
# Burden of Asthma in Florida

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The goals of the FAP are to reduce the number of deaths, hospitalizations, emergency department visits, school or work days missed, and limitations on activity due to asthma and increase the number of individuals with asthma who receive self-management education. The program participates in and helps facilitate the Florida Asthma Coalition, conducts asthma surveillance, program evaluation, and works specifically to increase the number of childcare centers, schools, and hospitals that implement comprehensive evidence-based asthma management programs.

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# Table of Contents

# List of Figures and Tables

# Executive Summary

Asthma is a chronic lung disease characterized by inflammation of the airways causing recurring episodes of symptoms such as wheezing, coughing, and chest tightness. There is currently no known cure for asthma, but effective strategies to prevent and manage asthma symptoms exist. Individuals with asthma can achieve optimal health outcomes and live normal, active lives with proper clinical treatment, medication adherence, self-management education, environmental control, and trigger avoidance.

Asthma rates and health care utilization for asthma have increased dramatically over the last thirty years in all populations in Florida, and across the United States. Asthma incurs high expenses, in terms of the cost of care, lost workdays and productivity, and lower quality of life for persons with asthma and their families. Asthma is a leading cause of preventable emergency department visits and hospitalizations.

Large disparities related to race/ethnicity, gender, age, and income exist when reviewing the most severe outcomes of the disease. While the prevalence of asthma in Florida is similar among all race/ethnicity groups, substantial disparities exist in the rate of emergency department (ED) visits and hospitalizations, an indication of poorly controlled asthma. Improving asthma outcomes among disparate populations must be a priority for all partners involved in asthma management.

## Key Findings from this Report

### Asthma Prevalence

Prevalence is the percentage of a defined population with a certain condition. Lifetime asthma prevalence is defined as individuals who report they have been told 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 report they still have asthma.

#### Overall

- More than 2.6 million Florida children and adults had lifetime asthma, and approximately 1.6 million had current asthma in 2012

#### Gender

- Adult females had a higher prevalence of lifetime and current asthma than adult males
- Adolescent females had a higher prevalence of current asthma than adolescent males

#### Race/Ethnicity

- Lifetime and current asthma prevalence did not differ significantly by race/ethnicity for adults
- Non-Hispanic white adolescents had the lowest prevalence of lifetime asthma
- Non-Hispanic black adolescents had the highest prevalence of current asthma

#### Household Income

- The lowest income households had the highest prevalence of lifetime and current asthma

### Factors Associated with Asthma

There are many risk and behavioral factors that complicate asthma management or exacerbate asthma in Florida's children and adults.

- Floridians with asthma were more likely to be obese, to use tobacco or be exposed to secondhand smoke, and to have other chronic conditions, such as diabetes, chronic obstructive pulmonary disorder (COPD), and heart disease than Floridians who never had asthma

## Living with Asthma

Uncontrolled asthma can negatively impact many aspects of daily life and overall well-being.

### Asthma Attacks or Episodes

- One in four adults with current asthma had an asthma attack during the past three months
- One in six adolescents with lifetime asthma had an asthma attack during the past year

### Asthma Action Plans

- One in four adults and one in three children with lifetime asthma had ever received an Asthma Action Plan from a doctor or other health professional

### Asthma Education

- One in 15 adults and one in 10 children with lifetime asthma (or their parent) has taken a course or class on how to manage the asthma

### Missed Work or School

- One in four adults and one in four children with current asthma missed one or more days of work or school during the past year because of asthma symptoms

## Emergency Department (ED) Visits and Hospitalizations

The number of asthma ED visits has increased greatly over the past five years, while the number of hospitalizations has remained constant.

### Gender

- Female adults had a higher rate of ED visits and hospitalizations than male adults
- Male children had a higher rate of ED visits and hospitalizations than female children

### Race/Ethnicity

- Non-Hispanic black Floridians had the highest ED visit and hospitalization rates

### Age Group

- Younger children (ages 0-4 years) had the highest rate of asthma ED visits and hospitalizations
- Older adults (ages 65+ years) had the lowest ED rate and the second highest hospitalization rate

### Payer Source

- The number of ED visits and hospitalizations covered by Medicaid has increased at a faster rate than those covered by any other payer group
- More than half of ED visits and nearly two-thirds of hospitalizations with asthma listed as the primary diagnosis were covered by Medicare or Medicaid

## Asthma Mortality

Deaths from asthma are relatively rare occurrences and represent the worst outcome of the disease.

- Asthma death rates are decreasing in Florida and nationally
- Florida females have consistently had a higher rate of death from asthma than males
- Non-Hispanic blacks in Florida disproportionally had the highest rate of death due to asthma

# Introduction – Addressing Asthma

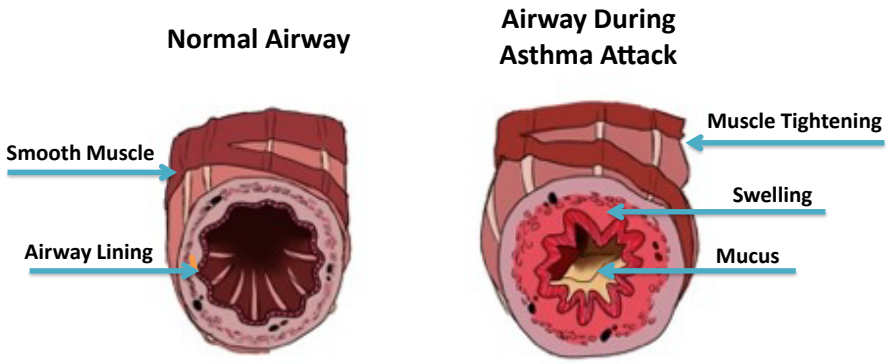
# Introduction - Addressing Asthma

## A Growing Public Health Priority

Asthma rates and health care utilization for asthma have increased dramatically over the past thirty years in all populations in Florida, and across the United States. Asthma is a leading cause of preventable emergency department visits and hospitalizations. Asthma incurs high expenses related to cost of care, lost workdays and productivity, and lower quality of life for persons with asthma and their families. For these reasons, asthma education, control, and self -management are public health priorities for the State of Florida.

### About Asthma

Asthma is a chronic lung disease characterized by inflammation of the airways causing recurring episodes of symptoms such as wheezing, coughing, and chest tightness. When an individual with asthma is exposed to an irritant or trigger, the lining of the airways swell, the muscles around the airways tighten or constrict, and mucus production increases (as shown in the diagram below) making it difficult to breathe. Individual asthma triggers might include tobacco smoke, fragrances, dust mites, animal dander, pollen, mold, or diesel emissions, for example. Asthma symptoms can also be triggered by a cold or respiratory virus, exercise, or by strong emotions such as laughing or crying.




There is currently no known cure for asthma, but effective strategies to prevent, manage, and control asthma symptoms exist. Individuals with asthma can achieve optimal health outcomes and live normal, active lives with proper clinical treatment, medication adherence, self-management education, environmental control, and trigger avoidance. When asthma is not under control, it can greatly hinder an individual's quality of life, impacting physical health, mental health, and productivity.

### Asthma Disparities

Large disparities related to race/ethnicity, gender, age, and income exist when looking at the most severe outcomes of the disease. While the prevalence of asthma in Florida (the proportion of the population with asthma) is similar among all race/ethnicity groups, substantial disparities exist in the rate of emergency department (ED) visits and hospitalizations, an indication of poorly controlled

asthma. Findings show non-Hispanic black Floridians have asthma ED visit and hospitalization rates two to three times that of the other racial/ethnic groups. This disparity is even larger among children, with non-Hispanic black children in Florida being four times more likely than non-Hispanic white children to receive care from the ED because of their asthma. Improving asthma outcomes among disparate populations must be a priority for all partners involved in asthma management.

## Asthma Expenditures

A recent study estimated medical expenses associated with asthma were $3,259 per person per year during 2002—2007, and the total direct and indirect costs of asthma to society in the United States was $56 billion in 2007.[i] While it is difficult to calculate the exact cost of asthma in Florida, it is important to note that in 2012 the combined charges for ED visits and hospitalizations with asthma listed as the primary diagnosis exceeded one billion dollars ($1,085 million). From 2008 to 2012, the number of asthma ED visits and hospitalizations covered by commercial insurance decreased by 11.1% and 25.8%, respectively, and the number covered by Medicaid increased by 72.5% and 30.4%, respectively. In 2012, Medicaid covered 55.9% of the total ED visits and hospitalizations due to asthma.

## About this Report

The intent of this report is to highlight the burden of asthma in Florida and to assist stakeholders, policymakers, and other interested parties in their efforts to reduce asthma ED visits and hospitalizations, associated costs, and improve the health of Floridians with asthma. This report will help to determine the future direction of asthma control efforts in Florida by identifying populations and domains with the greatest opportunity and need for improvement. The findings in this report will be used to support the strategic development of the Florida Asthma Plan, 2015-2019.

The information in this report can also be used by stakeholders and partners to target resources or interventions, set priorities, increase awareness, and to apply for funding. Stakeholders are encouraged to use the information in this report to improve asthma outcomes within organizations, target areas, and in Florida overall. The information in this report may also motivate organizational leaders to examine individually collected data to identify opportunities for improvement, as stressed below in the sector specific recommendations section.

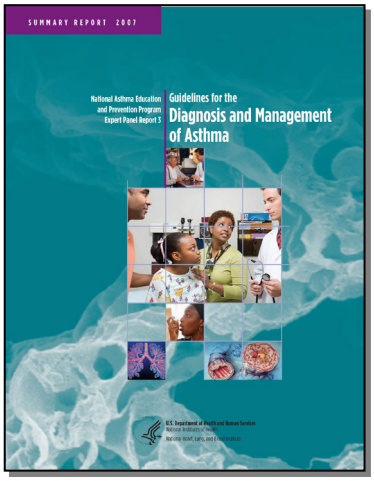
## Florida's Call to Action

The increasing prevalence, growing disparities, and rising costs detailed in this report call to action multiple public and private partners who only through collaboration can help reverse the negative health disparity trend and improve asthma outcomes in Florida. Guidelines from the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health (NIH) and the peer-reviewed literature on evidence-based interventions serve as the guides. A brief introduction to the national guidelines and specific sector by sector recommendations for immediate action are presented below.

### National Guidelines

The *Expert Panel Report 3 (EPR-3): Guidelines for the Diagnosis and Management of Asthma*[ii], was developed by an expert panel commissioned by the National Asthma Education and Prevention Program Coordinating Committee coordinated by the NHLBI. The EPR-3 sets forth standards of asthma classification, care, and treatment, based on a review of the numerous studies that have been published documenting the effectiveness of various asthma interventions. The updated guidelines support the efforts of those who already incorporate best practices and encourage primary care clinicians, asthma specialists, health care systems and providers, and communities to join together in making quality asthma care available to all people who have asthma. The ultimate goal is to enable people with asthma to maintain long-term control of their asthma so they can be active all day and sleep well at night with the least amount of medication possible.

In addition to the full report, a companion document, *Expert Panel Report 3 (EPR-3): Guidelines for the Diagnosis and Management of Asthma – Summary Report 2007*, was developed to highlight key information from the full report on the diagnosis and management of asthma. Summary information is provided on measures of assessment and monitoring, education for a partnership in asthma care, control of environmental factors and comorbid conditions that affect asthma, and medications. Key tables and figures from the full report are also included for easy reference.




The EPR-3 strategies for managing asthma long-term and for managing exacerbations are centered on four essential components of asthma care, namely: assessment and monitoring, patient education, control of factors contributing to asthma severity, and pharmacological treatment. Adherence to national EPR-3 Guidelines by hospitals, clinicians, and patients would result in optimal circumstances whereby most patients would meet regularly with a physician about their asthma, adhere to prescribed medication regimens, and have a long-term asthma management plan to help manage the symptoms of asthma sufficiently well so that they do not have exacerbations necessitating medical intervention in emergency departments or require inpatient hospitalization.

## Sector by Sector Guidance

Complimentary efforts by institutions and organizations are needed to improve asthma control and reduce the burden on citizens and health systems in Florida. The following sector specific recommendations were compiled from multiple sources including published literature, the Center for Disease Control and Prevention's (CDC) Vital Signs Report on Asthma[iii], and the National Asthma Control Initiative's *Take Action: Stop Asthma Today*. All of these recommendations align with the evidence-based EPR-3 guidelines discussed above. Tips are categorized in two areas; data use and taking action. This distinction serves to underscore the importance of 1) learning the scope of the problem within your organization or community, 2) targeting resources based on the data and cooperating across sectors, and 3) conducting ongoing monitoring and assessment to enable continuous improvement.

### *State and Local Public Health Agencies*

***Use Your Data:***

- Track asthma rates and communicate findings to state and local partners and stakeholders.
- Encourage ongoing assessment of the effectiveness of asthma control measures so continuous improvements can be made.

***Take Action and Collaborate Across Sectors:***

- Use data to engage stakeholders from various sectors including health care providers, Floridians with asthma, child care and school administrators, staff, and nurses, employers, and insurers.
- Facilitate collaboration and coordination between partners through coalitions or other alliances.
- Use coalitions to enable peer support and rapid transfer of best practices between similar entities. Cross sector partnerships, such as those between primary providers and schools, are critical to successful community-wide asthma management.
- Promote influenza and pneumonia vaccinations for people with asthma as well as indoor air quality improvements for people with asthma through measures such as smoke-free air laws and policies, healthy homes, schools and workplaces, and improvements in outdoor air quality.

### *Health Plans and Insurers*

***Use Your Data:***

- Assess the number of individuals with asthma or asthma-like symptoms covered by your plan.
- Review existing data on office visits, urgent care visits, ED visits, hospitalizations, pharmacy orders, refills, and pick-ups, to identify individuals at higher risk for poor asthma control and outcomes. These individuals will likely benefit the most from evidence-based interventions that support disease management.
- Use data to conduct ongoing monitoring and to obtain feedback on asthma care processes, quality, and outcomes. Produce "quality reports" to help ensure positive outcomes such as provider performance profiles, health plan report cards, and consumer satisfaction reports.
- Use clinical information systems, including electronic medical records and decision support programs, to enhance adherence to clinical practice guidelines.

## *Health Plans and Insurers (continued)*

***Take Action and Collaborate Across Sectors:***

- Help your members, especially those at higher risk for poor asthma outcomes, improve control of their asthma symptoms and reduce asthma episodes through disease management programs consistent with the EPR-3 guidelines, including establishing requirements for the provision of asthma-action plans and self-management education for every patient with asthma.
- Consider measures that prevent asthma exacerbations such as eliminating co-payments for inhaled corticosteroids and other prescribed medicines and devices (such as spacers).
- Use reimbursements as an incentive to ensure delivery of self-management education and home environmental assessments conducted by clinicians, health educators, community health workers, and other health professionals both within and outside of the clinical setting.

## *Employers and Workplaces*

***Use Your Data:***

- In 2010, approximately one third of Florida adults with current asthma reported missing one or more work days due to asthma.[iv] Partner with your human resources office and health care plans to explore how data may be used to assess, improve, and monitor asthma outcomes for your employees.

***Take Action and Collaborate Across Sectors:***

- Promote a healthy workplace by reducing or eliminating known asthma triggers.
- Schedule an asthma presentation or training session at a staff meeting, brown bag lunch, or workplace health fair.
- Work with your health plans to ensure reimbursement is available for long-term control medications, devices, self-management education conducted by clinicians, health educators, and other health professionals, and services to identify and reduce asthma triggers in homes of patients with asthma.
- Visit the Occupational Safety and Health Administration website for a wealth of information on asthma irritants in the workplace and how to train workers to avoid triggers and to take precautions when they are unavoidable.

## *Physicians and Other Primary Care Providers*

***Use Your Data:***

- Use patient management information systems or electronic medical records (EMR) to assess and track asthma patient care. Three out of four adults in Florida with asthma (75.3%) report never having received an Asthma Action Plan from a doctor or other health professional. Use your data systems to track and monitor this and other components of asthma care.

## *Physicians and Other Primary Care Providers (continued)*

***Take Action and Collaborate Across Sectors:***

- Make asthma self-management a priority for your patients, their families, and their caregivers.
- Assess asthma severity at the initial visit to determine initial treatment and monitor your patient's level of control during follow-up asthma visits.
- Develop an Asthma Action Plan and review it with each patient to ensure the patient understands daily medications and proper usage techniques, how to avoid asthma triggers, and how to identify warning signs that require quick-relief medications or additional medical interventions.
- For children, obtain parental permission and provide a copy of the Asthma Action Plan to child's school and/or daycare center.
- For children, obtain parental permission to collaborate with school nurses to share and obtain information about asthma episodes and treatments at school.
- Train staff on how to apply the EPR-3 asthma guidelines routinely in your practice setting. Many online training programs are available free of cost for all levels of medical professionals. Visit the Florida Asthma Coalition's website for a comprehensive listing of on-line trainings for physicians and other health care providers.

## *Hospitals and Emergency Departments*

***Use Your Data:***

- Assess readmission rates (ED and hospitalizations separately and combined) at various time intervals.
- Performance improvement offices are in a priority position to review these data to see how many patients with an initial asthma visit returned to the ED or hospital within 7 days, 30 days, or other time intervals. The need for this type of assessment aligns with changes to Medicaid reimbursement policies related to readmission.
- Use data on the number of visits amongst individuals in your catchment area as part of required community health improvement planning processes.

***Take Action and Collaborate Across Sectors:***

- Ensure patients have an Asthma Action Plan, provide or make referrals to self-management education, provide education and resources on managing environmental triggers in the home, and communicate with primary care and community care providers as needed.
- Train staff on how to apply the EPR-3 asthma guidelines routinely in the hospital or ED setting. Many online training programs are available free of cost for all levels of medical professionals. Visit the Florida Asthma Coalition's website for a comprehensive listing of on-line trainings for physicians and other health care providers.
- Reach out to the community to provide education sessions to childcare centers, school nurses, and others who can help individuals with asthma better manage their disease. Non-profit hospitals can make these efforts part of their routine activities related to community benefit. Visit www.FloridaAsthmaCoalition.com to learn more and get involved.

## *Schools and Child Care Organizations*

***Use Your Data:***

- Identify school children with asthma at the beginning of each school year. This will enable schools to track absenteeism, health room visits, 9-1-1 calls, and the number of times children leave school with asthma-related issues. This will enable school staff to identify and monitor students in need for additional asthma management support.

***Take Action and Collaborate Across Sectors:***

- Request a written Asthma Action Plan from the health care provider for each student with asthma. Work with the child, family, health care provider to help the child adhere to the plan.
- Ensure students' quick-relief inhalers are readily available for them to use at school as needed. This includes allowing them to carry the inhaler on their person, in accordance with Florida Law, when the health care provider, parent and school nurse deem this appropriate.
- Create an indoor air quality management plan. Get help at: http://www.epa.gov/iaq/schools/index.html
- Fix indoor air quality problems like mold and address outdoor air quality problems such as idling school buses.
- Make education on proper asthma medication administration and steps to follow for an asthma episode part of routine training for all school staff, from bus drivers to school administrators. Low cost training programs are available through the American Lung Association and many local children's hospitals.
- School administrators and leaders should visit the Florida Asthma Coalition's Asthma-Friendly Schools Webpage and establish a comprehensive plan to meet the needs of children with asthma and obtain the Asthma-Friendly School Recognition.
- Child Care center administrators and staff can visit the Florida Asthma Coalition's Asthma-Friendly Child Care Centers Webpage for resources and an opportunity to obtain recognition for efforts to improve asthma management at your center.

## *Pharmacists*

***Use Your Data:***

- Monitor your pharmacy's asthma medication order and refill intervals to identify patients with poorly controlled asthma. Contribute to the community's asthma management team by alerting prescribers about patients whose asthma may be poorly controlled.

***Take Action and Collaborate Across Sectors:***

- Instruct patients about the proper use of medications (e.g. quick relief vs. controller) and techniques for using different devices.
- Encourage the use of spacers in young children.
- Help patients use peak flow meters appropriately.
- Encourage patients purchasing over the counter (OTCs) asthma medications to seek medical care.

*Pharmacists (continued)*

- Help patients, including those discharged from the hospital understand how to use their Asthma Action Plan.
- Share information about the EPR-3 Guidelines with prescribers.
- Collaborate with primary providers and hospitals by alerting prescribers about refill data indicating patients whose asthma may be poorly controlled.
- For more tips, review NIH and NHLBI's document on the Role of the Pharmacist in Improving Asthma Care.

## *Health Care Professional Associations*

***Use Your Data:***

- Encourage your members to use the data they have to monitor and improve asthma care, quality, and outcomes.

***Take Action and Collaborate Across Sectors:***

- Include a link to the National Asthma Control Initiative on your website and promote the six priority action messages amongst your members. http://www.nhlbi.nih.gov/health/prof/lung/asthma/naci/
    1. Prescribe inhaled corticosteroids as indicated by the guidelines.
    2. Use written Asthma Action Plans to guide patient self-management.
    3. Assess asthma severity at the initial visit to determine initial treatment.
    4. Assess and monitor asthma control and adjust treatment if needed.
    5. Schedule follow-up visits at periodic intervals.
    6. Act to control environmental exposures that worsen asthma.
- Engage members in self-assessment, professional development, and quality improvement efforts related to asthma management and control.
- Promote educational seminars and on-line trainings related to the EPR-3 Guidelines such as the *Physician Asthma Care Education (PACE) Program* and *Asthma in the Primary Care Practice* on-line training. Visit the Florida Asthma Coalition's website for a comprehensive listing of on-line trainings for physicians and other health care providers.

## Using this Report

The intent of this report is to highlight the burden of asthma in Florida and to assist stakeholders, policymakers, and other interested parties in their efforts to reduce this burden. Readers are encouraged to resolve how they might use the information in this report to improve asthma outcomes through efforts in their organization, local community, or in Florida overall. The previous section provided sector-specific recommendations to motivate organizational leaders to examine their own data to identify opportunities for improvement and collaboration across sectors.

In this report, data from several sources are presented to provide a comprehensive view of the overall burden of asthma in the state of Florida. This includes trends in asthma prevalence, disease impact, associated factors, health effects, environmental factors, clinical treatment, and education. The main body of this report contains figures that present percentages, counts, and rates. Narrative is provided to aid in the interpretation and understanding of the data presented in the figures.

Determination of statistical significance for the population-based survey data in this report is based on non-overlapping 95% confidence intervals (CIs). Differences labeled "significant" are statistically significant at the 95% CI level unless otherwise noted. The appendices provide detailed tables of the data presented in the figures, additional information about the data sources, and a discussion of the methodologies used during analysis and interpretation.

### Report Structure

The report first describes who in Florida has asthma by examining lifetime and current asthma prevalence among both children and adults. These terms, along with others, are defined in the glossary of this document. The second section focuses on risk and protective factors associated with the disease, such as obesity, physical activity, tobacco use, indoor and outdoor air quality, and insurance coverage. The third section delves deeply into data on asthma's impact on the individual and how well asthma is managed, including symptoms, activity limitations, treatment, and education. Lastly, the burden of asthma is explored through the discussion of health-related outcomes including ED visits, hospitalizations, and finally deaths.

### Appendices

Several appendices have been included at the end of this document to provide additional support to readers and stakeholders. In **Appendix A**, readers will find summary tables for the figures included in this report. **Appendix B** provides resources for accessing local asthma data in Florida. **Appendix C** is a glossary of the terms used throughout this document for easy reference, and **Appendix D** provides technical information about the asthma data sources and methodology used in this report.

# Prevalence – Who Has Asthma?

# Prevalence – Who has asthma?

The following section discusses the prevalence of asthma in Florida. Prevalence is the percentage of a defined population with a certain condition. Asthma prevalence in Florida is primarily monitored through population-based surveys, including the Behavioral Risk Factor Surveillance System (BRFSS), the Youth Risk Behavior Survey (YRBS), and the Florida Youth Tobacco Survey (FYTS). More detailed information about each of these surveys is available in Appendix D: Methodology and Technical Notes.

**Definitions of Lifetime and Current Asthma**

Lifetime asthma prevalence is defined as individuals who report they have been told 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 report they still have asthma.

## Key Findings

### Overall

- More than 2.6 million Florida children and adults had lifetime asthma, and approximately 1.6 million had current asthma in 2012
    - One out of eight adults in Florida had lifetime asthma and one in 12 had current asthma
    - One out of five children in Florida had lifetime asthma and one in 10 had current asthma
- The prevalence of lifetime and current asthma in Florida did not differ from the national rate

### Gender

- Adult females had a significantly higher prevalence of lifetime and current asthma than adult males in Florida
- Adolescent males had a higher prevalence of lifetime asthma than adolescent females, although this difference was not statistically different
- Adolescent females had a significantly higher prevalence of current asthma than adolescent males

### Race/Ethnicity

- Hispanic adults had the highest prevalence of lifetime asthma and non-Hispanic white adults had the highest prevalence of current asthma, but the differences were not statistically significant
- Non-Hispanic white adolescents had the lowest prevalence of lifetime asthma
- Non-Hispanic black adolescents had the highest prevalence of current asthma

### Age

- The prevalence of lifetime asthma among younger adults (ages 18-34) was significantly higher than all other adult age groups

### Household Income

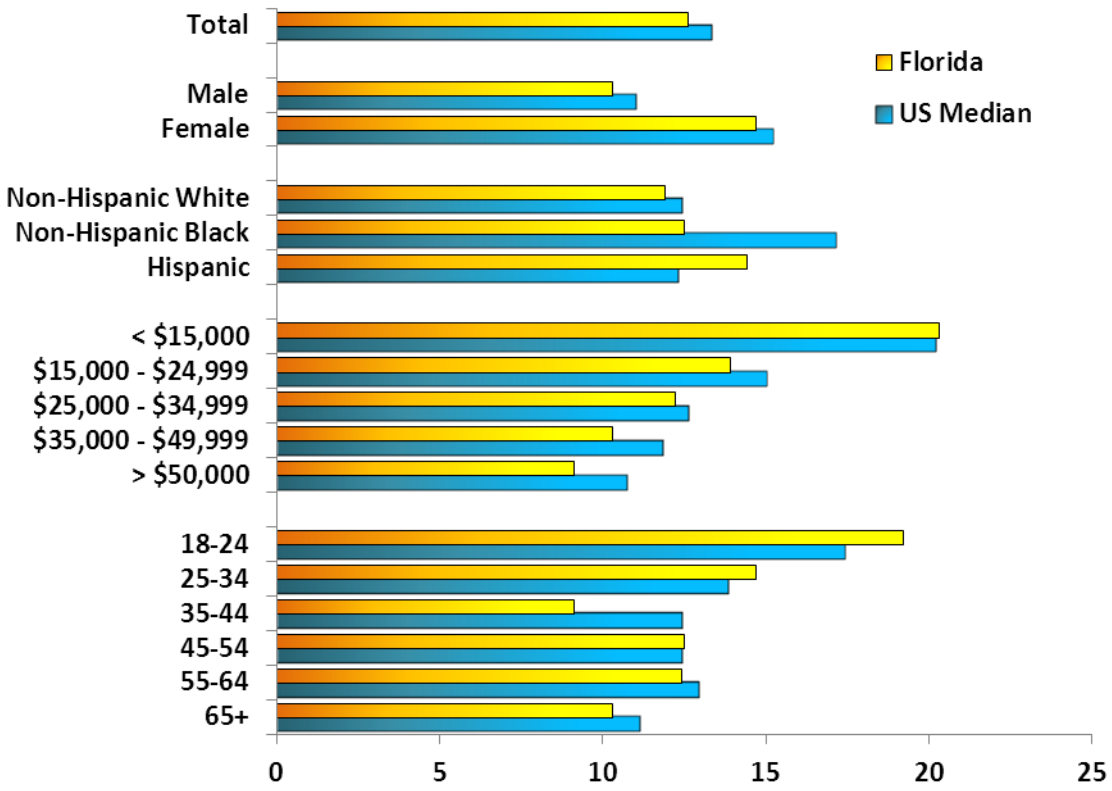
- Households with the lowest income levels (less than $15,000) had the highest prevalence of lifetime and current asthma

## Adult Lifetime Prevalence

### Lifetime Adult Asthma Prevalence, 2012 FL vs. US Overview

In 2012, approximately 1.9 million Florida adults (12.6%) reported lifetime asthma. As seen with the national data, the highest prevalence of lifetime asthma in Florida occurred among females, households with lower-income levels, and younger adults. Nationally, non-Hispanic black adults had the highest prevalence of asthma. In Florida however, Hispanics had the highest prevalence of lifetime asthma, although not significantly different from non-Hispanic white or non-Hispanic black adults (Figure 1).

Figure 1. Lifetime Adult Asthma Prevalence, BRFSS 2012



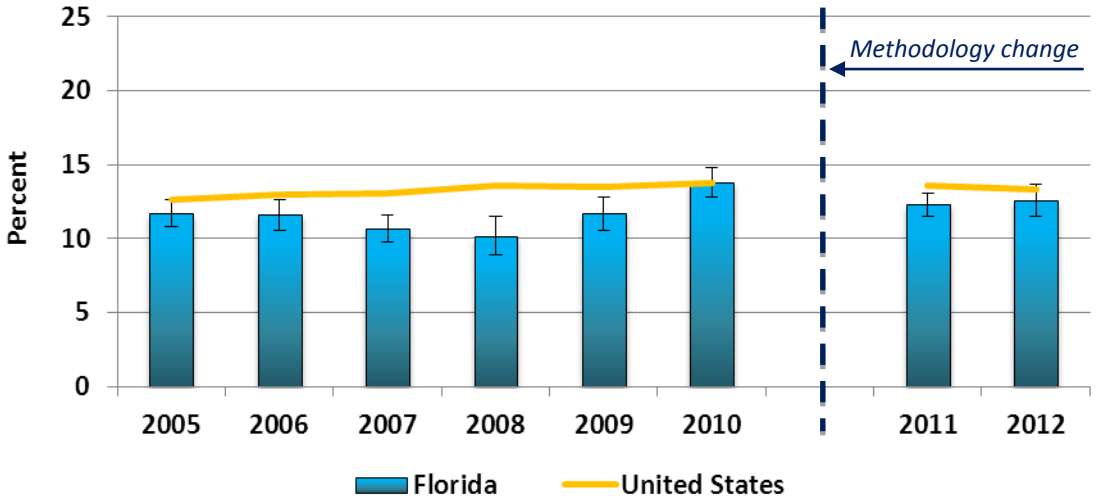

*Note: Beginning in 2011, to address the increasing number of cell phone-only households, CDC changed the methodology of the BRFSS, requiring states to collect data from both landline and cell phone respondents. To allow for the incorporation of cell phone data and to improve the accuracy of prevalence estimates based on BRFSS data, a new weighting methodology know as iterative proportional fitting or raking, was implemented in 2011.*

*Due to these methodology changes, BRFSS estimates from 2011 forward should not be compared to BRFSS estimates from previous years, and the 2011 estimates should be considered the new baseline for BRFSS data moving forward. These methodology changes will cause breaks in BRFSS trends, but will also greatly improve the accuracy, coverage, validity, and representativeness of the Florida BRFSS. In this report, the 2011 and 2012 estimates are displayed in graphs, but BRFSS trends will be discussed only for the years 2005 through 2010. More information about these changes can be found in Appendix D: Methodology and Technical Notes.*

## Lifetime Adult Asthma Prevalence Trends over Time, FL vs. US

According to the BRFSS, the prevalence of lifetime asthma increased significantly from 11.7% in 2005 to 13.8% in 2010 among Florida adults (Figure 2). During this time, adults in Florida have had a lower prevalence of lifetime asthma than adults nationally, but this difference was not always statistically significant.

Figure 2. Lifetime Adult Asthma Prevalence, BRFSS 2005 – 2012

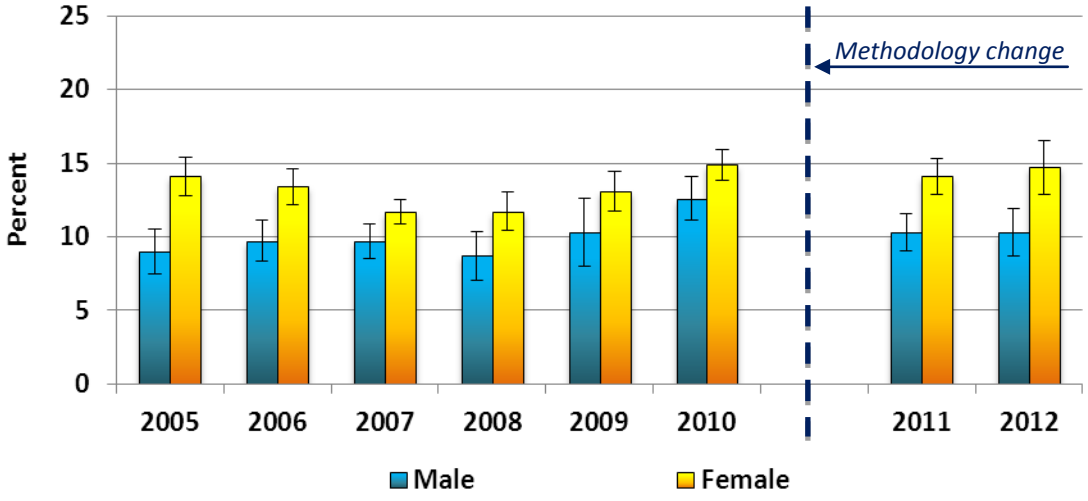



## Lifetime Adult Asthma Prevalence by Gender

From 2005 to 2010, the prevalence of lifetime asthma increased significantly among males. During this time, females in Florida consistently had a higher prevalence of lifetime asthma than males, although this difference was not always statistically significant (Figure 3).

In 2012, females (14.9%) had a significantly higher prevalence of lifetime asthma than males (12.6%).

Figure 3. Lifetime Adult Asthma Prevalence by Gender, BRFSS 2005 – 2012

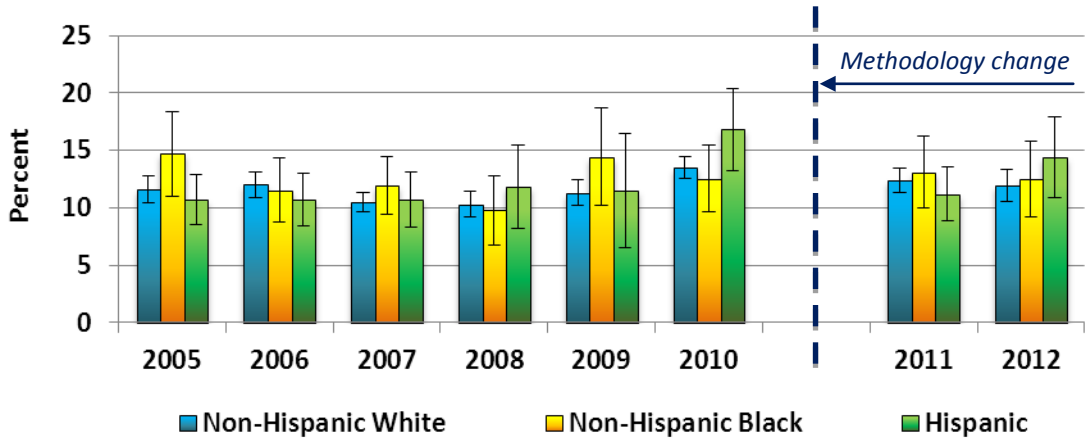


## Lifetime Adult Asthma Prevalence by Race/Ethnicity

From 2005 to 2010, the prevalence of lifetime asthma in Florida varied from group to group, but none of the differences between groups were statistically significant (Figure 4). During this time, the prevalence of lifetime asthma increased significantly by 57% for Hispanic adults.

In 2012, Hispanic adults (14.4%) had the highest prevalence of lifetime asthma, but this difference was not significantly higher than non-Hispanic white adults (11.9%) or non-Hispanic black adults (12.5%).

Figure 4. Lifetime Adult Asthma Prevalence by Race/Ethnicity, BRFSS 2005 – 2012

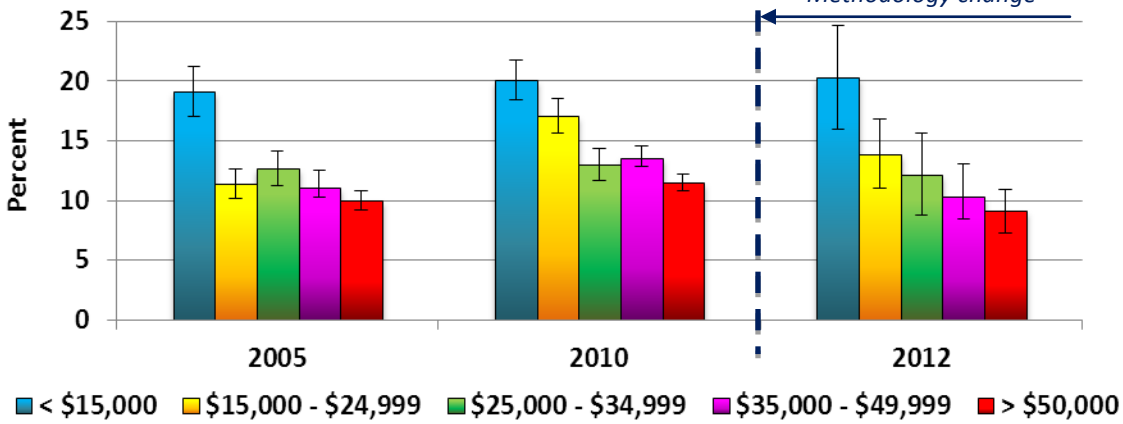



## Lifetime Adult Asthma Prevalence by Household Income

The prevalence of lifetime asthma decreases as household income increases (Figure 5). From 2005-2010, a significant increase occurred among Floridians with a household income of $15,000 to $24,999.

In 2012, the prevalence of lifetime asthma was highest among individuals living in a household with an income less than $15,000 (20.3%), and was significantly higher than individuals living in households with an income greater than $25,000.

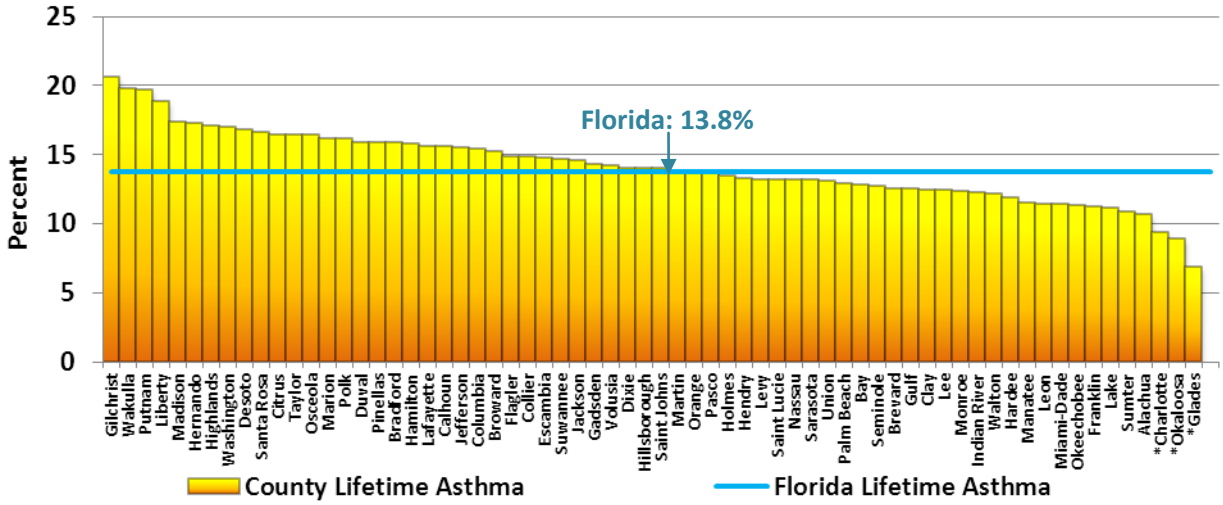
Figure 5. Lifetime Adult Asthma Prevalence by Household Income, BRFSS 2005, 2010, 2012



## Lifetime Adult Asthma Prevalence 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 significant (Figure 6). Three counties (Charlotte, Glades, and Okaloosa, noted with an *) had a significantly lower prevalence of lifetime asthma (9.4%, 6.9%, and 9.0%, respectively) than the state prevalence of 13.8%.

Figure 6. Lifetime Adult Asthma Prevalence by County, BRFSS 2010

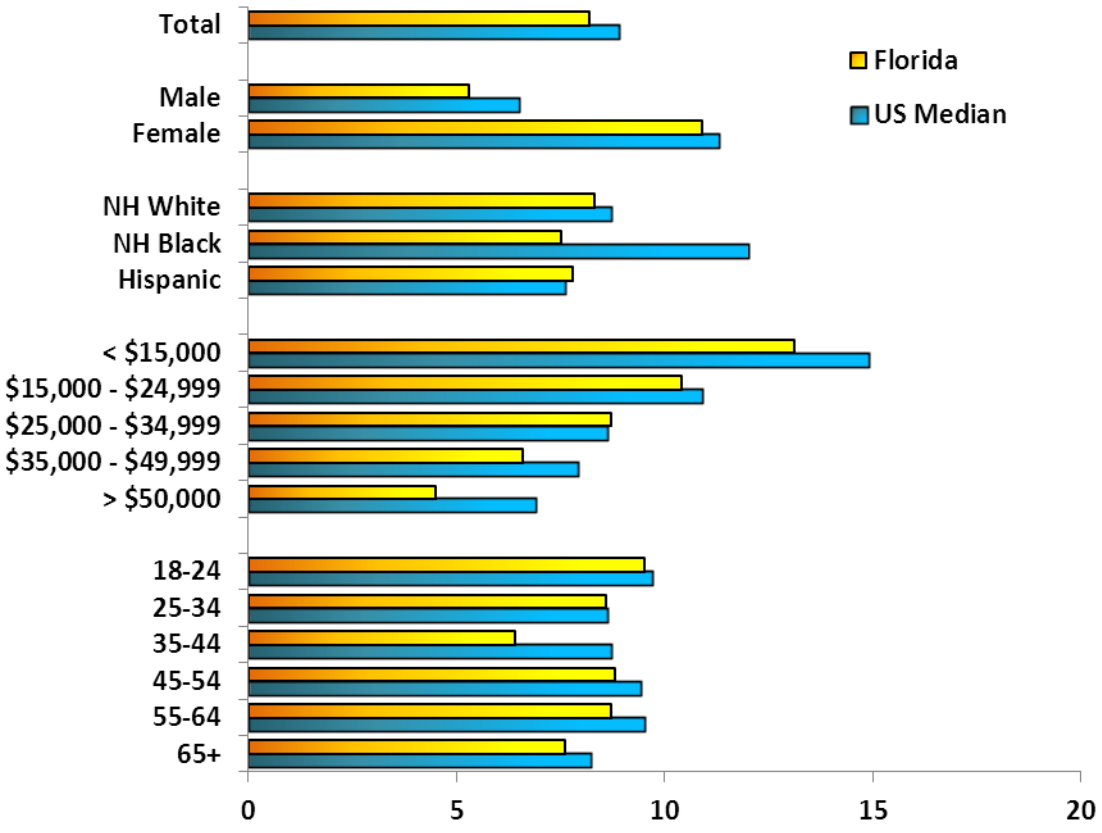


## Adult Current Prevalence

### Current Adult Asthma Prevalence, 2012 FL vs. US Overview

In 2012, approximately 1.2 million Florida adults (8.2%) reported current asthma. As with the national data, the highest prevalence of current asthma in Florida occurred among females and households with lower-income levels. Nationally, non-Hispanic black adults had the highest prevalence of current asthma. In Florida however, non-Hispanic white adults had the highest prevalence of current asthma, but this was not significantly higher than non-Hispanic black or Hispanic adults. Households with the highest and lowest incomes in Florida had lower prevalence of current asthma than their national counterparts (Figure 7).

Figure 7. Current Adult Asthma Prevalence, BRFSS 2012

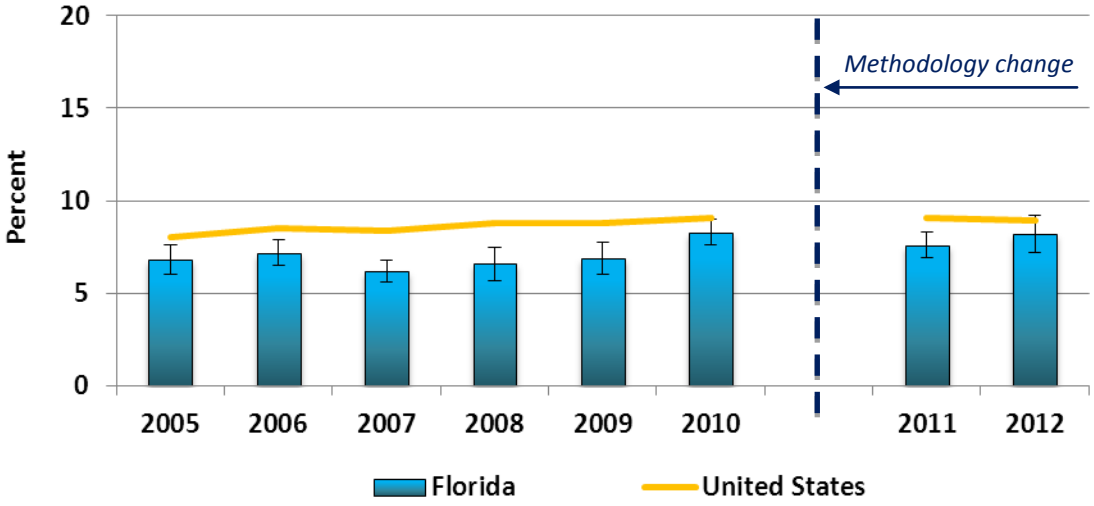



### Current Adult Asthma Prevalence Trends over Time, FL vs. US

The prevalence of current asthma among Florida adults increased significantly from 6.8% in 2005 to 8.3% in 2010 (Figure 8). Florida adults have consistently had a lower prevalence of current asthma than national counterparts, although this difference was not always statistically significant.

In 2012, one out of 12 Florida adults (8.2%) had current asthma.

Figure 8. Current Adult Asthma Prevalence, BRFSS 2005 – 2012

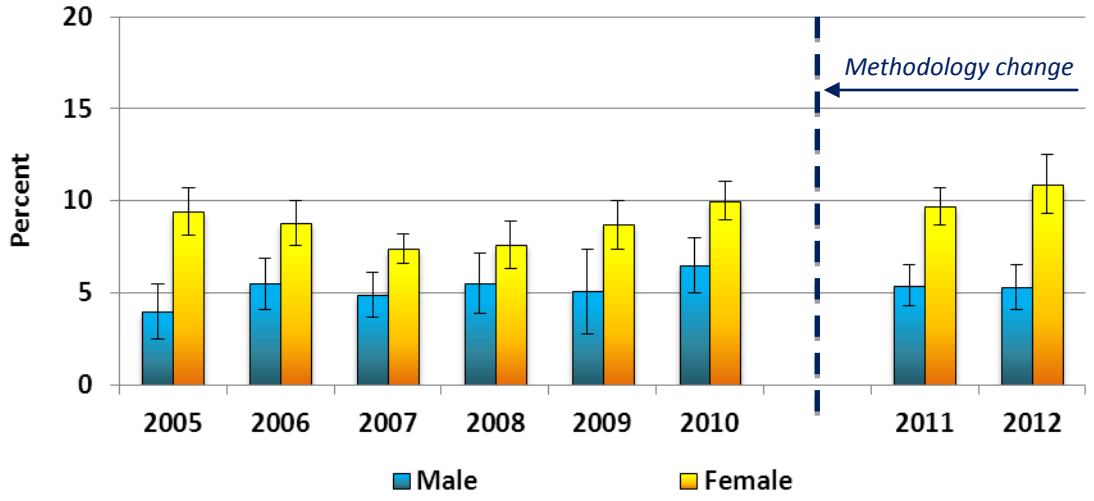



## Current Adult Asthma Prevalence by Gender

From 2005 to 2012, females have consistently had a significantly higher prevalence of current asthma than males. During this time, the prevalence of current asthma among males increased significantly.

In 2012, one out of 10 Florida females (10.9%) and one out of 20 Florida males (5.3%) reported current asthma. Females had a significantly higher prevalence of current asthma than males.

Figure 9. Current Adult Asthma Prevalence by Gender, BRFSS 2005 – 2012

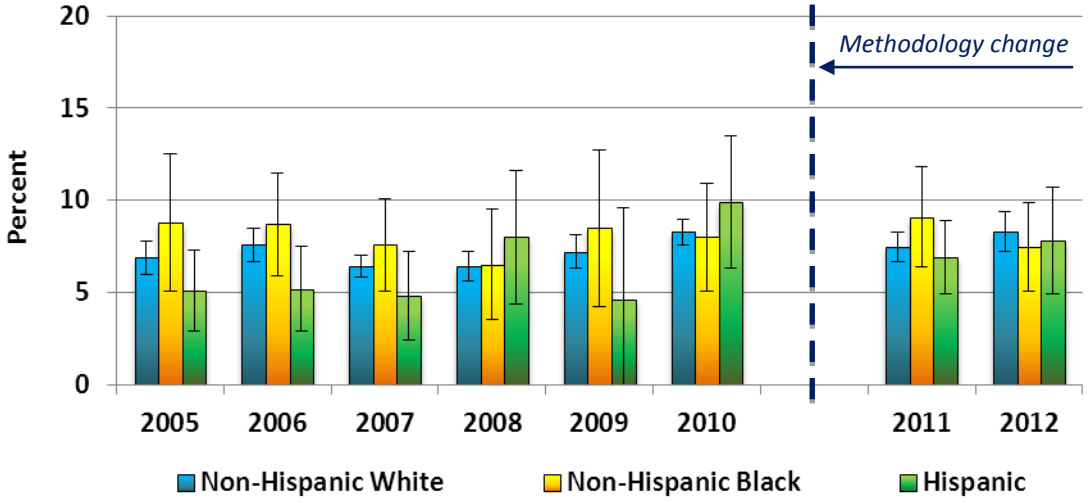



## Current Adult Asthma Prevalence by Race/Ethnicity

From 2005 to 2010, the prevalence of current asthma fluctuated by race/ethnicity. During this time, the prevalence of current asthma increased 94% among Hispanic Floridians (Figure 10).

In 2012, non-Hispanic white adults (8.3%) had the highest prevalence of current asthma, but this difference was not significantly higher than non-Hispanic black adults (7.5%) or Hispanic adults (7.8%).

Figure 10. Current Adult Asthma Prevalence by Race/Ethnicity, BRFSS 2005 – 2012

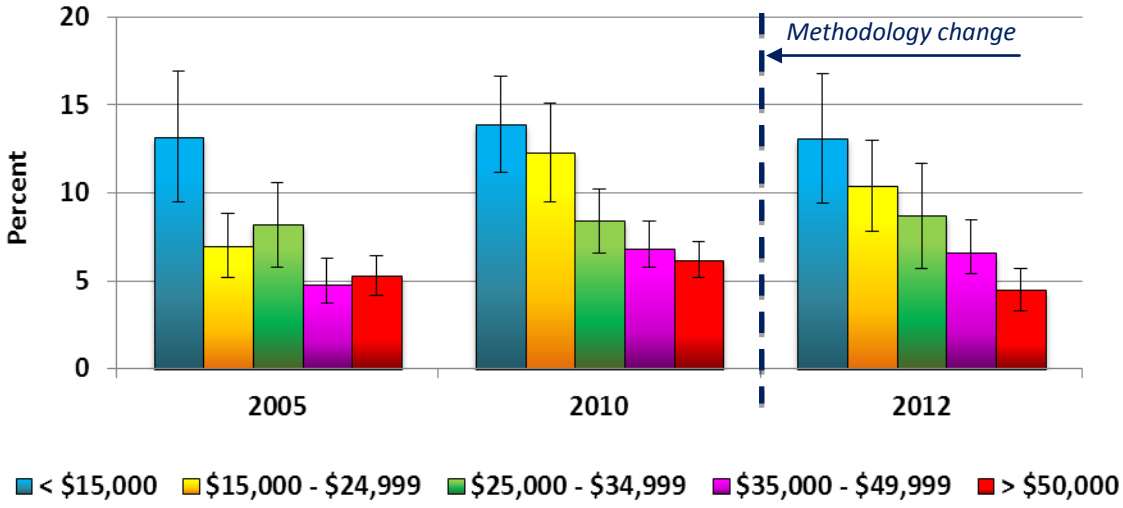



## Current Adult Asthma Prevalence by Household Income

As with lifetime asthma, the prevalence of current asthma decreases as household income increases. From 2005 to 2010, the prevalence of current asthma increased significantly among individuals living in households with an income between $15,000 and $24,999 (Figure 11).

In 2012, individuals living in households with an income less than $15,000 (13.1%) had a significantly higher prevalence of current asthma than individuals living in households with income levels between $35,000 and $49,999 (6.6%) and greater than $50,000 (4.5%).

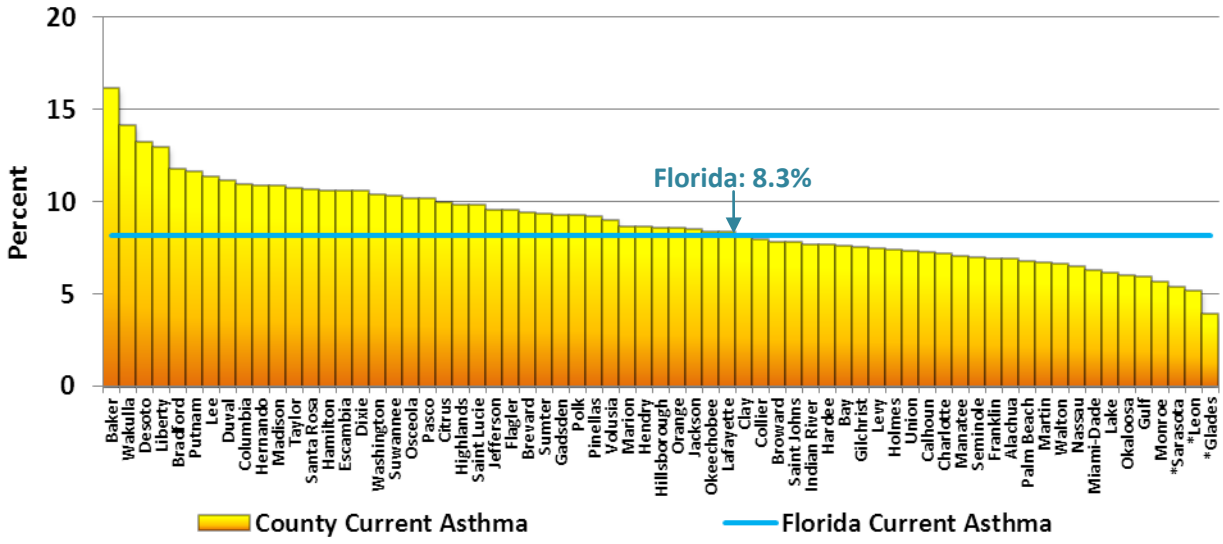
Figure 11. Current Adult Asthma Prevalence by Household Income, BRFSS 2005, 2010, 2012



## Current Adult Asthma Prevalence 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%. These counties are noted with an * (Figure 12).

Figure 12. Current Adult Asthma Prevalence by County, BRFSS 2010



## Child and Adolescent Lifetime Prevalence

Several sources of data are used to estimate the burden of asthma among youth. The Florida Child Health Survey (FCHS) is a call back survey to BRFSS respondents with children under the age of 18 years in the household who agree to participate in an additional survey. While this survey is limited by a small number of children with asthma (2010 n=263), this is the only data source that provides detailed asthma data for children ages 0-17 years.

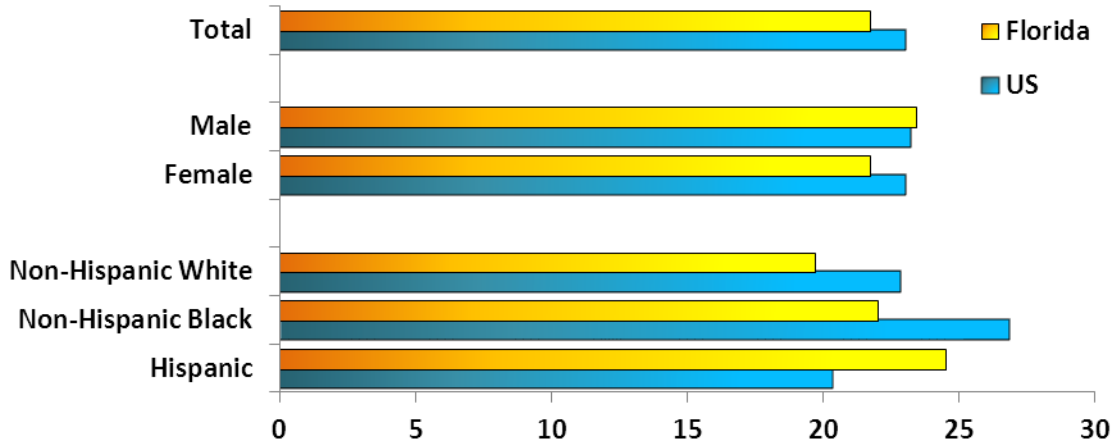
The Florida Youth Survey (FYS) is a collection of survey instruments administered annually to a random sample of Florida public middle and high school students (grades 6-8 and 9-12). One of the survey instruments, the Youth Risk Behavior Survey (YRBS), is administered every-other year to approximately 5,000 public high school students. This source will be used to examine comparisons between Florida youth and the rest of the nation. The Florida Youth Tobacco Survey (FYTS), another FYS instrument, is administered every year to Florida public middle and high school students. In the even-numbered years, this survey is administered at the county-level, collecting responses from approximately 60,000 public middle and high school students. Due to this large sample size, the FYTS is a very valuable tool for assessing differences between demographic groups and geographic areas. More information about these sources can be found in Appendix D: Methodology and Technical Notes.

### Lifetime Child and Adolescent Asthma Prevalence

In 2010, approximately 725,000 children under the age of 18 years in Florida had been told by a doctor, nurse, or other health professional they had asthma at some point in their lifetime.

In 2011, approximately 165,000 Florida public high school students (21.7%) reported lifetime asthma. Florida females had a significantly lower prevalence of lifetime asthma than their national counterparts. Nationally, as seen with the adult data, non-Hispanic black public high schools students had the highest prevalence of lifetime asthma. In Florida however, the prevalence of lifetime asthma was highest among Hispanic public high school students (Figure 13).

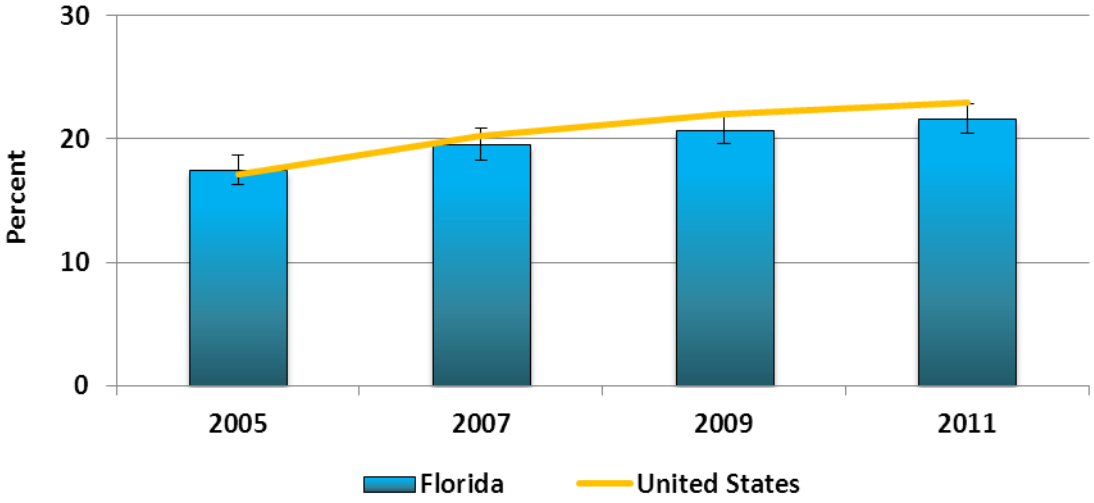
Figure 13. Lifetime Adolescent Asthma Prevalence, YRBS 2011



## Lifetime Adolescent Asthma Prevalence Trends over Time, FL vs. US (High School)

From 2005 to 2011, the prevalence of lifetime asthma increased significantly among public high school students in Florida and nationally. In Florida, the prevalence of lifetime asthma increased from 17.5% in 2005 to 21.7% in 2011. The prevalence of lifetime asthma among Florida public high school students was consistent with their national counterparts during this time period (Figure 14).

Figure 14. Lifetime Adolescent Asthma Prevalence, YRBS 2005 – 2011

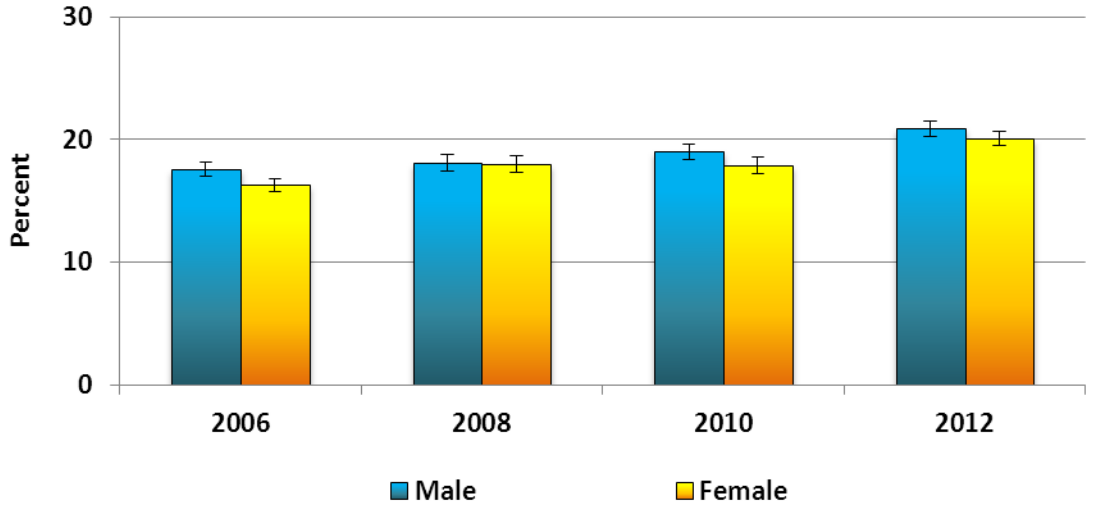



## Lifetime Adolescent Asthma Prevalence by Gender (Middle and High School)

From 2006 to 2012, the prevalence of lifetime asthma among Florida public middle and high school students increased significantly among both genders.

In 2012, approximately 1 out of 5 Florida public middle and high school students (20.5%) had lifetime asthma. Males (20.9%) and females (20.1%) did not differ significantly (Figure 15).

Figure 15. Lifetime Adolescent Asthma Prevalence by Gender, FYTS 2006 – 2012

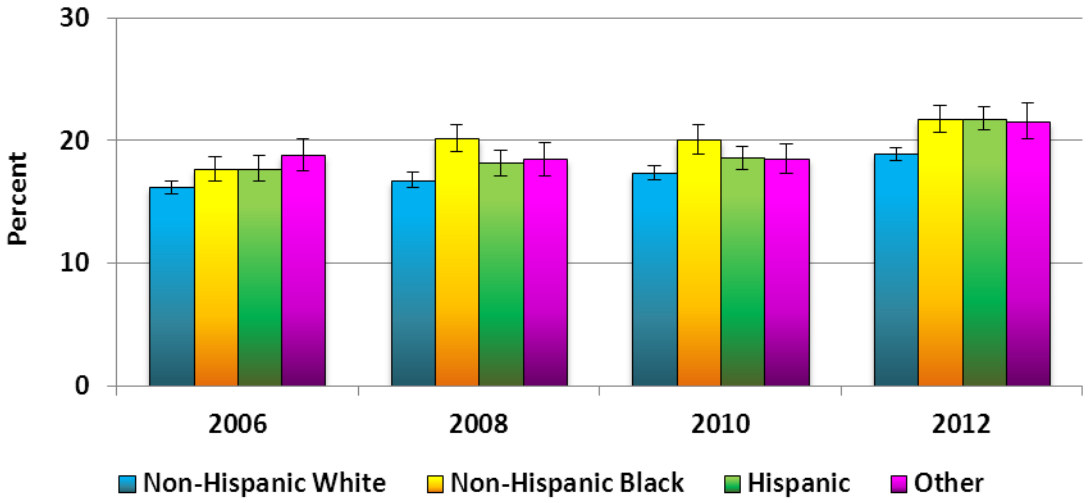


## Lifetime Adolescent Asthma Prevalence by Race/Ethnicity (Middle and High School)

From 2006 to 2012, the prevalence of lifetime asthma among Florida public middle and high school students increased significantly among all race/ethnicity groups (Figure 16).

In 2012, the prevalence of lifetime asthma among non-Hispanic white students (18.9%) was significantly lower than non-Hispanic black students (21.8%), Hispanic students (21.8%), and students belonging to the other race/ethnicity group (21.6%).

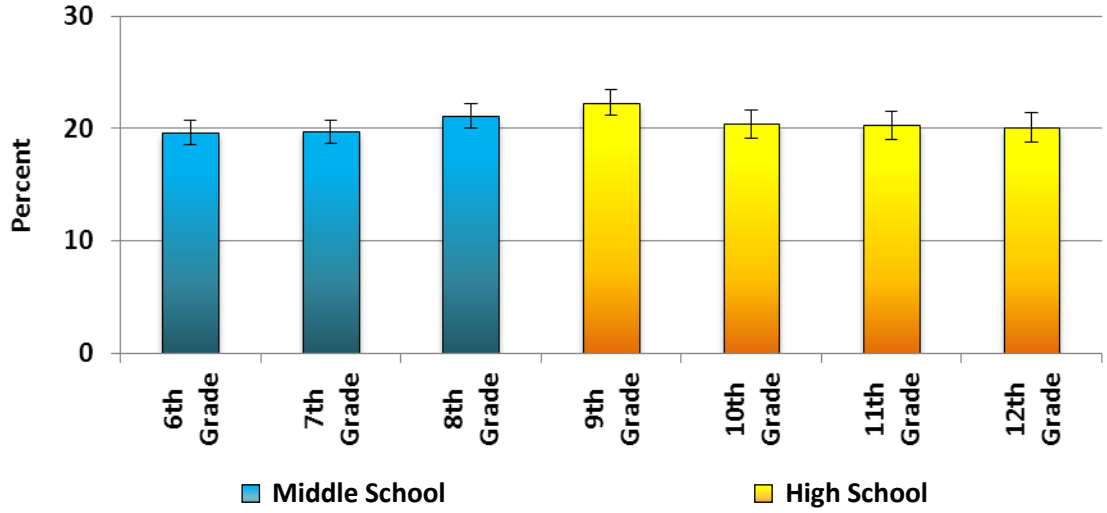
Figure 16. Lifetime Adolescent Asthma Prevalence by Race/Ethnicity, FYTS 2006 – 2012




## Lifetime Adolescent Asthma Prevalence by Grade (Middle and High School)

In 2012, 8th grade students (21.1%) and 9th grade students (22.3%) had the highest the prevalence of lifetime asthma. Students in 9th grade had a significantly higher prevalence of lifetime asthma than students in grades 6, 7, 10, 11, and 12 (Figure 17).

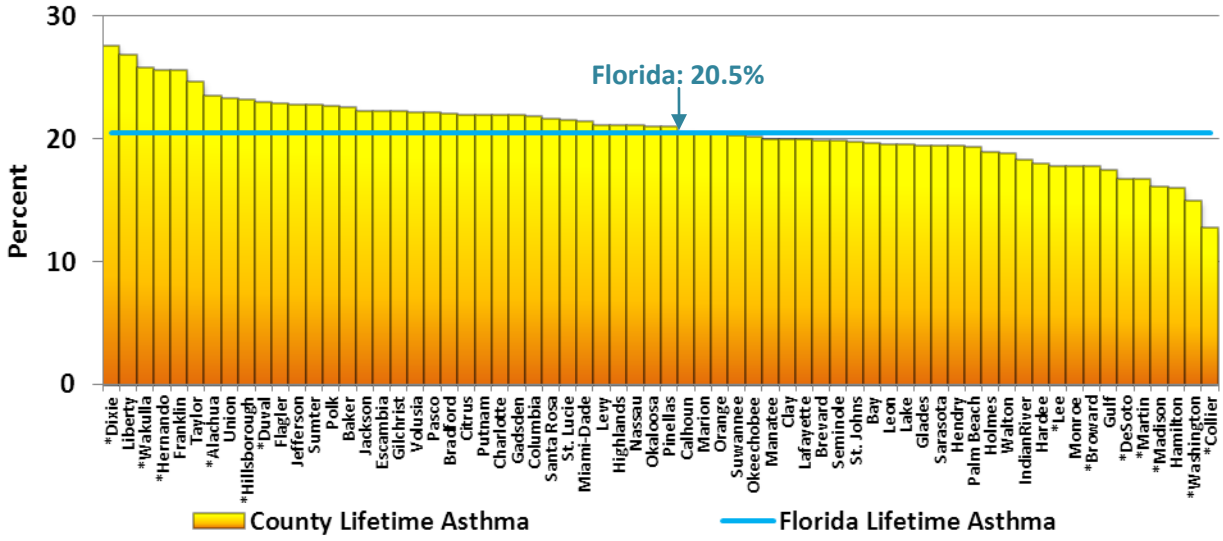
Figure 17. Lifetime Adolescent Asthma Prevalence by Grade, FYTS 2012



## Lifetime Adolescent Asthma Prevalence by County (Middle and High School)

In 2012, public middle and high school students in about half of the counties in Florida had a higher prevalence of lifetime asthma than the state, but only six counties were statistically higher (Alachua, Dixie, Duval, Hernando, Hillsborough, and Wakulla). In addition, middle and public high school students in seven counties (Broward, Collier, DeSoto, Lee, Madison, Martin, and Washington) had a statistically lower prevalence of lifetime asthma than the state. These counties are noted with an * (Figure 18).

Figure 18. Lifetime Adolescent Asthma Prevalence by County, FYTS 2012



## Child and Adolescent Current Prevalence

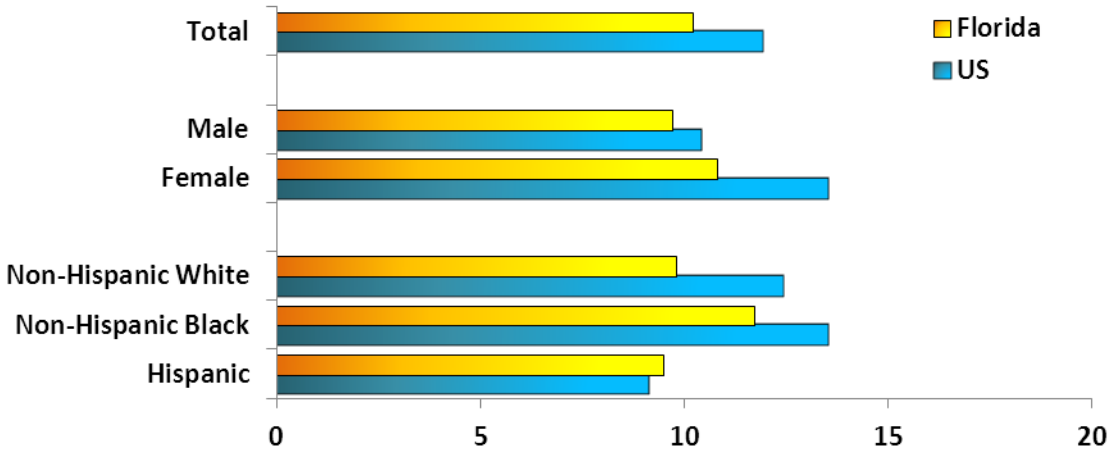
### Current Child Asthma Prevalence

In 2010, among the 725,000 children in Florida under the age of 18 years who had ever been told they had asthma by a doctor, nurse, or other health professional, parents reported that approximately 435,000 (60%) still had asthma.

### Current Adolescent Asthma Prevalence Trends over Time, 2011 FL vs. US Overview (High School)

In 2011, approximately 77,000 Florida public high school students (10.2%) reported current asthma, significantly lower than the national average (11.9%). This is largely attributable to Florida female students and Florida non-Hispanic white students having a significantly lower prevalence of current asthma than their national counterparts. Nationally, non-Hispanic black and non-Hispanic white students had a significantly higher prevalence of current asthma than Hispanic students. Non-Hispanic black students had the highest prevalence of current asthma in Florida public high schools, but this was not statistically different from any of the other race/ethnicity groups (Figure 19).

Figure 19. Current Adolescent Asthma Prevalence, YRBS 2011

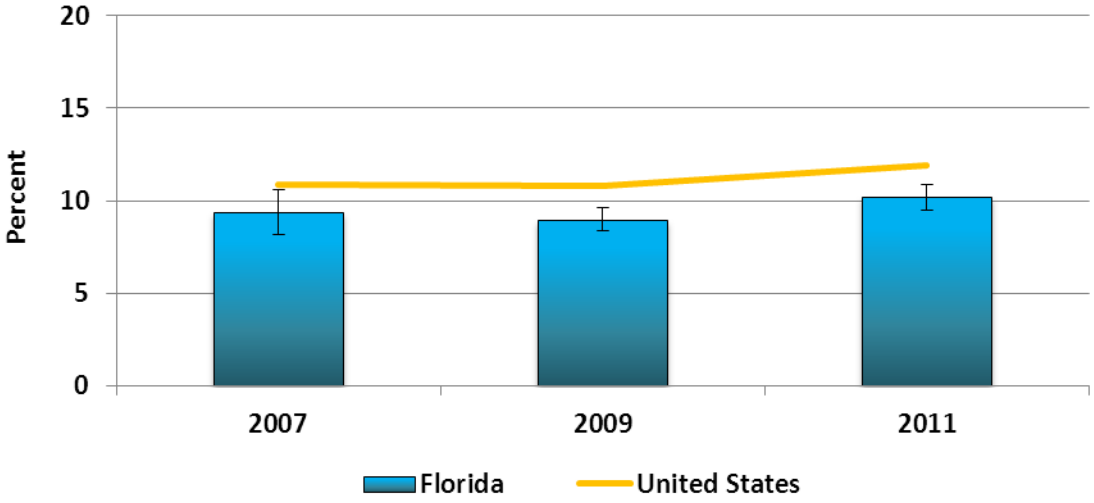



### Current Adolescent Asthma Prevalence Trends over Time, FL vs. US (High School)

From 2007 the 2011, the prevalence of current asthma among Florida public high school students has not changed significantly, although it seems to be moving in an upward trend, both in Florida and nationally (Figure 20).

In 2011, one out of 10 Florida public high school students (10.2%) currently had asthma, compared to one out of nine public high schools students nationally (11.9%).

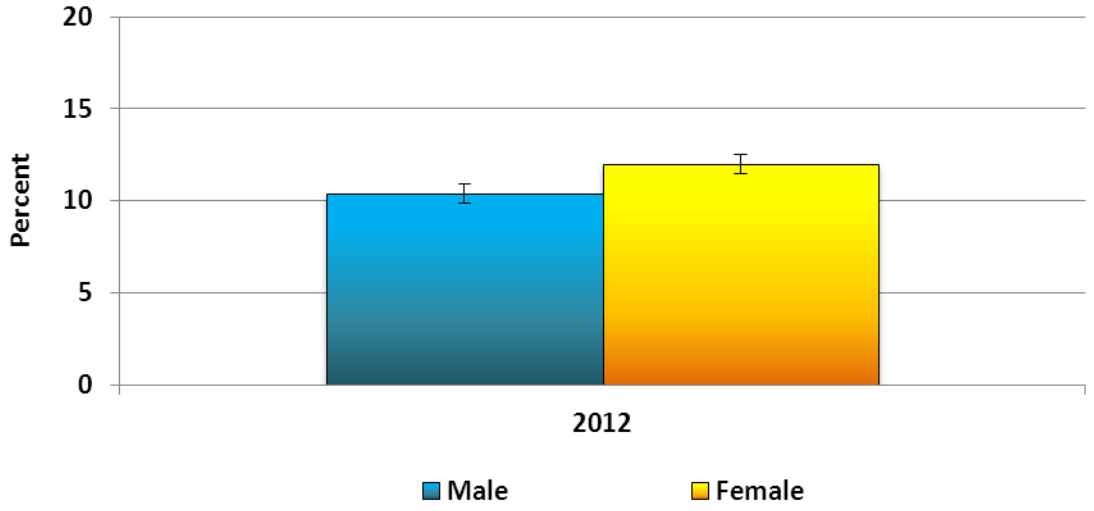
Figure 20. Current Adolescent Asthma Prevalence, YRBS 2007 – 2011




## Current Adolescent Asthma Prevalence by Gender (Middle and High School)

The 2012 FYTS marks the first time the current asthma prevalence question, "Do you still have asthma?" was asked on this survey, providing data at the county level. In 2012, Florida female public middle and high school students (12.0%) had a significantly higher prevalence of current asthma than Florida male public middle and high school students (10.4%) (Figure 21).

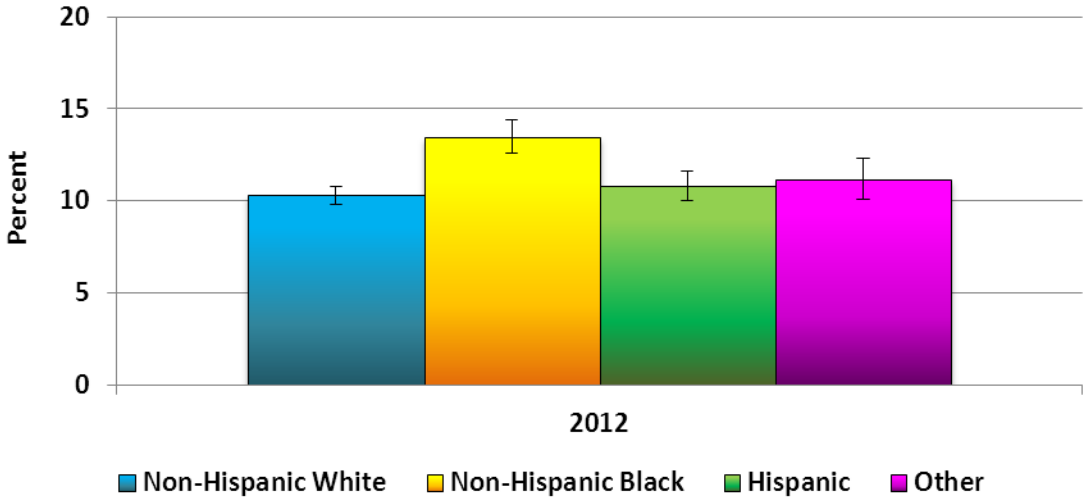
Figure 21. Current Adolescent Asthma Prevalence by Gender, FYTS 2012




## Current Adolescent Asthma Prevalence by Race/Ethnicity (Middle and High School)

In 2012, Florida non-Hispanic black students (13.5%) had a significantly higher prevalence of current asthma than non-Hispanic white (10.3%), Hispanic (10.8%), and Other (11.2%) public middle and high school students (Figure 22).

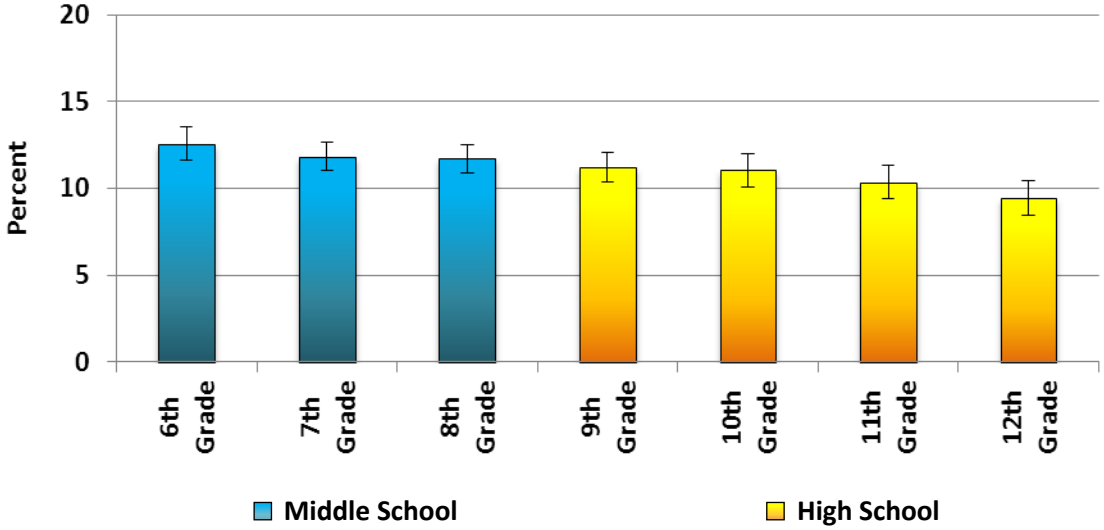
Figure 22. Current Adolescent Asthma Prevalence by Race/Ethnicity, FYTS 2012




## Current Adolescent Asthma Prevalence by Grade

The prevalence of current asthma decreases as grade level increases (Figure 23). The prevalence of current asthma among 6th grade students (12.6%) was significantly higher than 11th and 12th grade students (10.3% and 9.4%, respectively).

Figure 23. Current Adolescent Asthma Prevalence by Grade, FYTS 2012

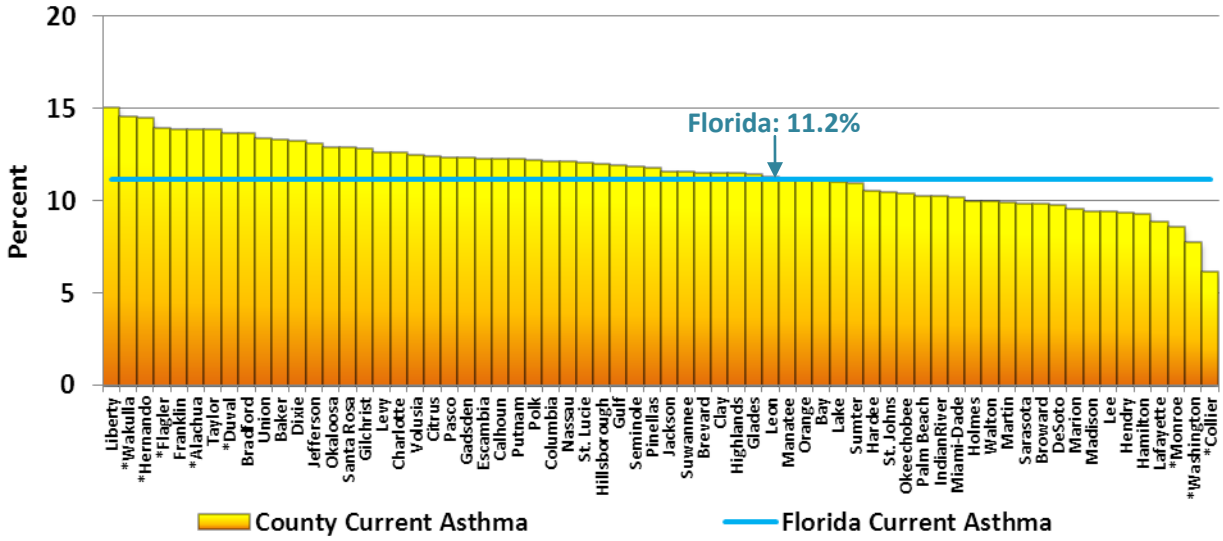



## Current Adolescent Asthma Prevalence by County (Middle and High School)

In 2012, public middle and high school students in nearly two-thirds of the counties in Florida had a higher prevalence of current asthma than the state average, but only five counties were statistically higher (Alachua, Duval, Flagler, Hernando, and Wakulla). In addition, middle and public high school

students in three counties (Collier, Monroe, and Washington) had a statistically lower prevalence of lifetime asthma than the state. These counties are noted with an * (Figure 24).

Figure 24. Current Adolescent Asthma Prevalence by County, FYTS 2012



# Factors Associated with Asthma

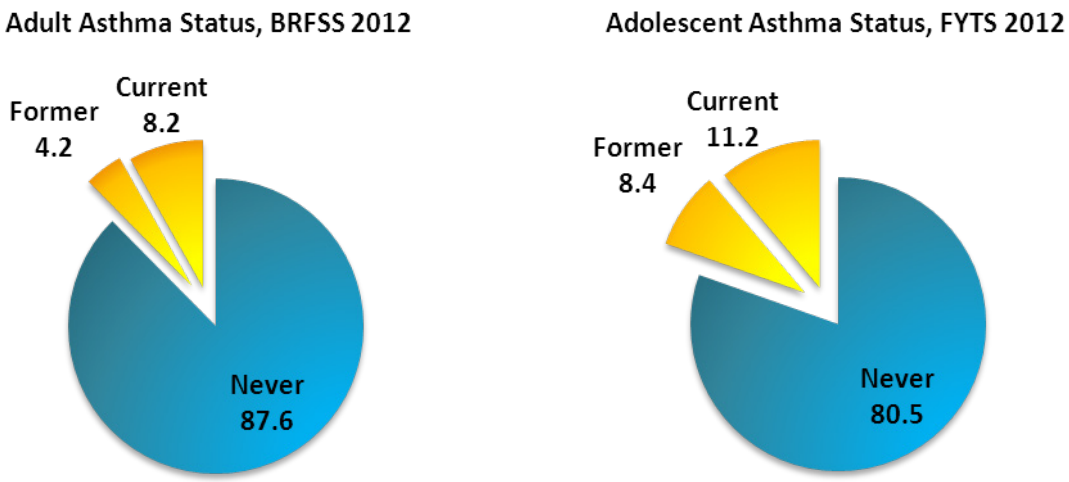
# Factors Associated with Asthma

This section discusses some of the risk and behavioral factors that may complicate asthma management or exacerbate asthma in Florida children and adults. Factors include obesity and physical activity, tobacco use and exposure, air quality, influenza vaccination, insurance coverage, and co-morbid conditions. For this section, these factors were analyzed by asthma status. Comparisons were first made between those with lifetime asthma and those who never had asthma. When the sample size was large enough to produce reliable estimates, comparisons were made using the three following levels of asthma status:

1. **Never Had Asthma:** Floridians who have never been told by a doctor, nurse, or other health professional that they have asthma
2. **Former Asthma:** Floridians who have been told by a doctor, nurse, or other health professional that they have asthma and report that they do not still have asthma
3. **Current Asthma:** Floridians who have been told by a doctor, nurse, or other health professional that they have asthma and report that they still have asthma

In 2012, Florida adolescents were more likely to have lifetime or current asthma than adults (Figure 25).

**Figure 25. Three Levels of Asthma Status, Adults and Adolescents, 2012**




## Key Findings

Overall, Floridians with asthma were more likely to be obese, to use tobacco or be exposed to secondhand smoke, and to have other chronic conditions such as diabetes, COPD, and heart disease than Floridians who never had asthma. On a positive note, Florida adults with asthma were more likely to have received an influenza vaccine and had similar levels of insurance coverage than adults who never had asthma.

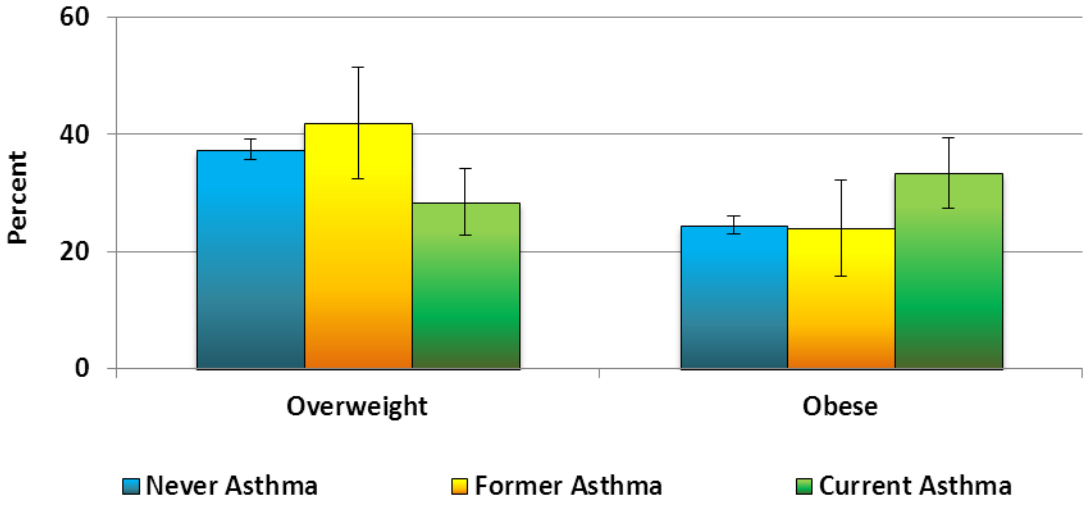
## Obesity and Physical Activity

Obesity has shown to be a predisposing factor for the development of asthma and can make asthma control more difficult as it is associated with reduced effectiveness of asthma medications.[v] Individuals with asthma often avoid physical activity for fear of exacerbating symptoms. With proper education and clinical management, individuals with asthma can live normal, fully active lives.

### Adult Asthma and Obesity

The BRFSS collects self-reported height and weight information from all respondents. This information is used to calculate body-mass index (BMI). In 2012, approximately 2 out of 3 adults in Florida were overweight or obese, regardless of asthma status. Adults with current asthma had a significantly lower prevalence of overweight (28.4%) and a significantly higher prevalence of obesity (33.4%) than adults who never had asthma (Figure 26).

Figure 26. Adult Overweight[1] and Obesity[2] by Asthma Status, BRFSS 2012

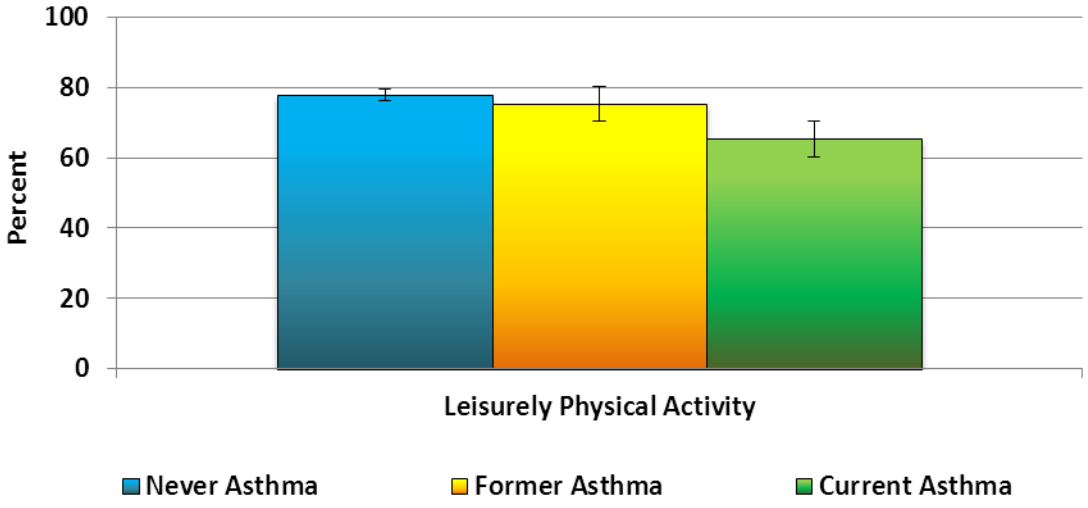



**1 – BMI greater than or equal to 25 and less than 30**
**2 – BMI greater than 30.0**

### Adult Asthma and Physical Activity

In 2012, adults with current asthma had a significantly lower prevalence of participating in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise during the past month compared to adults who never had asthma (77.9%) and adults with former asthma (75.3%) (Figure 27).

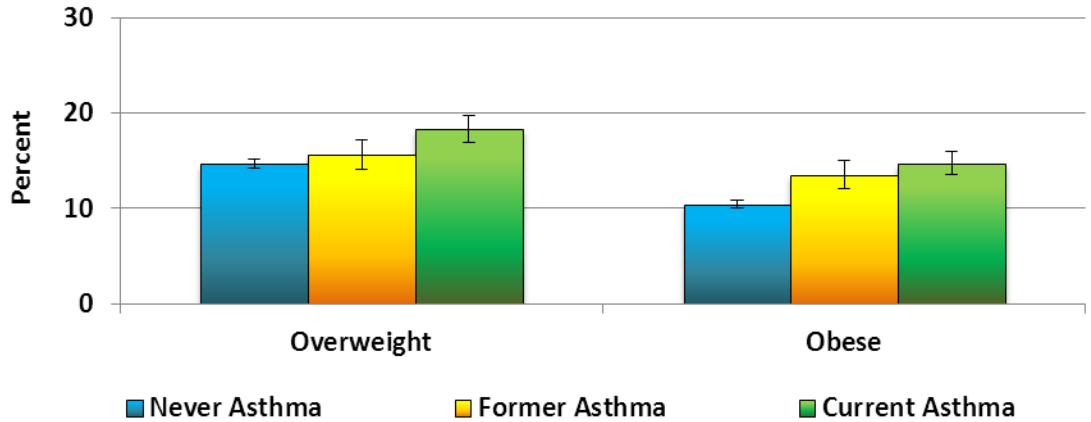
Figure 27. Adult Leisurely Physical Activity by Asthma Status, BRFSS 2012




## Adolescent Asthma and Obesity

Self-reported height and weight information is also collected from students on the FYTS and used to calculate BMI. Students with current asthma (18.3%) had a significantly higher prevalence of overweight than students who never had asthma (14.7%) and students with former asthma (15.6%). Students with current asthma (14.7%) and students with former asthma (13.5%) had a significantly higher prevalence of obesity than students who never had asthma (10.4%) (Figure 28).

Figure 28. Adolescent Overweight[3] and Obesity[4] by Asthma Status, FYTS 2012

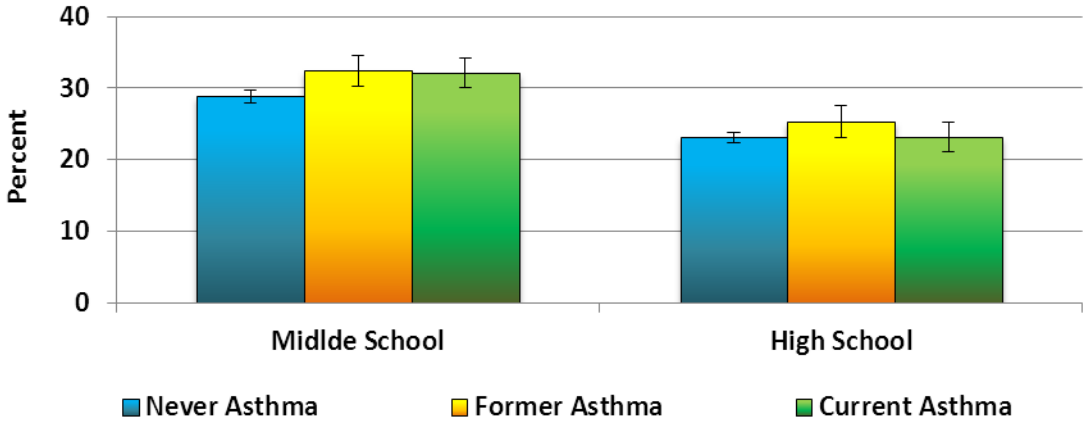



**3 – BMI between the 85th and 95th percentile among students of the same age and gender**
**4 – BMI greater than or equal to the 95th percentile among students of the same age and gender**

## Adolescent Asthma and Physical Activity

National guidelines recommend that youth should be physically active for 60 minutes or more daily[vi]. Overall, middle school students (29.6%) reported a significantly higher prevalence of daily physical activity than high school students (23.3%) regardless of asthma status. Middle school students with former asthma (32.4%) and current asthma (32.1%) had a significantly higher prevalence of daily physical activity than students who never had asthma (28.8%). Daily physical activity did not differ significantly by asthma status among high school students (Figure 29).

Figure 29. Daily Adolescent Physical Activity by Asthma Status, FYTS 2012



## Tobacco Use and Exposure

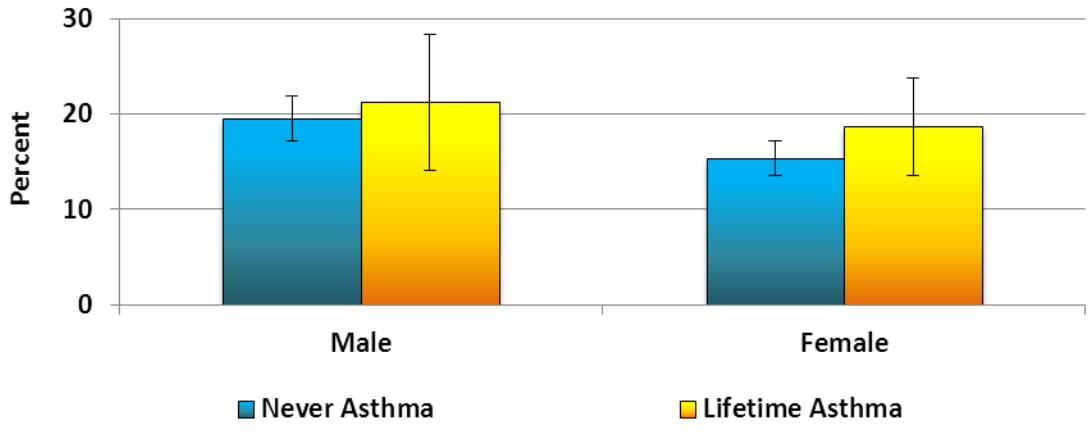
Exposure to tobacco smoke, whether from firsthand smoking or exposure to secondhand smoke, is a risk factor for both the smoker and those around the smoker, and has been linked to the development of asthma among children. The National EPR-3 Guidelines recommend that people with asthma avoid tobacco smoke exposure, as it is also a known asthma trigger. Because of these risks, family members should not expose children (with or without asthma) to secondhand smoke in the home or other enclosed spaces, such as cars.

A recent data brief from the National Center on Health Statistics found that from 1999 to 2010, the percentage of children without asthma exposed to environmental tobacco smoke (ETS) decreased, while children with asthma showed no change. As a result, ETS exposure among children with asthma is now higher than for those children without asthma nationally.[vii]

### Adult Smoking Behaviors

The BRFSS defines current smoking among adults 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 2012, the prevalence of current smoking among Florida adults with lifetime asthma was higher than those who never had asthma, but this difference was not significantly different. Among individuals with lifetime asthma approximately one out of six adult females (18.7%) and approximately one out of five adult males (21.2%) were current smokers (Figure 30).

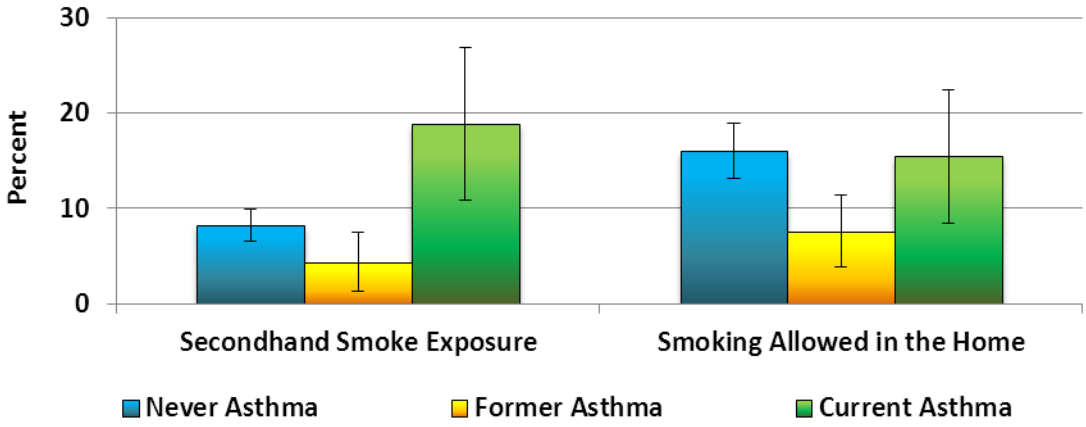
Figure 30. Adult Current Smokers by Asthma Status by Gender, BRFSS 2012




### Adult Exposure to Secondhand Smoke

In 2012, Florida adults with current asthma (18.9%) had the highest prevalence of being exposed to secondhand smoke in a room or car during the past 7 days, and adults with former asthma had the lowest prevalence (4.4%). Adults with former asthma (7.6%) also had a significantly lower prevalence of living in a home where smoking is allowed indoors than adults with current asthma (15.5%) and adults who never had asthma (16.0%) (Figure 31).

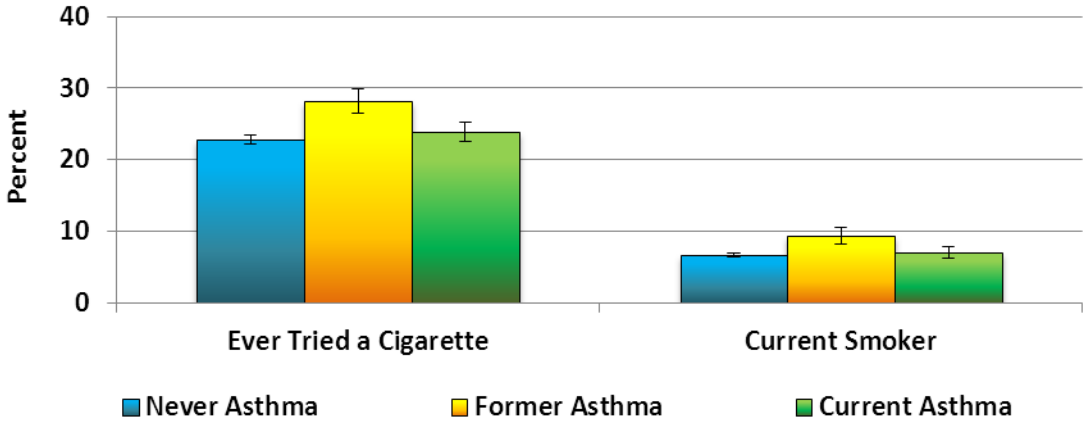
Figure 31. Adult Secondhand Smoke Exposure and Smoking Rules in the Home by Asthma Status, FLATS 2012




## Adolescent Smoking Behaviors

Florida youth who report smoking one or more cigarettes during the past 30 days are considered current smokers. Students with former asthma (28.2% ever, 9.3% current) had a significantly higher prevalence of ever trying a cigarette (even one or two puffs) and current cigarette use than students who have never had asthma (22.8% ever, 6.7% current) or students with current asthma (23.9% ever, 7.0% current) (Figure 32).

Figure 32. Adolescent Smoking Status by Asthma Status, FYTS 2012

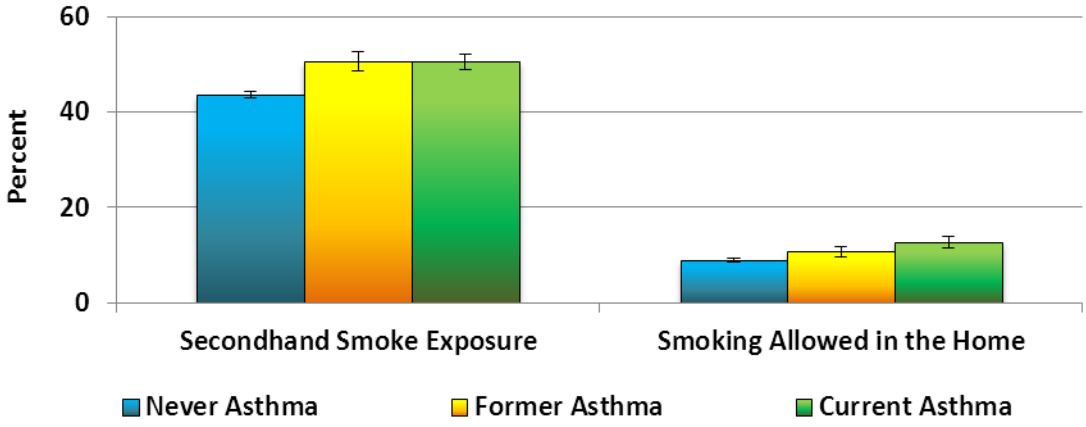



## Adolescent Exposure to Secondhand Smoke

Students with former asthma (50.6%) and current asthma (50.5%) had a significantly higher prevalence being exposed to secondhand smoke in a room or car one or more times during the past 7 days than students who have never had asthma (43.5%). Students with current asthma (12.7%) had a significantly higher prevalence of living in a home where smoking was allowed indoors than students with former

asthma (10.7%) and students who never had asthma (8.9%). This prevalence was also significantly higher among students with former asthma than students who never had asthma (Figure 33).

Figure 33. Adolescent Secondhand Smoke Exposure and Smoking Rules in the Home by Asthma Status, FYTS 2012



## Indoor Air Quality

Many people are unaware that indoor air contains pollutants, sometimes at higher percentages than outdoor air. Indoor air can be a source of asthma triggers including cigarette smoke, dust mites, molds, cockroach allergens, pet dander, gases or fumes, household or industrial chemical irritants, and wood smoke. Considering that Americans spend up to 90% of their time indoors[viii], it is very important for individuals with asthma to take necessary steps to control their indoor environment to reduce asthma triggers.

The Adult Asthma Call Back Survey (ACBS) asks adults with asthma many questions about the household environment, including questions about factors that may increase the risks of symptoms and preventative measures and actions taken to reduce symptoms. Table 1 below shows some of these measures.

**Table 1. Environmental Factors in the Home Among Adults with Asthma, ACBS 2010**

| Increased Risk | Preventative Measures |
|---|---|
| Three out of four (75.6%) allow pets in the bedrooms of the home | Four out of ten (39.2%) use a mattress or pillow cover made for controlling dust mites |
| Three out of five (60.3%) have carpeting or rugs in their bedroom | Three out of ten (30.4%) use an air cleaner or purifier regularly inside the home |
| Three out of ten (28.2%) have seen a pest (mouse, rat, or cockroach) in the home | Two out of three (36.7%) wash their sheets and pillowcases in hot water |

## Outdoor Air Quality

Outdoor air pollution is caused by small particles and ground level ozone (smog) coming from car exhaust, outdoor smoke, road dust, and factory emissions. Outdoor air quality is also affected by pollen from trees, plants, crops, and weeds which vary by season. Particle pollution can be high any time of year and is typically higher near busy roads and where people burn wood.

When inhaled, outdoor pollutants and pollens can aggravate lung functioning, and may lead to chest discomfort, coughing, digestive problems, dizziness, fever, lethargy, sneezing, shortness of breath, throat irritation, and watery eyes. Outdoor air pollution and pollen may also worsen chronic respiratory diseases, such as asthma.[ix]

Schools and daycare centers located near busy roadways should take efforts to limit exposure to air pollution by avoiding outdoor activities during heavy traffic times, especially for children with respiratory conditions such as asthma. The Florida Environmental Public Tracking (EPHT) program recently conducted an analysis to determine how many schools and daycare centers were close to busy roadways. The table below shows the ten counties in Florida with the highest percentage of schools and day care centers within 500 feet of a busy roadway. In Broward County, more than a third of schools and daycare centers are located within 500 feet of a busy roadway. Full data are available on the Florida EPHT Portal under "Air Quality – Outdoor": www.Floridatracking.com.

**Table 2. Proximity of Schools and Daycare Centers to Busy Roadways by County, EPHT 2010**

| County | Percent of Schools and Daycare Centers within 500 Feet of a Busy Roadway |
|---|---|
| Broward | 36.43 |
| Miami-Dade | 30.62 |
| Osceola | 24.76 |
| Orange | 23.03 |
| Okeechobee | 22.86 |
| Lee | 22.67 |
| Palm Beach | 21.08 |
| Sarasota | 19.43 |
| Seminole | 18.83 |
| Okaloosa | 18.29 |

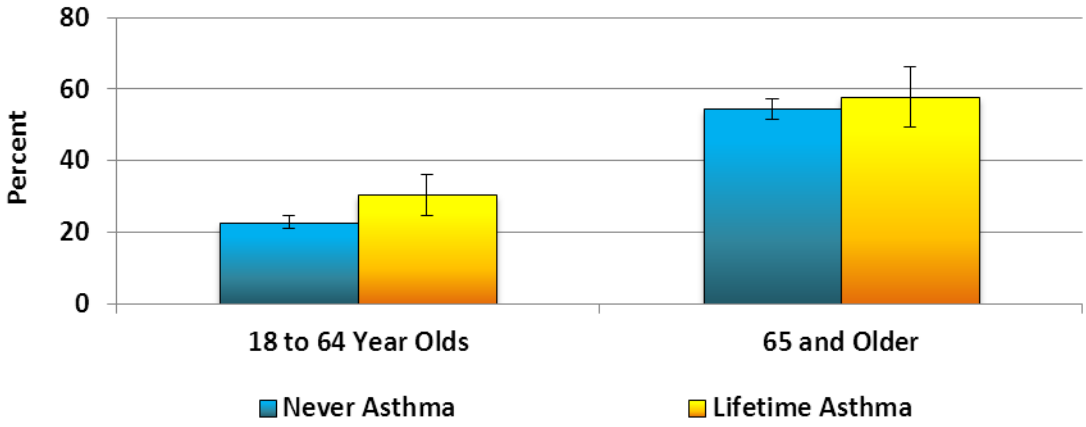
## Influenza Vaccination

Influenza, commonly called "the flu," is caused by the influenza virus, which can infect the respiratory tract (nose, throat, lungs). Individuals with asthma should take preventative steps to avoiding the flu virus, as the flu can exacerbate an asthma episode or attack. The flu vaccine is the primary and most important step individuals can take to protect themselves and their loved ones from the flu. All people who have asthma should be encouraged to get the flu vaccination as part of their yearly routine care.[x]

### Seasonal Flu Vaccine

In 2012, among adults ages 18 to 64 years, adults with lifetime asthma (30.5%) had a significantly higher prevalence of getting a seasonal flu vaccine in the past year than adults who never had asthma (22.7%). Among adults 65 years and older, adults with lifetime asthma (66.2%) had a higher prevalence than adults who never had asthma (57.2%) of getting a seasonal flu vaccine, but this was not a statistically significant difference (Figure 34).

Figure 34. Adult Seasonal Flu Vaccine by Asthma Status by Age Group, BRFSS 2012



## Health Care Coverage

Lack of adequate health care coverage prevents people with asthma from accessing treatment, education, and medication that could assist them in keeping their asthma under control. A recent study found that among children intermittent asthma symptoms, those with insurance coverage (public or private) were four times more likely to be diagnosed with asthma or to receive asthma-control therapy with inhaled corticosteroids than uninsured children. However, for children with persistent asthma symptoms, the odds of being diagnosed with asthma and/or receiving inhaled corticosteroids did not differ by insurance status.[xi]

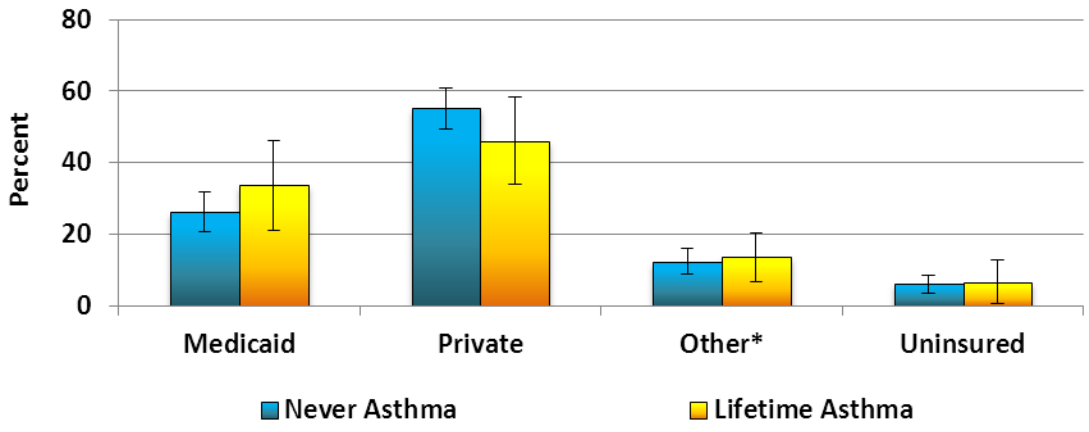
### Adult Health Care Coverage by Asthma Status

In 2012, approximately three out of four Florida adults with lifetime asthma aged 18 to 64 years (73.0%) and almost all adults with lifetime asthma aged 65 and older (97.3%) reported having some form of health care coverage, including commercial health insurance, prepaid plans such as HMOs, or government plans such as Medicare. The estimates of heath care coverage for Florida adults who never had asthma were slightly lower (72.2% and 96.1%, respectively), but did not differ significantly from adults with lifetime asthma.

### Child Health Care Coverage by Asthma Status

In 2010, parents reported that 94% of Florida children have some sort of health care coverage, regardless of asthma status. Florida children with lifetime asthma (33.7%) had a higher estimate of being covered by Medicaid than children who never had asthma (26.3%), although these differences were not statistically different (Figure 35).

Figure 35. Child Insurance Type by Asthma Status, FCHS 2010




*** Other includes Military, CHAMPUS, VA, and "Other"**

## Work-Related Asthma

Asthma is one of the more serious problems that can develop as a result of occupational exposure to irritants and allergens. Work-related asthma includes aggravation of pre-existing asthma and new-onset asthma induced by exposures in the workplace. The main types of irritants and allergens that can cause asthma in the workplace include animals, plants and plant material, and chemicals and dust. Occupations that may put people at risk of exposure to these substances vary widely, and include farmers, veterinarians, bakers, florists, sawmill workers, nurses, welders, custodians, manufacturers, and painters, among others.

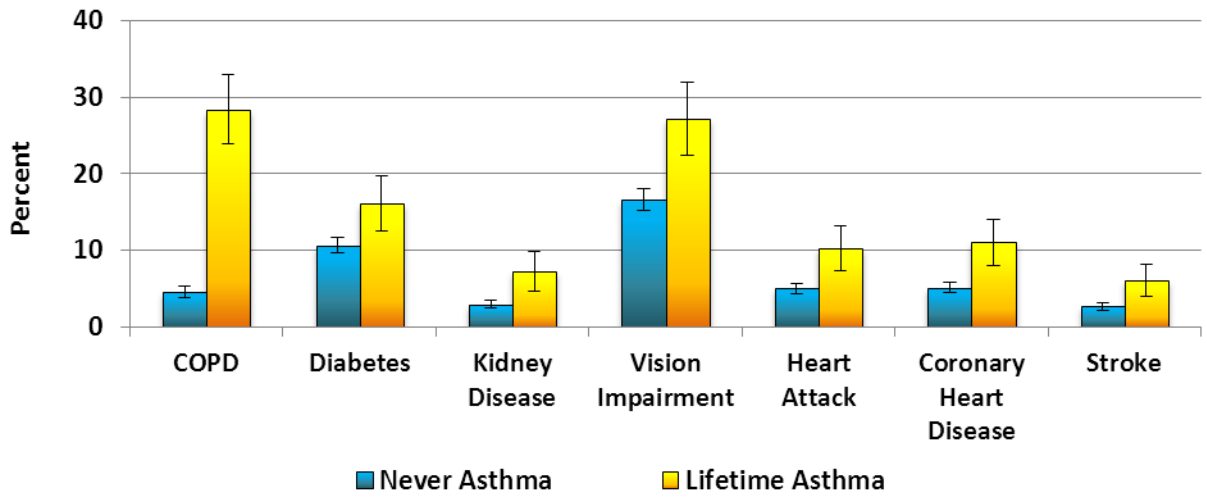
A meta-analysis of the existing literature was recently developed into a report for the NIH, *Healthy Environments: A Compilation of Substances Linked to Asthma*. This report provides details of the 374 known substances in the built environment that may cause or aggravate asthma, and also notes where these substances are commonly found. In addition, the report includes a list of 160 occupations and industries uniquely exposed to these substances.[xii]

Among Florida adults with current asthma who have ever been employed, approximately half (49.6%) report their asthma was caused or made worse by chemicals, smoke, fumes, or dust in a current or previous job, and one out of nine (11.7%) reported having to change or quit a job because of these exposures. Among these individuals, 10.4% were told by their doctor that their asthma was related to a job they had, while 15.9% report telling their doctor that their asthma was related to a job.

## Co-Morbid Conditions

Adults with lifetime asthma often are diagnosed with other chronic conditions. These comorbidities may serve as confounding factors in the diagnosis and/or assessment and control of asthma, as they may change the way asthma responds to therapy. Currently, little is known about how many of these conditions interact with asthma. In 2012, Florida adults with lifetime asthma had a significantly higher prevalence of having chronic obstructive pulmonary disorder (COPD), diabetes, kidney disease, vision impairment, heart attack or myocardial infarction, coronary heart disease or angina, and stroke than Florida adults who never had asthma (Figure 36).

Figure 36. Chronic Conditions by Asthma Status, BRFSS 2012



# Living with Asthma

# Living with Asthma

Uncontrolled asthma can negatively impact many aspects of daily life and overall well-being. Individuals with asthma should strive to control and manage day and nighttime symptoms in order to minimize negative health effects from asthma. For individuals ages 12 years and older, the EPR-3 defines well controlled asthma as having symptoms on two or fewer days per week, nighttime awakenings two or fewer times per month, no interference with normal activity, and using a quick-relief medication no more than 2 days a week.

This section presents information about asthma symptoms, clinical treatment, education, and overall impact on the individual. This section helps to quantify the extent to which Floridians living with asthma are hindered by the disease. The data in this section come mostly from the 2012 Behavioral Risk Factor Surveillance System (BRFSS), the 2010 Adult Asthma Call Back Survey (ACBS), and the 2010 Florida Child Health Survey (FCHS). More information about these sources can be found in Appendix D. Methodology and Technical Notes.

## Key Findings

### Asthma Attacks / Episodes

- One in four adults with current asthma had an asthma attack or episode during the past three months, while one in 10 had more than 10 attacks or episodes during the past three months
- One in six middle and high school students with lifetime asthma had an asthma attack or episode in the past year

### Routine Asthma Check-Up

- Two out of five adults with current asthma did not see a doctor for a routine checkup for their asthma in the past year

### Asthma Action Plans

- One in four adults with lifetime asthma and one in three children with asthma had ever received an Asthma Action Plan from a doctor or other health professional

### Asthma Education

- One in 15 adults with asthma had ever taken a course or class on how to manage their asthma
- One in 10 parents of children with asthma or their child has taken a course or class on how to manage the child's asthma

### Mental Health

- Adults and youth with asthma are at increased risk for poor mental health and depression

### Missed Work and School

- One of four adults with current asthma and one of four children with current asthma missed one or more days of work or school during the past year because of asthma symptoms

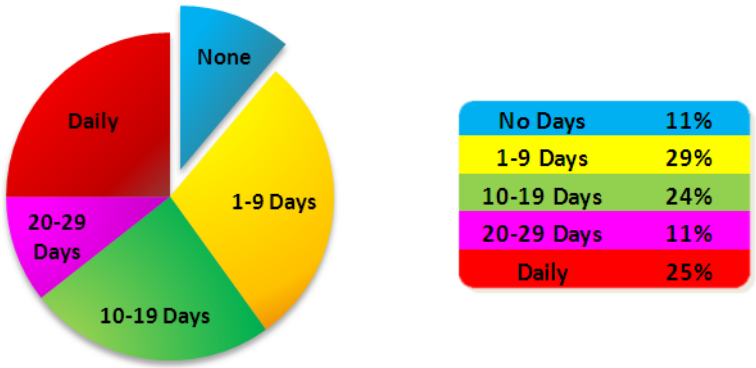
## Asthma Symptoms

Asthma symptoms may include coughing, chest tightness, wheezing, and difficulty breathing. Individuals with asthma experience symptoms when exposed to an irritant, or trigger, that causes airway swelling from inflammation, airway smooth muscle contraction, and increased mucus production, leading to difficulty in breathing. Symptoms can be prevented by adhering to prescribed controller medications and avoiding asthma triggers/allergens.

### Adult Asthma Symptoms

Approximately two out of three (65.5%) Florida adults with lifetime asthma still have asthma, or have current asthma. In 2010, one in nine Florida adults with current asthma (11.1%) were symptom free during the past month, while one in four (25.0%) experienced asthma symptoms every day (Figure 37).

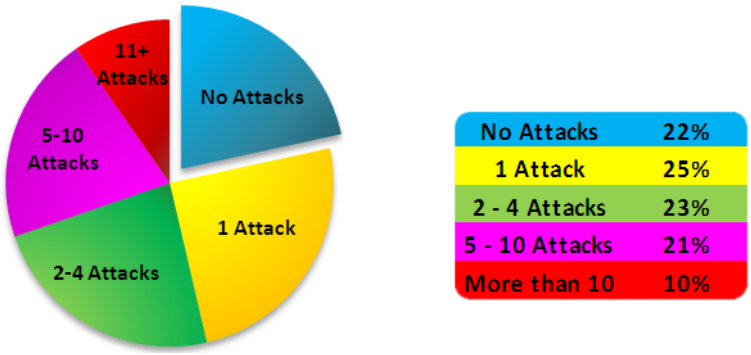
Figure 37. Number of Days with Asthma Symptoms among Adults with Current Asthma in the Past Month, ACBS 2010




### Adult Asthma Attacks or Episodes

In 2010, two of ten adults with current asthma (21.6%) did not have an asthma attack or episode in the past three months. During the past three months, approximately half of adults with current asthma had four or fewer attacks (24.8% had one attack; 23.4% had two to four), and approximately three of ten adults had five or more asthma attacks (20.6% had five to ten attacks; 9.7% had 11 or more) (Figure 38).

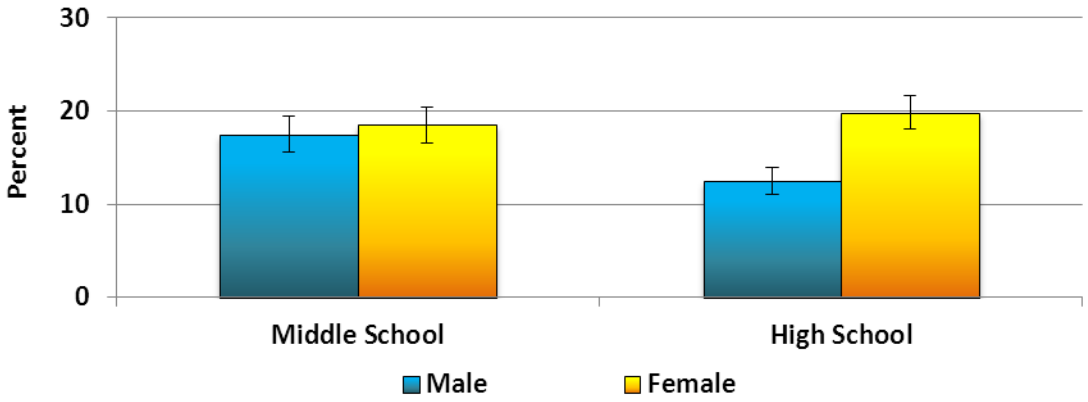
Figure 38. Number of Asthma Attacks or Episodes During the Past Three Months among Adults with Current Asthma, ACBS 2010



## Adolescent Asthma Attacks or Episodes by Gender

In 2012, one of six Florida public middle and high school students with lifetime asthma (17.0%) reported having had a recent asthma attack (asthma attack or episode in the past year). Approximately one of five female high school students (19.8%) had a recent asthma attack, significantly higher than one of eight male high school students (12.5%). The prevalence of recent asthma attacks did not differ significantly between males and females in middle school (Figure 39).

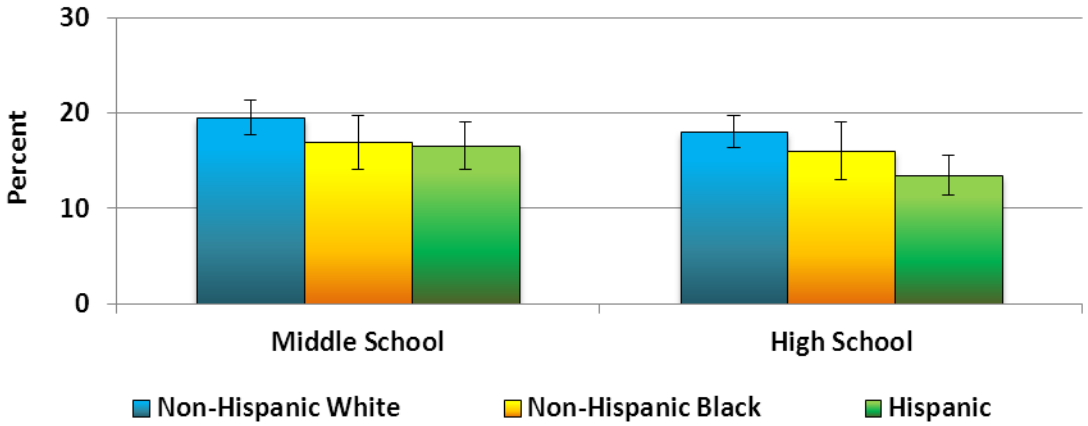
Figure 39. Adolescent Asthma Attacks or Episodes by Gender by Grade Level, FYTS 2012




## Adolescent Asthma Attacks or Episodes by Race/Ethnicity

The prevalence of recent asthma attacks did not differ significantly among Florida public middle school students in 2012. Non-Hispanic white public high school students (18.0%) had a significantly higher prevalence of having had a recent asthma attack than Hispanic high school students (13.5%). The prevalence of recent asthma attacks among Non-Hispanic black high school students (16.0%) did not differ significantly from either of the other racial/ethnic groups (Figure 40).

Figure 40. Adolescent Asthma Attacks or Episodes by Race/Ethnicity by Grade Level, FYTS 2012



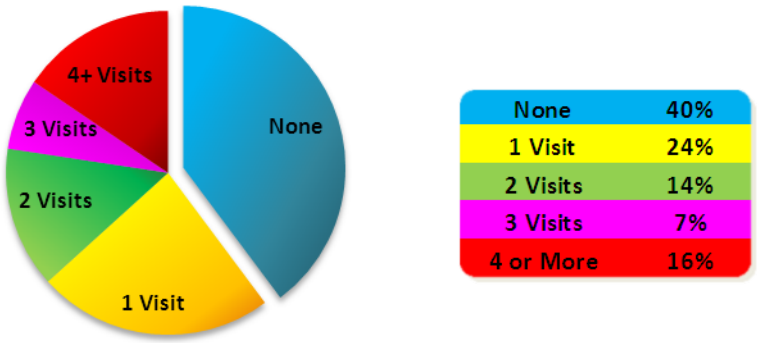
## Clinical Treatment

Optimal clinical treatment of asthma includes regularly scheduled physician appointments for asthma, adhering to prescribed medication regimens, and having an asthma management plan to help manage the symptoms of asthma sufficiently well to avoid exacerbations necessitating medical intervention in emergency rooms or that require inpatient hospitalization.

### Routine Doctor Visits

Regular asthma checkups allow doctors to assess an individual's level of asthma control, current lung function, medication adherence, and proper medication administration, and adjust treatments as needed. The main goal of asthma management is to achieve the best control of asthma using the least amount of medicine, which may require frequent medication adjustment. In 2010, two out of five Florida adults with current asthma (40%) did not see a doctor for a routine checkup for their asthma in the past year. A quarter of adults with current asthma (24%) had seen a doctor once and 16% of adults with current asthma saw a doctor four or more times for asthma during the past year (Figure 41).

Figure 41. Percent of Routine Asthma Visits with Doctor in the Past Year among Adults with Current Asthma, ACBS 2010




### Cost as a Barrier to Clinical Treatment

Approximately 330,000 Florida adults with current asthma (25.2%) noted cost as a barrier to receiving needed clinical treatment in 2010. A portion of Florida adults with current asthma could not afford to see their primary care provider (14.7%), follow-up with a referral to an asthma specialist (13.1%), or buy prescribed asthma medication (19.6%).

In 2010, one out of nine Florida parents of children with asthma (11.1%) reported that there was a time during the past year when they did not get health care, or delayed seeking health care, for their child because they did not have enough money to pay the provider. In addition, 14.1% of Florida parents of children with asthma reported that their child's health care causes financial problems for the family.

### Asthma Action Plans

An Asthma Action Plan is a written, individualized care plan to help guide, monitor, and control asthma. It is typically developed by a doctor or primary care provider with input from the individual with asthma

and/or their caretakers. The Asthma Action Plan shows the individual's daily asthma treatment plan, such as types and dosages of medication, and situations when quick relief medication administration is warranted. The Asthma Action Plan also describes the individual's asthma triggers/allergens and provides instructions for how to handle worsening asthma symptoms – including when to call 9-1-1. The National EPR-3 Guidelines recommend that all individuals with asthma, regardless of age, should have an Asthma Action Plan. For children with asthma, the EPR-3 recommends that anyone who is responsible for the child should be given a copy of the plan, such as teachers, daycare providers, and sports coaches.

In 2010, approximately one out of four adults with lifetime asthma (23.7%) had ever been given an Asthma Action Plan by a doctor or other health professional, and approximately one out of three parents of children with asthma (33.7%) had ever been given an Asthma Action Plan by a doctor or other health professional for their child. Among those parents, fewer than half provided a copy of the asthma management plan to the child's school. Overall, four out of five students with asthma (80.0%) who attend school in Florida do not have an Asthma Action Plan on file at the school.

## Asthma Medication

Medications for asthma are categorized into two general classes: long-term control medication and quick-relief medication and are prescribes based on the individual's needs. Long-term control medications, or controllers, are used daily to achieve and maintain control of asthma. Quick-relief medications are used to treat acute symptoms and exacerbations or for exercise-induced asthma. Patients should routinely be instructed in the use of inhaled medications, and patients' technique should be reviewed at every visit.

In 2010, approximately 93.1% of adults with lifetime asthma had used a prescription inhaler in the past. The majority (95.0%) report that a doctor or other health professional showed them how to use the inhaler. However, approximately one of five adults with lifetime asthma (19.5%) never had a doctor or other health professional watch them use the inhaler to ensure proper technique.

In 2010, approximately 31.7% of children used a controller medication daily to control their asthma. Approximately half of all children in Florida with asthma (52.8%) use a rescue medication, such as Albuterol, to treat asthma symptoms when they do occur.

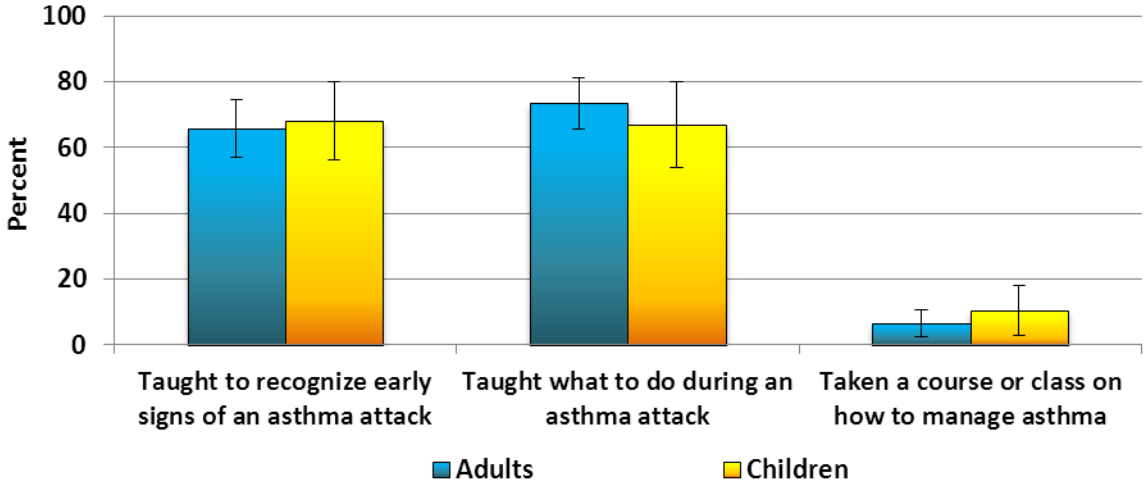
Florida law allows students with asthma to carry their medication at school and to self-administer their medication, as long as the physician, parent, and school nurse verify that the child is capable of this responsibility. In 2010, most parents of children with asthma (70.8%) who attend school reported their child is not allowed to carry his or her medication at school, and approximately 74.1% were not allowed to self-administer their emergency medication.

## Asthma Education

In 2010, approximately two of three adults with asthma (66.0%) had been taught by their doctor or other health professional how to recognize the early signs and symptoms of an asthma attack or episode, and nearly three of four (73.5%) were taught what to do during an asthma attack. However, one of 15 adults with asthma (6.6%) had ever taken a course or class on how to manage their asthma.

In 2010, approximately two out of three parents of children with asthma report that a doctor or other health professional has taught them or their child how to recognize early signs or symptoms of an asthma attack or episode, and what to do during an asthma attack (68.1% and 65.9%, respectively). Similar to adults with asthma, only one out of 10 parents of children with asthma or their child (10.3%) has taken a course or class on how to manage the child's asthma (Figure 42).

Figure 42. Asthma Education Provided for Adults and Children, ACBS 2010 and FCHS 2010

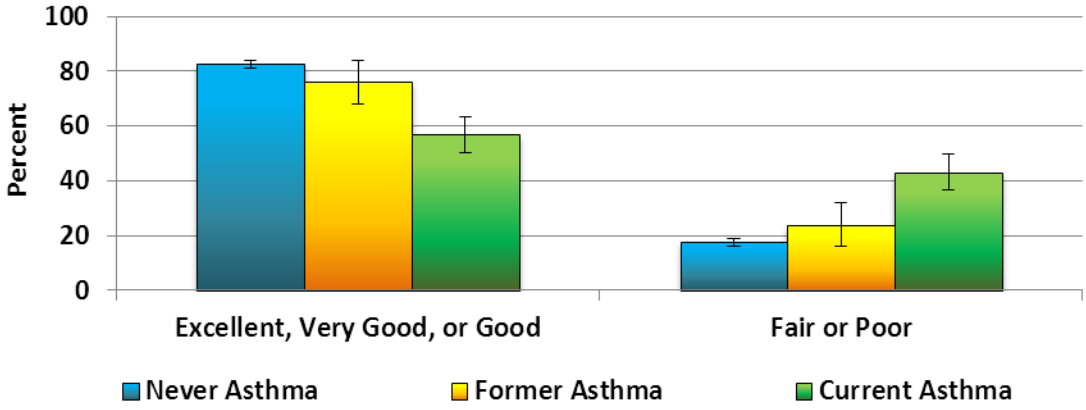


## Asthma's Impact on the Individual

### General Health Status

Florida adults who have never had asthma (82.5%) and adults with former asthma (76.1%) had a significantly higher prevalence of describing their overall health as excellent, very good, or good than adults with current asthma (56.9%). More than two out of five adults (43.1%) with current asthma described their overall health as poor or fair (Figure 43).

Figure 43. General Health Status by Asthma Status, BRFSS 2012




### Missed School and / or Work

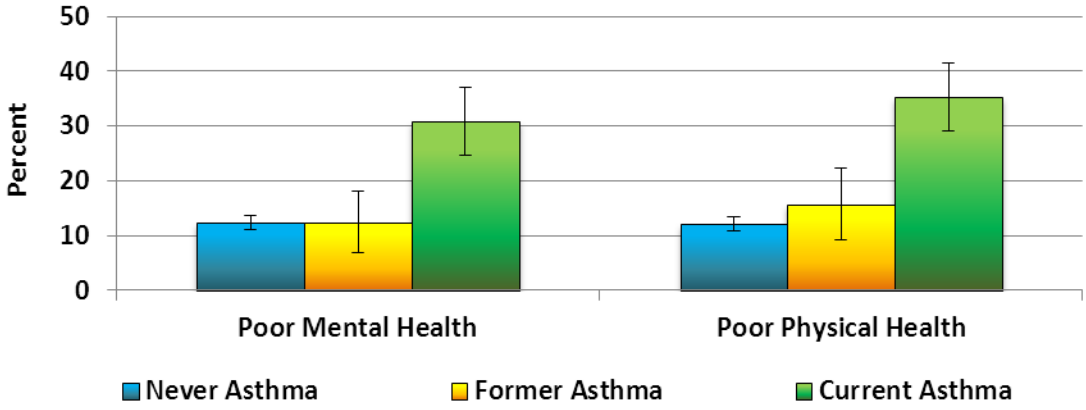
In 2010, 27.3% of Florida adults with current asthma reported that they were unable to work or carry out usual activities one or more days during the past year because of asthma symptoms. Of those, three out of five (61.0%) missed five or more days of work because of their asthma during the past year.

In 2010, one out of four Florida children (27.6%) with current asthma missed one or more days of school or day care during the past year because of asthma symptoms. More than half of these children (56.3%) missed five or more days of school or day care because of their asthma.

### Poor Mental and Physical Health

In 2012, three out of 10 Florida adults with current asthma (30.8%) reported that their mental health (including stress, depression, and problems with emotions) was not good on 14 or more of the past 30 days, significantly higher than Florida adults with former asthma and adults who never had asthma (12.4%). More than a third of Florida adults with current asthma (35.3%) also reported that their physical health, including physical illness and injury, was not good on 14 or more of the past 30 days, significantly higher than the 15.7% of Florida adults with former asthma and the 12.1% who never had asthma (Figure 44).

Figure 44. Poor Physical or Mental Health on 14 or More of the Past 30 days by Asthma Status, BRFSS 2012




## Activity Limitations because of Poor Physical and Mental Health

Approximately three out of five Florida adults with current asthma (60.5%) reported that their usual activities (self-care, work, or recreation) were limited by poor physical or mental health on one or more of the past 30 days, significantly lower than the two out of five adults who never had asthma (41.3%).

Approximately three out of 10 Florida adults with current asthma (30.1%) reported their usual activities were limited by poor physical or mental health on 14 or more of the past 30 days, significantly higher than adults with former asthma (12.9%) and adults who never had asthma (15.6%).

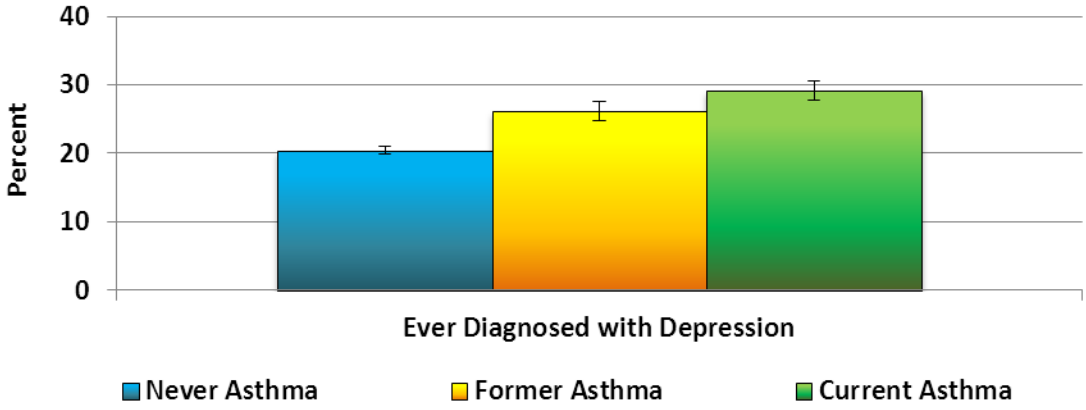
## Adult Depression

Approximately one out of three Florida adults with current asthma (34.7%) have been diagnosed by a physician with a depressive disorder (including depression, major depression, dysthymia, or minor depression), at some point in their life, significantly higher than adults with former asthma (18.1%) and adults who never had asthma (15.1%).

## Adolescent Depressive Symptoms

Similarly, approximately three out of ten Florida public middle and high school students with current asthma (29.1%) felt so sad or hopeless almost every day for two weeks or more in a row that they stopped doing some of their usual activities, significantly higher than students with former asthma (26.2%) and students who never had asthma (20.4%) (Figure 45).

Figure 45. Adolescent Feelings of Sadness and Hopelessness by Asthma Status, FYTS 2012




## Interrupted Sleep

Approximately three out of five Florida adults with current asthma (59.2%) reported that asthma symptoms made it difficult to stay asleep on one or more of the past 30 nights (Figure 46). Among this group, nearly two out of five adults (37.9%) reported that asthma symptoms made it difficult to stay asleep on 14 or more of the past 30 days.

Figure 46. Asthma Symptoms Made it Difficult to Stay Asleep among Adults with Current Asthma, ACBS 2010

# Emergency Department Visits and Hospitalizations

# Emergency Department Visits and Hospitalizations

Asthma emergency department (ED) visits result when asthma episodes cannot be managed by the patient or family members sufficiently well to provide relief to the patients. The patient may be experiencing a life-threatening episode, or a relatively mild episode on arrival to the ED. Hospitalization occurs when the patient requires care beyond what can be provided in the ED including specific therapies, observation, or care that requires a longer period of time to provide. There are many ED visits and hospitalizations due to asthma in Florida, many of which are preventable with proper clinical treatment, medication adherence, education, and environmental management.

Cases presented in the section are those with asthma listed as the primary diagnosis (determined by ICD-9 code 493: Asthma). These data were analyzed by gender, age group, race/ ethnicity, and payer. More detailed information about these data is available in Appendix D. Methodology and Technical Notes.

## Key Findings

### Overall

- The number of asthma ED visits has increased greatly over the past five years, but the number of hospitalizations has remained mostly level

### Gender

- Female adults had a higher rate of ED visits and hospitalizations than male adults
- Male children had a higher rate of ED visits and hospitalizations than female children

### Race/Ethnicity

- Non-Hispanic black Floridians have the highest rates of asthma ED visit and hospitalizations

### Age

- Younger children (ages 0-4 years) have the highest rate of asthma ED visits and hospitalizations
- Older adults (ages 65+ years) have the lowest rate of asthma ED visits and the second highest rate of asthma hospitalizations

### Payer Source

- The number of ED visits and hospitalizations covered by Medicaid has increased at a faster rate than those covered by any other payer group
    - Asthma ED visits covered by Medicaid accounted for almost half of all ED visits in 2012
- The number of ED visits and hospitalizations covered by commercial insurance are decreasing

### Length of Hospital Stay

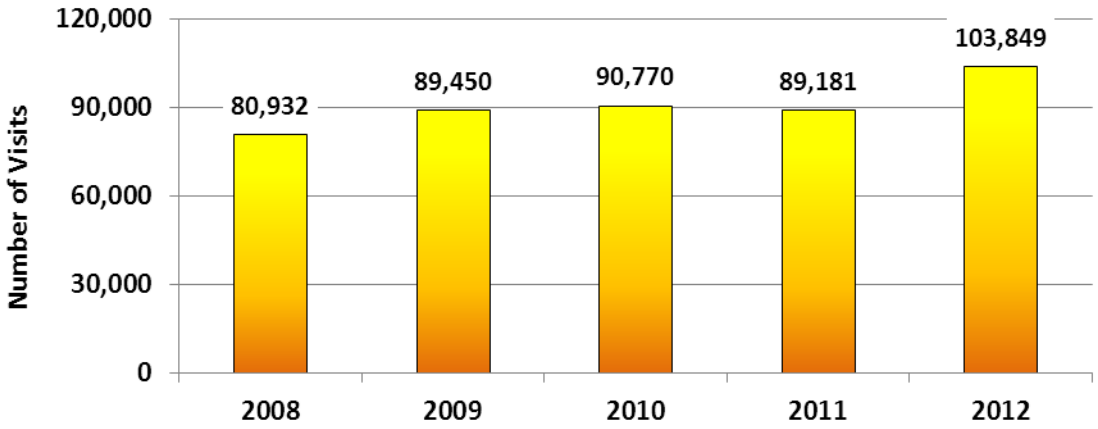
- Females consistently had a longer length of stay due to asthma hospitalizations than males
- The average length of hospital stay due to asthma among adults ages 65 and older was more than double the average length of hospital stay for children ages 0-17 years

## Emergency Department (ED) Visits

### Florida Asthma ED Visits over Time

The number of emergency department visits in Florida with asthma listed as the primary diagnosis increased by 28.3% from 80,932 in 2008 to 103,849 in 2012 (Figure 47). Overall, the rate of asthma ED visits increased from 43.4 per 10,000 Floridians in 2008 to 54.5 per 10,000 Floridians in 2012.

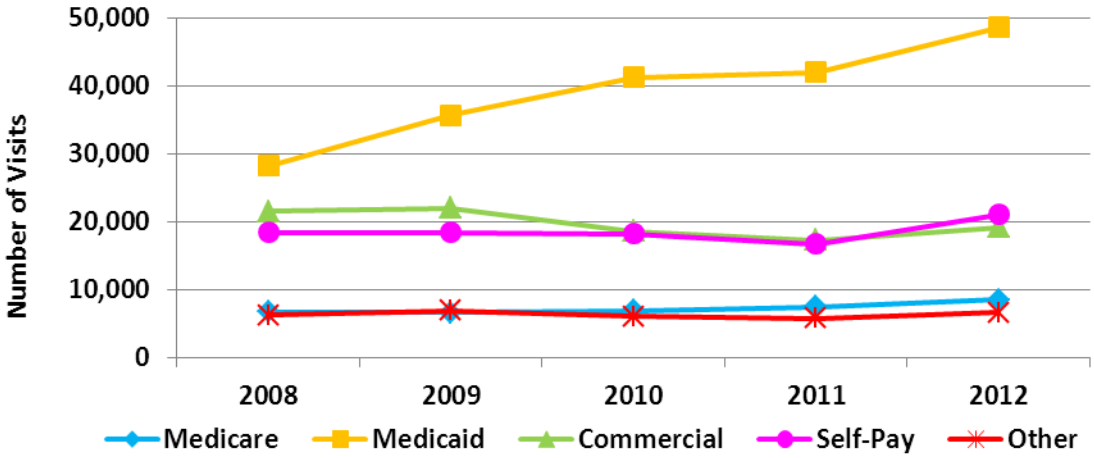
Figure 47. Number of Asthma ED Visits in Florida, AHCA 2008 – 2012




### Asthma ED Visits over Time by Payer Group

Over the past five years, the largest increase in the number of asthma ED visits by payer occurred among patients covered by Medicaid, increasing by 72.5% from 28,174 visits in 2008 to 48,588 visits in 2012. During this time, the number of visits covered by Medicare, self-pay, or other funds also increased, but at a lesser rate (27.1%, 14.6%, and 6.4%, respectively). The number of asthma ED visits covered by commercial insurance decreased by 11.1% during this same time (Figure 48). Asthma ED visits covered by Medicaid accounted for almost half (46.8%) of all asthma ED visits.

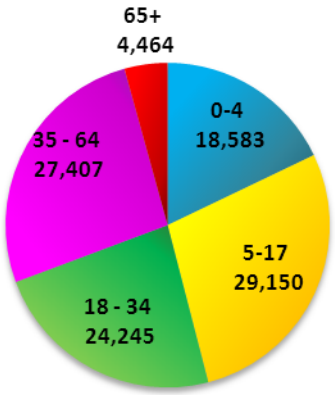
Figure 48. Number of Asthma ED Visits by Payer, AHCA 2008 – 2012



## Asthma ED Visits by Age Group

In 2012, the largest number of ED visits with asthma listed as the primary diagnosis occurred among Floridians ages 5-17 years and the fewest number of visits occurred among Floridians ages 65 years and older (Figure 49). It is important to note that if an individual enters into the ED and is then admitted into the hospital, their record is removed from the ED dataset. Older adults tend to be medically vulnerable and are often admitted because they require care beyond that which can be provided in the ED setting, which may explain why they have so few ED visits compared to the other age groups.

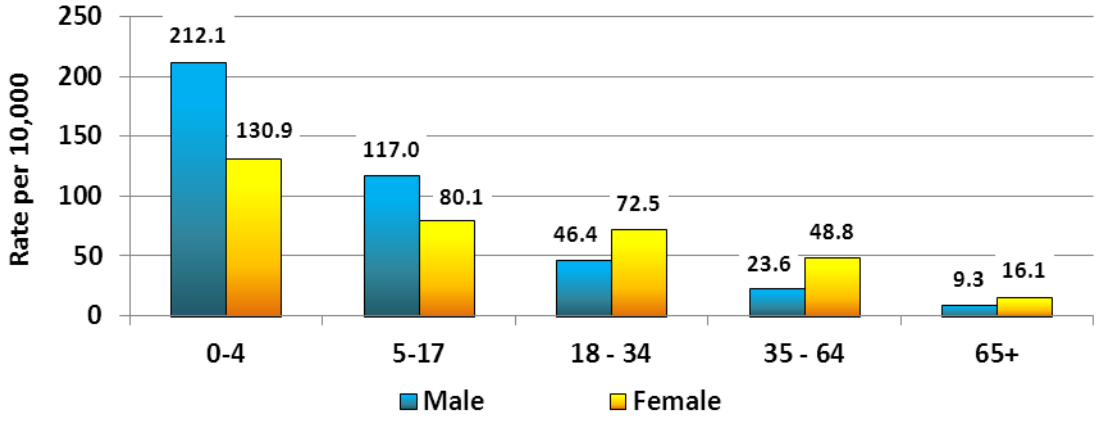
Figure 49. Number of Asthma ED Visits by Age Group, AHCA 2012




## Asthma ED Visit Rates by Gender by Age Group

ED visit rates allow for even comparisons between groups, by controlling for the size of the different populations. While the largest number of asthma ED visits occurred among Florida youth ages 5-17 years, the highest rate of ED visits occurred among Floridians ages 0-4 years (172.4 per 10,000). Overall, the rate of asthma ED visits decreased by age, with the lowest ED rates occurring among Florida's adults ages 65 years and older. An interesting finding is that male children have higher rates of asthma ED visits than female children, but female adults have higher rates of asthma ED visits than male adults (Figure 50).

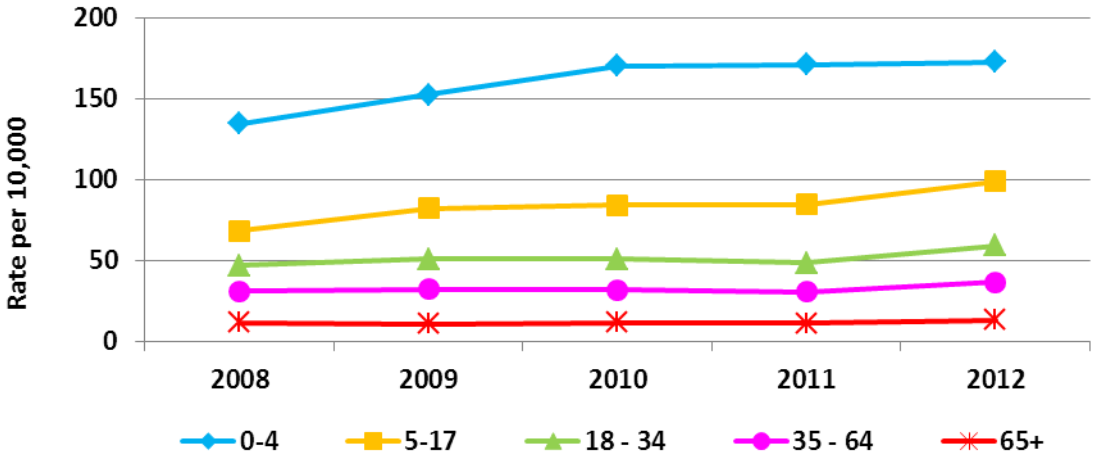
Figure 50. Asthma ED Visit Rates per 10,000 by Gender by Age Group, AHCA 2012



## Asthma ED Visit Rates by Age Group over Time

From 2008 to 2012, increases in the rate of asthma ED visits occurred among all age groups. Floridians ages 5-17 years showed the greatest increase (45.0%) in the rate of asthma ED visits, followed by ages 0-4 years (28.1% increase), ages 18-34 years (26.9% increase), ages 35-64 years (17.5% increase), and finally ages 65 years and older (11.1% increase) (Figure 51).

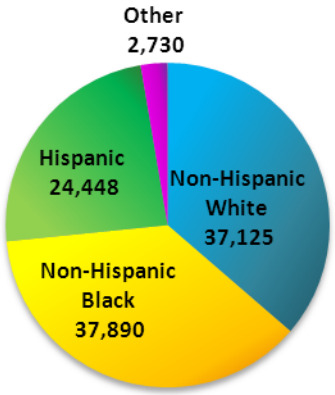
Figure 51. Asthma ED Visit Rates per 10,000 by Age Group, AHCA 2008 – 2012




## Asthma ED Visits by Race/Ethnicity

In 2012, Florida non-Hispanic white and non-Hispanic black residents each had over 37,000 ED visits with asthma listed as the primary diagnosis (Figure 52).

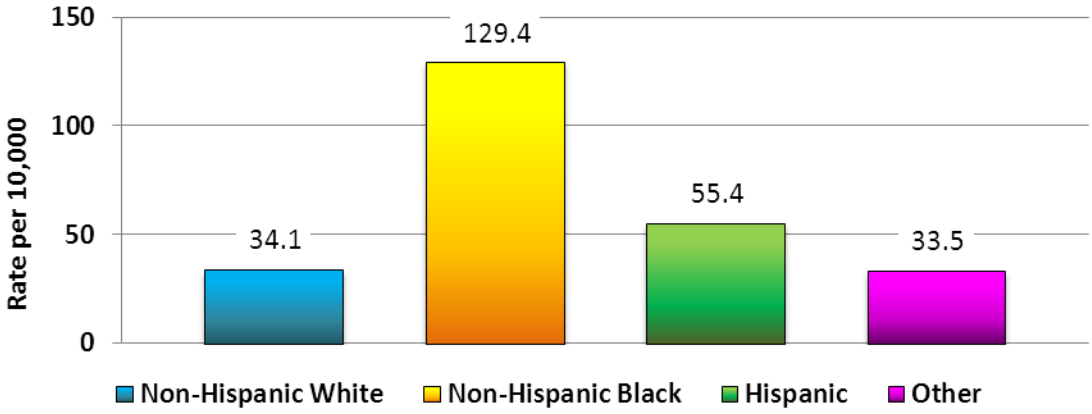
Figure 52. Number of Asthma ED Visits by Race/Ethnicity, AHCA 2012




## Asthma ED Visit Rates by Race/Ethnicity

In 2012, the rate of ED visits with asthma listed as the primary diagnosis was highest among non-Hispanic black Floridians (129.4 per 10,000) compared to all other racial/ethnic groups. The rate of ED visits among Hispanics (55.4 per 10,000) was higher than the rate among non-Hispanic whites (34.1 per 10,000) and the other group (33.5 per 10,000) (Figure 53).

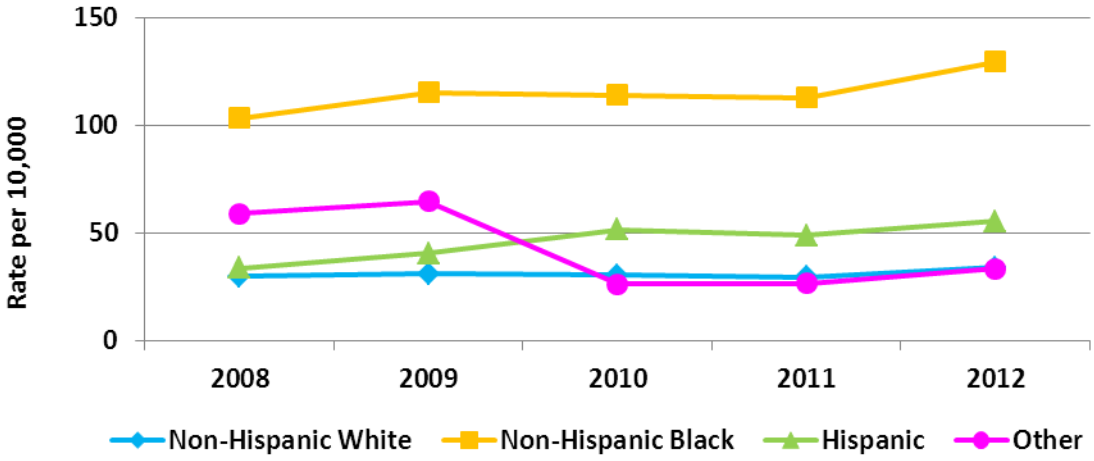
Figure 53. Asthma ED Visit Rates per 10,000 by Race/Ethnicity, AHCA 2012




## Asthma ED Visit Rates by Race/Ethnicity over Time

From 2008 to 2012, the rate of ED visits with asthma listed as the primary diagnosis increased by 64.3% among Hispanic Floridians, by 25.1% among non-Hispanic black Floridians, and by 14.3% among non-Hispanic white Floridians. The rate of asthma ED visits decreased by 43.1% among the Other group (Figure 54). This decrease is likely due to changes in population estimates, described in detail here: *Changes in Population Estimates from the 2000 Census to the 2010 Census and Impact on Asthma Rates*.

Figure 54. Asthma ED Visit Rates per 10,000 by Race/Ethnicity, AHCA 2008 – 2012




## Asthma ED Visits by Length of Service

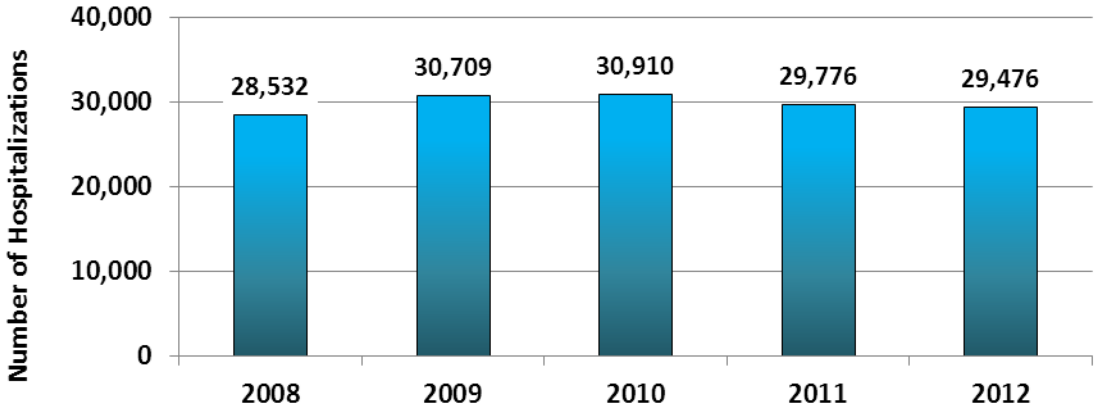
Approximately 84.7% of patients who are admitted to the ED for asthma are discharged that same day, and 14.4% are discharged the next day. A small proportion of asthma ED visits (0.9%) last for more than one day, although this number is increasing. In 2012, 927 asthma ED visits lasted for more than one day.

## Hospitalizations

### Florida Asthma Hospitalizations over Time

In 2012, there were a total of 29,476 hospitalizations in Florida with asthma listed as the primary diagnosis. This number has fluctuated a little over time, but has remained relatively level from 2008 to 2012 (Figure 55).

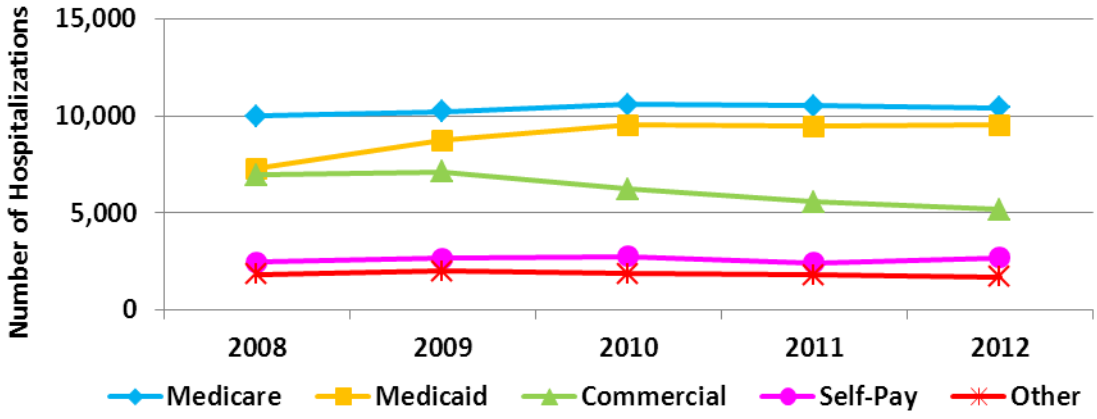
Figure 55. Number of Asthma Hospitalizations in Florida, AHCA 2008 – 2012




### Asthma Hospitalizations over Time by Payer Group

Over the past five years, the largest increase in the number of asthma hospitalizations by payer occurred among patients covered by Medicaid, increasing 30.4% from 7,292 hospitalizations in 2008 to 9,510 hospitalizations in 2012. During this time, the number of visits covered by Medicare and self-pay also increased, but at very low rate (4.2% and 8.9%, respectively). The number of asthma hospitalizations covered by commercial insurance and by other funds decreased by 25.8% and 6.5%, respectively, during this same time (Figure 56). In 2012, Medicare covered approximately 33% and Medicaid covered approximately 30% of all asthma hospitalizations in Florida.

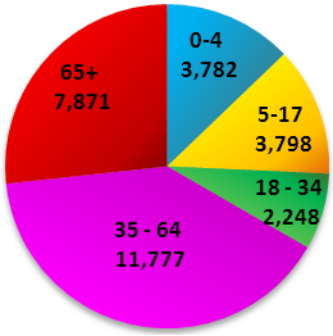
Figure 56. Number of Asthma Hospitalizations by Payer, AHCA 2008 – 2012



## Asthma Hospitalizations by Age Group

In 2012, the largest number of hospitalizations with asthma listed as the primary diagnosis occurred among Floridians ages 35-64 years and the fewest number of hospitalizations occurred among Floridians ages 18-34 years (Figure 57).

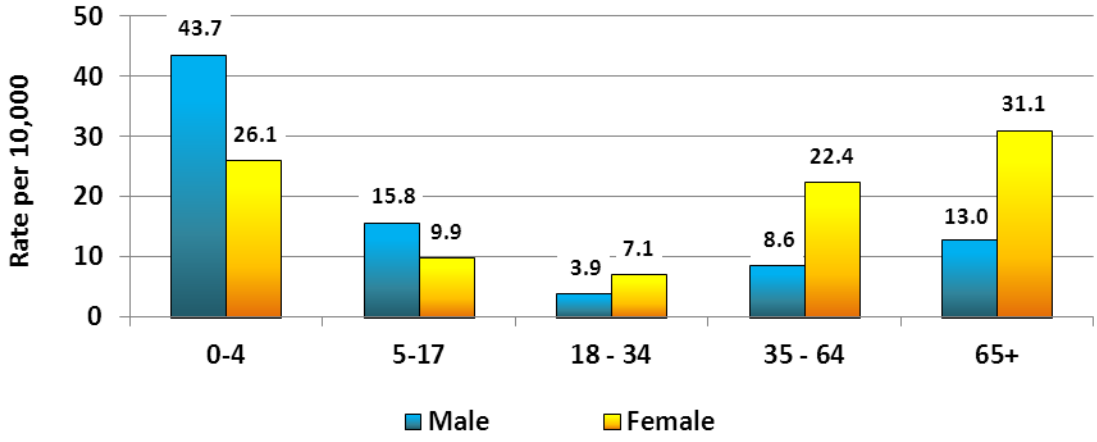
Figure 57. Number of Asthma Hospitalizations by Age Group, AHCA 2012




## Asthma Hospitalization Rates by Gender by Age Group

While the largest number of asthma hospitalizations occurred among Florida adults ages 35-64 years, the rate of hospitalizations was highest among Florida's youngest and oldest residents; 35.1 per 10,000 for ages 0-4 years and 23.0 per 10,000 for ages 65 years and older. As seen with ED visits, male children have higher rates of asthma hospitalizations than female children, and female adults have higher rates of asthma hospitalizations than male adults (Figure 58).

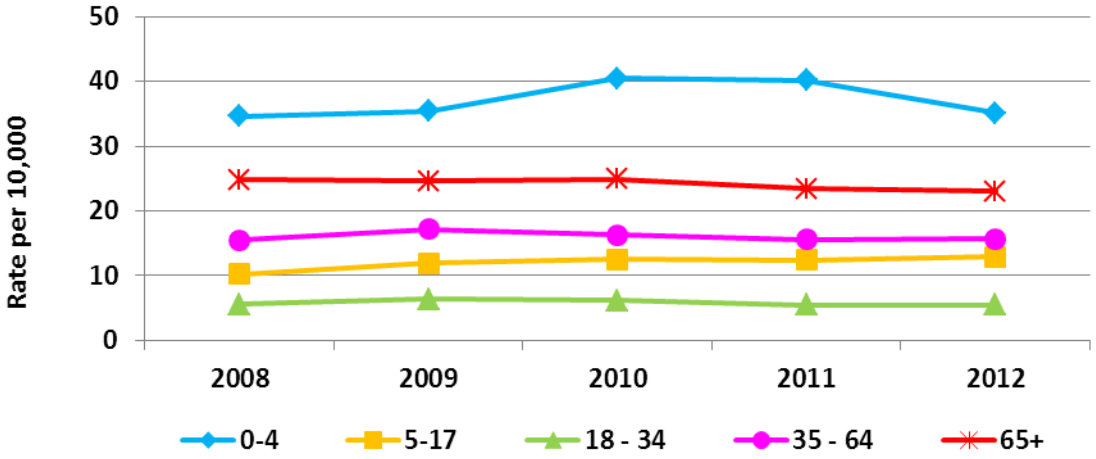
Figure 58. Asthma Hospitalization Rates per 10,000 by Gender by Age Group, AHCA 2012



## Asthma Hospitalization Rates by Age Group over Time

From 2008 to 2012, the only major increase in the rate of asthma hospitalizations occurred among Florida youth ages 5-17 years (25.9%). The rate of asthma hospitalizations for all other age groups fluctuated, but did not change during this time (Figure 59).

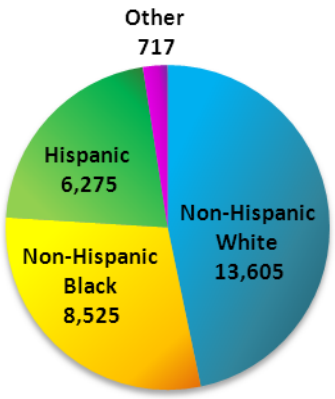
Figure 59. Asthma Hospitalization Rates per 10,000 by Age Group, AHCA 2008 – 2012




## Asthma Hospitalizations by Race/Ethnicity

In 2012, Florida non-Hispanic white residents had the largest number of hospitalizations (13,605) with asthma listed as the primary diagnosis, accounting for nearly half (46.2%) of all asthma hospitalizations (Figure 60).

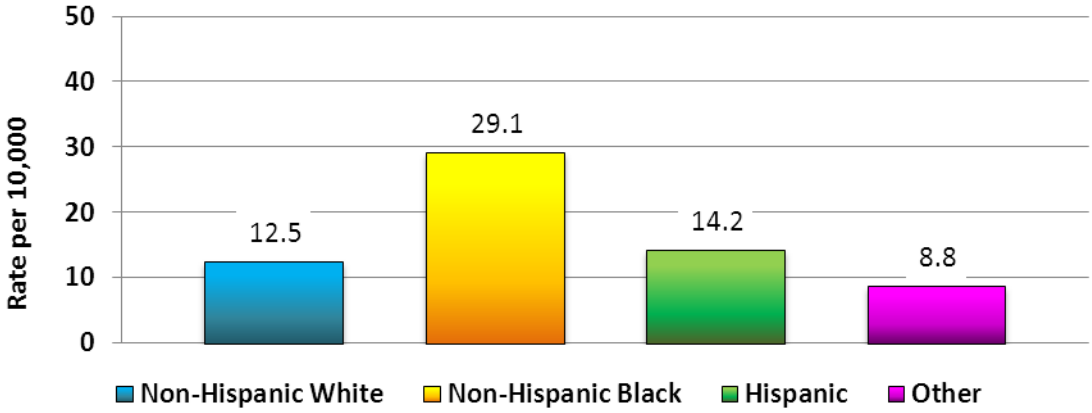
Figure 60. Number of Asthma Hospitalizations by Race/Ethnicity, AHCA 2012



## Asthma Hospitalization Rates by Race/Ethnicity

In 2012, the rate of hospitalizations with asthma listed as the primary diagnosis was highest among non-Hispanic black Floridians (29.1 per 10,000) compared to the other racial/ethnic groups. The rate of asthma hospitalizations was similar among non-Hispanic whites (12.5 per 10,000) and Hispanics (14.2 per 10,000), and both were higher than the rate among the Other group (8.8 per 10,000) (Figure 61).

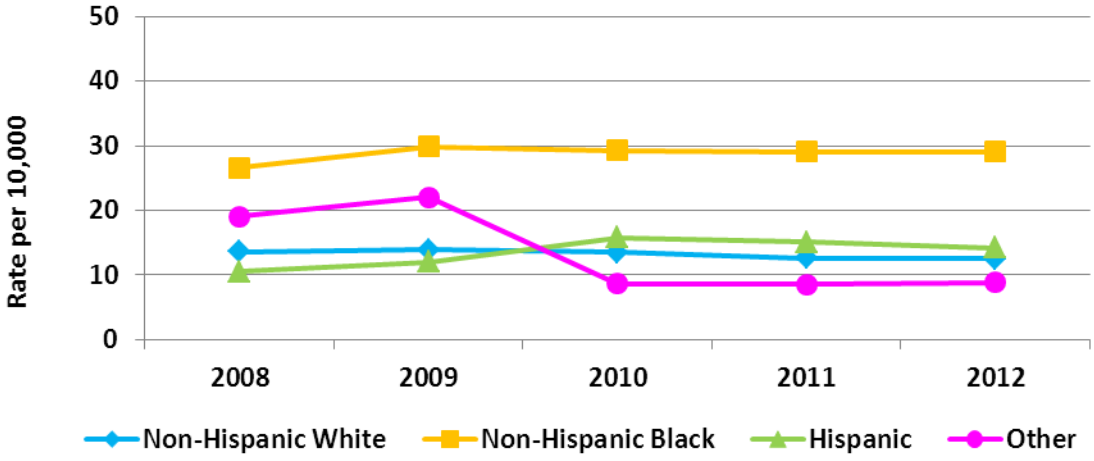
Figure 61. Asthma Hospitalization Rates per 10,000 by Race/Ethnicity, AHCA 2012




## Asthma Hospitalization Rates by Race/Ethnicity over Time

From 2008 to 2012, the rate of hospitalizations with asthma as the primary diagnosis increased by 34.8% among Hispanic Floridians and by 9.4% among non-Hispanic black Floridians. During this time, the rate of asthma hospitalizations in Florida decreased by 8.3% among non-Hispanic whites and by 53.9% among the Other race/ethnicity group.

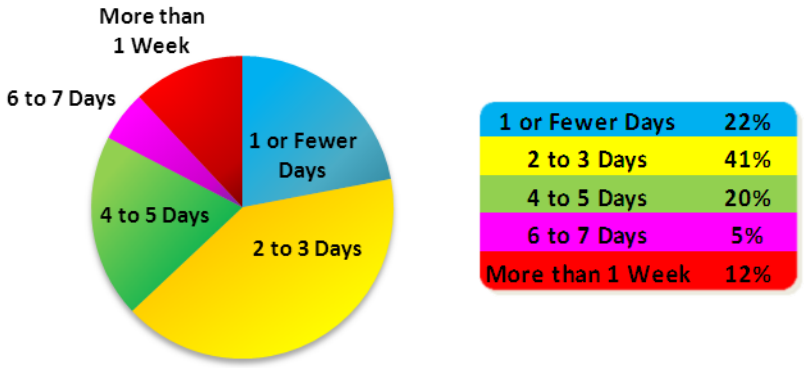
Figure 62. Asthma Hospitalization Rates per 10,000 by Race/Ethnicity, AHCA 2008 – 2012



## Asthma Hospitalizations by Length of Stay

In 2012, approximately three out of five patients (63%) admitted to the hospital were discharged within three days. However, approximately one out of five patients (20%) admitted to the hospital for asthma were admitted to the hospital for four to five days, 5% were admitted for 6 to 7 days, and 12% of patients were admitted for more than 1 week (Figure 63).

Figure 63. Length of Hospital Stay, AHCA 2012

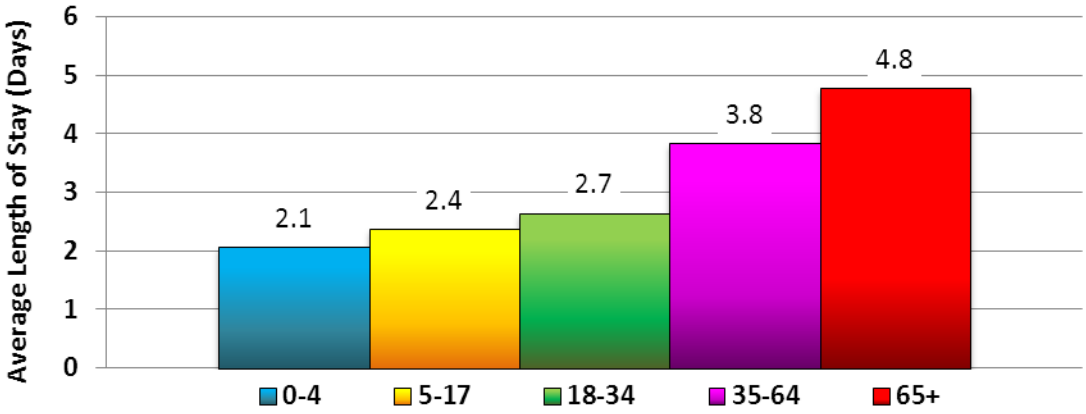



## Asthma Hospitalizations by Average Length of Stay by Age Group

The average length of stay for asthma hospitalizations decreased slightly from 3.9 days in 2008 to 3.6 days in 2012. During this time period, males consistently had a shorter length of stay than females, and the average length of stay increased with age. Non-Hispanic white and Hispanic patients had slightly longer average lengths of stay than non-Hispanic black patients and Other race/ethnicity patients.

In 2012, the average length of hospital stay among adults ages 65 years and older (4.8 days) was more than double the average length of hospital stay for children ages 5-17 years (2.4 days) (Figure 65).

Figure 64. Average Length of Hospital Stay by Age Group, AHCA 2012



## Repeat Emergency Department Visits and Hospitalizations

When working to improve asthma outcomes and reduce costs, starting with those individuals whose asthma is poorly controlled is recommended. One indication of poorly controlled asthma is frequent or repeat visits to the ED or hospital for asthma care, as these should be avoidable with proper asthma management and control. Repeat patients were identified by matching masked, or de-identified, social security numbers (SSN). Repeat ED visits will be discussed first, followed by repeat hospitalizations. In the third section, ED visits and hospitalizations were combined to assess individuals who had at least one ED visit and one hospitalization. Repeat patients' visits were sorted chronologically; the first visit was assigned as the index visit and any other visits were termed subsequent visits.

### Repeat Asthma ED Visits

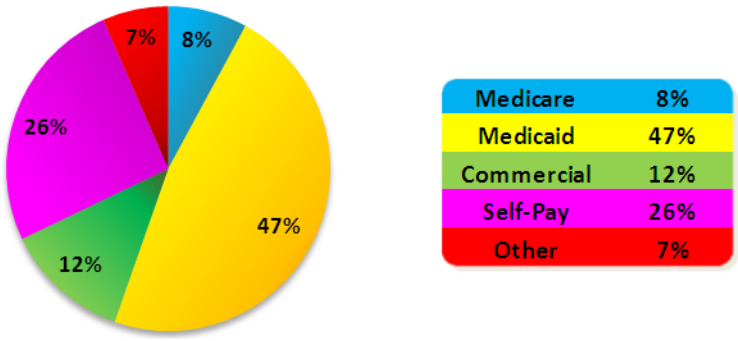
In this section, single and repeat ED visits with asthma listed as the primary diagnosis in 2012 are discussed, regardless of hospitalizations. There were 17,106 records with unknown SSN that were excluded from this analysis because it could not be determined if these individuals had more than one visit. This left a remainder of 68,578 patients for this analysis, representing 86,743 asthma ED visits and $243.3 million in total charges.

Of the 68,578 patients, there were 57,926 patients (84.5%) who only had one asthma ED visit and 10,652 patients (15.5%) who had two or more asthma ED visits, i.e. repeat patients. Repeat patients accounted for 33.2% of total asthma ED visits (28,817) and 31.8% of the total charges ($77.2 million), while only accounting for 15.5% of the total patients.

Males and females were equally likely to have repeat ED visits with asthma listed as the primary diagnosis in 2012. The highest rates of repeat visits occurred among children ages 0 to 4 years and non-Hispanic blacks.

Patients paying out of pocket accounted for a quarter (26%) of the total repeat asthma ED visits and Medicaid was listed as the payer for almost half (47%) of these visits in 2012 (Figure 65).

Figure 65. Percent of Repeat Asthma ED Visits by Payer, AHCA 2012



Two thirds of repeat patients (67.8%) had only two asthma ED visits in 2012, but 18.0% of repeat patients had three ED visits, and 14.1% had four or more visits. There were 105 patients who had between 10 and 20 asthma ED visits, and 13 patients who had more than 20 in 2012.

## Repeat Asthma Hospitalizations

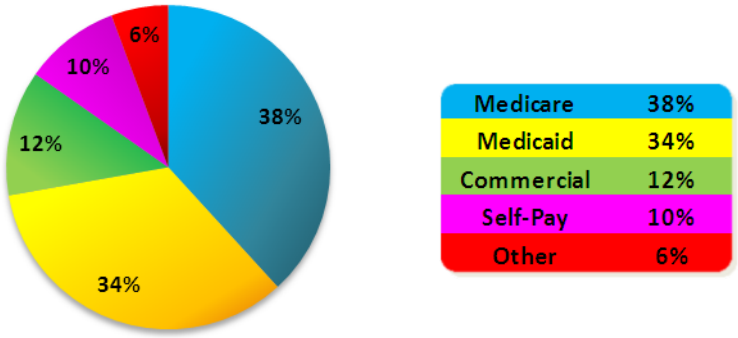
In this section, single and repeat hospitalizations with asthma listed as the primary diagnosis in 2012 are discussed, regardless of ED visits. There were 3,124 records with unknown SSN that were excluded from this analysis because it could not be determined if these individuals had more than one hospitalization. This left a remainder of 22,338 patients for this analysis, representing 26,352 asthma hospitalizations and $759.8 million in total charges.

Of the 22,338 patients, there were 19,605 patients (87.8%) who only had one asthma hospitalization and 2,733 patients (12.2%) who had two or more asthma hospitalizations, i.e. repeat patients. Repeat patients accounted for 25.6% of total asthma ED visits (6,747) and 27.3% of the total charges ($207.6 million), while only accounting for 12.2% of the total patients.

In 2012, females were more likely to have repeat asthma hospitalizations than males. The highest rates of repeat hospitalizations occurred among adults ages 35 and older and non-Hispanic blacks.

The majority of repeat asthma hospitalizations were covered by Medicare (38%) and Medicaid (34%) in 2012 (Figure 66).

Figure 66. Percent of Repeat Asthma Hospitalizations by Payer, AHCA 2012




Approximately three out of four repeat patients (73.4%) had only two asthma hospitalizations in 2012, but 16.3% of repeat patients had three hospitalizations, and 10.3% had four or more visits. There were 62 patients who had more than 5 asthma hospitalizations in 2012.

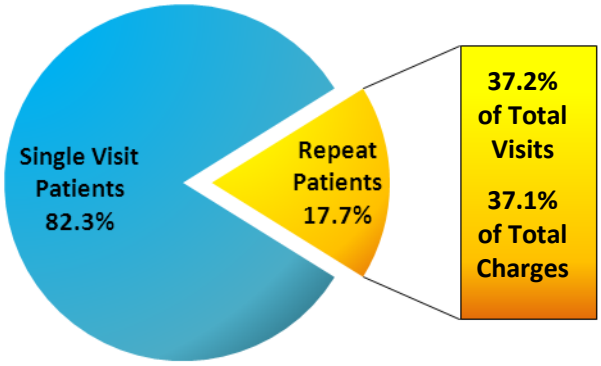
## Repeat Asthma ED Visits and Hospitalizations Combined

Previously, repeat ED patients and visits were discussed separately from repeat hospitalization patients and visits. In this section, the ED and hospitalization datasets for 2012 were combined to identify the number of patients who had one ED visit and one hospitalization with asthma listed as the primary diagnosis in 2012. Some of the patients with two or more asthma ED visits mentioned above also had

one or more asthma hospitalizations. Likewise, some of the patients with two or more hospitalizations mentioned above also had one or more ED visits. In the combined dataset, there were 20,230 records with unknown SSN, leaving a remainder of 86,316 patients and a total of 113,095 asthma ED visits and hospitalizations for this analysis. By combining the two datasets, an additional 1,890 repeat patients in 2012 were identified, each with only one asthma ED visit and one asthma hospitalization.

Of the 86,316 known patients, there were 71,041 patients (82.3%) who had only one asthma ED visit or hospitalization and 15,275 repeat patients (17.7%) who had more than one asthma ED visit and/or hospitalization. Repeat patients accounted for 37.2% of the total asthma ED visits or hospitalizations (42,054) and 37.1% of the total charges ($372.6 million), while only accounting for 17.7% of the total patients (Figure 67).

Figure 67. Single and Repeat Asthma ED Visits and Hospitalizations, AHCA 2012




The total amount of charges in 2012 for all ED visits and hospitalizations with asthma listed as the primary diagnosis was $1.1 billion. Assuming that providing medical treatment, management plans, and education at discharge could prevent future visits, the repeat patients' first visits were separated from their subsequent visits to assess the opportunity for cost savings. There were 15,275 first visits among repeat patients and 26,779 subsequent visits. Preventing these subsequent visits could have led to $238 million fewer charges in 2012.

# Mortality Data

# MORTALITY DATA

Asthma related deaths represent the worst outcome possible. Fortunately, asthma mortality rates have been decreasing over time and are relatively low. However, even one death due to asthma is one too many. Most asthma deaths are related to lack of access to health care and insufficient knowledge of proper management techniques. Approximately 80% of the deaths from asthma are preventable with proper education and management.[xiii]

The mortality data presented in this section 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). Data for national comparisons were pulled from CDC Wonder. More detailed information about this data is available in Appendix D. Methodology and Technical Notes.

## Key Findings

### Overall

- Asthma deaths are relatively rare occurrences
    - From 2008 to 2012, the average annual number of deaths due to asthma was 178
- Asthma death rates are decreasing in Florida and nationally

### Gender

- Florida females have consistently had a higher rate of death from asthma than males

### Race/Ethnicity

- In Florida, non-Hispanic blacks disproportionally had the highest rate of death due to asthma

### Years of Potential Life Lost

- From 2008 to 2012, the rate of years of potential life lost due to asthma was 20.1 years per 100,000 population under 75 years of age

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### Asthma Deaths in Florida over Time

Over the past several years in Florida, the annual number of deaths due to asthma has fluctuated, but has not moved in a defined direction. From 2008 to 2012, the annual number of deaths ranged from 146 to 202, with an overall average of 178 asthma deaths per year.
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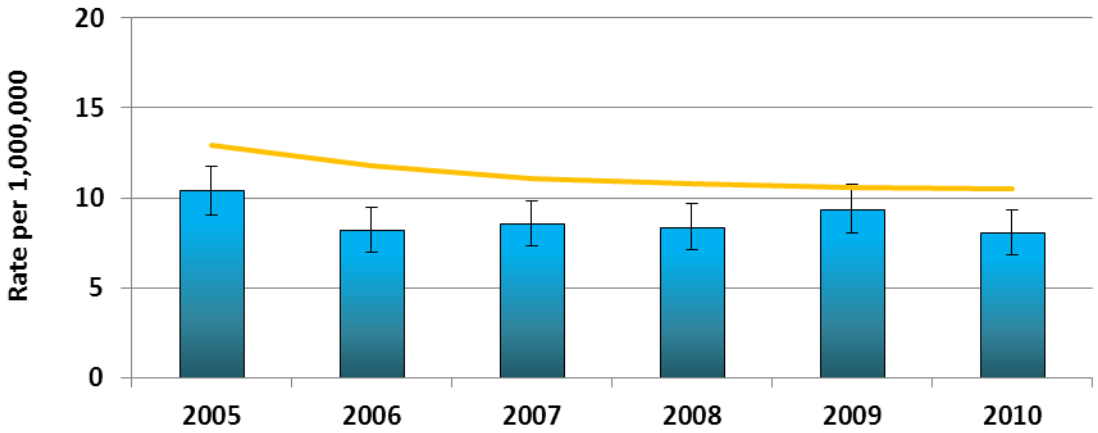
## Asthma Age-Adjusted Death Rate over Time

The asthma age-adjusted death rate (AADR) has been decreasing in Florida and nationally. From 2005 to 2010, the asthma AADR in Florida decreased from 10.4 deaths per 1,000,000 Floridians to 8.1 deaths per 1,000,000 Floridians. During this same time, the national asthma AADR decreased from 12.9 deaths per 1,000,000 population to 10.5 deaths per million population (Figure 68).

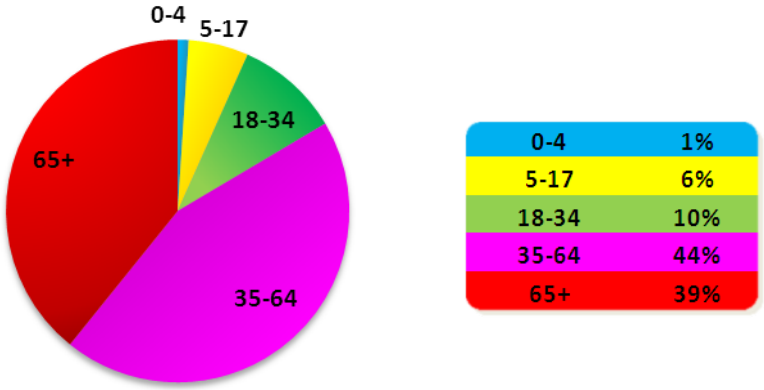
Figure 68. Asthma Age-Adjusted Death Rate per 1,000,000, CDC Wonder 2005 – 2010




## Asthma Deaths by Age Group

In 2012, there were a total of 194 deaths in Florida with asthma listed as the underlying cause. Approximately 93.3% (181) of these deaths occurred among Florida adults aged 18 years and older (Figure 69).

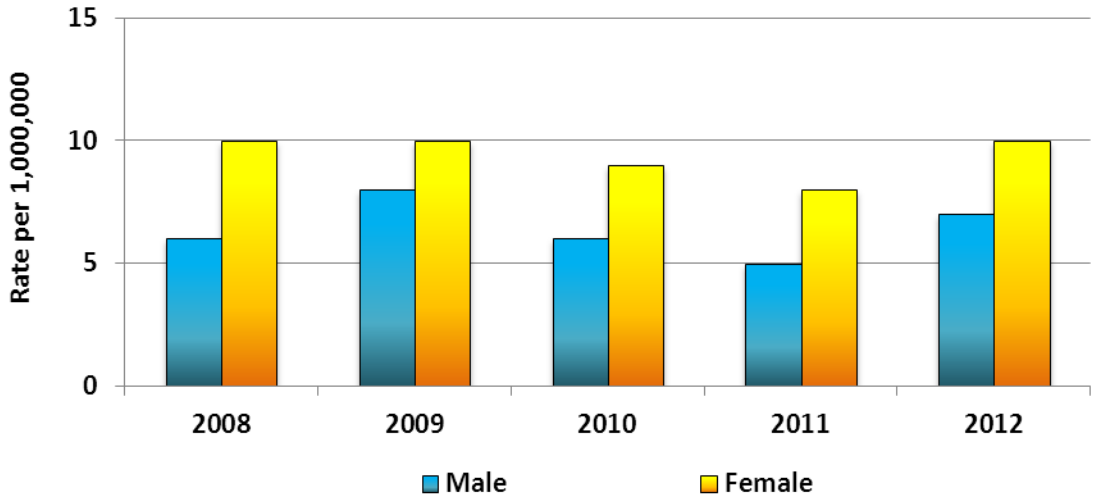
Figure 69. Percent of Florida Asthma Deaths by Age Group, FL CHARTS 2012



## Asthma Age-Adjusted Death Rates per 1,000,000 by Gender by Age Group

Females have consistently had a higher asthma AADR than males. In 2012, the asthma AADR among Florida females was 10 per 1,000,000, compared to 7 per 1,000,000 among Florida males (Figure 70).

Figure 70. Asthma Age-Adjusted Death Rates per 1,000,000 by Gender by Age Group, FL CHARTS 2008 - 2012

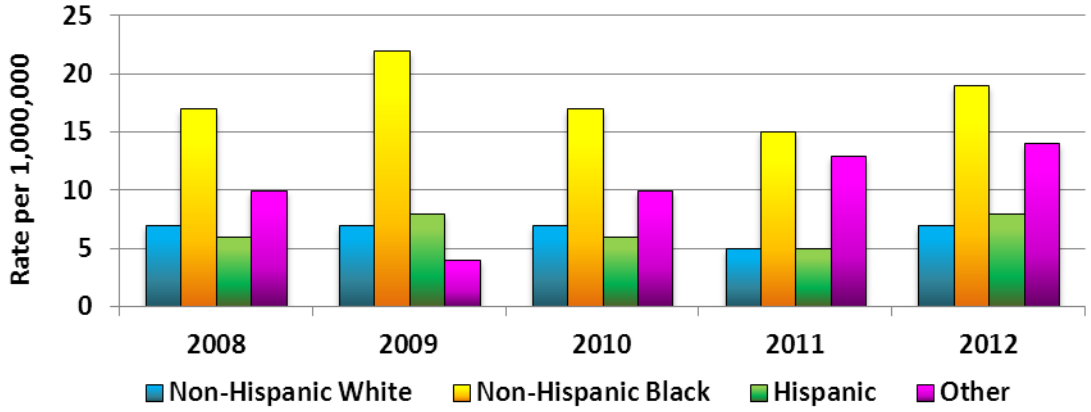



## Asthma Age-Adjusted Death Rates per 1,000,000 by Race/Ethnicity

Non-Hispanic blacks in Florida have consistently had the highest asthma AADR rate compared to all other race/ethnicity groups. In recent years, the Other race/ethnic group has also had a high asthma AADR, but this this rate should be interpreted cautiously because it is based off of a small number of events (fewer than 10 deaths).

In 2012, the AADR for non-Hispanic blacks (19 per 1,000,000) was more than double that of non-Hispanic whites (7 per 1,000,000 population) and Hispanics (8 per 1,000,000) in Florida (Figure 71).

Figure 71. Asthma Age-Adjusted Death Rates by Race/Ethnicity, FL CHARTS 2008 - 2012

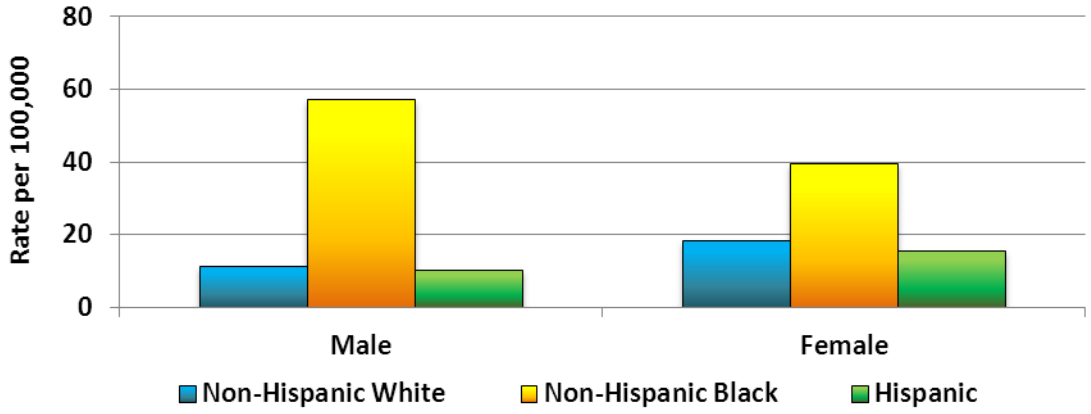


## Years of Potential Life Lost

Years of Potential Life Lost (YPLL) is an estimate of premature mortality, defined as the number of years of life lost among persons who die before a predetermined age. From 2008 to 2012, the total YPLL rate due to asthma was 20.1 per 100,000 Floridians under 75 years of age.

Over the past five years, females had a higher rate of YPLL due to asthma than males (21.4 vs. 18.7 per 100,000 Floridians under 75 years). However, non-Hispanic black males had the highest rate of YPLL due to asthma (57.5 per 100,000 under 75) during this time (Figure 72).

Figure 72. Asthma Years of Potential Life Lost per 100,000 Population < 75 by Gender by Race/Ethnicity, FL CHARTS 2008-2012



# Conclusion

# Conclusion

Despite low mortality, there is significant work to be done in Florida to lessen the burden of asthma and to reduce asthma related disparities. This report has outlined the current burden of asthma in Florida, and identified populations that are disproportionately impacted by the disease. Male children, female adults, non-Hispanic blacks, and lower-income households are at the greatest risk for developing asthma and for dealing with the negative consequences of poor asthma control. More than half of ED visits and nearly two-thirds of hospitalizations with asthma listed as the primary diagnosis were covered by Medicare and Medicaid.

As the prevalence and costs of asthma among Floridians continue 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 successful management requires coordination between partners to ensure individuals with asthma and their families receive the education and resources needed for proper medical treatment, medication adherence, and environmental control.

Health care providers have the important responsibility of working with individuals and families to find the right course of treatment and to ensure clear understanding of the patient's Asthma Action Plan. And for children, copies of these plans need to be provided to child care centers, schools, and other places where the child spends significant amounts of time.

It is recommended, that clinicians in primary care practices, hospitals, and ED settings follow the updated 2007 EPR-3 Guidelines when assessing, diagnosing, and treating individuals with asthma. Every ED visit or hospitalization is an opportunity to provide education and information about proper asthma management. Pharmacists also have the opportunity to provide education on proper medication techniques each time a prescription is filled.

Incentives should be identified to encourage schools, childcare centers, physicians, hospitals, urgent care centers, and health plans to implement robust programs that support individuals with asthma. These organizations should examine their own data to identify those populations most at risk and in need of interventions.

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.

*We ask for the assistance of every reader in reaching the ultimate goal:*

*Improving asthma care and quality of life for Floridians with asthma.*

# Appendices

# Appendix A. Summary Tables

## Figure 1. Lifetime Adult Asthma Prevalence, BRFSS 2012

| | Florida | US Median |
|---|---|---|
| **Total** | 12.6 | 13.3 |
| | | |
| **Male** | 10.3 | 11 |
| **Female** | 14.7 | 15.2 |
| | | |
| **Non - Hispanic White** | 11.9 | 12.4 |
| **Non - Hispanic Black** | 12.5 | 17.1 |
| **Hispanic** | 14.4 | 12.3 |
| | | |
| **< $15,000** | 20.3 | 20.2 |
| **$15,000 - $24,999** | 13.9 | 15 |
| **$25,000 - $34,999** | 12.2 | 12.6 |
| **$35,000 - $49,999** | 10.3 | 11.8 |
| **> $50,000** | 9.1 | 10.7 |
| | | |
| **18 - 24** | 19.2 | 17.4 |
| **25 - 34** | 14.7 | 13.8 |
| **35 - 44** | 9.1 | 12.4 |
| **45 - 54** | 12.5 | 12.4 |
| **55 - 64** | 12.4 | 12.9 |
| **65+** | 10.3 | 11.1 |

## Figure 2. Lifetime Adult Asthma Prevalence, BRFSS 2005 – 2012

| Year | Florida | | US Median |
|---|---|---|---|
| | Mean | 95% CI | |
| **2005** | 11.7 | (10.7 - 12.7) | 12.6 |
| **2006** | 11.6 | (10.7 - 12.5) | 13.0 |
| **2007** | 10.7 | (9.9 - 11.5) | 13.1 |
| **2008** | 10.2 | (9.2 - 11.3) | 13.6 |
| **2009** | 11.7 | (10.4 - 13.0) | 13.5 |
| **2010** | 13.8 | (12.9 - 14.7) | 13.8 |
| **2011** | 12.3 | (11.4 - 13.2) | 13.6 |
| **2012** | 12.6 | (11.4 - 13.8) | 13.3 |

## Figure 3. Lifetime Adult Asthma Prevalence by Gender, BRFSS 2005 – 2012

| Year | Male | | Female | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI |
| **2005** | 9.0 | (7.5 - 10.5) | 14.1 | (12.8 - 15.4) |
| **2006** | 9.7 | (8.3 - 11.1) | 13.4 | (12.2 - 14.6) |
| **2007** | 9.7 | (8.5 - 10.9) | 11.7 | (10.9 - 12.5) |
| **2008** | 8.7 | (7.1 - 10.4) | 11.7 | (10.4 - 13.0) |
| **2009** | 10.3 | (8.0 - 12.6) | 13.1 | (11.7 - 14.4) |
| **2010** | 12.6 | (11.1 - 14.1) | 14.9 | (13.8 - 15.9) |
| **2011** | 10.3 | (9.0 - 11.6) | 14.1 | (12.9 - 15.3) |
| **2012** | 10.3 | (8.7 - 11.9) | 14.7 | (12.9 - 16.5) |

## Figure 4. Lifetime Adult Asthma Prevalence by Race/Ethnicity, BRFSS 2005 – 2012

| Year | Non - Hispanic White | | Non - Hispanic Black | | Hispanic | |
|---|---|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI |
| **2005** | 11.6 | (10.4 - 12.8) | 14.7 | (11.0 - 18.4) | 10.7 | (8.5 - 12.9) |
| **2006** | 12.0 | (10.9 - 13.1) | 11.5 | (8.7 - 14.3) | 10.7 | (8.4 - 13.0) |
| **2007** | 10.5 | (9.7 - 11.3) | 11.9 | (9.4 - 14.4) | 10.7 | (8.3 - 13.1) |
| **2008** | 10.3 | (9.2 - 11.4) | 9.8 | (6.8 - 12.8) | 11.8 | (8.1 - 15.4) |
| **2009** | 11.3 | (10.2 - 12.4) | 14.4 | (10.1 - 18.6) | 11.5 | (6.5 - 16.5) |
| **2010** | 13.5 | (12.6 - 14.4) | 12.5 | (9.6 - 15.4) | 16.8 | (13.2 - 20.4) |
| **2011** | 12.4 | (11.4 - 13.5) | 13.1 | (10.0 - 16.3) | 11.2 | (8.9 - 13.6) |
| **2012** | 11.9 | (10.5 - 13.3) | 12.5 | (9.2 - 15.8) | 14.4 | (10.9 - 17.9) |

## Figure 5. Lifetime Adult Asthma Prevalence by Household Income, BRFSS 2005 - 2012

| Year | > $15,000 | | $15,000 - $24,999 | | $25,000 - $34,999 | | $35,000 - $49,999 | | ≤ $50,000 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI |
| **2005** | 19.1 | (14.9 - 23.3) | 11.4 | (9.0 - 13.8) | 12.7 | (9.8 - 15.6) | 11.1 | (8.3 - 13.9) | 10.0 | (8.4 - 11.6) |
| **2010** | 20.1 | (16.8 - 23.4) | 17.1 | (14.1 - 20.0) | 13.0 | (10.3 - 15.7) | 13.5 | (11.3 - 15.7) | 11.5 | (10.1 - 12.8) |
| **2012** | 20.3 | (16.0 - 24.7) | 13.9 | (11.0 - 16.8) | 12.2 | (8.8 - 15.6) | 10.3 | (7.6 - 13.1) | 9.1 | (7.2 - 10.9) |

## Figure 6. Lifetime Adult Asthma Prevalence by County, BRFSS 2010

| County | Mean | 95% CI |
|---|---|---|
| Alachua | 10.7 | (7.3 - 14.1) |
| Baker | 22.2 | (13.9 - 30.6) |
| Bay | 12.9 | (9.4 - 16.4) |
| Bradford | 15.9 | (9.2 - 22.6) |
| Brevard | 12.6 | (9.0 - 16.2) |
| Broward | 15.2 | (11.0 - 19.5) |
| Calhoun | 15.6 | (9.8 - 21.4) |
| Charlotte | 9.4 | (6.5 - 12.2) |
| Citrus | 16.5 | (11.8 - 21.2) |
| Clay | 12.5 | (9.2 - 15.8) |
| Collier | 14.9 | (10.0 - 19.8) |
| Columbia | 15.5 | (11.1 - 19.9) |
| Desoto | 16.9 | (11.7 - 22.0) |
| Dixie | 14.1 | (10.1 - 18.1) |
| Duval | 15.9 | (11.5 - 20.4) |
| Escambia | 14.8 | (10.6 - 19.0) |
| Flagler | 14.9 | (10.6 - 19.1) |
| Franklin | 11.3 | (7.5 - 15.0) |
| Gadsden | 14.3 | (10.3 - 18.4) |
| Gilchrist | 20.7 | (10.9 - 30.5) |
| Glades | 6.9 | (4.0 - 9.7) |
| Gulf | 12.5 | (8.1 - 16.9) |
| Hamilton | 15.8 | (11.1 - 20.5) |
| Hardee | 11.9 | (8.1 - 15.7) |
| Hendry | 13.3 | (8.3 - 18.4) |
| Hernando | 17.3 | (12.1 - 22.4) |
| Highlands | 17.1 | (12.4 - 21.8) |
| Hillsborough | 14.0 | (10.3 - 17.8) |
| Holmes | 13.5 | (9.7 - 17.3) |
| Indian River | 12.3 | (8.3 - 16.2) |
| Jackson | 14.6 | (10.1 - 19.2) |
| Jefferson | 15.5 | (11.1 - 19.9) |
| Lafayette | 15.7 | (7.4 - 23.9) |
| Lake | 11.1 | (7.8 - 14.5) |

| County | Mean | 95% CI |
|---|---|---|
| Lee | 12.5 | (7.5 - 17.5) |
| Leon | 11.5 | (7.6 - 15.4) |
| Levy | 13.3 | (9.6 - 16.9) |
| Liberty | 18.9 | (13.3 - 24.5) |
| Madison | 17.4 | (12.0 - 22.9) |
| Manatee | 11.5 | (7.8 - 15.2) |
| Marion | 16.1 | (11.5 - 20.8) |
| Martin | 13.9 | (8.7 - 19.0) |
| Miami-Dade | 11.4 | (8.0 - 14.8) |
| Monroe | 12.3 | (7.0 - 17.7) |
| Nassau | 13.2 | (8.9 - 17.5) |
| Okaloosa | 9.0 | (5.6 - 12.4) |
| Okeechobee | 11.3 | (7.4 - 15.3) |
| Orange | 13.8 | (10.9 - 16.7) |
| Osceola | 16.4 | (12.0 - 20.8) |
| Palm Beach | 12.9 | (8.4 - 17.5) |
| Pasco | 13.7 | (9.4 - 18.0) |
| Pinellas | 15.9 | (11.4 - 20.4) |
| Polk | 16.1 | (11.3 - 21.0) |
| Putnam | 19.7 | (13.9 - 25.6) |
| Saint Johns | 14.0 | (10.4 - 17.6) |
| Saint Lucie | 13.2 | (9.3 - 17.2) |
| Santa Rosa | 16.7 | (11.8 - 21.6) |
| Sarasota | 13.2 | (8.9 - 17.4) |
| Seminole | 12.7 | (9.1 - 16.3) |
| Sumter | 10.9 | (4.7 - 17.2) |
| Suwannee | 14.7 | (10.5 - 18.9) |
| Taylor | 16.5 | (11.9 - 21.0) |
| Union | 13.2 | (8.0 - 18.3) |
| Volusia | 14.2 | (10.5 - 17.9) |
| Wakulla | 19.8 | (13.5 - 26.0) |
| Walton | 12.2 | (8.2 - 16.2) |
| Washington | 17.0 | (11.9 - 2.2) |

## Figure 7. Current Adult Asthma Prevalence, BRFSS 2012

| | Florida | US Median |
|---|---|---|
| **Total** | 8.2 | 8.9 |
| | | |
| **Male** | 5.3 | 6.5 |
| **Female** | 10.9 | 11.3 |
| | | |
| **Non-Hispanic White** | 8.3 | 8.7 |
| **Non-Hispanic Black** | 7.5 | 12 |
| **Hispanic** | 7.8 | 7.6 |
| | | |
| **< $15,000** | 13.1 | 14.9 |
| **$15,000 - $24,999** | 10.4 | 10.9 |
| **$25,000 - $34,999** | 8.7 | 8.6 |
| **$35,000 - $49,999** | 6.6 | 7.9 |
| **> $50,000** | 4.5 | 6.9 |
| | | |
| **18-24** | 9.5 | 9.7 |
| **25-34** | 8.6 | 8.6 |
| **35-44** | 6.4 | 8.7 |
| **45-54** | 8.8 | 9.4 |
| **55-64** | 8.7 | 9.5 |
| **65+** | 7.6 | 8.2 |

## Figure 8. Current Adult Asthma Prevalence, BRFSS 2005 – 2012

| Year | Florida | | US Median |
|---|---|---|---|
| | Mean | 95% CI | |
| **2005** | 6.8 | (6.0-7.6) | 8.0 |
| **2006** | 7.2 | (6.5-7.9) | 8.5 |
| **2007** | 6.2 | (5.6-6.8) | 8.4 |
| **2008** | 6.6 | (5.7-7.5) | 8.8 |
| **2009** | 6.9 | (6.1-7.8) | 8.8 |
| **2010** | 8.3 | (7.6-9.0) | 9.1 |
| **2011** | 7.6 | (6.9 - 8.3) | 9.1 |
| **2012** | 8.2 | (7.2 - 9.2) | 8.9 |

## Figure 9. Current Adult Asthma Prevalence by Gender, BRFSS 2005 – 2012

| Year | Male | | Female | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI |
| **2005** | 4.0 | (3.0 - 5.0) | 9.4 | (8.3 - 10.5) |
| **2006** | 5.5 | (4.4 - 6.6) | 8.8 | (7.9 - 9.7) |
| **2007** | 4.9 | (4.1 - 5.7) | 7.4 | (6.8 - 8.0) |
| **2008** | 5.5 | (4.1 - 7.0) | 7.6 | (6.6 - 8.6) |
| **2009** | 5.1 | (3.7 - 6.4) | 8.7 | (7.6 - 9.8) |
| **2010** | 6.5 | (5.4 - 7.6) | 10.0 | (9.2 - 10.9) |
| **2011** | 5.4 | (4.3 - 6.5) | 9.7 | (8.7 - 10.7) |
| **2012** | 5.3 | (4.1 - 6.5) | 10.9 | (9.3 - 12.5) |

## Figure 10. Current Adult Asthma Prevalence by Race/Ethnicity, BRFSS 2005 - 2012

| Year | Non - Hispanic White | | Non - Hispanic Black | | Hispanic | |
|---|---|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI |
| **2005** | 6.9 | (6.0 - 7.8) | 8.8 | (5.9 - 11.7) | 5.1 | (3.6 - 6.6) |
| **2006** | 7.6 | (6.7 - 8.5) | 8.7 | (6.2 - 11.2) | 5.2 | (3.4 - 7.0) |
| **2007** | 6.4 | (5.8 - 7.0) | 7.6 | (5.6 - 9.6) | 4.8 | (3.4 - 6.2) |
| **2008** | 6.4 | (5.6 - 7.2) | 6.5 | (4.0 - 9.1) | 8.0 | (4.7 - 11.3) |
| **2009** | 7.2 | (6.3 - 8.1) | 8.5 | (5.8 - 11.2) | 4.6 | (2.0 - 7.2) |
| **2010** | 8.3 | (7.6 - 9.0) | 8.0 | (5.8 - 10.1) | 9.9 | (6.8 - 12.9) |
| **2011** | 7.5 | (6.7 - 8.3) | 9.1 | (6.4 - 11.8) | 6.9 | (4.9 - 8.9) |
| **2012** | 8.3 | (7.2 - 9.4) | 7.5 | (5.1 - 9.9) | 7.8 | (4.9 - 10.7) |

## Figure 11. Current Adult Asthma Prevalence by Household Income, BRFSS 2005 – 2012

| Year | > $15,000 | | $15,000 - $24,999 | | $25,000 - $34,999 | | $35,000 - $49,999 | | ≤ $50,000 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI | Mean | Mean | 95% CI | Mean | 95% CI | Mean |
| **2005** | 13.2 | (9.5 - 16.9) | 7.0 | (5.2 - 8.8) | 8.2 | (5.8 - 10.6) | 4.8 | (3.3 - 6.3) | 5.3 | (4.2 - 6.4) |
| **2010** | 13.9 | (11.2 - 16.6) | 12.3 | (9.5 - 15.0) | 8.4 | (6.6 - 10.3) | 6.8 | (5.2 - 8.4) | 6.2 | (5.2 - 7.1) |
| **2012** | 13.1 | (9.4 - 16.8) | 10.4 | (7.8 - 13.0) | 8.7 | (5.7 - 11.7) | 6.6 | (4.7 - 8.5) | 4.5 | (3.3 - 5.7) |

## Figure 12. Current Adult Asthma Prevalence by County, BRFSS 2010

| County | Mean | 95% CI |
|---|---|---|
| Alachua | 6.9 | (4.2 - 9.6) |
| Baker | 16.2 | (7.7 - 24.6) |
| Bay | 7.6 | (4.8 - 10.5) |
| Bradford | 11.8 | (5.7 - 17.8) |
| Brevard | 9.4 | (6.2 - 12.7) |
| Broward | 7.9 | (4.7 - 11.0) |
| Calhoun | 7.3 | (4.2 - 10.3) |
| Charlotte | 7.2 | (4.6 - 9.7) |
| Citrus | 10.0 | (6.3 - 13.7) |
| Clay | 8.2 | (5.6 - 10.8) |
| Collier | 8.0 | (4.2 - 11.8) |
| Columbia | 11.0 | (6.9 - 15.1) |
| Desoto | 13.2 | (8.4 - 18.1) |
| Dixie | 10.6 | (6.9 - 14.2) |
| Duval | 11.2 | (7.2 - 15.2) |
| Escambia | 10.6 | (7.1 - 14.0) |
| Flagler | 9.6 | (5.9 - 13.2) |
| Franklin | 6.9 | (4.2 - 9.6) |
| Gadsden | 9.3 | (6.2 - 12.4) |
| Gilchrist | 7.6 | (4.0 - 11.2) |
| Glades | 3.9 | (2.0 - 5.9) |
| Gulf | 5.9 | (3.4 - 8.5) |
| Hamilton | 10.6 | (6.9 - 14.3) |
| Hardee | 7.7 | (5.0 - 10.4) |
| Hendry | 8.6 | (4.2 - 13.1) |
| Hernando | 10.9 | (6.7 - 15.1) |
| Highlands | 9.9 | (6.1 - 13.7) |
| Hillsborough | 8.6 | (5.6 - 11.6) |
| Holmes | 7.4 | (4.6 - 10.3) |
| Indian River | 7.7 | (4.4 - 11.0) |
| Jackson | 8.6 | (5.5 - 11.6) |
| Jefferson | 9.6 | (6.4 - 12.8) |
| Lafayette | 8.4 | (4.2 - 12.5) |
| Lake | 6.2 | (3.8 - 8.6) |

| County | Mean | 95% CI |
|---|---|---|
| Lee | 11.4 | (6.4 - 16.4) |
| Leon | 5.2 | (2.8 - 7.5) |
| Levy | 7.5 | (5.1 - 9.9) |
| Liberty | 13.0 | (8.7 - 17.2) |
| Madison | 10.9 | (6.2 - 15.6) |
| Manatee | 7.1 | (4.5 - 9.7) |
| Marion | 8.6 | (5.8 - 11.5) |
| Martin | 6.7 | (4.2 - 9.3) |
| Miami-Dade | 6.3 | (3.6 - 8.9) |
| Monroe | 5.7 | (2.4 - 9.0) |
| Nassau | 6.5 | (3.3 - 9.8) |
| Okaloosa | 6.0 | (3.0 - 9.1) |
| Okeechobee | 8.4 | (4.9 - 11.9) |
| Orange | 8.6 | (6.4 - 10.7) |
| Osceola | 10.2 | (6.4 - 14.0) |
| Palm Beach | 6.8 | (4.2 - 9.4) |
| Pasco | 10.2 | (6.4 - 13.9) |
| Pinellas | 9.3 | (5.6 - 12.9) |
| Polk | 9.3 | (5.7 - 12.8) |
| Putnam | 11.6 | (7.6 - 15.7) |
| Saint Johns | 7.8 | (5.2 - 10.4) |
| Saint Lucie | 9.8 | (6.5 - 13.2) |
| Santa Rosa | 10.7 | (6.8 - 14.6) |
| Sarasota | 5.4 | (3.1 - 7.6) |
| Seminole | 7.0 | (4.4 - 9.6) |
| Sumter | 9.3 | (3.2 - 15.4) |
| Suwannee | 10.3 | (6.5 - 14.1) |
| Taylor | 10.8 | (7.2 - 14.4) |
| Union | 7.4 | (4.0 - 10.7) |
| Volusia | 9.0 | (5.9 - 12.1) |
| Wakulla | 14.1 | (8.1 - 20.1) |
| Walton | 6.7 | (4.4 - 8.9) |
| Washington | 10.4 | (7.2 - 13.7) |

## Figure 13. Lifetime Adolescent Asthma Prevalence, YRBS 2011

| | Florida | | US | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI |
| **Total** | 21.7 | (20.5 - 22.9) | 23.0 | (21.7 - 24.3) |
| | | | | |
| **Male** | 23.4 | (22.0 - 24.8) | 23.2 | (21.8 - 24.6) |
| **Female** | 20.0 | (18.4 - 21.7) | 22.8 | (21.2 - 24.5) |
| | | | | |
| **Non-Hispanic White** | 19.7 | (17.9 - 21.7) | 22.8 | (21.2 - 24.5) |
| **Non-Hispanic Black** | 22.0 | (19.6 - 24.5) | 26.8 | (24.1 - 29.6) |
| **Hispanic** | 24.5 | (22.3 - 27.0) | 20.3 | (17.9 - 23.0) |

## Figure 14. Lifetime Adolescent Asthma Prevalence, YRBS 2005 – 2011

| Year | Florida | | US | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI |
| **2005** | 17.5 | (16.3 - 18.7) | 17.1 | (16.2 - 18.1) |
| **2007** | 19.6 | (18.3 - 20.9) | 20.3 | (19.2 - 21.4) |
| **2009** | 20.7 | (19.6 - 21.8) | 22.0 | (20.8 - 23.1) |
| **2011** | 21.7 | (20.5 - 22.9) | 23.0 | (21.7 - 24.3) |

## Figure 15. Lifetime Adolescent Asthma Prevalence by Gender, FYTS 2006 – 2012

| Year | Male | | Female | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI |
| **2006** | 17.6 | (17.0 - 18.2) | 16.3 | (15.7 - 16.8) |
| **2008** | 18.1 | (17.4 - 18.7) | 18.0 | (17.3 - 18.6) |
| **2010** | 19.0 | (18.4 - 19.6) | 17.9 | (17.2 - 18.5) |
| **2012** | 20.9 | (20.3 - 21.6) | 20.1 | (19.5 - 20.7) |

## Figure 16. Lifetime Adolescent Asthma Prevalence by Race/Ethnicity, FYTS 2006 – 2012

| Year | Non - Hispanic White | | Non - Hispanic Black | | Hispanic | | Other | |
|---|---|---|---|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI |
| **2006** | 16.2 | (15.7 - 16.7) | 17.7 | (16.7 - 18.7) | 17.7 | (16.7 - 18.8) | 18.8 | (17.3 - 19.9) |
| **2008** | 16.8 | (16.2 - 17.4) | 20.2 | (19.2 - 21.3) | 18.2 | (17.2 - 19.3) | 18.5 | (17.2 - 19.9) |
| **2010** | 17.4 | (16.8 - 18.0) | 20.1 | (18.9 - 21.3) | 18.6 | (17.7 - 19.6) | 18.5 | (17.3 - 19.7) |
| **2012** | 18.9 | (18.3 - 19.4) | 21.8 | (20.7 - 22.9) | 21.8 | (20.9 - 22.8) | 21.6 | (20.1 - 23.1) |

## Figure 17. Lifetime Adolescent Asthma Prevalence by Grade, FYTS 2012

| Middle School | 6th Grade | | 7th Grade | | 8th Grade | |
|---|---|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI |
| **2006** | 17.0 | (16.1 - 17.9) | 16.9 | (15.9 - 17.9) | 17.3 | (16.2 - 18.3) |
| **2008** | 17.0 | (15.9 - 18.0) | 18.2 | (17.2 - 19.2) | 19.1 | (18.0 - 20.3) |
| **2010** | 17.5 | (16.4 - 18.5) | 18.0 | (16.8 - 19.1) | 18.6 | (17.5 - 19.7) |
| **2012** | 19.6 | (18.5 - 20.7) | 19.7 | (18.7 - 20.7) | 21.1 | (20.0 - 22.2) |

| High School | 9th Grade | | 10th Grade | | 11th Grade | | 12th Grade | |
|---|---|---|---|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI |
| **2006** | 17.1 | (16.0 - 18.1) | 16.7 | (15.7 - 17.7) | 16.7 | (15.5 - 17.9) | 16.5 | (15.2 - 17.8) |
| **2008** | 17.8 | (16.8 - 18.9) | 18.3 | (17.1 - 19.5) | 18.6 | (17.3 - 19.9) | 16.9 | (15.5 - 18.3) |
| **2010** | 20.1 | (18.9 - 21.3) | 18.7 | (17.6 - 19.8) | 18.1 | (17.0 - 19.3) | 17.1 | (15.8 - 18.4) |
| **2012** | 22.3 | (21.2 - 23.4) | 20.4 | (19.2 - 21.7) | 20.3 | (19.0 - 21.5) | 20.1 | (18.7 - 21.4) |

## Figure 18. Lifetime Adolescent Asthma Prevalence by County, FYTS 2012

| County | Mean | 95% CI |
|---|---|---|
| Alachua | 23.6 | (21.3 - 25.8) |
| Baker | 22.6 | (19.1 - 26.1) |
| Bay | 19.7 | (17.9 - 21.5) |
| Bradford | 22.1 | (18.1 - 26.1) |
| Brevard | 19.9 | (17.5 - 22.4) |
| Broward | 17.8 | (16.2 - 19.3) |
| Calhoun | 20.6 | (15.9 - 25.4) |
| Charlotte | 22.0 | (19.1 - 24.9) |
| Citrus | 22.0 | (19.0 - 25.0) |
| Clay | 20.0 | (18.0 - 21.9) |
| Collier | 12.8 | (10.7 - 14.9) |
| Columbia | 21.9 | (19.3 - 24.5) |
| Desoto | 16.8 | (14.3 - 19.2) |
| Dixie | 27.6 | (22.3 - 32.8) |
| Duval | 23.0 | (21.1 - 24.8) |
| Escambia | 22.2 | (20.1 - 24.3) |
| Flagler | 22.9 | (20.1 - 25.8) |
| Franklin | 25.6 | (20.1 - 31.2) |
| Gadsden | 21.9 | (19.6 - 24.2) |
| Gilchrist | 22.2 | (18.0 - 26.5) |
| Glades | 19.5 | (15.5 - 23.5) |
| Gulf | 17.5 | (11.4 - 23.6) |
| Hamilton | 16.0 | (11.6 - 20.4) |
| Hardee | 18.0 | (15.3 - 20.7) |
| Hendry | 19.4 | (16.6 - 22.3) |
| Hernando | 25.6 | (23.2 - 28.1) |
| Highlands | 21.1 | (18.4 - 23.8) |
| Hillsborough | 23.2 | (21.0 - 25.3) |
| Holmes | 18.9 | (15.6 - 22.2) |
| Indian River | 18.4 | (16.4 - 20.3) |
| Jackson | 22.2 | (19.7 - 24.8) |
| Jefferson | 22.8 | (16.6 - 29.0) |
| Lafayette | 19.9 | (13.8 - 26.1) |
| Lake | 19.5 | (17.4 - 21.6) |

| County | Mean | 95% CI |
|---|---|---|
| Lee | 17.8 | (16.0 - 19.7) |
| Leon | 19.5 | (16.8 - 22.2) |
| Levy | 21.2 | (18.6 - 23.8) |
| Liberty | 26.8 | (20.2 - 33.5) |
| Madison | 16.1 | (12.8 - 19.4) |
| Manatee | 20.0 | (18.1 - 21.9) |
| Marion | 20.5 | (18.1 - 22.9) |
| Martin | 16.7 | (14.4 - 19.0) |
| Miami-Dade | 21.4 | (19.7 - 23.2) |
| Monroe | 17.8 | (15.4 - 20.2) |
| Nassau | 21.1 | (17.9 - 24.4) |
| Okaloosa | 21.0 | (18.8 - 23.2) |
| Okeechobee | 20.2 | (17.5 - 22.9) |
| Orange | 20.5 | (18.4 - 22.5) |
| Osceola | N/A | N/A |
| Palm Beach | 19.4 | (17.6 - 21.2) |
| Pasco | 22.1 | (20.2 - 24.1) |
| Pinellas | 21.0 | (18.4 - 23.7) |
| Polk | 22.7 | (20.9 - 24.5) |
| Putnam | 22.0 | (18.2 - 25.7) |
| Saint Johns | 19.7 | (17.7 - 21.8) |
| Saint Lucie | 21.5 | (18.8 - 24.3) |
| Santa Rosa | 21.6 | (19.2 - 24.1) |
| Sarasota | 19.5 | (17.2 - 21.7) |
| Seminole | 19.9 | (17.7 - 22.0) |
| Sumter | 22.8 | (19.6 - 25.9) |
| Suwannee | 20.3 | (17.5 - 23.1) |
| Taylor | 24.7 | (20.2 - 29.2) |
| Union | 23.3 | (19.7 - 27.0) |
| Volusia | 22.2 | (20.0 - 24.5) |
| Wakulla | 25.8 | (22.8 - 28.9) |
| Walton | 18.8 | (16.3 - 21.3) |
| Washington | 14.9 | (12.4 - 17.5) |

## Figure 19. Current Adolescent Asthma Prevalence, YRBS 2011

| | Florida | | US Median | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI |
| **Total** | 10.2 | (9.5 - 11.0) | 11.9 | (10.9 - 12.9) |
| | | | | |
| **Male** | 9.7 | (8.7 - 10.9) | 10.4 | (9.4 - 11.4) |
| **Female** | 10.8 | (9.9 - 11.9) | 13.5 | (12.1 - 15.1) |
| | | | | |
| **Non-Hispanic White** | 9.8 | (8.6 - 11.1) | 12.4 | (11.2 - 13.8) |
| **Non-Hispanic Black** | 11.7 | (9.8 - 13.8) | 13.5 | (11.7 - 15.6) |
| **Hispanic** | 9.5 | (8.1 - 11.2) | 9.1 | (7.4 - 11.1) |

## Figure 20. Current Adolescent Asthma Prevalence, YRBS 2007 – 2011

| Year | Florida | | US Median | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI |
| **2007** | 9.4 | (8.2 - 10.6) | 10.9 | (10.1 - 11.9) |
| **2009** | 9.0 | (8.4 - 9.6) | 10.8 | (9.9 - 11.7) |
| **2011** | 10.2 | (9.5 - 10.9) | 11.9 | (10.9 - 12.9) |

## Figure 21. Current Adolescent Asthma Prevalence by Gender, FYTS 2012

| | Male | | Female | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI |
| **2012** | 10.4 | (9.9 - 10.9) | 12.0 | (11.5 - 12.5) |

## Figure 22. Current Adolescent Asthma Prevalence by Race/Ethnicity, FYTS 2012

| | Non - Hispanic White | | Non - Hispanic Black | | Hispanic | | Other | |
|---|---|---|---|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI |
| **2012** | 10.3 | (9.8 - 10.8) | 13.5 | (12.6 - 14.4) | 10.8 | (10.0 - 11.6) | 11.2 | (10.1 - 12.3) |

## Figure 23. Current Adolescent Asthma Prevalence by Grade, FYTS 2012

| Middle School | 6th Grade | | 7th Grade | | 8th Grade | |
|---|---|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI |
| **2012** | **12.6** | (11.6 - 13.5) | **11.8** | (11.0 - 12.6) | **11.7** | (10.9 - 12.5) |

| High School | 9th Grade | | 10th Grade | | 11th Grade | | 12th Grade | |
|---|---|---|---|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI |
| **2012** | **11.2** | (10.4 - 12.1) | **11.0** | (10.1 - 12.0) | **10.3** | (9.4 - 11.3) | **9.4** | (8.4 - 10.4) |

## Figure 24. Current Adolescent Asthma Prevalence by County, FYTS 2012

| County | Mean | 95% CI |
|---|---|---|
| Alachua | 13.9 | (12.1 - 15.7) |
| Baker | 13.3 | (10.4 - 16.2) |
| Bay | 11.1 | (9.6 - 12.6) |
| Bradford | 13.7 | (10.7 - 16.6) |
| Brevard | 11.5 | (9.6 - 13.5) |
| Broward | 9.8 | (8.6 - 11.1) |
| Calhoun | 12.3 | (9.1 - 15.4) |
| Charlotte | 12.6 | (10.2 - 15.0) |
| Citrus | 12.4 | (10.0 - 14.7) |
| Clay | 11.5 | (9.9 - 13.1) |
| Collier | 6.2 | (4.8 - 7.5) |
| Columbia | 12.2 | (10.2 - 14.2) |
| Desoto | 9.8 | (7.8 - 11.8) |
| Dixie | 13.3 | (9.2 - 17.4) |
| Duval | 13.7 | (12.2 - 15.1) |
| Escambia | 12.3 | (10.5 - 14.0) |
| Flagler | 13.9 | (11.6 - 16.2) |
| Franklin | 13.9 | (9.8 - 18.0) |
| Gadsden | 12.3 | (8.5 - 16.2) |
| Gilchrist | 12.9 | (9.6 - 16.1) |
| Glades | 11.4 | (7.3 - 15.5) |
| Gulf | 11.9 | (8.5 - 15.4) |
| Hamilton | 9.3 | (5.4 - 13.2) |
| Hardee | 10.5 | (8.4 - 12.7) |
| Hendry | 9.3 | (7.3 - 11.3) |
| Hernando | 14.5 | (12.4 - 16.5) |
| Highlands | 11.5 | (9.4 - 13.6) |
| Hillsborough | 12.0 | (10.3 - 13.7) |
| Holmes | 10.0 | (7.5 - 12.5) |
| Indian River | 10.2 | (8.6 - 11.9) |
| Jackson | 11.6 | (9.8 - 13.4) |
| Jefferson | 13.1 | (7.5 - 18.7) |
| Lafayette | 8.9 | (5.0 - 12.7) |
| Lake | 11.1 | (9.3 - 12.9) |

| County | Mean | 95% CI |
|---|---|---|
| Lee | 9.4 | (8.0 - 10.8) |
| Leon | 11.3 | (9.2 - 13.4) |
| Levy | 12.6 | (10.4 - 14.9) |
| Liberty | 15.0 | (8.2 - 21.8) |
| Madison | 9.4 | (7.1 - 11.8) |
| Manatee | 11.3 | (9.8 - 12.7) |
| Marion | 9.5 | (7.9 - 11.1) |
| Martin | 9.9 | (8.1 - 11.7) |
| Miami-Dade | 10.2 | (8.9 - 11.5) |
| Monroe | 8.6 | (6.8 - 10.4) |
| Nassau | 12.2 | (9.7 - 14.6) |
| Okaloosa | 12.9 | (11.1 - 14.7) |
| Okeechobee | 10.4 | (8.3 - 12.5) |
| Orange | 11.3 | (9.7 - 12.8) |
| Osceola | N/A | N/A |
| Palm Beach | 10.3 | (8.9 - 11.6) |
| Pasco | 12.4 | (10.7 - 14.0) |
| Pinellas | 11.8 | (9.6 - 14.0) |
| Polk | 12.2 | (10.8 - 13.7) |
| Putnam | 12.3 | (9.6 - 14.9) |
| Saint Johns | 10.5 | (8.7 - 12.3) |
| Saint Lucie | 12.0 | (9.9 - 14.2) |
| Santa Rosa | 12.9 | (11.0 - 14.8) |
| Sarasota | 9.9 | (8.2 - 11.5) |
| Seminole | 11.9 | (10.3 - 13.4) |
| Sumter | 11.0 | (8.8 - 13.1) |
| Suwannee | 11.6 | (9.4 - 13.8) |
| Taylor | 13.9 | (10.3 - 17.5) |
| Union | 13.4 | (10.1 - 16.8) |
| Volusia | 12.5 | (10.5 - 14.5) |
| Wakulla | 14.6 | (12.0 - 17.2) |
| Walton | 10.0 | (8.2 - 11.8) |
| Washington | 7.8 | (5.6 - 10.0) |

## Figure 25. Three Levels of Asthma Status, Adults and Adolescents, 2012

| Asthma Status | Adult | Adolescent |
|---|---|---|
| **Never Had Asthma** | 87.6 | 80.5 |
| **Former Asthma** | 4.2 | 8.4 |
| **Current Asthma** | 8.2 | 11.2 |

## Figure 26. Adult Overweight and Obesity by Asthma Status, BRFSS 2012

| Asthma Status | Overweight | | Obese | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI |
| **Never Had Asthma** | 37.4 | (35.6 - 39.2) | 24.5 | (22.9 - 26.2) |
| **Former Asthma** | 41.9 | (32.3 - 51.5) | 24.0 | (15.8 - 32.1) |
| **Current Asthma** | 28.4 | (22.7 - 34.1) | 33.4 | (27.4 - 39.3) |

## Figure 27. Adult Leisurely Physical Activity by Asthma Status, BRFSS 2012

| Asthma Status | Mean | 95% CI |
|---|---|---|
| **Never Had Asthma** | 77.9 | (76.3 - 79.4) |
| **Former Asthma** | 75.3 | (67.6 - 83.0) |
| **Current Asthma** | 65.3 | (59.2 - 71.4) |

## Figure 28. Adolescent Overweight and Obesity by Asthma Status, FYTS 2012

| Asthma Status | Overweight | | Obese | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI |
| Never Had Asthma | 14.7 | (14.2 - 15.2) | 10.4 | (10.0 - 10.8) |
| Former Asthma | 15.6 | (14.1 - 17.1) | 13.5 | (12.0 - 15.0) |
| Current Asthma | 18.3 | (16.9 - 19.7) | 14.7 | (13.5 - 15.9) |

## Figure 29. Daily Adolescent Physical Activity by Asthma Status, FYTS 2012

| Asthma Status | Middle School | | High School | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% Ci |
| Never Had Asthma | 28.8 | (28.0 - 29.7) | 23.1 | (22.3 - 23.8) |
| Former Asthma | 32.4 | (29.7 - 35.1) | 25.3 | (23.1 - 27.5) |
| Current Asthma | 32.1 | (30.1 - 34.2) | 23.1 | (21.1 - 25.1) |

## Figure 30. Adult Current Smokers by Asthma Status by Gender, BRFSS 2012

| Asthma Status | Male | | Female | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI |
| Never Had Asthma | 19.5 | (17.1 - 21.9) | 15.3 | (13.5 - 17.1) |
| Lifetime Asthma | 21.2 | (14.1 - 28.3) | 18.7 | (13.6 - 23.8) |

## Figure 31. Adult Secondhand Smoke Exposure and Smoking Rules in the Home by Asthma Status, FLATS 2012

| Asthma Status | Secondhand Smoke Exposure | | Smoking Allowed in the Home | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI |
| Never Had Asthma | 8.3 | (6.6 - 10.0) | 16.0 | (13.1 - 18.9) |
| Former Asthma | 4.4 | (1.3 - 7.4) | 7.6 | (3.8 - 11.4) |
| Current Asthma | 18.9 | (8.5 - 29.3) | 15.5 | (8.5 - 22.5) |

## Figure 32. Adolescent Smoking Status by Asthma Status, FYTS 2012

| Asthma Status | Ever Tried a Cigarette | | Current Smoker | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI |
| Never Had Asthma | 22.8 | (22.1 - 23.5) | 6.7 | (6.4 - 7.0) |
| Former Asthma | 28.2 | (26.5 - 29.9) | 9.3 | (8.2 - 10.5) |
| Current Asthma | 23.9 | (22.5 - 25.3) | 7.0 | (6.2 - 7.9) |

## Figure 33. Adolescent Secondhand Smoke Exposure and Smoking Rules in the Home by Asthma Status, FYTS 2012

| Asthma Status | Secondhand Smoke Exposure | | Smoking Allowed in the Home | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI |
| Never Had Asthma | 43.5 | (42.8 - 44.2) | 8.9 | (8.5 - 9.3) |
| Former Asthma | 50.6 | (48.6 - 52.6) | 10.7 | (9.6 - 11.8) |
| Current Asthma | 50.5 | (48.8 - 52.2) | 12.7 | (11.6 - 13.8) |

## Figure 34. Adult Seasonal Flu Vaccine by Asthma Status by Age Group, BRFSS 2012

| Asthma Status | 18 to 64 Years Olds | | 65 Years and Older | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI |
| Never Had Asthma | 22.7 | (20.9 - 24.5) | 54.4 | (51.6 - 57.2) |
| Lifetime Asthma | 30.5 | (24.8 - 36.1) | 57.9 | (49.5 - 66.2) |

## Figure 35. Child Insurance Type by Asthma Status, FCHS 2010

| Asthma Status | Medicaid | | Private | | Other* | | Uninsured | |
|---|---|---|---|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI |
| Never Had Asthma | 26.3 | (20.9 - 31.8) | 55.2 | (49.5 - 60.8) | 12.4 | (8.7 - 16.2) | 6.0 | (3.4 - 8.6) |
| Lifetime Asthma | 33.7 | (21.2 - 46.2) | 46.1 | (33.8 - 58.3) | 13.6 | (6.8 - 20.4) | 6.7** | (0.6 - 12.7) |

*Military, CHAMPUS, VA, or Other

**Lifetime Asthma Uninsured estimates are unreliable (cell size less than 30)

## Figure 36. Chronic Conditions by Asthma Status, BRFSS 2012

| Ever Been Told by a Doctor, Nurse, or Other Health Professional That He / She Had: | Never Had Asthma | | Lifetime Asthma | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI |
| COPD, Emphysema, or Chronic Bronchitis | 4.6 | (3.9 - 5.3) | 28.4 | (23.9 - 32.8) |
| Diabetes | 10.7 | (9.6 - 11.8) | 16.2 | (12.5 - 19.8) |
| Kidney Disease* | 3.0 | (2.4 - 3.5) | 7.3 | (4.7 - 9.9) |
| Any Trouble Seeing** | 16.7 | (15.2 - 18.1) | 27.2 | (22.4 - 32.0) |
| A Heart Attack (Myocardial Infarction) | 5.0 | (4.3 - 5.7) | 10.3 | (7.4 - 13.1) |
| Angina or Coronary Heart Disease | 5.1 | (4.4 - 5.8) | 11.0 | (8.0 - 14.0) |
| A Stroke | 2.7 | (2.2 - 3.2) | 6.1 | (3.9 - 8.2) |

*Not including kidney stones, bladder infection or incontinence

** Even when wearing glasses or contact lenses

## Figure 37. Number of Days with Asthma Symptoms among Adults with Current Asthma in the Past Month, ACBS, 2010

| Number of Days with Symptoms | Percent |
|---|---|
| None | 11.1 |
| 1-9 Days | 28.9 |
| 10-19 Days | 24.3 |
| 20-29 Days | 10.6 |
| Daily | 25.0 |

## Figure 38. Number of Asthma Attacks or Episodes During the Past Three Months among Adults with Current Asthma, ACBS 2010

| Number of Attacks | Percent |
|---|---|
| No Attacks | 21.6 |
| 1 Attack | 24.8 |
| 2-4 Attacks | 23.4 |
| 5-10 Attacks | 20.6 |
| 11+ Attacks | 9.7 |

## Figure 39. Adolescent Asthma Attacks or Episodes by Gender by Grade Level, FYTS 2012

| Grade Level | Male | | Female | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI |
| Middle School | 17.5 | (15.6 - 19.4) | 18.5 | (16.6 - 20.3) |
| High School | 12.5 | (11.0 - 14.1) | 19.8 | (18.0 - 21.7) |

## Figure 40. Adolescent Asthma Attacks or Episodes by Race/Ethnicity by Grade Level, FYTS 2012

| Grade Level | Non-Hispanic White | | Non-Hispanic Black | | Hispanic | |
|---|---|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI |
| Middle School | 19.5 | (17.7 - 21.4) | 16.9 | (14.1 - 19.6) | 16.6 | (14.1 - 19.0) |
| High School | 18.0 | (16.3 - 19.8) | 16.0 | (13.0 - 19.0) | 13.5 | (11.4 - 15.7) |

## Figure 41. Percent of Routine Asthma Visits with Doctor in the Past Year among Adults with Current Asthma, ACBS 2010

| Number of Doctor Visits | Percent |
|---|---|
| None | 39.8 |
| 1 Visit | 23.5 |
| 2 Visits | 14.1 |
| 3 Visits | 7.1 |
| 4+ Visits | 15.5 |

## Figure 42. Asthma Education Provided for Adults and Children, ACBS 2010 and FCHS 2010

| Asthma Education | Adults | | Children | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI |
| Taught to recognize early signs of an asthma attack | 66.0 | (57.2 - 74.8) | 68.1 | (56.4 - 79.9) |
| Taught what to do during an asthma attack | 73.5 | (65.8 - 81.2) | 66.9 | (53.9 - 79.9) |
| Taken a course or class on how to manage asthma | 6.6 | (2.3 - 10.8) | 10.3 | (2.8 - 17.9) |

## Figure 43. General Health Status by Asthma Status, BRFSS 2012

| Asthma Status | Excellent, Very Good, or Good | | Fair or Poor | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI |
| Never Had Asthma | 82.5 | (81.0 - 83.9) | 17.5 | (16.1 - 19.0) |
| Former Asthma | 76.1 | (68.2 - 84.1) | 23.9 | (15.9 - 31.8) |
| Current Asthma | 56.9 | (50.4 - 63.4) | 43.1 | (36.6 - 49.6) |

## Figure 44. Poor Physical or Mental Health on 14 or More of the Past 30 Days by Asthma Status, BRFSS 2012

| Asthma Status | Poor Mental Health | | Poor Physical Health | |
|---|---|---|---|---|
| | Mean | 95% CI | Mean | 95% CI |
| Never Had Asthma | 12.4 | (11.1 - 13.7) | 12.1 | (10.9 - 13.3) |
| Former Asthma | 12.4 | (6.8 - 18.0) | 15.7 | (9.1 - 22.3) |
| Current Asthma | 30.8 | (24.6 - 37.0) | 35.3 | (29.1 - 41.6) |

## Figure 45. Adolescent Feelings of Sadness and Hopelessness by Asthma Status, FYTS 2012

| Asthma Status | Felt Sad or Hopeless | |
|---|---|---|
| | Mean | 95% CI |
| Never Had Asthma | 20.4 | (19.9 - 20.9) |
| Former Asthma | 26.2 | (24.6 - 27.9) |
| Current Asthma | 29.1 | (27.6 - 30.6) |

## Figure 46. Asthma Symptoms Made it Difficult to Stay Asleep among Adults with Current Asthma, ACBS 2010

| Difficulty Staying Asleep | Percent |
|---|---|
| **No Nights** | 40.8 |
| **One or More Nights** | 59.2 |

## Figure 47. Number of Asthma ED Visits in Florida, AHCA 2008 – 2012

| Year | ED Visits |
|---|---|
| **2008** | 80,932 |
| **2009** | 89,450 |
| **2010** | 90,770 |
| **2011** | 89,181 |
| **2012** | 103,849 |

## Figure 48. Number of Asthma ED Visits by Payer, AHCA 2008 – 2012

| Year | ED Visits | | | | |
|---|---|---|---|---|---|
| | **Medicare** | **Medicaid** | **Commercial** | **Self-Pay** | **Other** |
| **2008** | 6,667 | 28,174 | 21,546 | 18,379 | 6,166 |
| **2009** | 6,562 | 35,637 | 22,003 | 18,406 | 6,842 |
| **2010** | 6,826 | 41,188 | 18,576 | 18,181 | 5,999 |
| **2011** | 7,484 | 42,022 | 17,266 | 16,646 | 5,763 |
| **2012** | 8,475 | 48,588 | 19,157 | 21,069 | 6,560 |

## Figure 49. Number of Asthma ED Visits by Age Group, AHCA 2012

| Age Group | ED Visits |
|---|---|
| **0-4** | 18,583 |
| **5-17** | 29,150 |
| **18 - 34** | 24,245 |
| **35 - 64** | 27,407 |
| **65+** | 4,464 |

## Figure 50. Asthma ED Visit Rates per 10,000 by Gender by Age Group, AHCA 2012

| Age Group | ED Visit Rate per 10,000 | |
|---|---|---|
| | Male | Female |
| **0-4** | 212.1 | 130.9 |
| **5-17** | 117.0 | 80.1 |
| **18 - 34** | 46.4 | 72.5 |
| **35 - 64** | 23.6 | 48.8 |
| **65+** | 9.3 | 16.1 |

## Figure 51. Asthma ED Visit Rates per 10,000 by Age Group, AHCA 2008 – 2012

| Year | ED Visit Rate per 10,000 | | | | |
|---|---|---|---|---|---|
| | **0-4** | **5-17** | **18 - 34** | **35 - 64** | **65+** |
| **2008** | 134.6 | 68.2 | 46.7 | 31.1 | 11.8 |
| **2009** | 152.2 | 82.1 | 50.7 | 32.1 | 11.0 |
| **2010** | 170.0 | 84.0 | 50.7 | 32.0 | 11.5 |
| **2011** | 171.0 | 84.4 | 48.3 | 30.6 | 11.3 |
| **2012** | 172.4 | 98.9 | 59.3 | 36.5 | 13.1 |

## Figure 52. Number of Asthma ED Visits by Race/Ethnicity, AHCA 2012

| Race/Ethnicity | ED Visits |
|---|---|
| Non-Hispanic White | 37,125 |
| Non-Hispanic Black | 37,890 |
| Hispanic | 24,448 |
| Other | 2,730 |

## Figure 53. Asthma ED Visit Rates per 10,000 by Race/Ethnicity, AHCA 2012

| Race/Ethnicity | ED Visit Rate per 10,000 |
|---|---|
| Non-Hispanic White | 34.1 |
| Non-Hispanic Black | 129.4 |
| Hispanic | 55.4 |
| Other | 33.5 |

## Figure 54. Asthma ED Visit Rates per 10,000 by Race/Ethnicity, AHCA 2008 – 2012

| Year | ED Visit Rate per 10,000 | | | |
|---|---|---|---|---|
| | Non-Hispanic White | Non-Hispanic Black | Hispanic | Other |
| 2008 | 29.8 | 103.4 | 33.7 | 58.9 |
| 2009 | 31.1 | 115.2 | 40.6 | 64.5 |
| 2010 | 30.4 | 114.0 | 51.5 | 26.2 |
| 2011 | 29.4 | 112.8 | 49.0 | 26.6 |
| 2012 | 34.1 | 129.4 | 55.4 | 33.5 |

## Figure 55. Number of Asthma Hospitalizations in Florida, AHCA 2008 – 2012

| Year | Hospitalizations |
|---|---|
| **2008** | 28,532 |
| **2009** | 30,709 |
| **2010** | 30,910 |
| **2011** | 29,776 |
| **2012** | 29,476 |

## Figure 56. Number of Asthma Hospitalizations by Payer, AHCA 2008 – 2012

| Year | Hospitalizations | | | | |
|---|---|---|---|---|---|
| | **Medicare** | **Medicaid** | **Commercial** | **Self-Pay** | **Other** |
| **2008** | 9,985 | 7,292 | 6,956 | 2,472 | 1,827 |
| **2009** | 10,211 | 8,740 | 7,110 | 2,642 | 2,006 |
| **2010** | 10,577 | 9,510 | 6,210 | 2,753 | 1,860 |
| **2011** | 10,521 | 9,453 | 5,560 | 2,435 | 1,807 |
| **2012** | 10,400 | 9,510 | 5,164 | 2,693 | 1,709 |

## Figure 57. Number of Asthma Hospitalizations by Age Group, AHCA 2012

| Age Group | Hospitalizations |
|---|---|
| **0-4** | 3,782 |
| **5-17** | 3,798 |
| **18 - 34** | 2,248 |
| **35 - 64** | 11,777 |
| **65+** | 7,871 |

## Figure 58. Asthma Hospitalization Rates per 10,000 by Gender by Age Group, AHCA 2012

| Age Group | Hospitalization Rate per 10,000 | |
|---|---|---|
| | Male | Female |
| **0-4** | 43.7 | 26.1 |
| **5-17** | 15.8 | 9.9 |
| **18 - 34** | 3.9 | 7.1 |
| **35 - 64** | 8.6 | 22.4 |
| **65+** | 13.0 | 31.1 |

## Figure 59. Asthma Hospitalization Rates per 10,000 by Age Group, AHCA 2008 – 2012

| Year | Hospitalization Rate per 10,000 | | | | |
|---|---|---|---|---|---|
| | **0-4** | **5-17** | **18 - 34** | **35 - 64** | **65+** |
| **2008** | 34.6 | 10.2 | 5.6 | 15.5 | 24.8 |
| **2009** | 35.4 | 11.9 | 6.4 | 17.1 | 24.6 |
| **2010** | 40.4 | 12.5 | 6.2 | 16.2 | 24.9 |
| **2011** | 40.1 | 12.4 | 5.5 | 15.6 | 23.5 |
| **2012** | 35.1 | 12.9 | 5.5 | 15.7 | 23.0 |

## Figure 60. Number of Asthma Hospitalizations by Race/Ethnicity, AHCA 2012

| Race/Ethnicity | Hospitalizations |
|---|---|
| **Non-Hispanic White** | 13,605 |
| **Non-Hispanic Black** | 8,525 |
| **Hispanic** | 6,275 |
| **Other** | 717 |

## Figure 61. Asthma Hospitalization Rates per 10,000 by Race/Ethnicity, AHCA 2012

| Race/Ethnicity | Hospitalizations |
|---|---|
| Non-Hispanic White | 12.5 |
| Non-Hispanic Black | 29.1 |
| Hispanic | 14.2 |
| Other | 8.8 |

## Figure 62. Asthma Hospitalization Rates per 10,000 by Race/Ethnicity, AHCA 2008 – 2012

| Year | Hospitalization Rate per 10,000 | | | |
|---|---|---|---|---|
| | Non-Hispanic White | Non-Hispanic Black | Hispanic | Other |
| 2008 | 13.6 | 26.6 | 10.5 | 19.1 |
| 2009 | 13.9 | 29.8 | 12.0 | 22.0 |
| 2010 | 13.5 | 29.3 | 15.8 | 8.7 |
| 2011 | 12.7 | 29.0 | 15.1 | 8.6 |
| 2012 | 12.5 | 29.1 | 14.2 | 8.8 |

## Figure 63. Length of Hospital Stay, AHCA 2012

| Length of Stay | Hospitalizations | |
|---|---|---|
| | Number | Percent |
| 1 or Fewer Days | 6,482 | 22.0 |
| 2 to 3 Days | 12,091 | 41.0 |
| 4 to 5 Days | 5,780 | 19.6 |
| 6 to 7 Days | 1,592 | 5.4 |
| More than 1 Week | 3,531 | 12.0 |

## Figure 64. Average Length of Hospital Stay by Age Group, AHCA 2012

| Age Group | Average Length of Stay (Days) |
|---|---|
| **0-4** | 2.1 |
| **5-17** | 2.4 |
| **18-34** | 2.7 |
| **35-64** | 3.8 |
| **65+** | 4.8 |

## Figure 65. Percent of Repeat Asthma ED Visits by Payer, AHCA 2012

| Payer | Repeat ED Visits | |
|---|---|---|
| | Number | Percent |
| **Medicare** | 2,280 | 7.9 |
| **Medicaid** | 13,682 | 47.5 |
| **Commercial** | 3,600 | 12.5 |
| **Self-Pay** | 7,362 | 25.5 |
| **Other** | 1,893 | 6.6 |

## Figure 66. Percent of Repeat Asthma Hospitalizations by Payer, AHCA 2012

| Payer | Hospitalizations | |
|---|---|---|
| | Number | Percent |
| **Medicare** | 2578 | 38.2 |
| **Medicaid** | 2294 | 34.0 |
| **Commercial** | 845 | 12.5 |
| **Self-Pay** | 645 | 9.6 |
| **Other** | 385 | 5.7 |

## Figure 67. Single and Repeat Asthma ED Visits and Hospitalizations, AHCA 2012

| Category | Single Visit Patients | | Repeat Patients | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| **Patients** | 71,041 | 82.3 | 15,275 | 17.7 |
| **Total Cases** | 71,041 | 62.8 | 42,054 | 37.2 |
| **Total Charges** | $630.5 Million | 62.9 | $ 372.7 Million | 37.1 |

## Figure 68. Asthma Age-Adjusted Death Rate per 1,000,000, CDC Wonder 2005 – 2010

| Year | Florida | | US |
|---|---|---|---|
| | Mean | 95% CI | |
| **2005** | 10.4 | (9.1 - 11.8) | 12.9 |
| **2006** | 8.2 | (7.0 - 9.5) | 11.8 |
| **2007** | 8.6 | (7.4 - 9.9) | 11.1 |
| **2008** | 8.4 | (7.2 - 9.7) | 10.8 |
| **2009** | 9.4 | (8.1 - 10.8) | 10.6 |
| **2010** | 8.1 | (6.9 - 9.4) | 10.5 |

## Figure 69. Percent of Florida Asthma Deaths by Age Group, FL CHARTS 2012

| Age Group | Deaths | |
|---|---|---|
| | Number | Percent |
| **0-4** | 2 | 1.0 |
| **5-17** | 11 | 5.7 |
| **18-34** | 19 | 9.8 |
| **35-64** | 86 | 44.3 |
| **65+** | 76 | 39.2 |

## Figure 70. Asthma Age-Adjusted Death Rates per 1,000,000 by Gender, FL CHARTS 2008 – 2012

| Year | Death Rate per 1,000,000 | |
|---|---|---|
| | Male | Female |
| 2008 | 6 | 10 |
| 2009 | 8 | 10 |
| 2010 | 6 | 9 |
| 2011 | 5 | 8 |
| 2012 | 7 | 10 |

## Figure 71. Asthma Age - Adjusted Death Rates by Race/Ethnicity, FL CHARTS 2008 – 2012

| Year | Death Rate per 1,000,000 | | | |
|---|---|---|---|---|
| | Non-Hispanic White | Non-Hispanic Black | Hispanic | Other |
| 2008 | 7 | 17 | 6 | 10 |
| 2009 | 7 | 22 | 8 | 4 |
| 2010 | 7 | 17 | 6 | 10 |
| 2011 | 5 | 15 | 5 | 13 |
| 2012 | 7 | 19 | 8 | 14 |

## Figure 72. Asthma Years of Potential Life Lost per 100,000 Population <75 by Gender by Race/Ethnicity, FL CHARTS 2008 – 2012

| Race/Ethnicity | YPLL Rate per 100,000 | |
|---|---|---|
| | Male | Female |
| Non-Hispanic White | 11.4 | 18.4 |
| Non-Hispanic Black | 57.5 | 39.8 |
| Hispanic | 10.5 | 15.8 |

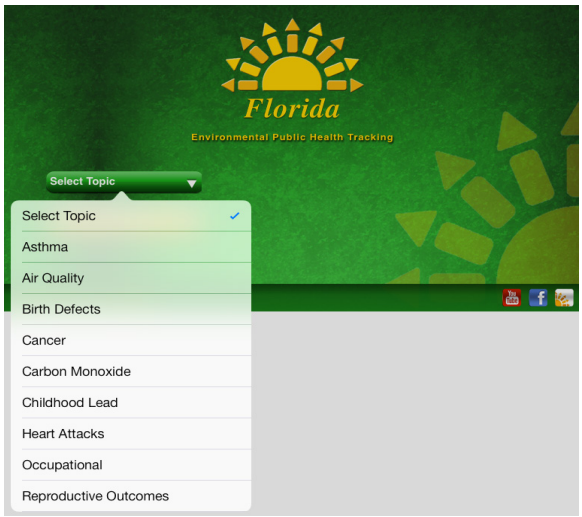
# APPENDIX B. LOCAL LEVEL DATA RESOURCES

**Florida Community Health Assessment Resource Toolset (CHARTS): [www.FloridaCHARTS.com](http://www.FloridaCHARTS.com)**
Florida CHARTS is part of the Florida Department of Health's Division of Public Health Statistics and Performance Management and is a one-stop-site for Florida public health statistics and community health data.

**Florida Environmental Public Health Tracking (EPHT) Program: [www.FloridaTracking.com](http://www.FloridaTracking.com)**

Florida Environmental Public Health Tracking is a grant funded program to identify and promote the use of nationally consistent data in partnership with the Center for Disease Control and Prevention and other grantee states.


**Mobile Site:**



## Local Health Planning Council Dashboards

- **Healthy Measures for East Central Florida – Measuring What Matters**
  http://www.cflhealthymeasures.org/

- **Miami Matters – Measuring What Matters in Miami-Dade County**
  www.MiamiMatters.org

- **NE Florida Counts – Better Health through Data and Dialogue**
  www.**nefloridacounts**.org

- **Palm Beach County Counts – Good decisions begin with good data**
  http://www.pbccounts.org

# Appendix C. Glossary

### 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 or Episodes (Adolescents)
Individuals with lifetime asthma who report having had an asthma attack or episode in the past year.

### Current Asthma Attacks or Episodes (Adults)
Individuals with lifetime asthma who had asthma symptoms during the past year and 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
Individuals with lifetime asthma who respond "yes" to the question "Do you still have asthma?"

### Current Cigarette Use (Adolescents)
Students who smoked one or more cigarettes during the past 30 days.

### Current Cigarette Use (Adults)
Adults who have smoked 100 or more cigarettes in their lifetime and currently smoke cigarettes "some days" or "everyday".

### Lifetime Asthma
Individuals who have ever been told by a doctor, nurse, or other health professional that they have asthma at some point in their life.

### Never Had Asthma
Individuals who have never been told by a doctor, nurse, or other health professional that they have asthma.

### Obesity (Adolescents)
Students having a BMI at or above the 95$^{th}$ percentile among students of the same age and gender.

### Obesity (Adults)
Adults having a BMI greater than or equal to 30.

### Overweight (Adolescents)
Students having a BMI greater than or equal to the 85th percentile and less than the 95th percentile among students of the same age and gender.

### Overweight (Adolescents)
Adults having a BMI greater than or equal to 25 and less than 30.

### Poor Mental Health
Adults who experienced one 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 one or more days during the past 30 in which their physical health (including physical illness and injury) was not good.

# Appendix D. Methodology and Technical Notes

## Data Sources

### Adult Population-Based Surveys

Several population-based surveys provide the prevalence of asthma among Florida's residents. 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 population. Weighting is a procedure that adjusts for the chance of being selected to participate in the survey and for discrepancies between those who complete the survey and the overall population of Florida. 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 respondents age 18 and above from households across the state. It 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.

The 2011 and 2012 BRFSS data reflect a change in weighting methodology (raking) and the addition of cell phone only respondents. Because of these changes, the 2011 BRFSS data should be considered a baseline year for data analysis and is not directly comparable to previous years of BRFSS data. More information about the changes to the 2011 BRFSS is available here: http://www.cdc.gov/surveillancepractice/reports/brfss/brfss.html.

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 and has been administered in Florida since 2007 with an annual target sample size of 600. 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. 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 a very valuable data source. The information collected from the ACBS is crucial to the planning and evaluating efforts to reduce the health burden from this disease.

The Florida Adult Tobacco Survey is another population-based telephone survey that uses a similar methodology as the BRFSS. While the majority of questions focus on tobacco use, the prevalence of asthma is captured, and allows for the analysis of secondhand smoke exposure by asthma status.

## Youth Population-Based Surveys

BRFSS respondents with children under the age of 18 in the household who agreed to be called back for future studies make up the sampling frame for the Florida Child Health Survey (FCHS). The FCHS has been administered annually in Florida since 2008, with a target sample size ranging from 800 to 1,500. In 2010, the FCHS sampled parents or guardians of approximately 1,500 children in Florida, however only 263 of those children had asthma. The small sample size can affect the precision of prevalence estimates, and limits the ability to do more detailed analyses such as comparing sub-populations or assessing the co-occurrence with other diseases or behaviors.

The Florida Youth Tobacco Survey (FYTS) and the Youth Risk Behavior Survey (YRBS) are part of the Florida Youth Survey, a simultaneous administration of several survey instruments to a random representative sample of Florida public middle and high school students. Surveys are administered in the classroom, using a paper and pencil format.

The Youth Risk Behavior Survey (YRBS) captures self-reported lifetime and current asthma prevalence for Florida public high school students. This survey is administered in odd-numbered years and only at the state level. The YRBS has been conducted annually in Florida since 2001, although the asthma questions were not added until 2005 (lifetime prevalence) and 2007 (current prevalence). In 2011, the Florida YRBS was completed by 6,212 students in 78 public high schools (grades 9-12) and the combined student and school response rate was 75%.

The Florida Youth Tobacco Survey (FYTS) captures the self-reported lifetime prevalence and the prevalence of current asthma attacks (students with lifetime asthma who have had an asthma attack in the past year) for Florida public middle and high school students. The FYTS has been conducted annually in Florida since 1998, although the lifetime asthma prevalence and current asthma attack questions were not added until 2006. The question about current asthma prevalence was added to the FYTS for in 2012 the first time. In odd-numbered years, the FYTS targets 5,000 students in middle school (grades 6-8) and an additional 5,000 in high school (grades 9-12). In even-numbered years, the FYTS is conducted at the county-level, allowing for the examination of geographic differences across the state. The county-level FYTS targets approximately 80,000 students in middle and high school students in Florida.

The 2012 FYTS was administered to 38,989 middle school students and 36,493 high school students in 746 public schools across the state. The combined student and school response rates were 77% and 73% respectively. This robust dataset allows us to examine differences by asthma status for risk behaviors such as smoking and personal safety and associated risks such as exposure to secondhand smoke, weight status, and mental health.

## Emergency Department Visits and Hospitalizations

In Florida, the Agency for Health Care Administration (AHCA) is tasked with collecting patient discharge data from all Florida hospitals for emergency department visits and hospitalizations. However, there are some hospitals in Florida, such as state operated, federally funded, or Shriner's hospitals, that are not required to report to AHCA.

AHCA's ED Visit dataset and Hospital Inpatient (HI) dataset have a detailed record for each visit or admission including discharge date, demographics of the patient, primary and additional diagnoses, procedures, charges, and payer information. The ED and HI datasets are mutually exclusive. If a patient enters into the ED and is then admitted to the hospital, their record for that visit is removed from the ED dataset and included in the HI dataset. The data were collected by hospitals primarily for the purpose of medical billing and therefore clinical accuracy may vary.

Cases with asthma listed as the primary diagnosis (determined by ICD-9 code 493) are the main focus of this report. These data were analyzed by age group, race, gender, ethnicity, and payer.

### Mortality Data

The mortality data in this report are derived from the Florida Department of Health, Bureau of Vital Statistics and only include cases with asthma listed as the underlying cause of death (determined by ICD-10 codes J45-J46). Mortality counts and rates were pulled from Florida CHARTS (www.FLCHARTS.com).

## Methods

### Determination of Statistical Significance

Determination of statistical significance for the population-based survey data in this report is based on non-overlapping 95% confidence intervals (CIs). A 95% confidence interval is a range in which the "true" rate will fall 95% of the time. 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 to the difference of the means to determine significance.

### Race and Ethnicity

Race and ethnicity are presented as a combined measure in this report. In most cases, race and ethnicity were captured as two separate measures. Race and ethnicity measures were combined to create the following groups: non-Hispanic white, non-Hispanic black, Hispanic, and (non-Hispanic) other when possible. Any individual coded as Hispanic was considered Hispanic, regardless of race. Other includes Asian, American Indian or Alaska Native, Hawaiian or Other Pacific Islander, and Other.

### Repeat Patients

Repeat patients (patients with two or more ED visits or two or more hospitalizations with asthma listed as the primary diagnosis) were matched using a masked or de-identified social security number. Analysis of repeat patients was restricted to patients discharged in 2012. First, patients with two or more ED visits and patients with two or more hospitalizations were identified. The two complete datasets were then merged to identify individuals who had one ED visit and one hospitalization. Repeat patients' visits were sorted chronologically; the first visit was assigned as the index visit and any other visits were termed subsequent visits.

## Rate Calculations

Crude rates were calculated by dividing the number of events by the estimated mid-year population, and multiplying the result by 10,000 (or by 100,000). Crude rates were calculated using population estimates provided by the Florida Legislature, Office of Economic and Demographic Research.

Age-adjusted rates control for differences between populations due to age. Age adjusted rates were calculated using the Year 2000 Standard Population Proportion.

Years of Potential Life Lost (YPLL) is an estimate of premature mortality defined as the number of years of life lost among persons who die before a predetermined age (75 in this report).

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