

# MICHIGAN OPIOID-INVOLVED DRUG POISONING (OVERDOSE) DEATHS

**Publication Date:** 7/21/2023

## **Abstract**

The Michigan Public Health Tracking Program (MiTracking) has created a dataset that includes deaths with an underlying cause listed as drug poisoning that includes at least one opioid for Michigan residents from 2004 through the most recent year available. Drug poisoning is often referred to as drug overdose. The data include four measures: (1) the number of deaths due to opioid-involved drug poisoning, (2) the crude rate of opioid-involved drug poisoning deaths per 100,000 population, (3) the age-adjusted rate of opioid-involved drug poisoning deaths per 100,000 population, and (4) the percent of all drug poisoning deaths that did not specify the type of drug involved in the death. Data are aggregated by year of death, county of residence, sex, and age group. The MiTracking team is looking into including data by race in subsequent versions based on its availability in the original database. This dataset is updated annually.

## **Purpose**

MiTracking developed this dataset to provide public health professionals, researchers, and the general public with summary information on the number, characteristics, and distribution of opioid-involved drug overdose deaths among Michigan residents. The data are used to calculate opioid-involved drug overdose death measures for

1. Percent of all drug poisoning deaths that did not specify the type of drug involved in the death
2. Number of deaths due to opioid-involved drug poisoning
3. Crude rate of opioid-involved drug poisoning deaths per 100,000 population
4. Age-adjusted rate of opioid-involved drug poisoning deaths per 100,000 population.

## **Supplemental Information**

Records from the Michigan Resident Death File are provided under a data sharing agreement to the MiTracking program by the Michigan Department of Health and Human Services Division for Vital Records & Health Statistics. The Michigan Resident Death File includes deaths of all Michigan residents, including deaths that occur both in- and out-of-state. The county of residence is based on the geocoded address reported on the death certificate. Addresses which could not be successfully geocoded are not assigned to any county but are still included in the total statewide count.

## **Keywords**

Overdose; overdose deaths; overdose mortality; drug overdose; drug overdose deaths; drug overdose mortality; drug poisoning; drug poisoning deaths; drug poisoning mortality;

opioid; opioids; opioid overdose; opioid overdose mortality; opioid overdose deaths; heroin; semisynthetic; drugs

### ***Bounding Coordinates***

Geographically, all cases in this dataset occurred within the State of Michigan. This means that all cases fit within the latitude/longitude coordinates listed below.

West Bounding Coordinate: -90.41813399999995

East Bounding Coordinate: -82.418394000000006

North Bounding Coordinate: 48.189534000000002

South Bounding Coordinate: 41.696088000000003

### ***Other Information on Data***

**Level of Geographic Detail:** Statewide, County, and City of Detroit

**Currentness Reference (when data were last updated):** 7/21/2023

**Frequency at which the data are updated:** Annually

**Data Status:** Complete

### ***Completeness Report***

Deaths with an unknown or missing value of county of residence, sex, or age were excluded from the corresponding category, but included in the total. Therefore, the sum of deaths within each category may be less than the total.

The MiTracking team is looking into including data by race in subsequent versions based on its availability in the original database. Primary and complementary suppression of deaths by race will be required to protect confidentiality when there are too few cases.

### ***Data Processing Description***

**Data Source:** The dataset was created from the Michigan Resident Death Files, provided by the Division of Vital Records and Health Statistics for years 2004 through the most recent year available.

**Inclusion Criteria:** All deaths of Michigan residents that met the following two criteria:

- An underlying cause of death ICD-10 code of X40-X44 (unintentional), X60-X64 (suicide), X85 (homicide), or Y10-Y14 (undetermined intent)

- An opioid-related ICD-10 code in any of the multiple cause-of-death fields, including T40.0 (opium), T40.1 (heroin), T40.2 (natural and semisynthetic opioids), T40.3 (methadone), T40.4 (synthetic opioids), or T40.6 (unspecified opioids)

Deaths of out-of-state residents were excluded. Deaths with an unknown or missing value for county of residence, sex, or age were excluded from the corresponding category, but included in the total. Therefore, the sum of deaths within each category may be less than the total.

#### **Data Calculations:**

- Percent of overdose deaths with unspecified drugs by county was calculated by dividing the number of drug overdose deaths where the type of drug was not specified by the total number of drug overdose deaths and multiplying by 100. Counts were based on the decedent's county of residence.
- Counts of deaths were aggregated by year of death, county of residence, sex, and age group (Groups: 0-14, 15-24, 25-34, 35-44, 45-54, 55-64, and 65+).
- To calculate crude and age-adjusted rates, bridged-race population denominators were obtained from National Center for Health Statistics. For years 2010-2021, Vintage 2020 postcensal population estimates were used.<sup>1</sup> For years 2004-2009, July 1, 2000-July 1, 2009 revised bridged-race intercensal population estimates were used (released 10/26/2012).<sup>2</sup> The release of postcensal population estimates ceased with the release of the Vintage 2020 estimates. Data for the year 2021 use the 2020 population estimate for the denominator.
- Direct age-standardization using the 2000 Standard United States Population as the reference population was used to calculate age-adjusted rates.
- Crude and age-adjusted rates are presented per 100,000 population per year.
- Data management and all analyses were performed using SAS Version 9.4 (©2002-2012, SAS Institute Inc.).

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#### ***Access Constraints***

There are no access constraints for data available through the Michigan Environmental Public Health Tracking program public portal.

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#### ***Use Constraints***

It is recommended that all users read and fully comprehend the metadata prior to data use. Efforts have been made to ensure the accuracy of the data. These data are supplied by Michigan Department of Health and Human Services Division of Vital Records and Health Statistics for submission to the Michigan Environmental Public Health Tracking program for the purposes of compiling, integrating, and disseminating environmental hazard, exposure,

and health effects data. MDHHS specifically disclaims responsibility for any analyses, interpretations, or conclusions made by those who access this information.

These data remain the property of the MDHHS, cannot be used for commercial purposes, and shall not be used to engage in any method, act, or practice which constitutes the solicitation or advertisement of goods, services, or real estate to Michigan consumers.

Data users are prohibited from attempting to learn the identity of any person included in the data and from linking these data with any other data for the purpose of matching records to identify individuals.

Differences in rates over time or by area may reflect real changes, increased reporting and classifying of overdose deaths, or both. Rates at the state and/or county level will not show the true drug overdose burden at a more local level (e.g., neighborhood) and are not geographically resolved enough to be linked with many types of environmental data. Data aggregated at the county level are based on the decedent's county of residence, not necessarily where the death occurred. The degree to which specific drugs involved in a drug poisoning death are specified in death data varies across years and counties within each year. Counts and rates of opioid-involved drug overdose deaths may be underestimated where there is a high percent of cases for which drug type was not specified.

For violent and unexpected deaths, and deaths without medical attendance within the last 48 hours, a medical examiner must investigate the cause and manner of death. In most cases, the cause of death for overdose deaths must be certified by a medical examiner in the State of Michigan. However, differences in standards of practice between medical examiner jurisdictions may result in a differential classification of deaths due to drug overdose or other causes.

### ***Data Suppression***

The Michigan Environmental Public Health Tracking Program and its data partners have applied appropriate cell suppression rules imposed by the data providers and/or using guidance from the CDC. Even at the county level it can be expected that the measures generated will often be based upon numbers too small to report or present without violating state and federal privacy guidelines and regulations. Staff have adhered to the cell suppression rules by suppressing all counts greater than 0 and less than 6 (the corresponding rates based on these small counts have also been suppressed).

[Complementary \(or secondary\) suppression](#) of other counts and rates has also been completed to prevent any back calculation of primary-suppressed cells.

Additionally, counties where there was a high percent of drug overdose deaths where drug type was not specified have been suppressed. Counties were suppressed if >20% of all drug poisoning deaths were due to an unspecified drug. In reporting state-level opioid mortality

data, the CDC has included only states with “good” or “very good” drug specificity ( $\geq 80\%$  and  $\geq 90\%$ , respectively).<sup>3,4</sup> Using this as guidance, Michigan requires at least 80% specificity to be included in reporting.

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***Security Handling Description***

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If data are distributed, the use constraints specified in this metadata apply to all recipients of the data.

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***Distribution Liability***

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The Michigan Public Health Tracking Network is maintained, managed, and operated by the Division of Environmental Health (DEH) within MDHHS. In preparation of these data, every effort has been made to offer the most current, correct, complete, and clearly expressed information possible. Nevertheless, some errors in the data may exist. In particular, MDHHS disclaims any responsibility for source data, compilation and typographical errors and accuracy of the information that may be contained in these data.

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If errors or otherwise inappropriate information is brought to our attention, a reasonable effort will be made to fix or remove it. Such concerns should be addressed to the Michigan Tracking Program via email or telephone (see Contact Information below).

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### ***Custom Order Process***

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For more information or access to unrestricted or public use Michigan-specific mortality data, please contact the Division for Vital Records and Health Statistics, Michigan Department of Health and Human Services, 333 South Grand Ave., Lansing, Michigan, 48933.

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### ***Contact Information***

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### ***References***

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1. National Center for Health Statistics. Vintage 2020 postcensal estimates of the resident population of the United States (April 1, 2010, July 1, 2010-July 1, 2020), by year, county, single-year of age (0, 1, 2, .., 85 years and over), bridged race, Hispanic origin, and sex. Prepared under a collaborative arrangement with the U.S. Census Bureau. Available from: [/nchs/nvss/bridged\\_race.htm](#) as of September 22, 2021, following release by the U.S. Census Bureau of the unbridged Vintage 2020 postcensal estimates by 5-year age group on June 17, 2021.
2. National Center for Health Statistics. Intercensal estimates of the resident population of the United States for July 1, 2000-July 1, 2009, by year, county, single-year of age (0, 1, 2, .., 85 years and over), bridged race, Hispanic origin, and sex. Prepared under a

collaborative arrangement with the U.S. Census Bureau. Available from: [https://www.cdc.gov/nchs/nvss/bridged\\_race.htm](https://www.cdc.gov/nchs/nvss/bridged_race.htm) as of October 26, 2012, following release by the U.S. Census Bureau of the revised unbridged intercensal estimates by 5-year age group on October 9, 2012.

3. Heroin Overdose Data. Centers for Disease Control and Prevention. <https://www.cdc.gov/drugoverdose/deaths/heroin/index.html>. Published June 6, 2022. Accessed July 28, 2023.
4. Wilson N, Kariisa M, Seth P, Smith H IV, Davis NL. Drug and Opioid-Involved Overdose Deaths — United States, 2017–2018. *MMWR Morb Mortal Wkly Rep* 2020;69:290–297. DOI: [http://dx.doi.org/10.15585/mmwr.mm6911a4external icon](http://dx.doi.org/10.15585/mmwr.mm6911a4external_icon). Accessed July 21, 2023.

Appendix: List of counties suppressed due to high percentage of unspecified drug poisoning deaths per year (2004-2018)

2004		2005		2006		2007		
Barry	Monroe	Alcona	Jackson	Alcona	Lake	Alger	Kalkaska	Wayne
Bay	Montcalm	Alpena	Kalamazoo	Alpena	Lapeer	Antrim	Lake	Wexford
Berrien	Montmorency	Antrim	Lake	Arenac	Lenawee	Arenac	Lapeer	Detroit City
Calhoun	Oakland	Arenac	Lapeer	Barry	Macomb	Baraga	Lenawee	
Cass	Ogemaw	Barry	Luce	Bay	Manistee	Bay	Mackinac	
Charlevoix	Osceola	Bay	Macomb	Benzie	Marquette	Benzie	Macomb	
Cheboygan	Oscoda	Benzie	Mecosta	Berrien	Mecosta	Berrien	Mason	
Clare	Ottawa	Berrien	Midland	Branch	Menominee	Branch	Menominee	
Clinton	Saginaw	Calhoun	Montcalm	Calhoun	Midland	Calhoun	Midland	
Crawford	St Clair	Cass	Oakland	Cass	Missaukee	Charlevoix	Monroe	
Genesee	St Joseph	Cheboygan	Oscoda	Cheboygan	Monroe	Cheboygan	Montcalm	
Gladwin	Sanilac	Clare	Otsego	Clare	Montcalm	Clare	Montmorency	
Grand Traverse	Tuscola	Clinton	Ottawa	Crawford	Newaygo	Clinton	Oakland	
Gratiot	Van Buren	Crawford	Roscommon	Delta	Oakland	Delta	Oceana	
Hillsdale	Wayne	Eaton	Saginaw	Dickinson	Ontonagon	Dickinson	Ontonagon	
Huron	Detroit City	Genesee	St Clair	Eaton	Osceola	Genesee	Osceola	
Ingham		Gladwin	St Joseph	Genesee	Oscoda	Gladwin	Oscoda	
Ionia		Gogebic	Schoolcraft	Gladwin	Ottawa	Gogebic	Otsego	
Iosco		Grand Traverse	Van Buren	Gratiot	Roscommon	Grand Traverse	Ottawa	
Isabella		Gratiot	Wayne	Hillsdale	Saginaw	Hillsdale	Saginaw	
Kalkaska		Huron	Wexford	Ingham	St Clair	Huron	St Clair	
Lake		Ingham	Detroit City	Ionia	Sanilac	Ionia	St Joseph	
Lenawee		Ionia		Iosco	Tuscola	Iosco	Sanilac	
Macomb		Iosco		Isabella	Van Buren	Isabella	Tuscola	
Mason		Iron		Jackson	Washtenaw	Jackson	Van Buren	
Midland		Isabella		Kalamazoo	Wayne	Kalamazoo	Washtenaw	
					Detroit City			



2008		2009		2010		2011	
Alcona	Mason	Alcona	Marquette	Antrim	Montcalm	Barry	Ogemaw
Alger	Mecosta	Alpena	Mecosta	Arenac	Montmorency	Bay	Osceola
Baraga	Midland	Arenac	Menominee	Baraga	Newaygo	Berrien	Oscoda
Bay	Missaukee	Baraga	Midland	Bay	Oakland	Calhoun	Ottawa
Benzie	Monroe	Berrien	Monroe	Berrien	Otsego	Cass	Saginaw
Berrien	Montcalm	Branch	Montcalm	Branch	Ottawa	Charlevoix	St Clair
Branch	Oakland	Calhoun	Montmorency	Calhoun	Presque Isle	Cheboygan	St Joseph
Calhoun	Oceana	Cheboygan	Oakland	Charlevoix	Saginaw	Clare	Sanilac
Charlevoix	Ogemaw	Clare	Oceana	Cheboygan	St Clair	Clinton	Tuscola
Cheboygan	Oscoda	Clinton	Osceola	Clare	St Joseph	Crawford	Van Buren
Chippewa	Otsego	Crawford	Otsego	Clinton	Sanilac	Genesee	Wayne
Clare	Roscommon	Gladwin	Presque Isle	Dickinson	Tuscola	Gladwin	Detroit City
Clinton	Saginaw	Gogebic	Saginaw	Gladwin	Van Buren	Grand Traverse	
Dickinson	St Clair	Grand Traverse	St Clair	Grand Traverse	Wayne	Gratiot	
Gladwin	St Joseph	Gratiot	St Joseph	Gratiot	Wexford	Hillsdale	
Grand Traverse	Sanilac	Hillsdale	Sanilac	Huron	Detroit City	Huron	
Gratiot	Schoolcraft	Houghton	Tuscola	Ingham		Ingham	
Hillsdale	Tuscola	Huron	Van Buren	Ionia		Ionia	
Huron	Van Buren	Ingham	Wayne	Iosco		Iosco	
Ingham	Wayne	Ionia	Wexford	Iron		Isabella	
Ionia	Wexford	Iosco	Detroit City	Isabella		Kalkaska	
Iosco	Detroit City	Iron		Jackson		Lake	
Isabella		Isabella		Kalkaska		Lenawee	
Jackson		Jackson		Lapeer		Macomb	
Kalamazoo		Kalamazoo		Leelanau		Mason	
Lake		Lake		Lenawee		Midland	
Lapeer		Lapeer		Macomb		Monroe	
Leelanau		Leelanau		Mecosta		Montcalm	
Lenawee		Lenawee		Midland		Montmorency	
Macomb		Macomb		Monroe		Oakland	

2012		2013		2014		2015	
Arenac	Presque Isle	Alcona	Monroe	Alcona	Oscoda	Alcona	Otsego
Baraga	Roscommon	Alpena	Oakland	Arenac	Otsego	Alger	Presque Isle
Bay	Saginaw	Arenac	Ogemaw	Baraga	Presque Isle	Antrim	Saginaw
Benzie	St Clair	Bay	Osceola	Bay	Roscommon	Bay	St Clair
Berrien	St Joseph	Benzie	Otsego	Berrien	Saginaw	Berrien	St Joseph
Branch	Sanilac	Berrien	Roscommon	Branch	St Clair	Branch	Sanilac
Calhoun	Shiawassee	Branch	Saginaw	Cheboygan	St Joseph	Charlevoix	Schoolcraft
Charlevoix	Tuscola	Calhoun	St Clair	Chippewa	Sanilac	Cheboygan	Tuscola
Cheboygan	Wayne	Cass	St Joseph	Clinton	Tuscola	Clare	Van Buren
Clinton	Wexford	Cheboygan	Sanilac	Crawford	Van Buren	Clinton	Wayne
Crawford	Detroit City	Clare	Shiawassee	Dickinson	Wayne	Dickinson	Wexford
Delta		Clinton	Tuscola	Genesee	Wexford	Emmet	
Grand Traverse		Crawford	Van Buren	Grand Traverse	Detroit City	Gratiot	
Gratiot		Dickinson	Wayne	Huron		Hillsdale	
Huron		Emmet	Wexford	Iosco		Huron	
Iosco		Grand Traverse	Detroit City	Iron		Iosco	
Isabella		Gratiot		Jackson		Iron	
Jackson		Hillsdale		Lapeer		Jackson	
Kalamazoo		Huron		Lenawee		Lake	
Lapeer		Iosco		Macomb		Lapeer	
Lenawee		Lake		Marquette		Macomb	
Luce		Lapeer		Mecosta		Manistee	
Macomb		Lenawee		Menominee		Marquette	
Marquette		Luce		Midland		Mecosta	
Mason		Mackinac		Monroe		Menominee	
Menominee		Macomb		Montcalm		Midland	
Monroe		Manistee		Newaygo		Missaukee	
Montmorency		Marquette		Oakland		Monroe	
Newaygo		Mecosta		Ogemaw		Oakland	
Oakland		Menominee		Osceola		Osceola	

2016	2017	2018
Alger	Alcona	Antrim
Baraga	Alger	Arenac
Bay	Antrim	Bay
Benzie	Bay	Charlevoix
Berrien	Branch	Chippewa
Branch	Clare	Delta
Charlevoix	Clinton	Dickinson
Cheboygan	Dickinson	Gratiot
Chippewa	Emmet	Hillsdale
Clare	Gratiot	Iosco
Clinton	Houghton	Jackson
Dickinson	Kalkaska	Marquette
Gogebic	Marquette	Mecosta
Houghton	Menominee	Menominee
Iosco	Missaukee	Montmorency
Jackson	Oakland	Oakland
Kalkaska	Oceana	Oscoda
Lake	Otsego	Sanilac
Marquette	Presque Isle	Schoolcraft
Mecosta	Sanilac	
Menominee	Wexford	
Oakland		
Ogemaw		
Osceola		
Otsego		
Roscommon		
St Clair		
Sanilac		