

# The Burden of Asthma in Florida



2009

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# Key Findings

## Prevalence

### *Adults*

- In 2007, the prevalence of current asthma among adults in Florida was 6.2 percent, affecting approximately 870, 423 adults.
- From 2000-2005, adult females lifetime asthma prevalence has significantly increased every year (10.6% to 14.1).
- Among Florida adults from 2006-2007, lifetime asthma prevalence estimates were highest among Blacks and Whites compared to the other racial groups.
- Adults whose annual household income was less than \$15,000 showed a higher prevalence of current asthma compared to adults whose household incomes were more than \$15,000.
- In 2007, 22.9 percent of adults with current asthma reported current smoking. The prevalence of current smoking was higher than that among people without current asthma (19.1%).
- Since 2006, females who are overweight/obese appear to be almost twice as likely to report still having asthma than males who are also overweight/obese.
- In 2007, 60.7 percent of current asthmatic adults had not received the flu vaccine in the past 12 months.

### *Children*

- About 13.5 percent of Florida children are reported to currently have asthma, affecting approximately 600, 378 children in 2004.
- Lifetime asthma prevalence is significantly higher among boys than girls. (17.8 percent vs. 11 percent in 2003).
- In 2008, 16.9 percent of middle school students and 17.2 percent of high school students reported having been diagnosed with asthma.  
Non-Hispanic White's and individuals who identify themselves as other have higher prevalence of current asthma in public middle and high schools in 2008  
This is why I requested a meeting. I've done nothing different in my routine since my first day of employment here. I have never been singled out like this before. This is starting to affect my work environment as well.
- 59 percent of middle and high school students who reported having been diagnosed with asthma were more likely to have been exposed to second hand smoke (SHS) in a room or car during the past seven days compared to 54.1 percent of students who reported no asthma in 2006.

## Asthma Management and Quality of Life

- Among adults with current asthma in 2006, 21 percent had asthma symptoms every day, and 50 percent had asthma symptoms at least once a week during the past 30 days
- In 2006, adults with current asthma were approximately 2.7 times more likely to have poor physical health than adults who did not have current asthma (25% vs. 9.4%).

- Approximately 38 percent of parents/guardians described their children's asthma as causing moderate or severe health difficulties in 2003.
- In 2003, 17 percent of Florida parents/guardians felt their child's asthma affected the family a great deal or medium amount.

#### *Asthma Attacks or Episodes*

- In 2006, among adults with current asthma 32.5 percent saw a doctor for urgent treatment of worsening asthma symptoms during the past 12 months. During that same time period, over 50 percent took a prescription asthma medication or inhaler to prevent an asthma attack from occurring in the past 30 days.
- In 2003, 47 percent of Florida children (less than 18 years of age) reported experiencing an asthma attack in the past year.

### **Health Care Utilization**

#### *Hospitalizations*

- In 2006, there were a total of 26,740 hospitalizations in Florida for asthma. The total cost associated with hospitalizations for inpatient treatment was more than \$472 million.
- From 1998 to 2007 there has been an overall steady increase in age-adjusted rates for asthma hospitalizations (261.8 vs. 701.8, per 100,000).
- Children aged 5-11 have the highest asthma hospitalization rates, over 300 per 100,000 since 2001 when compared to children aged 12-18.

#### *Emergency Department Visits*

- In 2006, there were 150,159 ED visits among Florida residents who had asthma. The cost for asthma-related ED visits in Florida for 2006 was more than \$186 million.

### **Medicaid**

- In 2003, total Medicaid spending on asthma in Florida was estimated to be more than \$230 million.
- Approximately 131,000 children 0-18 years of age with asthma were enrolled in Medicaid in 2003.
- 64,939 Florida adults in the Medicaid population ages 19-64 had asthma and 21,042 adults 65 and over had asthma in 2003.

### **Mortality**

- In 2007, 184 deaths in Florida were due to asthma.
- Overall asthma deaths have declined since 1997, however, there was a slight increase in asthma deaths recently from 2006 to 2007 (169 to 184).
- Florida residents ages 75-84 and 45-54 had the highest asthma deaths in 2007, with 43 and 25 deaths respectively. Deaths among children 0-19 were very low.
- Asthma deaths are higher among Whites than Blacks and Other racial groups.
- From 1997-2007, females had more deaths due to asthma than males.

### **Other Findings**

- Sixty-five percent of Florida public middle and high schools allow students with asthma to carry and administer their own asthma medications and use an asthma action plan; however, more than 70 percent do not provide asthma training to staff or increase student knowledge about asthma in a required health education course.



## Introduction

Asthma is a chronic inflammatory lung disease caused by ongoing airway inflammation that can result in recurrent episodes of wheezing, breathlessness, coughing, and chest tightness. Asthma causes the airways to become inflamed and hypersensitive to environmental allergens and irritants and viral infections. During an asthma attack, airway muscles tighten, the tissue becomes inflamed, and mucous is produced; this all results in narrow airways. The exact cause of asthma is unknown but there are a few things that might trigger an attack. Respiratory infections, colds, environmental tobacco smoke, pollen, molds, animal dander, dust, food, cockroaches, and environmental pollutants are a few examples of things that trigger attacks in individuals (ALA, 2008).

It is estimated that asthma affects 22 million Americans, 6 million of whom are children. Asthma is responsible for more than 500,000 hospitalizations annually and over 4,000 deaths (CDC, 2007). In 2006, there were approximately 27,000 hospitalizations and 169 deaths in Florida due attributed to asthma. The annual direct health care cost of asthma in Florida was approximately \$324 million in 1998 (AAFA, 1998); indirect costs add another \$248 million, for a total estimated cost of \$572 million dollars. Asthma costs the U.S. approximately \$14 billion a year (ALA, 2008).

The *Burden of Asthma in Florida 2009* is the first comprehensive data report on asthma in Florida. It contains information on asthma prevalence among adults, children, public middle and high school students, risk factors associated with asthma, hospitalizations, and deaths from asthma in Florida. Data was comprised from a variety of sources. These include the 2000-2007 Behavioral Risk Factor Surveillance Survey (BRFSS) which provides asthma prevalence estimates in adults. The 2004 BRFSS Child Asthma Module and the 2003 National Survey of Children's Health (NSCH) provided data on asthma in children and quality of life. The Florida Youth Tobacco Survey (FYTS) and the Youth Risk Behavior Survey (YRBS) provided asthma prevalence for public middle and high school students. Data on asthma-related hospitalizations, emergency department visits, and deaths were provided by the Florida Agency for Health Care Administration (AHCA). The department's annual Vital Statistics Report provides data on asthma deaths in Florida.

The purpose of this report is to describe the burden of asthma among the Florida population and asthma-related health outcomes. This report will also provide statewide and county data that can give insight into the distribution of asthma in Florida, and can be used as a guide to inform public health programs, policy makers, healthcare professionals and the public about the health burden of asthma in Florida. In order to measure our progress towards reducing the burden of asthma in Florida, *The Burden of Asthma* report will be updated on an ongoing basis.



## Asthma Prevalence in Florida

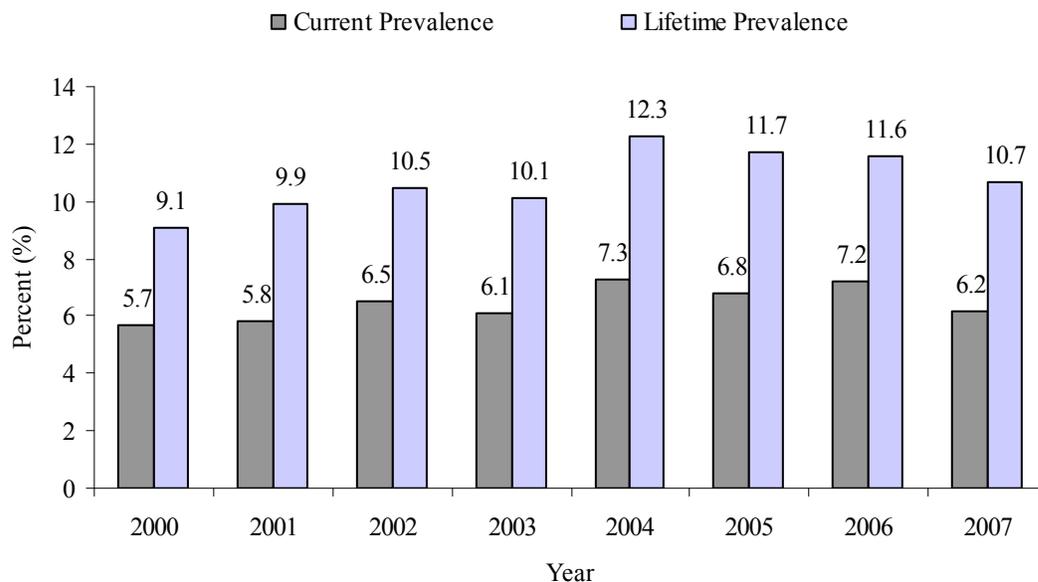
### Adult Asthma Prevalence ( $\geq 18$ years old)

Asthma is a complex disease and symptoms and severity vary from person to person. Determining the prevalence of asthma is important in order to track the number of individuals living with asthma. Asthma prevalence is classified in two ways: lifetime and current prevalence. Lifetime asthma prevalence is estimated based on the number of respondents who answer yes to the following question: *“Have you ever been told by a doctor, nurse, or other health professional that you had asthma?”* Current asthma prevalence is estimated based on the number of respondents who answer yes to the lifetime asthma prevalence question and yes to the following question: *“Do you still have asthma?”*

Asthma prevalence estimates are typically collected by a health survey. The BRFSS is one survey instrument used to collect asthma prevalence. Florida is one of 50 states conducting the BRFSS with financial and technical assistance from the Centers for Disease Control and Prevention (CDC). This state-based telephone surveillance system is designed to collect data on individual risk behaviors and preventive health practices related to the leading causes of morbidity and mortality in the United States. Information from the survey is used for health planning, program evaluation, and monitoring health objectives within the Department of Health. BRFSS is for people 18 years and older, who reside in Florida household. The BRFSS in Florida started in 1986 and since then, it has been conducted annually.

Figure 1 illustrates the differences between current and lifetime asthma prevalence in Florida adults. The data show from 2000 to 2003 a fairly steady increase in both lifetime and current asthma prevalence. However, the prevalence of lifetime asthma significantly declined from 12.3% in 2004 to 10.7% in 2007. During that same time period the prevalence of current asthma has remained relatively stable. In 2007, the prevalence of current asthma among adults in Florida was 6.2%, indicating that approximately 870,423 adults were affected.

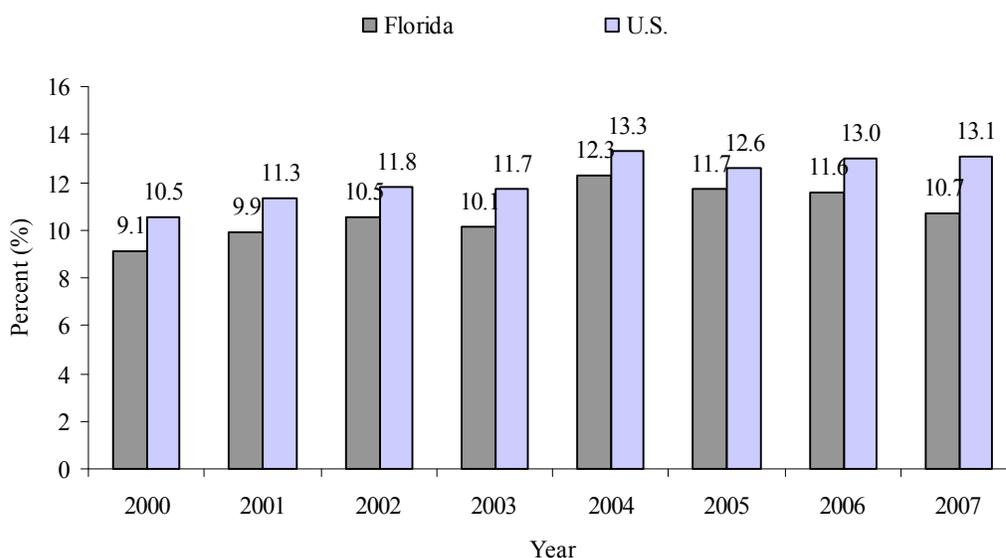
**Figure 1. Current and Lifetime Asthma Prevalence by Year, Florida Adults. 2000-2007.**



Data Source: 2000-2007 Behavioral Risk Factor Surveillance System, Centers for Disease Control and Prevention.

Compared to national estimates, Florida adults have slightly lower lifetime asthma prevalence rates (Figure 2). National estimates show a steady increase from 2000-2007 in lifetime asthma prevalence among U.S. adults.

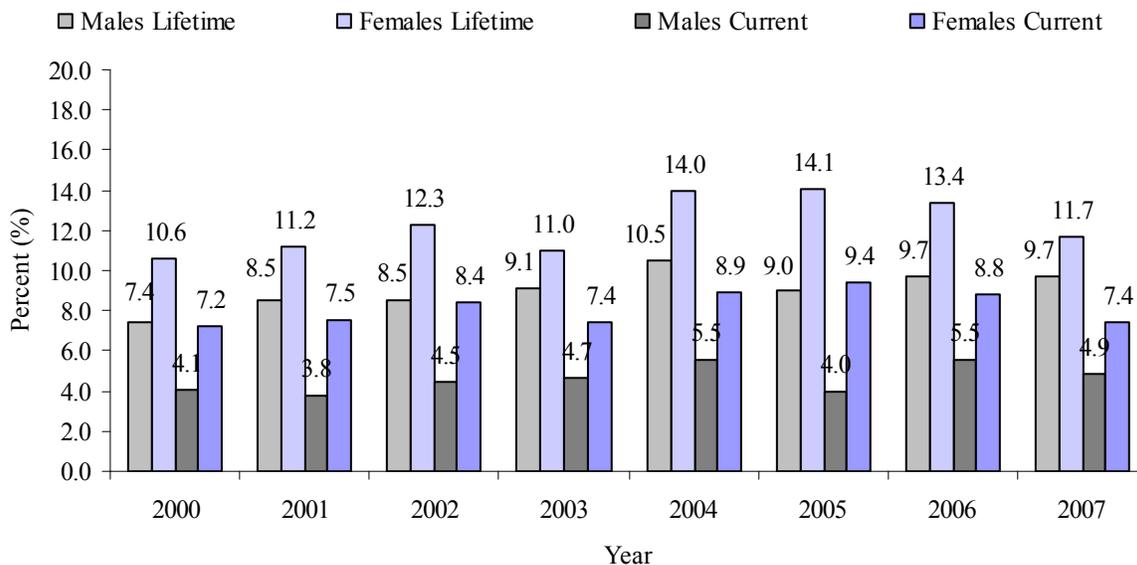
**Figure 2. Lifetime Asthma Prevalence by Year in Florida and U.S. Adults, 2000-2007.**



Data Source: 2000-2007 Behavioral Risk Factor Surveillance System, Centers for Disease Control and Prevention.

Lifetime and current asthma prevalence by sex in Florida adults from 2000 to 2007 are illustrated below (Figure 3). The data shows lifetime asthma prevalence for females has significantly increased every year (10.6% to 14.1), with the exception of 2006 and 2007 (13.4%; 11.7%). Lifetime asthma prevalence for males and current asthma prevalence for both females and males has remained relatively stable.

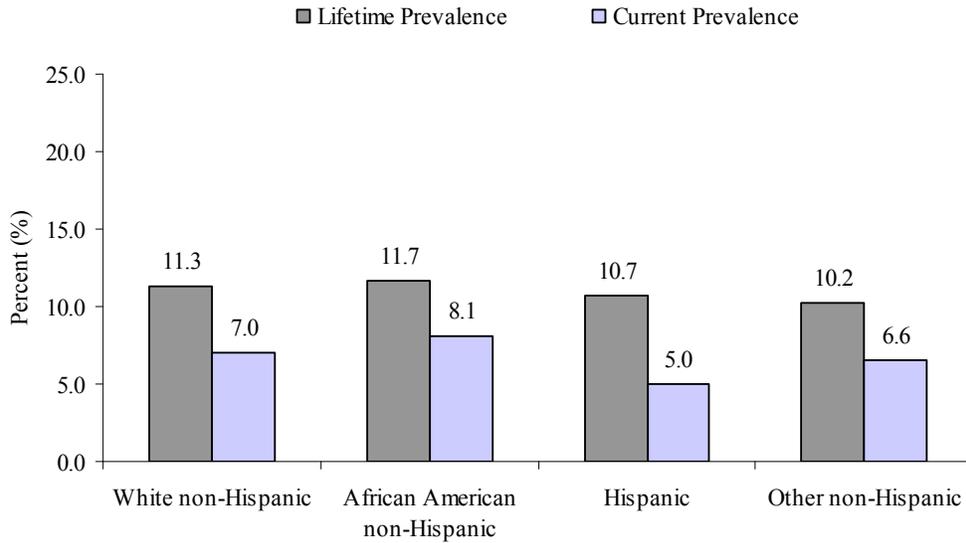
**Figure 3. Lifetime and Current Asthma Prevalence by Sex and Year, Florida Adults, 2000-2007**



Data Source: 2000-2007 Behavioral Risk Factor Surveillance System, Centers for Disease Control and Prevention.

Significant differences were not seen among the racial groups for both lifetime and current asthma prevalence. Blacks and Whites had the highest lifetime asthma prevalence rates and Hispanics had slightly lower current asthma prevalence compared to the other racial groups (Figure 4).

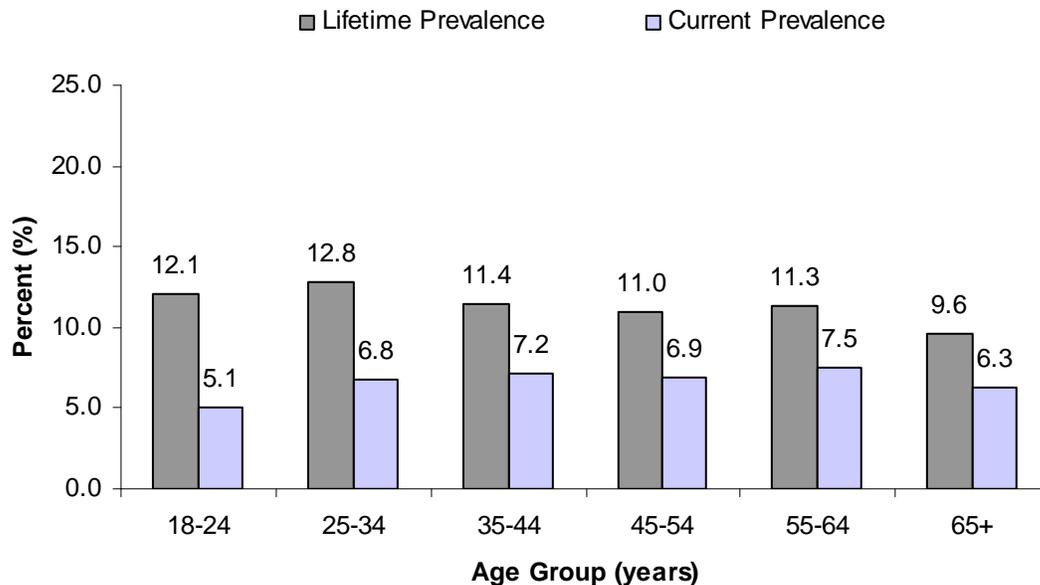
**Figure 4. Lifetime and Current Asthma Prevalence by Race and Ethnicity, Florida Adults, 2006-2007.**



Data Source: 2006 and 2007 Behavioral Risk Factor Surveillance System, Centers for Disease Control and Prevention.

Lifetime asthma prevalence from 2006-2007 showed slightly higher rates among the younger adult age groups (18-34). Among the 35-44 and 55-64 age groups current asthma prevalence was slightly higher than the other age groups (Figure 5).

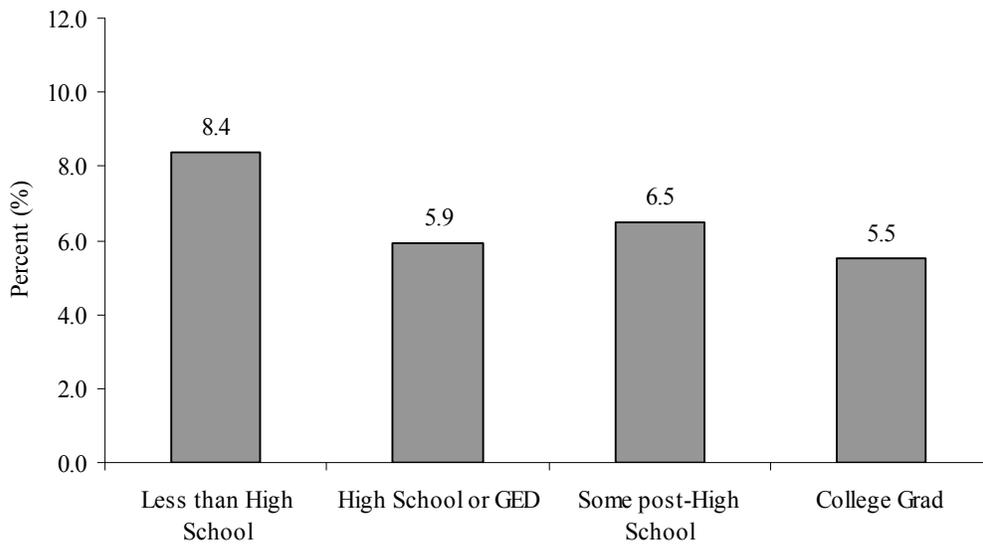
**Figure 5. Lifetime and Current Asthma Prevalence by Age Group, Florida Adults, 2006-2007.**



Data Source: 2006 and 2007 Behavioral Risk Factor Surveillance System, Centers for Disease Control and Prevention.

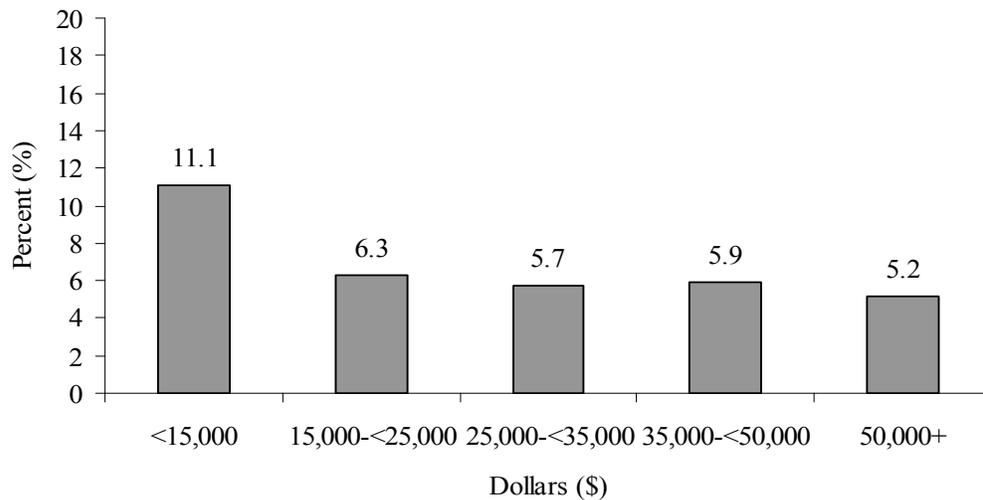
In 2007, adults with less than high school education (8.4%) were significantly more likely to have current asthma than either high school graduates (5.9%) or college graduates (5.5%) (Figure 6). Income levels among adults with current asthma appear to be inversely associated. Figure 7 depicts a decrease in current asthma prevalence with an increase in income. Adults whose annual household income was less than \$15,000 showed a significantly higher prevalence of current asthma compared to adults whose household incomes were more than \$15,000.

**Figure 6. Current Asthma Prevalence by Education Level, Florida Adults, 2007.**



Data Source: 2007 Behavioral Risk Factor Surveillance System, Centers for Disease Control and Prevention.

**Figure 7. Current Asthma Prevalence by Household Income Level, Florida Adults, 2007**

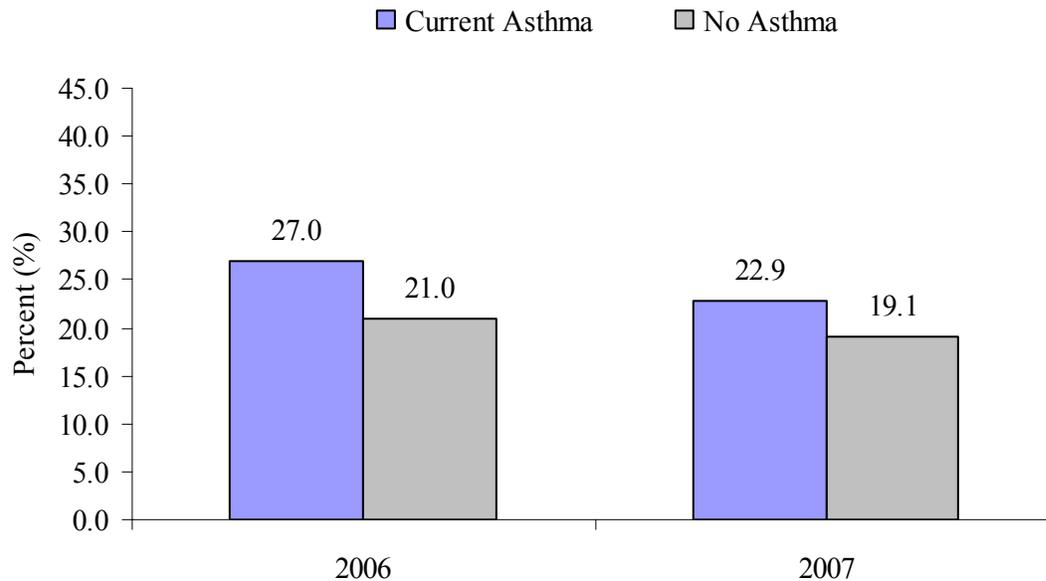


Data Source: 2007 Behavioral Risk Factor Surveillance System, Centers for Disease Control and Prevention.

## Smoking among Adults with Asthma

Asthma can be triggered by secondhand smoke, or the smoke from the burning end of a cigarette, pipe, or cigar. It's recommended that people with asthma not smoke due to these risk factors (FDOH, 2006). Current smokers are defined as adults who smoked at least 100 cigarettes in their entire life, and smoked cigarettes on either some days or all days. In 2006, over one-fourth (27%) of adults with current asthma reported current smoking. The prevalence of current smoking was significantly higher than that among people without current asthma (21%). Among people with current asthma, smokers have more frequent asthma attacks than non-smokers (33% vs. 17%). In addition, non-smokers have a significantly higher prevalence of experiencing no symptoms during the past 30 days than smokers (33% vs. 17%). In 2007, 22.9% of adults with current asthma reported current smoking. The prevalence of current smoking was higher than that among people without current asthma (19.1%), but it was not statistically significant.

**Figure 8. Current Cigarette Smoking by Asthma Status, Florida Adults, 2006- 2007.**

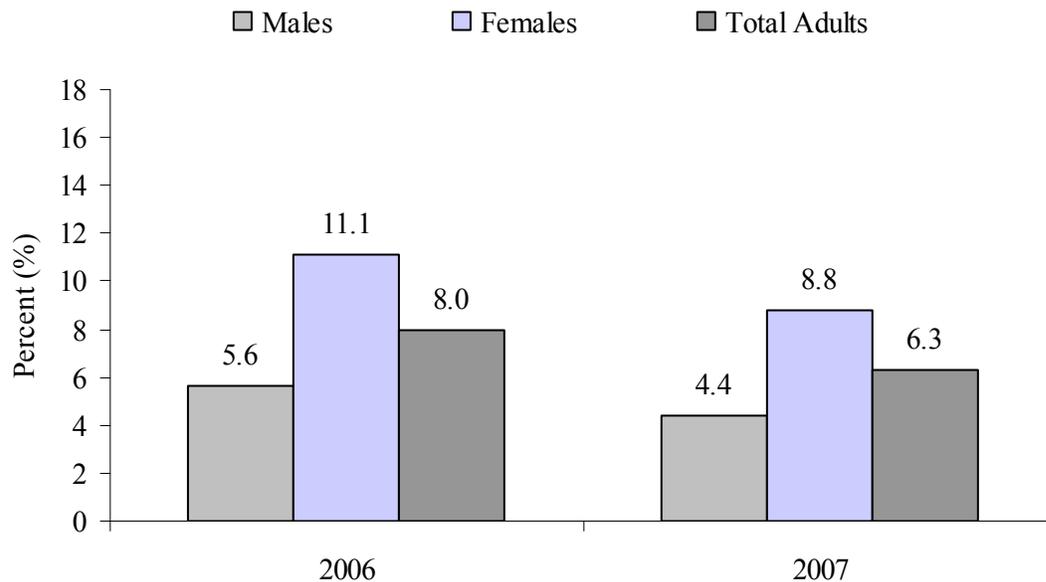


Data Source: 2006 and 2007 Florida Behavioral Risk Factor Surveillance System, Bureau of Epidemiology, Florida Department of Health

## Obesity among Adults with Asthma

Another risk factor that can affect adults with asthma is being overweight or obese. This is defined as a body mass index (BMI) of greater than or equal to 25. Florida adults who were overweight or obese had a current asthma prevalence of 6.3 percent in 2007, a decrease from 8 percent in 2006. When comparing by sex, females who are overweight/obese appear to be almost twice as likely to have current asthma than males who are also overweight/obese (figure 9).

**Figure 9. Current Asthma Prevalence in adults who are Overweight/Obesity Status by Sex and Year, Florida Adults, 2006 and 2007.**



Data Source: 2006 and 2007 Florida Behavioral Risk Factor Surveillance System, Bureau of Epidemiology, Florida Department of Health.

## Flu Shots among Adults with Asthma

People with asthma should receive an influenza shot annually. Adults with asthma are at high risk of developing complications after contracting the influenza virus, yet in 2006, 63% of current asthmatic adults had not received the flu vaccine in the past 12 months (FDOH, 2006). This prevalence was significantly lower than the overall prevalence of not receiving a flu shot for adults (73%). In 2007, 60.7% of current asthmatic adults had not received the flu vaccine in the past 12 months (BRFSS, 2007).



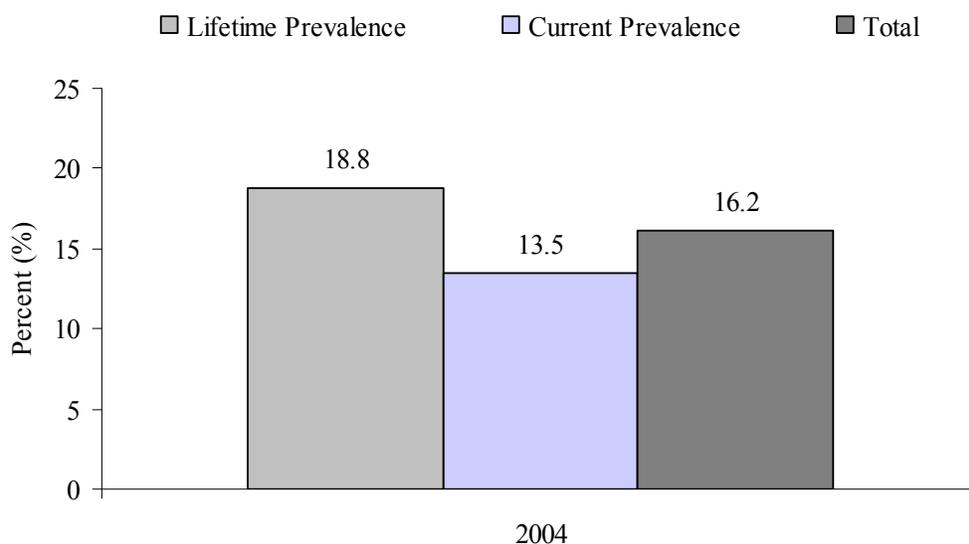
## Child Asthma Prevalence ( $\leq 17$ years old)

Asthma in childhood is the most chronic disease, affecting approximately 6.8 million children under the age of 18 years old in the United States (ALA, 2008). Asthma can be a life-threatening disease if not properly managed. The impact of asthma on children can vary among children and depending on the severity of the symptoms can also impact the child's other health conditions and whether they receive effective health care for their condition (FLIC HQ, 2003).

To determine asthma prevalence among children in Florida, the 2004 BRFSS childhood asthma module and the National Survey of Children's Health (NSCH) was used. Both surveys assess childhood asthma prevalence by asking an adult respondent about the asthma status of children living in the household.

Data from the 2004 BRFSS shows that 37 percent of households had children less than 18 years of age. According to the survey's childhood asthma module, among these households, 18.8 percent of respondents reported having a child that had ever been diagnosed with asthma, and approximately 13.5 percent reported their child still has asthma. This data indicates that approximately 600,378 children in Florida are currently affected with asthma

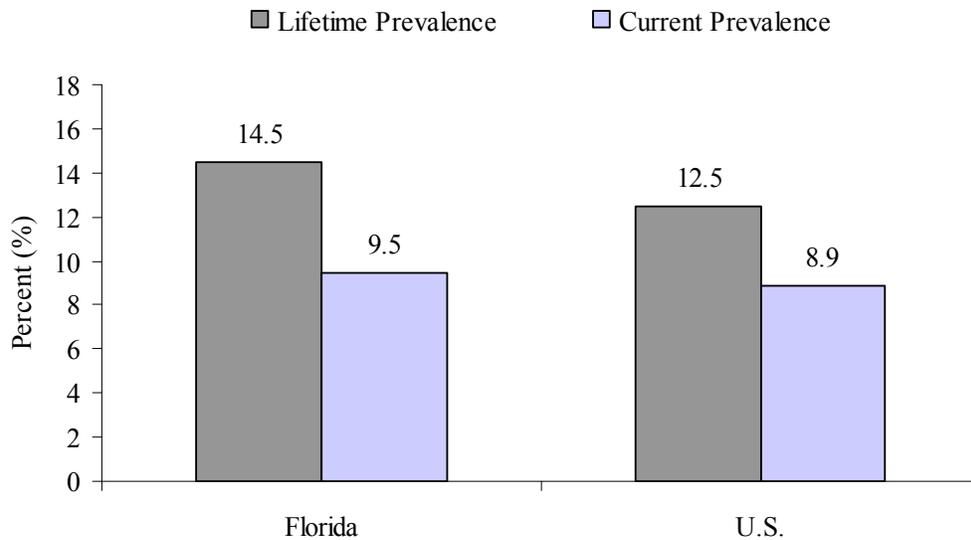
**Figure 10. Lifetime and Current Asthma Prevalence, Florida Children, 2004.**



Data Source: 2004 Florida Behavioral Risk Factor Surveillance System, Bureau of Epidemiology, Florida Department of Health

Based on the 2003 NCSH, lifetime asthma prevalence among Florida children was 14.5 percent and current asthma prevalence was 9.5 percent (Figure 11). Florida children appear to have slightly higher lifetime and current asthma prevalence compared to children in the U.S. When stratified by sex lifetime asthma prevalence is significantly higher among boys (17.8%) than girls (11.0%) (Figure 12). This difference is opposite of the trend seen among male and female adults, where females have a higher prevalence than males (see Figure 3).

**Figure 11. Lifetime and Current Asthma Prevalence, Florida and U.S. Children, 2003.**



Data Source: 2003 National Survey of Children’s Health, Bureau of Maternal and Child Health, Resources and Services Administration, U.S. Department of Health and Human Services.

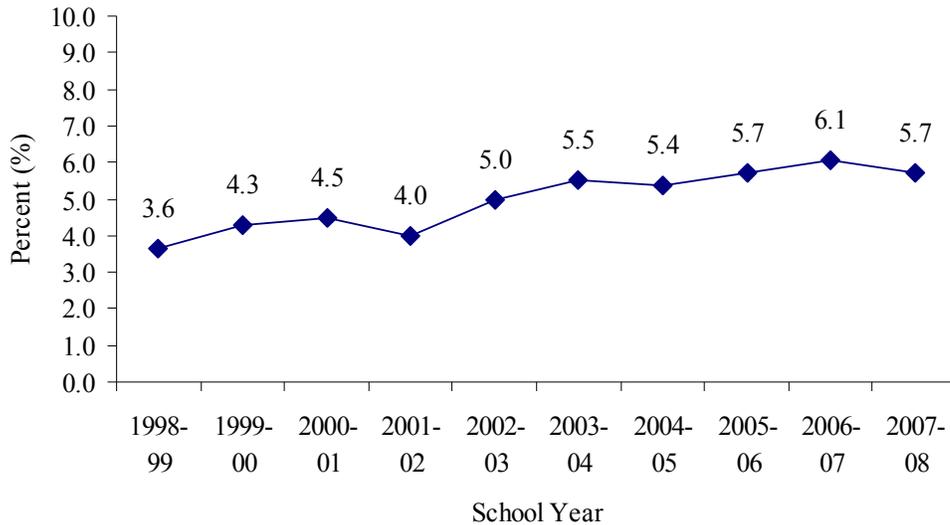
**Figure 12. Lifetime Asthma Prevalence by Sex, Florida Children, 2003.**



Data Source: 2003 National Survey of Children’s Health, Bureau of Maternal and Child Health, Resources and Services Administration, U.S. Department of Health and Human Services.

Data from the 1998-2008 Florida school health program (figure 13) show that like adults, Florida Pre-K-12 students have experienced a slow but steady increase in current asthma prevalence, with the exception of school years 2001-2002 and 2007-2008. Although this data is specific to children in schools it may not reflect all children in Florida.

**Figure 13. Current Asthma Prevalence among Public PK-12 Students, Florida, 1998-2008.**



Data Source: 1998-2008 Florida School Health Program, Florida Department of Health.



### **Prevalence in Public Middle and High Schools**

The Youth Risk Behavioral Survey (YRBS) and the Florida Youth Tobacco Survey (FYTS) are two surveys administered to public middle and high school students in Florida that assess health-risk behaviors and attitudes regarding tobacco use, secondhand smoke exposure, alcohol and drug use, injuries, and physical activity. Both surveys include questions regarding asthma prevalence and provide information on various demographic and behavioral information related to middle and high school students.

The YRBS was first administered by the Florida Departments of Health and Education in 1991. The survey is administered in odd-numbered years to Florida public high school students to monitor health-risk behaviors that contribute substantially to the leading causes of death, disability, and social problems among youth.

The FYTS tracks indicators of tobacco use and exposure to second-hand smoke among Florida public middle and high school students, and provides data for monitoring and evaluating tobacco use among youth in the Florida Tobacco Prevention and Control Program. The first FYTS was

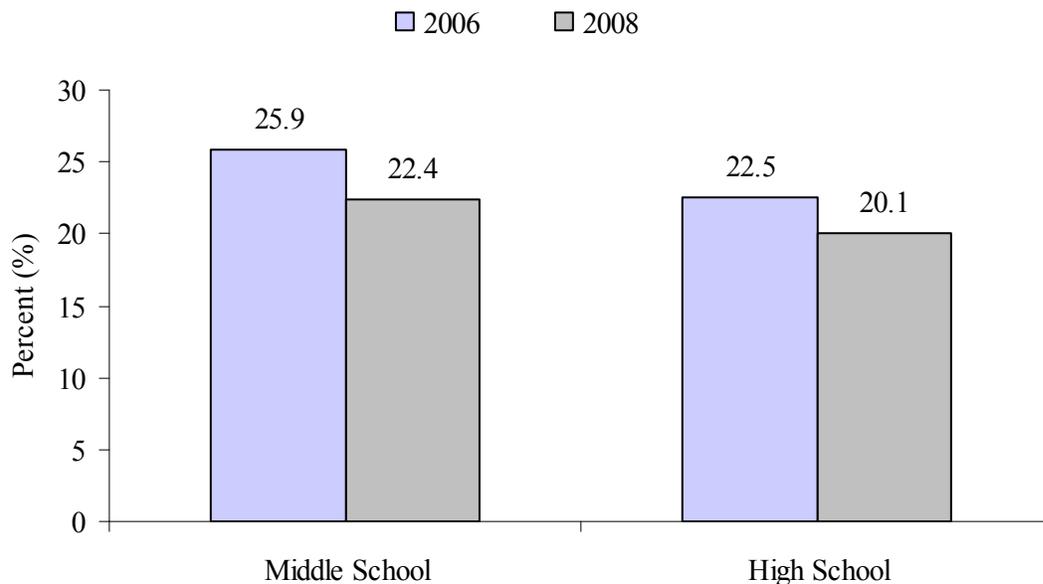
administered in 1998. Since then, the FYTS has been conducted annually by the Florida Department of Health. Both the FYTS and YRBS ask asthma questions, however the YRBS is similar to the BRFSS and the FYTS follow up question is different from YRBS (see Table 1).

**Table 1. Asthma Questions on the 2005 Florida Youth Risk Behavioral Survey (YRBS) and 2006 and 2008 Florida Youth Tobacco Survey (FYTS)**

Survey	Lifetime Prevalence	Current Prevalence
YRBS	Has a doctor or nurse ever told you that you have asthma?	Do you still have asthma?
FYTS	Has a doctor or nurse ever told you that you have asthma?	During the past 12 months, have you had an asthma attack?

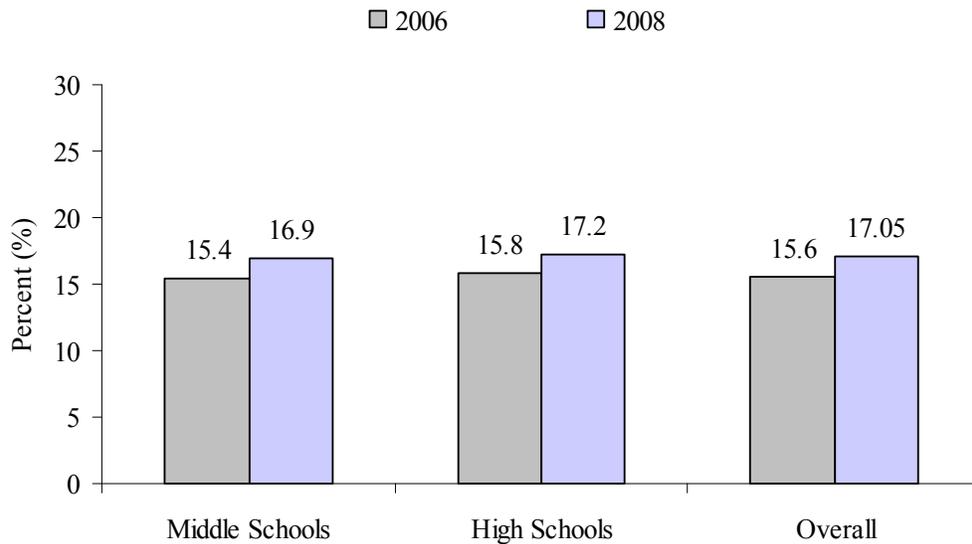
Data from the FYTS indicated that 22.4 percent and 20.1 percent of students in middle school and high school reported they currently have asthma (Figure 14). This is a slight decrease from the 2006 YTS data. However, lifetime asthma prevalence among public middle and high schools students has slightly increased from 2006 (Figure 15). In 2008, 16.9 percent of middle school students and 17.2 percent of high school students reported ever having been diagnosed with asthma. In addition, non-Hispanic White's and individuals who identify themselves as Other have higher prevalence of current asthma in public middle school and high school (data not shown, see appendix B, Table 7).

**Figure 14. Current Asthma Prevalence among Florida Public Middle and High School Students, 2006 and 2008.**



Data Source: 2006 and 2008 Florida Youth Tobacco Survey, Bureau of Epidemiology, Division of Disease Control, Florida Department of Health.

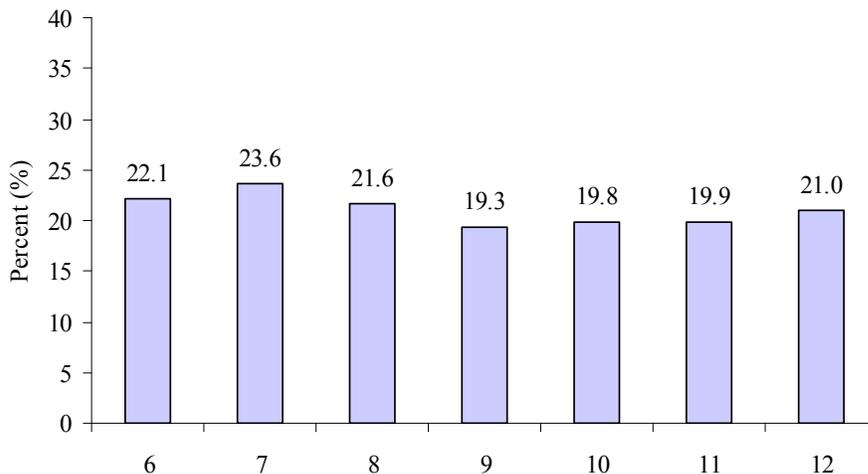
**Figure 15. Lifetime Asthma Prevalence among Florida Public Middle and High School Students, 2006 and 2008.**



Data Source: 2006 and 2008 Florida Youth Tobacco Survey, Bureau of Epidemiology, Division of Disease Control, Florida Department of Health

Figure 16 illustrates current asthma prevalence among Florida public middle and high school students by grade level. Data show after grade 7 a slight decrease in asthma prevalence but then a steady increase around grade 10. When compared to high school students asthma prevalence rates are highest among middle school students (grades 6-8), however high school students in the twelfth grade have rates similar to those in middle school.

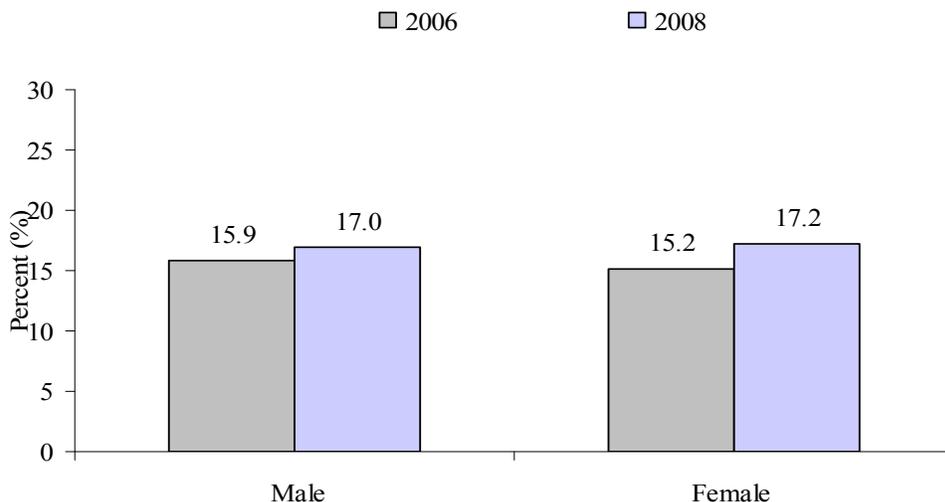
**Figure 16. Current Asthma Prevalence among Florida Public Middle and High School Students by Grade, 2008.**



Data Source: 2008 Florida Youth Tobacco Survey, Bureau of Epidemiology, Division of Disease Control, Florida Department of Health.

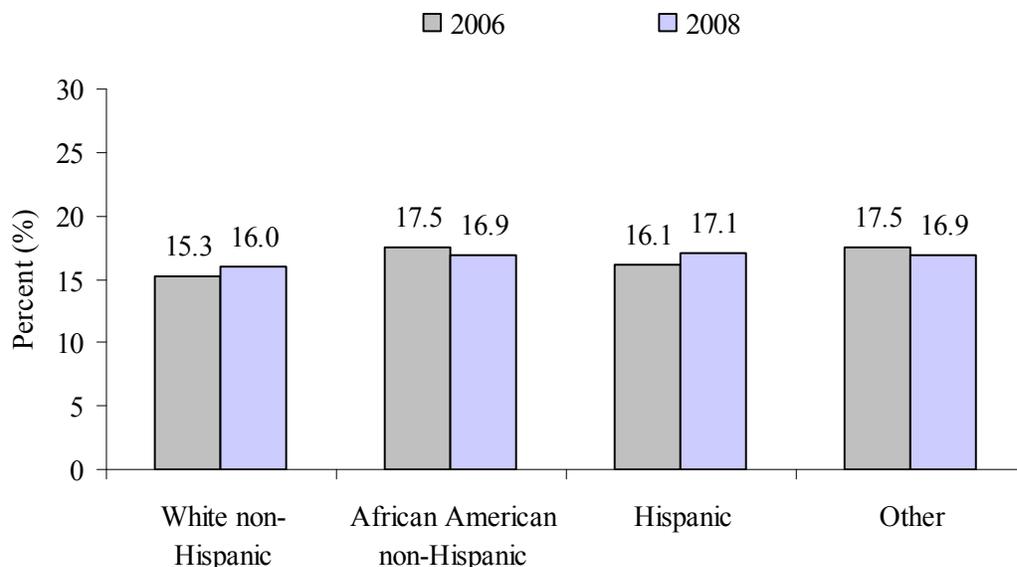
By sex, results did not differ significantly among middle and high school students. In 2008, females had a slight increase in lifetime asthma prevalence. There were no significant differences in asthma prevalence among the racial groups. Non-Hispanic Blacks, Hispanics and Other minority students had slightly higher asthma prevalence values compared to non-Hispanic White students in 2006 and 2008 (Figure 17 and 18).

**Figure 17. Lifetime Asthma Prevalence among Florida Public Middle and High School Students by Sex, 2006 and 2008.**



Data Source: 2006 and 2008 Florida Youth Tobacco Survey, Bureau of Epidemiology, Division of Disease Control, Florida Department of Health.

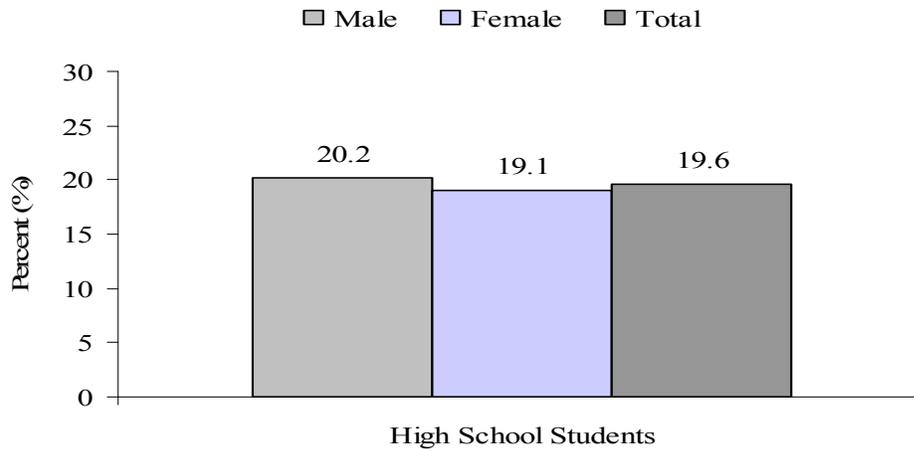
**Figure 18. Lifetime Asthma Prevalence among Florida Public Middle and High School Students by Race and Ethnicity, 2006 and 2008.**



Data Source: 2006 and 2008 Florida Youth Tobacco Survey, Bureau of Epidemiology, Division of Disease Control, Florida Department of Health

The 2007 YRBS for public high school students showed 19.6 percent of students reported having been diagnosed with asthma (Figure 19). This is slightly higher to what was seen in the high school FYTS in 2006 and 2008 (Figure 15). In addition, males also reported slightly higher lifetime asthma prevalence than females.

**Figure 19. Lifetime Asthma Prevalence Among Florida Public High School Students by Sex, 2007.**



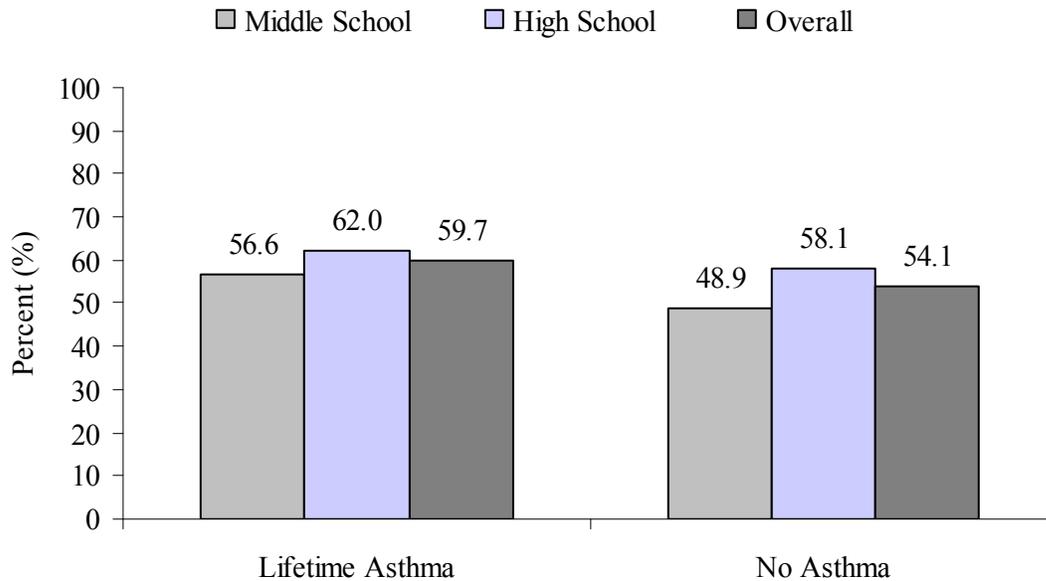
Data Source: 2005 and 2007 Florida Youth Risk Behavior Survey, Florida Department of Health.

## **Exposure to Secondhand Smoke among Public Middle and High Schools**

Research has shown that exposure to environmental tobacco smoke can increase asthma severity and frequency of asthma attacks (Gold, 2000; Gilmour et al., 2006). The FYTS provides information on exposure to environmental tobacco smoke among public middle and high school students.

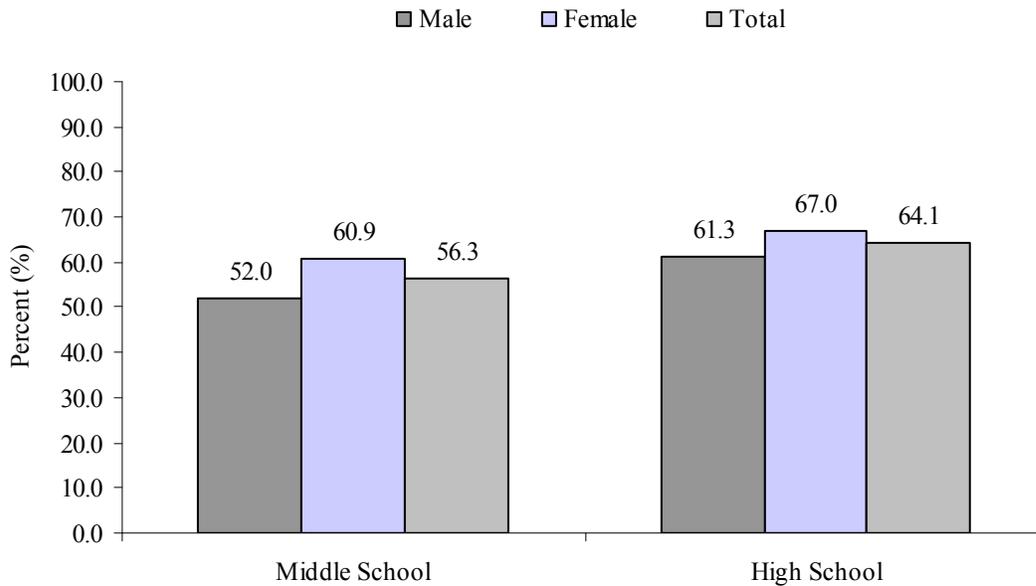
Data from 2006 indicate that middle and high school students who reported having been diagnosed with asthma were more likely to have been exposed to second hand smoke (SHS) in a room or car during the past seven days compared to students who reported no asthma. Additionally, female students in both middle school and high school had higher exposure to second hand smoke during the past seven days compared to male students (Figure 20 and 21).

**Figure 20. Percentage of Middle and High School students who have been exposed to Second Hand Smoke in a room or car one or more times during the past 7 days, by asthma status, Florida, 2006.**



Data Source: 2006 Florida Youth Tobacco Survey, Florida Department of Health.

**Figure 21. Percentage of Middle and High School Students who have been exposed to Second Hand Smoke in a room or a car during the past 7 days, by Sex, Florida, 2006.**



Data Source: 2006 Florida Youth Tobacco Survey, Florida Department of Health.



## Asthma Management and Quality of Life

### Asthma Control and Symptoms

It's important for people with asthma to control and manage day and nighttime symptoms in order to minimize asthma attacks and activity limitations. An individual's asthma severity prior to treatment can be assessed by their symptoms and lung function. The "*Expert Panel Report 3 (EPR-3) Guidelines for the Diagnosis and Management of Asthma*," released in 2007 by the National Asthma Education and Prevention Program (NAEPP), emphasizes the importance of asthma control, by reducing asthma symptoms through appropriate treatment and medication usage. The measures of impairment used to assess asthma control in youth (age 12 and older) and adults are shown in Table 2. The guidelines focus on impairment and risk as two key areas of severity and control of asthma symptoms. According to the EPR-3 Guidelines impairment is defined as the "frequency and intensity of symptoms and functional limitations the patient is experiencing currently or has recently experienced" (NHBLI, 2007). Risk is defined as "the likelihood of either asthma exacerbations, progressive decline in lung function (or, for children, lung growth), or risk of adverse effects from medication" (NHBLI, 2007).

**Table 2. Factors used to Classify Asthma Control in Adults and Children older than 12 Years of Age**

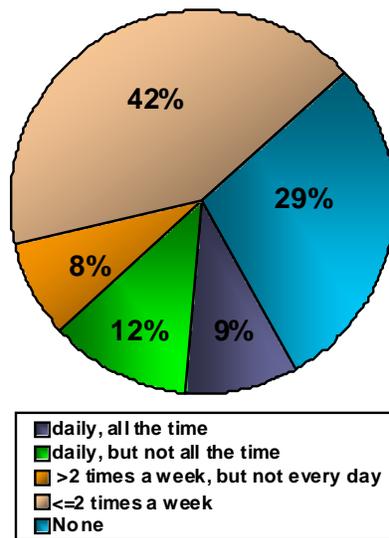
Components of Asthma Control		Classification of Asthma Control ( $\geq 12$ years of age)		
		Well Controlled	Not Well Controlled	Very Poorly Controlled
Impairment:	Symptoms	$\leq 2$ days/week	$> 2$ days/week	Throughout the day
	Nighttime awakenings	$\leq 2$ x/month	1-3x/week	$\geq 4$ x/week
	Short-acting beta2-agonist use for symptom control	$\leq 2$ days/week	$> 2$ days/week	Several times per day
	Lung function: FEV1 or peak flow	$> 80\%$ predicted/ personal best	$> 60\%$ - $< 80\%$ predicted/ personal best	$< 60\%$ predicted/ personal best
Risk:	Exacerbations requiring oral systemic corticosteroids	0-1/year	$\geq 2/$ year	
	Progressive loss of lung function	Evaluation requires long-term followup care		
	Treatment-related adverse effects	Medication side effects can vary in intensity from none to very troublesome and worrisome. The level of intensity does not correlate to specific levels of control but should be considered in the overall assessment of risk.		

Data Source: National Asthma Education and Prevention Program (NAEPP), Expert Panel Report 3 (EPR-3) Guidelines for the Diagnosis and Management of Asthma, 2007. (<http://www.nhlbi.nih.gov/guidelines/asthma/>).

## Asthma Symptoms in Adults

In 2006, approximately 65% of adults with lifetime asthma currently still had asthma. Among adults with current asthma, 21% had asthma symptoms every day, and 50% had asthma symptoms at least once a week during the past 30 days. Symptoms of asthma include cough, wheezing, shortness of breath, chest tightness, and phlegm production with no cold or respiratory infection. Figure 22 shows the five categories of asthma symptom frequency among adults with current asthma.

**Figure 22. Frequency of Asthma Symptoms in the past 30 days among Adults with current Asthma, Florida, 2006.**



Data Source: 2006 Florida Behavioral Risk Factor Surveillance System, Florida Department of Health.

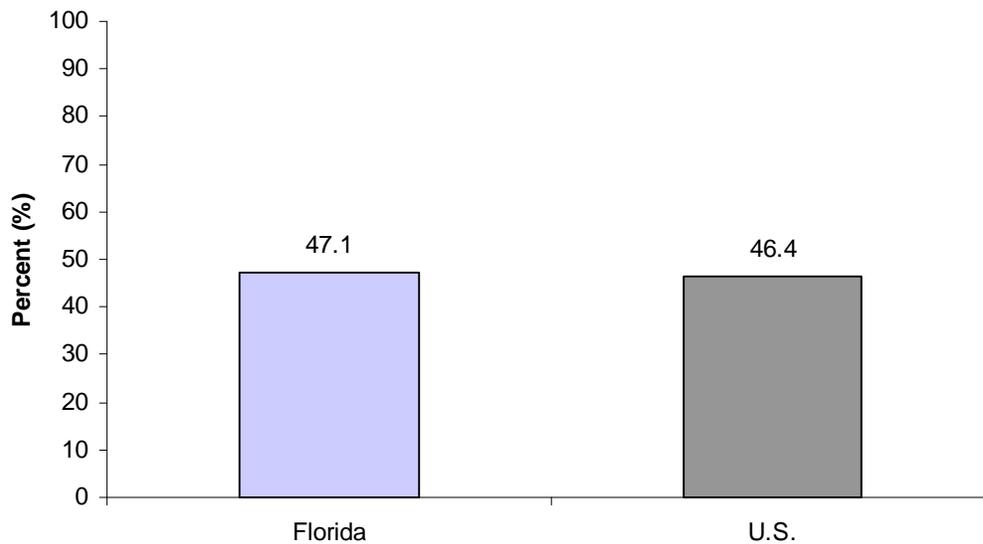
## Asthma Attack or Episode in Adults

Proper asthma management and avoiding environmental triggers such as tobacco smoke, mold, pet dander, dust mites, and other environmental exposures can prevent asthma attacks and reduce the need for urgent medical care. In 2006, among adults with current asthma 32.5 percent saw a doctor for urgent treatment of worsening asthma symptoms during the past 12 months. During that same time period, over 50 percent took a prescription asthma medication or inhaler to prevent an asthma attack from occurring in the past 30 days.

## Asthma Attack or Episode in Children

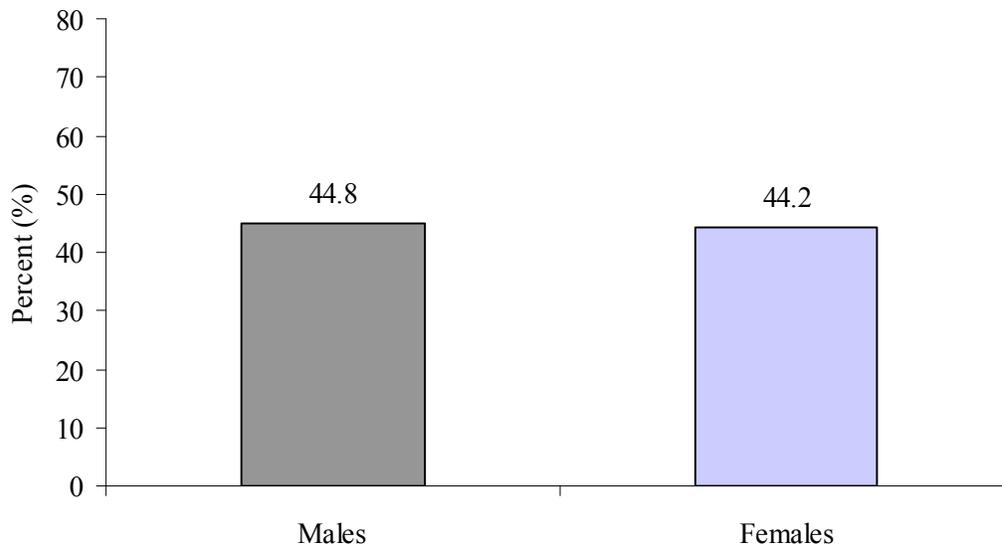
Data from the 2003 NSCH indicated, that 47 percent of Florida children (under 18 years of age) reported experiencing an asthma attack in the past year compared to 46 percent of U.S. children (Figure 23). There were no differences seen in reported frequency of asthma attacks in Florida children by sex (Figure 24).

**Figure 23. Percent of Children with Current Asthma who Experienced an Asthma Attack in the Past Year, Florida, and U.S., 2003.**



Data Source: 2003 National Survey of Children's Health, Bureau of Maternal and Child Health, Resources and Services Administration, U.S. Department of Health and Human Services.

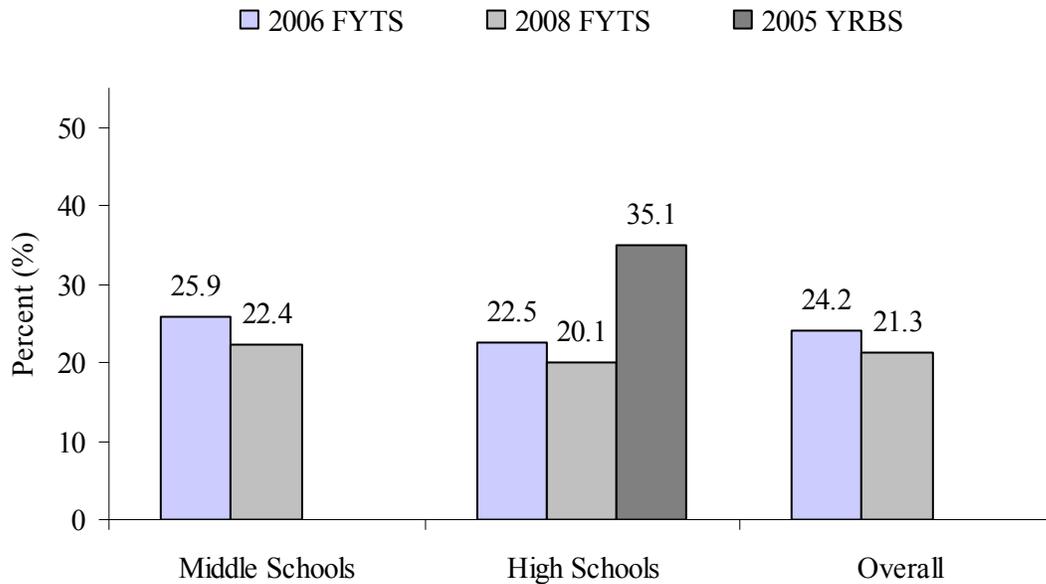
**Figure 24. Percent of Children with Current Asthma who Experience an Asthma Attack in the Past Year, by Sex, Florida 2003.**



Data Source: 2003 National Survey of Children's Health, Bureau of Maternal and Child Health, Resources and Services Administration, U.S. Department of Health and Human Services.

We estimate that in 2007, 25,300 middle school students and 33,400 high school students experienced an asthma attack in the past year. According to data from the 2006 and 2008 FYTS, the frequencies of asthma attacks among students in middle and high school were similar (Figure 25).

**Figure 25. Percent of Public Middle and High School Students who Experienced an Asthma Attack in the Past Year, Florida, 2006 and 2008.**

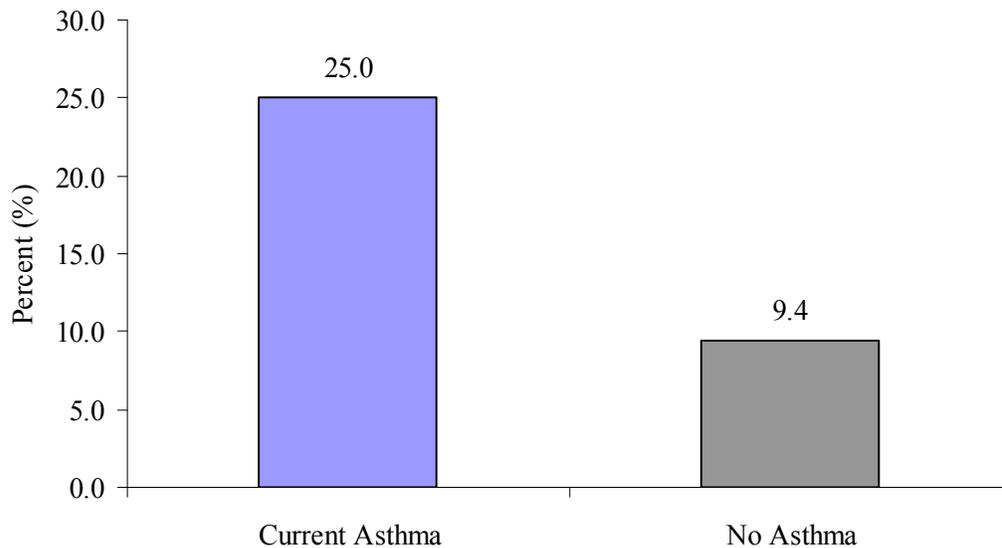


Data Source: 2006 and 2008 Florida Youth Tobacco Survey, Florida Department of Health.

### Health-Related Quality of Life in Adults with Asthma

Asthma can have an impact on the quality of life and overall health status of individuals with asthma. In 2006, adults with current asthma were approximately 2.7 times more likely to have poor physical health than adults who did not have current asthma (25% vs. 9.4%). On average, adults with current asthma experienced 7.2 days in which their physical health was not good during the past 30 days compared to an average of 3.1 days among adults without current asthma (Figure 26).

**Figure 26. Prevalence of Poor Physical Healthy by Asthma Status, Florida, 2006.**

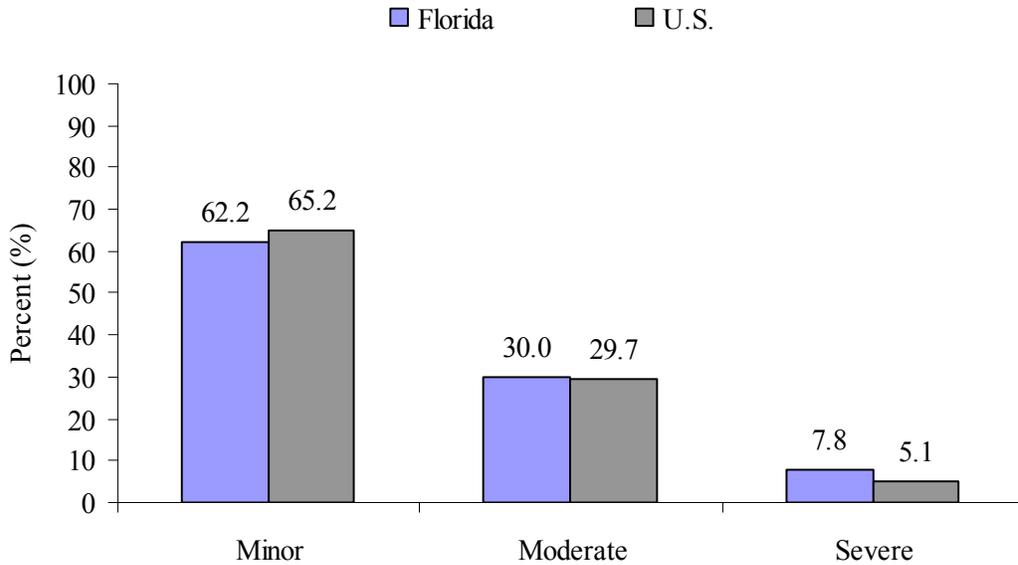


Data Source: 2006 Florida Behavioral Risk Factor Surveillance System, Florida Department of Health.

### **Health-Related Quality of Life in Children with Asthma**

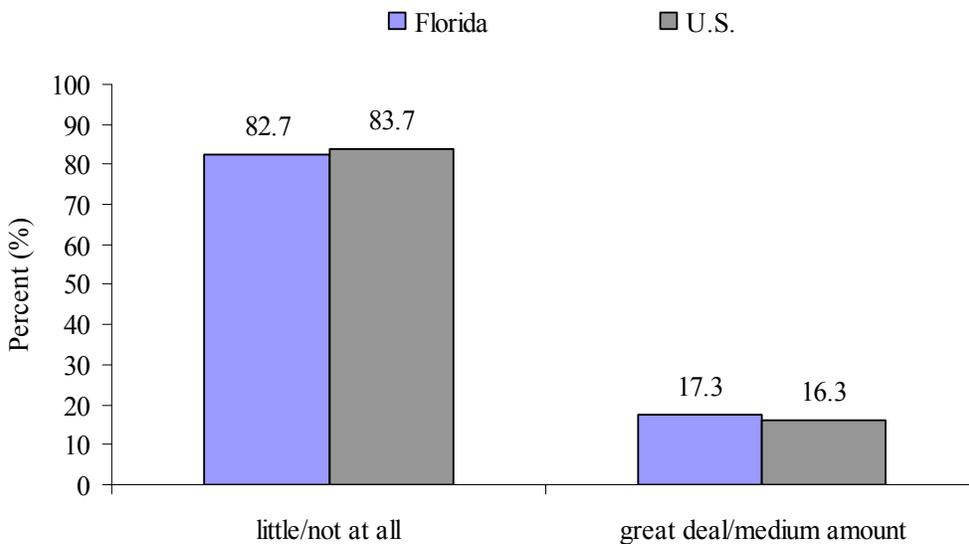
Asthma can also have an impact on the overall health of children with asthma. The 2003 NSCH asked respondents who had children with current asthma how they would describe the health difficulties caused by their child's asthma. Approximately 38 percent of parents/guardians compared to 35 percent of U.S. parents/guardians described their children's asthma as causing moderate or severe health difficulties (Figure 27). In addition, when they were asked how much of a burden their child's asthma was on the family, 17 percent of Florida and 16 percent of U.S. parents/guardians felt the asthma affected the family a great deal or medium amount (Figure 28).

**Figure 27. Perceived Health difficulties among Children with Current Asthma, Florida and U.S., 2003.**



Data Source: 2003 National Survey of Children’s Health, Bureau of Maternal and Child Health, Resources and Services Administration, U.S. Department of Health and Human Services.

**Figure 28. Perceived Family Burden among Children with Current Asthma, Florida and U.S., 2003.**



Data Source: 2003 National Survey of Children’s Health, Bureau of Maternal and Child Health, Resources and Services Administration, U.S. Department of Health and Human Service.



## Asthma Management in Florida Schools

The CDC developed a document entitled “Strategies for Addressing Asthma Within a Coordinated School Health Program” to help schools address asthma management (CDC, 2006). This document describes six strategies that schools can use to help students with asthma:

1. Establish management and support systems for asthma-friendly schools.
2. Provide appropriate school health and mental health services for students with asthma.
3. Provide asthma education and awareness programs for students and school staff.
4. Provide a safe and healthy school environment to reduce asthma triggers.
5. Provide safe, enjoyable physical education and activity opportunities for students with asthma.
6. Coordinate school, family, and community efforts to better manage asthma symptoms and reduce school absences among students with asthma.

The School Health Education Profile (SHEP) is a survey tool used to help schools measure their progress toward the implementation of these CDC strategies. This survey is typically administered biennially by the Florida Department of Education to middle and high school principals and lead health education teachers.

The SHEP assists states and local education and health agencies in monitoring and assessing characteristics of and trends in school health education; physical education; asthma management activities; school health policies related to HIV/AIDS prevention, tobacco-use prevention, violence prevention, physical activity, and nutrition; food service; and family and community involvement in school health programs. Data from Profiles can be used to improve school health programs.

Two questionnaires are used to collect data — one for school principals and one for lead health education teachers. The two questionnaires were mailed to 456 regular secondary public schools containing any of grades 6 through 12 in Florida during the spring of 2006. Usable questionnaires were received from 72% of principals and from 71% of teachers. Because the response rates for these surveys were  $\geq 70\%$ , the results are weighted and are representative of all regular public secondary schools in Florida having at least one of grades 6 through 12. Florida participated in 2000 and 2006. Results are presented in Table 3.

**Table 3. Asthma Management in Florida Public Middle and High Schools, 2006.**

Activity	Percent of Schools
Obtain and use an asthma action plan (or individualized Health Plan) for all students with asthma	65.1 %
Assure immediate access to medications prescribed by a physician and approved by parents (allow students to self-carry inhalers)	65.7%
Increase student knowledge on asthma awareness in a required health education course	28.3%
Educate school staff about asthma awareness	22.1%
Identification or school-based management of chronic health conditions	72.2%
School nurse who provides standard health services	71.2%

Data Source: 2006 Florida School Health Education Profile, Centers for Disease Control and Prevention.



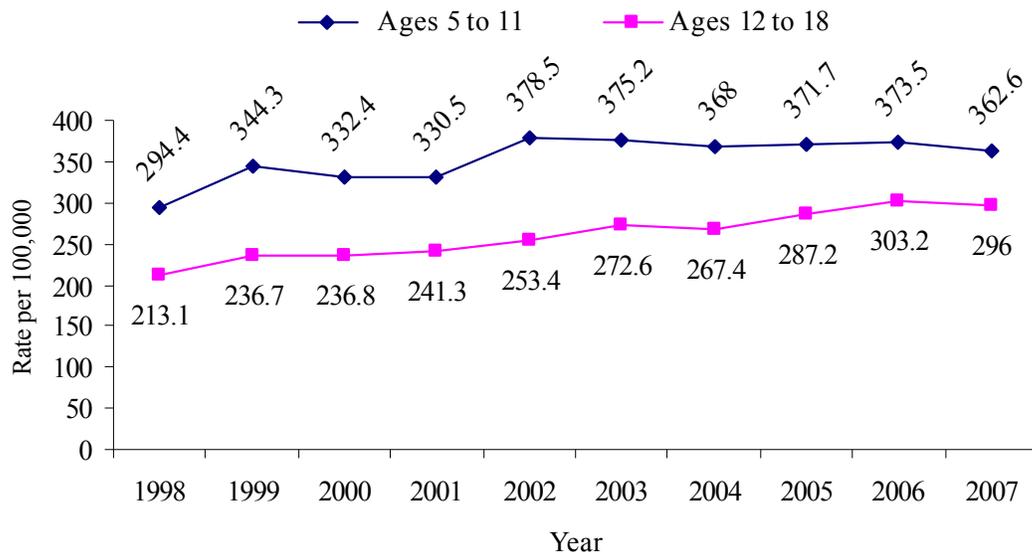
## Health Care Access and Utilization

### Inpatient Hospitalizations

In 2006, the Florida Agency for Health Care Administration estimated that there were a total of 26,740 hospitalizations in Florida for asthma. The total cost associated with hospitalizations for inpatient treatment was more than \$472 million and the average length of stay was 3.5 days in 2003. In the U.S., the National Center for Health Statistics (NCHS) estimated that there were 497,000 asthma hospitalizations in 2004, or 17 per 10,000 people according to the National Hospital Discharge Survey (NHDS). In addition, the NHDS described that among children 0-17 years, there were 198,000 hospitalizations and were highest among children 0-4 years, 60 hospitalizations per 10,000. Females had a hospitalization rate about 35% higher than males (NCHS, 2006)

Figure 29 shows crude asthma hospitalization rates for ages 18 and under from 1998 to 2007 in Florida. Florida children ages 5 to 11 years have higher hospitalization rates per 100,000 than age group 12 to 18. The highest hospitalization rate among Florida children aged 5-11 was seen in 2002 with a rate of 378.5 per 100,000.

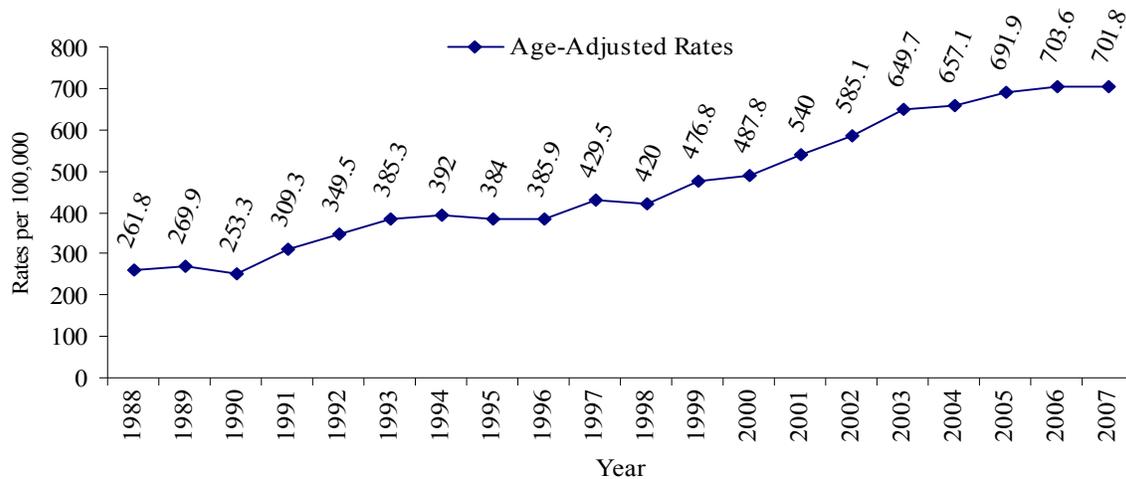
**Figure 29. Asthma Hospitalizations Rates Ages 5-18, Florida Children, 1998-2007.**



Data Source: Florida CHARTS, Florida Department of Health, Florida Agency of Health Care Administration, 1998-2007

Age-adjusted asthma hospitalizations rates for 1988 to 2007 are illustrated below (Figure 30). From 1998 to 2007 there has been an overall steady increase in age-adjusted rates for asthma hospitalizations.

**Figure 30. Age-adjusted Asthma Hospitalization Rates, All Florida Residents, 1988-2007.**



Data Source: Florida CHARTS, Florida Department of Health, Florida Agency of Health Care Administration, 1988-2007

## Emergency Department Visits

In 2006, there were 150,159 hospital ED visits among Florida residents who had asthma. The cost for asthma-related ED visits in Florida for 2006 was more than \$186 million. National estimates in 2004 estimated that 1.8 million visits to the ED were due to asthma (NCHS, 2006).



## Asthma in the Florida Medicaid Population

### The Medicaid Population

Medicaid is a state and federal partnership that provides health coverage for selected categories of people with low incomes. Its purpose is to improve the health of people who might otherwise go without medical care for themselves and their children. Florida implemented the Medicaid program on January 1, 1970, to provide medical services to indigent people.

In 2003, approximately 130,595 children 0-18 years of age with asthma were enrolled in Medicaid. 64,939 Florida adults in the Medicaid population ages 19-64 had asthma and 21,042 adults 65 and over had asthma. Total Medicaid spending on asthma in Florida was estimated to be over \$230 million (Table 4). Nationally, over 4 million people in Medicaid had asthma in 2003 with total spending estimated at \$4 trillion dollars.

**Table 4. Medicaid Eligible Population and their Estimated Asthma Prevalence and Expenditures for Medical Care, All Ages, Florida and U.S., 2003.**

State	Medicaid Population 0-18 with Asthma	Medicaid Expense for 0-18 with Asthma	Medicaid Population 19-64 with Asthma	Medicaid Expense for 19-64 with Asthma	Medicaid Population 65+ with asthma	Medicaid Expense for 65+ with Asthma	Total Medicaid Spending on Asthma
Florida	130,595	\$139,182,496	64,939	\$69,209,856	21,042	\$22,425,969	\$230,818,321
U.S.	2,365,525	\$2,521,082,005	1,468,088	\$1,564,629,590	347,821	\$370,693,882	\$4,456,405,476

Data Source: Centers for Medicare & Medicaid Services, *MSIS State Summary FY 2003*.  
[http://www.ahrq.gov/qual/asthmacare/asthmatable1\\_4.htm](http://www.ahrq.gov/qual/asthmacare/asthmatable1_4.htm)

### Children Medical Services (CMS)

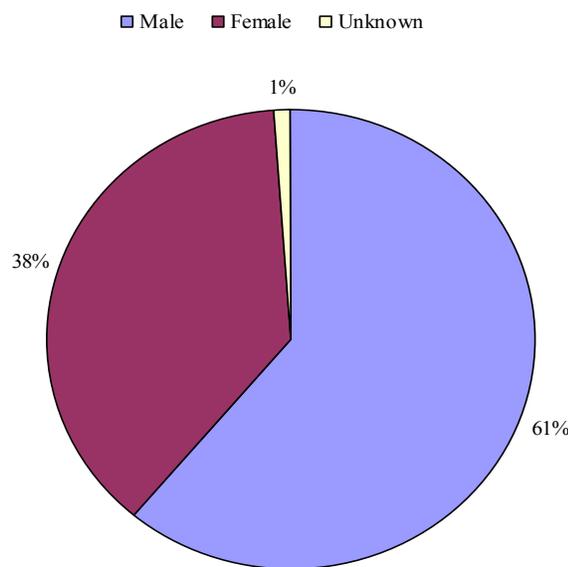
CMS is a division under the Florida Department of Health, and is the Florida Title V program, the Title XIX (Medicaid) and Title XXI (Florida's Child Health Insurance Program) managed system of care for children with special health care needs. CMS covers individuals under the age of 21 that have serious or chronic physical or developmental conditions that require extensive preventive and maintenance care beyond what is typically needed for a healthy child. Services

are provided in the public and private healthcare sector in 22 locations in local communities. CMS provides both primary and specialty health care services.

The CMS Clinical Eligibility Screening Guide for children with special health care needs includes asthma as a medical condition that meets the Level I screening for clinical eligibility. For the 2007-2008 fiscal year, 13,000 children were enrolled in the CMS Network. Over \$8.8 million in expenditures was spent in the 2007-2008 fiscal year to provide services to patients with asthma. Medications composed of 42% of this expense and inpatient services composed of 8% of the amount.

Figure 31 illustrates that of the 13,000 children with asthma enrolled in the CMS Network were 61 percent were male and 38 percent were female.

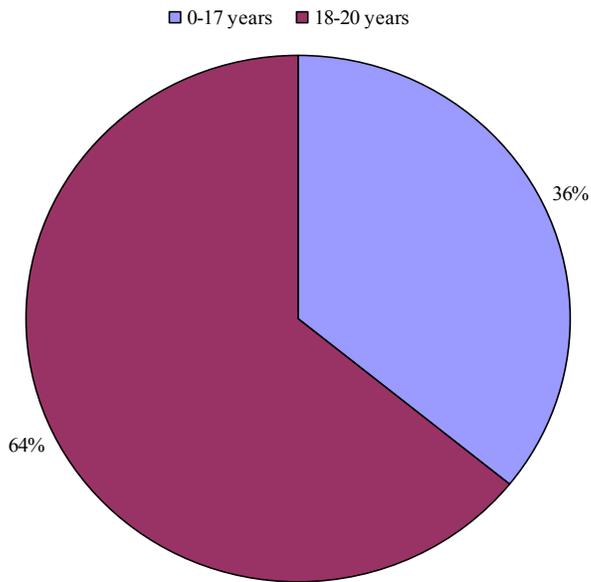
**Figure 31. 13,000 Children with Asthma Enrolled in the CMS Network by Gender, Florida, 2007-2008**



Data Source: Children Medical Services, Florida Department of Health.

Figure 32 reveals that 64 percent of children with asthma enrolled in the CMS Network are under the age of 18 compared to 36 percent who are 18-20 years of age.

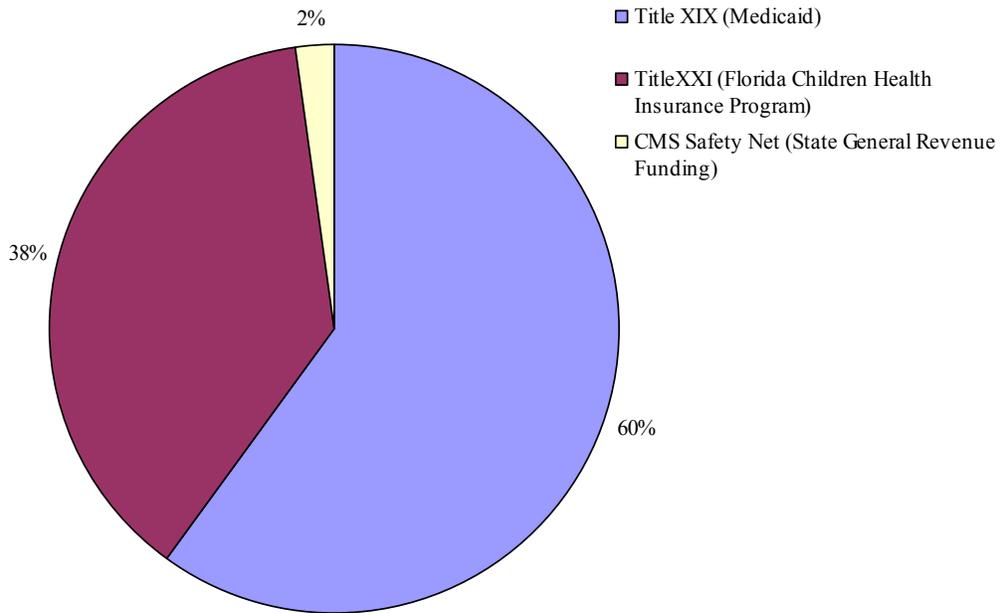
**Figure 32. 13,000 Children with Asthma Enrolled in the CMS Network by Age, Florida, 2007-2008.**



Data Source: Florida Department of Health, Children Medical Services

Children enrolled in CMS have different sources of coverage. Figure 33 illustrates the different types of coverage provided to children enrolled in CMS. The majority (60%) of children with asthma who are enrolled in the CMS networks were covered under Title XIX (Medicaid) from 2007-2008.

**Figure 33. 13,000 Children with Asthma Enrolled in the CMS Network by Coverage, Florida, 2007-2008.**



Data Source: Children Medical Services, Florida Department of Health.

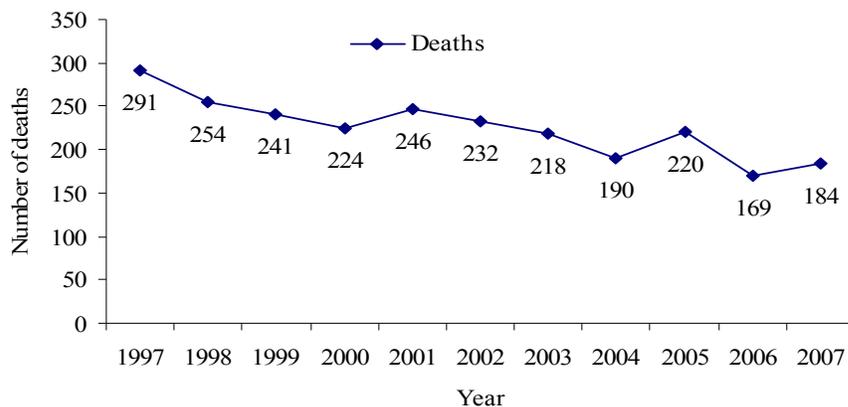


## Asthma Mortality

In 2005, 3,884 people in the United States died from asthma (NCHS, 2006). Among children, asthma deaths are rare. In 2003, 195 children died from asthma, or 0.3 deaths per 100,000 children compared to 1.4 deaths per 100,000 adults. Females had an asthma death rate 45% higher than males (NCHS, 2006). The Office of Vital Statistics develops an annual Vital Statistics Report which provides data on asthma deaths in Florida. This data is further described in this section.

Figure 34 illustrates asthma deaths in Florida from 1997 to 2007. Overall asthma deaths have declined since 1997 however; there was a slight increase in asthma deaths recently from 2006 to 2007 (169 to 184). The year 2001 had the most cases of asthma deaths (246) and 2006 had the lowest (169).

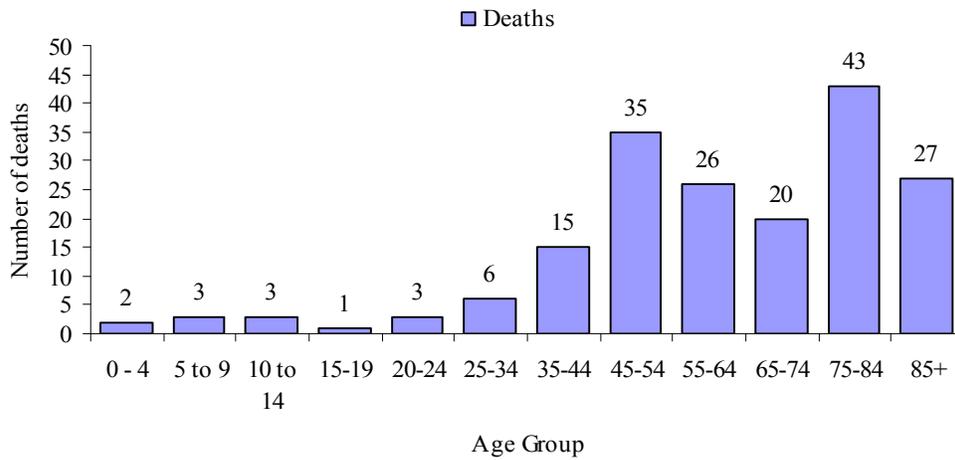
**Figure 34. Asthma Mortality by Year, Florida, 1997-2007.**



Data Source: FloridaCHARTS, Florida Department of Health, 1997-2007

In 2007, asthma deaths were highest among individuals ages 74 to 84 (43 deaths). Figure 35 illustrates the 2007 asthma deaths by age group in Florida. Cases were very low among people ages 44 and under.

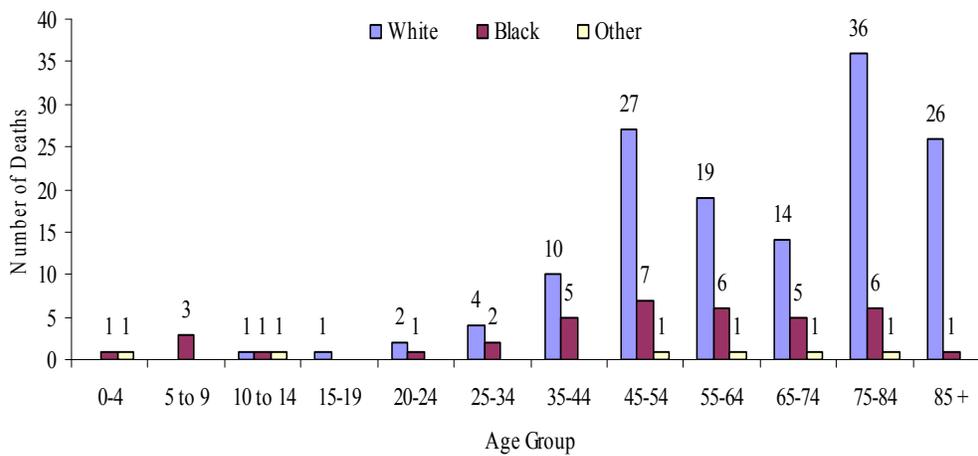
**Figure 35. Asthma Mortality by Age Group, Florida, 2007.**



Data Source: FloridaCHARTS, Florida Department of Health, 2007

In Figure 36, asthma deaths by race and age are shown for Florida in 2007. Whites' ages 75 to 85 years had the most asthma deaths than any other race by age. Cases of asthma deaths are very low for ages 34 and under regardless of race.

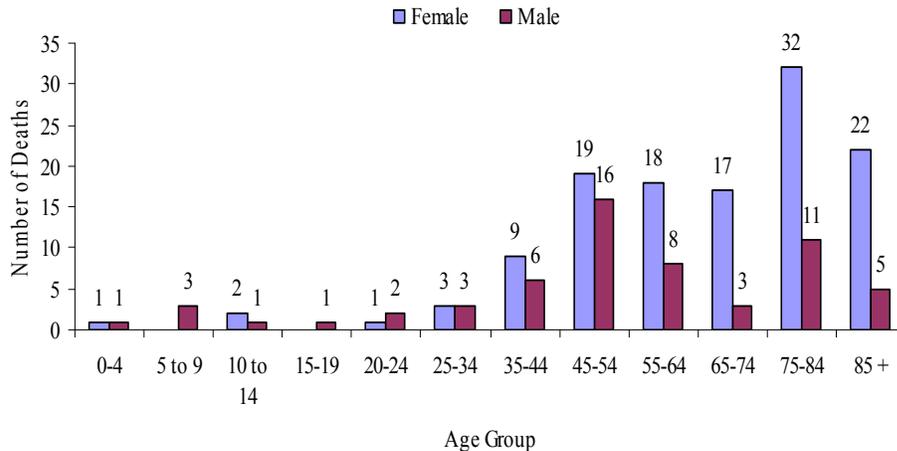
**Figure 36. Asthma Mortality by Race & Age, Florida, 2007.**



Data Source: FloridaCHARTS, Florida Department of Health

Asthma deaths in Florida by race and gender for the year 2007 are shown in Figure 37. In 2007 females ages 75 to 84 had the most asthma deaths (32 deaths), compared to males and all other age groups.

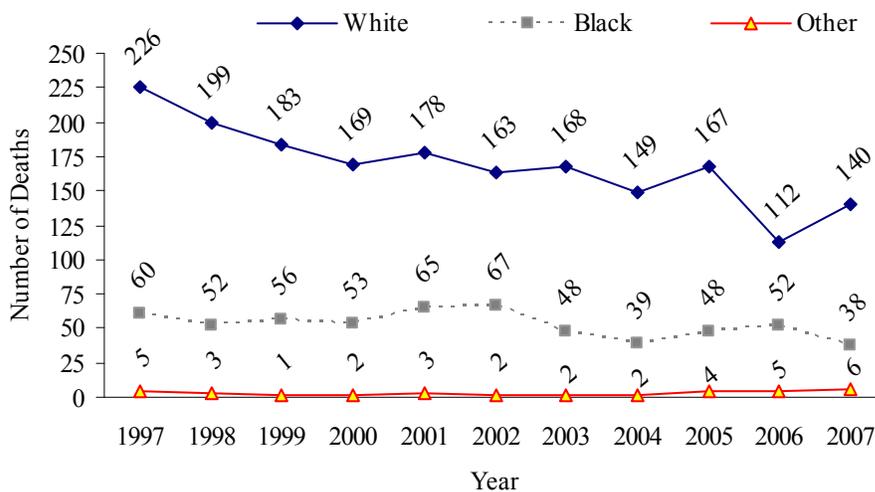
**Figure 37. Asthma Mortality by Age & Gender, Florida, 2007.**



Data Source: FloridaCHARTS, Florida Department of Health

Number of asthma deaths by race from 1997-2007 in Florida is shown in Figure 38. Data shows that Whites have higher asthma deaths than Blacks or Other racial groups. Deaths among Whites have been declining since 1997, with a significant decline in 2006. Among Blacks, deaths have remained relatively constant.

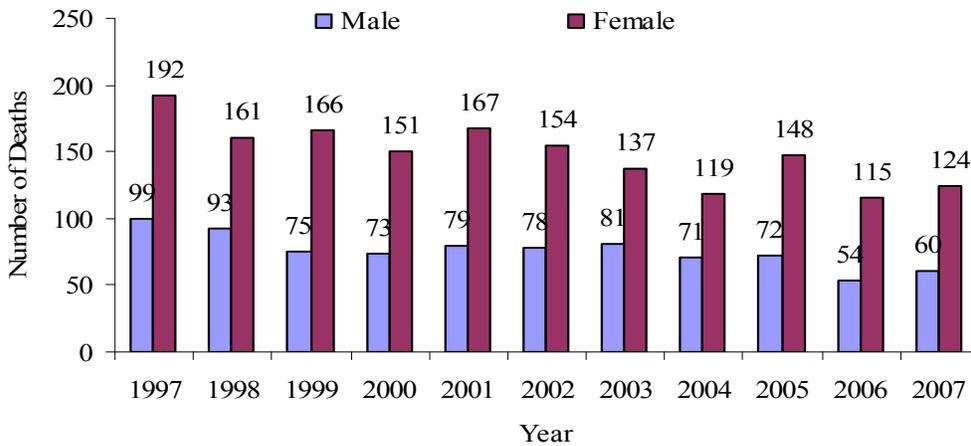
**Figure 38. Asthma Mortality by Race, Florida, 1997-2007.**



Data Source: FloridaCHARTS, Florida Department of Health

Figure 39 illustrates asthma deaths by gender for 1997 to 2007 in Florida. Females have more asthma deaths than males for all 10 years.

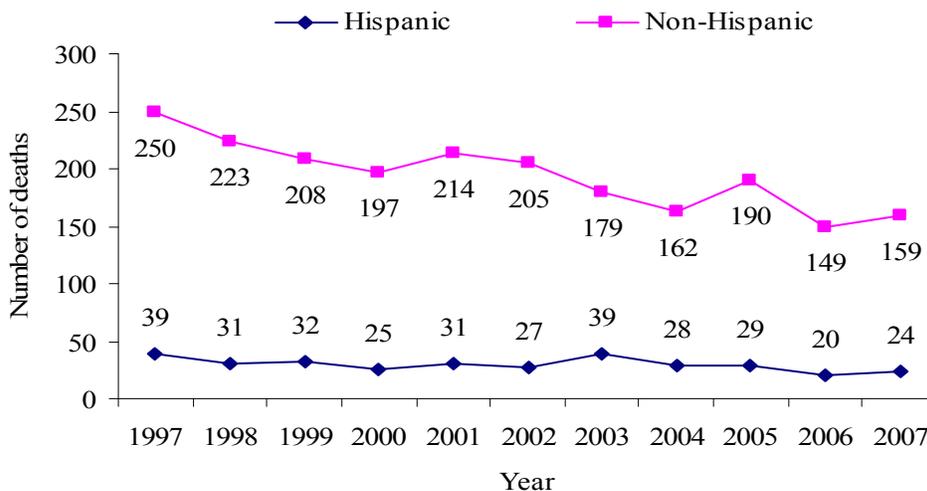
**Figure 39. Asthma Mortality by Gender, Florida, 1997-2007.**



Data Source: FloridaCHARTS, Florida Department of Health, 1997-2007

Figure 40 shows asthma deaths by ethnicity from 1997-2007 in Florida. Overall deaths are higher among Non-Hispanics than Hispanics.

**Figure 40. Asthma Mortality by Ethnicity, Florida, 1997-2007.**



Data Source: FloridaCHARTS, Florida Department of Health, 1997-2007



## Discussion

Although asthma prevalence data in Florida are showing a slight decrease in the past few years, asthma remains a major public health problem in the state. Approximately, 6.2 percent of adults, 13.5 percent of children, 16.9 percent of public middle school students, and 17.2 percent of high school students report currently having asthma (BRFSS, 2007; BRFSS 2004; FYTS 2008). While the percentage of adults with current asthma in Florida is below the national estimates, the percentage of children in Florida with asthma is higher than the national estimates according to the most recent data (2003).

Surveillance data in this report show that asthma affects all segments of Florida's population, while certain subgroups appear to be disproportionately affected by asthma. Among children, boys tend to have higher asthma prevalence rates than girls. However, among adults this trend is opposite as adult females have higher asthma prevalence rates than adults males. By age group, children 5-11 years of age have the highest rate of hospitalizations and adults 75 years of age and older have the highest asthma mortality rates.

Asthma disparities between racial groups continue to be an issue in Florida. Black and White populations are most affected by asthma as reported by the BRFSS. According to the 2008 FYTS (Table 7), non-Hispanic White's and individuals who identify themselves as Other have higher prevalence of current asthma in public middle school and high school.

Asthma in Florida also disproportionately affects individuals by income and weight. Adults whose annual household income was less than \$15,000 showed a higher prevalence of current asthma compared to adults whose household incomes were more than \$15,000. In addition, 6.3 percent of adults with current asthma were overweight/obese and females who reported being overweight/obese were almost twice as likely to have asthma compared to males who were also overweight/obese.

Exposure to environmental tobacco smoke has been shown to increase asthma attacks and the severity of asthma symptoms. Currently, 22.9 percent of adults with asthma currently smoke (BRFSS, 2007) and approximately 59 percent of middle and high school students with asthma have reported being exposed to environmental tobacco smoke in a room or car during the past seven days (FYTS, 2006). This represents an important public health opportunity to educate health care providers, individuals affected by asthma and the general public about this risk factor by developing appropriate educational materials.

Currently, very little data is available on asthma management, asthma office visits, medication usage, limitations for normal activities, and school or work days missed due to asthma, for children and adults. In 2006, among adults with current asthma 21 percent reported experiencing asthma symptoms everyday and 50 percent reported asthma symptoms at least once a week

during the past 30 days (BRFSS, 2006). In order to identify and evaluate asthma management activities among adults and children in Florida additional surveillance needs to be conducted.

Hospitalizations due to asthma often result from poor asthma management and can be a financial burden. In 2006, 26,740 hospitalizations in Florida were due to asthma and the total cost for inpatient treatment was more than \$472 million (BRFSS, 2006). Florida asthma hospitalization rates have continued to increase over the past 5 years. Providing better asthma management can help to reduce this financial burden.

Asthma management activities within schools represent another important opportunity where interventions can help improve asthma management. Sixty-five percent of public middle and high schools allow students with asthma to carry and administer their own asthma medications and obtain and use an asthma action plan while at school. However, more than seventy percent of public middle and high schools do not provide asthma training to staff or increase student knowledge about asthma (SHEP, 2006).

Improving our asthma surveillance data will help to identify all populations in Florida that are disproportionately affected by asthma and minimize our data gaps. Education, interventions, policy changes towards improving asthma management activities, decreasing exposure to environmental triggers, and other risk factors associated with asthma are all goals to aim for in Florida. The data described in this report will be used in conjunction with the state asthma plan to guide the development and implementation of activities related to our goals that will address and reduce the burden of asthma in this state.



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# Appendices

## Appendix A. Data Sources

**Behavioral Risk Factor Surveillance System (BRFSS)** is a telephone survey of Florida adults aged 18 and older on a wide range of health issues including, but not limited to: physical activity, diet, tobacco and alcohol use, HIV/AIDS, asthma, diabetes, and cancer screenings. The Florida BRFSS is conducted in cooperation with the Centers for Disease Control and Prevention (CDC). This survey has been conducted annually since 1986 in Florida. Data from this survey have been used for health planning, program evaluation, and monitoring health objectives in Florida. Asthma questions have been included on the survey since 2002.

**Mortality Data** are based on deaths of Florida residents whose underlying cause of death was asthma. Death certificates are collected by the Office of Vital Statistics, Florida Department of Health. In 1999, the International Classification of Diseases coding system, which is used to classify causes of death, was updated from ICD-9 to ICD10. Due to this change in the coding system mortality rates in 1998 and before are not directly comparable to those in 1999 and after.

**National Survey of Children's Health, 2003** is a random telephone survey of households with children under 18 years of age conducted by the Maternal and Child Health Bureau of the Health Resources and Services Administration, U.S. Department of Health and Human Services. The National Center for Health Statistics at the CDC conducted the state-based survey to estimate national and state level prevalence for a variety of physical and emotional health factors. Questions on asthma prevalence and health-related quality of life were also included on this survey. A total of 102,353 surveys were completed nationally, 2,116 of those done in Florida.

**Florida Youth Tobacco Survey (FYTS)** is a self-administrated, confidential, school-based questionnaire survey of Florida public middle and high school students annually starting from 1998. The purpose of FYTS is to monitor and evaluate progress of Florida's tobacco control program. The FYTS tracks indicators of tobacco use and exposure to second-hand smoke among Florida public middle and high school students, and provides data for monitoring and evaluating tobacco use among youth in the Florida Tobacco Prevention and Control Program. The first FYTS was administered in 1998. Since then, the FYTS has been conducted annually by the Florida Department of Health. Two asthma-related questions are included in the survey.

**Youth Risk Behavior Survey (YRBS)** was first administered by the Florida Department of Health and Education in 1991. Since then, its conducted in odd-numbered years to Florida public high school students to monitor health-risk behaviors that contribute substantially to the leading causes of death, disability, and social problems among youth. State data collection for the YRBS does not include county-level data. However, five Florida counties (Broward, Hillsborough, Miami-Dade, Orange, and Palm Beach) are funded by the Centers for Disease Control and Prevention (CDC) to collect county-level data

**Inpatient Hospitalizations** data is collected by the Florida Agency for Health Care Administration (Agency), which licenses and regulates health care facilities and health maintenance organizations (HMOs) in Florida and is the chief health policy and planning group for the state. The Agency also manages the Florida Medicaid Program that provides health care to low-income and disabled citizens. The ICD-9 codes used to select hospitalizations for asthma were 493.00-493.91 and includes both primary and contributing diagnoses.

**Children's Medical Services (CMS)**, a division of the Department of Health, is the Florida Title V program and the Title XIX (Medicaid) and Title XXI (Florida's Child Health Insurance Program) managed system of care for children with special health care needs. Children with special health care needs are children and youth under the age of 21 years whose serious or chronic physical or developmental conditions require extensive preventive and maintenance care beyond that required by typically healthy children. These children often need complex care requiring multiple providers, rehabilitation services and specialized equipment in a number of different settings.

The CMS Clinical Eligibility Screening Guide for children with special health care needs includes asthma as a medical condition that meets the Level I screening for clinical eligibility. Through 22 locations, CMS offers a statewide delivery system of public/private sector care. Services are delivered in local communities through private doctor's offices and CMS clinics, regional centers and academic medical centers. CMS provides both primary and specialty health care services.

**School Health Education Profile (SHEP)** is a survey tool used to monitor and assess characteristics of and trends in school health education; physical education; asthma management activities; school health policies related to HIV/AIDS prevention, tobacco-use prevention, violence prevention, physical activity, and nutrition; food service; and family and community involvement in school health programs. This survey is typically administered biennially by the Florida Department of Education to middle and high school principals and lead health education teachers. Asthma questions related to management and policies were included on the 2006 school principal survey.

## Appendix B. Detailed Data Tables

**Table 5. Lifetime Asthma Prevalence, Florida Adults, 2007.**

Group	%	95% CI	
Total	10.7	9.9	11.5
Male	9.7	8.5	10.9
Female	11.7	10.9	12.5
18-24 years old	11.6	8.1	15.1
25-34 years old	11.7	9.5	13.9
35-44 years old	11.2	9.4	13.0
45-54 years old	10.4	9.0	11.8
55-64 years old	11.2	9.6	12.8
65 and older	9.1	8.1	10.1
White non-Hispanic	10.5	9.7	11.3
Black non-Hispanic	11.9	9.4	14.4
Other non-Hispanic	9.3	6.8	11.8
Hispanic	10.7	8.3	13.1
Less than High School	13.1	10.4	15.8
High School or GED	10.3	8.9	11.7
Some post-High School	11.2	9.8	12.6
College Graduate	10.2	9.0	11.4
<\$15,000	15.7	12.8	18.6
\$15,000-\$24,000	11.7	9.7	13.7
\$25,000-\$34,000	10.4	8.4	12.4
\$35,000-\$50,000	10.1	8.5	11.7
\$50,000+	9.5	8.3	10.7

Data Source: 2007, Behavioral Risk Factor Surveillance System, Centers for Disease Control and Prevention.

**Table 6. Current Asthma Prevalence, Florida Adults, 2007**

Group	%	95% CI	
Total	6.2	5.6	6.8
Male	4.9	4.1	5.7
Female	7.4	6.8	8.0
18-24 years old	3.9	2.5	5.3
25-34 years old	5.7	4.1	7.3
35-44 years old	6.7	5.3	8.1
45-54 years old	6.2	5.2	7.2
55-64 years old	7.3	5.9	8.7
65 and older	6.1	5.3	6.9
White non-Hispanic	6.4	5.8	7.0
Black non-Hispanic	7.6	5.6	9.6
Other non-Hispanic	5.2	3.2	7.2
Hispanic	4.8	3.4	6.2
Less than High School	8.4	6.4	10.4
High School or GED	5.9	5.1	6.7
Some post-High School	6.5	5.5	7.5
College Graduate	5.5	4.7	6.3
<\$15,000	11.1	8.7	13.5
\$15,000-\$24,000	6.3	5.1	7.5
\$25,000-\$34,000	5.7	4.3	7.1
\$35,000-\$50,000	5.9	4.7	7.1
\$50,000+	5.2	4.4	6.0

Data Source: 2007, Behavioral Risk Factor Surveillance System, Centers for Disease Control and Prevention.

**Table 7. Asthma Prevalence among Florida Public Middle and High School Students, 2006 and 2008.**

		<b>Percentage of Florida public middle and high school students who have been told by a doctor or nurse that they have asthma (Ever Asthma)</b>						
		<b>Middle School</b>			<b>High School</b>			
		<b>%</b>	<b>95% CI*</b>		<b>%</b>	<b>95% CI*</b>		
<b>2006</b>	<b>Gender</b>	Female	15.0	14.3	15.7	15.4	14.7	16.2
		Male	15.6	14.9	16.4	16.2	15.4	16.9
	<b>Race/Ethnicity</b>	non-Hispanic White	14.5	13.8	15.1	15.8	15.1	16.5
		non-Hispanic Black	16.3	15.1	17.6	15.3	14.0	16.5
		Hispanic	15.8	14.6	17.1	16.3	15.0	17.6
		Other	17.3	15.8	18.8	16.8	15.0	18.5
	<b>Grade (Middle/High)</b>	6th/9th	15.0	14.1	15.8	15.9	15.0	16.9
		7th/10th	15.1	14.2	16.0	15.7	14.7	16.6
		8th/11th	15.8	14.9	16.7	15.8	14.7	17.0
		--/12th	.	.	.	15.4	14.2	16.8
	<b>Total</b>		15.4	14.8	15.9	15.8	15.3	16.4

Data Source: 2006 Florida Youth Tobacco Survey, Bureau of Epidemiology, Division of Disease Control, Florida Department of Health.

		<b>Among Florida public middle and high school students who have been told by a doctor or nurse that they have asthma, the percentage have had an asthma attack during the past 12 months(Asthma Attack)</b>						
		<b>Middle School</b>			<b>High School</b>			
		<b>%</b>	<b>95% CI*</b>		<b>%</b>	<b>95% CI*</b>		
<b>2006</b>	<b>Gender</b>	Female	29.3	27.0	31.5	29.1	26.8	31.5
		Male	22.7	20.8	24.7	16.0	14.1	17.9
	<b>Race/Ethnicity</b>	non-Hispanic White	26.5	24.4	28.6	23.6	21.5	25.7
		non-Hispanic Black	25.5	22.1	28.9	21.5	18.0	24.9
		Hispanic	24.8	21.7	27.8	19.1	15.7	22.4
		Other	28.1	23.9	32.3	31.4	26.7	36.1
	<b>Grade (Middle/High)</b>	6th/9th	26.7	24.1	29.3	23.2	20.2	26.2
		7th/10th	25.3	22.4	28.2	22.2	19.3	25.0
		8th/11th	25.5	23.1	27.8	20.5	17.6	23.4
		--/12th	.	.	.	24.0	19.9	28.1
	<b>Total</b>		25.9	24.5	27.3	22.5	21.1	23.9

Data Source: 2006 Florida Youth Tobacco Survey, Bureau of Epidemiology, Division of Disease Control, Florida Department of Health.

<b>Percentage of Florida public middle and high school students who have been told by a doctor or nurse that they have asthma. (Ever Asthma)</b>								
		<b>Middle School</b>			<b>High School</b>			
		<b>%</b>	<b>95% CI*</b>		<b>%</b>	<b>95% CI*</b>		
<b>2008</b>	<b>Gender</b>	Female	16.4	15.5	17.2	17.9	17.1	18.8
		Male	17.5	16.6	18.5	16.5	15.7	17.3
	<b>Race/Ethnicity</b>	non-Hispanic White	16.2	15.3	17.0	16.3	15.5	17.0
		non-Hispanic Black	18.8	17.3	20.2	18.6	17.3	19.9
		Hispanic	16.5	15.1	17.8	17.9	16.5	19.2
		Other	17.8	15.9	19.7	17.0	15.3	18.7
	<b>Grade (Middle/High)</b>	6th/9th	15.6	14.6	16.6	17.0	16.1	18.0
		7th/10th	17.1	16.2	18.1	17.5	16.3	18.7
		8th/11th	18.2	17.2	19.3	17.7	16.5	18.9
		--/12th	.	.	.	16.3	15.0	17.7
	<b>Total</b>		16.9	16.3	17.6	17.2	16.6	17.8

Data Source: 2008 Florida Youth Tobacco Survey, Bureau of Epidemiology, Division of Disease Control, Florida Department of Health.

<b>Among Florida public middle and high school students who have been told by a doctor or nurse that they have asthma, the percentage have had an asthma attack during the past 12 months. (Asthma Attacks)</b>								
		<b>Middle School</b>			<b>High School</b>			
		<b>%</b>	<b>95% CI*</b>		<b>%</b>	<b>95% CI*</b>		
<b>2008</b>	<b>Gender</b>	Female	25.1	22.8	27.4	25.3	23.4	27.2
		Male	20.1	18.0	22.1	14.6	12.8	16.4
	<b>Race/Ethnicity</b>	non-Hispanic White	24.6	22.2	27.0	21.6	20.0	23.3
		non-Hispanic Black	20.8	17.7	24.0	20.2	17.1	23.2
		Hispanic	20.6	17.6	23.6	16.8	14.2	19.5
		Other	22.2	17.2	27.1	22.3	17.1	27.5
	<b>Grade (Middle/High)</b>	6th/9th	22.1	19.2	24.9	19.3	17.0	21.5
		7th/10th	23.6	21.3	25.9	19.8	17.3	22.2
		8th/11th	21.6	19.1	24.1	19.9	17.2	22.5
		--/12th				21.0	18.0	24.0
	<b>Total</b>		22.4	21.0	23.9	20.1	19.0	21.3

Data Source: 2008 Florida Youth Tobacco Survey, Bureau of Epidemiology, Division of Disease Control, Florida Department of Health.

## Appendix C. County Specific Data

**Table 8. Prevalence of Asthma among Adults 18 years and older by County, Florida 2007.**

County	Percent with Asthma	95% CI
<b>State Total</b>	<b>6.2</b>	<b>5.7-6.7</b>
Alachua	6.9	4.8-9.7
Baker	6.3	4.3-9.1
Bay	7.4	5.3-10.2
Bradford	8.2	4.6-14.4
Brevard	4.2	2.9-6.2
Broward	5.2	3.4-7.9
Calhoun	10.2	6.8-15.0
Charlotte	6.3	4.4-9.0
Citrus	11.8	8.8-15.6
Clay	6.8	4.6-9.9
Collier	5.4	3.3-8.7
Columbia	8.3	5.7-11.8
Dade	4.6	3.1-6.8
Desoto	8.6	4.2-16.9
Dixie	11	7.2-16.3
Duval	7.1	5.8-8.6
Escambia	7.6	5.1-11.4
Flagler	4.5	2.8-7.1
Franklin	6.5	4.2-9.8
Gadsden	10.2	6.2-16.3
Gilchrist	5.5	2.9-10.4
Glades	3.3	1.9-5.7
Gulf	7.1	4.8-10.2
Hamilton	8.5	6.1-11.8
Hardee	6.9	4.6-10.4
Hendry	3.9	2.5-5.9
Hernando	7.3	4.9-10.6
Highlands	5.7	3.8-8.4
Hillsborough	6.9	4.8-9.8
Holmes	7.9	5.3-11.6
Indian River	4.9	3.2-7.5
Jackson	6.9	4.6-10.4
Jefferson	6.4	4.2-9.7
Lafayette	5.5	3.5-8.6
Lake	5.7	3.8-8.5
Lee	3.5	2.4-5.2
Leon	9.6	6.6-13.9
Levy	7.2	5.2-9.9
Liberty	4.0	2.0-7.9
Madison	7.7	5.6-10.6
Manatee	7.1	4.6-10.7
Marion	7.7	5.1-11.5

Martin	5.4	3.7-8.0
Monroe	6.1	3.3-11.0
Nassau	5.5	3.8-8.0
Okaloosa	6.9	4.6-10.3
Okeechobee	7.8	5.0-11.9
Orange	5.1	3.6-7.3
Osceola	7.3	5.1-10.1
Palm Beach	4.7	3.0-7.5
Pasco	7.2	5.1-10.2
Pinellas	8.8	5.5-13.6
Polk	7.9	5.7-11.0
Putnam	7.2	4.9-10.4
Saint Johns	6.5	4.3-9.7
Saint Lucie	4.7	3.2-6.8
Santa Rosa	5.9	3.9-8.7
Sarasota	6.0	4.0-8.9
Seminole	6.4	4.3-9.6
Sumter	6.3	3.4-11.3
Taylor	9.9	6.9-14.0
Union	7.0	4.3-11.1
Volusia	8.6	5.8-12.7
Wakulla	11.2	7.1-17.4
Walton	7.0	4.8-10.0
Washington	9.2	6.4-13.0

Data Source: Florida County-level Behavioral Risk Factors Surveillance Survey, Bureau of Epidemiology, Florida Department of Health.

**Table 9. Asthma Deaths by County, Florida, 1998-2007.**

County	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
<b>State Total</b>	<b>254</b>	<b>241</b>	<b>224</b>	<b>246</b>	<b>232</b>	<b>218</b>	<b>190</b>	<b>220</b>	<b>169</b>	<b>184</b>
Alachua	2	2	0	3	3	3	0	1	0	4
Baker	1	0	0	0	0	0	0	0	0	1
Bay	4	5	1	3	1	3	0	4	2	1
Bradford	0	0	1	0	0	0	1	0	1	0
Brevard	3	6	4	3	8	4	7	7	3	6
Broward	21	18	20	26	31	23	13	20	14	15
Calhoun	0	0	0	0	0	0	0	0	0	2
Charlotte	0	5	3	1	3	2	2	5	1	2
Citrus	6	2	3	2	0	2	2	0	2	2
Clay	0	0	0	3	0	1	4	2	2	1
Collier	4	3	4	2	4	2	1	0	2	3
Columbia	0	2	0	0	2	2	0	0	2	1
Dade	41	42	29	43	34	33	19	28	15	21
Desoto	1	0	0	1	2	1	0	0	0	1
Dixie	0	0	0	0	0	0	0	0	0	1
Duval	13	9	13	16	12	16	16	16	25	11
Escambia	3	3	8	4	5	9	6	5	5	4
Flagler	2	1	0	0	1	0	2	2	1	0
Franklin	1	0	0	1	0	0	0	0	0	0
Gadsden	1	1	1	0	2	1	2	0	1	1
Gilchrist	0	0	0	0	0	0	1	0	0	0
Glades	0	0	0	0	0	1	0	2	0	1
Gulf	0	0	0	0	0	0	0	0	0	0
Hamilton	0	0	0	0	0	0	1	0	1	0
Hardee	2	0	0	0	0	0	0	0	0	0
Hendry	1	0	0	1	1	0	0	1	0	0
Hernando	1	1	3	6	0	3	0	0	0	0
Highlands	1	0	2	0	1	2	1	1	1	3
Hillsborough	19	19	16	15	14	14	14	13	15	9
Holmes	1	0	1	0	1	0	0	1	0	1
Indian River	2	1	0	2	1	1	0	2	0	1
Jackson	0	1	0	1	0	2	2	1	0	0
Jefferson	1	0	0	1	0	1	0	0	1	0
Lafayette	0	0	0	1	0	0	0	0	0	0
Lake	3	2	2	3	1	1	1	3	2	3
Lee	7	4	6	2	6	3	5	8	6	4
Leon	4	2	8	6	3	0	4	5	1	1
Levy	0	1	0	2	0	0	1	1	0	0
Liberty	0	0	0	0	0	0	0	0	0	0
Madison	0	1	0	0	1	0	0	1	0	0
Manatee	2	3	3	4	5	1	3	2	0	1
Marion	4	8	3	4	5	3	6	5	8	5
Martin	1	2	2	1	1	2	3	0	0	2
Monroe	1	1	0	4	0	1	1	1	1	0
Nassau	1	2	0	2	1	1	1	0	1	1

Okaloosa	1	0	2	1	0	1	1	1	2	1
Okeechobee	0	0	0	0	0	0	0	0	0	0
Orange	10	12	14	10	10	7	11	8	6	12
Osceola	2	5	2	3	3	3	2	3	3	2
Palm Beach	22	18	15	17	13	15	10	17	11	9
Pasco	8	4	8	1	5	10	6	7	2	6
Pinellas	17	13	15	19	18	10	16	19	14	16
Polk	10	11	8	5	9	10	10	7	2	4
Putnam	0	1	1	1	0	2	0	0	1	3
Saint Johns	2	3	0	3	0	2	1	1	2	1
Saint Lucie	3	2	2	2	5	0	2	3	2	4
Santa Rosa	4	0	0	0	1	2	0	2	1	1
Sarasota	6	5	5	8	3	4	5	5	3	5
Seminole	3	2	8	3	3	3	2	4	0	2
Sumter	0	1	0	1	0	0	0	0	0	0
Suwannee	1	1	1	1	0	1	0	0	0	0
Taylor	0	0	1	0	0	0	0	0	0	0
Union	0	0	0	0	0	0	0	0	0	0
Volusia	8	15	7	7	11	7	3	5	5	8
Wakulla	1	0	2	0	0	3	1	0	0	1
Walton	1	1	0	1	1	0	1	1	2	0
Washington	1	0	0	0	1	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0

Data Source: Florida Charts, Office of Vital Statistics, Florida Department of Health.

## **Appendix D. Abbreviations**

AAFA	Asthma and Allergy Foundation of America
ACHA	Florida Agency for Health Care Administration
ALA	American Lung Association
BMI	Body Mass Index
BRFSS	Behavioral Risk Factor Surveillance System
CDC	Centers for Disease Control and Prevention
CI	Confidence Interval
CMS	Children's Medical Services
ED	Emergency Department
FDOH	Florida Department of Health
FLICHQ	Florida Initiative for Children's Healthcare Quality
FYTS	Florida Youth Tobacco Survey
ICD	International Classification of Diseases
NAEPP	National Asthma Education and Prevention Program
NHLBI	National Heart, Lung, and Blood Institute
NCHS	National Center for Health Statistics
NSCH	National Survey of Children's Health
SHEP	School Health Education Profile
YRBS	Youth Risk Behavior Survey

## Appendix E. Population Distribution of Florida

According to the 2000 US Census, the Florida population as of April 1<sup>st</sup> of 2000 was 15, 982, 378 persons. Whites make up the majority of Florida population, while the Hispanic or Latino population and the Black population are the second and third largest racial groups in Florida; representing 16.8 and 14.6 percent of the population respectively. The population distribution of the United States is included in Table 10 for comparison to the Florida population distribution.

**Table 10. Florida and US Census Data by Sex, Age Group, Race and Ethnicity, 2000.**

	Population	Florida Population Distribution (%)	U.S. Population (%)
Male	7,797,715	48.8	49.1
Female	8,814,663	51.2	50.9
Under 5 years	945,663	5.9	6.8
5 to 9 years	1,031,718	6.5	7.3
10 to 14 years	1,057,024	6.6	7.3
15 to 19 years	1,014,067	6.3	7.2
20 to 24 years	928,310	5.8	6.7
25 to 34 years	2,084,100	13.0	14.2
35 to 44 years	2,485,247	15.5	16.0
45 to 54 years	2,069,479	12.9	13.4
55 to 59 years	821,517	5.1	4.8
60 to 64 years	737,496	4.6	3.8
65 to 74 years	1,452,176	9.1	6.5
75 to 84 years	1,024,134	6.4	4.4
85 years and over	331,287	2.1	1.5
One race	15,606,063	97.6	97.6
White	12,465,029	78.0	75.1
Black	2,335,505	14.6	12.3
American Indian and Alaska Native	53,541	0.3	0.9
Asian	266,256	1.7	3.6
Native Hawaiian and Other Pacific Islander	31,612	0.2	0.1
Some other race	477,107	3.0	5.5
Two or more races	376,315	2.4	2.4
Hispanic or Latino (of any race)	2,682,715	16.8	12.5
Total Florida population	15, 982, 378	100.0	

Data Source: U.S. Census Bureau, Census, 2000.

## **Appendix F. Useful Links and Resources**

American Lung Association of Florida: <http://www.lungfla.org/>

American Lung Association (National): <http://www.lungusa.org>

CDC Asthma Program: <http://www.cdc.gov/asthma/>

CDC BRFSS Program: <http://www.cdc.gov/BRFSS/>

Florida Agency for Health Care Administration: <http://ahca.myflorida.com/>

Florida Department of Health: <http://www.doh.state.fl.us/>

Florida Department of Health, School Health Services Program:  
<http://www.doh.state.fl.us/Family/school/health/asthma.html>

Florida Environmental Public Health Tracking:  
<http://www.floridacharts.com/HealthTrackFL/DealIndicator.aspx?PageId=11500>

Healthy Jacksonville Asthma Coalition:  
<http://www.healthyjacksonville.org/Coalitions/asthma.htm>

National Heart Lung and Blood Institute: <http://www.nhlbi.nih.gov/>

South Florida Asthma Consortium: <http://www.southfloridaasthma.org/healthcare.html>

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For further information about this report please contact:

Florida Department of Health  
Division of Environmental Health  
Bureau of Environmental Public Health Medicine  
4052 Bald Cypress Way, Bin # A08  
Tallahassee, FL 32301-1712  
Phone: (850) 245-4299  
<http://www.doh.state.fl.us/>



**Florida Department of Health**

**Division of Environmental Health  
Bureau of Environmental Public Health Medicine  
4052 Bald Cypress Way, Bin # A08  
Tallahassee, FL 32399-1712**

**<http://www.doh.state.fl.us/>**