

# MICHIGAN NONFATAL OPIOID POISONING (OVERDOSE) HOSPITALIZATIONS

**Publication Date:** 7/5/2022

## **Abstract**

The Michigan Environmental Public Health Tracking Program (MiTracking) has created a dataset that contains inpatient hospitalization records for Michigan residents who have experienced a nonfatal opioid poisoning (any diagnosis of T40.0X-T40.4X, T40.41, T40.42, T40.49, T40.60 or T40.69 using ICD-10-CM). The data were aggregated and stratified by county of residence, discharge year, age group, gender, race, and ethnicity. Note: Opioid poisoning is often referred to as opioid overdose.

The dataset was processed using data from the Michigan Inpatient Database supplied from the Michigan Health and Hospital Association (MHA).

This dataset is updated annually.

It is recommended that all users read and fully comprehend metadata prior to data use. To access these data, please visit the MiTracking data portal.

## **Purpose**

MiTracking developed this dataset to provide public health professionals, researchers, and the public with summary information on the number, characteristics, and distribution of nonfatal opioid overdose hospitalizations among Michigan residents. The data include nonfatal opioid overdose hospitalization measures for:

- (1) Number of hospitalizations due to a nonfatal opioid poisoning.
- (2) Crude rate of nonfatal opioid poisoning hospitalizations per 100,000 population.
- (3) Age-adjusted rate of nonfatal opioid poisoning hospitalizations per 100,000 population.

## **Supplemental Information**

These hospitalization data are provided by the Michigan Health and Hospital Association (MHA) to the Michigan Department of Health and Human Services (MDHHS) through a contractual agreement. The MHA annually collects data for the Michigan Inpatient Database (MIDB) from patient discharge records supplied by Michigan hospitals and hospitals from several other states such as Ohio, Indiana, Wisconsin, and Illinois where Michigan residents were hospitalized and discharged from their facility.

Data provided by the hospitals were reviewed and reconciled by the MHA to ensure the validity of the data received. The data were further reviewed by staff in the MDHHS

Division of Vital Records and Health Statistics (DVRHS), and missing data were reconciled using multiple sources including previous MIDB files, Michigan birth records, and Michigan driver license files.

While hospitals submit patient address to the MHA, they do not report patient county of residence. In addition, the MHA does not provide patient address to MDHHS. The MHA has geocoded the address of residence for each record within the MIDB beginning with the 2016 dataset. The patient's county of residence was based on the census tract of residence, if available. If the patient's address could not be successfully geocoded, the MHA and DVRHS derived codes for county of residence from the patient's zip code. When a zip code falls into two or more counties, the MHA and DVRHS use different methods for assigning county of residence. DVRHS will apply "weights" to determine how to assign county of residence. The weights were created by using the percentage that a zip code fell under each county. When a zip code intersects more than one county, DVRHS considered all the weights. For example, for 100 records, if zip code "X" intersects counties A (weight = 60%) and B (weight = 40%), DVRHS would randomly select 60 records for county A and 40 records for county B. On the contrary, the MHA will assign all 100 records to the county of residence in which much of the zip code is located. The county field generated by DVRHS was used for this dataset.

Data for non-Michigan residents and hospitalizations from federal facilities (such as Veterans Affairs or Indian Health Service hospitals) and non-acute care facilities (such as long-term acute care, cancer treatment, addiction treatment, psychiatric, orthopedic, and rehabilitation hospitals) were excluded.

Records were excluded if the patient died before discharge.

Data have been de-identified to protect patient confidentiality.

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**Keywords**

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Overdose; nonfatal overdoses; overdose hospitalizations; opioid overdose; nonfatal opioid overdose; nonfatal opioid overdose hospitalizations; opioid poisoning; opioid poisoning hospitalizations; nonfatal opioid poisoning.

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**Bounding Coordinates**

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Geographically, all cases in this dataset are for residents of the State of Michigan. This means that all were residents within the latitude/longitude coordinates listed below.

West Bounding Coordinate: -90.41813399999995

East Bounding Coordinate: -82.41839400000006

North Bounding Coordinate: 48.18953400000002

South Bounding Coordinate: 41.696088000000003

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

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

**Currentness Reference** (when data were last updated): 5/26/2022

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

**Data Status:** Complete

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### ***Completeness Report***

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These data include hospitalizations of Michigan residents discharged from non-federal acute care hospitals by year of discharge. These data do not include hospitalizations at Veteran Affairs, Indian Health Service, other federal facilities, or non-acute care hospitals.

Data submission to the MIDB is voluntary; therefore, hospital participation may vary from year to year. Numbers and rates are suppressed for counties if hospitals comprising more than 20% of licensed hospital beds for that county did not report hospitalization data for any given year.

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

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

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**Data Source:** The dataset was created from the MIDB.

**Inclusion Criteria:** All hospitalizations of Michigan residents, including those hospitalized at an out-of-state hospital, that are discharged from inpatient care, with an ICD-10-CM code of T40.0X-T40.4X, T40.41, T40.42, T40.49, T40.60 or T40.69 recorded as a primary or secondary diagnosis were included. Overdoses of all intents (accidental or unintentional, intentional self-harm, assault, and undetermined intent) were included. Adverse effects, underdosing, subsequent and sequela visits, visits in which the patient died before discharge, and visits of out-of-state residents were excluded.

**Data Calculations:**

- Counts of hospitalizations were aggregated by year of discharge, county of residence, sex, race/ethnicity, 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 the National Center for Health Statistics.

- 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 9.4 and RStudio version 1.4.1106.

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### ***Access Constraints***

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There are no access constraints for data available through the Michigan Environmental Public Health Tracking Program public portal. Where applicable, restricted data will only be released to users after a written request detailing the purpose of the request, intended use for the data, and specifics on the security and privacy measures to be taken to safeguard patient privacy and prevent unauthorized access to or use of the data. Such requests are reviewed and approved by the MHA. Contact the MHA at [datakoala@mha.org](mailto:datakoala@mha.org) for more information.

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### ***Use Constraints***

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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 the MHA to MDHHS DVRHS 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 MHA, 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 this data with any other data for the purpose of matching records to identify individuals or entities (such as hospitals).

**Usage rights:** Portions of these data are taken from a proprietary database owned and maintained by the MHA. All rights reserved. These data may not be used for commercial purposes without first obtaining written permission from the MHA. Contact the MHA at [datakoala@mha.org](mailto:datakoala@mha.org) for more information.

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### ***Data Limitations***

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Hospitalization data, by definition, do not include individuals who are not hospitalized for a condition.

Differences in rates by area may be due to different socio-demographic characteristics and associated behaviors. When comparing rates across geographic areas, a variety of non-

environmental factors, such as access to medical care, can impact the likelihood of persons being hospitalized for opioid poisoning.

Differences in rates over time or by area may reflect real changes, changes in diagnostic techniques and practices, or a combination of factors. Rates at the state and/or county level will not show the true opioid 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 patient's county of residence, not necessarily where the overdose occurred or was treated.

Because cases are included if they have any diagnosis of opioid poisoning, this cause will sometimes not be the primary reason for their hospitalization. In addition, some hospitals may assign a code of opioid poisoning even in cases where the patient is simply exhibiting the effects of opioid intoxication while not actually experiencing an overdose. The degree to which this occurs is unknown.

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### ***Data Suppression***

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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.

Data submission to the MIDB is voluntary; therefore, hospital participation may vary from year to year. Numbers and rates are suppressed for counties if hospitals comprising more than 20% of licensed hospital beds for that county did not report hospitalization data for any given year.

Not all data submitted to the MIDB contain the type of drug involved in the overdose. Numbers and rates are suppressed for counties where the percentage of unspecified drug type was greater than 20%.

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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 Environmental Public Health Tracking Program 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. MDHHS disclaims any responsibility for source data, compilation and typographical errors and accuracy of the information that may be contained in these data.

These data do not represent the official legal version of source documents or data used to compile these data. MDHHS further reserves the right to make changes to these data at any time without notice.

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The sale or resale of the data, or any portions thereof, is prohibited unless with the express written permission of MDHHS and the MHA. Portions of this data are taken from a proprietary database owned and maintained by the MHA. All rights reserved. These data

may not be used for commercial purposes without first obtaining written permission from the MHA.

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 Environmental Public Health 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 data, please contact the Michigan Health and Hospital Association at [datakoala@mha.org](mailto:datakoala@mha.org).

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### **Contact Information**

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