



Health  
Department

# Chronic Hepatitis C in Macomb County

Reevaluating the epidemic of  
chronic hepatitis C in adults under 40

January 2020

# Contents

Introduction	01
Chronic Hepatitis C in Macomb County	02
Ages Most Affected by Chronic Hepatitis C	03
Chronic Hepatitis C in Adults Under 40	04
HCV Risk Factors in Adults Under 40	05
Hepatitis C Case Locations	07
How are Opioids Related to HCV Infections	08
Prescription Opioids	09
Drug-Related Health Outcomes	10
Summary	12



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# Introduction

## What is Hepatitis C?

Hepatitis C is a liver infection caused by the hepatitis C virus (HCV). HCV is a blood-borne virus and is most commonly spread through sharing needles to inject drugs. Acute hepatitis C occurs within the first six months of being exposed to HCV. It is a short-term illness and only 20-30% of people with acute hepatitis C show symptoms, but approximately 75-85% of people with acute hepatitis C will develop chronic hepatitis C. Chronic hepatitis C can be a lifelong HCV infection if left untreated. When left untreated, chronic hepatitis C can cause serious health problems including liver damage, cirrhosis, liver cancer, and even death.

## How is HCV spread?

HCV may be spread through injection drug use, needlestick injuries in health care settings, or birth to an HCV-infected mother. In rare occurrences, HCV may also be transmitted through receipt of donated blood, sex with an HCV-infected person, unregulated tattooing, sharing personal items contaminated with HCV-infected blood, or other health care procedures that involve invasive procedures.

## How does the Health Department know who has Hepatitis C?

Hepatitis C is a nationally reportable disease. This means that when a person tests positive for the virus, the positive lab results are automatically reported to the person's local health department for follow-up. Cases are reported electronically through the Michigan Disease Surveillance System (MDSS). MDSS is a secure database for all communicable diseases reported in Michigan. The data collected in MDSS are confidential and protected information can only be accessed by certain health care workers for reasons related to surveillance and data analysis.

## Michigan Disease Surveillance System (MDSS) Data

Since 2002, 9,754 chronic hepatitis C cases have been reported through MDSS in Macomb County. A previous report published by the Macomb County Health Department in 2015 found a newly emerging group of individuals being infected with HCV: adults under 40 years old. Since the 2015 report, the Michigan Department of Health & Human Services reported a "concurrent signal of increased heroin abuse has been evident within the same timeframe" as the increase in chronic hepatitis C in adults under 40. The purpose of this report is to analyze the data since the 2015 findings and reevaluate the status of chronic hepatitis C in Macomb County in conjunction with the rise in injection drug use and opioid misuse.



*All of the data in this report were extracted from MDSS unless otherwise specified. This report includes laboratory-confirmed and probable chronic hepatitis C cases. Data is through December 31, 2019 and is current as of January 21, 2020.*

# Chronic Hepatitis C in Macomb County

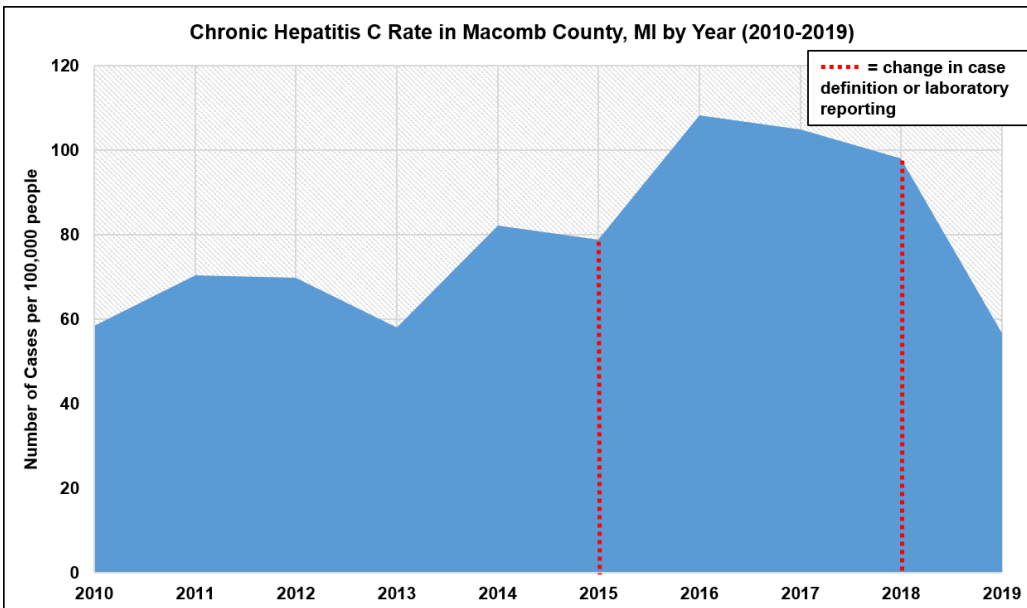
## Macomb County 2018

- 857 cases in 2018
  - Rate: 101 cases per 100,000 people
  - Male-specific rate: 112 cases per 100,000
  - Female-specific rate: 91 cases per 100,000
- Case follow-up and recording of epidemiologic risk factors was completed for 17% of cases
- Injection drug use (IDU) was a factor in 123 out of 149 cases (83%) with a known IDU status
  - IDU reported in 90 out of 99 cases (91%) under 40 years old with a known IDU status
- Incarceration was a factor in 27 out of 45 (60%) of all cases with a known incarceration status

## Michigan 2018

- 10,545 cases in 2018
  - Rate: 106 cases per 100,000 people
  - Male-specific rate: 122 cases per 100,000
  - Female-specific rate: 90 cases per 100,000
- Case follow-up and recording of epidemiologic risk factors was completed for 56% of cases
- Injection drug use (IDU) was a factor in 62% of all cases with a known IDU status
  - IDU reported in 82% of cases under 40 years old with a known IDU status
- Incarceration was a factor in 61% of all cases with a known incarceration status

Chronic Hepatitis C Rate in Macomb County, MI by Year (2010-2019)



In 2019, the rate of chronic hepatitis C was about 57 cases per 100,000.

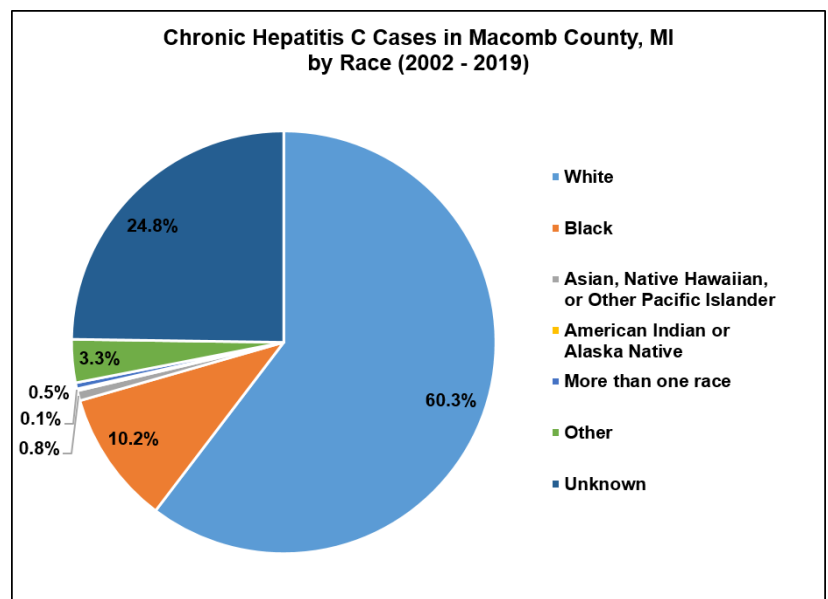
The chronic hepatitis C case definition was changed in 2016, which lowered the threshold for inclusion as a case, therefore, increases since 2015 may be partially attributable to this change

Laboratory reporting requirements changed in 2019, which made it easier to rule out cases so the decline may be partially due to this.

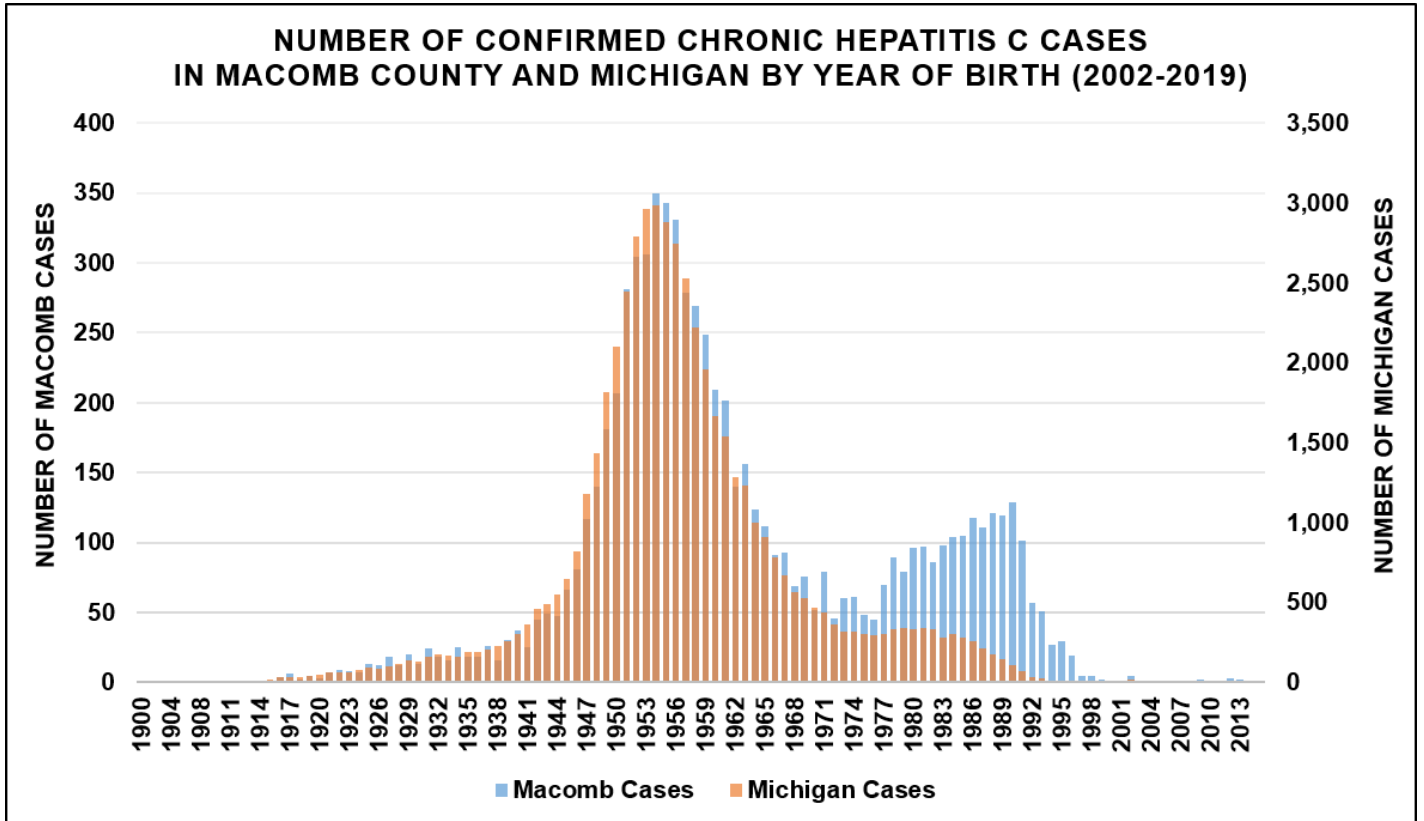
It is important to note that demographic information including race is not reported for 10% of cases. More complete information is needed to better understand the racial distribution of chronic hepatitis C cases and the burden in each demographic.

The burden of chronic hepatitis C is not evenly spread across all races. White residents make up 82% of the population in the county but account for a smaller percentage (60%) of chronic hepatitis C cases.

Chronic Hepatitis C Cases in Macomb County, MI by Race (2002 - 2019)



# What age groups are most affected by Chronic Hepatitis C?

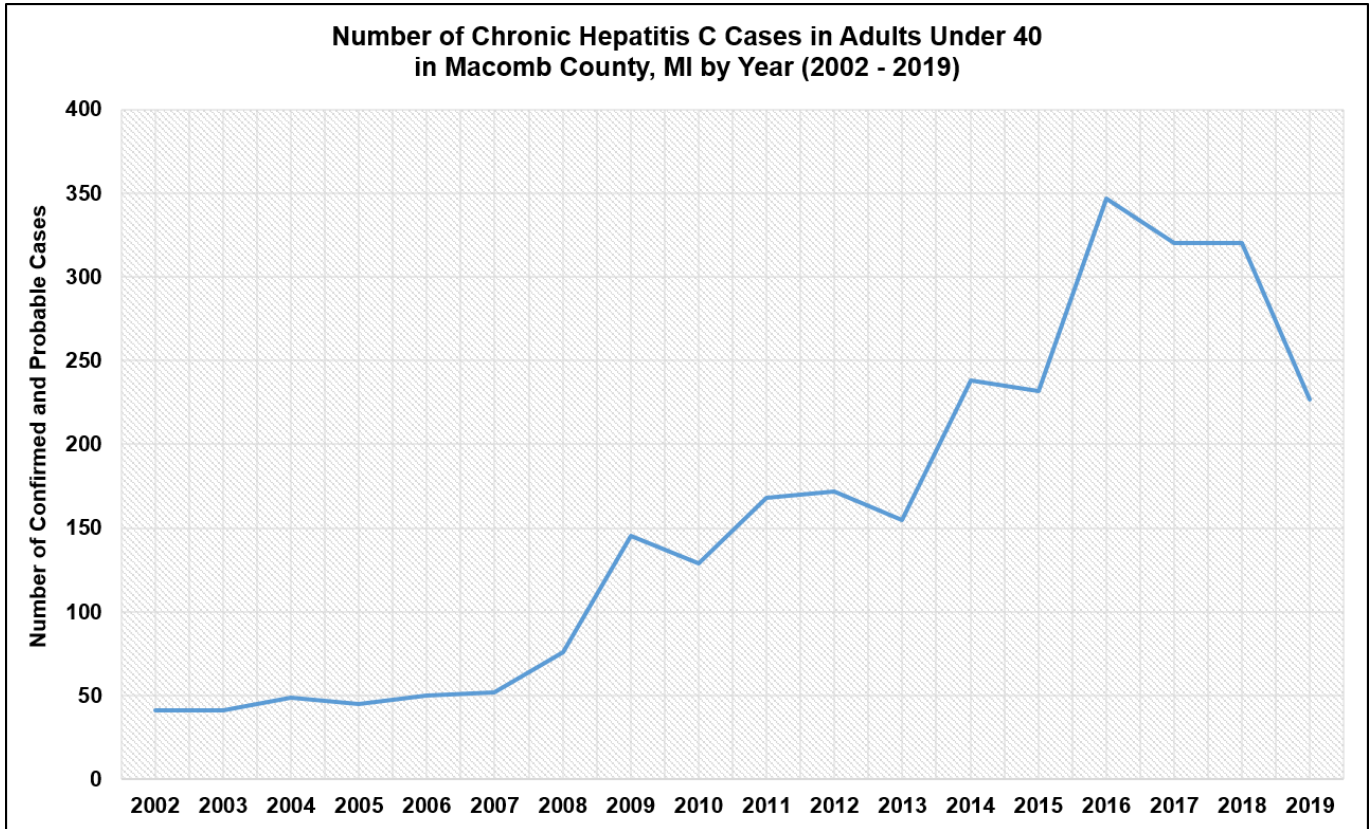


The graph above displays the number of chronic hepatitis C cases diagnosed between 2002 and 2019 by the case's year of birth. Michigan cases are displayed in orange and Macomb County cases are in blue. The large bell curve on the left side of the graph represents the "baby boomer" cases (individuals born between 1946 and 1964) and the slightly smaller curve on the right represents adults under 40 years old (individuals born between 1980 and 2000).



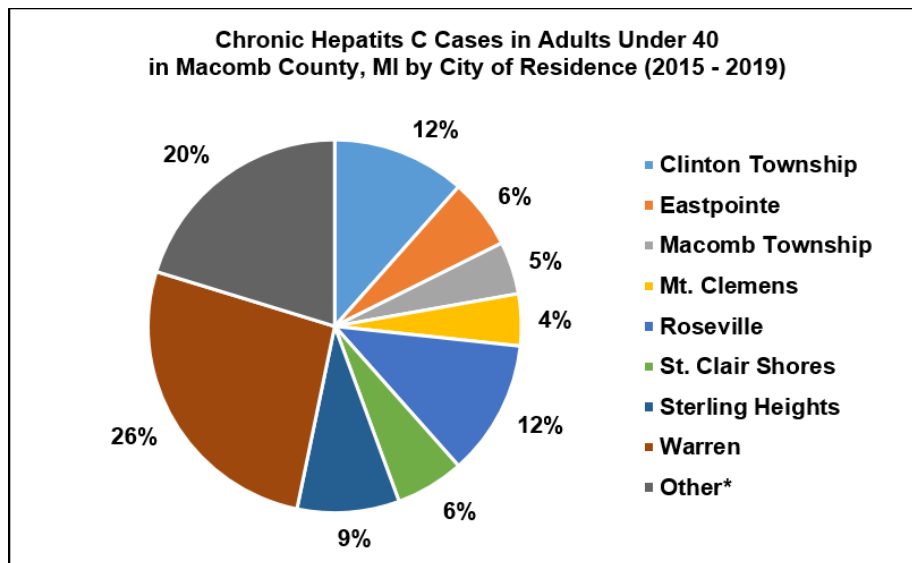
Macomb County Health Department's 2015 report found a newly emerging group of chronic hepatitis C cases in adults under 40, which was unusual for chronic hepatitis C. Typically, chronic hepatitis C cases are mostly seen in older adults. The growing trend of cases in adults under 40 is especially pronounced in Macomb County but is also occurring throughout Michigan. The higher burden of hepatitis C cases in adults under 40 in Macomb County is partially attributable to the increase in injection drug use and opioid misuse.

# Chronic Hepatitis C in Adults Under 40



The number of chronic hepatitis C cases in adults under 40 years old has been rising since 2002 and peaked in 2016. Since 2016, the number of chronic hepatitis C cases in adults under 40 years old has decreased, however, the number of cases continues to be at levels much higher than 10 years ago.

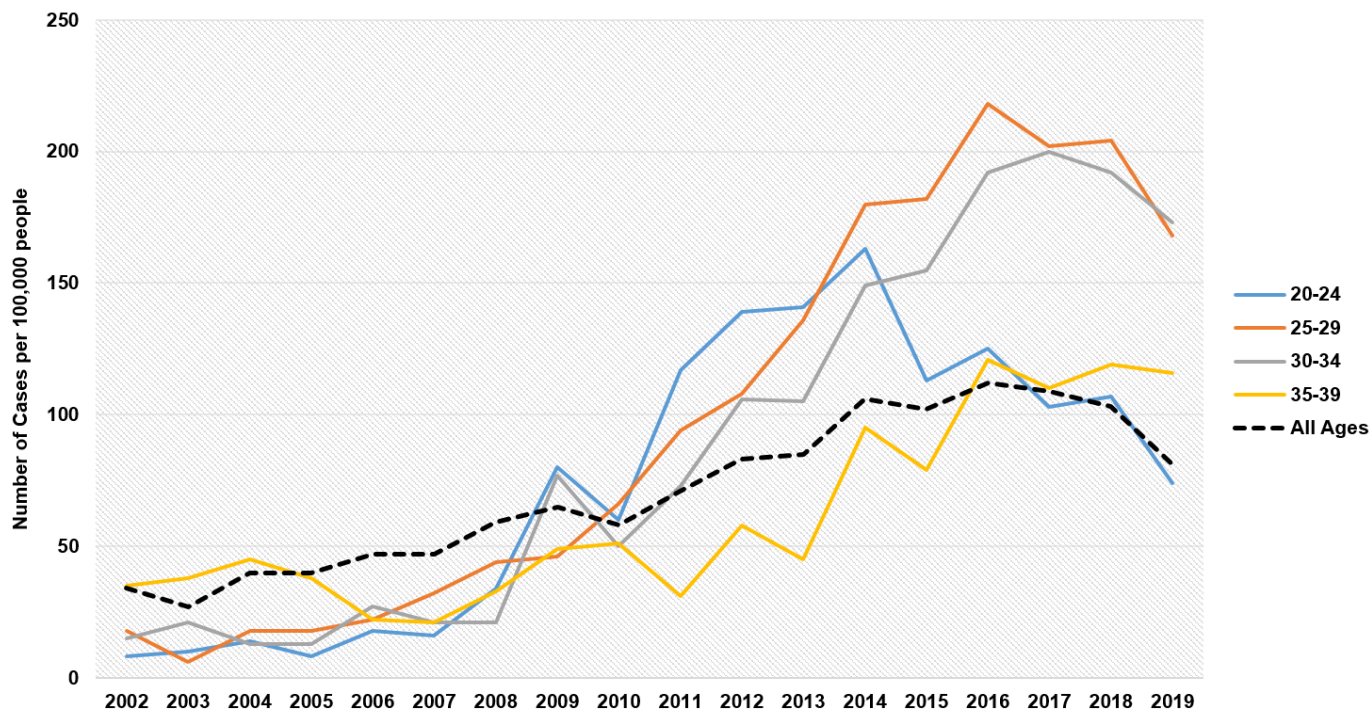
It should be noted that in 2019, MDSS and laboratory reporting procedures changed, which increased the health department's capacity to rule out hepatitis C cases. This contributed to the drop in reported cases from 2018 to 2019.



\*Other includes cities with fewer than 5% of the county's cases

# Chronic Hepatitis C in Adults Under 40

Chronic Hepatitis C Rate in Adults Under 40 Years Old in Macomb County, MI by Age Group and Year (2002 - 2019)



## Demographics of Chronic Hepatitis C Cases in Adults Under 40 in Macomb County, MI (2015-2019)

<b>Number of Cases</b>	1,446
<b>Age</b>	
<b>Mean</b>	29.7
<b>Median</b>	30
<b>Range</b>	18-39
<b>Sex</b>	
<b>Female</b>	681 (47.1%)
<b>Male</b>	764 (52.8%)
<b>Unknown</b>	1 (0.1%)
<b>Race</b>	
<b>White</b>	1086 (75.1%)
<b>Black</b>	83 (5.7%)
<b>Other*</b>	72 (5.0%)
<b>Unknown</b>	205 (14.2%)
<b>Incarceration Status</b>	
<b>MDOC Case**</b>	15 (1.0%)
<b>Non-MDOC Case</b>	1431 (99.0%)

The graph above shows the rate of chronic hepatitis C cases in adults under 40 broken up by 5-year age groups. The black dotted line shows the average rate for all ages. The rate of chronic hepatitis C cases in adults under 40 years old began to spike in 2008, peaked in 2016, and has been decreasing. As previously mentioned, the drop from 2018 to 2019 may be partially attributable to the MDSS and laboratory change in reporting. Despite the decrease in the last year, the rate of chronic hepatitis C remains at levels significantly higher than 10 years ago. In particular, the rate of chronic hepatitis C was much higher in the 20-24 and 30-34 age groups than all the other age groups.

From 2015 to 2019, the majority of chronic hepatitis C cases in adults under 40 were White (75%) and male (53%). The average age of a case under 40 years old was 29.7. About 1% of adult cases under 40 during this timeframe were individuals who were incarcerated by the Michigan Department of Corrections at the time of their diagnosis. Demographic information regarding ethnicity was excluded due to small numbers and data missingness. Information was incomplete for approximately 35% of Hispanic and 60% of Arab ethnicity fields.

\*Other includes multiracial, Asian & Pacific Islander, and American Indian & Alaskan Native

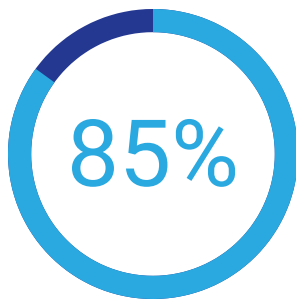
\*\*MDOC cases are individuals who are currently incarcerated by the Michigan Department of Corrections

# HCV Risk Factors in Adults Under 40

Where data were available\*, the risk factors reported among adults under 40 with chronic hepatitis C in Macomb County, MI from 2015-2019 included:

- Injection drug use (85%)
- Incarceration (66%)
- Treatment for STDs (37%)
- Contact with known hepatitis cases (64%)

\*Risk factor data are unknown or missing for approximately 80% of chronic hepatitis C cases. Therefore, additional data are needed to determine the burden of certain risk factors in HCV-infected adults in Macomb County and the significance of the association of these factors with chronic hepatitis C.



**Nearly 9 out of 10 adults under 40 with chronic hepatitis C have a history of injection drug use**



**Responses to Standard Epidemiologic Risk Factor Questions Asked during Chronic Hepatitis C Case Investigations in Macomb County, MI (2015-2019)**

Epidemiologic Information	Adults Under 40				All Cases			
	Yes	No	Unknown*	No Data**	Yes	No	Unknown*	No Data**
Did the patient receive a blood transfusion prior to 1992?	10	558	1,314	925	130	981	5,387	3,356
Did the patient receive an organ transplant prior to 1992?	0	585	1,291	931	<9***	1,240	5,159	3,382
Did the patient receive clotting factor concentrates produced prior to 1987?	0	668	1,224	915	<9***	1,173	5,223	3,352
Was the patient ever on long-term hemodialysis?	<9***	552	1,334	948	23	1,156	5,177	3,398
Has the patient ever injected drugs not prescribed by a doctor even if only once or a few times?	827	150	999	831	1,270	508	4,763	3,213
Was the patient ever incarcerated?	335	169	1,375	928	536	511	5,343	3,364
Was the patient ever treated for a STD?	160	274	1,404	969	242	598	5,457	3,457
Was the patient ever a contact of a person who had hepatitis?	241	134	1,496	936	380	357	5,630	3,387
Was the patient Employed in a medical or dental field involving direct contact with human blood?	37	427	1,395	948	95	909	5,345	3,405
Has the patient received medication for the type of hepatitis being reported?	21	532	678	1,576	173	1,093	2,011	6,477

\*Unknown = an attempt was made to obtain the data for this question but was unsuccessful

\*\*No Data = no attempt has been made to obtain the data for this question

\*\*\*If there were greater than 0 but fewer than 9 responses then these data were suppressed

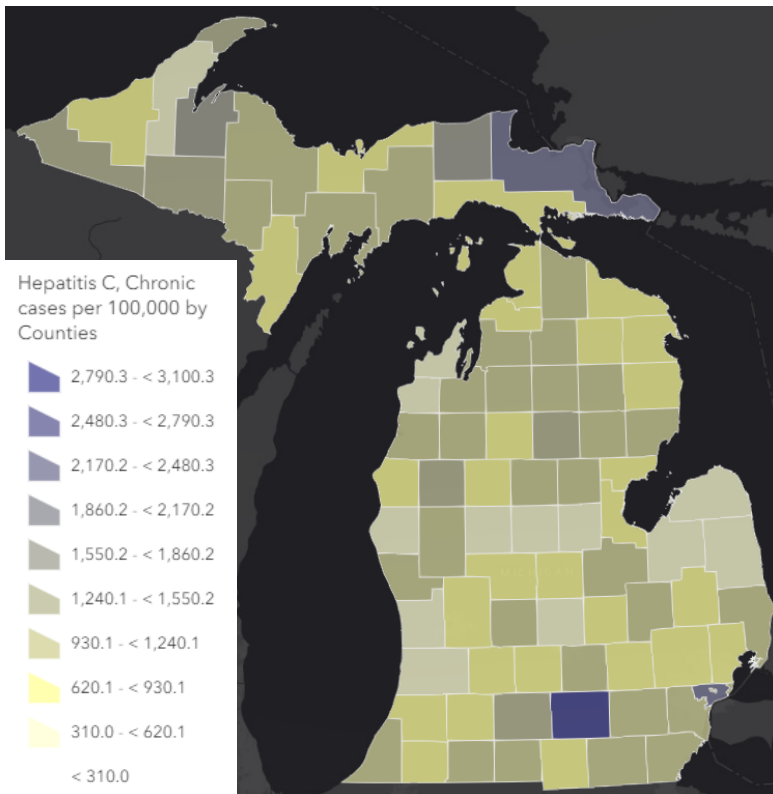


# Chronic Hepatitis C Case Locations

## Rate of Chronic Hepatitis C Cases in Michigan by County of Residence (2002-2019)

In this map, Michigan is broken up by county and each county is shaded by the rate of confirmed hepatitis C cases from 2002 to September 30, 2019. Counties with a higher rate of chronic hepatitis C cases are shaded yellow and green and the counties with the highest rate are shaded purple.

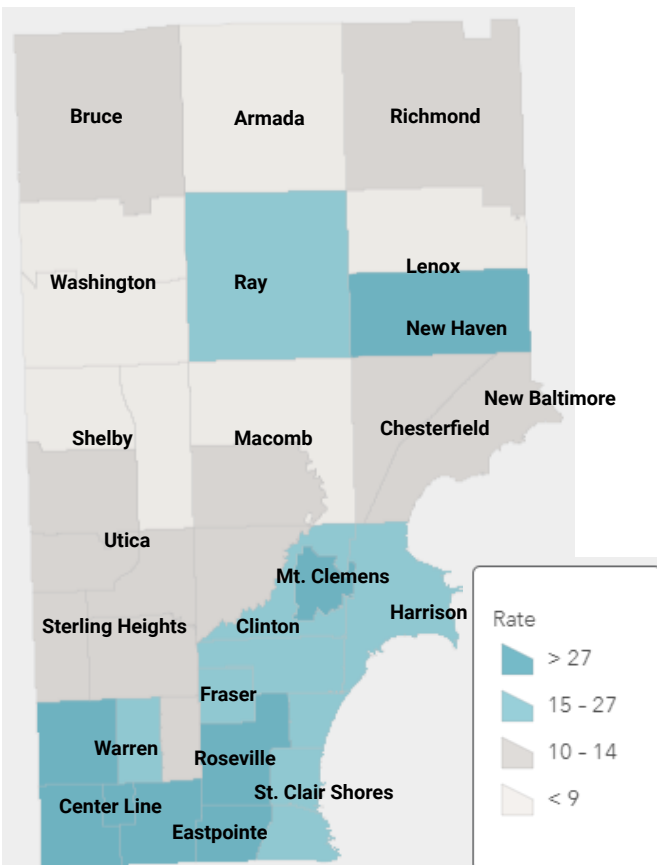
Macomb County's overall rate of chronic hepatitis C during the 2002-2019 timeframe was 883 cases per 100,000 people. The City of Detroit borders southern Macomb County and has one of the highest hepatitis C rate in the state with 2,288 confirmed cases per 100,000 people.



## Rate of Chronic Hepatitis C Cases in Macomb County, Michigan by Zip Code of Residence (2015-2019)

The map to the left is Macomb County broken up by zip code districts. City and township boundaries are also shown as some cities and townships include multiple zip code districts. The map shows the rate of chronic hepatitis C cases per 10,000 residents reported in MDSS from January 1, 2015 to December 31, 2019. Zip code districts with a higher rate of chronic hepatitis C cases are shaded blue and darker blue.

The areas with a higher rate of chronic hepatitis C are primarily concentrated in the southern parts of Macomb County. The areas with higher chronic hepatitis C rates include Roseville, Eastpointe, Warren, Center Line, Mount Clemens, Clinton Township, Harrison Township, St. Clair Shores, Ray Township, and Lenox Township and New Haven



# How are Opioids related to HCV Infections?

Opioids are a class of drugs. Prescription opioids are typically used to treat pain and when used appropriately can be an important component of treatment. However, there are serious risks to using prescription opioids including misuse, opioid use disorder, overdose, and death. Prescription opioids can be highly addictive and anyone who takes prescription opioids can become addicted to them. Heroin is an illegal opioid. Fentanyl is a synthetic opioid pain reliever. It is significantly more powerful than other opioids and is approved for treating severe pain. Illegally made and distributed fentanyl has been on the rise throughout the United States.

Injection drug use is the most common way HCV is spread from person to person. As injection drug use, like heroin, increased significantly throughout the United States, HCV transmission has similarly increased.

There have been three waves to the opioid crisis. During these waves, there has been a rise in opioid-related overdoses and deaths and more persons exposed to HCV:

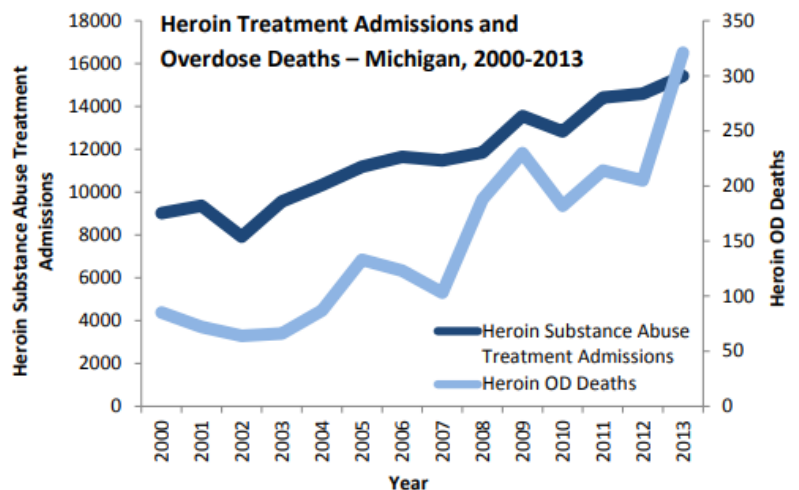
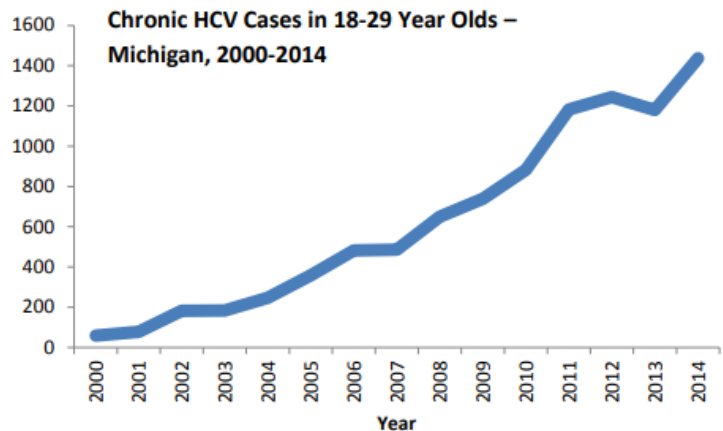
- First wave: beginning in the 1990s, increased prescribing of opioid medications
- Second wave: beginning in the 2010s, rapid increase in heroin-related deaths
- Third wave: beginning in 2013, significant increases in fentanyl- and other synthetic opioid-related overdoses and deaths

Source: The Centers for Disease Control Division of Unintentional Injury Prevention

## Opioids and HCV in Michigan

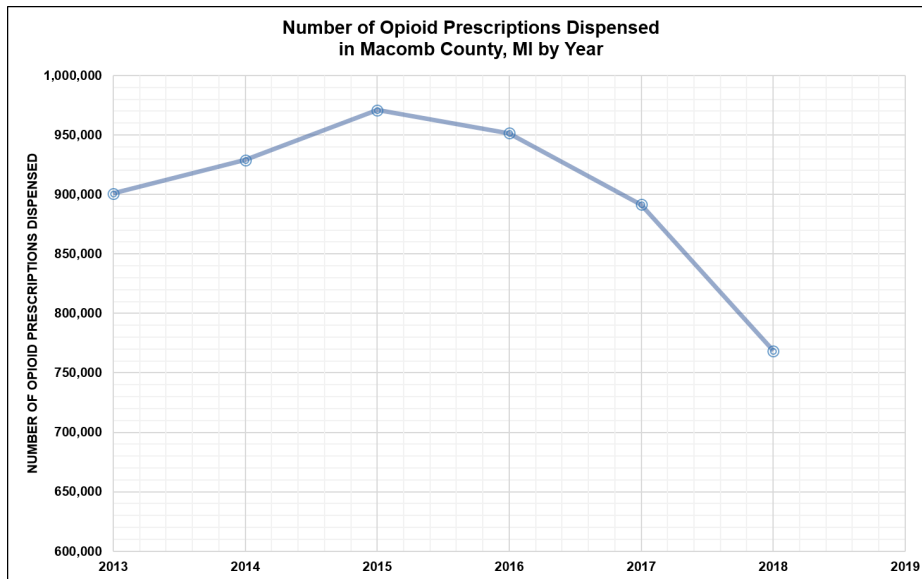
From 2005 to 2018, the number of chronic hepatitis C cases seen in adults under 40 years old increased 1,300% from 292 cases to 3,774 cases in Michigan. Increased heroin abuse has been documented in the same time frame and is demonstrated in the graphs to the right.

82% of adult cases under 40 in Michigan reported a history of injection drug use. Adults under 40 diagnosed with chronic hepatitis C are more likely to be White and live in suburban or rural areas.



Source: Michigan Department of Health & Human Services Viral Hepatitis Unit

# Prescription Opioids



Data source:  
Michigan Substance Use  
Disorder Data Repository

Since the 1990s, the amount of opioids prescribed to patients grew as did the number of overdoses and deaths from prescription opioids and other opiates. In 2016, the CDC published revised recommendations for prescribing opioids, which has led to a decrease in the number of prescriptions dispensed.

Yet, Macomb County residents are still prescribed at higher rates than other counties and the county has multiple characteristics linked to higher prescription rates including: a higher percentage of white residents, a higher number of dentists and physicians per capital, and more residents who have diabetes, arthritis, and/or a disability

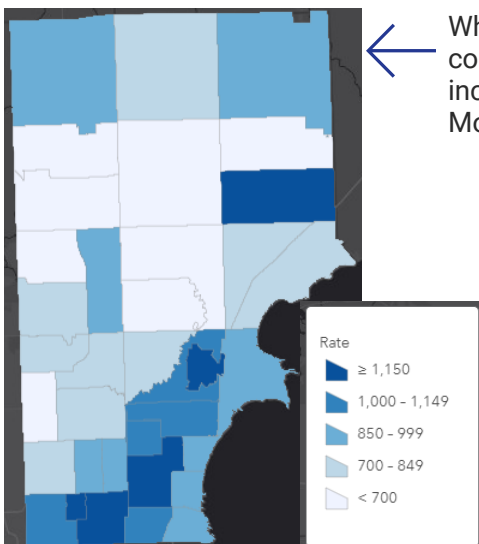
## 768,424

opioid prescriptions written for  
Macomb County residents in 2018



13% decrease from 2017.  
Compared to the 11.5% decrease in  
opioid prescriptions nationwide.

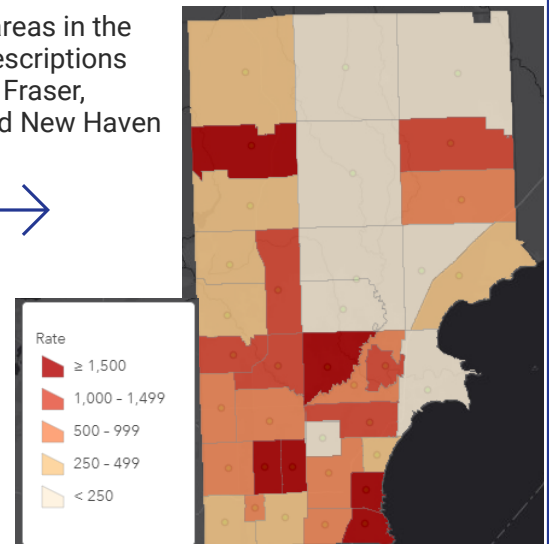
## Rate of Opioid Prescriptions per 1,000 residents by Patient's Zipcode (2018)



← When mapped by patient's zipcode, areas in the county with higher rates of opioid prescriptions include Roseville, Warren, Centerline, Fraser, Mount Clemens, Lenox Township, and New Haven

→ When mapped by provider's zipcode, areas with higher rates of opioid prescriptions dispensed include Washington Township, Lenox Township, New Haven, Macomb, Warren, and St. Clair Shores

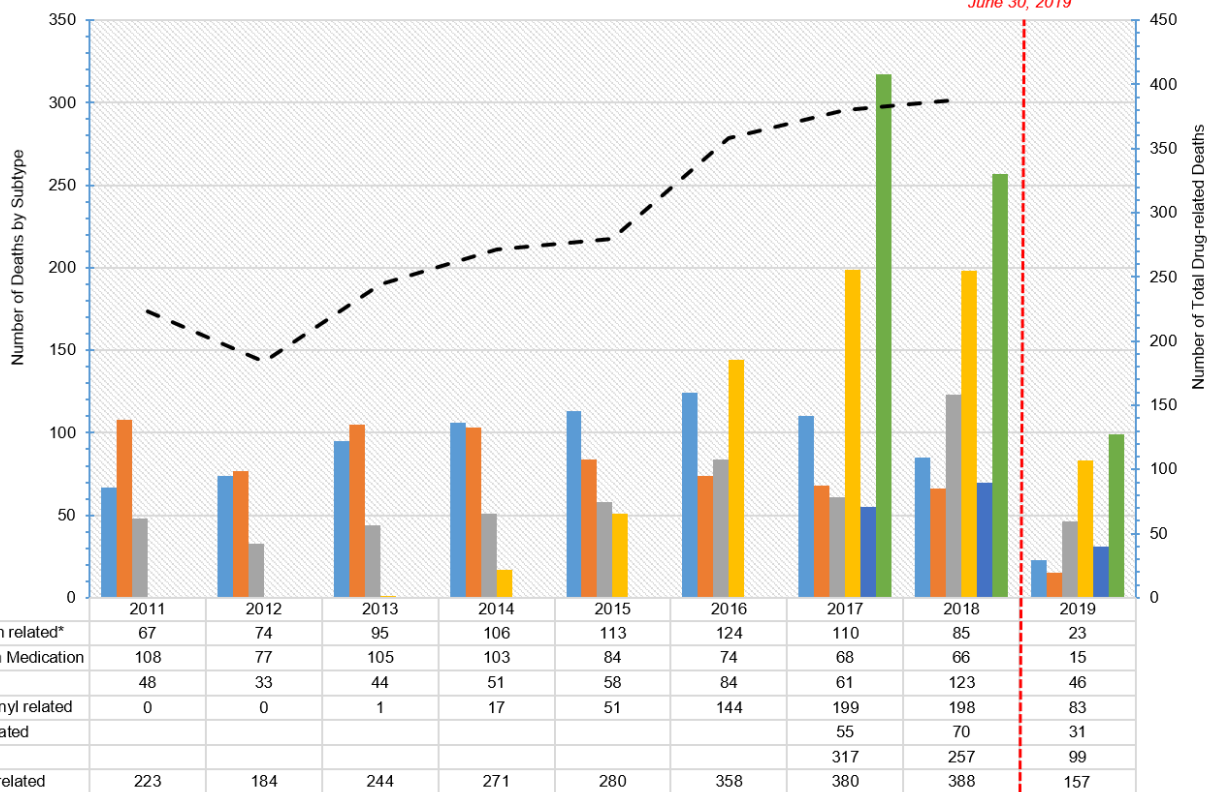
## Rate of Opioid Prescriptions per 1,000 residents by Provider's Zipcode (2018)



Data source:  
Michigan Department of  
Licensing and Regulatory Affairs

# Drug-Related Health Outcomes

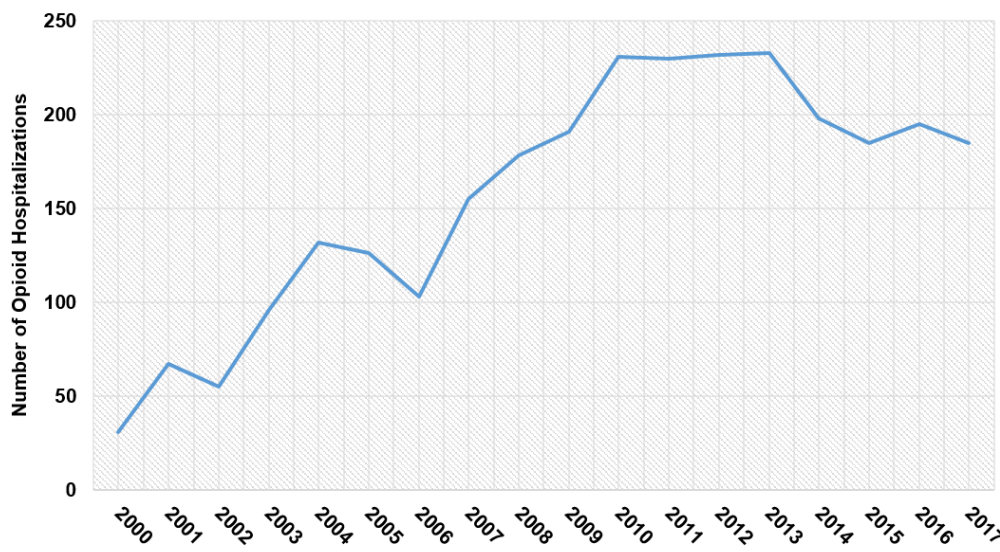
**Drug-related Deaths in Macomb County, MI  
by Drug Subtype and Year (2011-2019)**



Since 2012, there has been a 111% increase in total drug-related deaths, with 388 deaths in 2018. The increase in drug-related deaths is connected to the high rates of prescription opioids and the ongoing opioid crisis.

Data source:  
Macomb County  
Medical Examiner's Office

**Number of Opioid-related Hospitalizations  
in Macomb County, MI by Year**



In addition to the rise in drug-related deaths, there has been a significant increase in opioid-related hospitalizations.

The number of opioid-related hospitalizations is defined as the number of hospital stays involving natural/semi-synthetic opioids, methadone, or synthetic opioids by any intent (accidental, intentional, assault, or undetermined intent).

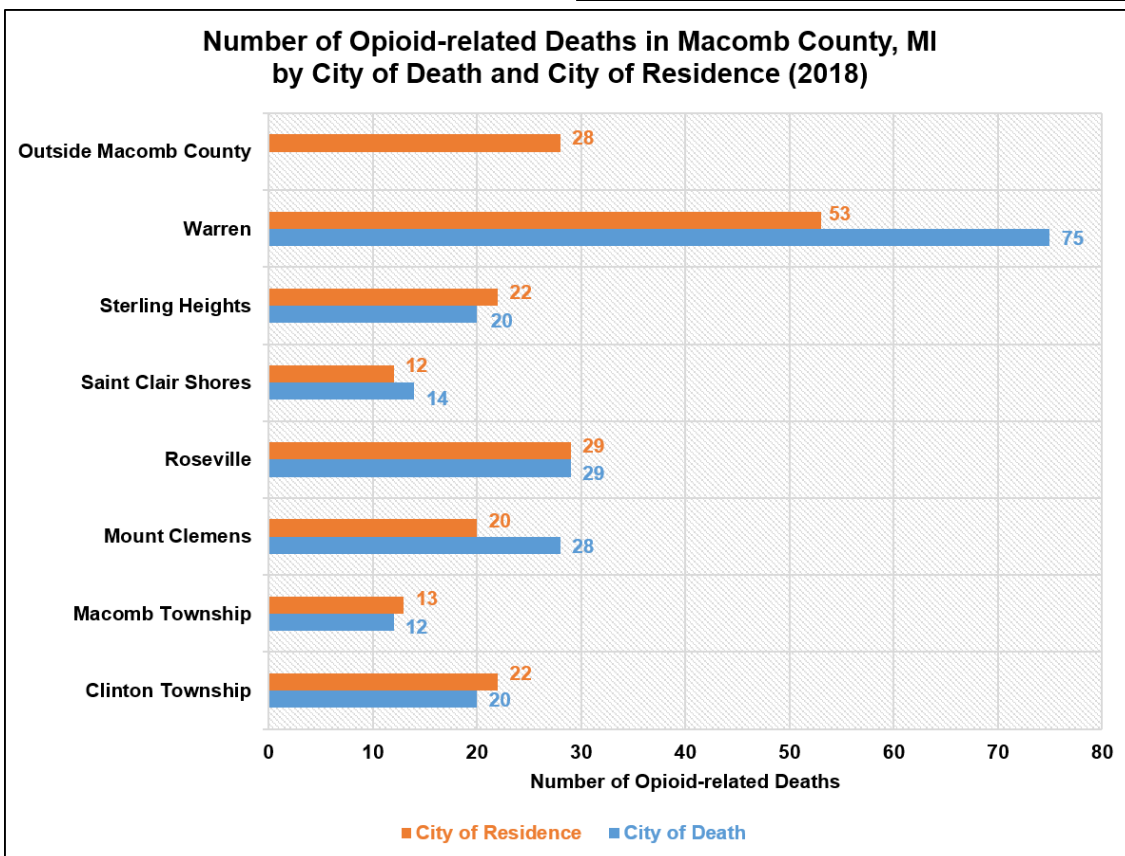
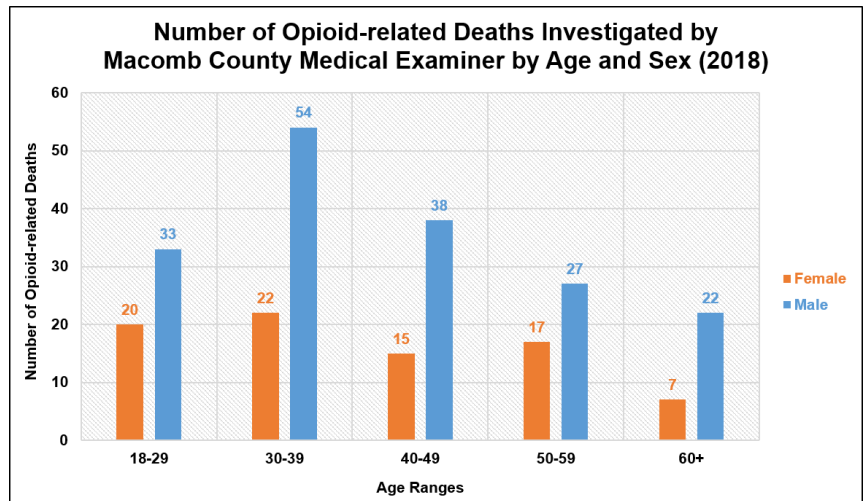
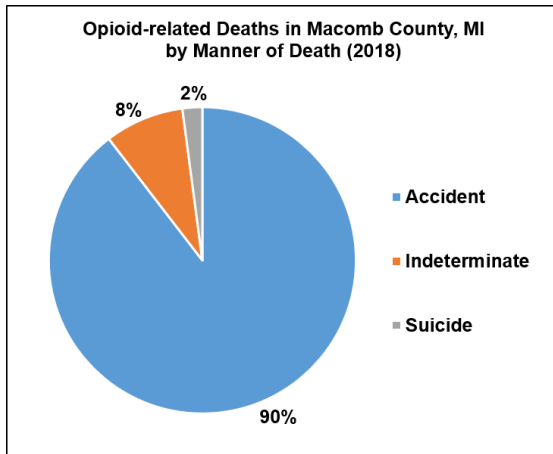
Data source: Michigan Substance Use  
Disorder Data Repository

From 2007 to 2013, there was 50% increase in opioid-related hospitalizations with opioid-related hospitalizations peaking at 233 in 2013. The number has been decreasing but remains at much higher levels than 10 years ago.

# Drug-Related Health Outcomes

According to 2018 data from the Macomb County Medical Examiner's Office:

- There were 388 drug-related deaths investigated in 2018
- 257 (66%) of the drug-related deaths were related to opioids
- 85 (22%) of the drug-related deaths involved heroin
- Males accounted for 68% of the total drug-related deaths in 2018
- The majority (90%) of opioid-related deaths in 2018 were ruled accidental



In 2018, the cities\* where most opioid-related deaths occurred were Warren, Roseville, and Mount Clemens.

It should be noted that the city in which the death occurred and the city of the decedent's residence prior to death matched only 31% of the time.

\*Cities with fewer than 10 deaths related to opioids were excluded.

There were 79 deaths in 2018 that occurred in cities other than the decedent's city of residence. In Warren, there were 75 opioid-related deaths, but only 47 (63%) were residents of Warren at the time of their death.

# Summary

- The number of chronic hepatitis C cases in adults under 40 years old increased substantially from 2002 to 2016. The number of cases has since been decreasing but remains at levels much higher than 10 years ago.
  - Chronic hepatitis C case definitions and laboratory reporting procedures were changed in 2016 and 2019, which affected the number of cases reported.
  - From 2015 to 2019, the majority of hepatitis C cases in adults under 40 years old were White (75%) and male (53%).
- The increase in chronic hepatitis C cases in adults under 40 is connected to the increase in injection drug use and opioid misuse.
  - Chronic hepatitis C rates increased as the rate of opioid-related overdoses and deaths increased.
  - Chronic hepatitis C cases are concentrated in the southern parts Macomb County, which is also where opioid prescriptions and opioid-related overdoses and deaths are concentrated.
  - 85% of adults under 40 with chronic hepatitis C reported a history of injection drug use.
- It is important to note that the city where an opioid-related death occurred only matched the decedent's city of residence 31% of the time.
  - This should be taken into consideration when targeting prevention and treatment programs, as the places where people reside are not necessarily the same places where overdoses occur.

## Recommendations from the CDC and the Michigan Department of Health & Human Services

- Improve case follow-up and completion of epidemiologic risk factor and demographic data for each case reported in the county.
- Connect hepatitis C cases to substance use treatment programs where appropriate given the likeliness of co-occurrence.
- Expand syringe exchange programs, specifically targeting zip code districts with higher rates of hepatitis C cases and opioid-related health outcomes (hospitalizations and death).
- Increase awareness of drug take back programs, especially in areas with higher rates of opioid prescriptions.

## Macomb County Health Department's Progress and Initiatives

- Additional Communicable Disease staff hired to increase capacity for case follow-up and referrals for additional care
- Awarded funding to support Community Health Awareness Group (CHAG) syringe exchange programs that serve Macomb County residents
- Operation Rx, a Macomb County drug coalition, was formed to bring together community partners to combat the opioid crisis.
  - Operation Rx information: <https://www.operationrx.com/>
  - Medication disposal sites: <https://www.operationrx.com/disposal>



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