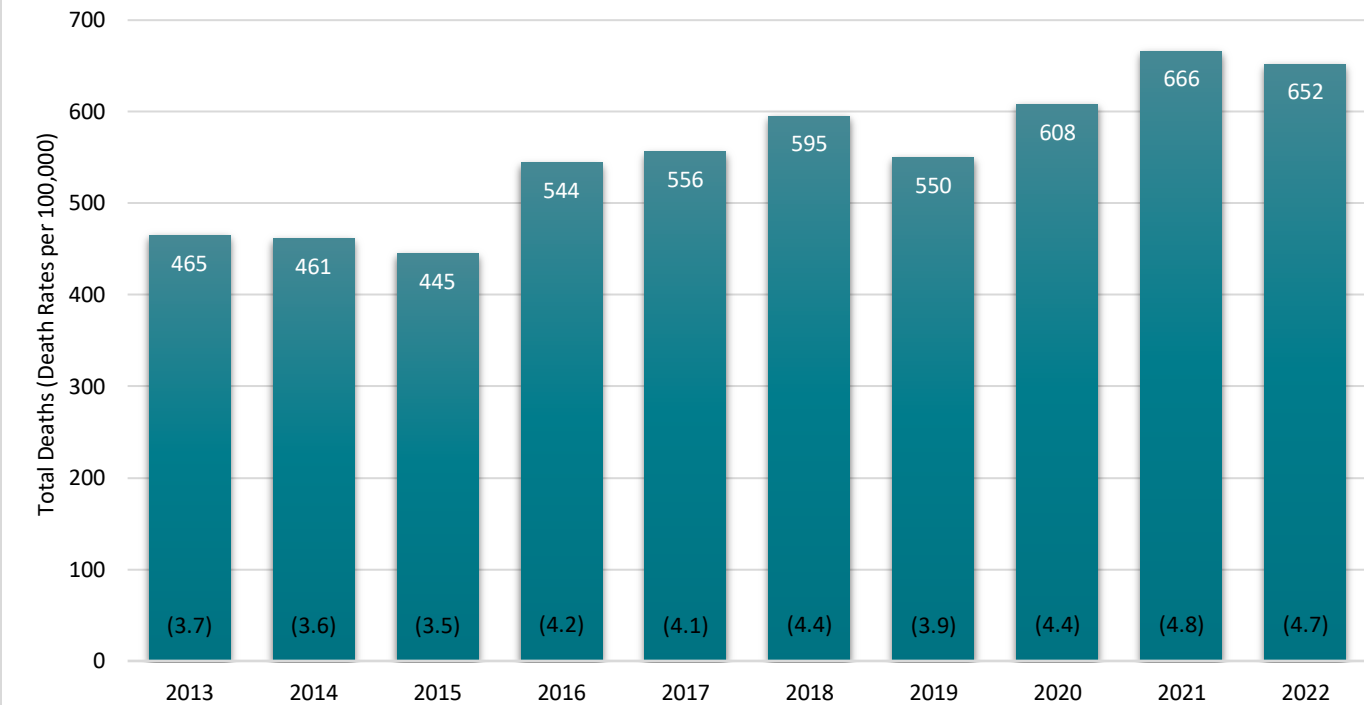


Figure 7.4 shows the number of deaths per year due to liver and intrahepatic bile duct cancer. This total has risen 40% from 2013 to 2022. Chronic infection with viral hepatitis, over time, can lead to liver cancer. As rates of liver cancer morbidity correlate directly with liver cancer mortality, improved efforts to test and treat viral hepatitis infections may help to continue improving these trends.

Table 7.2 Numbers of Deaths Due to Invasive Cancer of the Liver and Intrahepatic Bile Ducts and Age-Adjusted Death Rates by Race and Sex in Michigan, 2012 - 2021

Year of Death	Total		White or Caucasian Male		White or Caucasian Female		Black or African American Male		Black or African American Female	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
2013	465	3.7	227	4.5	129	2.2	65	9.3	27	3.4
2014	461	3.6	226	4.4	119	2.1	64	8.9	36	4.3
2015	445	3.5	218	4.2	121	2.1	60	9.9	26	3.1
2016	544	4.2	291	5.6	138	2.4	54	7.8	38	4.4
2017	556	4.1	293	5.4	156	2.5	64	8.7	23	2.5
2018	595	4.4	309	5.7	142	2.3	72	10.5	38	4.2
2019	550	3.9	292	5.2	147	2.3	71	10.1	20	2.0
2020	608	4.4	319	5.8	168	2.7	65	9.8	31	3.5
2021	666	4.8	312	5.6	194	3.2	83	11.7	37	4.0
2022	652	4.7	311	5.6	189	3.1	68	10.4	45	4.8

Table 7.2 shows the death rate per 100,000 Michigan population due to cancer of the liver and intrahepatic bile ducts between 2013 and 2022. The overall liver and intrahepatic bile duct cancer mortality rate in Michigan in 2022 was 4.7 per 100,000. Black/African American males experience the highest death rates due to these cancers with a death rate of 10.4 per 100,000. The death rate in Black/African American males is 1.9 times higher than the rate in White/Caucasian males (5.6 per 100,000). White/Caucasian females experienced the lowest mortality rate amongst the included racial groups in 2022.

While not all liver cancers are a direct result of viral hepatitis, viral hepatitis remains a primary risk factor for development of liver cancer. These data highlight racial disparities in liver cancer data that may be reflective of disparities seen in viral hepatitis infection.

Figure 7.5 Deaths Due to Acute and Chronic HCV, Michigan, 2015-2023

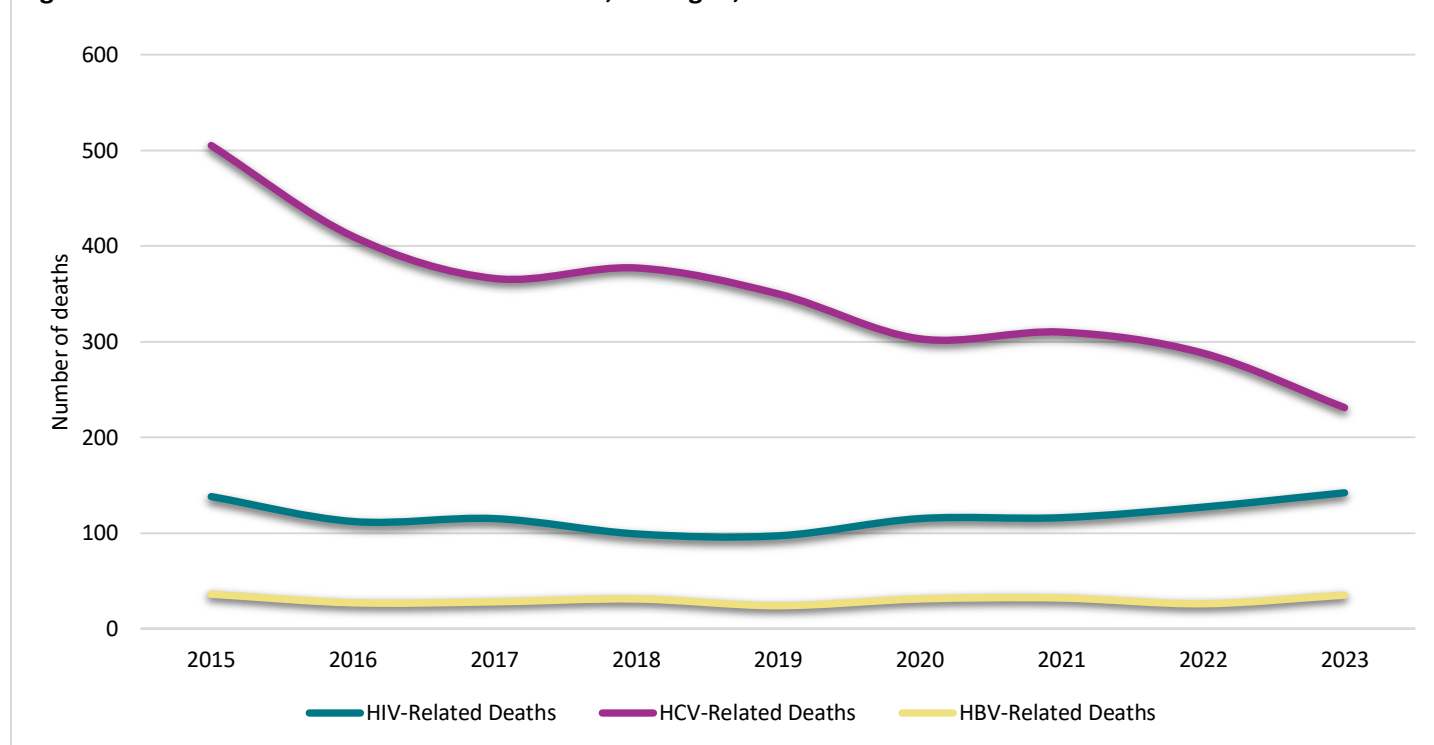


Figure 7.5 illustrates the number of deaths per year in Michigan residents between 2015 and 2023 due to acute and chronic HCV, according to death certificate data, in comparison to hepatitis B and HIV. The Vital Records and Health Statistics Section provides data on underlying causes of death in Michigan, which is classified using the Tenth Revision of the International Classification of Diseases (ICD-10). Deaths included those with any mention of these three conditions at any position in their death certificate.

In 2023 there were 231 deaths attributed to HCV in Michigan (ICD-10: B17.1, B18.2, B19.2). Between 2015 and 2023, deaths due to chronic HCV decreased by 54%, likely resulting from the introduction of new medications that treat HCV infections, among other factors. From 2015 through 2023, HBV deaths (ICD-10: B16.2, B16.9, B18.1) decreased slightly from 36 to 35 per year, while HIV-related deaths (ICD-10: B20-B24) were increased slightly 138 to 142.

A large, stylized graphic of a virus particle, resembling a sphere with a hexagonal pattern, is centered on the page. The graphic is composed of two overlapping rings, one in a teal color and one in a purple color, creating a 3D effect. The background is white with a pattern of small, light gray dots.

Viral Hepatitis Programming

Hepatitis C Emerging Threats Project

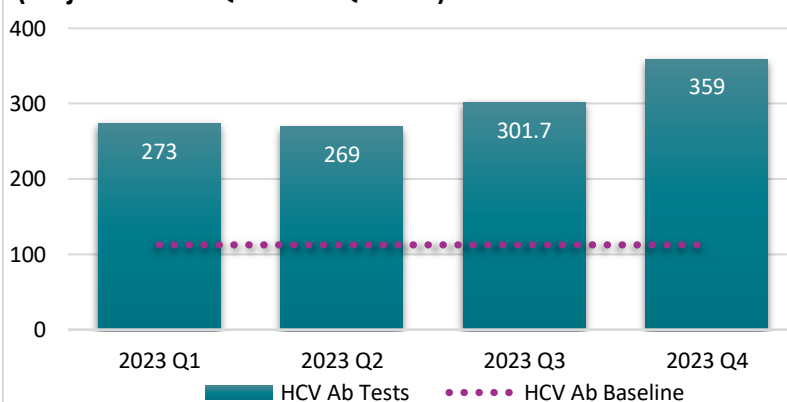
In 2017, the Viral Hepatitis Unit at MDHHS wrote a Proposal for Change, which supported the allocation of general funds to local health departments for HCV testing, case investigation, linkage to care, and follow-up. The \$4.5 million proposal was supported in the governor's budget and eventually approved by the Michigan legislature at \$1 million.

The project goal was to fund each local health jurisdiction, but a shortage of funds prompted an effort to prioritize a smaller cohort. Therefore, it was decided that funding would be allocated to the 10 jurisdictions with the highest HCV case burden in 2017, according to the MDSS. Disbursement of funds and project implementation began on January 1, 2019. Starting in quarter 4 of 2021, funding was reduced, which forced the group of funded jurisdictions to shrink to six health departments.

Table 8.1 Local Health Departments participating in the HCV Emerging Threats Project

Funded Local Health Departments	2017 Hepatitis C Cases
Detroit City	1,941
Wayne County	1,360
Oakland County	1,010
Macomb County	896
Genesee County	647
Kent County	564
Ingham County	351
St. Clair County	271
Muskegon County	264
Kalamazoo County	259

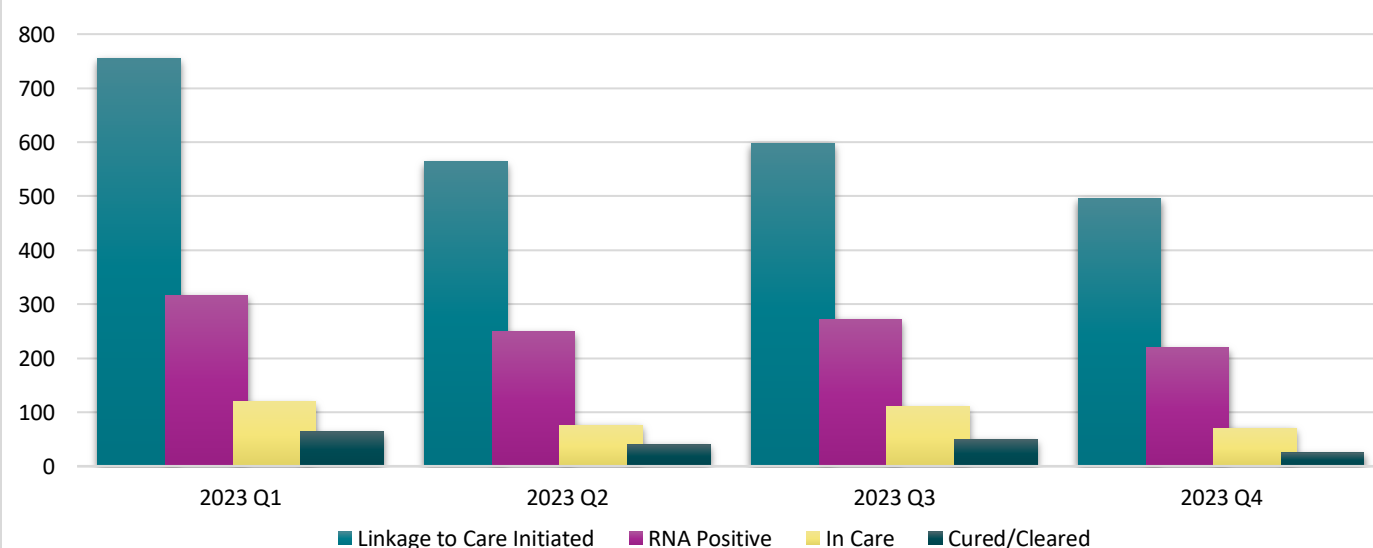
Figure 8.1 Combined average number of HCV specimens submitted to BOL from the funded LHDs (Project Period: Q1 2023 - Q4 2023)



Hepatitis C Testing: Project dollars went to the Michigan Bureau of Laboratories (BOL) to continue to offer HCV antibody (Ab) and RNA testing services at no cost to our submitters. Since the start of the project (Jan 1, 2019 – Dec 31, 2022), funded health departments have submitted 28,439 HCV specimens to BOL.

Hepatitis C Linkage to Care: In calendar year 2023, funded local health departments reached out to 2,413 individuals to offer linkage to care activities such as informing cases of their HCV lab result, encouraging confirmatory HCV testing (if needed), providing viral hepatitis education, and helping to refer and navigate cases through the complex process of hepatitis C treatment (e.g., PCP, HCV treatment providers, insurance). Of those individuals living with hepatitis C and contacted for linkage to care, 375 were linked to care for hepatitis C and 179 have documented cure (or viral clearance).

Figure 8.2 Linkage to Care Activities Performed by the Funded LHDs from Jan 1 - Dec 31, 2023



Harm Reduction and Syringe Service Programs

As viral hepatitis data has indicated year after year, there is growing concern for dissemination of infectious disease through use of injection drugs. In response to this pressing issue, MDHHS has supported development of a statewide harm reduction platform, which includes provision of funds for several existing and start-up syringe service programs (SSPs). Harm reduction is a respectful, non-judgmental approach to reducing the harms of substance use that meets people where they are at. This approach has been proven effective in SSPs and can reduce HCV and HIV prevalence by as much as 50%, reduce fatal and non-fatal overdoses, and increase access to substance use disorder treatment and recovery services (which can often include hepatitis C testing and linkage to care).

In fiscal year 2019, MDHHS invested approximately \$1.25 million in harm reduction and SSPs in 15 different local health jurisdictions. With inclusion of all operating SSPs in Michigan, as of December 31, 2023, there is now coverage across Michigan by a total of 36 programs operating 87 sites.

Figure 8.3 Naloxone Kits Distributed and Overdoses Reversed as Result of SSP, MI by Quarter, 2023

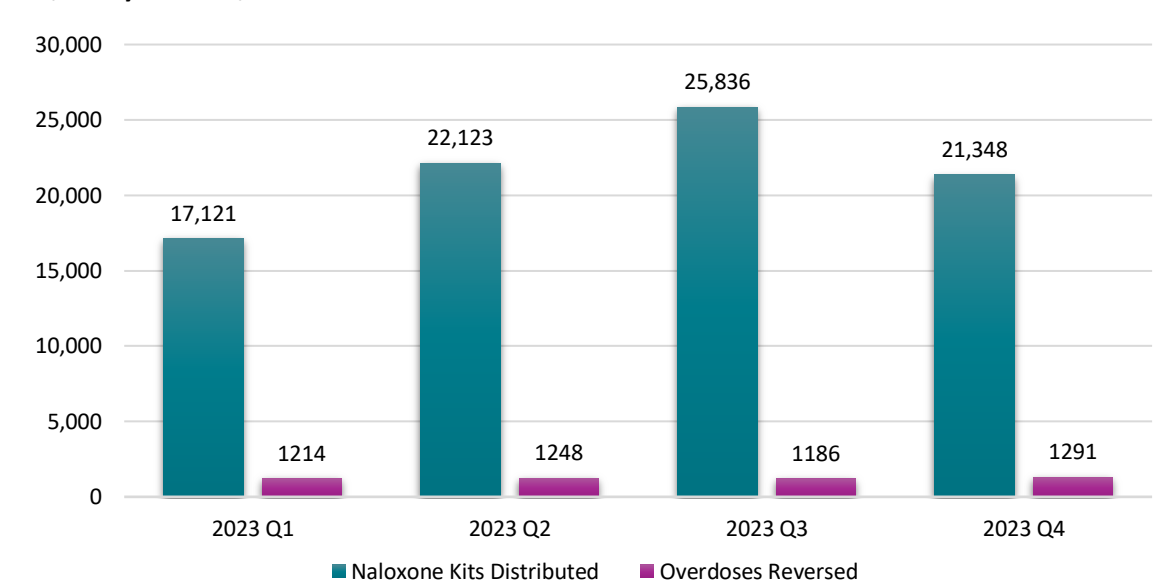
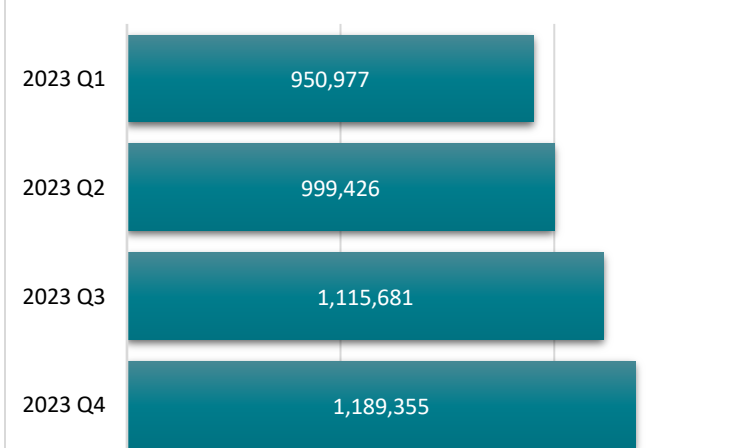


Figure 8.4 Syringes Dispensed by MI SSP's by Quarter, 2023



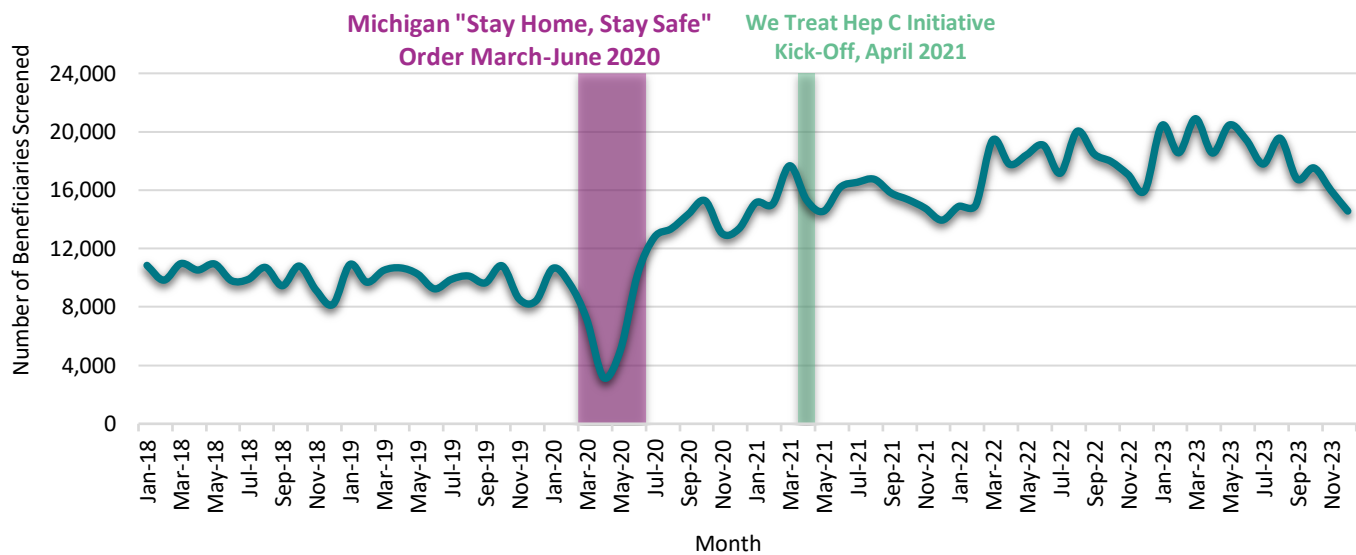
From the start of data collection through 2022, SSPs in Michigan:

- Provided 9,254 referrals to substance use treatment.
- Provided assistance directly on 111,272 instances.
- Distributed 132,268 naloxone kits.
- Reversed 10,929 overdoses.
- Conducted 2,769 HIV tests.
- Conducted 2,140 hepatitis C tests.
- Distributed 9.2 million sterile syringes.

We Treat Hep C Initiative

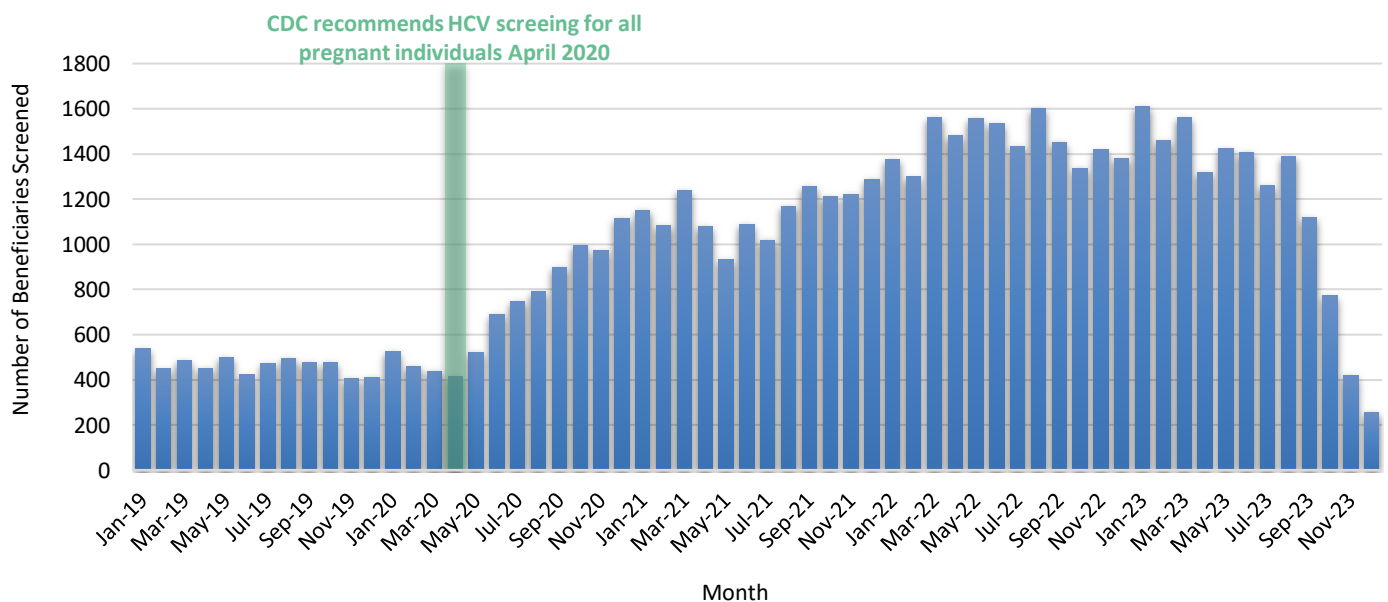
In an effort to eliminate hepatitis C in Michigan, MDHHS partnered with research-based global biopharmaceutical company, AbbVie, to launch the We Treat Hep C Initiative, effective April 1, 2021. As part of the initiative, the antiviral MAVYRET no longer requires prior authorization, making it available to all Medicaid and Healthy Michigan Plan beneficiaries at little to no cost. Additionally, the initiative emphasized outreach and partnership with the state's clinical community to increase the number of prescribers screening and treating patients impacted by HCV. Provided by our collaborators at the Michigan Medicaid Program, the following data illustrates the progress achieved during the first year of the We Treat Hep C Initiative.

Figure 8.5 Medicaid Beneficiaries Tested By Month, 2018-2023



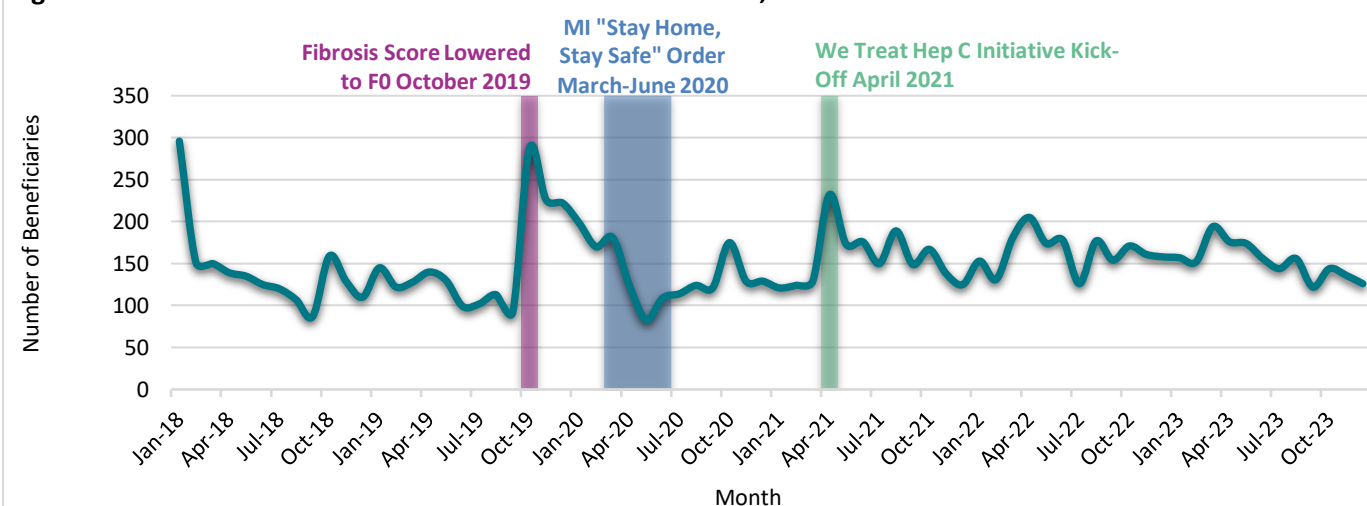
During 2022, the average number of Medicaid beneficiaries tested for HCV per month continued to increase compared to averages from previous years. After monthly averages decreased to 10,664 in 2020, likely due to effects attributable to Michigan's "Stay Home, Stay Safe" order during the COVID-19 pandemic, averages increased to 15,591 beneficiaries tested per month in 2021 and then to 17,545 beneficiaries tested per month in 2022, and 18,376 in 2023, far out-weighting volumes seen in all previous years since 2018.

Figure 8.6 Medicaid Beneficiaries Tested for HCV During Pregnancy, 2018-2023



Additionally, the number of pregnant Medicaid beneficiaries tested per month for HCV increased as well (figure 8.6). As of April 2020, the CDC recommends screening all pregnant individuals for hepatitis C, regardless of age, corresponding with the marked increase seen first in 2021 and continuing through 2023. However, it should be noted that the data only includes individuals whose pregnancies have ended and does not represent currently pregnant individuals. This aspect of the data likely contributes to the decrease in testing volume seen in the later months of 2023.

Figure 8.7 Medicaid Beneficiaries that Started HCV Treatment, 2018-2023



Treatment starts saw marked increases after major events related to HCV treatment (figure 8.7). For example, in October of 2018 and 2019, liver fibrosis score requirements for treatment were lowered from F1 to F0, respectively, after which, the number of beneficiaries starting HCV treatment spiked. Another increase in treatment starts occurred in April of 2021, after the launch of the We Treat Hep C Initiative. In that first year of the initiative, an average of 156 beneficiaries started HCV treatment each month, higher than all averages in all previous years. A steady rate of treatment continued in year three of the initiative, with a monthly average of 153 beneficiaries starting treatment each month in 2022.

Figure 13.4 Cumulative Total of Prescribers of HCV Treatment for Medicaid Beneficiaries, 2018-2023

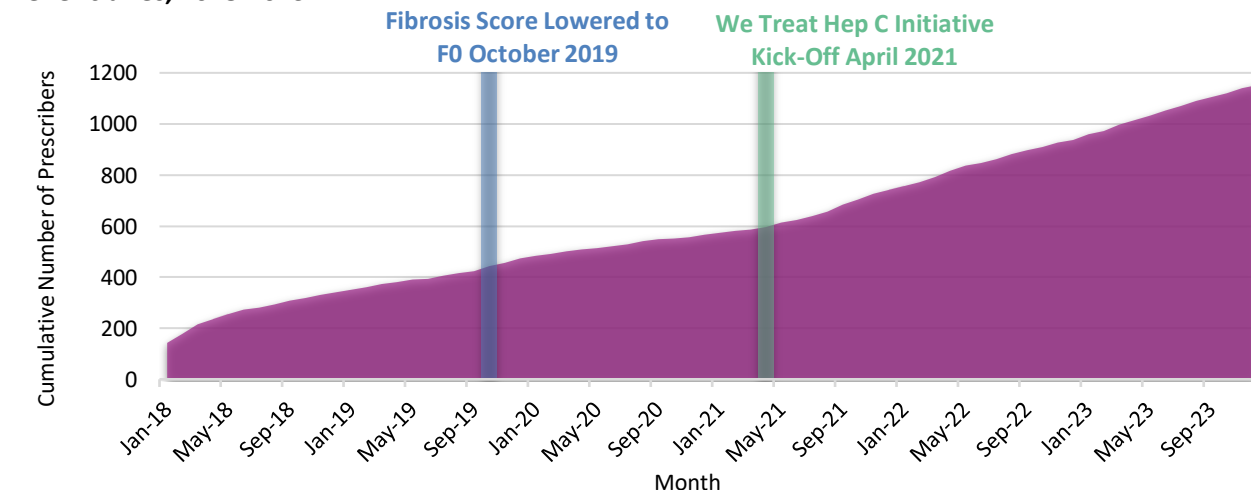


Figure 8.8 illustrates the number of providers prescribing treatment for HCV has been increasing since 2018. Following the launch of the We Treat Hep C Initiative in April 2021, the rate of increase for the total number of prescribers grew, resulting in a steady increase in total prescribers through 2023.

As we continue into the next year of the We Treat Hep C initiative, we plan to further delve into this data to track our progress and to examine where more support is needed as we take steps towards hepatitis C elimination in Michigan.

HCV Disease Intervention Specialist Unit

In August 2021, the Disease Intervention Specialist Unit (DIS) was created to aid in Michigan's state plan to eliminate hepatitis C (HCV). As a result, the unit has seven DIS that are responsible for identifying, contacting, and linking to care and treatment Michigan residents at-risk for or living with hepatitis C.

DIS Services:

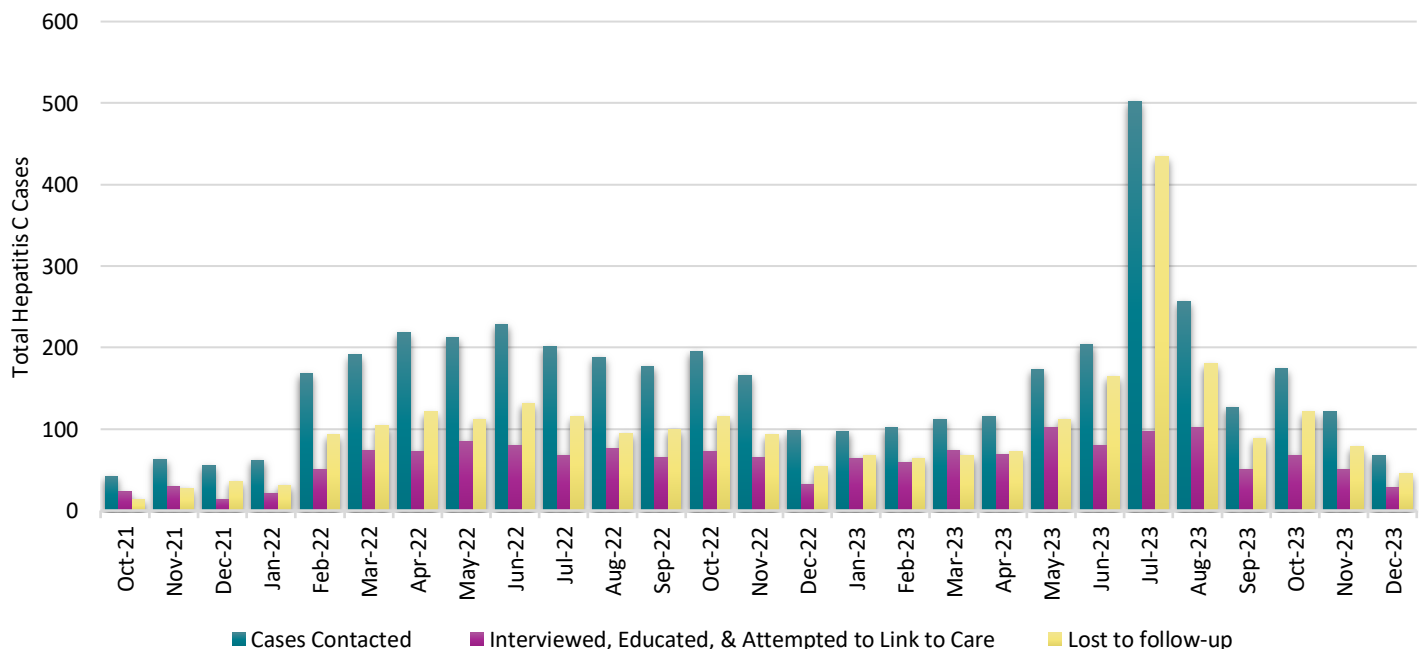
- Provide HCV education.
- Interpret HCV labs.
- Provide harm reduction education.
- Link to care for treatment.
- Link to confirmatory testing.
- Insurance navigation.
- Referrals to community organizations.
- Case management.

Who do the DIS serve?

- Medicaid beneficiaries.
- Acute cases.
- Perinatal cases.
- Moms & pregnant persons.
- GHOST clusters.
- HCV/HIV.
- Justice involved.
- Wayne County.
- Any LHD or medical provider that requests support.

From October 1, 2021, to December 31, 2023, the HCV DIS have attempted to contact 4,316 persons living with HCV. Although 2,735 of those cases were lost to follow-up, the unit interviewed, educated, and attempted to link 1,671 individuals to HCV care.

Figure 14.1 Michigan HCV DIS Unit Case Follow-up Metrics, Oct 2021-Dec 2023



A large, stylized graphic of the number "9" is centered on the page. The "9" is composed of two thick, curved segments: a teal segment on the left and a purple segment on the right. The background is white with a pattern of small, light gray dots. A vertical gray bar is visible on the left side of the page.

Appendices

Appendix A1: Viral Hepatitis Data by County

County	Total Population	2023 Chronic HCV Cases	2023 Acute HCV Cases	2023 Chronic HBV Cases	2023 Acute HBV Cases	2023 Chronic HCV Rate*	2023 Acute HCV Rate*	2023 Chronic HBV Rate*	2023 Acute HBV Rate*
Alcona	10,238	3	0	0	0	29.3	0.0	0.0	0.0
Alger	8,866	2	0	1	0	22.6	0.0	11.3	0.0
Allegan	120,189	12	1	4	0	10.0	0.8	3.3	0.0
Alpena	28,911	5	0	0	0	17.3	0.0	0.0	0.0
Antrim	23,662	3	0	1	0	12.7	0.0	4.2	0.0
Arenac	15,031	7	0	0	0	46.6	0.0	0.0	0.0
Baraga	8,245	8	1	0	0	97.0	12.1	0.0	0.0
Barry	62,581	9	0	2	0	14.4	0.0	3.2	0.0
Bay	103,752	38	5	4	2	36.6	4.8	3.9	1.9
Benzie	18,058	7	0	0	0	38.8	0.0	0.0	0.0
Berrien	153,938	26	6	8	1	16.9	3.9	5.2	0.6
Branch	44,795	9	1	2	0	20.1	2.2	4.5	0.0
Calhoun	134,011	39	1	18	1	29.1	0.7	13.4	0.7
Cass	51,604	18	0	0	0	34.9	0.0	0.0	0.0
Charlevoix	26,174	10	1	1	0	38.2	3.8	3.8	0.0
Cheboygan	25,709	12	0	1	0	46.7	0.0	3.9	0.0
Chippewa	36,670	19	0	0	0	51.8	0.0	0.0	0.0
Clare	30,998	19	1	0	0	61.3	3.2	0.0	0.0
Clinton	79,249	15	1	2	1	18.9	1.3	2.5	1.3
Crawford	13,197	2	0	1	0	15.2	0.0	7.6	0.0
Delta	36,839	25	0	2	0	67.9	0.0	5.4	0.0
Detroit City	636,787	396	2	125	2	62.2	0.3	19.6	0.3
Dickinson	25,937	12	0	0	0	46.3	0.0	0.0	0.0
Eaton	109,072	29	0	10	0	26.6	0.0	9.2	0.0
Emmet	34,072	8	0	1	0	23.5	0.0	2.9	0.0
Genesee	405,280	126	6	30	7	31.1	1.5	7.4	1.7
Gladwin	25,461	9	0	0	0	35.3	0.0	0.0	0.0
Gogebic	14,597	11	0	0	1	75.4	0.0	0.0	6.9
Grand Traverse	95,315	27	1	1	0	28.3	1.0	1.0	0.0
Gratiot	41,534	8	2	1	0	19.3	4.8	2.4	0.0
Hillsdale	45,698	14	1	0	0	30.6	2.2	0.0	0.0
Houghton	37,414	7	0	1	0	18.7	0.0	2.7	0.0
Huron	31,461	2	0	2	0	6.4	0.0	6.4	0.0
Ingham	282,540	97	1	39	1	34.3	0.4	13.8	0.4
Ionia	66,663	14	0	1	0	21.0	0.0	1.5	0.0
Iosco	25,319	8	1	0	0	31.6	3.9	0.0	0.0
Iron	11,585	8	0	0	0	69.1	0.0	0.0	0.0
Isabella	64,938	16	1	3	0	24.6	1.5	4.6	0.0
Jackson	160,637	43	1	9	1	26.8	0.6	5.6	0.6
Kalamazoo	261,426	53	8	18	3	20.3	3.1	6.9	1.1
Kalkaska	17,934	7	0	2	0	39.0	0.0	11.2	0.0
Kent	657,321	80	4	62	3	12.2	0.6	9.4	0.5
Keweenaw	2,088	0	0	0	0	0.0	0.0	0.0	0.0

*Rates are calculated per 100,000 persons in the population

†Due to cases without a defined jurisdiction, statewide totals may include cases that were not included in jurisdiction counts

County	Total Population	2023 Chronic HCV Cases	2023 Acute HCV Cases	2023 Chronic HBV Cases	2023 Acute HBV Cases	2023 Chronic HCV Rate*	2023 Acute HCV Rate*	2023 Chronic HBV Rate*	2023 Acute HBV Rate*
Lake	12,285	0	0	0	0	0.0	0.0	0.0	0.0
Lapeer	88,687	17	0	0	0	19.2	0.0	0.0	0.0
Leelanau	22,426	1	0	1	0	4.5	0.0	4.5	0.0
Lenawee	99,263	20	1	3	0	20.1	1.0	3.0	0.0
Livingston	194,302	21	0	3	1	10.8	0.0	1.5	0.5
Luce	5,442	2	0	1	0	36.8	0.0	18.4	0.0
Mackinac	10,843	1	0	0	0	9.2	0.0	0.0	0.0
Macomb	878,453	180	9	80	7	20.5	1.0	9.1	0.8
Manistee	25,058	4	0	0	0	16.0	0.0	0.0	0.0
Marquette	66,376	23	0	1	0	34.7	0.0	1.5	0.0
Mason	29,178	9	0	1	0	30.8	0.0	3.4	0.0
Mecosta	40,128	12	0	0	0	29.9	0.0	0.0	0.0
Menominee	23,433	11	0	0	0	46.9	0.0	0.0	0.0
Midland	83,503	11	0	2	0	13.2	0.0	2.4	0.0
Missaukee	15,089	4	1	0	0	26.5	6.6	0.0	0.0
Monroe	154,823	87	0	11	0	56.2	0.0	7.1	0.0
Montcalm	66,901	14	2	2	0	20.9	3.0	3.0	0.0
Montmorency	9,261	1	0	0	0	10.8	0.0	0.0	0.0
Muskegon	175,947	45	1	11	0	25.6	0.6	6.3	0.0
Newaygo	50,130	16	0	1	0	31.9	0.0	2.0	0.0
Oakland	1,272,264	204	1	160	8	16.0	0.1	12.6	0.6
Oceana	26,707	5	0	0	0	18.7	0.0	0.0	0.0
Ogemaw	20,820	9	0	1	0	43.2	0.0	4.8	0.0
Ontonagon	5,862	3	0	0	0	51.2	0.0	0.0	0.0
Osceola	23,022	8	0	1	0	34.7	0.0	4.3	0.0
Oscoda	8,264	2	1	0	0	24.2	12.1	0.0	0.0
Otsego	25,221	4	0	2	0	15.9	0.0	7.9	0.0
Ottawa	296,183	18	0	13	0	6.1	0.0	4.4	0.0
Presque Isle	13,083	1	0	0	0	7.6	0.0	0.0	0.0
Roscommon	23,556	8	0	0	0	34.0	0.0	0.0	0.0
Saginaw	189,821	34	0	9	1	17.9	0.0	4.7	0.5
St Clair	160,257	39	5	12	0	24.3	3.1	7.5	0.0
St Joseph	60,887	18	1	1	1	29.6	1.6	1.6	1.6
Sanilac	40,759	7	0	0	0	17.2	0.0	0.0	0.0
Schoolcraft	8,062	1	0	0	0	12.4	0.0	0.0	0.0
Shiawassee	68,124	13	0	2	0	19.1	0.0	2.9	0.0
Tuscola	53,218	5	1	1	0	9.4	1.9	1.9	0.0
Van Buren	75,636	17	0	3	1	22.5	0.0	4.0	1.3
Washtenaw	370,231	58	3	30	1	15.7	0.8	8.1	0.3
Wayne	1,144,854	308	2	160	2	26.9	0.2	14.0	0.2
Wexford	33,766	14	0	1	0	41.5	0.0	3.0	0.0
MDOC	32,186	208	3	12	0	646.2	9.3	37.3	0.0
Statewide†	10,057,921	2,729	77	877	45	27.1	0.8	8.7	0.4

*Rates are calculated per 100,000 persons in the population

†Due to cases without a defined jurisdiction, statewide totals may include cases that were not included in jurisdiction counts

Appendix A2: HCV Focus Population Data by County

County	Young Adult (18-39) Population	2022 Baby Boomer Population (Age 55-74)	2023 Young Adult (18-39) HCV Cases	2023 Baby Boomer HCV Cases (Birth Yr 1945-65)	2023 Young Adult (18-39) HCV Rate*	2023 Baby Boomer HCV Rate (Birth Yr 1945-65)	Young Adult Proportion of All HCV Cases	Baby Boomer Proportion of All HCV Cases
Alcona	1,614	4,126	<5	<5	N/A	N/A	N/A	N/A
Alger	2,233	2,775	<5	0	N/A	0.0	N/A	0.0%
Allegan	31,078	30,331	6	5	19.3	16.5	46.2%	38.5%
Alpena	6,762	8,875	<5	0	N/A	0.0	N/A	0.0%
Antrim	4,928	8,095	<5	0	N/A	0.0	N/A	0.0%
Arenac	3,090	5,115	<5	<5	N/A	N/A	N/A	N/A
Baraga	2,170	2,421	<5	<5	N/A	N/A	N/A	N/A
Barry	15,983	17,024	6	<5	37.5	N/A	66.7%	N/A
Bay	26,446	28,367	26	<5	98.3	N/A	60.5%	N/A
Benzie	3,953	5,931	<5	<5	N/A	N/A	N/A	N/A
Berrien	38,949	40,748	11	13	28.2	31.9	34.4%	40.6%
Branch	11,323	11,581	7	<5	61.8	N/A	70.0%	N/A
Calhoun	36,233	32,697	16	7	44.2	21.4	40.0%	17.5%
Cass	12,216	14,898	9	<5	N/A	N/A	N/A	N/A
Charlevoix	5,812	8,485	6	<5	N/A	N/A	N/A	N/A
Cheboygan	5,569	8,867	7	<5	N/A	N/A	N/A	N/A
Chippewa	11,371	8,930	10	<5	87.9	N/A	52.6%	N/A
Clare	7,084	9,791	8	9	112.9	91.9	40.0%	45.0%
Clinton	20,930	19,841	7	<5	33.4	N/A	43.8%	N/A
Crawford	2,696	4,494	0	<5	N/A	N/A	N/A	N/A
Delta	8,264	11,340	11	6	133.1	52.9	44.0%	24.0%
Detroit City	198,737	131,642	89	210	44.8	159.5	22.4%	52.8%
Dickinson	5,960	7,751	<5	<5	N/A	N/A	N/A	N/A
Eaton	30,334	28,262	7	8	23.1	28.3	24.1%	27.6%
Emmet	8,485	10,186	<5	<5	N/A	N/A	N/A	N/A
Genesee	110,225	100,726	51	40	46.3	39.7	38.6%	30.3%
Gladwin	5,366	8,513	<5	<5	N/A	N/A	N/A	N/A
Gogebic	3,301	4,890	6	<5	N/A	N/A	N/A	N/A
Grand Traverse	25,204	26,403	11	5	43.6	18.9	39.3%	17.9%
Gratiot	13,012	9,505	7	<5	53.8	N/A	70.0%	N/A
Hillsdale	11,705	12,645	9	<5	76.9	N/A	60.0%	N/A
Houghton	13,902	7,937	<5	<5	N/A	N/A	N/A	N/A
Huron	6,764	10,087	<5	0	N/A	0.0	N/A	0.0%
Ingham	111,146	56,311	36	34	32.4	60.4	36.7%	34.7%
Ionia	20,422	15,318	6	<5	29.4	N/A	42.9%	N/A
Iosco	5,236	8,949	<5	<5	N/A	N/A	N/A	N/A
Iron	2,141	4,153	<5	<5	N/A	N/A	N/A	N/A
Isabella	28,621	12,243	8	<5	28.0	N/A	47.1%	N/A
Jackson	44,555	40,357	20	10	44.9	24.8	45.5%	22.7%
Kalamazoo	92,348	53,744	27	16	29.2	29.8	44.3%	26.2%
Kalkaska	4,601	5,200	<5	<5	N/A	N/A	N/A	N/A
Kent	212,979	136,208	23	26	10.8	19.1	27.4%	31.0%
Keweenaw	312	807	0	0	0.0	0.0	0.0%	0.0%

*Rates are calculated per 100,000 persons in the population

†Due to cases without a defined jurisdiction, statewide totals may include cases that were not included in jurisdiction counts

Note: Due to internal data suppression guidelines, some aggregate counts and corresponding rates required censorship

County	Young Adult (18-39) Population	2022 Baby Boomer Population (Age 55-74)	2023 Young Adult (18-39) HCV Cases	2023 Baby Boomer HCV Cases (Birth Yr 1945-65)	2023 Young Adult (18-39) HCV Rate*	2023 Baby Boomer HCV Rate (Birth Yr 1945-65)	Young Adult Proportion of All HCV Cases	Baby Boomer Proportion of All HCV Cases
Lake	2,588	4,335	0	0	N/A	0.0	N/A	0.0%
Lapeer	21,975	25,311	11	<5	50.1	N/A	64.7%	N/A
Leelanau	4,322	8,378	0	<5	N/A	N/A	N/A	N/A
Lenawee	26,868	25,738	11	5	40.9	19.4	52.4%	23.8%
Livingston	49,330	53,261	9	6	18.2	11.3	42.9%	28.6%
Luce	1,242	1,670	0	<5	N/A	N/A	N/A	N/A
Mackinac	2,311	3,765	0	0	0.0	0.0	0.0%	0.0%
Macomb	245,687	216,344	72	58	29.3	26.8	38.1%	30.7%
Manistee	5,548	8,164	<5	<5	N/A	N/A	N/A	N/A
Marquette	22,500	16,886	11	<5	48.9	N/A	47.8%	N/A
Mason	6,826	8,990	<5	5	N/A	55.6	N/A	55.6%
Mecosta	12,040	10,598	7	<5	N/A	N/A	N/A	N/A
Menominee	5,194	7,493	<5	<5	N/A	N/A	N/A	N/A
Midland	22,226	20,995	5	5	22.5	23.8	45.5%	45.5%
Missaukee	3,688	4,197	<5	<5	N/A	N/A	N/A	N/A
Monroe	40,150	41,251	32	23	79.7	55.8	36.8%	26.4%
Montcalm	18,818	16,488	8	<5	42.5	N/A	50.0%	N/A
Montmorency	1,541	3,709	<5	0	N/A	0.0	N/A	0.0%
Muskegon	49,418	43,216	15	16	30.4	37.0	32.6%	34.8%
Newaygo	12,506	13,958	5	6	N/A	43.0	N/A	37.5%
Oakland	355,983	313,581	66	68	18.5	21.7	32.2%	33.2%
Oceana	6,341	7,677	<5	<5	N/A	N/A	N/A	N/A
Ogemaw	4,285	7,036	<5	<5	N/A	N/A	N/A	N/A
Ontonagon	892	2,493	<5	<5	N/A	N/A	N/A	N/A
Osceola	5,459	6,451	<5	<5	N/A	N/A	N/A	N/A
Oscoda	1,497	2,968	<5	<5	N/A	N/A	N/A	N/A
Otsego	6,099	7,257	<5	<5	N/A	N/A	N/A	N/A
Ottawa	95,426	62,567	11	<5	11.5	N/A	61.1%	N/A
Presque Isle	2,332	5,007	<5	0	N/A	0.0	N/A	0.0%
Roscommon	3,948	9,361	<5	<5	N/A	N/A	N/A	N/A
Saginaw	52,171	48,130	18	7	34.5	14.5	52.9%	20.6%
St Clair	39,440	44,524	23	8	58.3	18.0	52.3%	18.2%
St Joseph	15,775	15,348	12	<5	76.1	N/A	63.2%	N/A
Sanilac	9,290	11,857	<5	<5	N/A	N/A	N/A	N/A
Schoolcraft	1,559	2,899	0	0	N/A	0.0	N/A	0.0%
Shiawassee	17,307	18,337	5	<5	28.9	N/A	38.5%	N/A
Tuscola	13,066	14,976	<5	<5	N/A	N/A	N/A	N/A
Van Buren	19,493	20,246	9	6	46.2	29.6	52.9%	35.3%
Washtenaw	143,402	74,819	22	21	15.3	28.1	36.1%	34.4%
Wayne	319,187	270,931	98	124	30.7	45.8	31.6%	40.0%
Wexford	8,301	8,982	6	<5	72.3	N/A	42.9%	N/A
MDOC	16,229	5,568	130	13	801.0	233.5	61.6%	6.2%
Statewide†	2,890,091	2,466,763	1,085	875	37.5	35.5	38.7%	31.2%

*Rates are calculated per 100,000 persons in the population

†Due to cases without a defined jurisdiction, statewide totals may include cases that were not included in jurisdiction counts

Note: Due to internal data suppression guidelines, some aggregate counts and corresponding rates required censorship

Appendix B1: Viral Hepatitis Data by Local Health Jurisdiction

Local Health Jurisdiction	Total Population	2023 Chronic HCV Cases	2023 Acute HCV Cases	2023 Chronic HBV Cases	2023 Acute HBV Cases	2023 Chronic HCV Rate*	2023 Acute HCV Rate*	2023 Chronic HBV Rate*	2023 Acute HBV Rate*
Allegan	120,189	12	1	4	0	10.0	0.8	3.3	0.0
Barry-Eaton	171,653	38	0	12	0	22.1	0.0	7.0	0.0
Bay	103,752	38	5	4	2	36.6	4.8	3.9	1.9
Benzie-Leelanau	40,484	8	0	1	0	19.8	0.0	2.5	0.0
Berrien	153,938	26	6	8	1	16.9	3.9	5.2	0.6
Branch-Hillsdale-St. Joseph	151,380	41	3	3	1	27.1	2.0	2.0	0.7
Calhoun	134,011	39	1	18	1	29.1	0.7	13.4	0.7
Central Michigan	183,006	67	2	4	0	36.6	1.1	2.2	0.0
Chippewa	36,670	19	0	0	0	51.8	0.0	0.0	0.0
Delta-Menominee	60,272	36	0	2	0	59.7	0.0	3.3	0.0
Detroit City	636,787	396	2	125	2	62.2	0.3	19.6	0.3
Dickinson-Iron	37,522	20	0	0	0	53.3	0.0	0.0	0.0
District Health Department #10	263,472	73	1	6	0	27.7	0.4	2.3	0.0
District Health Department #2	64,641	22	2	1	0	34.0	3.1	1.5	0.0
District Health Department #4	76,964	19	0	1	0	24.7	0.0	1.3	0.0
Genesee	405,280	126	6	30	7	31.1	1.5	7.4	1.7
Grand Traverse	95,315	27	1	1	0	28.3	1.0	1.0	0.0
Huron	31,461	2	0	2	0	6.4	0.0	6.4	0.0
Ingham	282,540	97	1	39	1	34.3	0.4	13.8	0.4
Ionia	66,663	14	0	1	0	21.0	0.0	1.5	0.0
Jackson	160,637	43	1	9	1	26.8	0.6	5.6	0.6
Kalamazoo	261,426	53	8	18	3	20.3	3.1	6.9	1.1
Kent	657,321	80	4	62	3	12.2	0.6	9.4	0.5
Lapeer	88,687	17	0	0	0	19.2	0.0	0.0	0.0
Lenawee	99,263	20	1	3	0	20.1	1.0	3.0	0.0
Livingston	194,302	21	0	3	1	10.8	0.0	1.5	0.5
Luce-Mackinac-Alger-Schoolcraft	33,213	6	0	2	0	18.1	0.0	6.0	0.0
Macomb	878,453	180	9	80	7	20.5	1.0	9.1	0.8
Marquette	66,376	23	0	1	0	34.7	0.0	1.5	0.0
Midland	83,503	11	0	2	0	13.2	0.0	2.4	0.0
Mid-Michigan	187,684	37	5	5	1	19.7	2.7	2.7	0.5
Monroe	154,823	87	0	11	0	56.2	0.0	7.1	0.0
Muskegon	175,947	45	1	11	0	25.6	0.6	6.3	0.0
Northwest Michigan	109,129	25	1	5	0	22.9	0.9	4.6	0.0
Oakland	1,272,264	204	1	160	8	16.0	0.1	12.6	0.6
Ottawa	296,183	18	0	13	0	6.1	0.0	4.4	0.0
Saginaw	189,821	34	0	9	1	17.9	0.0	4.7	0.5
Sanilac	40,759	7	0	0	0	17.2	0.0	0.0	0.0
Shiawassee	68,124	13	0	2	0	19.1	0.0	2.9	0.0
St Clair	160,257	39	5	12	0	24.3	3.1	7.5	0.0
Tuscola	53,218	5	1	1	0	9.4	1.9	1.9	0.0
Van Buren-Cass	127,240	35	0	3	1	27.5	0.0	2.4	0.8
Washtenaw	370,231	58	3	30	1	15.7	0.8	8.1	0.3
Wayne	1,144,854	308	2	160	2	26.9	0.2	14.0	0.2
Western Upper Peninsula	68,206	29	1	1	1	42.5	1.5	1.5	1.5
MDOC	32,186	208	3	12	0	646.2	9.3	37.3	0.0
Statewide†	10,057,921	2,729	77	877	45	27.1	0.8	8.7	0.4

*Rates are calculated per 100,000 persons in the population

†Due to cases without a defined jurisdiction, statewide totals may include cases that were not included in jurisdiction counts

Appendix B2: HCV Focus Population Data by Local Health Jurisdiction

Local Health Jurisdiction	Young Adult (18-39) Population	2022 Baby Boomer Population (Age 55-74)	2023 Young Adult (18-39) HCV Cases	2023 Baby Boomer HCV Cases (Birth Yr 1945-65)	2023 Young Adult (18-39) HCV Rate*	2023 Baby Boomer HCV Rate (Birth Yr 1945-65)	Young Adult Proportion of All HCV Cases	Baby Boomer Proportion of All HCV Cases
Allegan	31,078	30,331	6	5	19.3	16.5	46.2%	38.5%
Barry-Eaton	46,317	45,286	13	10	28.1	22.1	34.2%	26.3%
Bay	26,446	28,367	26	<5	98.3	N/A	60.5%	N/A
Benzie-Leelanau	8,275	14,309	<5	<5	N/A	N/A	N/A	N/A
Berrien	38,949	40,748	11	13	28.2	31.9	34.4%	40.6%
Branch-Hillsdale-St. Joseph	38,803	39,574	28	<5	72.2	N/A	63.6%	N/A
Calhoun	36,233	32,697	16	7	44.2	21.4	40.0%	17.5%
Central Michigan	53,568	51,474	27	21	50.4	40.8	39.1%	30.4%
Chippewa	11,371	8,930	10	<5	87.9	N/A	52.6%	N/A
Delta-Menominee	13,458	18,833	15	8	111.5	42.5	41.7%	22.2%
Detroit City	198,737	131,642	89	210	44.8	159.5	22.4%	52.8%
Dickinson-Iron	8,101	11,904	6	<5	74.1	N/A	30.0%	N/A
District Health Department #10	65,135	76,595	29	27	44.5	35.3	39.2%	36.5%
District Health Department #2	12,632	23,079	10	7	79.2	30.3	41.7%	29.2%
District Health Department #4	16,204	26,458	13	<5	80.2	N/A	68.4%	N/A
Genesee	110,225	100,726	51	40	46.3	39.7	38.6%	30.3%
Grand Traverse	25,204	26,403	11	5	43.6	18.9	39.3%	17.9%
Huron	6,764	10,087	<5	0	N/A	0.0	N/A	0.0%
Ingham	111,146	56,311	36	34	32.4	60.4	36.7%	34.7%
Ionia	20,422	15,318	6	<5	29.4	N/A	42.9%	N/A
Jackson	44,555	40,357	20	10	44.9	24.8	45.5%	22.7%
Kalamazoo	92,348	53,744	27	16	29.2	29.8	44.3%	26.2%
Kent	212,979	136,208	23	26	10.8	19.1	27.4%	31.0%
Lapeer	21,975	25,311	11	<5	50.1	N/A	64.7%	N/A
Lenawee	26,868	25,738	11	5	40.9	19.4	52.4%	23.8%
Livingston	49,330	53,261	9	6	18.2	11.3	42.9%	28.6%
Luce-Mackinac-Alger-Schoolcraft	7,345	11,109	<5	<5	N/A	N/A	N/A	N/A
Macomb	245,687	216,344	72	58	29.3	26.8	38.1%	30.7%
Marquette	22,500	16,886	11	<5	48.9	N/A	47.8%	N/A
Midland	22,226	20,995	5	5	22.5	23.8	45.5%	45.5%
Mid-Michigan	52,760	45,834	22	10	41.7	21.8	52.4%	23.8%
Monroe	40,150	41,251	32	23	79.7	55.8	36.8%	26.4%
Muskegon	49,418	43,216	15	16	30.4	37.0	32.6%	34.8%
Northwest Michigan	25,324	34,023	12	9	47.4	26.5	46.2%	34.6%
Oakland	355,983	313,581	66	68	18.5	21.7	32.2%	33.2%
Ottawa	95,426	62,567	11	<5	11.5	N/A	61.1%	N/A
Saginaw	52,171	48,130	18	7	34.5	14.5	52.9%	20.6%
Sanilac	9,290	11,857	<5	<5	N/A	N/A	N/A	N/A
Shiawassee	17,307	18,337	5	<5	28.9	N/A	38.5%	N/A
St Clair	39,440	44,524	23	8	58.3	18.0	52.3%	18.2%
Tuscola	13,066	14,976	<5	<5	N/A	N/A	N/A	N/A
Van Buren-Cass	31,709	35,144	18	8	56.8	22.8	51.4%	22.9%
Washtenaw	143,402	74,819	22	21	15.3	28.1	36.1%	34.4%
Wayne	319,187	270,931	98	124	30.7	45.8	31.6%	40.0%
Western Upper Peninsula	20,577	18,548	13	7	63.2	37.7	43.3%	23.3%
MDOC	16,229	5,568	130	13	801.0	233.5	61.6%	6.2%
Statewide†	2,890,091	2,466,763	1,085	875	37.5	35.5	38.7%	31.2%

*Rates are calculated per 100,000 persons in the population

†Due to cases without a defined jurisdiction, statewide totals may include cases that were not included in jurisdiction counts

Note: Due to internal data suppression guidelines, some aggregate counts and corresponding rates required censorship

Appendix C1: Viral Hepatitis Data by Region

Region	Total Population	2023 Chronic HCV Cases	2023 Acute HCV Cases	2023 Chronic HBV Cases	2023 Acute HBV Cases	2023 Chronic HCV Rate*	2023 Acute HCV Rate*	2023 Chronic HBV Rate*	2023 Acute HBV Rate*
1	1,080,419	260	7	69	4	24.1	0.6	6.4	0.4
3	1,101,614	278	14	49	10	25.2	1.3	4.4	0.9
5	965,067	201	18	56	7	20.8	1.9	5.8	0.7
6	1,540,401	256	9	95	3	16.6	0.6	6.2	0.2
7	450,492	118	3	12	0	26.2	0.7	2.7	0.0
8	302,259	133	1	6	1	44.0	0.3	2.0	0.3
2N	2,310,974	423	15	252	15	18.3	0.6	10.9	0.6
2S	2,306,695	849	7	326	5	36.8	0.3	14.1	0.2
MDOC	32,186	208	3	12	0	646.2	9.3	37.3	0.0
Statewide†	10,057,921	2,729	77	877	45	27.1	0.8	8.7	0.4

*Rates are calculated per 100,000 persons in the population

†Due to cases without a defined jurisdiction, statewide totals may include cases that were not included in jurisdiction counts

Appendix C2: HCV Focus Population Data by Region

Region	Young Adult (18-39) Population	2022 Baby Boomer Population (Age 55-74)	2023 Young Adult (18-39) HCV Cases	2023 Baby Boomer HCV Cases (Birth Yr 1945-65)	2023 Young Adult (18-39) HCV Rate*	2023 Baby Boomer HCV Rate (Birth Yr 1945-65)	Young Adult Proportion of All HCV Cases	Baby Boomer Proportion of All HCV Cases
1	325,187	264,257	111	74	34.1	28.0	41.6%	27.7%
3	283,251	297,156	131	79	46.2	26.6	44.9%	27.1%
5	273,398	236,617	103	53	37.7	22.4	47.0%	24.2%
6	478,528	347,840	96	81	20.1	23.3	36.2%	30.6%
7	103,789	141,591	54	36	52.0	25.4	44.6%	29.8%
8	83,352	86,210	57	26	68.4	30.2	42.5%	19.4%
2N	641,110	574,449	161	134	25.1	23.3	36.8%	30.6%
2S	701,476	518,643	241	378	34.4	72.9	28.2%	44.2%
MDOC	16,229	5,568	130	13	801.0	233.5	61.6%	6.2%
Statewide†	2,890,091	2,466,763	1,085	875	37.5	35.5	38.7%	31.2%

*Rates are calculated per 100,000 persons in the population

†Due to cases without a defined jurisdiction, statewide totals may include cases that were not included in jurisdiction counts

Note: Due to internal data suppression guidelines, some aggregate counts and corresponding rates required censorship