

*Florida Asthma Prevention and Control Program*

## Adult Asthma in Florida, 2000 - 2010



Florida Department of Health  
Division of Environmental Health  
Bureau of Environmental Public Health Medicine  
Produced under: Centers for Disease Control and Prevention (CDC)  
Cooperative Agreement: 5U59EH000523-03

## TABLE OF CONTENTS

Glossary of Terms	iii
List of Tables	iv
Life of Figures	iv
I. Introduction	5
II. Burden of Asthma among Florida’s Adults	8
III. Risk Factors and Health Effects	22
IV. Asthma Self-Management and Education	27
V. Conclusion	28
Appendix A: Table of Lifetime and Current Prevalence of Asthma by County	29

## Glossary of Terms

- **Adult Asthma Call Back Survey (ACBS):** Respondents of the Behavioral Risk Factor Surveillance System with lifetime asthma who agree to be called back for additional questions make up the sample of the ACBS. The ACBS is an in-depth survey about asthma.
- **Behavioral Risk Factor Surveillance System (BRFSS):** An annual telephone based survey of a random representative sample of Florida adults ages 18 and older.
- **Confidence Interval (CI):** A confidence interval provides an estimated range of values which is likely to include an unknown population parameter of interest.
- **Current Asthma Attacks:** Those individuals with lifetime asthma who have had asthma symptoms during the past year and have had one or more asthma attacks in the past year. Symptoms of asthma include coughing, wheezing, shortness of breath, chest tightness or phlegm production in the absence of a cold or respiratory infection. Asthma attacks, sometimes called episodes, refer to periods of worsening asthma symptoms that limit activity more than usual or require medical care.
- **Current Asthma:** Adults with lifetime asthma who report still having asthma
- **Current Cigarette Use:** Adults who have smoked 100 or more cigarettes in their lifetime and currently smoke cigarettes some days or everyday
- **Lifetime Asthma:** Adults who have ever been told by a doctor, nurse, or other health professional that they have asthma
- **Never Had Asthma:** Adults who have never been told by a doctor, nurse, or other health professional that they have asthma
- **Normal Weight:** Adults having a BMI less than 25
- **Obesity:** Adults having a BMI greater than or equal to 30
- **Overweight:** Adults having a BMI greater than or equal to 25 and less than 30
- **Poor Mental Health:** Adults who experienced 20 or more days during the past 30 in which their mental health (including stress, depression, and problems with emotions) was not good
- **Poor Physical Health:** Adults who experienced 20 or more days during the past 30 in which their physical health (including physical illness and injury) was not good

## List of Tables

Table 1. Count of Asthma Related ED Visits by Age Group, Ages 18 +, AHCA 2009	14
Table 2. Counts of Asthma Hospitalizations by Age Group, Ages 18 +, AHCA 2009	17
Table 3. Counts of Asthma Deaths by Age Group, Ages 18 +, VS 2010	19

## List of Figures

Figure 1. Lifetime Prevalence of Asthma, BRFSS 2000—2010	8
Figure 2. Lifetime Prevalence of Asthma, by Gender, and Race/Ethnicity, BRFSS 2010	9
Figure 3. Lifetime Prevalence of Asthma, by Household Income, BRFSS 2010	9
Figure 4. Lifetime Prevalence of Asthma by County, BRFSS 2010	10
Figure 5. Current Prevalence of Asthma, BRFSS 2000—2010	11
Figure 6. Current Prevalence of Asthma, by Gender, and Race/Ethnicity, BRFSS 2010	11
Figure 7. Current Prevalence of Asthma, by Household Income, BRFSS 2010	12
Figure 8. Current Prevalence of Asthma, by County, BRFSS 2010	13
Figure 9. Asthma Attack or Episode in Past Year, ACBS 2007—2009	13
Figure 10. Asthma ED Visit Rates, Ages 18 +, by Age Group, AHCA 2009	15
Figure 11. Asthma ED Visit Rates, Ages 18 +, by Gender, Race, and Ethnicity, AHCA 2009	15
Figure 12. Asthma ED Visit Rates, Ages 18 +, by County, AHCA 2009	16
Figure 13. Asthma Hospitalization Rates, Ages 18 +, by Age Group, AHCA 2009	17
Figure 14. Asthma Hospitalization Rates, Ages 18 +, by Gender, Race, and Ethnicity AHCA 2009	18
Figure 15. Asthma Hospitalization Rates, Ages 18 +, by County, AHCA 2009	18
Figure 16. Asthma Death Rates, Ages 18 +, by Age Group, VS 2010	20
Figure 17. Asthma Death Rates, Ages 18 +, by Gender, Race, and Ethnicity, VS 2010	20
Figure 18. Current Smoking Prevalence, by Asthma Status, BRFSS 2010	22
Figure 19. Someone Smoked Inside the Home, ACBS 2007- 2009	23
Figure 20. Overweight and Obesity, by Asthma Status, BRFSS 2010	23
Figure 21. Received a Seasonal Flu Shot in the Past Year by Asthma Status, BRFSS 2010	24
Figure 22. Poor Mental and Poor Physical Health, by Asthma Status, BRFSS 2010	24
Figure 23. No Insurance Coverage, Adults Ages 18-64, by Asthma Status, BRFSS 2010	25
Figure 24. Could Not See Doctor during Past Year Because of Cost, by Asthma Status, BRFSS 2010	25

## **I. INTRODUCTION**

### **ABOUT ASTHMA**

Asthma is a chronic lung disease characterized by inflammation of the airways and recurring attacks of symptoms such as wheezing, coughing, and chest tightness. Individuals with asthma are sensitive to various allergens and irritants in the environment, such as tobacco smoke, fragrances, dust mites, animal dander, pollen, mold, and diesel emissions, which cause airways to become inflamed. There is no cure for asthma, but it can be controlled through proper clinical treatment and environmental management.

Asthma rates have increased dramatically over the last thirty years in all populations in the United States. Asthma is the third leading cause of preventable hospitalizations. In addition, asthma incurs high costs, in terms of the costs of care, lost workdays and productivity, and lower quality of life for persons with asthma and their families. For these reasons, asthma is a public health priority for the State of Florida.

### **Asthma in Florida Adults**

Approximately 1 out of 12 adults in Florida currently have asthma. Poorly managed asthma results in unnecessary visits to the emergency department, hospitalizations, and in the worst cases, asthma can be fatal.

In Florida in 2009, there were a total of 23,063 emergency department (ED) visits and 47,212 hospitalizations with asthma listed as the primary diagnosis among adults aged 18 years and older. The total charges for these visits combined were approximately \$719.6 million dollars. Approximately 36% of asthma ED visits and 60% of asthma hospitalizations were billed to Medicaid/Medicare. These ED visits and hospitalizations and the resulting charges are largely avoidable when asthma is properly managed.

According to the 2010 Behavioral Risk Factor Surveillance System (BRFSS), 13.8% of adults in the United States and in Florida have at some point during their life time been told by a doctor, nurse, or other health professional that they have asthma. In Florida, approximately 60% of these individuals still report having asthma. About a quarter of the adults in Florida with asthma (25.8%) were unable to work or carry out usual activities because of their asthma on one or more days during the past 12 months

### **Asthma is a Community Health Problem**

Poorly managed asthma can greatly hinder an adult's quality of life. The disease impacts physical health, mental health, and productivity. Individuals with asthma need proper treatment, education, and self-management skills to achieve optimal health outcomes.

The Florida Department of Health, the Florida Asthma Coalition, members of local asthma coalitions in Jacksonville, Tampa, South Florida, and St. Petersburg, and other partners are committed to reducing asthma's impact on Floridians. Strategies to improve asthma outcomes seek to engage the many organizations and individuals who care for or provide support to individuals with asthma, including family members, schools, workplaces, hospitals, EDs, primary care providers, specialists, and pharmacies.

## **PURPOSE AND ORGANIZATION OF THIS REPORT**

This report offers a comprehensive view of trends in asthma prevalence, disease impact, risk factors, health effects, self-management, and education amongst adults. The purpose of this report is to provide key stakeholders, those who are in positions to make an impact in asthma prevention and control, with the information needed to bring about positive changes. Key stakeholders include local and state public health professionals, health care practitioners, individuals with asthma and their families, program administrators, the general public, policy makers, and the media.

The report first presents the burden of asthma among Florida adults, including lifetime and current asthma prevalence. These terms, along with others, are defined in the glossary of this document (Appendix A). The burden of asthma is further explored through the examination of the percentage of individuals experiencing recent asthma attacks and rates of the often preventable health related outcomes including ED visits, hospitalizations, and deaths. The next section covers asthma risk factors and health effects, including smoking behaviors, weight status, and physical and mental health indicators. The final section will examine asthma care, management, and education. When feasible, comparisons will be made to national statistics and between subpopulations such as gender, age, race/ethnicity, and income levels.

### **Methods**

This report includes data from a variety of sources in Florida. These sources are categorized as Mandatory Reportable Health Data and Population-Based Survey Data. Each category provides a different perspective of the burden of asthma in Florida. Analytical methods used for both are discussed below.

**Mandatory Reportable Health Data:** The ED visit and hospitalization data are derived from the Agency for Health Care Administration (AHCA). In this report, only cases with asthma listed as the primary diagnosis (determined by ICD-9 code 493) were included. The mortality data are derived from the Florida Department of Health, Bureau of Vital Statistics (VS), and only include cases with asthma listed as the underlying cause of death (determined by ICD-10 codes J45-J46). Rates are calculated using population estimates provided by the Florida Legislature, Office of Economic and Demographic Research. The Mandatory Reportable Health Data were analyzed by age group, race, gender, ethnicity, and geographic locality. Please note that race and ethnicity were analyzed independent of each other.

**Population-Based Survey Data:** Several population-based surveys provide the prevalence of asthma among Florida's adults, as well as associated risk behaviors. The survey data included in this report use complex sampling and surveying methodology and all data have been weighted to be representative of the state and/or county populations. Weighting is a procedure that adjusts for the chance of an adult being selected to complete the survey and for discrepancies between the adults who completed the survey and the overall population of Florida adults. The data were weighted to the respondent's probability of selection by county, as well as age and gender, based on 2010 population estimates.

The Behavioral Risk Factor Surveillance System (BRFSS) is a telephone-based survey that uses a random-digit dial sampling methodology to select households across the state and has been conducted annually in Florida since 1986. The purpose of this survey is to gather information

regarding personal health behaviors, selected medical conditions, and the prevalence of preventive health care practices among Florida adults. The 2010 BRFSS marks the third time the survey has been conducted at the county-level. Over 35,000 surveys were completed statewide in the 2010 calendar year, with a target sample size of 500 completed surveys in each of Florida's 67 counties. The BRFSS data were analyzed by age group, gender, combined race and ethnicity, household income level, and geographic locality.

In this report, definitions of terms are based on the actual questions from the BRFSS. Lifetime prevalence is defined as adults who respond that they have been told that they have asthma by a doctor, nurse, or health professional at some point during their lifetime. Current asthma prevalence is defined as those with lifetime asthma who respond that they still have asthma. Current asthma attacks are defined as those individuals with lifetime asthma who have had asthma symptoms during the past year and have had one or more asthma attacks in the past year. Symptoms of asthma include coughing, wheezing, shortness of breath, chest tightness or phlegm production in the absence of a cold or respiratory infection. Asthma attacks, sometimes called episodes, refer to periods of worsening asthma symptoms that limit activity more than usual or require medical care.

BRFSS respondents with lifetime asthma who agreed to be called back for future studies made up the sampling frame for the Asthma Call Back Survey (ACBS). The ACBS is conducted approximately two weeks after the BRFSS. The ACBS is a product of CDC's National Asthma Control Program (NACP) and adds considerable depth to the existing body of asthma data. The survey addresses critical questions surrounding the health and experiences of persons with asthma and provides data at the state level. The data are critical for planning and evaluating efforts to reduce the health burden from this disease.

The ACBS was first administered in Florida in 2007. In 2009, the ACBS was completed by approximately 600 adults in Florida with lifetime asthma. Because of this small sample size, more detailed analyses such as comparing sub-populations or assessing the co-occurrence with other diseases or behaviors are limited. Despite this limitation, it is still a very valuable data source as the survey collects a series of asthma specific questions from the target population that are not otherwise available.

### **Determination of Statistical Significance**

A 95% confidence interval is a range in which the "true" rate will fall 95% of the time. In this report, determination of statistical significance for the population-based survey data is based on non-overlapping 95% confidence intervals (CIs) when comparing two population estimates such as asthma rates in males and females. In certain situations when the overlap of 95% CIs were close, the square root of the sum of squares of the standard error was calculated and added and subtracted to the difference of the means to generate a combined CI of both population estimates to determine significance. If the new CI did not contain "0", then the two population estimates were determined to be statistically different. Differences labeled "significant" are statistically significant at the 95% CI level unless otherwise noted.

## II. BURDEN OF ASTHMA AMONG FLORIDA ADULTS

The following section discusses the burden of asthma among Florida adults, including lifetime and current asthma prevalence. The burden of asthma is further explored through the examination of individuals experiencing recent asthma attacks and rates of the often preventable health related outcomes including ED visits, hospitalizations, and mortality data.

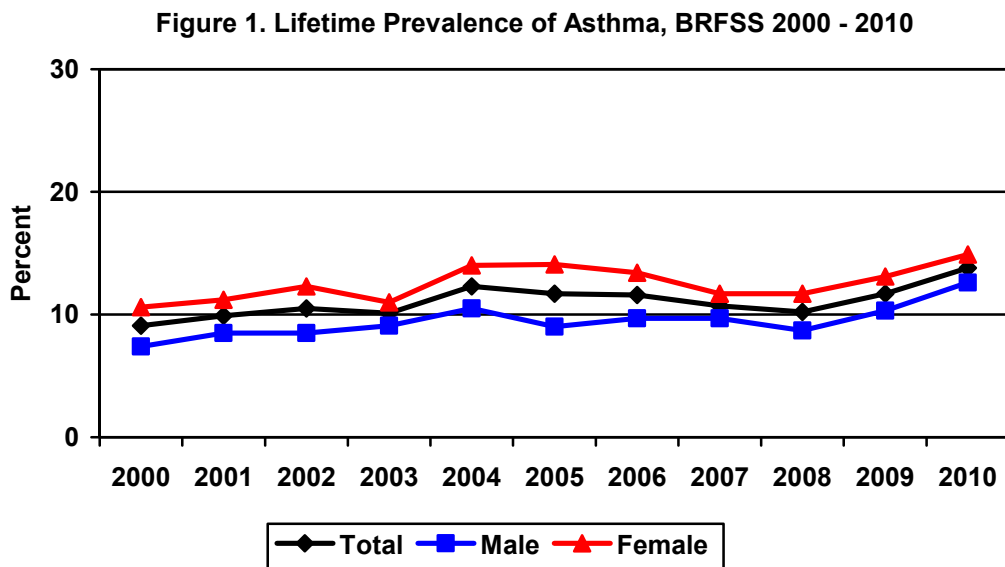
### PREVALENCE

As discussed previously, lifetime prevalence of asthma is defined as those who have been told that they have asthma by a doctor, nurse, or health professional at some point during their lifetime. Current asthma prevalence is defined as those with lifetime asthma who respond that they still have asthma. Current asthma attacks are defined as those individuals with lifetime asthma who have had asthma symptoms during the past year and have had one or more asthma attacks in the past year. Symptoms of asthma include coughing, wheezing, shortness of breath, chest tightness or phlegm production in the absence of a cold or respiratory infection. Asthma attacks, sometimes called episodes, refer to periods of worsening asthma symptoms that limit activity more than usual or requires medical care.

### LIFETIME PREVALENCE

#### Lifetime Asthma Prevalence: Trends over Time by Gender

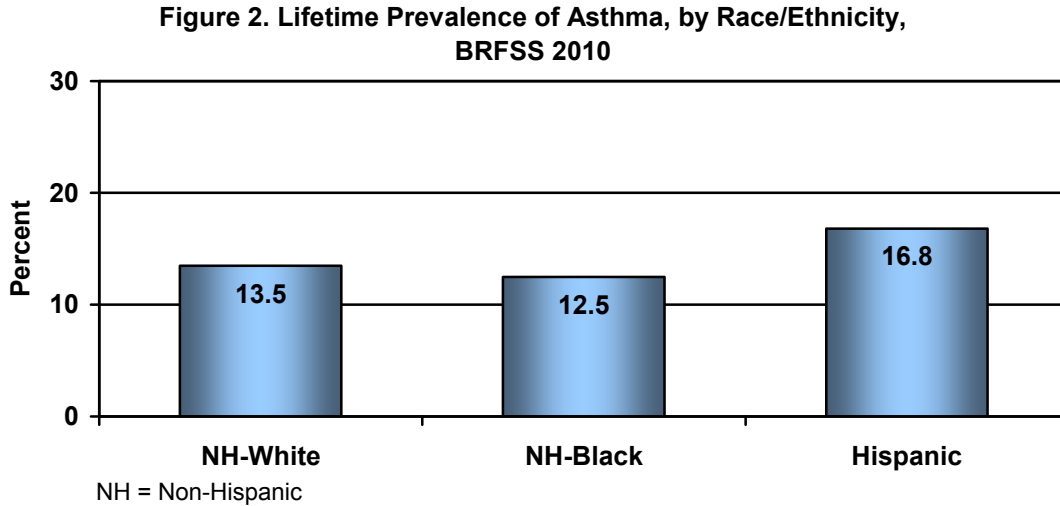
The BRFSS data from 2010 indicate that 13.8% of Florida adults have been diagnosed with asthma by a doctor or nurse at some point during their lifetime. The prevalence of lifetime asthma has increased significantly by 51.6% from 2000 (9.1%) to 2010 (13.8%) (Figure 1). Females have consistently had a higher prevalence than males, although this difference was not always statistically different.





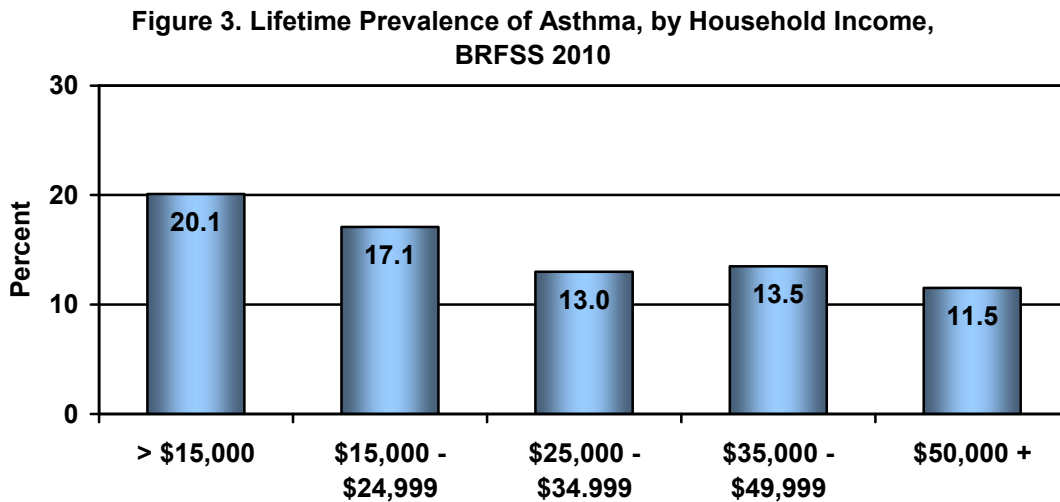
**Lifetime Asthma Prevalence: 2010 by Race/Ethnicity**

Looking at the racial/ethnic differences in 2010, Hispanics (16.8%) had the highest prevalence of lifetime asthma, but disease rates in this group did not differ significantly from non-Hispanic blacks (12.5%) or non-Hispanic whites (13.5%) (Figure 2).



**Lifetime Asthma Prevalence: 2010 by Household Income**

Floridians with the lowest household incomes had the highest prevalence of lifetime asthma. Approximately one out of five individuals (20.1%), living in a household with an income less than \$15,000, have ever been told by a doctor or nurse that they have asthma (Figure 3). This prevalence is significantly higher than Floridians with an income greater than \$25,000.



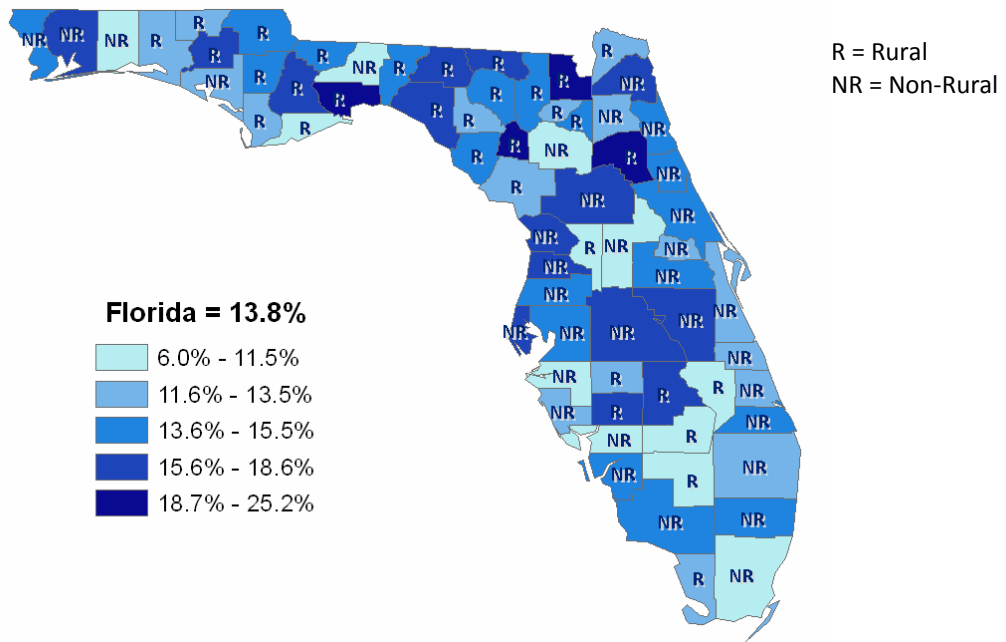
**Lifetime Asthma Prevalence: 2010 by County**

In 2010, approximately half of Florida’s counties (36) had a higher prevalence of lifetime asthma than the state prevalence, although none of these differences were statistically different from the state. There were three counties, Charlotte, Glades, and Okaloosa, which had a significantly lower prevalence of lifetime asthma (9.4%, 6.9%, and 9.0% respectively) than the state prevalence of 13.8%. For individual county prevalence data, please see **Appendix A**.

**Lifetime Asthma Prevalence: 2010 by Rurality**

Approximately half of Florida’s counties are rural (33 of 67). Rural counties are defined as areas with a population density of less than 100 individuals per square mile or an area defined by the most recent U.S. Census as rural<sup>1</sup>. A comparison of 2010 BRFSS data from Florida’s 33 rural counties against the 34 non-rural counties in the state showed that Florida residents living in rural counties had a higher prevalence of lifetime asthma (14.8%) than residents living in non-rural counties (13.6%), although this difference was not statistically significant (Figure 4).

**Figure 4. Lifetime Prevalence of Asthma by Rurality, BRFSS 2010**

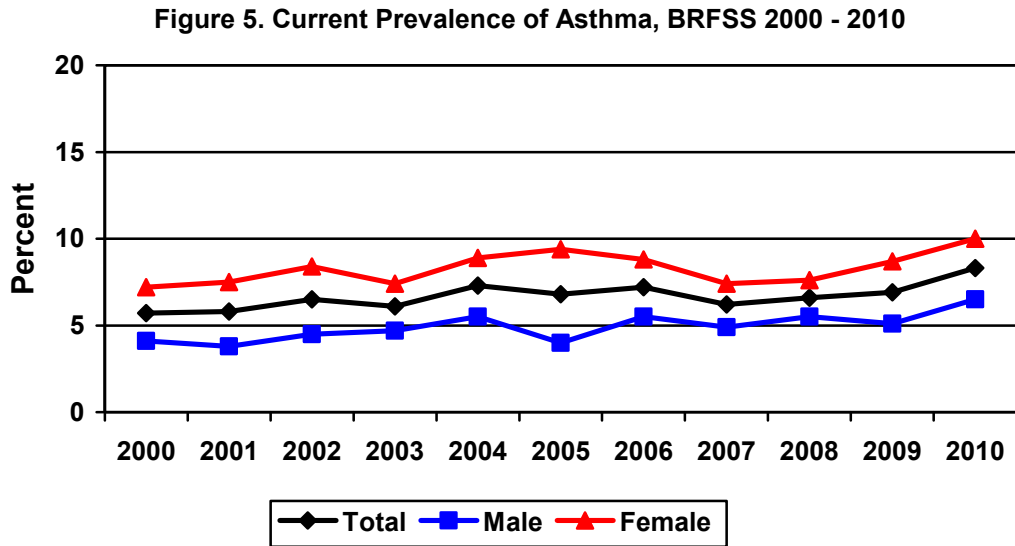


<sup>1</sup> Office of Rural Health, Florida Department of Health - <http://www.doh.state.fl.us/workforce/ruralhealth/PDFs/ruralcounties.pdf>

**CURRENT PREVALENCE**

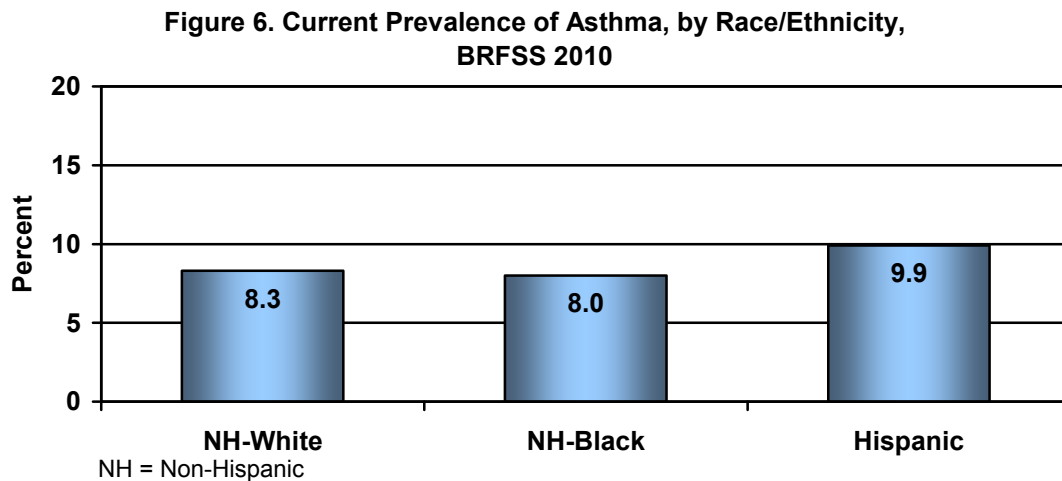
**Current Asthma Prevalence: Trends over Time by Gender**

The BRFSS data from 2010 indicate that 8.3% of Florida adults, or 1 out of 12, currently have asthma. The prevalence of current asthma has increased significantly by 45.6% from 2000 (5.7%) to 2010 (8.3%) (Figure 5). Females have consistently had a higher prevalence of current asthma than males, and had a significantly higher prevalence in 2010. However, the difference between genders was not always statistically different during this time period.



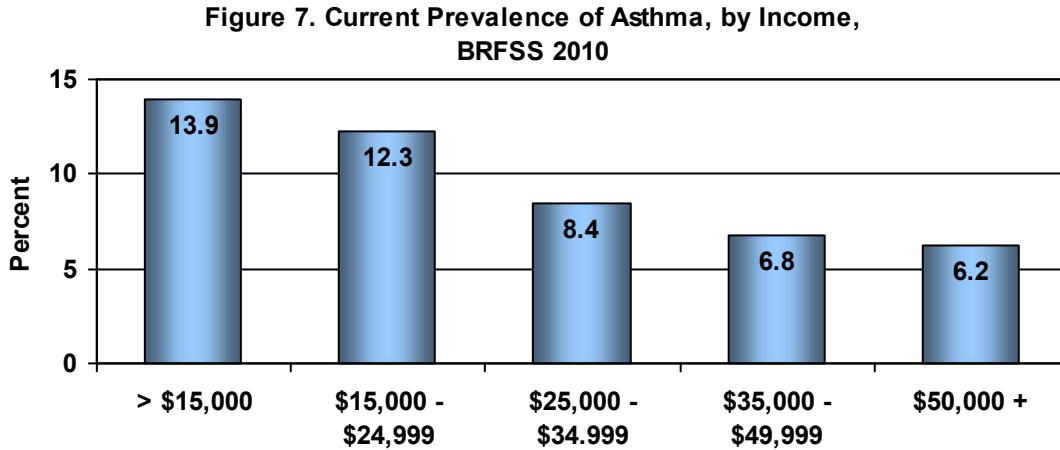
**Current Asthma Prevalence: 2010 by Race/Ethnicity**

In 2010, Hispanics (9.9%) had the highest prevalence of current asthma, but disease rates in this group did not differ significantly from non-Hispanic blacks (8.0%) or non-Hispanic whites (8.3%) (Figure 6).



### Current Asthma Prevalence: 2010 by Household Income

Florida adults with the lowest household incomes had the highest prevalence of current asthma (Figure 7). Residents living in a household with an income less than \$25,000 had a significantly higher prevalence of current asthma than adults living in a household with an income greater than \$35,000.



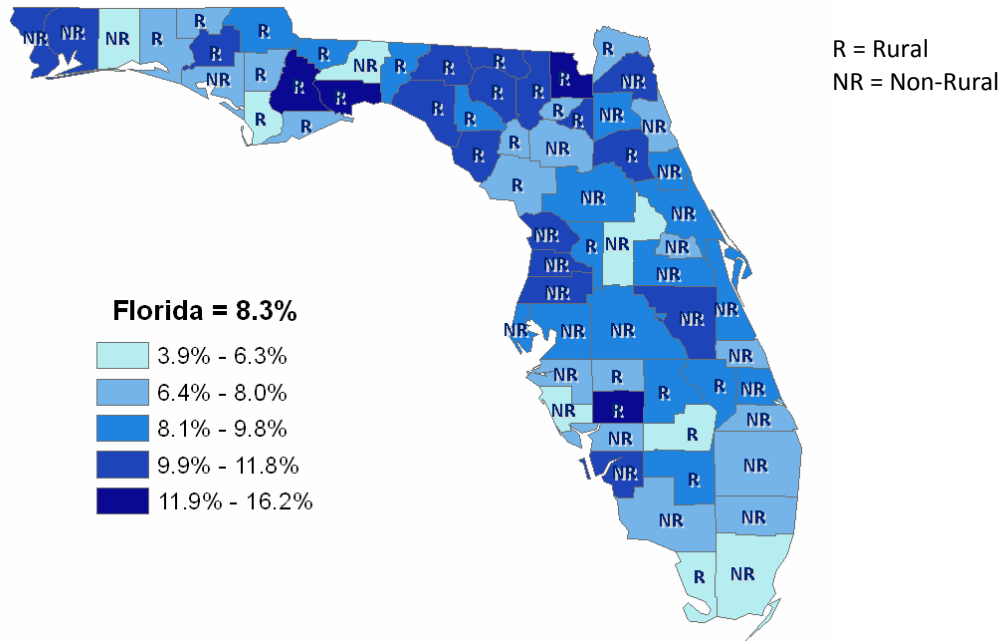
### Current Asthma Prevalence: 2010 by County

In 2010, slightly more than half of Florida’s counties (38) had a higher prevalence of current asthma than the state prevalence, although none of these differences were statistically significant. Three counties, Glades, Leon, and Sarasota had a significantly lower prevalence of current asthma (3.9%, 5.2%, and 5.4%, respectively) than the state prevalence of 8.3%. For individual county prevalence data, please see **Appendix A**.

### Current Asthma Prevalence: 2010 by Rurality

A comparison of 2010 BRFSS data from Florida’s 33 rural counties against the 34 non-rural counties in the state showed that Florida residents living in rural counties had a higher prevalence of current asthma (9.3%) than residents living in non-rural counties (8.2%), although this difference was not statistically significant (Figure 8).

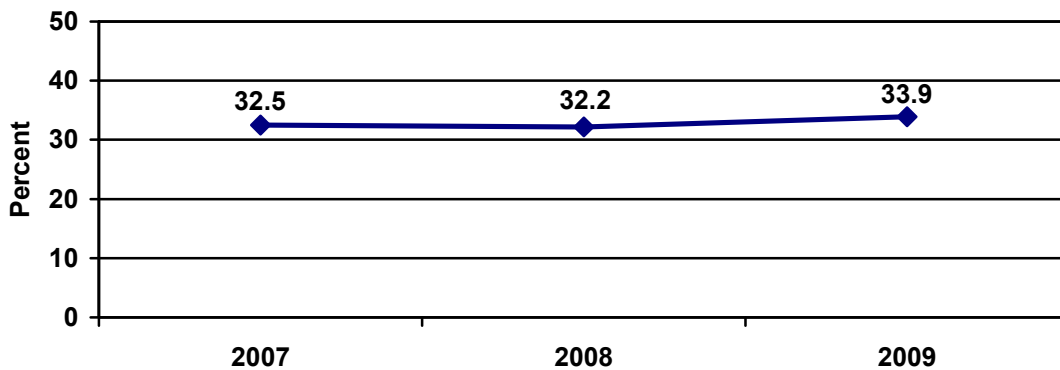
**Figure 8. Current Prevalence of Asthma by County, BRFSS 2010**



**ASTHMA EPISODES OR ATTACKS**

Among Florida residents who experienced recent asthma symptoms in 2009 (such as minor wheezing, coughing, or shortness of breath), approximately 1 out of 3 (33.9%) have had an asthma attack during the past year (Figure 9). The prevalence of current attacks seems to be increasing but additional data years need to be assessed to determine if this increase will continue. When asked how long their most recent attack or episode lasted, approximately half of the individuals (47%) said it lasted less than an hour; 37.1% said it lasted more than an hour but less than a day; 7.8% said it lasted more than a day, but less than a week; and 1 out of 12 (8.3%) said it lasted more than a week.

**Figure 9. Asthma Attack or Episode in Past Year, ACBS 2007- 2009**



## HEALTH OUTCOMES

The burden of asthma among Florida adults is also assessed by looking at health outcome data, including ED visits, hospitalizations, and deaths. All ED visits and hospitalizations with a primary diagnosis of asthma (ICD-9 code = 493) were included in this analysis. While ED visit and hospitalization data cannot be used to describe the population with asthma in Florida, they help to examine which groups do not have their asthma under control.

### EMERGENCY DEPARTMENT VISITS

#### Emergency Department Visits: 2009 by Age Group

In 2009, there were a total of 89,450 ED visits in Florida with asthma listed as the primary diagnosis. Approximately 53% of these ED visits (47,212) occurred among Floridian adults aged 18 years and older. The younger adult groups had a larger number of ED visits than any of the older adult groups (Table 1). It is important to note that individuals visiting the ED that are admitted to the hospital are removed from the ED visit counts.

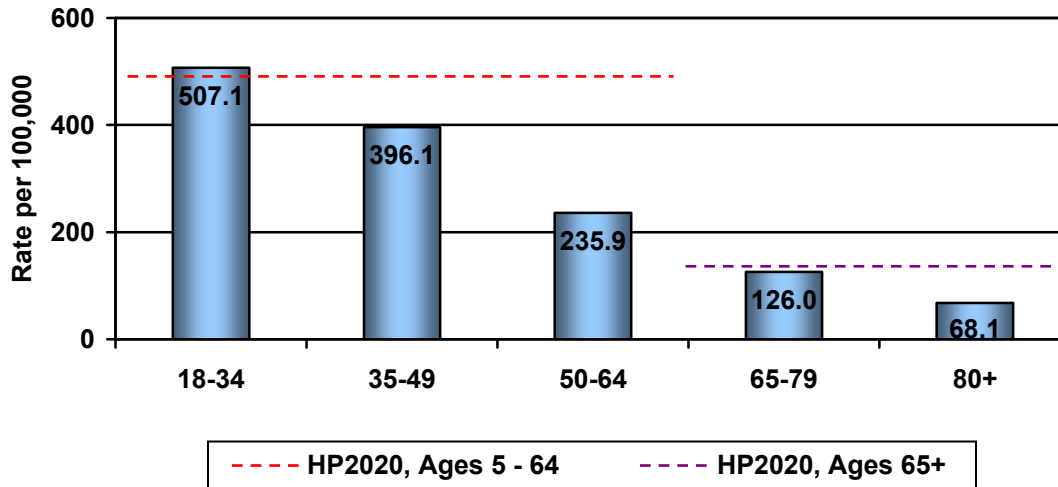
**Table 1. Count of Asthma Related ED Visits by Age Group, Ages 18 +, AHCA 2009**

Age Group	Count	Percent
18 – 34	20,117	43%
35 – 49	15,054	32%
50 – 64	8,489	18%
65 +	3,552	8%
<b>Total</b>	<b>47,212</b>	<b>100%</b>

ED visits due to asthma are largely preventable with proper management and control. Healthy People 2020 (HP2020), a public health guide providing science-based 10-year objectives for the health of all Americans, includes a national objective to reduce the rate of asthma ED visits to less than 49.1 per 10,000 (or 491 per 100,000) for individuals ages 5 to 64 years of age and less than 13.2 per 10,000 (or 132 per 100,000) among individuals aged 65 years and older.

Among Florida adults in 2009, those aged 18-34 years had the highest rate of asthma ED visits at 507.1 per 100,000, slightly higher than the HP2020 goal (Figure 10). All the other adult age groups are currently below the HP2020 objectives. The HP2020 objectives are shown as dotted lines on the graph below.

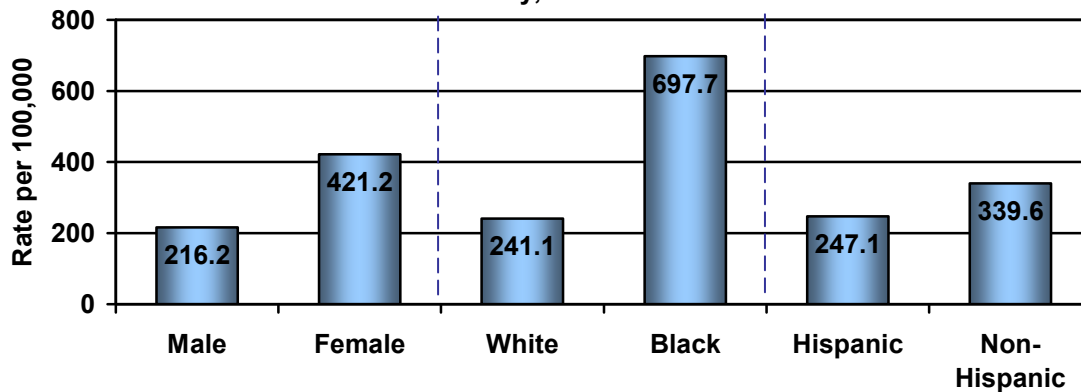
**Figure 10. Asthma ED Visit Rates, Ages 18+, by Age Group, AHCA 2009**



**Emergency Department Visits: 2009 by Gender, Race, and Ethnicity**

In 2009, Florida adult females (421.2 per 100,000) had a higher rate of ED visits than adult males (216.2 per 100,000). Black adults had a higher rate of asthma ED visits (697.7 per 100,000) than white adults (241.1 per 100,000), a notable disparity (Figure 11). Non-Hispanic adults had a higher rate of asthma ED visits (339.6 per 100,000) than Hispanic adults (247.1 per 100,000).

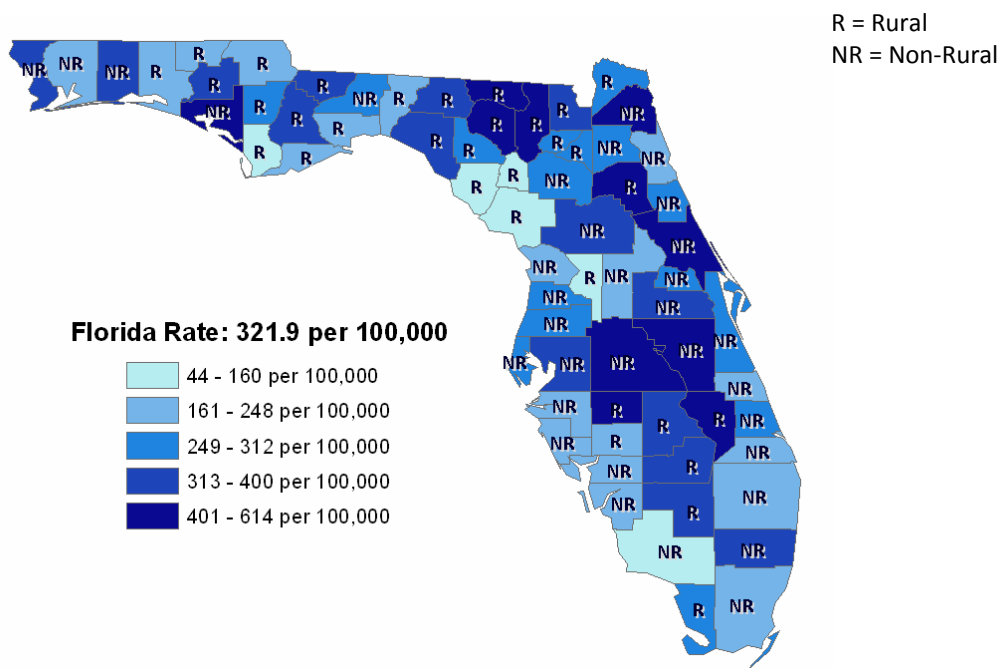
**Figure 11. Asthma ED Visit Rates, Ages 18+, by Gender, Race, and Ethnicity, AHCA 2009**



**Emergency Department Visits: 2009 by Rurality**

The rate of ED visits varied by geographical location, but not necessarily by rurality (Figure 12). In 2009, the ED visit rate among rural counties was 309.5 per 100,000 and the ED visit rate for non-rural counties was 305.5 per 100,000. For county-specific asthma ED visits, please view the fact sheet, Florida Emergency Department Visit Rates, 2006-2009, available at: <http://www.myfloridaeh.com/medicine/Asthma/AsthmaEDvisits.pdf>.

**Figure 12. Asthma ED Visit Rates, Ages 18+, by Rurality, AHCA 2009**



**Emergency Department Visits: Charges**

In 2009, the average charge of an asthma ED visit for Florida adults 18 years of age and older was approximately \$2,540 and the total charges for asthma ED visits for this age group were \$119.9 million. Approximately 36% of the charges were covered by Medicare/Medicaid, 26% were covered by private insurance, and 29% were paid out of pocket (including uninsured).

**Emergency Department Visits: Summary**

Reducing ED visits, particularly among populations with the highest ED visitation rates (adults ages 18-49, females, and blacks), should be a priority given the burden placed on the health care system. Efforts should focus on ensuring those visiting the ED receive self-management education, have access to and know how to properly use prescribed medications, and are connected to a primary care provider or specialist who can monitor the individual’s asthma and provide the routine care needed to prevent emergencies. Many EDs in Florida and across the country are working on quality improvement initiatives to improve patient care and to help prevent repeat ED visits due to asthma. As these programs expand, we will likely see reduced disparities, reduced rates of ED visits, improved quality of life and reduced costs.



**HOSPITALIZATIONS**

**Hospitalizations: 2009 by Age Group**

In 2009, there were a total of 30,709 asthma hospitalizations in Florida with asthma listed as the primary diagnosis. Approximately 75% of these hospitalizations (23,063) occurred among Floridians ages 18 and older. Older adults had a larger number of hospitalizations than younger adults (Table 2).

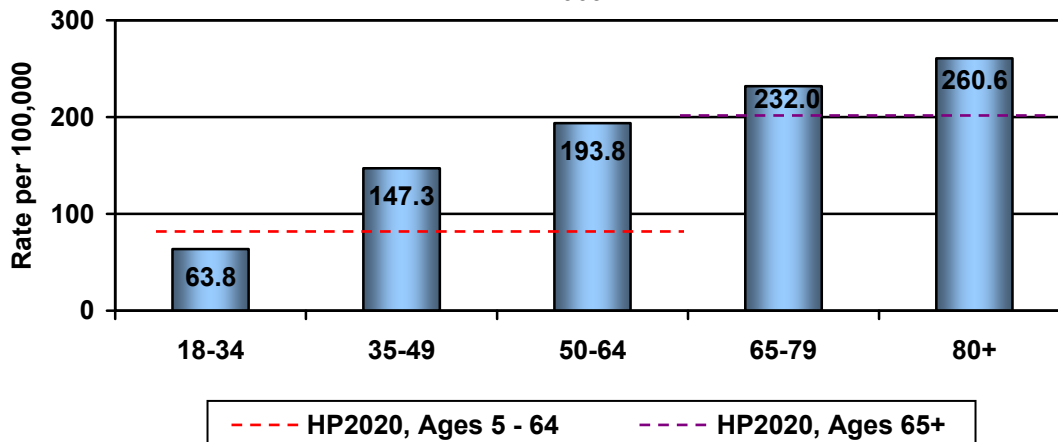
**Table 2. Counts of Asthma Hospitalizations by Age Group, Ages 18 +, AHCA 2009**

Age Group	Count	Percent
18 – 34	2,533	11%
35 – 49	5,596	24%
50 – 64	6,972	30%
65 +	7,962	35%
<b>Total</b>	<b>23,063</b>	<b>100%</b>

The Healthy People 2020 national objective for asthma hospitalizations sets target hospitalization rates at less than 8.6 per 10,000 (or 86 per 100,000) for individuals ages 5 to 64 and less than 20.3 per 10,000 (or 203 per 100,000) among individuals ages 65 and older.

Among Florida adults in 2009, those ages 80 and older had the highest rate of asthma ED visits at 260.6 per 100,000, higher than the HP2020 goal (Figure 13). Florida adults ages 18-34 are the only adult age group with a rate below the HP2020 objective (63.8 per 100,000). The HP2020 objectives are shown as dotted lines on the graph below.

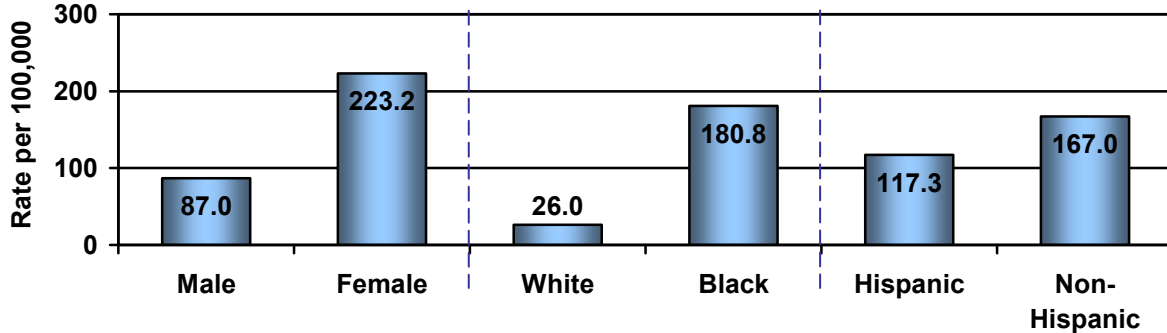
**Figure 13. Asthma Hospitalization Rates, Ages 18+, by Age Group, AHCA 2009**



**Hospitalizations: 2009 by Gender, Race, and Ethnicity**

In 2009, females (223.2 per 100,000) had a higher rate of asthma hospitalizations than males (87.0 per 100,000). Black adults had a higher rate of asthma hospitalizations (180.8 per 100,000) than white adults (26.0 per 100,000), again a notable disparity (Figure 14). Non-Hispanic adults had a higher rate of asthma hospitalizations (167.0 per 100,000) than Hispanic adults (117.3 per 100,000).

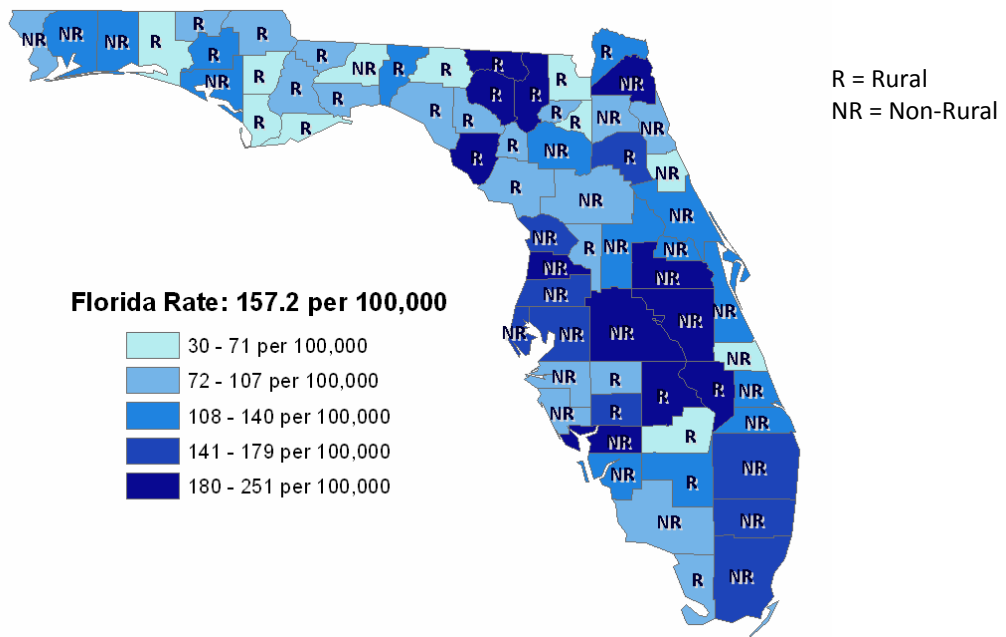
**Figure 14. Asthma Hospitalization Rates, Ages 18+, by Gender, Race, and Ethnicity, AHCA 2009**



**Hospitalizations: 2009 by Rurality**

In 2009, the rate of asthma hospitalizations was higher among Florida adult residents residing in non-rural settings (154.1 per 100,000) than among those residing in rural counties (125.3 per 100,000) (Figure 15). For county-specific asthma hospitalization rates, please view the fact sheet, Florida Asthma Hospitalization Rates, 2006-2009, available at: <http://www.myfloridaeh.com/medicine/Asthma/FLAsthmaHospitalizationRates.pdf>.

**Figure 15. Asthma Hospitalization Rates, Ages 18+, by Rurality, AHCA 2009**



### Hospitalizations: Average Length of Stay and Charges

In 2009, the average length of stay for an asthma hospitalization was 4.2 days, and asthma patients spent a total of approximately 97,000 days in the hospital. The average charge per adult asthma hospitalization was approximately \$26,000 and the total charges for this age group were \$599.7 million. Approximately 61% of the charges were covered by Medicaid/ Medicare, 22% were covered by private insurance, and 10% were paid out of pocket (including uninsured).

### Hospitalizations: Summary

Asthma hospitalizations, like ED visits, can largely be prevented with proper asthma control and management. Reducing hospitalizations, particularly among populations with the highest hospitalization rates (adults ages 65 and older, females, and blacks) should be a priority. Efforts for in-patient care should mirror those recommended for out-patient care and ensure those admitted to the hospital receive self-management education, have access to and knowledge of proper use of prescription medication for asthma, and are connected to a primary care provider or specialist who can monitor the individual's asthma and provide the routine care needed to prevent emergencies. As more hospitals in Florida adhere to compliance with the National Heart, Lung, and Blood Institute's [EPR-3 Guidelines for the Diagnosis and Treatment of Asthma](#), reduced disparities, reduced rates of hospital visits, improved quality of life, and reduced costs will likely result.

### MORTALITY

#### Asthma Deaths: 2010 by Age Groups

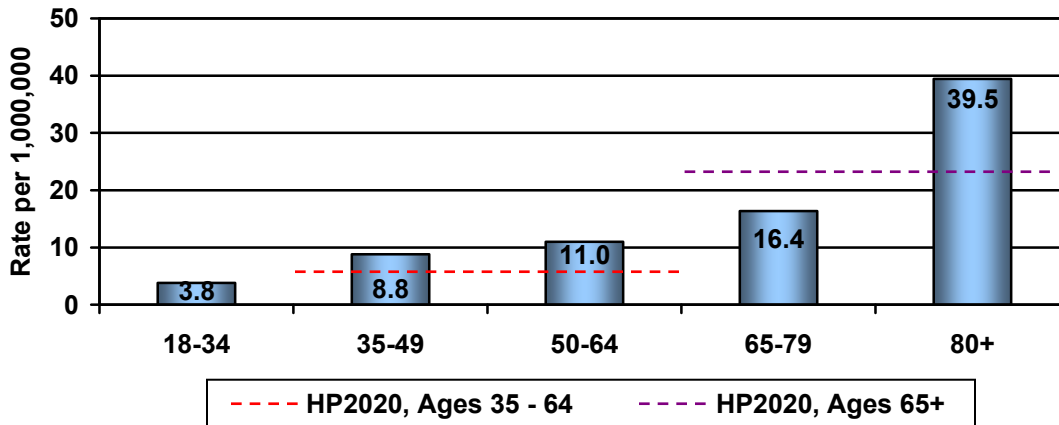
Deaths from asthma (ICD-10 codes J45-46) represent the worst outcome of the disease. In 2010, there were a total of 176 deaths in Florida with asthma listed as the underlying cause. Approximately 95% (167) of these deaths occurred among Floridian adults aged 18 years and older. Adults ages 65 and older accounted for approximately half (47%) of the asthma deaths among Florida adults (Table 3).

**Table 3. Count of Asthma Deaths by Age Group, Ages 18 +, Vital Statistics 2010**

Age Group	Count	Percent
18 – 34	15	9%
35 – 49	33	20%
50 – 64	40	24%
65 +	79	47%
<b>Total</b>	<b>176</b>	<b>100%</b>

There is currently no Healthy People 2020 objective for asthma deaths among individuals under the age of 35 years because the current rate is low. The HP2020 objective for asthma deaths among individuals ages 35-64 years is set at 6.0 deaths per million and among individuals ages 65 years and older, the objective is set at 22.9 deaths per million. Among Florida adults in 2010, those ages 80 and older had the highest asthma death rate at 39.5 per 1,000,000 (Figure 16). The HP2020 objectives are shown as dotted lines on the graph below.

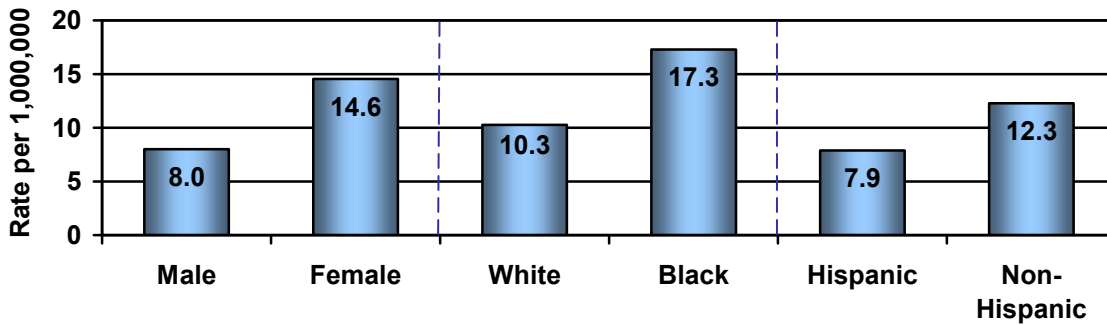
**Figure 16. Asthma Death Rates, Ages 18+, by Age Group, Vital Statistics 2010**



**Asthma Deaths: 2010 by Gender, Race, and Ethnicity**

In 2010, Florida adult females (14.6 per 1,000,000) had a higher rate of asthma deaths than adult males (8.0 per 1,000,000). Black adults had a higher rate of asthma deaths (17.3 per 1,000,000) than white adults (10.3 per 1,000,000), a notable disparity (Figure 17). Non-Hispanic adults had a higher rate of asthma deaths (12.3 per 1,000,000) than Hispanic adults (7.9 per 1,000,000).

**Figure 17. Asthma Deaths, Ages 18+, by Gender, Race, and Ethnicity, Vital Statistics 2010**



### **Asthma Deaths: Summary**

Reducing asthma deaths, particularly among populations with the greatest disparities (older adults, females, and blacks), should be a priority among physicians and other health care providers. Self-management education and management education for caretakers are critical lessons when dealing with this complex disease. Improved understanding of the disease, awareness of personal and environmental triggers, increased availability to health care, prescribed medications, and strict medication adherence could potentially save lives. For more asthma mortality data, please view the fact sheet, Florida Asthma Mortality, 2000-2010, available at: [http://www.myfloridaeh.com/medicine/Asthma/Asthma-Mortality\\_2011.pdf](http://www.myfloridaeh.com/medicine/Asthma/Asthma-Mortality_2011.pdf)

### **BURDEN SUMMARY**

The prevalence of lifetime asthma among Florida adults has increased from 9.1% in 2000 to 13.8% in 2010 and the prevalence of current asthma has increased from 5.7% in 2000 to 8.3% in 2010. Females have consistently had a higher prevalence of lifetime and current asthma than males, although these differences were not always statistically significant during this time period.

In 2010, Hispanics had the highest prevalence of lifetime and current asthma, but were not statistically different than either non-Hispanic blacks or non-Hispanic whites. Floridians with the lowest incomes had the highest prevalence of lifetime and current asthma. Residents living in rural counties had a higher prevalence of lifetime and current asthma than residents living in non-rural counties, although these differences were not statistically significant.

Adults ages 18 years and older accounted for about half of all asthma ED visits and three-fourths of all asthma hospitalizations in 2009. Young adults (ages 18-34 years), females, and blacks had the highest rates of ED visits. Older adults (ages 65 years and older), females, and blacks had the highest rates of asthma hospitalizations and deaths. Adults ages 18 years and older accounted for 95% of all asthma deaths in 2010.

Large disparities exist among adults in Florida that are impacted by asthma, but no one group is exempt from the disease. The burden is wide spread across Florida's population, but targeting interventions to at-risk groups can help reduce disparities. All individuals with asthma can live normal, active lives, if given the proper education, treatment, and support.

### III. RISK FACTORS AND HEALTH EFFECTS

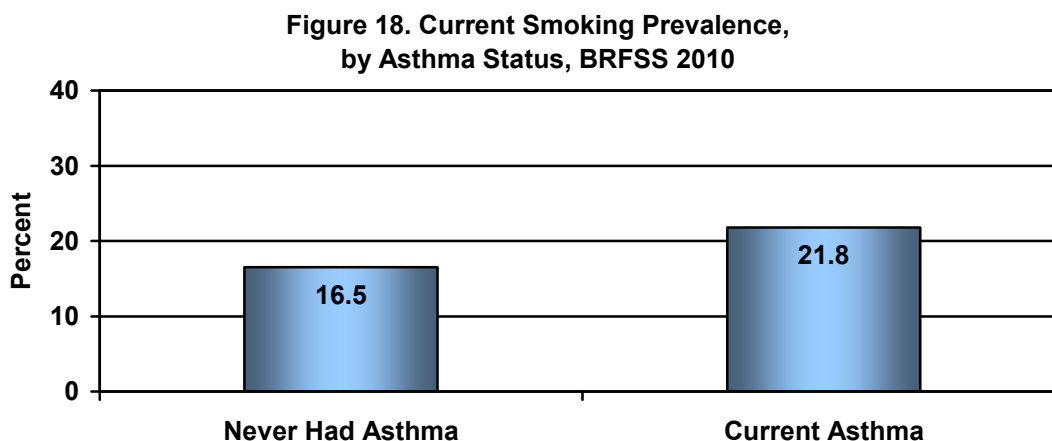
This section provides data from the ACBS and the BRFSS that can provide a better understanding of the risks and health impacts that complicate asthma management or exacerbate asthma in Florida adults. Seasonal viruses, exposure to irritants such as tobacco smoke, and even exercise often trigger or induce asthma attacks or episodes. Lack of access to proper medical care and treatment make it very difficult for an individual with asthma to properly control their disease. These findings are important to clinicians, educators, and public health professionals because they demonstrate the many challenges faced by adults with asthma. These challenges must be addressed in order to provide the best possible support for an adult with asthma.

In this section, indicators from the BRFSS were split into two groups and analyzed by asthma status: Group 1) Florida adults who have never been told by a doctor, nurse, or other health professional that they have asthma (Never Had Asthma); and Group 2) Florida adults who have been told by a doctor, nurse, or other health professional that they have asthma and who still have asthma (Current Asthma). Indicators from the ACBS will be presented as trends from 2007-2009.

#### RISK FACTORS

##### Smoking Behaviors

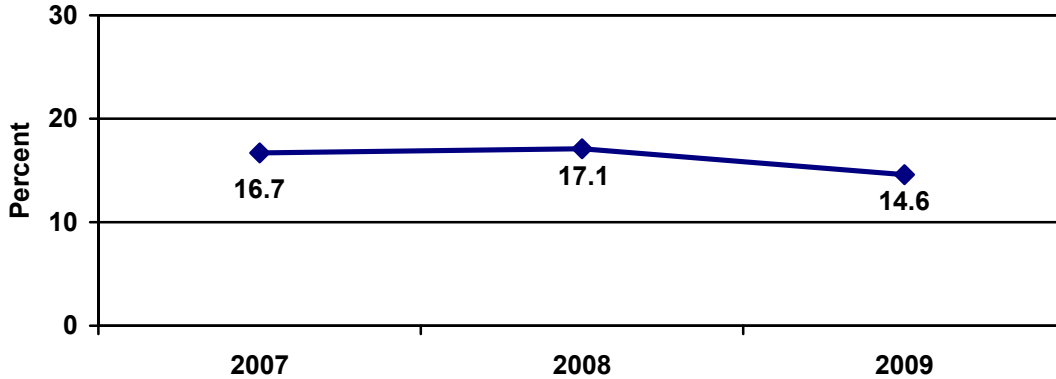
Current smoking is defined as individuals who have smoked 100 or more cigarettes in their lifetime and who report they now smoke cigarettes “every day” or “some days”. In 2010, Florida adults with current asthma had a significantly higher prevalence of current smoking (21.8%) compared to adults who had never had asthma (16.5%) (Figure 18). Looking at the current asthma groups by gender, approximately one out of five adult females (20.0%) and approximately one out of four adult males (24.7%) are current smokers. Non-Hispanic whites with current asthma have a significantly higher prevalence of current smoking (23.4%) than non-Hispanic whites who have never had asthma (17.8%).



### Smoke Inside the Home

In 2009, approximately 1 out of 7 (14.6%) adults with lifetime asthma reported that someone had smoked inside their home during the past week (Figure 19).

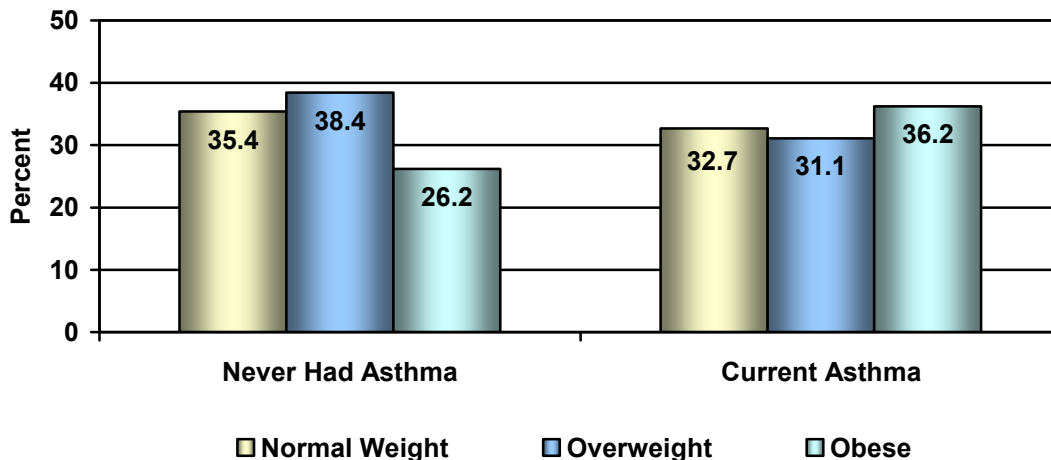
**Figure 19. Someone Smoked Inside the Home, ACBS 2007- 2009**



### Weight Status

The BRFSS collects self-reported height and weight information which is used to calculate body-mass index (BMI). Normal weight is defined as adults having a BMI less than 25; overweight is defined as adults having a BMI greater than or equal to 25 and less than 30; and obesity is defined as adults having a BMI greater than or equal to 30. In 2010, the prevalence of normal weight among adults who never had asthma (35.4%) and adults with current asthma (32.7%) did not differ significantly. Adults with current asthma (31.1%) had a significantly lower prevalence of being overweight than adults never having asthma (38.4%). However, adults with current asthma (36.2%) have a significantly higher prevalence of obesity than adults who have never had asthma (26.2%) (Figure 20).

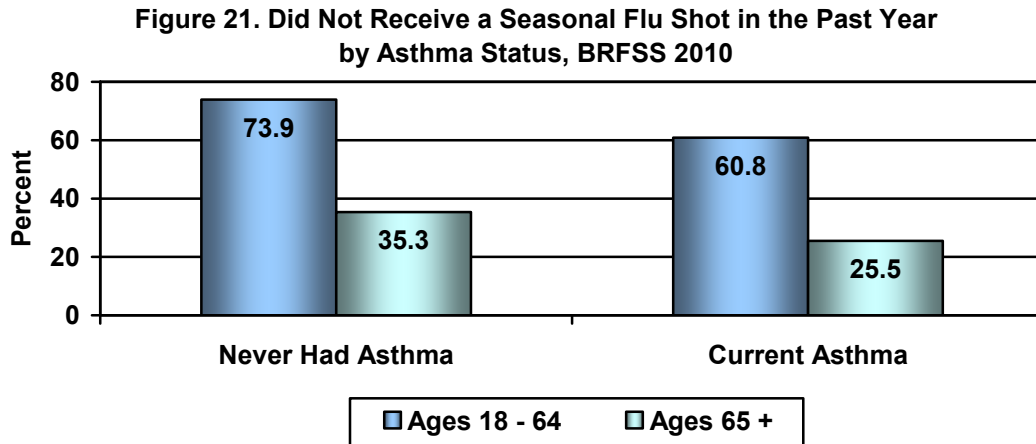
**Figure 20. Weight Status, by Asthma Status, BRFSS 2010**



Normal weight is defined as adults having a BMI less than 25  
Overweight is defined as adults having a BMI greater than or equal to 25 and less than 30  
Obese is defined as adults having a BMI greater than 30.0

### Immunization

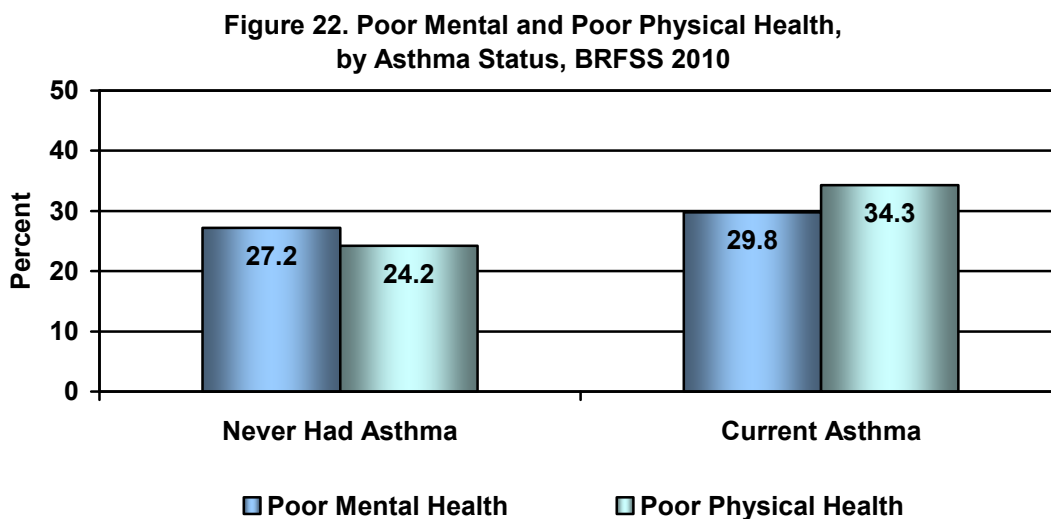
In 2010, among adults with current asthma, approximately three out of five under the age of 65 years (60.8%) and one out of four older than 65 years (25.5%) did not receive a seasonal flu shot during the past year. Among both age groups, this prevalence was significantly lower than adults who have never had asthma (73.9% and 35.3% respectively) (Figure 21).



### **HEALTH EFFECTS**

#### Poor Mental and Physical Health

Poor mental health and poor physical health are defined as having 20 or more days during the past 30 days in which one's mental or physical health was not good, respectively. In 2010, adults who have never had asthma reported a lower prevalence of poor mental health (27.2%) than adults with current asthma (29.8%), although this difference was not statistically different. Approximately one out of three (34.3%) adults with current asthma had 20 or more days during the past 30 in which their physical health was not good. This prevalence was significantly higher than adults who have never had asthma (24.2%) (Figure 22).

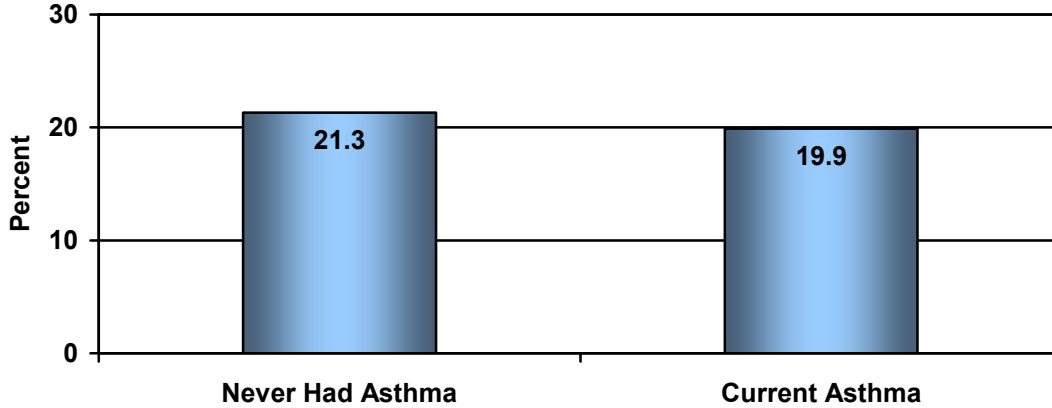




**Insurance Coverage**

In 2010, approximately one out of five adults ages 18 to 64 years with current asthma (19.9%) and 21.3% of adults ages 18 to 64 years who never had asthma reported having no health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare. This prevalence did not differ significantly by asthma status (Figure 23).

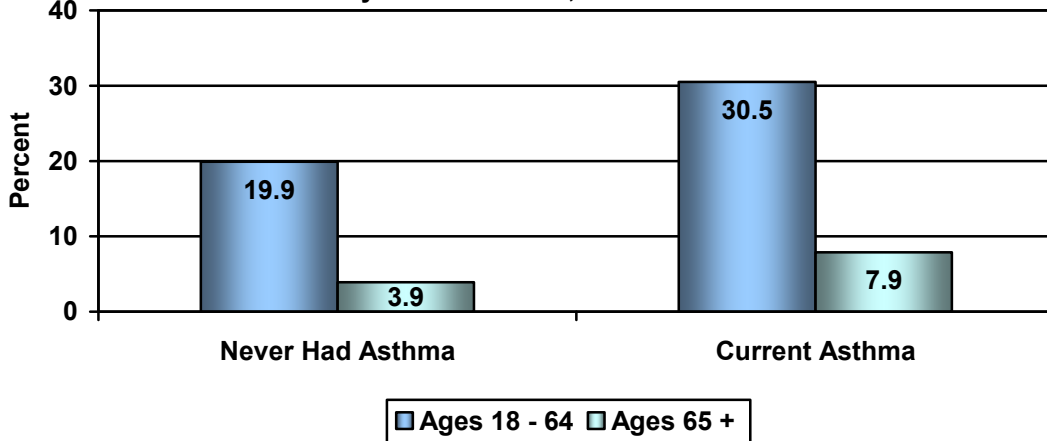
**Figure 23. No Insurance Coverage, Adults Ages 18-64, by Asthma Status, BRFSS 2010**



**Cost as a Barrier to Doctor Visit**

In 2010, approximately 1 out of 4 adults with current asthma (25.1%) and 16.1% of adults who never had asthma experienced a time during the past year when they needed to see a doctor but could not because of cost. This prevalence was significantly higher among adults with current asthma than among those who have never had asthma (Figure 24).

**Figure 24. Could Not See Doctor Because of Cost, by Asthma Status, BRFSS 2010**



## **RISKS AND RISK BEHAVIORS SUMMARY**

Adults with current asthma are impacted by a variety of risk factors and experiences related health effects. One out of seven adults with current asthma reported that someone had smoked inside their home during the past week. One out of five adult females and one out of four adult males with current asthma are current smokers. Adults with current asthma have a significantly higher prevalence of obesity than adults who have never had asthma. One out of three adults with current asthma experienced 20 or more days during the past 30 in which their physical health was not good. Three out of five adults with current asthma ages 18-64 and one out of four adults with current asthma ages 65 and older had not received a flu shot in the past year. Among adults with current asthma ages 18-64, approximately one in five adults did not have any kind of health insurance coverage and 30% experienced a time during the past year when they needed to see a doctor but could not because of the cost. These findings represent just some of the various issues that complicate asthma management or exacerbate asthma in Florida's adults and demonstrate some of the many challenges faced by adults with asthma.

## **IV. ASTHMA SELF-MANAGEMENT AND EDUCATION**

This section presents information about the type of care, education, and management received by adults with asthma in Florida. This information can help physicians, hospitals, health plans, and professionals in public health identify and prioritize opportunities for improvement. This data comes from the 2009 Adult Asthma Call Back Survey (ACBS).

### **Asthma Awareness and Education**

- Approximately three out of five (59%) adults with lifetime asthma report that a doctor or other health professional taught them how to recognize early signs or symptoms of an asthma episode or attack
- 72% of adults with lifetime asthma report that a doctor or other health professional has taught them what to do during an asthma episode or attack
- Only one out of ten (10.3%) adults with lifetime asthma have ever taken a course or class on how to manage their asthma
- Approximately one out of three (32.8%) adults with lifetime asthma have been instructed by a health professional to change things in their home, school, or work to improve their asthma

### **Asthma Action Plan**

- Approximately one out of four (23.7%) of adults with lifetime asthma report that a doctor or other health professional has ever given them an asthma action plan. An asthma action plan is defined as an individualized/personalized form with instructions about when to change the amount or type of medicine, when to call the doctor for advice, and when to go to the emergency room.

### **Asthma Treatment**

- Approximately two out of five (39.4%) adults with lifetime asthma visited a doctor or other health professional for a routine checkup for their asthma during the past year
- In 2009, 7.3% of adults with lifetime asthma report visiting an ED or urgent care center during the past year because of their asthma

### **Asthma Medication**

- Approximately one out of three (33.0%) adults with lifetime asthma report that a doctor or other health professional taught them how to use a peak flow meter to adjust daily medication
- Among the 84% of adults with lifetime asthma who have ever used a prescription inhaler:
  - The majority (93.9%) report that a doctor or other health professional showed them how to use the inhaler
  - Only three out of four (76.4%) report that a doctor or other health professional watched them use the inhaler

## **V. CONCLUSION**

As the prevalence and cost of asthma among Florida adults continues to increase, it is more important than ever to build capacity and establish networks within communities to support individuals with asthma. Managing asthma is possible, but it requires proper medical treatment, medication adherence, communication, and self-management for success.

Adults need proper education to be able to actively control their asthma. Each individual has their own set of asthma triggers that they must learn to recognize and control using self-management skills. Health care providers have the important responsibility of working with individuals to find the right course of treatment and to ensure clear understanding of patient's asthma action plans.

It is recommended, that clinicians in primary care, hospitals, and ED settings follow the updated 2007 EPR-3 Guidelines when assessing, diagnosing, or treating, individuals with asthma. Every ED visit or hospitalization is an opportunity to provide education and information about proper management.

Incentives should be identified to physicians, hospitals, urgent care centers, and health plans to implement robust programs that support individuals with asthma. Florida can recognize the greatest return on investment – in terms of quality of life, cost savings, and productivity- through a coordinated and integrated approach to asthma management.

**Appendix A: Table of Lifetime and Current Asthma Prevalence by County, 2010 BRFSS**

County	Rurality	Lifetime		Current	
		Prevalence	95% CI	Prevalence	95% CI
Alachua	Non-Rural	10.7%	7.3% - 14.1%	6.9%	4.2% - 9.6%
Baker	Rural	22.2%	13.9% - 30.6%	16.2%	7.7% - 24.6%
Bay	Non-Rural	12.9%	9.4% - 16.4%	7.6%	4.8% - 10.5%
Bradford	Rural	15.9%	9.2% - 22.6%	11.8%	5.7% - 17.8%
Brevard	Non-Rural	12.6%	9.0% - 16.2%	9.4%	6.2% - 12.7%
Broward	Non-Rural	15.2%	11.0% - 19.5%	7.9%	4.7% - 11.0%
Calhoun	Rural	15.6%	9.8% - 21.4%	7.3%	4.2% - 10.3%
Charlotte	Non-Rural	9.4%	6.5% - 12.2%	7.2%	4.6% - 9.7%
Citrus	Non-Rural	16.5%	11.8% - 21.2%	10.0%	6.3% - 13.7%
Clay	Non-Rural	12.5%	9.2% - 15.8%	8.2%	5.6% - 10.8%
Collier	Non-Rural	14.9%	10.0% - 19.8%	8.0%	4.2% - 11.8%
Columbia	Rural	15.5%	11.1% - 19.9%	11.0%	6.9% - 15.1%
Desoto	Rural	16.9%	11.7% - 22.0%	13.2%	8.4% - 18.1%
Dixie	Rural	14.1%	10.1% - 18.1%	10.6%	6.9% - 14.2%
Duval	Non-Rural	15.9%	11.5% - 20.4%	11.2%	7.2% - 15.2%
Escambia	Non-Rural	14.8%	10.6% - 19.0%	10.6%	7.1% - 14.0%
Flagler	Non-Rural	14.9%	10.6% - 19.1%	9.6%	5.9% - 13.2%
Franklin	Rural	11.3%	7.5% - 15.0%	6.9%	4.2% - 9.6%
Gadsden	Rural	14.3%	10.3% - 18.4%	9.3%	6.2% - 12.4%
Gilchrist	Rural	20.7%	10.9% - 30.5%	7.6%	4.0% - 11.2%
Glades	Rural	6.9%	4.0% - 9.7%	3.9%	2.0% - 5.9%
Gulf	Rural	12.5%	8.1% - 16.9%	5.9%	3.4% - 8.5%
Hamilton	Rural	15.8%	11.1% - 20.5%	10.6%	6.9% - 14.3%
Hardee	Rural	11.9%	8.1% - 15.7%	7.7%	5.0% - 10.4%
Hendry	Rural	13.3%	8.3% - 18.4%	8.6%	4.2% - 13.1%
Hernando	Non-Rural	17.3%	12.1% - 22.4%	10.9%	6.7% - 15.1%
Highlands	Rural	17.1%	12.4% - 21.8%	9.9%	6.1% - 13.7%
Hillsborough	Non-Rural	14.0%	10.3% - 17.8%	8.6%	5.6% - 11.6%
Holmes	Rural	13.5%	9.7% - 17.3%	7.4%	4.6% - 10.3%
Indian River	Non-Rural	12.3%	8.3% - 16.2%	7.7%	4.4% - 11.0%
Jackson	Rural	14.6%	10.1% - 19.2%	8.6%	5.5% - 11.6%
Jefferson	Rural	15.5%	11.1% - 19.9%	9.6%	6.4% - 12.8%
Lafayette	Rural	15.7%	7.4% - 23.9%	8.4%	4.2% - 12.5%
Lake	Non-Rural	11.1%	7.8% - 14.5%	6.2%	3.8% - 8.6%
Lee	Non-Rural	12.5%	7.5% - 17.5%	11.4%	6.4% - 16.4%
Leon	Non-Rural	11.5%	7.6% - 15.4%	5.2%	2.8% - 7.5%
Levy	Rural	13.3%	9.6% - 16.9%	7.5%	5.1% - 9.9%
Liberty	Rural	18.9%	13.3% - 24.5%	13.0%	8.7% - 17.2%
Madison	Rural	17.4%	12.0% - 22.9%	10.9%	6.2% - 15.6%

**Appendix A (Continued): Table of Lifetime and Current Asthma Prevalence  
by County, 2010 BRFSS**

County	Rurality	Lifetime		Current	
		Prevalence	95% CI	Prevalence	95% CI
Manatee	Non-Rural	11.5%	7.8% - 15.2%	7.1%	4.5% - 9.7%
Marion	Non-Rural	16.1%	11.5% - 20.8%	8.6%	5.8% - 11.5%
Martin	Non-Rural	13.9%	8.7% - 19.0%	6.7%	4.2% - 9.3%
Miami-Dade	Non-Rural	11.4%	8.0% - 14.8%	6.3%	3.6% - 8.9%
Monroe	Rural	12.3%	7.0% - 17.7%	5.7%	2.4% - 9.0%
Nassau	Rural	13.2%	8.9% - 17.5%	6.5%	3.3% - 9.8%
Okaloosa	Non-Rural	9.0%	5.6% - 12.4%	6.0%	3.0% - 9.1%
Okeechobee	Rural	11.3%	7.4% - 15.3%	8.4%	4.9% - 11.9%
Orange	Non-Rural	13.8%	10.9% - 16.7%	8.6%	6.4% - 10.7%
Osceola	Non-Rural	16.4%	12.0% - 20.8%	10.2%	6.4% - 14.0%
Palm Beach	Non-Rural	12.9%	8.4% - 17.5%	6.8%	4.2% - 9.4%
Pasco	Non-Rural	13.7%	9.4% - 18.0%	10.2%	6.4% - 13.9%
Pinellas	Non-Rural	15.9%	11.4% - 20.4%	9.3%	5.6% - 12.9%
Polk	Non-Rural	16.1%	11.3% - 21.0%	9.3%	5.7% - 12.8%
Putnam	Rural	19.7%	13.9% - 25.6%	11.6%	7.6% - 15.7%
Saint Johns	Non-Rural	14.0%	10.4% - 17.6%	7.8%	5.2% - 10.4%
Saint Lucie	Non-Rural	13.2%	9.3% - 17.2%	9.8%	6.5% - 13.2%
Santa Rosa	Non-Rural	16.7%	11.8% - 21.6%	10.7%	6.8% - 14.6%
Sarasota	Non-Rural	13.2%	8.9% - 17.4%	5.4%	3.1% - 7.6%
Seminole	Non-Rural	12.7%	9.1% - 16.3%	7.0%	4.4% - 9.6%
Sumter	Rural	10.9%	4.7% - 17.2%	9.3%	3.2% - 15.4%
Suwannee	Rural	14.7%	10.5% - 18.9%	10.3%	6.5% - 14.1%
Taylor	Rural	16.5%	11.9% - 21.0%	10.8%	7.2% - 14.4%
Union	Rural	13.2%	8.0% - 18.3%	7.4%	4.0% - 10.7%
Volusia	Non-Rural	14.2%	10.5% - 17.9%	9.0%	5.9% - 12.1%
Wakulla	Rural	19.8%	13.5% - 26.0%	14.1%	8.1% - 20.1%
Walton	Rural	12.2%	8.2% - 16.2%	6.7%	4.4% - 8.9%
Washington	Rural	17.0%	11.9% - 22.2%	10.4%	7.2% - 13.7%