

# MICHIGAN ASTHMA EMERGENCY DEPARTMENT VISITS

**Publication Date:** 4/23/2021

## **Abstract**

This dataset contains emergency department records for Michigan residents with a primary (first-listed) diagnosis of asthma (ICD-10-CM J45.\*<sup>1</sup>). The data are also provided for children under age 18. Data for the total population are aggregated and stratified by county of residence (including city of Detroit separately from Wayne County), admission year, age group, and sex (age and sex statewide only). The data for children under age 18 are aggregated and stratified by county of residence (including city of Detroit separately from Wayne County), admission year, and race.

The dataset was processed using data from both the Michigan Resident Outpatient and Michigan Resident Inpatient Databases supplied from the Michigan Health and Hospital Association (MHA) Service Corporation. County-level rates were calculated using vintage 2018 bridged-race population estimates available through the National Center for Health Statistics (NCHS) postcensal estimates series. Rates for Detroit, out-Wayne County, and census-tract level were calculated using American Community Survey 5 Year Estimates (2013-2017) for the underlying population by age.

All users are recommended to read and fully comprehend the metadata prior to data use. To access these data, please visit the [MiTracking data portal](#).

## **Purpose**

This dataset provides data for both the National Environmental Public Health Tracking Network and the Michigan Environmental Public Health Tracking Network. It is intended to provide public health professionals, researchers, and the general public with summary information on asthma emergency department visits in the State of Michigan. The data include the following asthma emergency department (ED) measures:

- (1) Number of ED visits for asthma
- (2) Crude rate of asthma ED visits per 10,000 population
- (3) Age-adjusted rate of asthma ED visits per 10,000 population
- (4) Number of ED visits for asthma in children (age <18)
- (5) Crude rate of asthma ED visits per 10,000 children (age <18)

## **Supplemental Information**

<sup>1</sup> Note ‘\*’ includes all sub variation codes: J45.[20-22, 30-32, 40-42, 50-52, 90, 901-902, 909, 990-991, 998].

These emergency department 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 Outpatient Database (MODB) and Michigan Inpatient Database (MIDB) from patient records supplied by Michigan acute care hospitals and hospitals in contiguous areas of Ohio, Indiana, Wisconsin, and several other states.

Hospitals included in the data file (which *does not* include federal facilities [such as Veterans Affairs or Indian Health Service hospitals]) are grouped into MHA hospital IDs of which there are both Michigan and out-of-state hospitals. Records from Michigan emergency departments include both Michigan residents and non-Michigan residents whereas records from out-of-state hospitals only include Michigan residents. Data provided by the hospitals were carefully checked and edited by the MHA to ensure the validity of the data received. The data were further reviewed and verified by staff in the Michigan Division of Environmental Health.

Hospitals do not report patient's county of residence. Thus, MHA derived codes for county of residence from the patient's reported zip code and zip/county population weights. When a zip code intersects more than one county, MHA used only the largest weight. For example, for 100 records, if zip code X intersects counties A (weight = 60%) and B (weight = 40%), MHA would assign all 100 records to county A.

Using the subsequent year's discharge-based dataset, the Michigan Tracking Program created an admission-based dataset for all ED visits in a year. Data for non-Michigan residents and for ED visits from federal facilities (such as Veterans Affairs or Indian Health Service hospitals) were excluded.

Data have been de-identified to protect patient confidentiality.

Because the MODB ED data only include patients who are treated and released from the ED, patients who visit the ED and are admitted for inpatient treatment were obtained from the Michigan Inpatient Database (MIDB). Please see the Hospitalizations metadata for supplemental information on the MIDB.

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**Keywords**

Respiratory disease; disease of respiratory system; health effects; health outcome; asthma; respiratory disorders; asthma attack; obstructive lung disease; reactive airway disease; asthma emergency department visits; emergency department; ED; ER; ED visits

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**Bounding Coordinates**

Geographically, all cases in this dataset occurred among residents of 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

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

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

**Currentness Reference (when data were last updated):** 1/22/2021

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

**Data Status:** Complete

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### ***Completeness Report***

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These data include emergency department visits of Michigan residents from non-federal acute care hospitals. These data do not include visits to Veteran Affairs, Indian Health Service, or other federal facilities or hospitals. These data are based only on primary diagnosis codes ICD-10-CM J45.\*

The MODB and MIDB are missing data from some acute care hospitals, so there are certain parts of the state that are not well represented. This is a limitation of both databases.

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

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The dataset was processed and created using data from the Michigan Resident Outpatient and Inpatient Files, created using data from the Michigan Outpatient Database (MODB) and the Michigan Inpatient Database (MIDB) obtained with permission from the Michigan Health and Hospitalization Association (MHA) Service Corporation. The dataset was prepared using the instructions found in the CDC Environmental Public Health Tracking How-To-Guide for Data Submission: Asthma Emergency Department (ED) Visits, July 2019. MODB and MIDB data are discharge-based datasets, but admission-based datasets for emergency department visits and hospitalizations were created using the year of interest and subsequent year of data.

Steps to create the dataset:

- A new dataset was created for ED visits including both patients who were admitted as inpatients from the emergency department, patients with observation stays who were discharged from the ED, and those who were treated and released (outpatients) with a primary diagnosis of asthma.

- This new dataset was cleaned and processed using SAS 9.4 for the total population and R Version 3.6.1 for the population up to age 18. Non-Michigan residents were excluded. Records were assigned a five-digit county FIPS code based on their geocoded-census tract of residence if available. Records with missing census tract information were assigned a county FIPS code based on the MHA-assigned county included in the provided data. Detroit and out-Wayne County residence was assigned based on census tract of residence.
- Duplicates, identified as records with the same values for sex, date of birth, admission date, and zip code, were removed from the dataset.
- Transfers between acute care hospitals were not excluded.

For measures involving the total population:

- Values for the gender field were re-assigned (Total, Male, Female)
- Ages were assigned into one of five age groups (0-4, 5-14, 15-34, 35-64, 65+) based on their date of birth and date of admission.
- Counts of emergency department visits for asthma were aggregated by year, county, age group, and sex (age group and sex statewide only)

For measures specific to the population under age 18:

- Racial categories were assigned to one of the following groups: American Indian or Alaska Native; Asian or Pacific Islander; Black; or White.
- Patient age at admission was calculated based on the patient date of birth. Records of patients who were 18 years or older on their admission date were excluded.
- Counts of emergency department visits for asthma were aggregated by county and race.

County-level rates were calculated using vintage 2018 bridged-race population estimates available through the National Center for Health Statistics (NCHS) postcensal estimates series. Rates for Detroit and out-Wayne County were calculated using American Community Survey 5 Year Estimates (2013-2017) for the underlying population by age.

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### **Access Constraints**

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 MHASC. Contact MHASC at [datakoala@mha.org](mailto:datakoala@mha.org) for more information.

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### ***Use Constraints***

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All users must read and fully comprehend the metadata prior to data use. Efforts have been made to assure the accuracy of the data. These data are supplied by MHA to MDHHS for submission to the National Environmental Public Health Tracking Network at CDC. The data are also used by the Michigan Tracking Network to compile, integrate, and provide environmental hazard, exposure, and health effects data according to criteria and requirements set forth by the CDC. MHA and MDHHS specifically disclaim responsibility for any analyses, interpretations, or conclusions made by those who access this information.

These data remain the property of the MHA and cannot be used for commercial purposes and shall not be used to engage in any method, act, or practice to conduct 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 or entities (such as hospitals).

When looking at small geographic levels (e.g., census tract), users must take into consideration appropriate cell suppression rules imposed by the data providers or individual state programs. 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. Careful adherence to cell suppression rules in cross tabulations is necessary and methods to increase cell sizes by combining data across time (e.g., months, years) and geographic areas may be appropriate.

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

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### ***Data Limitations***

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ED data, by definition, do not include individuals who do not receive medical care for their asthma at the emergency department. It also would not include individuals who are admitted to the hospital without first visiting the emergency department.

Differences in rates over time or by area may reflect differences or changes in diagnostic techniques and criteria and in the coding of asthma.

Rates at the state and/or county level may not necessarily reflect rates at a more local level (e.g., neighborhood).

Reporting rates at the state and/or county level will not be geographically resolved enough to be linked with many types of environmental data.

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 and diet, can impact the likelihood of persons visiting the emergency department for asthma.

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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](#) has also been completed to prevent any back calculation of suppressed cells. For some data, it was necessary to increase cell sizes by combining data across time (e.g., years) or geographic areas (e.g., statewide instead of county-level data).

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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.

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 this data at any time without notice.

It is strongly recommended that careful attention be paid to the contents of the metadata file associated with these data to evaluate dataset limitations, restrictions, or intended uses. MDHHS shall not be held liable for improper or incorrect use of the data described and/or contained herein.

MDHHS makes no warranties or representations whatsoever regarding the quality, content, condition, functionality, performance, completeness, accuracy, compilation, fitness, or adequacy of the data. By using the data, you assume all risk associated with the acquisition, use, management, and disposition of data in your information system, including any risks to your computers, software, or data being damaged by any virus, software, or any other file that might be transmitted or activated during the data exchange of this data.

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Use of the data with other data shall not terminate, void, or otherwise contradict this statement of liability.

The sale or resale of the data, or any portions thereof, is prohibited unless with the express written permission of MDHHS and MHASC. Portions of these data are taken from a proprietary database owned and maintained by the MHASC. All rights reserved. These data may not be used for commercial purposes without first obtaining written permission from the MHASC.

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.

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

For access to national and multi-state unrestricted or public use data, please see: <http://ephtracking.cdc.gov>

For access to unrestricted or public use Michigan-specific data, please contact the Michigan Health & Hospital Association Service Corporation (MHASC) at [datakoala@mha.org](mailto:datakoala@mha.org) for more information.

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**Contact Information**

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