



# Death by Overdose Ottawa County, MI

## 2010-2022

At the time of publication, 2022 overdose death data for Michigan and the United States were considered provisional until Vital Records data were finalized. Substantial changes to 2022 Ottawa County data in this report are not expected; however, data from recent years may vary slightly from previous reports due to updates and finalization of Vital Records data.

This report contains small numbers. Because the number of events overall and within subgroups may change considerably from year to year, caution should be taken when interpreting this data and when using it to build and inform programming.

Published January 2024

# Table of Contents

Overview of Overdose.....	3
Number and Rate of Overdoses.....	5
Characteristics of People Who Died by Overdose (All Ages), 2010-2021.....	7
Death by Overdose by County Quadrants.....	15
Drug Types Involved in Death by Overdose.....	17
Overdose Prevention Activities in Ottawa County and the Region.....	20
References.....	21
Definitions.....	22
Methods.....	23

# Overview: Overdose Deaths in Ottawa County

- In 2022, 39 Ottawa County residents died by overdose.
- Over the last 24 years, the rate of overdose deaths (per 100,000 people) in Ottawa County has been increasing, even after accounting for population increases; however, since 2017 the rate of overdose deaths has stabilized. There is little evidence of a recent increase or decrease in the rate of overdose deaths in Ottawa County.
- Since 2000, Ottawa County overdose death rates have been consistently lower than Michigan and the United States.
- Groups of people in Ottawa County with higher overdose death rates compared to Ottawa County overall are:
  - Veterans
  - Males
  - People 50 years and older
  - White, non-Hispanic people
  - Residents of the northwest and southwest quadrants of the County
- Ottawa County death by overdose rates are lower than Michigan among all age groups except the 60-69 age group. Ottawa County and Michigan rates for the 60–69 age group are similar.
- In 2022, nine non-White or Hispanic Ottawa County residents died by overdose, more than any year going back to 2010.
- Over the last six years, there has been a decline in the proportion of overdose deaths involving any opioid and an increase in the proportion of overdose deaths involving psychostimulants with abuse potential (primarily methamphetamine).
- The proportion of deaths involving synthetic opioids remained elevated in 2022, resulting in a potential long-term increasing trend in Ottawa County.

# Overview: Overdose Deaths in the US and Michigan

## Background

In 2021, overdose continued to be an ongoing epidemic in the United States and in Michigan<sup>1</sup>, with substantial effects on families, communities, workplaces, and the economy.<sup>2</sup> The considerable impact of overdose has led the Centers for Disease Control and Prevention (CDC)<sup>3</sup> and the State of Michigan<sup>4</sup> to recognize overdose as a public health crisis.

## Statistics

The overdose death rate in the United States increased from 2001-2006, was stable from 2006 through 2013, then increased from 2013 to 2021. From 2020 through 2021 the rate of overdose deaths increased 14%, from 28.3 per 100,000 people to 32.4 per 100,000 people, respectively.<sup>5</sup> Provisional 2022 data for the United States shows no significant change (32.3 per 100,000) from the year prior.<sup>6</sup>

Like the United States, overdose death rates in Michigan increased 13%, from 27.5 per 100,000 people in 2020 to 31.1 per 100,000 people in 2021.<sup>7</sup> Provisional 2022 data shows overdose death rates remain elevated in Michigan (29.9 per 100,000).<sup>6</sup>

## At-Risk Populations

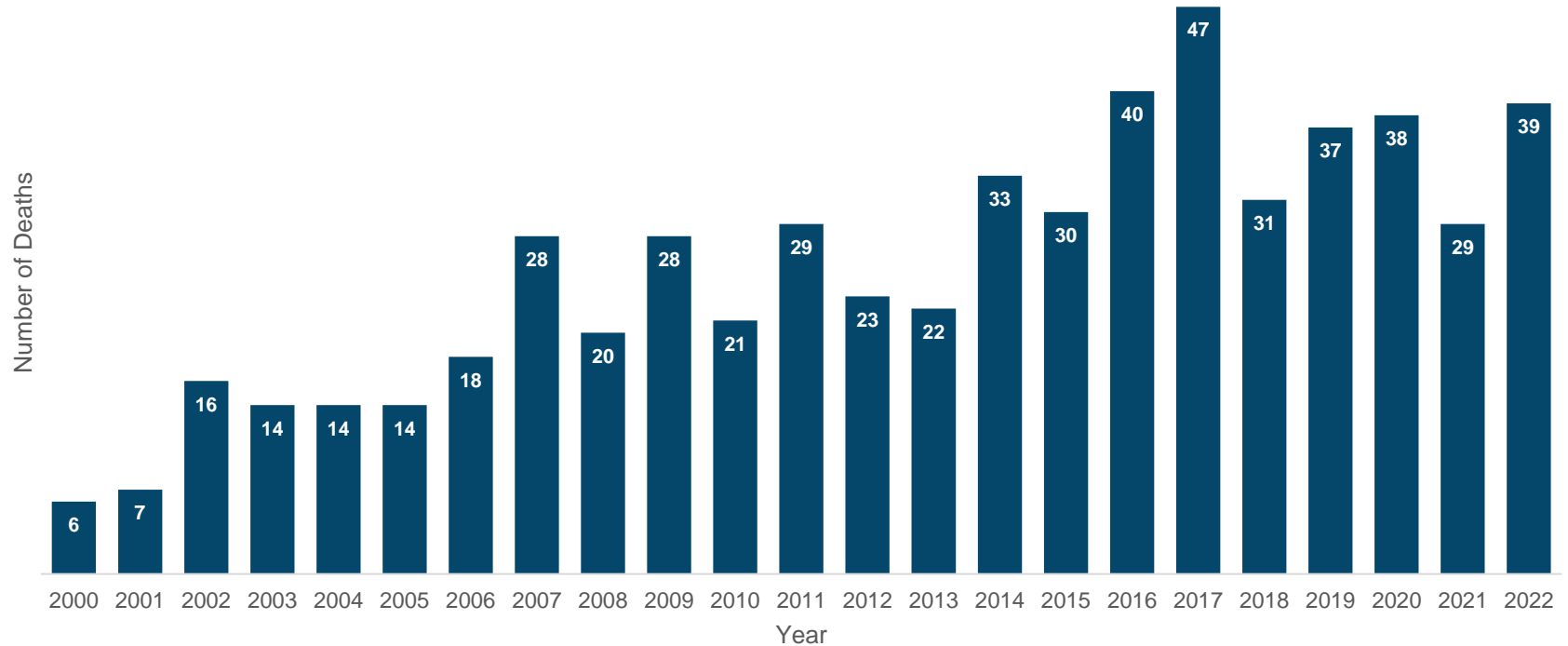
According to the CDC, the national overdose epidemic is affecting people of all racial and ethnic groups, in cities, suburbs, small towns, and rural areas, and rates of drug overdose are rising among almost all groups. In 2020, disparities in overdose deaths were noted, with the largest year-to-year relative rate increases among Black people aged 15-24, American Indian/Alaska Native aged 25-44, and White people aged 15-24.<sup>8</sup>

From July 2022 – June 2023, populations in Michigan bearing more of the overdose death burden were males, Black people, and people 35-44 years of age.<sup>9</sup>

## Prevention

The CDC and the State of Michigan have both provided strategic frameworks or recommendations for addressing overdose. Recommended prevention efforts from both organizations include comprehensive approaches, broad partnerships and collaboration, and prioritization of data and research.<sup>3,4</sup>

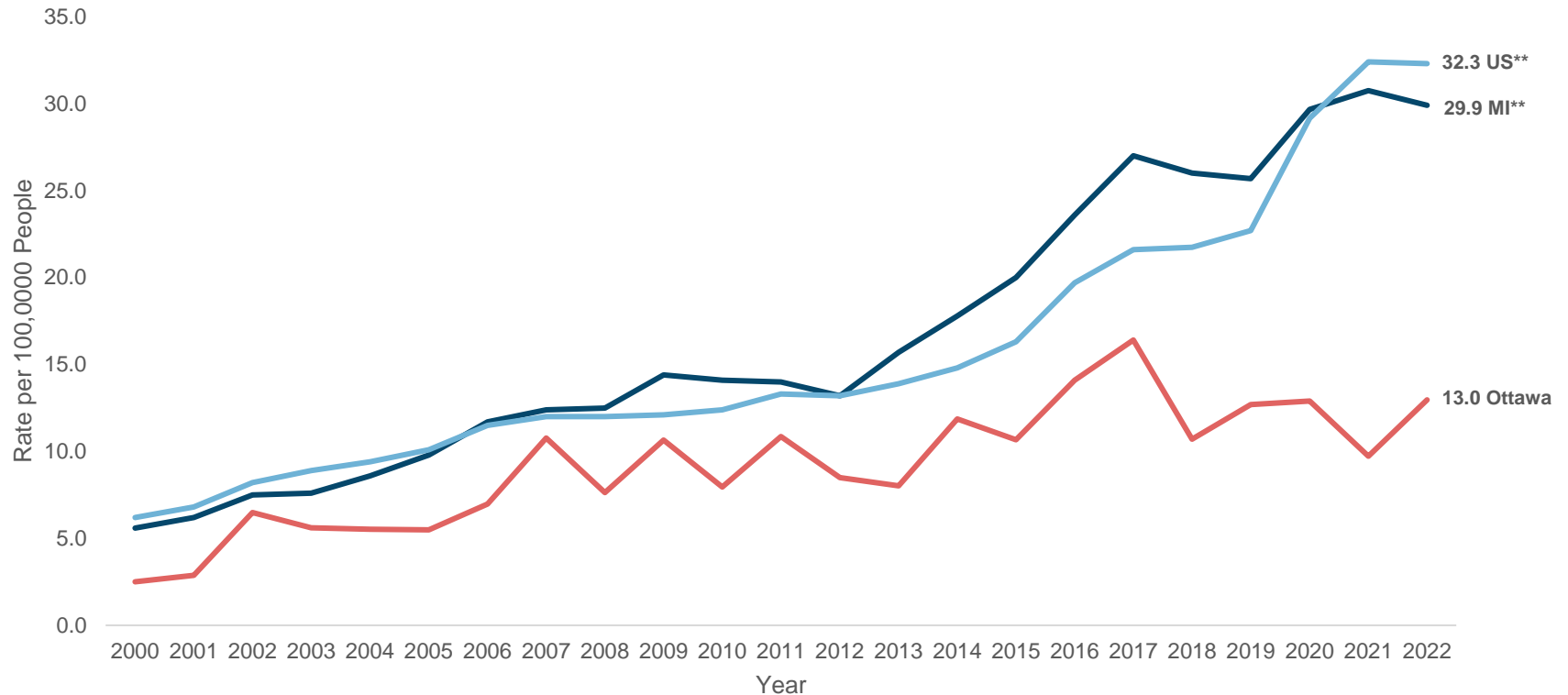
# Number of Deaths by Overdose, Ottawa County, 2000-2022



**Note:** Annual death counts displayed here may differ slightly from drug overdose data provided by the State of Michigan at these links: <https://mi-suddr.com/opioids> <https://mitracking.state.mi.us/>

In 2022, 39 Ottawa County residents died by overdose, more than the 29 deaths observed in 2021. Over the last two decades the number of overdose deaths has increased; however, the population of Ottawa County has also seen rapid and sustained growth.<sup>10</sup> To account for changes in population growth and to allow for comparison between groups, an overdose death rate is used. The Ottawa County rate of overdose deaths over time is illustrated on the next slide and includes comparisons to the United States and Michigan.

# Death by Overdose Rates from 2000-2022



\*\*Data is sourced from the National Vital Statistics System. Overdose deaths for 2022 are provisional <https://www.cdc.gov/nchs/nvss/vsrr/mortality-dashboard.htm#>

**Note:** Prior to 2007, most years had fewer than 20 deaths by overdose reported among Ottawa County residents, which may reduce the stability of rates calculated for those years.

**While the rate of death by overdose remains lower in Ottawa County than in Michigan and the United States, data indicate that as of 2022, there is a statistically significant increase in annual number of overdose deaths in Ottawa County over the past 24 years (1999 not displayed here). Although a long-term increasing trend exists, over the last six years, no upward or downward trend was detected, suggesting that the overall overdose death rate has been stabilizing in Ottawa County.**

**Among the largest counties in Michigan, Ottawa County continues to be one of the fastest growing. From 2020-2022 Ottawa County experienced the largest percent growth (1.34%) of the top ten most populous counties in Michigan.<sup>11</sup> To account for population changes, it is best to utilize the rate of overdose deaths, rather than the number of overdose deaths to monitor or detect changes over time.**

Characteristics of People  
Who Died by Overdose (All Ages)  
Ottawa County, MI

2010-2022

# Characteristics of People who Died by Overdose, 2022

Age Group	Count	%	Manner	Count	%	Month	Count	%
<20	4	10%	Accident	33	85%	January	4	10%
20-29	5	13%	Suicide	5	13%	February	4	10%
30-39	7	18%	Homicide	1	3%	March	2	5%
40-49	11	28%	Pending	0	0%	April	3	8%
50-59	4	10%	Indeterminate	0	0%	May	4	10%
60-69	6	15%	TOTAL	39	100%	June	5	13%
70-79	1	3%				July	2	5%
80+	1	3%				August	3	8%
TOTAL	39	100%				September	4	10%
						October	1	3%
Race/Ethnicity	Count	%	Marital Status	Count	%	November	4	10%
White, non-Hispanic	30	77%	Divorced	9	23%	December	3	8%
Hispanic	4	10%	Married	3	8%	TOTAL	39	100%
Asian	0	0%	Never Married	26	67%			
Black	5	13%	Separated	0	0%	Quadrant*	Count	%
Other	0	0%	Widowed	1	3%	NW	7	18%
TOTAL	39	100%	Unknown	0	0%	NE	8	21%
			TOTAL	39	100%	SW	15	38%
						SE	9	23%
Sex	Count	%	Veteran	Count	%	TOTAL	39	100%
Male	26	67%	Yes	1	3%	*Of residence		
Female	13	33%	No	38	97%			
TOTAL	39	100%	TOTAL	39	100%			

In 2022, most deaths by overdose were among people younger than 50 years of age, White, non-Hispanic people, and males. The most common (85%) manner of death by overdose was accidental (unintentional) meaning a drug was taken accidentally, too much of a drug was taken accidentally, the wrong drug was given or taken in error, or an accident occurred in the use of a drug(s) in medical and surgical procedures.<sup>12</sup> People that were never married made up 67% of all overdose deaths. Unlike suicide, death by overdose was a relatively rare cause of death for veterans in 2022, with only one death reported. The number of deaths by overdose varied each month, with the most deaths (five) occurring in June. Residents that lived in the southwest (SW) quadrant of Ottawa County experienced the highest proportion of overdoses by quadrant (see slide 16 for overdose death rates by quadrant).



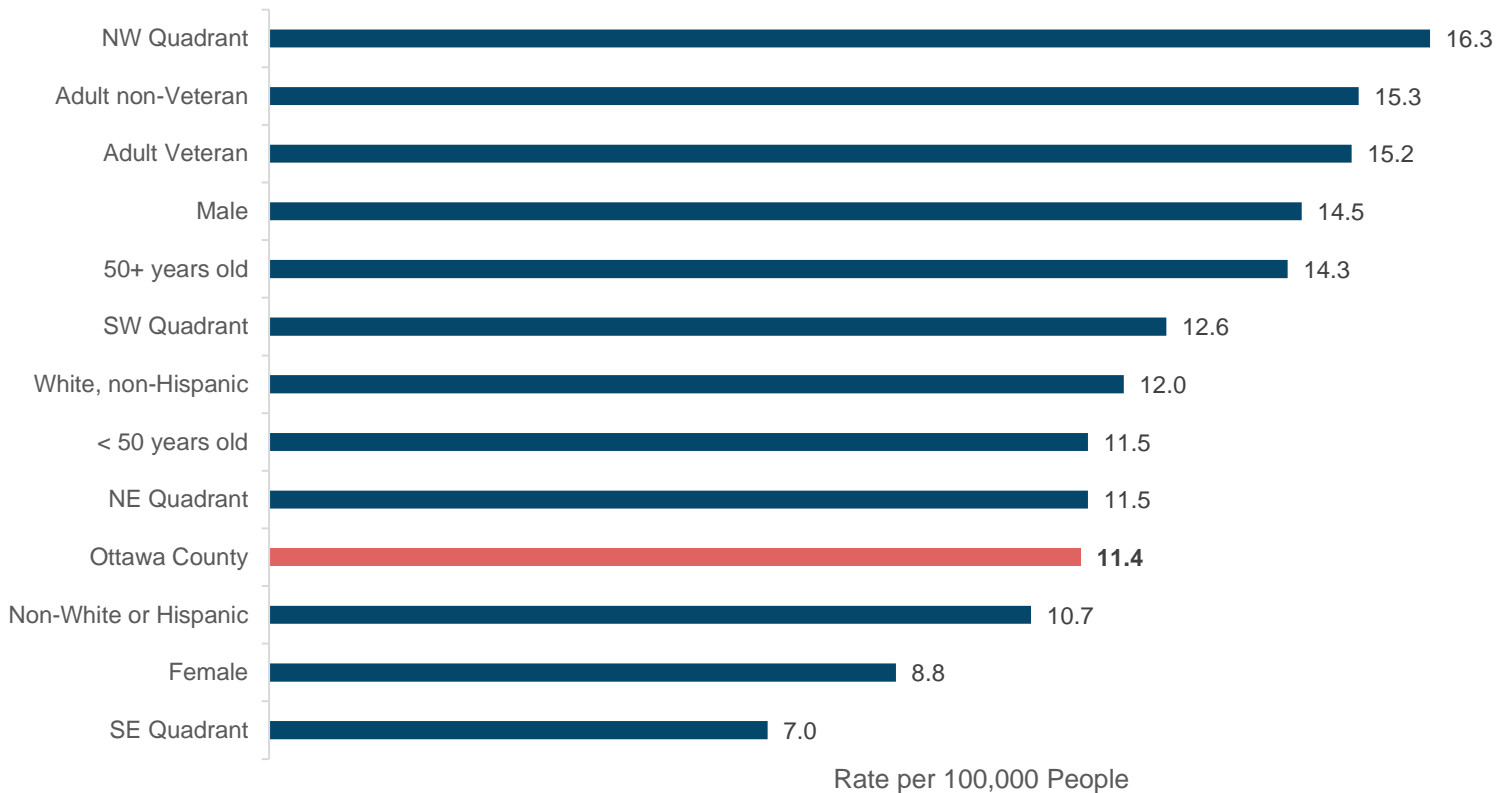
# Characteristics of People who Died by Overdose, 2010-2022

Age Group	Count	%	Manner	Count	%	Month	Count	%
<20	14	3%	Accident	294	70%	January	27	6%
20-29	70	17%	Suicide	64	15%	February	42	10%
30-39	79	19%	Homicide	1	0%	March	38	9%
40-49	101	24%	Pending	1	0%	April	38	9%
50-59	92	22%	Indeterminate	59	14%	May	38	9%
60-69	49	12%	TOTAL	419	100%	June	28	7%
70-79	7	2%			July	28	7%	
80+	7	2%			August	35	8%	
TOTAL	419	100%			September	48	11%	
					October	30	7%	
Race/Ethnicity	Count	%	Marital Status	Count	%	November	34	8%
White, non-Hispanic	366	87%	Divorced	99	24%	December	33	8%
Hispanic	30	7%	Married	102	24%	TOTAL	419	100%
Asian	2	0%	Never Married	177	42%			
Black	13	3%	Separated	1	0%	Quadrant*	Count	%
Other	8	2%	Widowed	40	10%	NW	117	28%
TOTAL	419	100%	Unknown	0	0%	NE	66	16%
			TOTAL	419	100%	SW	159	38%
Sex	Count	%			SE	74	18%	
Male	258	62%	Veteran	Count	%	TOTAL	416	100%
Female	161	38%	Yes	27	6%	*Of residence		
TOTAL	419	100%	No	392	94%			
			TOTAL	419	100%			

Note: Three decedents were not assigned to a quadrant due to missing address information.

From 2010-2022, 419 people have died by overdose in Ottawa County. Most deaths by overdose were among people younger than 50 years of age, and White, non-Hispanic people. Accidental overdoses made up 70% of deaths, contributing 294 overdose fatalities over the last 13 years. People that were never married made up 42% of all deaths by overdose from 2010-2022, followed by people that were married (24%) and people who were divorced (24%). Residents that lived in the southwest (SW) and northwest (NW) quadrants of Ottawa County experienced higher proportions of death by overdose (38% and 28% respectively). A slightly higher proportion of deaths by overdose occurred in September. However, nationally and in Michigan, there is little evidence that specific months of the year consistently have more (or less) deaths by overdose, except for intentional overdose, which may increase in the spring and early summer, similar to suicide.<sup>13</sup> See the Methods section for more information about selecting the 2010-2022 time-period for demographics.

# Groups With a Higher Burden of Death by Overdose, 2010-2022

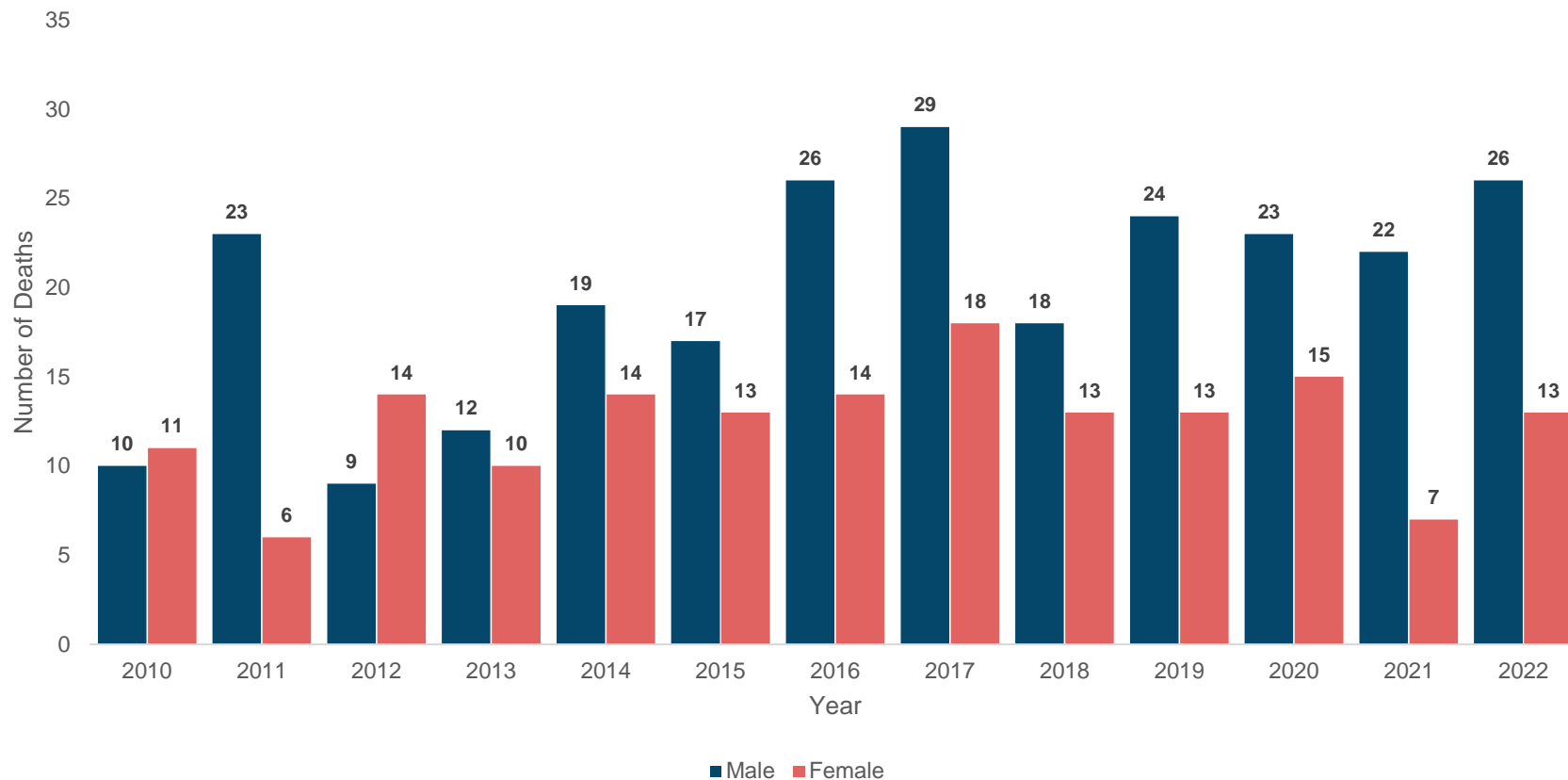


**Note:** Other racial minority groups are not displayed due to rate instability, a result of too few events to reach statistical stability.

Rates of deaths by overdose that occurred in the last 13 years are illustrated above and offer insights into which groups bore more of the death by overdose burden compared to other groups and Ottawa County overall.

Residents living in the northwest (NW) quadrant of the county had the highest rate of death by overdose compared to any other group. Other groups with higher rates of overdose deaths compared to the County overall include adults who are not veterans, adult veterans, males, those aged 50+, residents of the southwest (SW) quadrant, White, non-Hispanic people, those aged <50, and residents of the northeast (NE) quadrant.

# Sex of Persons who Died by Overdose, 2010-2022



Every year since 2013, more males have died by overdose than females. Although not displayed here, from 1999-2022 there was a long-term statistically significant increase in the overdose death rate among both males and females. From 2010-2022, the overdose death rate among males was 1.6 times higher than the rate among females.

Michigan and the United States have reported a similar trend by sex, with males consistently bearing more of the overdose death burden than females.<sup>14,15</sup>

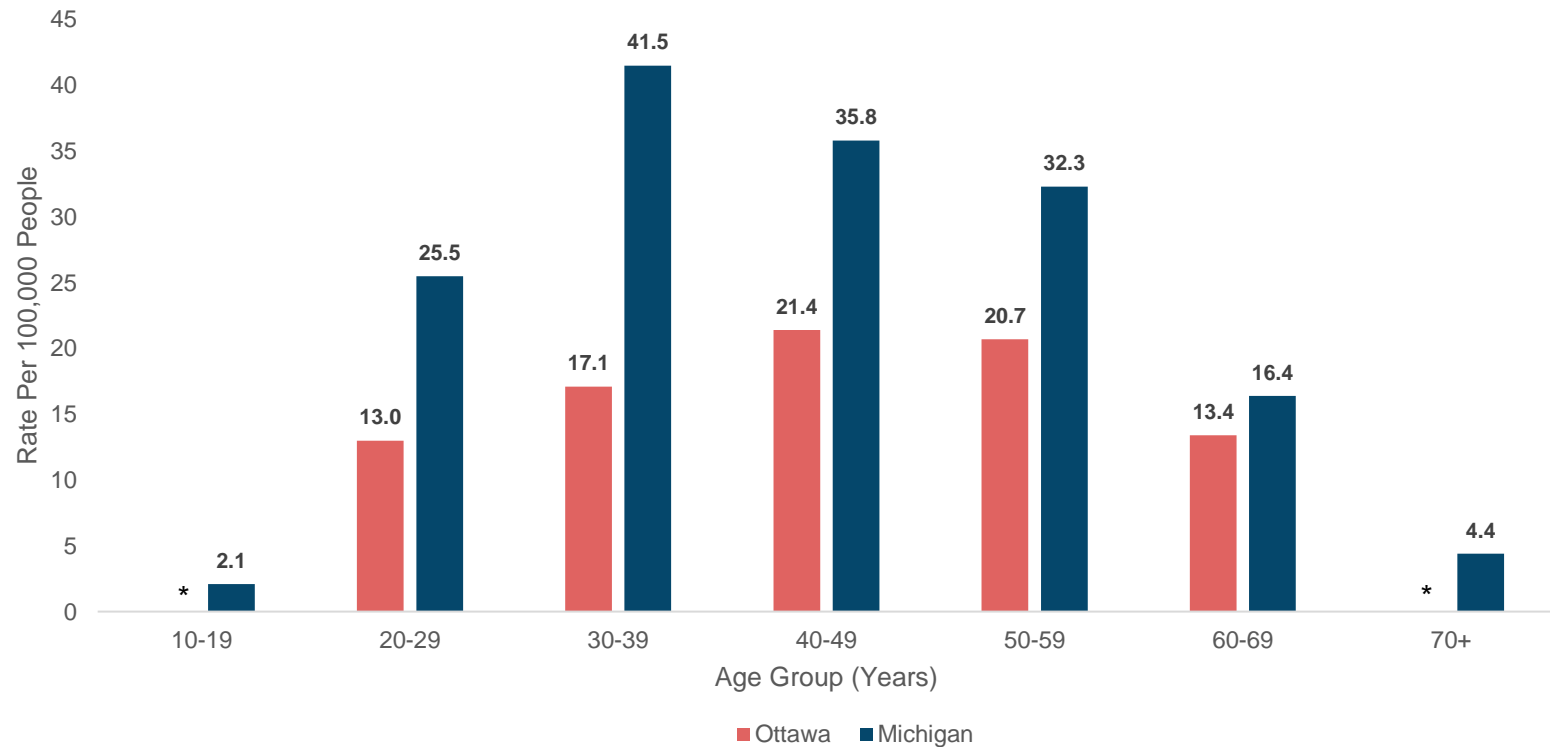
# Age of Persons who Died by Overdose, 2010-2022

Year	<20	20-29	30-39	40-49	50-59	60-69	70-79	80+	Total
2010	1	6	1	8	2	2	0	1	21
2011	1	4	8	8	5	3	0	0	29
2012	0	4	2	7	8	1	0	1	23
2013	0	5	2	4	8	3	0	0	22
2014	1	3	12	6	10	0	0	1	33
2015	2	1	5	7	7	5	1	2	30
2016	2	9	7	4	9	8	1	0	40
2017	0	13	8	13	4	7	1	1	47
2018	2	10	7	5	4	2	1	0	31
2019	0	4	4	9	13	6	1	0	37
2020	0	3	10	10	11	3	1	0	38
2021	1	3	6	9	7	3	0	0	29
2022	3	5	7	11	4	5	1	1	37
<b>Total</b>	<b>13</b>	<b>70</b>	<b>79</b>	<b>101</b>	<b>92</b>	<b>48</b>	<b>7</b>	<b>7</b>	<b>417</b>

In Ottawa County from 2010-2022, the 40-49 and 50-59 age groups experienced more deaths by overdose than any other age group, contributing 101 and 92 deaths, respectively. Because the underlying population in each age group displayed on this slide varies, overdose death rates should be used to account for population differences. Generally, overdose death rates among age groups 30-39, 40-49, and 50-59 years of age are similar, while the younger and oldest age groups tend to have lower overdose death rates (slide 13).

Thirteen teen overdose deaths occurred over the last 13 years. Among these 13 teen overdose deaths, 7 (50%) were ruled suicides, a statistically higher proportion compared to people aged 20+. Among those aged 20+, only 14% of overdose deaths were ruled as suicides. This data suggests that teens may be more likely to utilize overdose as a means of suicide than adults.

# Overdose Rates by Age, 2010-2020

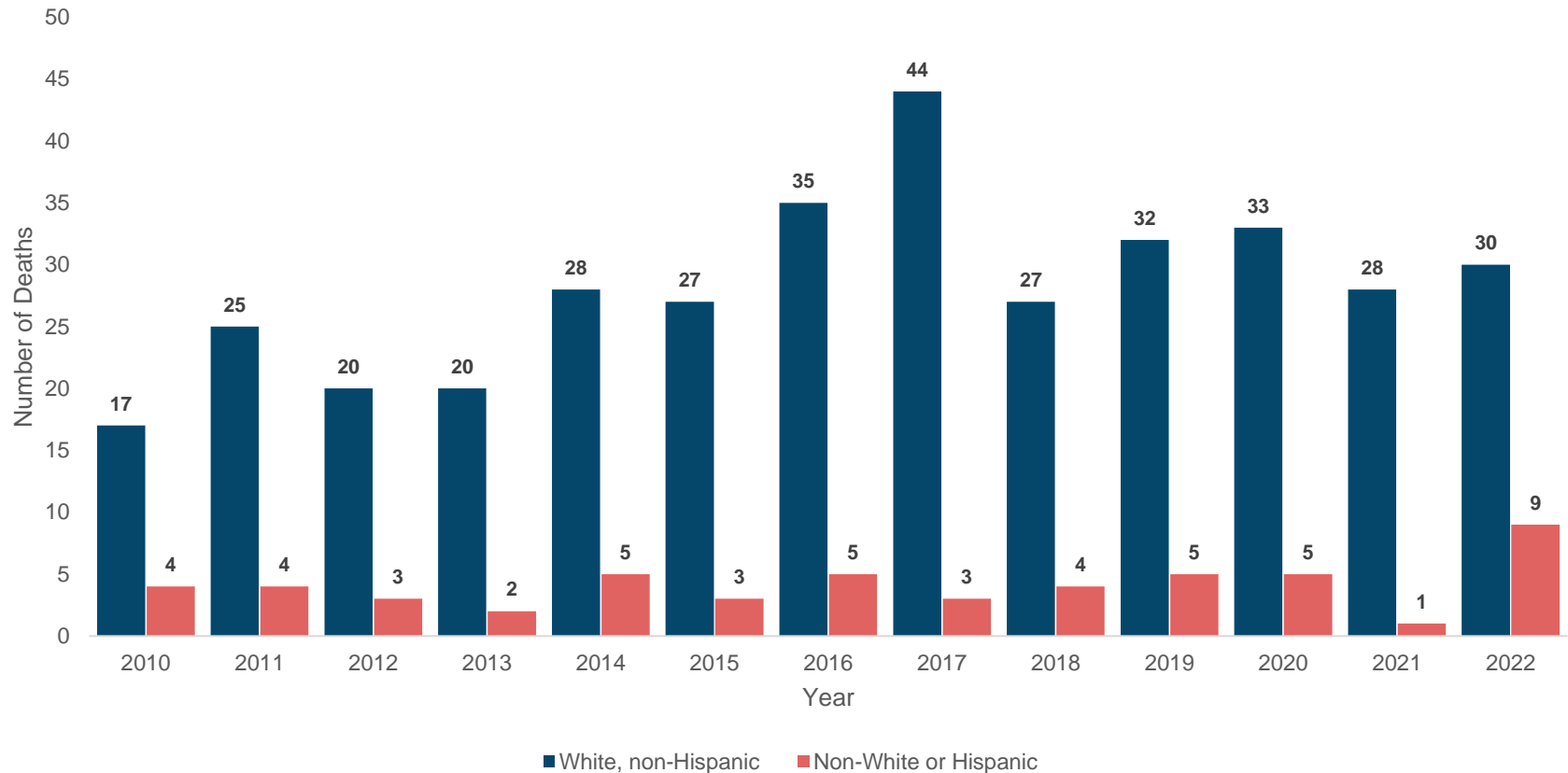


**Note:** To directly compare Ottawa County and Michigan, data was obtained from CDC Wonder, limiting the latest year of data to 2020. Due to CDC Wonder suppression standards, rates that are the result of less than 20 events are displayed as \*.

From 2010-2020, the highest rate of death by overdose in Ottawa County was among people aged 40-49 years of age, followed by those aged 50-59 and people 30-39 years of age. The lowest rate of death by overdose in Ottawa County was among people 20-29 years of age at 13.0 deaths per 100,000 people followed closely by people 60-69 years of age (13.4 per 100,000). Rates of death by overdose among people 10-19 years of age and 70+ years of age are not displayed due to a low number of events that require suppression.

Comparing Ottawa County and Michigan, Ottawa County deaths by overdose rates are lower than Michigan among all age groups, except for people 60-69 years of age; for the 60-69 age group rates are similar in Ottawa County and Michigan. See the Methods section for more details on statistical comparisons of age groups.

# Race/Ethnicity of People Who Died by Overdose, 2010-2022

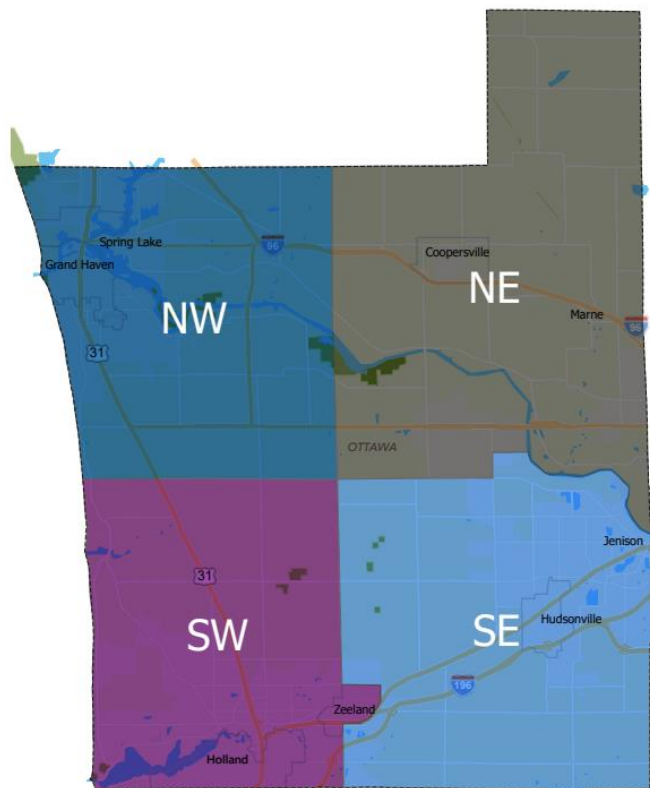


Over the last 13 years most deaths by overdose occurred among White, non-Hispanic people. In 2022, the highest number (9) of overdose deaths among racial or ethnic minority groups was observed, much higher than the one death in 2021. Using data from 2010-2022, the rate of overdose deaths in White, non-Hispanic people is slightly higher than the County overall and higher than non-White or Hispanic people (slide 10).

Death by Overdose  
by County Quadrants  
Ottawa County, MI

2010-2022

# Death by Overdose Rates by County Quadrant, 2010-2022



Quadrant	Number of Deaths by Overdose	Percent of Deaths by Overdose (%)	Quadrant Percent of Population (%)	Crude Rate (per 100,000 people)
NW	117	28.1	19.9	16.3
NE	66	15.9	15.9	11.5
SW	159	38.2	34.9	12.6
SE	74	17.8	29.3	7.0
<b>Ottawa County</b>	<b>416</b>	<b>100.0</b>	<b>100.0</b>	<b>11.4</b>

Note: Five decedents were not assigned to a quadrant due to missing address information.

Combined, the northwest (NW) and southwest (SW) quadrants of the County contain about 55% of the Ottawa County population. However, from 2010 to 2022, 276 overdose deaths (66.3%) occurred in the NW (28.1%) and SW (38.2%) quadrants. The outsized number of overdose deaths in the west county quadrants resulted in overdose death rates of 16.3 per 100,000 in the NW quadrant and 12.6 per 100,000 in the SW quadrant, both higher than the overdose rate for Ottawa County overall (11.4 per 100,000).

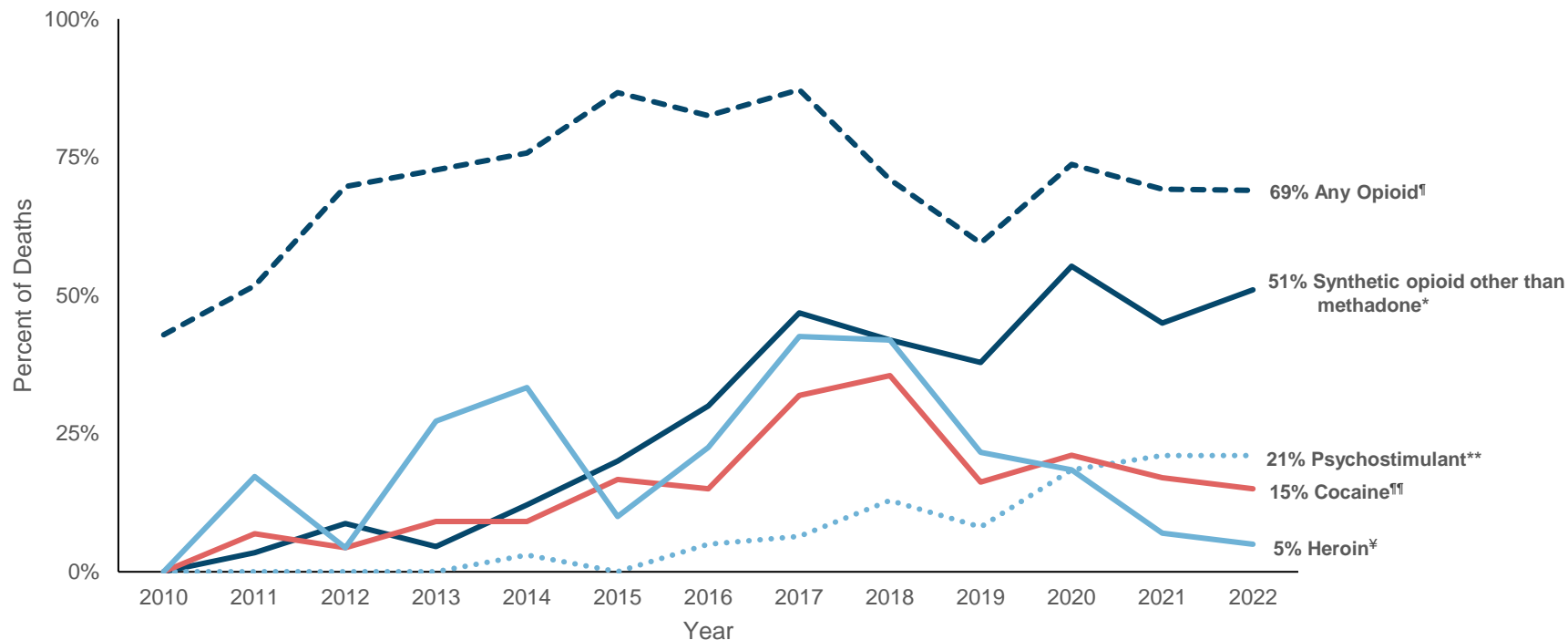
Over the last 12 years statistically significant upward or downward trends in the death by overdose rate were not detected in any of the four quadrants. Although not statistically significant, death by overdose rates have steadily increased in the south quadrants of the county since 2010. See the Methods section for more information about selecting the 2011-2022 time-period for trend analysis.



# Drug Types Involved in Death by Overdose Ottawa County, MI

2010-2022

# Drug Types Involved in Deaths by Overdose, 2010-2022



<sup>\*</sup>Synthetic opioids include, but are not limited to, fentanyl, fentanyl analogs (e.g., carfentanyl), and tramadol. Methadone cases included in the Any Opioid category.

<sup>\*\*</sup>Psychostimulants with abuse potential are not opioids and include such drugs as amphetamine and methamphetamine.

<sup>¶</sup>All opioid substances including heroin, methadone, and synthetic opioids.

<sup>¶¶</sup>Cocaine is not an opioid substance.

<sup>¥</sup>Heroin is an illegal, non-synthetic opioid.

Over the last 13 years the proportion of overdose deaths involving synthetic opioids other than methadone has continued to increase, as have deaths involving psychostimulants with abuse potential (usually methamphetamine). However, since 2017 the proportion of overdose deaths involving any opioid has decreased about 20% from 87% in 2017 to 70% in 2022. The proportion of overdose deaths involving psychostimulants with abuse potential has moved in the opposite direction, increasing over 250% from 6% in 2017 to 21% in 2022.

Similar increasing trends in overdose deaths involving synthetic opioids other than methadone and psychostimulants with abuse potential are noted in Michigan as well.<sup>9</sup>

# Drug Use Reported by Teens

	Ottawa County*	Michigan**	United States**
Issue Area	2021	2021	2021
I have used methamphetamines (also called speed, crystal, crank, ice, chalk, fire, or glass)	1.5%	1.2%	1.8%
I have used heroin (also called smack, junk, or China White)	0.9%	1.2%	1.3%
I have used cocaine (any form of cocaine, such as powder, crack, or freebase)	2.0%	2.1%	2.5%
During the past 30 days, I have used a needle to inject an illegal drug into my body	0.6%	N/A	N/A
Ever injected any illegal drugs (used a needle to inject drug into their body, one or more times during their life)	N/A	1.5%	1.4%

\*Data sourced from 2021 Ottawa County Youth Assessment Survey (YAS)<sup>17</sup> which includes 8<sup>th</sup>, 10<sup>th</sup>, 12<sup>th</sup> graders.

\*\*Data is sourced from Youth Risk Behavior Survey (YRBS) [Youth Online: High School YRBS - United States 2021 Results | DASH | CDC](#) which includes 9<sup>th</sup>-12<sup>th</sup> graders.

The proportion of Ottawa County teens reporting ever using methamphetamines, heroin, or cocaine in their lifetime remains low and has been decreasing since 2005. Lifetime use reported by Ottawa County teens for methamphetamines is slightly above the state, but remains lower than the nation. Lifetime use reported by Ottawa County teens for heroin and cocaine remains lower than the state and nation. Almost 8.5% of Ottawa County teens reported it would be sort of easy or very easy to get a drug like cocaine, LSD, heroin, or methamphetamine. And 10% believe there is no or slight risk to using methamphetamine (meth, crank, ice, chalk, fire or glass).<sup>16</sup>

Lifetime and current prescription drug use reported among Ottawa County teens have been decreasing since 2013. However, teens are reporting prescription drug use at younger ages.

# Overdose Prevention Activities in Ottawa County and the Region

## **The Ottawa County Opiate Overdose Taskforce**

The Opiate Taskforce is a collaboration of healthcare professionals, treatment providers, law enforcement, individuals in recovery, and community members with a vision to minimize the impacts of the opioid crisis in Ottawa County. This is done through education of professionals and community members, increased Narcan distribution, advocacy for increased access to treatment, and a focus on the safe storage and disposal of medications.

For more information on prevention and treatment, please visit:

<https://www.miottawa.org/Health/CMH/services.htm>

## **The Grand Rapids Red Project (Regional)**

The Red Project is a regional non-profit dedicated to improving health, reducing risk, and preventing HIV. The organization provides a range of services, including overdose prevention.

To learn more about the Red Project, please visit:

<https://redproject.org/>

# References

1. <https://www.cdc.gov/opioids/basics/epidemic.html>
2. [https://www.rand.org/content/dam/rand/pubs/external\\_publications/EP60000/EP68838/RAND\\_EP68838.pdf](https://www.rand.org/content/dam/rand/pubs/external_publications/EP60000/EP68838/RAND_EP68838.pdf)
3. [https://www.cdc.gov/drugoverdose/prevention/pdf/CDC-Efforts-to-Prevent-Overdoses\\_2022-2024.pdf](https://www.cdc.gov/drugoverdose/prevention/pdf/CDC-Efforts-to-Prevent-Overdoses_2022-2024.pdf)
4. <https://www.michigan.gov/opioids/crisis-response>
5. <https://www.cdc.gov/nchs/data/databriefs/db457.pdf>
6. <https://www.cdc.gov/nchs/nvss/vsrr/mortality-dashboard.htm>
7. <https://app.powerbigov.us/view?r=eyJrljoiYzY4ZmQ4OTctYWU1ZC00YmMyLWFjZTktOGExMzkxM2Y1ODE4liwidCI6ImQ1ZmI3MDg3LTM3NzctNDJhZC05NjZhLTg5MmVmNDcyMjVhMjVjMSJ9>
8. <https://www.cdc.gov/mmwr/volumes/71/wr/pdfs/mm7129e2-H.pdf>
9. <https://www.michigan.gov/opioids/category-data>
10. <https://content.govdelivery.com/accounts/MIOTTAWA/bulletins/31a23ff>
11. <https://content.govdelivery.com/accounts/MIOTTAWA/bulletins/352e991>
12. <https://nida.nih.gov/research-topics/treatment/intentional-vs-unintentional-overdose-deaths>
13. <https://ajp.psychiatryonline.org/doi/10.1176/appi.ajp.2021.21060604>
14. <https://www.cdc.gov/nchs/data/databriefs/db394-H.pdf>
15. [https://www.michigan.gov/-/media/Project/Websites/mdhhs/Folder4/Folder29/Folder3/Folder129/Folder2/Folder229/Folder1/Folder329/Drug\\_Overdose\\_Deaths\\_M\\_2018-2019.pdf?rev=a267887738b14188bf274e9055d84cc3](https://www.michigan.gov/-/media/Project/Websites/mdhhs/Folder4/Folder29/Folder3/Folder129/Folder2/Folder229/Folder1/Folder329/Drug_Overdose_Deaths_M_2018-2019.pdf?rev=a267887738b14188bf274e9055d84cc3)
16. [https://www.ottawacountyouth.org/wp-content/uploads/reports/2021/2021\\_YAS\\_Report.pdf](https://www.ottawacountyouth.org/wp-content/uploads/reports/2021/2021_YAS_Report.pdf)

**Note:** References displayed on this page link to third party data that could become unavailable or be updated in the future. OCDPH is not responsible for content found at these links.

# Definitions

Indicator	Definition	ICD-10 Codes/Detailed Explanation
<b>Overdose deaths</b>	All poisoning deaths involving any drug or substance, all causes of death, all manners of death except natural.	Underlying cause of death, determined from the field designated as such, or, where missing, from the first-listed multiple cause of death field: X40-44, X60-64, X85, Y10-14.
<b>Overdose deaths involving any opioid</b>	All poisoning deaths involving opioid pain relievers, all causes of death, all manners of death except natural.	Underlying cause of death, determined from the field designated as such, or, where missing, from the first-listed multiple cause of death field: X40-44, X60-64, X85, Y10-14 AND opioid in all other causes of death: T40.0, T40.1, T40.2, T40.3, T40.4, T40.6.
<b>Overdose deaths involving heroin (heroin is an opioid)</b>	All poisoning deaths involving heroin, all causes of death, all manners of death except natural.	Underlying cause of death, determined from the field designated as such, or, where missing, from the first-listed multiple cause of death field: X40-44, X60-64, X85, Y10-14 AND heroin in all other causes of death: T40.1.
<b>Overdose deaths involving synthetic opioid other than methadone</b>	All poisoning deaths involving a synthetic opioid other than methadone, all causes of death, all manners of death except natural.	Underlying cause of death, determined from the field designated as such, or, where missing, from the first-listed multiple cause of death field: X40-44, X60-64, X85, Y10-14 AND any synthetic opioid other than methadone in all other causes of death: T40.4.
<b>Overdose deaths involving cocaine (cocaine is not an opioid)</b>	All poisoning deaths involving cocaine, all causes of death, all manners of death except natural.	Underlying cause of death, determined from the field designated as such, or, where missing, from the first-listed multiple cause of death field: X40-44, X60-64, X85, Y10-14 AND cocaine in all other causes of death: T40.5.
<b>Overdose deaths involving psychostimulants with abuse potential (psychostimulants are not opioids)</b>	All poisoning deaths involving psychostimulants with abuse potential, all causes of death, all manners of death except natural.	Underlying cause of death, determined from the field designated as such, or, where missing, from the first-listed multiple cause of death field: X40-44, X60-64, X85, Y10-14 AND psychostimulant with abuse potential in all other causes of death: T43.6.

Adapted from New York State Department of Health

# Methods

## Definitions

- Drug overdose deaths include events with an underlying cause of death code of X40-X44, X60-X64, X85, or Y10-Y14. Alcohol poisoning deaths are not included in this report.
- County quadrants are used in this report to highlight geographical differences in overdose death rates. The boundaries for each quadrant are generally 96<sup>th</sup> Avenue (north to south) and Fillmore Avenue (east to west). Quadrant boundaries deviate slightly in Zeeland, where the city is placed in the SW quadrant, and in Georgetown, where the area north of the Grand River but south of Fillmore (if Fillmore extended directly east) is included in the NE quadrant. This method has two purposes: 1) it utilizes natural recognizable boundaries such as city limits and rivers, and 2) it incorporates census tract boundaries which can be used to determine an underlying population and calculate a rate. Those that died by overdose were assigned a quadrant based on residence. See slide 16 for a map of quadrant boundaries.

## Analytical Methods

- Deaths counted in this report are by residence of the decedent, not location of death.
- Rates are unadjusted (crude); the unit for rates in this report is the number of events per 100,000 people.
- Because death by overdose is a relatively rare event each year in Ottawa County, multiple years are often combined to improve statistical stability, particularly for rates over time.
- Ottawa County data prior to 2010 were obtained from CDC Wonder.
- Because detailed demographic data prior to 2010 were not available when developing this report, many figures and illustrations included herein show detailed data from 2010-2022.
- Michigan and United States overdose death rate data from 2010-2021 was obtained from CDC Wonder. Preliminary reported overdose death rates for Michigan and United States in 2022 were obtained from the (NCHS) [National Vital Statistics System](#).
- Population data evaluating age categories, sex, and means from 1990 – 2020 were obtained from CDC Wonder. These estimates are bridged-race populations estimates of the July 1 resident population from 1990-1999 bridged-race intercensal population estimates (released by NCHS on 7/26/2004); revised bridged-race 2000-2009 intercensal population estimates (released by NCHS on 10/26/2012); and bridged-race Vintage 2020 (2010-2020) postcensal population estimates (released by NCHS on 9/22/2021). Available on CDC WONDER Online Database. Accessed at <http://wonder.cdc.gov/bridged-race-v2020.html>.

# Methods (continued)

## Analytical Methods (continued)

- Population data when evaluating age categories, sex, and means from 2021 - 2022 were obtained from CDC Wonder. Single-race Population Estimates, United States, 2020-2022. The 2020-2022 postcensal series of estimates of the July 1 resident population are based on the modified Blended Base produced by the US Census Bureau in lieu of the April 1, 2020 decennial population count, released by the Census Bureau on June 22, 2023. Accessed at <http://wonder.cdc.gov/single-race-v2022.html>.
- Population data when evaluating county rates and quadrant rates utilized American Community Survey (ACS) 5-year estimates.
- The p-value was compared to an alpha level of .05 to determine statistical significance for all statistical tests and trend analyses.
- Overdose death rates from 2010-2020 were compared to Michigan overdose death rates to determine if Ottawa County rates by age decade were higher, lower or similar to the State for the given time period (slide 13). This was done by obtaining 95% confidence intervals (CI) for Ottawa County and Michigan by age decade from CDC Wonder and comparing the 95% CIs for each age group to assess if Ottawa County's 95% CI was higher, lower, or overlapping (indicating no difference) with the 95% CI for Michigan.
- Decedents with Hispanic origin listed on the death certificate were classified as Hispanic. Decedents without Hispanic origin listed on the death certificate were classified under the race listed on the death certificate.
- The proportion of overdose deaths ruled as suicides from 2010-2022 for teens and adults were compared using Fisher's Exact test. A statistically significant difference (p-value = .002) was found between the two groups with the proportion of teens being higher than adults (slide 12).

## Trend Analysis

**Overall (1999-2022):** Ottawa County death by overdose trend was assessed from 1999-2022 using Poisson regression with annual population offset to accommodate for population changes. Year was significantly associated with an annual increase in the number of overdose deaths ( $p < .001$ ). Joinpoint regression analysis was also conducted to assess Ottawa County annual overdose death rates from 1999-2022. Joinpoint regression analysis results were consistent with Poisson regression methods, showing a statistically significant increase in the rate of death by overdose over the given time period ( $p < .001$ ).

**Recent Trends (2017-2022):** Using the Poisson regression method referenced above, but limiting to 2017-2022, year was not significantly associated with an annual increase/decrease in the number of overdose deaths ( $p = .329$ ).



# Methods (continued)

## Trend Analysis (continued)

### Sex

**Male:** Ottawa County death by overdose trend was assessed from 1999-2022 using joinpoint regression analysis. Deaths by overdose were grouped into four-year time periods to accommodate for small numbers.

- The final joinpoint model selected for males included zero joinpoints indicating that year was significantly associated with an annual increase in number of overdose deaths ( $p = .004$ ).

**Female:** Ottawa County death by overdose trend was assessed from 1999-2022 using joinpoint regression analysis. Deaths by overdose were grouped into four-year time periods to accommodate for small numbers.

- The final joinpoint model selected for females included zero joinpoints indicating that year was significantly associated with an annual increase in number of overdose deaths ( $p = .039$ ).

**Quadrant:** Ottawa County death by overdose trend was assessed from 2011-2022 analyzing quadrant of residences using joinpoint regression analysis. Deaths by overdose were grouped into two-year time periods to accommodate for small numbers. Decedents were assigned to a specific quadrant based on the census tract they resided in at the time of death.

- The final joinpoint model selected for the NE quadrant included zero joinpoints indicating that year was not significantly associated with an annual increase/decrease in number of overdose deaths ( $p = .620$ ).
- The final joinpoint model selected for the NW quadrant included zero joinpoints indicating that year was not significantly associated with an annual increase/decrease in number of overdose deaths ( $p = .889$ ).
- The final joinpoint model selected for the SE quadrant included zero joinpoints indicating that year was not significantly associated with an annual increase/decrease in number of overdose deaths ( $p = .229$ ).
- The final joinpoint model selected for the SW quadrant included zero joinpoints indicating that year was not significantly associated with an annual increase in number of overdose deaths ( $p = .112$ ).