# DISPARITIES IN MICHIGAN'S ASTHMA BURDEN

MDHHS
Michigan Department of Health & Human Services
RICK SNYDER, GOVERNOR
NICK LYON, DIRECTOR

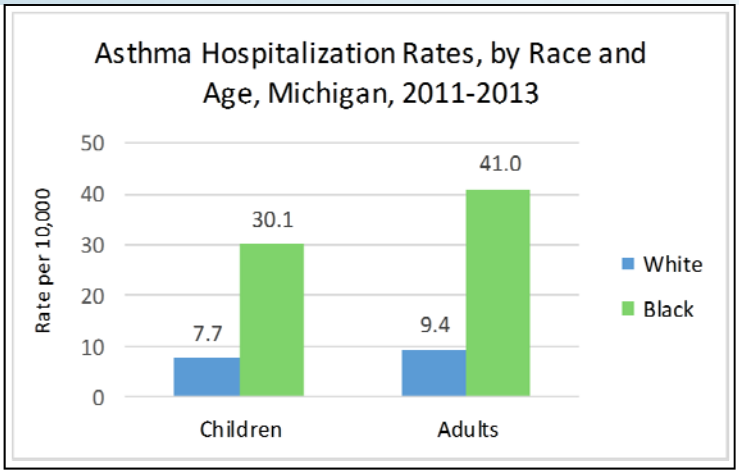
*Michigan is proud to have made strides to improve asthma health in our communities, but significant disparities still exist in the asthma burden among different racial, gender, and socioeconomic populations in our state. These differences are influenced by multiple factors: access to health care, genetics, environments, and knowledge of asthma control. Efforts to reduce the burden of asthma across the state and improve the health of all Michiganders must address these differences.*

## Racial and Gender Disparities in Michigan's General Population

### Asthma Hospitalization

- Asthma hospitalization rates for Black children and adults are more than three times the rates for White children and adults.
- Male children are hospitalized for asthma at a rate 57% higher than female children.
- Female adults are hospitalized for asthma 2.2 times as often as male adults.

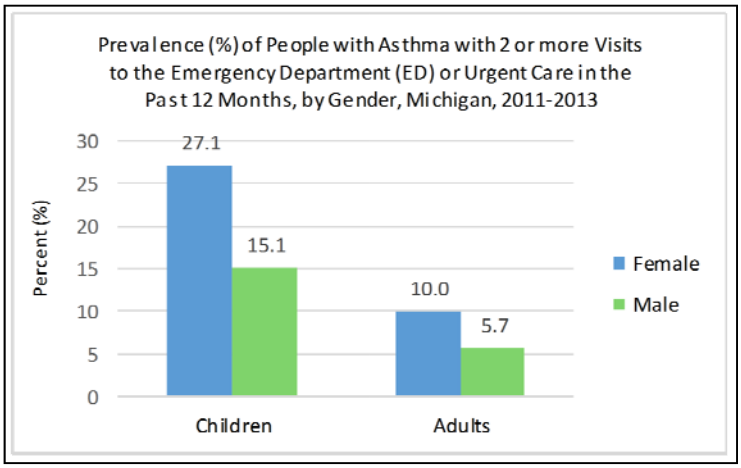
Data source: Michigan Inpatient Database, 2011-2013




### Asthma Urgent Visits

- Two times as many females adults than male adults visited the emergency department (ED) or urgent care two or more times in the past 12 months.
- More female children than male children visited the ED or urgent care two or more times in the past 12 months, 27.1% and 15.1%, respectively.
- Black adults had significantly higher prevalence of ≥2 emergency asthma visits than White adults.

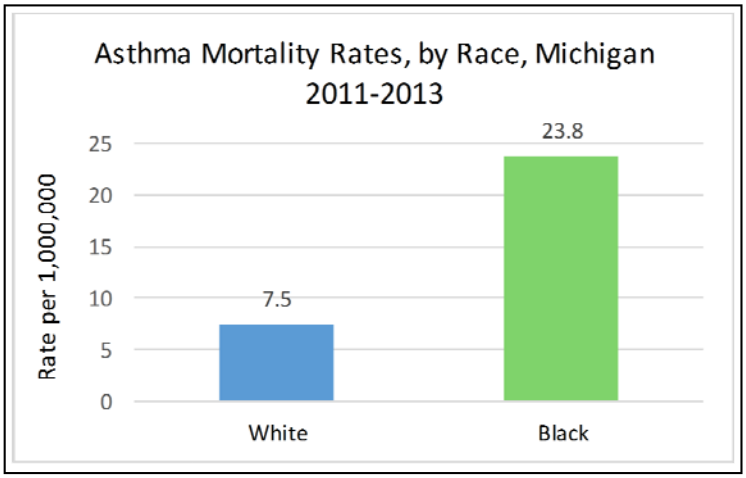
Data source: Michigan Asthma Call Back Survey, 2011-2013




### Asthma Mortality

- Asthma deaths for Black people occur at a rate 3.2 times that of White people.
- Overall, asthma mortality rates in Michigan have almost decreased by half since 1990, but significant disparities still exist.
- For both Black people and White people in Michigan, the rate of asthma death is higher among adults than among children.

Data source: Michigan Resident Death Files, 2011-2013

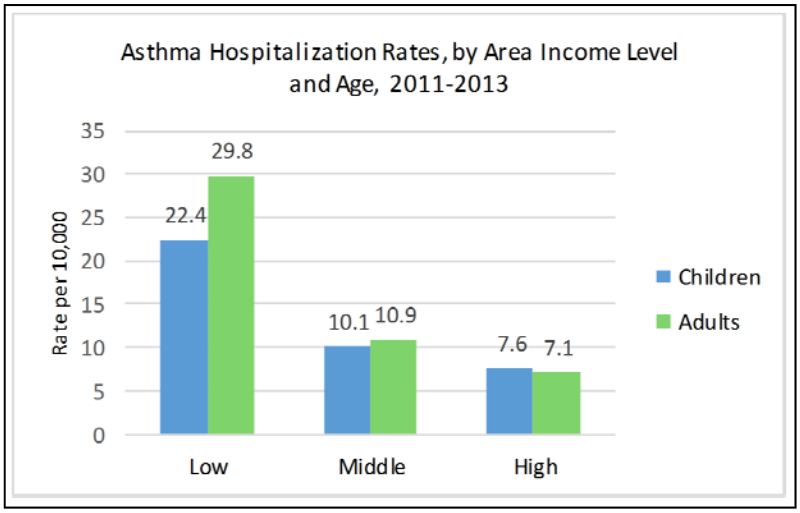


# Socioeconomic Disparities in Michigan's General Population

## Asthma Hospitalizations

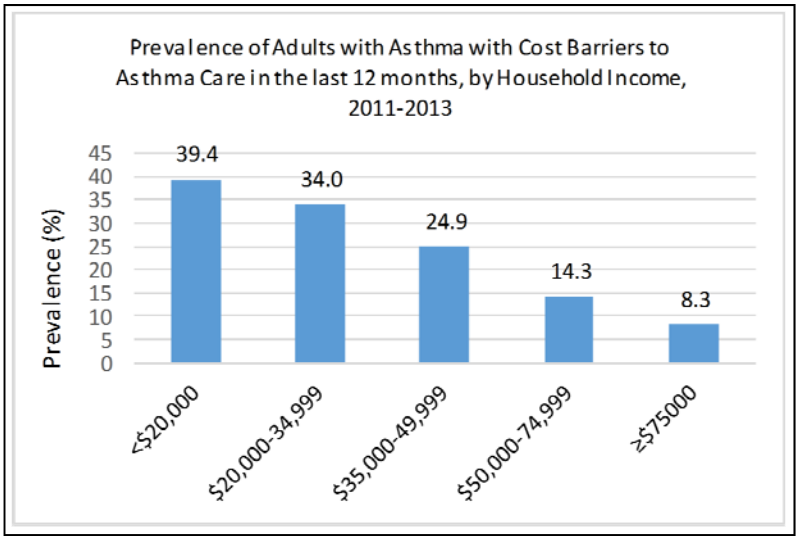
- Children living in low income areas are hospitalized for asthma 2.9 times as often as children living in high income areas.
- Adults living in low income areas are hospitalized for asthma 4.2 times as often as adults living in high income areas.
- The largest disparity between children and adult hospitalization rates is in low income areas, 22.4 and 29.8 per 10,000, respectively.

Data source: Michigan Inpatient Database, 2008-2010




## Cost Barriers to Asthma Care

- Barriers to asthma care include inability to access primary care, asthma specialist care, or asthma medication due to cost.
- The prevalence of adults with cost barriers to asthma care in low income households is almost five times that of adults in highest income households.
- Children in households earning less than $50,000 annually are four times as likely to experience cost barriers as children in households earning more than $50,000 annually.



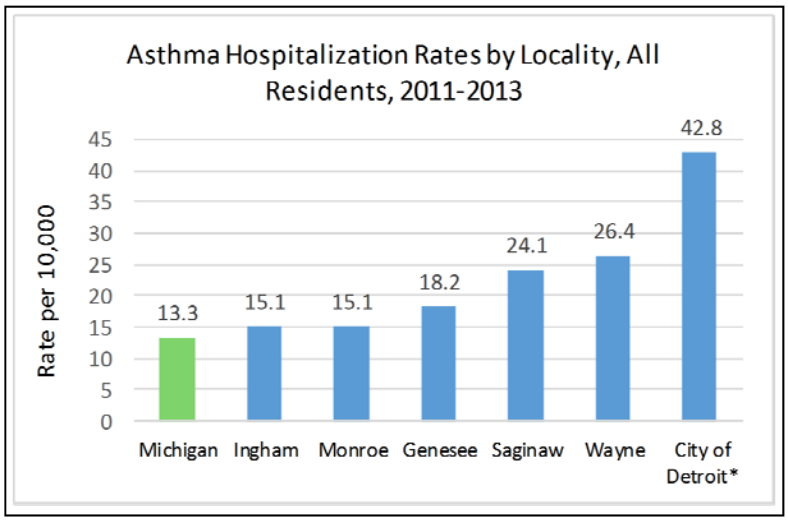

Data source: Michigan Asthma Call Back Survey, 2011-2013

# Geographic Disparities in Michigan's General Population

## Asthma Hospitalizations in Select Communities

- Ingham, Monroe, Genesee, Saginaw, and Wayne counties and the City of Detroit, have asthma hospitalization rates significantly higher than the state as a whole.
- Detroit's asthma hospitalization rate is over three times the rate for Michigan as a whole.

Data source: Michigan Inpatient Database, 2011-2013




*Rate calculated using the 2010 Census data. Age-adjusted to the 2000 standard population.

# Medicaid Population✧ of Michigan, Children, <18 Years

| | | Prevalence (%) of Persistent Asthma† | | Comment |
|---|---|---|---|---|
| | | 2008 | 2013 | |
| Sex | Male | 6.0 | 6.2 | The prevalence of persistent asthma is 38% higher for male children than female children. |
| | Female | 4.3 | 4.5 | |
| Race | White | 5.0 | 4.9 | The prevalence of persistent asthma is 33% higher for black children than white children. |
| | Black | 5.8 | 6.5 | |
| County | Urban | 5.2 | 5.4 | The prevalence of persistent asthma is similar for children in non-urban counties and children in urban counties. |
| | Non-Urban | 5.4 | 5.0 | |

| | | Asthma Emergency Department (ED) Visit Rate (per 10,000) | | Comment |
|---|---|---|---|---|
| | | 2008 | 2013 | |
| Sex | Male | 229.4 | 232.6 | Male children visit the ED at a rate 52% higher than female children for asthma. |
| | Female | 157.5 | 152.7 | |
| Race | White | 108.3 | 104.7 | Black children visit the ED for asthma at a rate 2.5 times that of White children. |
| | Black | 339.8 | 367.1 | |
| County | Urban | 215.1 | 212.8 | Children in urban counties visit the ED for asthma twice as often as children in non-urban counties. |
| | Non-Urban | 96.7 | 102.1 | |

| | | Asthma Hospitalization Rate (per 10,000) | | Comment |
|---|---|---|---|---|
| | | 2008 | 2013 | |
| Sex | Male | 38.3 | 23.7 | Male children are hospitalized for asthma at a rate 56% higher than female children. |
| | Female | 23.1 | 15.2 | |
| Race | White | 16.7 | 11.0 | Black children visit the ED for asthma at a rate 3.0 times that of White children. |
| | Black | 53.3 | 34.8 | |
| County | Urban | 34.2 | 21.7 | Children in urban counties are hospitalized for asthma at a rate 2.3 times that of children in non-urban counties. |
| | Non-Urban | 15.1 | 9.3 | |

✧Population restricted to those children continuously enrolled in Medicaid (11+ months) with full coverage and no other insurance.

† Persistent asthma is defined according to HEDIS® specifications: in the year prior to the prevalence measurement year having (1) ≥ 4 asthma medication dispensing events OR (2) ≥ 1 emergency department visits for asthma OR (3) ≥ 1 hospitalization for asthma OR (4) ≥ 4 outpatient visits for asthma and ≥ 2 asthma medication dispensing events. (National Committee for Quality Assurance. Use of Appropriate Medications for People with Asthma. *HEDIS® 2003, Volume 2: Technical Specifications*. Washington, DC; 2003.)

## NOTES

**Definitions:**

- An asthma hospitalization is defined as an inpatient hospitalization with a primary hospital discharge diagnosis of asthma, ICD-9-CM=493.XX. These data represent the number of inpatient hospitalizations for asthma, not the number of persons hospitalized for asthma.
- An asthma death is defined as the underlying cause of death being asthma, ICD-10=J45 or J46.
- An asthma emergency department (ED) visit is defined as an ED visit with a primary diagnosis of asthma, ICD-9-CM=493.XX. These data represent the number of ED visits for asthma, not the number of persons visiting the emergency department for asthma.
- The Medicaid population of children <18 is restricted to those children continuously enrolled in Medicaid (11+ months) with full medical and pharmaceutical coverage and no other insurance.
- Persistent asthma is defined according to HEDIS® specifications: having (1) ≥ 4 asthma medication dispensing events, OR (2) ≥ 1 emergency department visits for asthma, OR (3) ≥ 1 hospitalization for asthma, OR (4) ≥ 4 outpatient visits for asthma and ≥ 2 asthma medication dispensing events. (National Committee for Quality Assurance. Use of Appropriate Medications for People with Asthma. *HEDIS® 2003, Volume 2: Technical Specifications*. Washington, DC; 2003. )
- Income of area of residence is defined by the following: high income=top 20% of Michigan's zip code areas, as determined by median household income from Census 2010; Low income=bottom 20% of Michigan's zip code areas, as determined by median household income from Census 2010; all others are considered middle income.
- Urban counties are defined as those including a Metropolitan Statistical Area (MSA) per the U.S. Department of Commerce Census Bureau, Michigan Metropolitan Areas, Counties, and Central Cities. (http://www.census.gov/geo/www/mapGallery/stma99.pdf)

**Methods:**

- All rates and percentages are age-adjusted to the 2000 US standard population by the direct standardization method, with the exception of 'prevalence of two or more asthma emergency visits' and 'prevalence of cost barriers to asthma care.'
- Michigan hospitalization and mortality rates are calculated using yearly bridged–race population estimates provided by the National Vital Statistics System maintained by the Centers for Disease Control and Prevention.
- Detroit hospitalization rates and hospitalization rates by income of area of residence are calculated using zip code population estimates from the 2010 Census.

**Data Sources:**

- U.S. Census Bureau, Census 2010, Department of Commerce Economics and Statistics Administration
- Managed Care Production Encounters, Fee for Service Paid Claims, Medicaid Beneficiary Files, Data Warehouse, 2008-2013, Michigan Department of Health and Human Services
- Michigan Inpatient Database, 2011-2013, Division of Vital Records and Health Statistics, Michigan Department of Health and Human Services
- Michigan Resident Death File, 2011-2013, Division of Vital Records and Health Statistics, Michigan Department of Health and Human Services
- Michigan Population Estimates, 2011-2013, Division of Vital Records and Health Statistics, Michigan Department of Health and Human Services
- Michigan Asthma Call Back Survey, 2011-2013, Life Course Epidemiology and Genomics Division, Michigan Department of Health and Human Services

## FOR MORE INFORMATION

Visit www.michigan.gov/asthma to view information on asthma, and to see additional data and reports.

## SUGGESTED CITATION:

Wisnieski L, Strane D, Anderson B, Wahl R, and Garcia E. Disparities in Michigan's Asthma Burden. Lansing, Michigan: Bureau of Disease Control, Prevention, and Epidemiology, Michigan Department of Health and Human Services, 2016.

MDHHS
Michigan Department of Health & Human Services
RICK SNYDER, GOVERNOR | NICK LYON, DIRECTOR

This publication was supported by the Grant or Cooperative Agreement Number U59 EH 000525, funded by the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention or the Department of Health and Human Services.