

# Asthma Disparities in Ohio, 2019

## Key Findings

In 2017, almost one in eight adults in Ohio (13.6 percent) had been told at some point in their lifetime that they had asthma. Close to one in ten Ohio adults (9.9 percent) reported current asthma. Disparities in current asthma prevalence can be seen in both race and sex:

1. Black adults and children have significantly higher asthma prevalence than their white counterparts. For both black adults and children, higher prevalence of asthma may have contributed to inpatient hospital and emergency department visit rates that were over twice the white rates (Behavioral Risk Factor Surveillance System, Year 2017; Ohio Hospital Association Clinical-Financial Data Set, Years 2013-2016).
2. Mortality rates from asthma were also at least twice as high for black Ohioans compared to white Ohioans for both adults and children (Ohio Department of Health, Center for Vital and Health Statistics, Deaths 2010-2017).
3. By sex, adult women had significantly higher asthma prevalence than men, with higher emergency department visit, inpatient hospital visit and death rates from asthma (Behavioral Risk Factor Surveillance System, Year 2017; Ohio Hospital Association Clinical-Financial Data Set, Years 2013-2016; Ohio Department of Health, Center for Vital and Health Statistics, Deaths 2010-2017).

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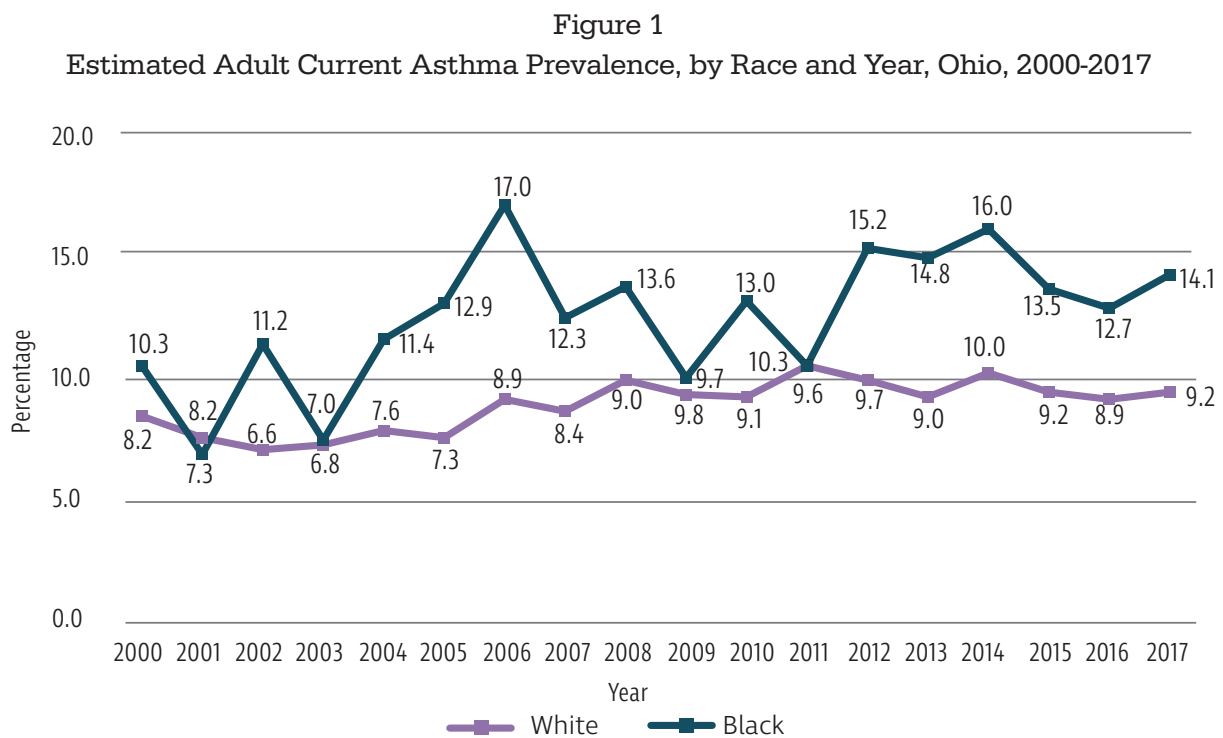
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Department  
of Health

## Nearly 10 percent of Ohio adults reported current asthma, and the rate significantly differed by race.

- In 2017, over 14.0 percent of black adults in Ohio reported having current asthma, significantly more than white adults in Ohio, at 9.2 percent.
- For most years since 2000, black Ohio residents are significantly more likely to report current asthma than white residents.
- In 2017, black children had over twice the asthma prevalence rate of white children (21.6 percent vs 9.6 percent, respectively).

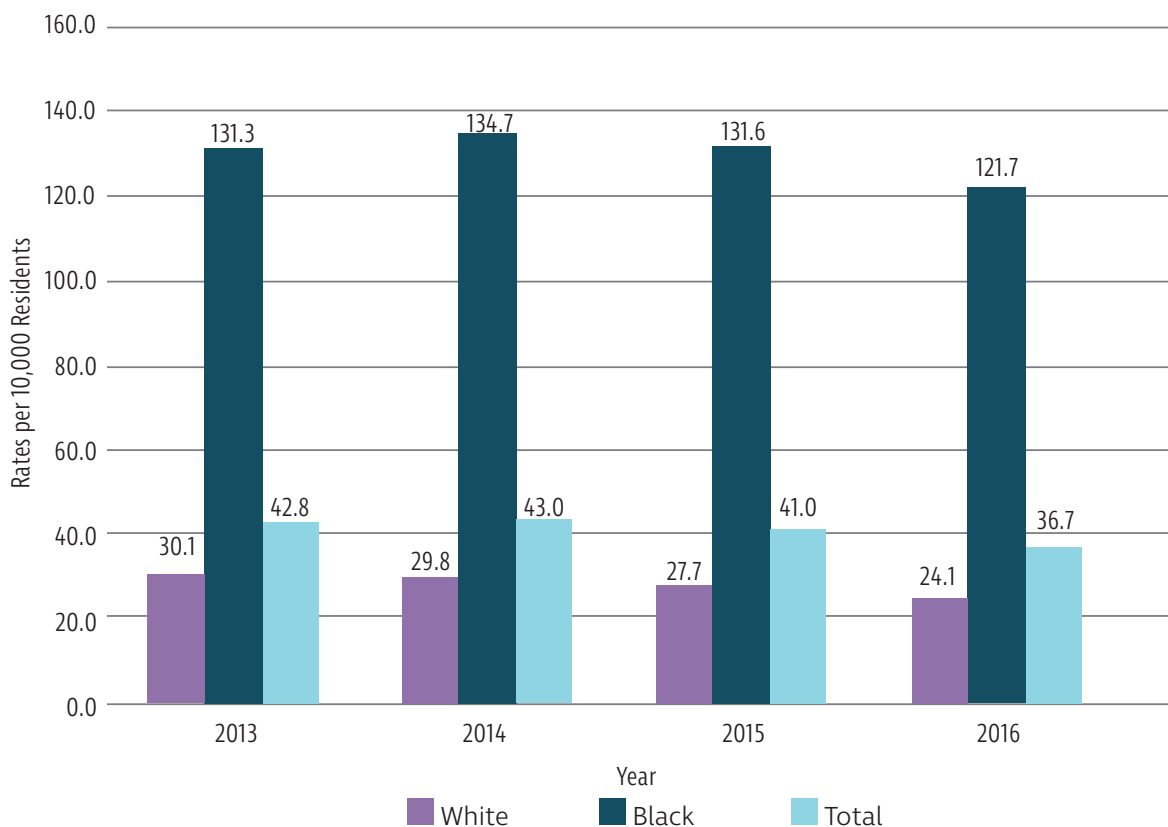


Source: Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Years 2000-2017.

### Race disparities exist in emergency department (ED) visit rates for black and white Ohioans, with the black residents' rate approximately five times as high as white residents.

- In 2017, black residents had an asthma ED visit rate of 121.7 per 10,000 residents, over five times higher than white residents at 24.1 per 10,000 residents.
- While the definition of an asthma ED visit for asthma changed on October 1, 2015 based on the transition from ICD-9 to ICD-10 coding, the difference between black and white rates remains consistent: black residents have approximately five times the rate of white residents from 2013 through 2016.

Figure 2  
ED Visit Rates per 10,000 Residents for Adults with  
a Primary Diagnosis of Asthma, by Race, 2013-2016



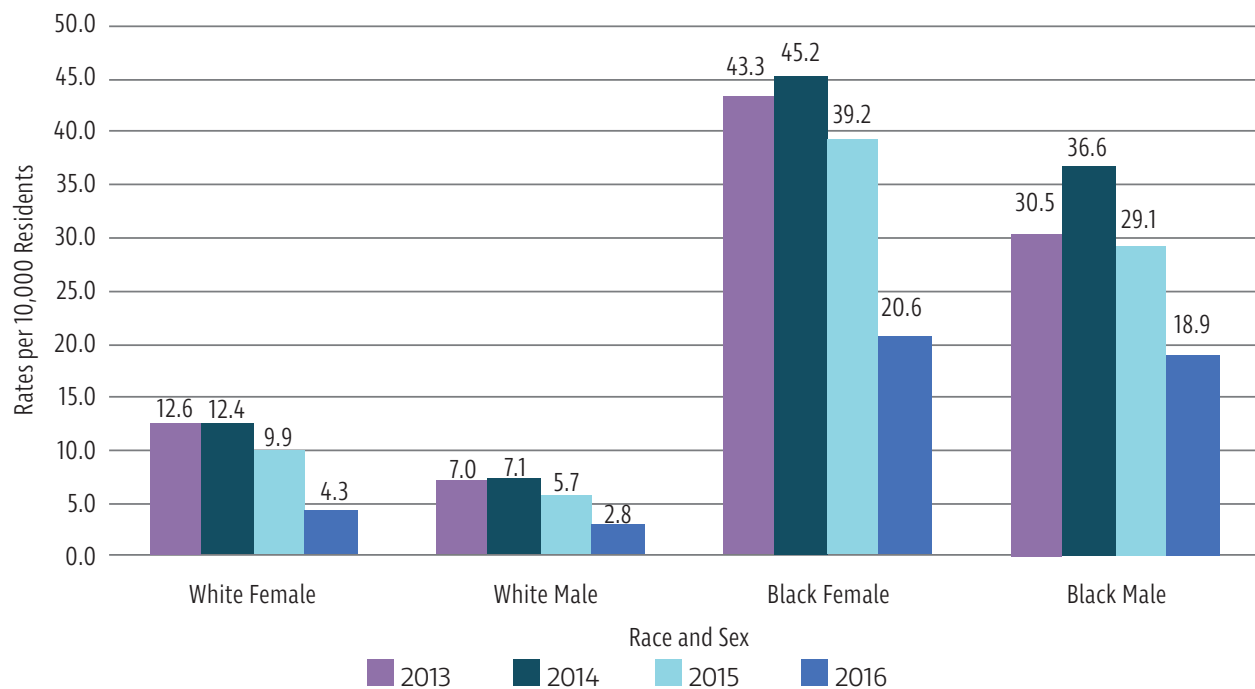
Source: Ohio Hospital Association Clinical-Financial Data Set, Years 2013-2016.

## Race and sex differences exist in inpatient hospital admissions for black and white Ohioans, exceeding a six-fold difference.

- While the definition of an inpatient hospital visit for asthma changed on October 1, 2015 based on the transition from ICD-9 to ICD-10 coding, the difference between male and female rates remains consistent: females have consistently higher rates than males from 2013 through 2016.
- Compared to white males, black females regularly have over six times the rate of inpatient hospital visits for asthma. In 2016, the rate for black females was 20.6 per 10,000 residents compared to 2.8 for white males.

Figure 3

Inpatient Hospital Rates per 10,000 Residents for Patients with a Primary Diagnosis of Asthma, by Race and Sex, 2013-2016

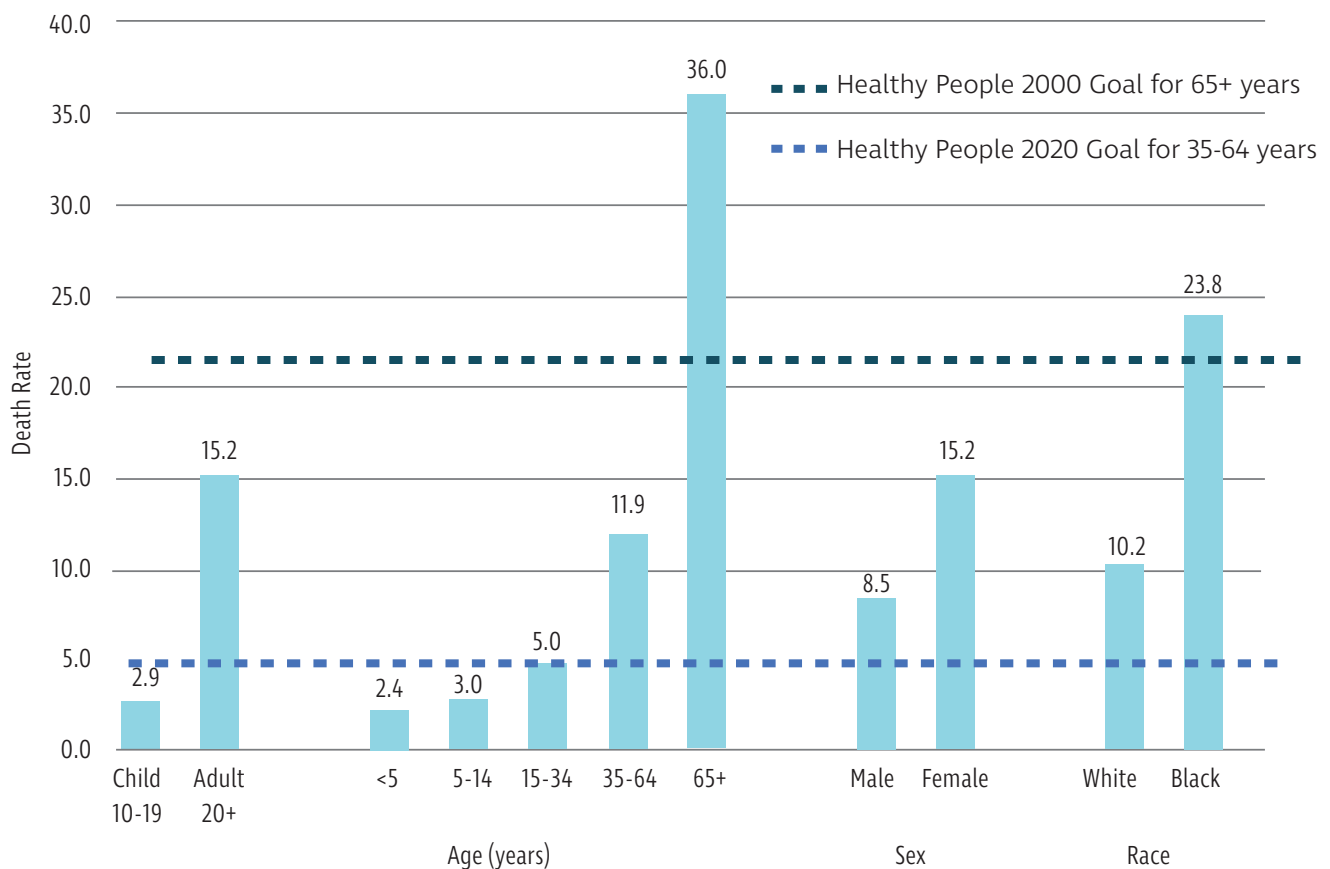


Source: Ohio Hospital Association Clinical-Financial Data Set, Years 2013-2016.

## Black death rates from asthma during 2010-2017 were over twice as high as white death rates.

- Asthma deaths are relatively rare, but preventable with proper asthma management. From 1990-2017, Ohio averages about 135 asthma deaths per year.
- Blacks are more likely to die from asthma than whites. Across the 2010 to 2017 time period, black Ohioans were more than twice as likely to die due to asthma compared with white Ohioans (23.8 and 10.2 per million, respectively).

**Figure 4**  
Asthma Death Rates by Age, Sex and Race: Ohio 2010-17 Annual Averages



Sources: Ohio Department of Health, Center for Vital and Health Statistics, Deaths 2010-2017; U.S. Census Bureau, Population Estimates Program and National Center for Health Statistics, Bridged-Race Population Estimates, 2010-2017.

## The Ohio death rate from asthma was nearly twice as high for females from 2010-2017.

Asthma deaths are twice as high for females compared to males. During 2010-2017, females had a higher average annual asthma death rate (15.2 per million) compared with males (8.5 per million).

From 2000 through 2017, current asthma prevalence rates for women were consistently higher than men.

- In 2017, women have significantly higher asthma prevalence, with 11.0 percent reporting current asthma, compared to 6.1 percent of men.

Figure 5  
Estimated Adult Current Asthma Prevalence, by Sex and Year, Ohio, 2000-2017



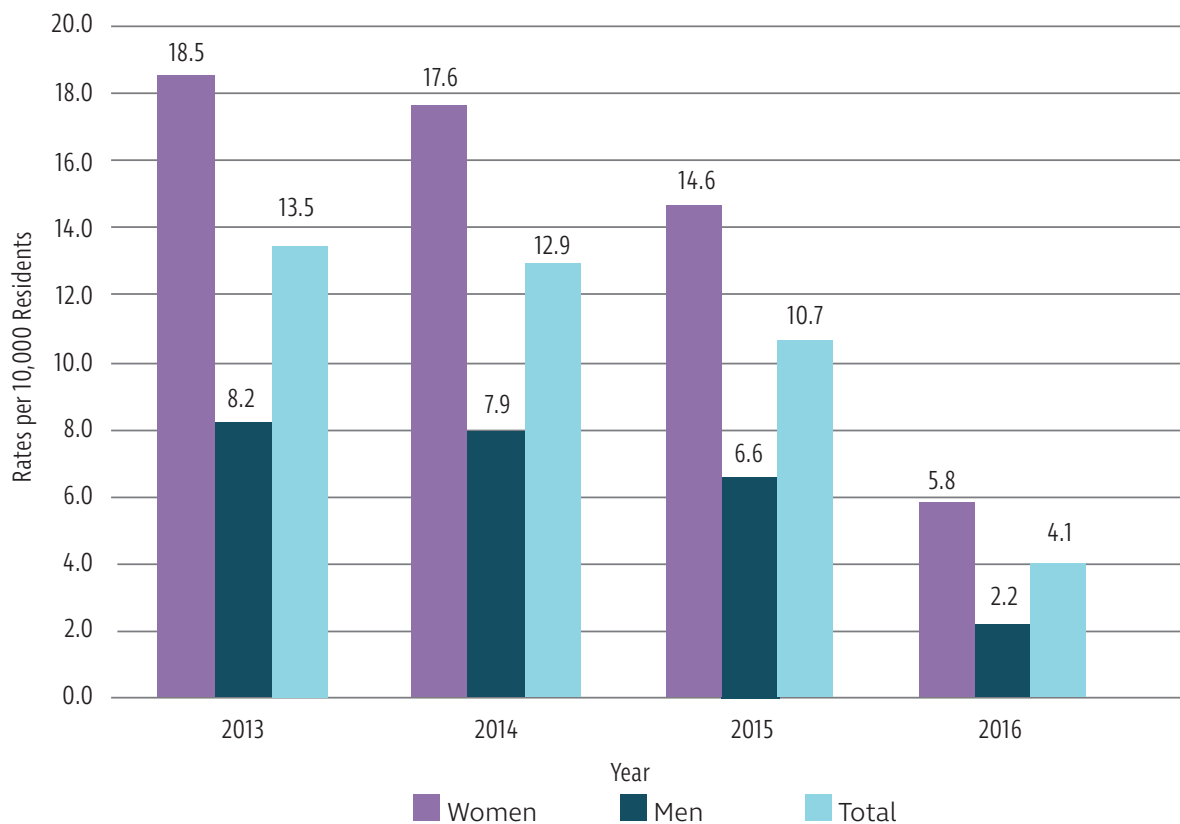
Source: Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Years 2000-2017.

### Adult women had over twice the rate of inpatient hospital visit rates for asthma compared to men.

- In 2017, women had an inpatient hospital visit rate of 5.8 per 10,000 residents compared to 2.2 per 10,000 residents for men.
- While the definition of an inpatient hospital visit for asthma changed on October 1, 2015 based on the transition from ICD-9 to ICD-10 coding, the difference between men's and women's rates remains consistent: women have over twice the rate of men from 2013 through 2016.

Figure 6

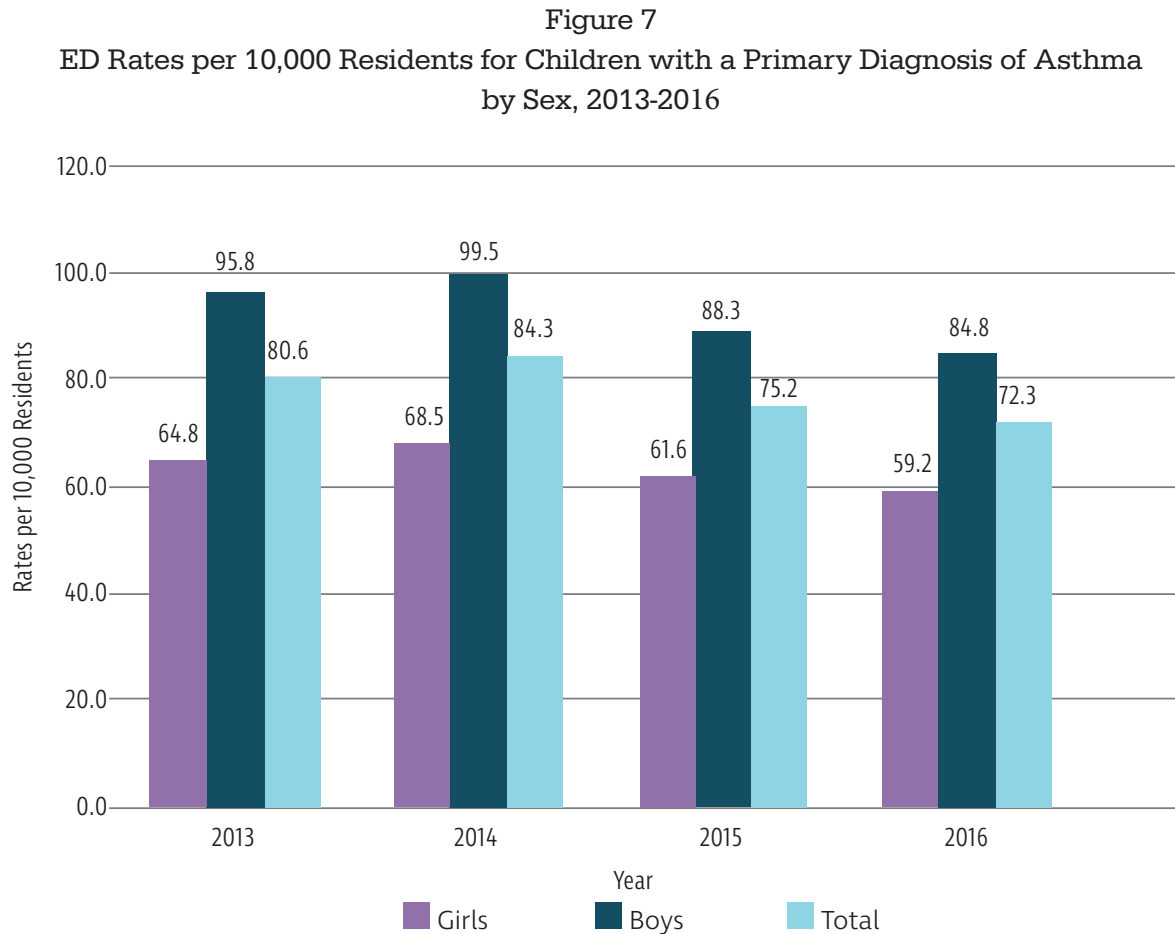
Inpatient Hospital Visit Rates per 10,000 Residents for Adults with a Primary Diagnosis of Asthma, by Sex, 2013-2016



Source: Ohio Hospital Association Clinical-Financial Data Set, Years 2013-2016.

### Boys had significantly higher ED hospital visit rates than girls from 2013 through 2016.

- In 2016, boys had an ED visit rate of 84.8 per 10,000 residents compared to 59.2 per 10,000 residents for girls.
- While the definition of an emergency department visit for asthma changed on October 1, 2015 based on the transition from ICD-9 to ICD-10 coding, the difference between boys' and girls' rates remains consistent: boys have a significantly higher rate of ED visits from 2013 through 2016.



Source: Ohio Hospital Association Clinical-Financial Data Set, Years 2013-2016.



### Black children had significantly higher ED hospital visit rates than white children from 2013 through 2016.

- In 2016, black children had an ED visit rate of 175.9 per 10,000 residents compared to 40.9 per 10,000 residents for white children.
- While the definition of an emergency department visit for asthma changed on October 1, 2015 based on the transition from ICD-9 to ICD-10 coding, the difference between ED visits rates for black and white children remains consistent: black children have a significantly higher rate of ED visits from 2013 through 2016.

**Figure 8**  
**ED Rates per 10,000 Residents for Children with a Primary Diagnosis of Asthma, by Race, 2013-2016**



Source: Ohio Hospital Association Clinical-Financial Data Set, Years 2013-2016.

### Summary

Significant differences in asthma prevalence and adverse health outcomes have persisted between black and white residents of Ohio for close to two decades. From 2000-2017, black residents have been significantly more likely than white residents to report current asthma. From 2013 to 2016, asthma emergency department rates and inpatient hospital rates for black adults were both over four times higher than white rates. During this time, asthma emergency department rates for black children were four times higher than white rates. When race and sex are considered together, black females have an inpatient hospital rate six times that of white males.

From 2010-2017, the asthma death rate for black residents was over twice the rate of asthma deaths compared to white residents.

Significant differences in asthma prevalence and adverse health outcomes have persisted between adult women and men for close to two decades. From 2000-2017, adult women have been significantly more likely than men to report current asthma. From 2013 to 2016, adult women have ED and inpatient hospital rates for asthma that are nearly twice that of men. From 2013 to 2016, boys had significantly higher emergency department rates for asthma compared to girls.

While asthma death rates have declined, females still experience twice the rate of asthma deaths compared to males.

### Definitions

In 1984, the Centers for Disease Control and Prevention (CDC) established the Behavioral Risk Factor Surveillance System (BRFSS). BRFSS is the nation's largest health survey that collects state-level data about U.S. residents regarding their health-related risk behaviors and events, chronic health conditions, and use of preventive services. The Ohio BRFSS is a major source of state-based health risk behavior data related to chronic disease prevalence.

**Lifetime Prevalence:** Estimated number of adult (i.e., 18 and older) Ohioans who responded, "yes" to the BRFSS question: "Have you ever been told by a doctor that you have asthma?"

**Current Prevalence:** Estimated number of adult (i.e., 18 and older) Ohioans who responded, "yes" to the BRFSS question: "Do you still have asthma?"

**Asthma Death:** deaths with International Classification of Diseases (ICD)-10 code J45-J46 as the underlying cause of death among residents during a calendar year.

**Inpatient Hospitalizations:** Inpatient hospitalizations with a primary diagnosis of International Classification of Diseases (ICD)-10-CM code J45 among residents during a calendar year.

**ED Visit:** ED Visits with a primary diagnosis of International Classification of Diseases (ICD)-10-CM code J45 among residents during a calendar year.

### Notes

#### Changes from ICD-9 to ICD-10

The International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10) is a morbidity classification published by the United States for classifying diagnoses and reason for visits in all health care settings. This document is the statistical classification of disease published by the World Health Organization (WHO). Deaths have been coded using these asthma diagnostic codes (ICD-10 Codes: J45, J46) as the underlying causes of death since 1999. However, a clinical modification of the classification for morbidity purposes has been developed by the National Center for Health Statistics (NCHS), the federal agency responsible for use of the International Statistical Classification of Diseases and Related Health Problems, 10th revision (ICD-10) in the United States (National Center for Health Statistics, 2017).

The coding and rule changes between ICD-10 and ICD-9 have resulted in discontinuities in the measurement of asthma-related morbidity and healthcare utilization outcomes. The transition from ICD-9 to ICD-10 occurred on October 1, 2015. In 2015, asthma hospitalization and emergency department visits data for the first three quarters of the year were coded as ICD-9- (493.0-493.9) and the fourth quarter was coded as ICD-10 (J45.0-J45.998). In the future, this coding change will be noted in trend analysis. By 2016, the transition was complete, and all related data was coded using ICD-10 codes J45.0-J45.998.

The change in definition using ICD-9 versus ICD-10 appear to have resulted in a decrease in emergency department visits by approximately 15 percent, and asthma hospitalizations by approximately 60 percent. The number of ED visits from 2014-2016 decreased from 62,281 to 52,955 and the rate decreased from 53.6 to 45.6 visits per 10,000 residents. The number of inpatient visits decreased from 16,219 to 6,691, resulting in a rate that decreased from 14 to 5.7 visits per 10,000 residents.

#### BRFSS Data Weighting Procedures

There are changes to the BRFSS data weighting procedures that began with 2011 survey. Weighting is a statistical tool that adjusts the sample to reflect probabilities of selection and participation as well as to ensure the demographic makeup of the sample reflects known distributions among the population. This shift in data weighting procedures helps to reduce nonresponse error. Because of this shift in weighting, data from 2011 and later are not directly comparable to data from earlier BRFSS surveys. The Centers for Disease Control and Prevention recommends that the 2011 estimates should constitute the beginning of a new trend line.

### References

Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System Comparability of Data BRFSS 2012, July 15, 2013 [https://www.cdc.gov/brfss/annual\\_data/2012/pdf/compare\\_2012.pdf](https://www.cdc.gov/brfss/annual_data/2012/pdf/compare_2012.pdf) Accessed January 18, 2019.

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