



# 2010 TEXAS ASTHMA BURDEN REPORT



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# Introduction

## The Burden of Asthma in Texas

Asthma is a chronic lung disease characterized by inflammation and narrowing or blocking of the airways. It is a widespread public health problem that has increased in the past two decades in the United States (U.S.) and in Texas.<sup>1</sup>

In 2009, an estimated 40 million (13.3 percent) of the U.S. population had lifetime asthma and 24.6 million (8.2 percent) had current asthma.<sup>2</sup> In 2007, the asthma hospitalization rate for all ages was 15.2 per 10,000 U.S. residents, accounting for approximately 456,000 hospitalizations.<sup>3</sup> There were 3,447 asthma-related deaths in the U.S. in 2007 with a mortality rate of 1.1 per 100,000 residents.<sup>4</sup>

In Texas in 2009, an estimated 2.2 million adults, or 12.2 percent (18 years of age or older) had self-reported lifetime asthma, and 1.2 million adults, or 6.5 percent had self-reported current asthma.<sup>5</sup>

Asthma affects more children than any other chronic disease and is one of the most frequent reasons for hospital admissions among children. In Texas in 2009, there were an estimated 872,000 (13.3 percent) children (0-17 years of age) with reported lifetime asthma and 538,000 (8.2 percent) children with reported current asthma.<sup>5</sup>

Given the numbers of Texans affected, asthma results in economic and social burdens. In 2009, the asthma hospitalization rate for all ages in Texas was 11.6 per 10,000 residents, accounting for more than

28,000 hospitalizations and \$694.4 million in total hospital charges.<sup>6</sup> Of those 28,000 hospitalizations, 16,141 were considered preventable. In 2009, of the \$ 694.4 million in charges, approximately \$400 million were preventable. From 2002 to 2008, there were a total of 1,620 deaths in Texas due to asthma with a mortality rate of 1.16 per 100,000.<sup>7</sup>

The mission of the Texas Asthma Control Program (TACP) is to decrease asthma morbidity and reduce the social and economic impact of asthma among Texans. Along with many partners across the state who have a common vision for improving the health of those with asthma, we seek to reduce the severity of asthma symptoms, and decrease the number of deaths and hospital visits due to asthma through education, interventions, and awareness campaigns.

Asthma has a major impact on the health of the population and the burden falls disproportionately on some populations. Monitoring trends in asthma morbidity and mortality among Texans is important for increasing the level of knowledge about this highly prevalent condition. Surveillance data help public health officials focus their efforts to address asthma by targeting those most in need of intervention. Data also help raise awareness about the effects of asthma on the health of the community. This report documents the magnitude of the problem, and identifies populations at highest risk for developing asthma and life threatening symptoms of the disease.

# Key Findings in Texas

## Key Findings in Texas

### Prevalence

- In 2009, approximately 2.2 million adults (12.2 percent) and 872,000 children (13.3 percent) had been diagnosed with asthma at some point in their lives, while 1.2 million adults (6.5 percent) and 538,000 children (8.2 percent) currently had asthma.<sup>5</sup>
- From 2006-2009, prevalence of lifetime asthma among adults was highest among females, Other Non-Hispanic (NH), and those aged 18 to 29 years.
- From 2006-2009, prevalence of current asthma among adults was highest among females, Whites and Black NH, those in Public Health Region (PHR) 2, and those age 65 and older.
- From 2006-2009, prevalence of lifetime asthma among children was highest among males and Black NH.
- From 2006-2009, prevalence of current asthma among children was highest among males, Black NH, and those in PHR 9.

### Hospitalizations

- In 2009, there were over 28,000 hospital admissions with an asthma diagnosis (11.6 per 10,000 Texas residents).
- From 2005-2009, adult asthma hospitalization rates were highest among females and childhood asthma hospitalization rates were highest among males.
- In 2009, adult asthma hospitalization rates were highest among females, Black NH, and those age 65 and older.
- In 2009, child asthma hospitalization rates were highest among males, Black NH, and those in the 0-4 age category.

### Mortality

- From 2002-2008, there has been an overall decrease in asthma mortality rates in Texas.
- From 2002-2008, asthma mortality rates were highest among females, Black NH, adults age 65 years and older, and adults and children in PHR 2.

### Medicaid

- In 2010, Texas Medicaid reimbursements for professional, outpatient and inpatient hospital claims for asthma were approximately \$60.5 million.

### Quality of Life

- From 2006-2009, 60.3 percent of adult Texans with current asthma had at least one visit to the emergency room or urgent care center for treatment of their asthma during the past 12 months.
- From 2006-2009, approximately 37.5 percent of adult Texans with current asthma experienced at least one day during the past year when they were unable to work or carry out their usual activities due to their asthma.
- From 2006-2009, approximately 64.1 percent of adult Texans with current asthma experienced sleep disturbed nights within the past 30 days.

### Pediatric Emergency Care

- From 2002-2010, the majority of pediatric emergency care patients enrolled in the Texas Emergency Department Asthma Surveillance program were male, African American, and aged one to 14 years.

# Demographics

## The Texas Population

With an area of 268,561 square miles and a population of 24.8 million, Texas is the second largest U.S. state both in area and population.<sup>8</sup> As of 2010, the rural population of Texas, which is estimated at approximately 3.3 million people, was greater than the population of 22 other states. Of the 254 counties in Texas, 196 are rural.<sup>9</sup>

In 2009, Texas had an estimated population of 24.8 million, an increase of 455,328 (1.9 percent) from the prior year and an increase of 4.3 million (20.6 percent) since the 2000 census.<sup>8</sup> Between 2000 and 2010 Texas was the fifth, fastest growing state and saw the greatest numeric increase in population among all states.<sup>10</sup>

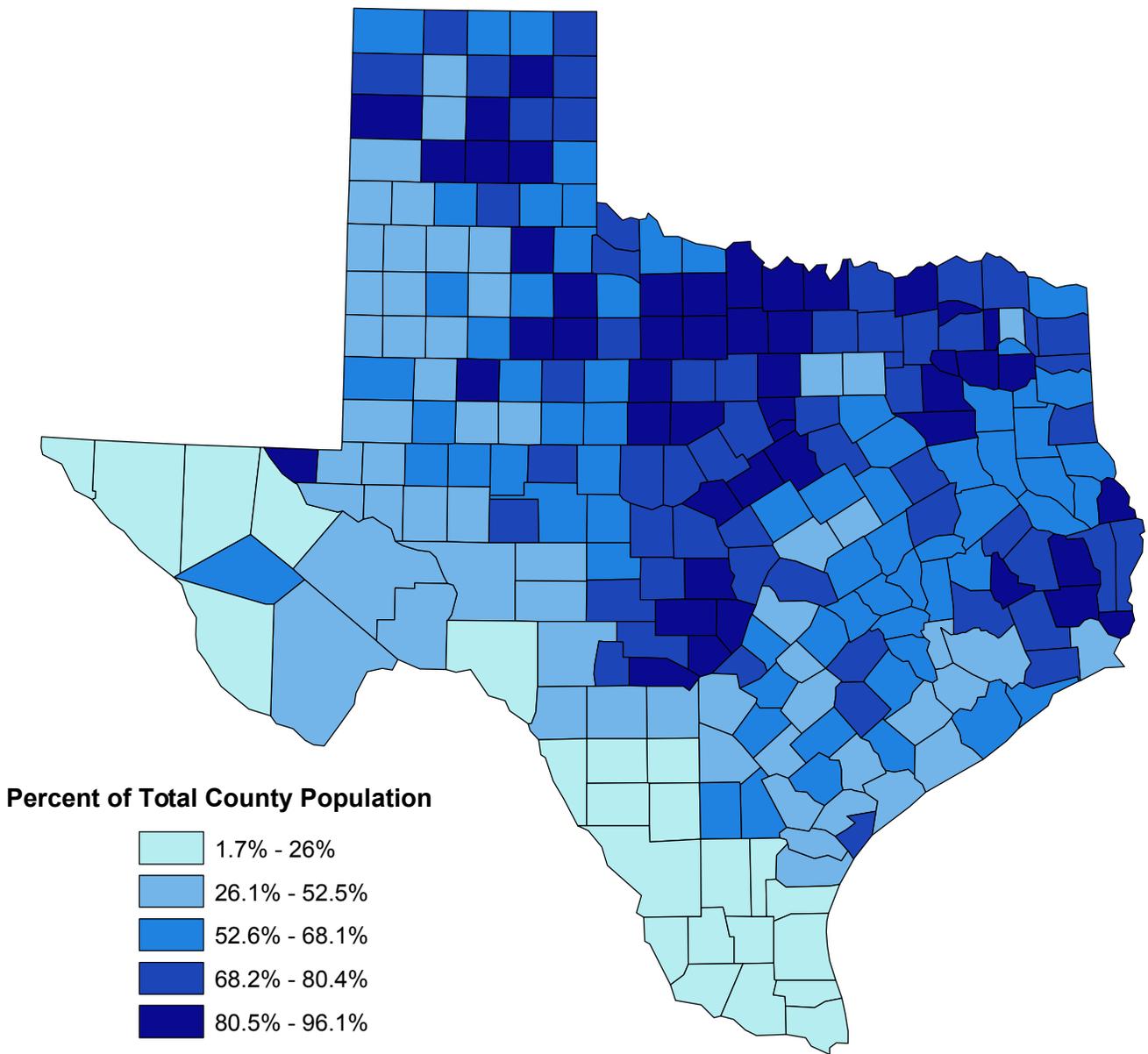
In August 2005, the U.S. Census Bureau announced that Texas joined Hawaii, New Mexico and California as a majority-minority state.<sup>11</sup> According to 2009 population estimates, Texas had a majority-minority population of 13.4 million, or 54.2 percent of its total population. (The minority population includes all people except NH Whites.) More than one-third (38.2 percent) of Texas residents were of Hispanic origin with the majority being Mexican-American. Other Hispanic subgroups in Texas may include, but are not limited to, Puerto Ricans, Cubans, and El Salvadorans. In 2009, African Americans made up 11.5 percent of the population, Other made up 4.4 percent, and Whites represented 45.8 percent of the population.<sup>9</sup>

The shifting demographics of Texas are evident when examining age groups by race and ethnicity. According to 2009 population estimates, 68.3 percent of Texas residents aged 65 or older were White, 8.6 percent were Black, and 19.7 percent were Hispanic. However, the demographics for the younger generation show a shift in trend: 36.7 percent of children under age 18 were White, 12.3 percent were Black, and 47.1 percent were Hispanic. The trend continued for younger age groups: 34.2 percent of children under the age of five were White, 11.2 percent were Black, and 50.8 percent were Hispanic.<sup>9</sup>

Because of the state's vast size, many Texans who live in less populated areas may be medically underserved and suffer from health disparities, regardless of race and ethnicity. Although the majority of Texans live in urban areas, rural populations are often in need of the same services as those who live in urban areas. The challenges for those living within these rural and frontier counties are similar: lack of access to affordable health care, lack of transportation, little or no economic development, limited financial resources, and lack of trained health care professionals.

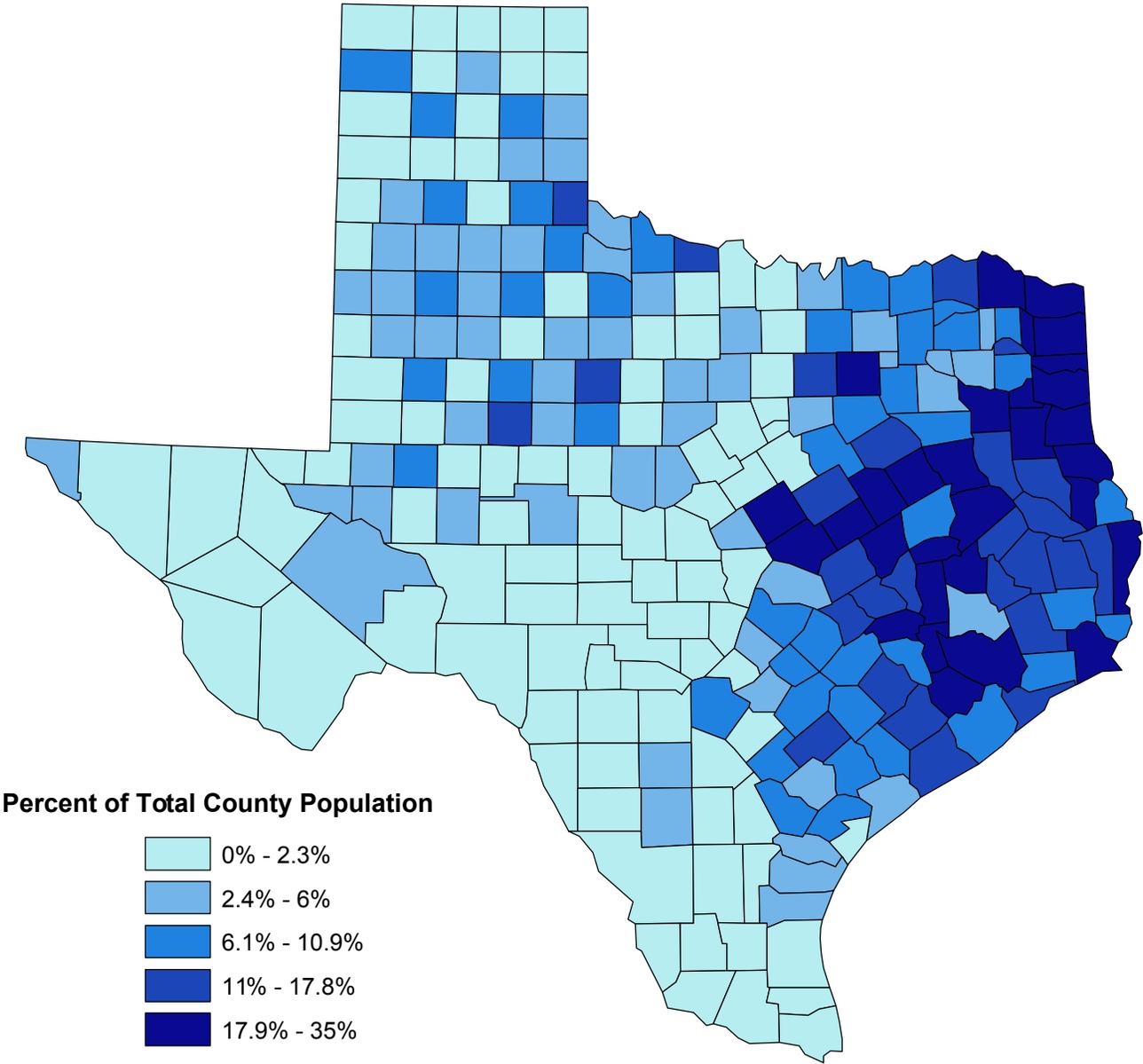
Population data are obtained from the Texas Center for Health Statistics (CHS) State Data Center (SDC) program. The Texas SDC program produces annual population estimates of state and county populations by age, sex, and race/ethnicity. Details of the estimate methodology may be obtained from the SDC web page: <http://txsdc.utsa.edu/tpepp/txpopest.php>.

**Figure 1. County Population by Race/Ethnicity-White Non-Hispanic (NH)**



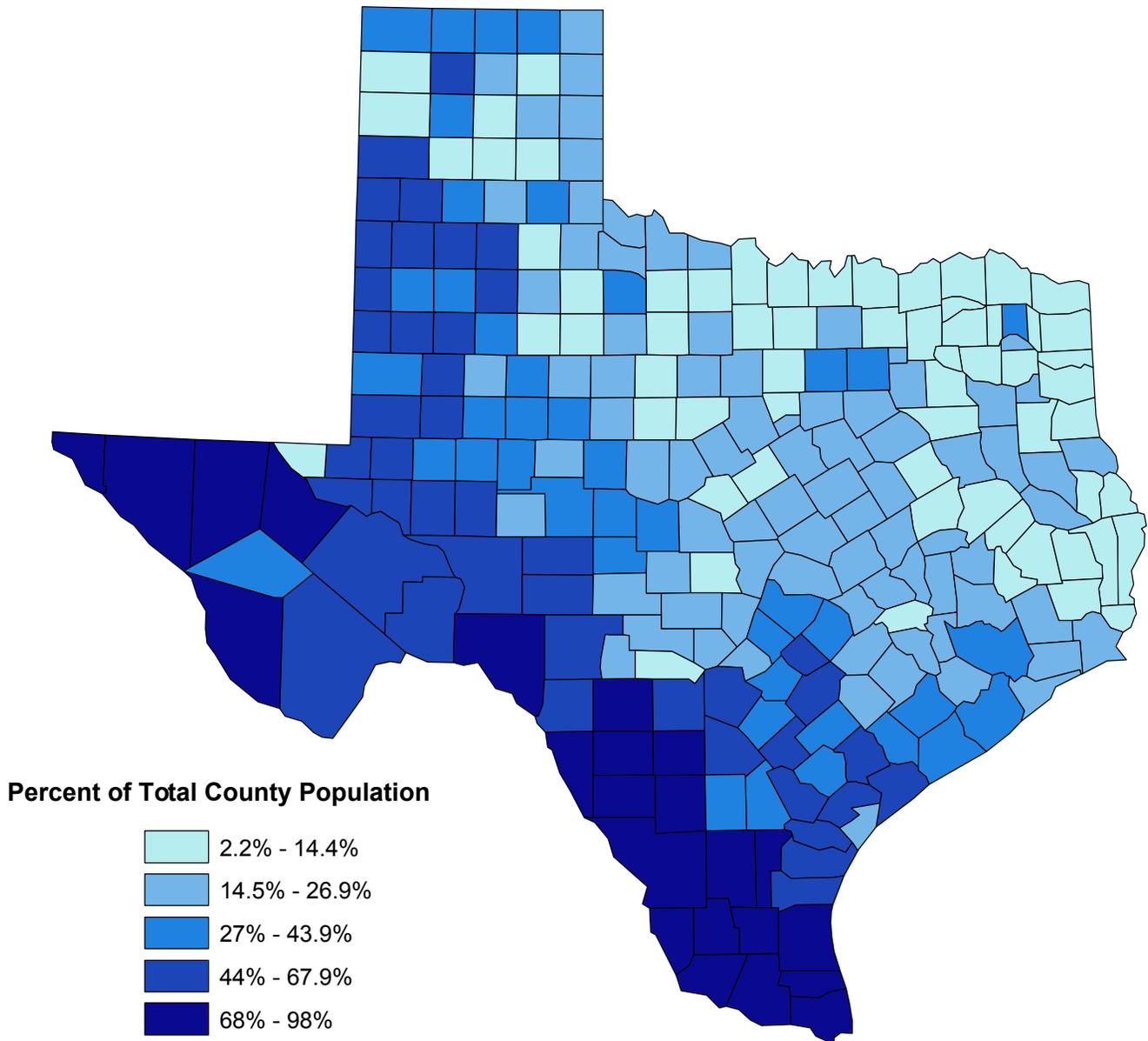
In 2009, the White NH population made up 45.8 percent of the Texas population. This map shows the percent of total county population that is White NH. Counties with a high percentage of Whites are in northern central Texas.

Figure 2. 2009 County Population by Race/Ethnicity-Black Non-Hispanic



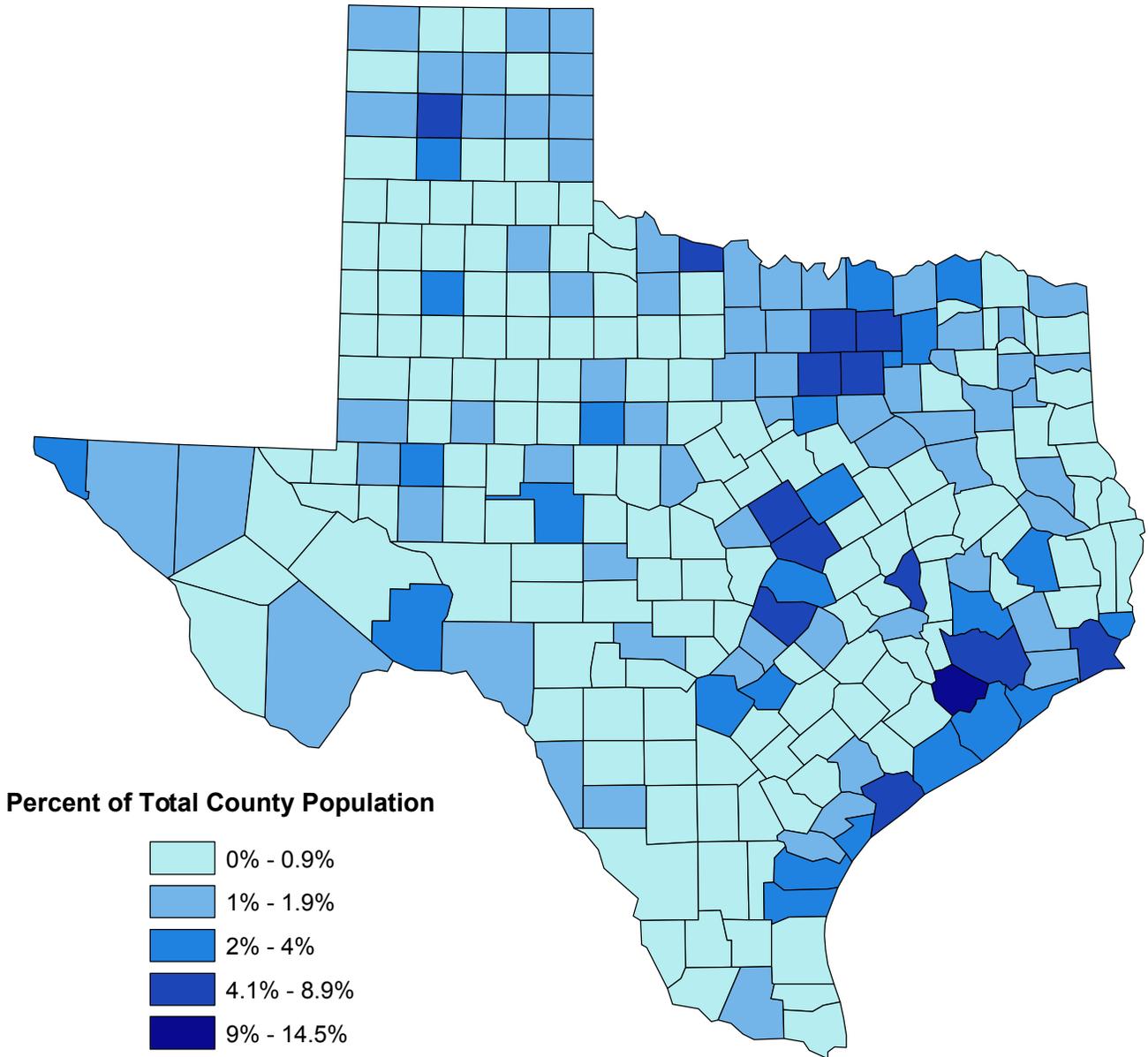
In 2009, the Black NH population made up 11.5 percent of the Texas population. This map shows the percent of total county population that is Black NH. Counties with the highest Black NH population are located in eastern Texas.

**Figure 3. 2009 County Population by Race/Ethnicity-Hispanic**



In 2009, Hispanics made up 38.2 percent of the Texas population. This map shows the percent of total county population that is Hispanic. Counties with a high percentage of Hispanics are concentrated in the southern and western parts of Texas.

Figure 4. 2009 County Population by Race/Ethnicity-Other



In 2009, the Other category made up 4.4 percent of the Texas population. This map shows the percent of total county population in this category. Counties with a high percentage of residents in the Other category are scattered throughout Texas.

# About the Data: Prevalence and BRFSS

**Prevalence** is defined as the number of existing cases of a disease or health condition in a population at some designated time. Prevalence estimates are often used to describe the burden of a disease in a given population. Texas prevalence estimates of lifetime and current asthma are derived from self-reported, population-based Texas Behavioral Risk Factor Surveillance System (BRFSS) data.

**The BRFSS** is a source of prevalence estimates for a wide range of health behaviors and risk factors, including chronic and infectious diseases.

The BRFSS is a statewide random-digit-dialed telephone survey of the Texas adult population (age 18 years and older). Each year, thousands of randomly selected adults are interviewed by telephone using standardized methods and questionnaires set by the Centers for Disease Control and Prevention. Since 1999, the Texas BRFSS has included two questions for assessing lifetime and current prevalence of asthma among adults. Childhood asthma questions have been included since 2001. Adult and childhood prevalence questions are included annually.

This section presents data from the 2005 through 2009 Texas BRFSS. Data were analyzed by gender, age, race/ethnicity, education, income, body mass index (BMI)\*, and Public Health Region (PHR).

Lifetime asthma prevalence among adults is defined as an affirmative response to the question “Have you ever been told by a doctor, nurse, or other health professional that you had asthma?” Current asthma prevalence among adults is defined as an affirmative response to that question followed by an affirmative response to the subsequent question “Do you still have asthma?”

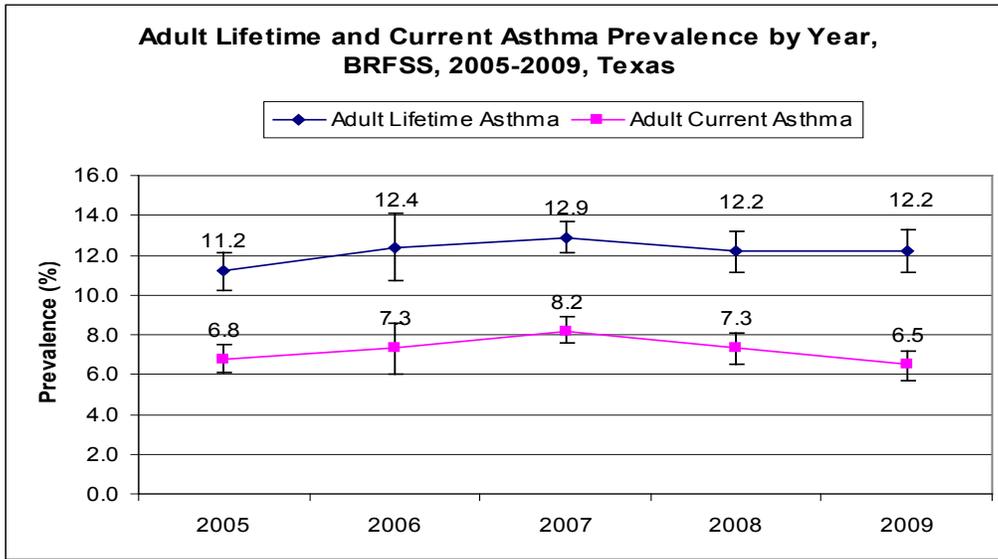
Data for children are based on information provided by an adult respondent about a child living in the home. Lifetime asthma prevalence among children is defined as an affirmative response to the question “Has a doctor, nurse or other health professional ever said that the child has asthma?” Current asthma prevalence among children is defined as an affirmative response to that question followed by an affirmative response to the subsequent question “Does the child still have asthma?”

### *Limitations of the BRFSS data:*

*BRFSS estimates are derived from self-reported interviews with no verification of having been diagnosed by a health care professional. BRFSS data may underestimate the true asthma prevalence among Texas adults and children because the survey does not identify undiagnosed cases of asthma. Further, self-reporting is subject to recall bias, which may impact the true prevalence of asthma.*

*\*An individual’s body weight divided by the square of his or her height, expressed in kg/m<sup>2</sup>*

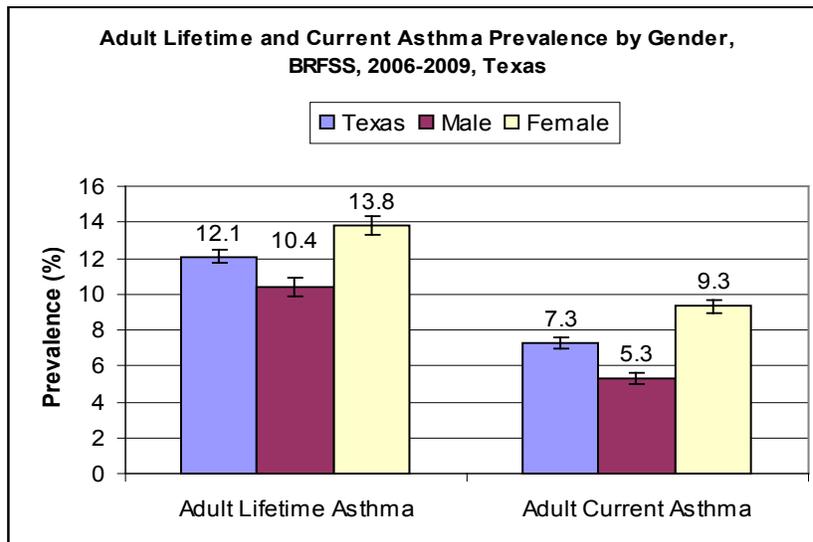
**Figure 5. Prevalence of Lifetime and Current Adult Asthma by Year, BRFSS, Texas, 2005-2009**



According to the 2005-2009 Texas BRFSS, the prevalence of lifetime adult asthma did not increase or decrease significantly. In 2007, adult lifetime asthma peaked at 12.9 percent (95% CI: 12.1, 13.7) and has since declined to 12.2 percent (95% CI: 11.1, 13.3).

From 2007-2009, adult current asthma prevalence decreased significantly. Adult current asthma prevalence peaked in 2007 at 8.2 percent (95% CI: 7.6, 8.9). Since 2007, adult current asthma prevalence declined to 6.5 percent (95% CI: 5.7, 7.2).

**Figure 6. Prevalence of Lifetime and Current Adult Asthma by Gender, BRFSS, Texas, 2006-2009**

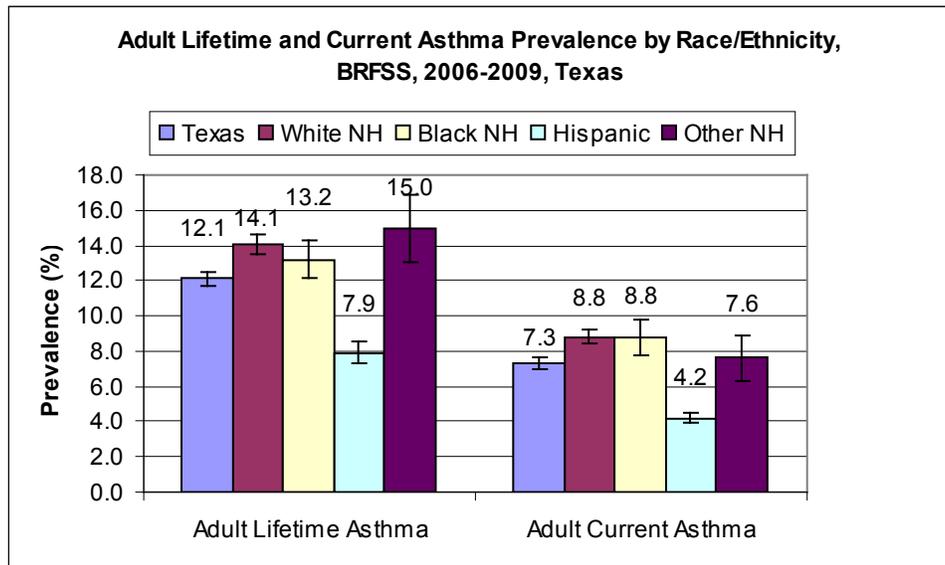


## Figure 6. continued

According to the 2006-2009 BRFSS, adult lifetime prevalence for males was 10.4 percent (95% CI: 9.4, 11.4). Adult lifetime prevalence for females was 13.8 percent (95% CI: 12.9, 14.8), which was significantly higher than the adult lifetime prevalence for males and the state.

Adult current asthma prevalence for males was 5.3 percent (95% CI: 4.7, 6.0). Adult current asthma prevalence for females was 9.3 percent (95% CI: 8.4, 10.1), significantly higher than adult current asthma prevalence for the state and for males.

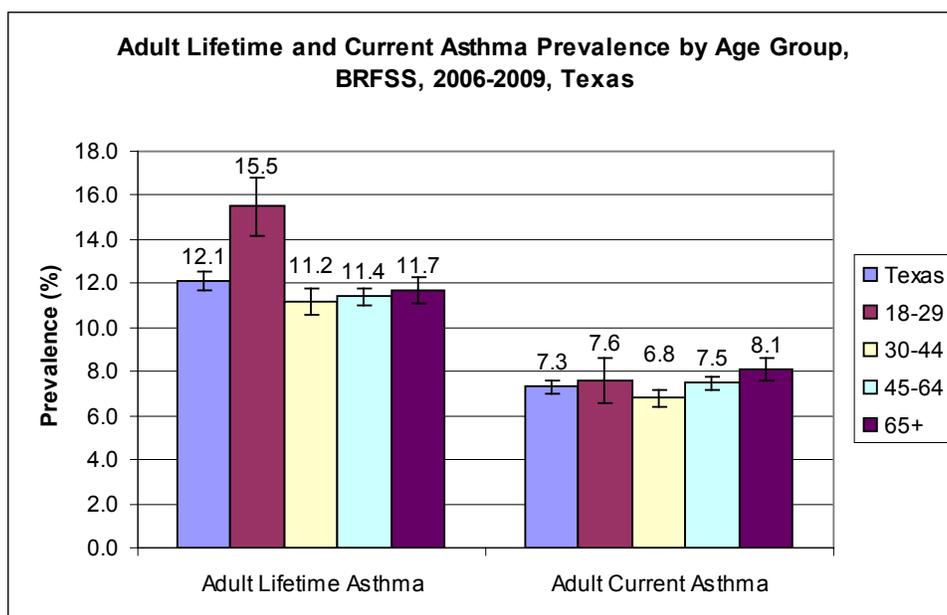
**Figure 7. Prevalence of Lifetime and Current Adult Asthma by Race/Ethnicity, BRFSS, Texas, 2006-2009**



From 2006-2009, adults in the Other NH race/ethnicity group had the highest adult lifetime asthma prevalence at 15.0 percent (95% CI: 11.1, 18.8). However, this prevalence was not significantly higher than the adult lifetime asthma prevalence for the state, Black NH, or White NH. Hispanics had the lowest adult lifetime asthma prevalence at 7.9 percent (95% CI: 6.7, 9.0). All race/ethnicity groups had significantly higher adult lifetime asthma prevalence percentages in comparison to Hispanics.

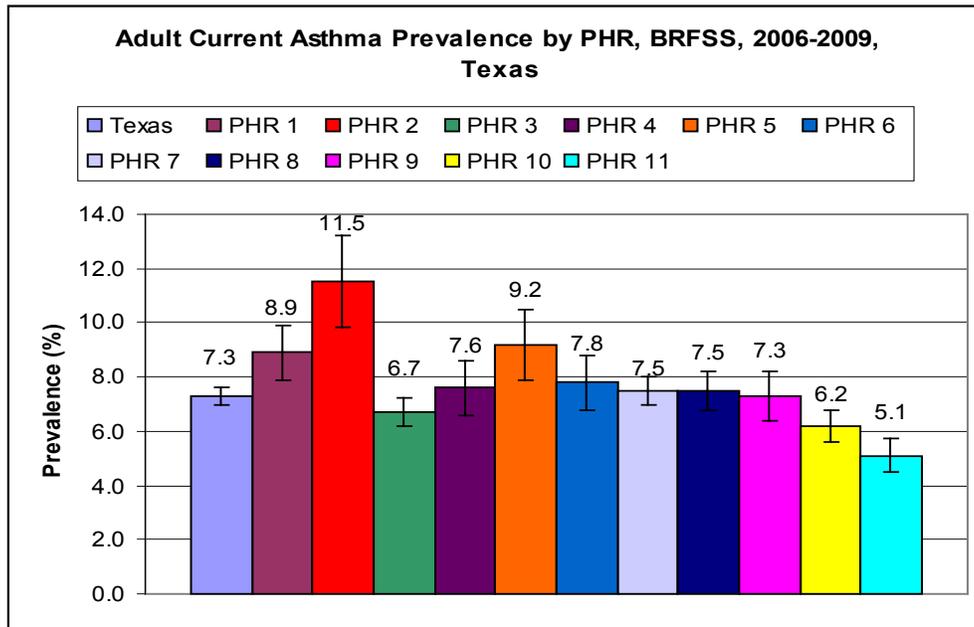
From 2006-2009, adult current asthma prevalence was highest for White NH and Black NH at 8.8 percent (95% CI: 7.9, 9.6) and 8.8 percent (95% CI: 7.1, 10.6), respectively. Hispanics had the lowest adult current asthma prevalence at 4.2 percent (95% CI: 3.6, 4.8). Adult current asthma prevalence for White NH and Black NH was significantly higher, and double the adult current asthma prevalence for Hispanics.

**Figure 8. Prevalence of Adult Lifetime and Current Asthma by Age Group, BRFSS, Texas, 2006-2009**



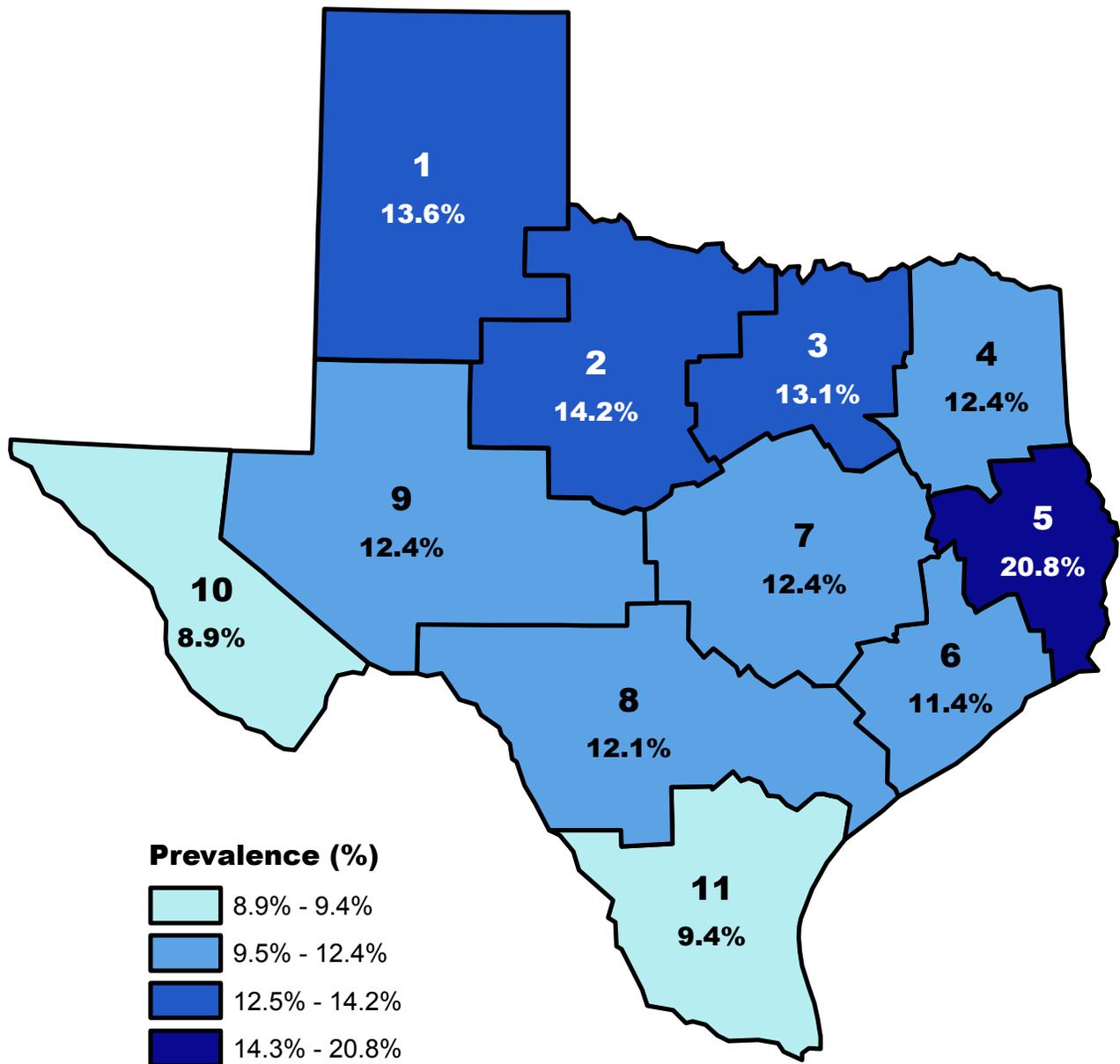
According to 2006-2009 Texas BRFSS, adults aged 18-29 years had the highest adult lifetime asthma prevalence at 15.5 percent (95% CI: 12.9, 18.0). Lifetime asthma prevalence for adults between the ages of 18 and 29 was significantly higher than lifetime asthma prevalence for all adults in Texas and those age 65 and older. Adult current asthma prevalence was highest for adults age 65 and older. However, prevalence for those age 65 and older was not significantly different than adult current asthma prevalence for any other age group.

**Figure 9. Prevalence of Current Adult Asthma by Public Health Region (PHR), BRFSS, Texas, 2006-2009**



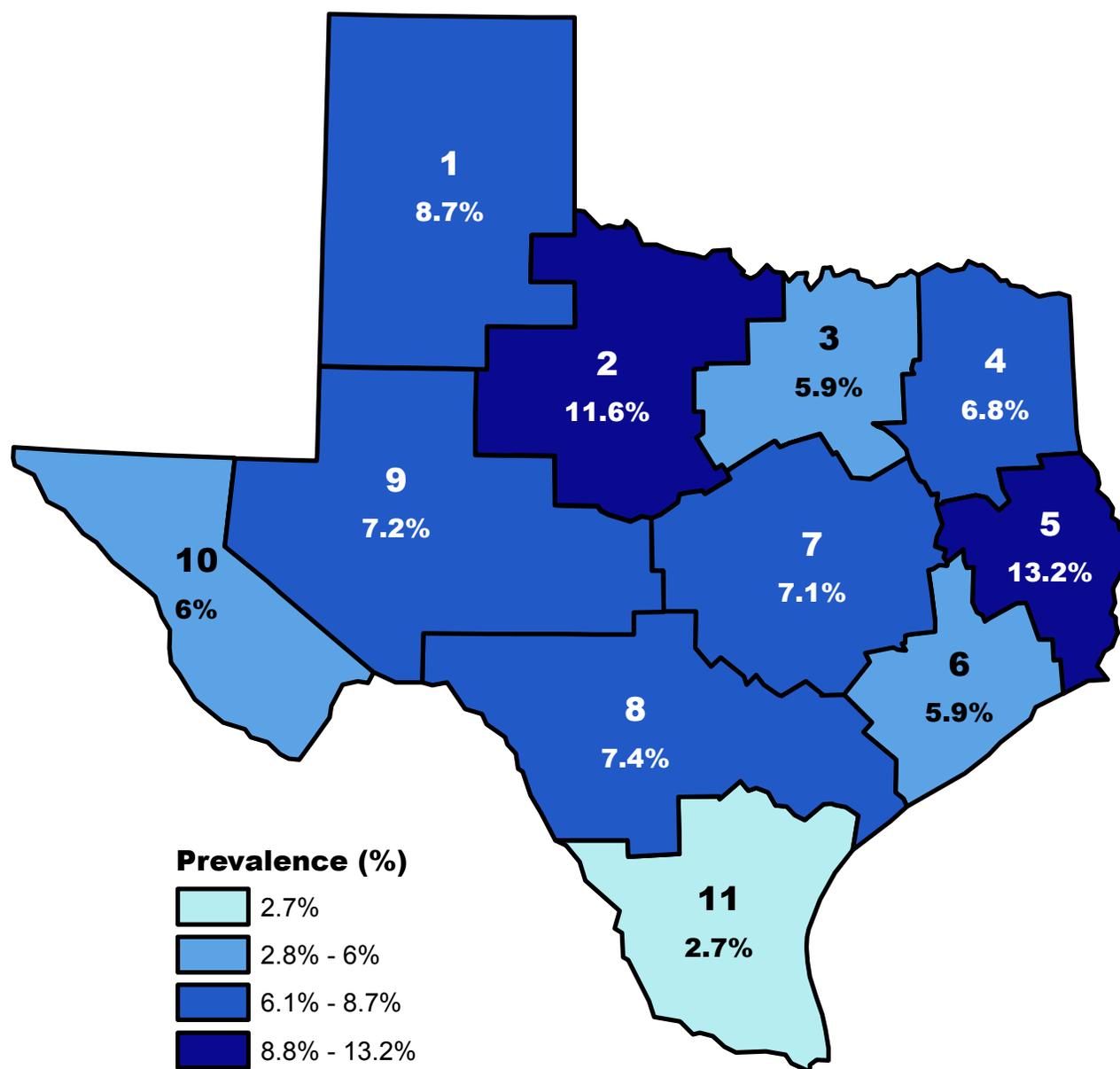
According to 2006-2009 Texas BRFSS, PHR 2 had the highest adult current asthma prevalence at 11.5 percent (95% CI: 8.1, 14.9). Adult current asthma prevalence in PHR 2 was significantly higher than the state adult current asthma prevalence, PHR 3, PHR 10 and PHR 11. Adult current asthma was lowest in PHR 11 at 5.1 percent (95% CI: 3.9, 6.3), which was significantly lower than adult current asthma prevalence for the state, PHR 1, PHR 2, PHR 5 and PHR 7.

Figure 10. Adult Lifetime Asthma Prevalence by PHR, BRFSS, Texas, 2009



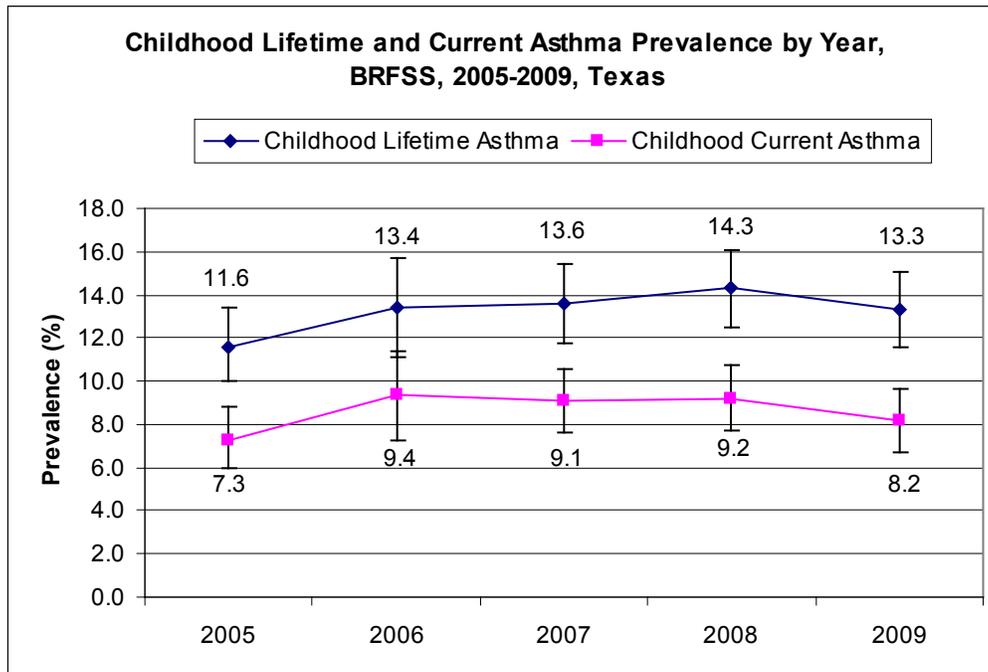
In 2009, adult lifetime asthma prevalence was higher in the northern and eastern areas of Texas than in the southern and western areas of the state.

Figure 11. Adult Current Asthma Prevalence by PHR, BRFSS, Texas, 2009



In 2009, adult current asthma prevalence was higher in the northern central and eastern areas in Texas than in the western and lower areas of the state.

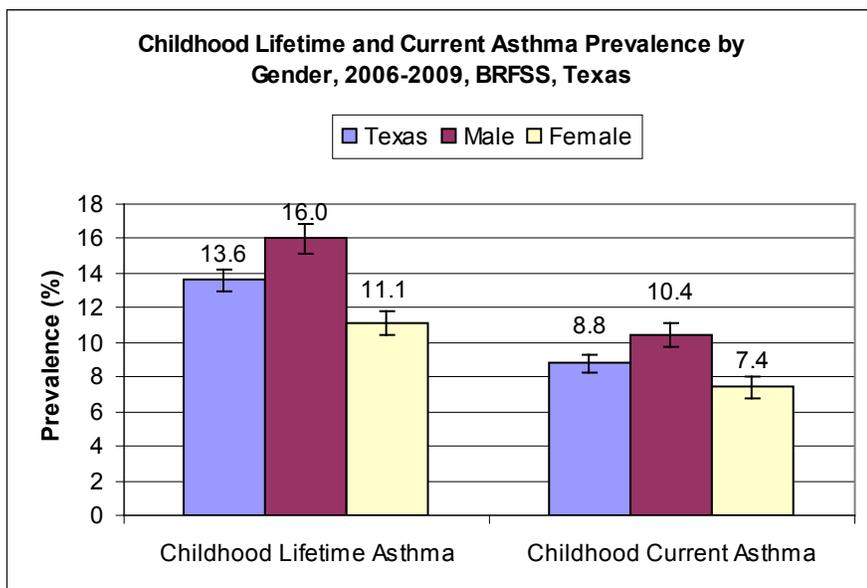
Figure 12. Prevalence of Lifetime and Current Childhood Asthma by Year, BRFSS, Texas, 2005-2009



Childhood lifetime asthma did not increase or decrease significantly from 2005-2009, according to Texas BRFSS. Over the past four years, childhood lifetime asthma peaked in 2008 at 14.3 percent (95% CI: 12.5, 16.1).

Childhood current asthma did not increase or decrease significantly from 2005-2009. Over the past four years, childhood current asthma peaked in 2006 at 9.4 percent (95% CI: 7.3, 11.4).

**Figure 13. Prevalence of Childhood Lifetime and Current Asthma by Gender, BRFSS, Texas, 2006-2009**

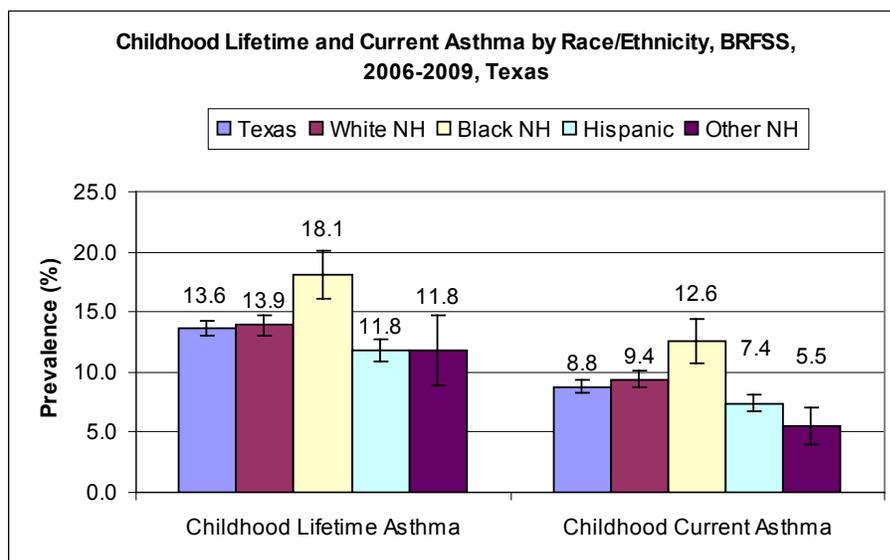


According to 2006-2009 Texas BRFSS, male childhood lifetime asthma prevalence was 16.0 percent (95% CI: 14.3, 17.7). Childhood lifetime asthma prevalence for males was significantly higher than childhood lifetime asthma prevalence for the state and for females at 11.1 percent (95% CI: 9.6, 12.6). Male childhood current asthma prevalence from 2006-2009 was 10.4 percent (95% CI: 8.9, 11.8). Male childhood current asthma prevalence was significantly higher than female childhood current asthma prevalence at 7.4 percent (95% CI: 6.1, 8.6), but not significantly higher than childhood current asthma prevalence for the state.

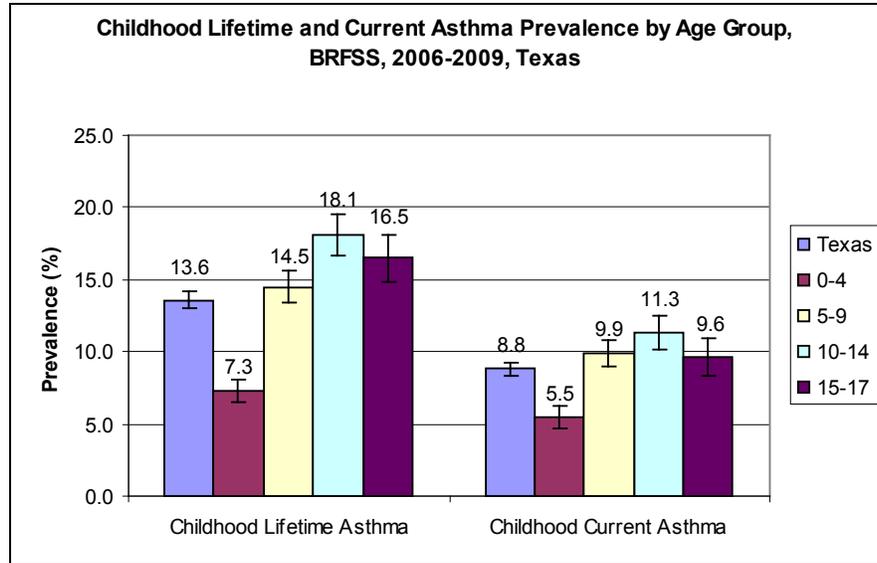
According to 2006-2009 Texas BRFSS, childhood lifetime asthma prevalence was highest for Black NH at 18.1 percent (95% CI: 14.2, 22.1). Childhood lifetime asthma prevalence for Black NH was significantly higher than childhood lifetime asthma prevalence for Hispanics at 11.8 percent (95% CI: 10.0, 13.5).

Childhood current asthma prevalence was also highest for Black NH from 2006-2009 at 12.6 percent (95% CI: 9.1, 16.1). Childhood current asthma prevalence for Black NH was significantly higher than childhood asthma prevalence for Hispanics at 7.4 percent (95% CI: 5.9, 8.8) and Other NH race/ethnicity groups at 5.5 percent (95% CI: 2.5, 8.5).

**Figure 14. Prevalence of Childhood Lifetime and Current Asthma by Race/Ethnicity, BRFSS, Texas, 2006-2009**

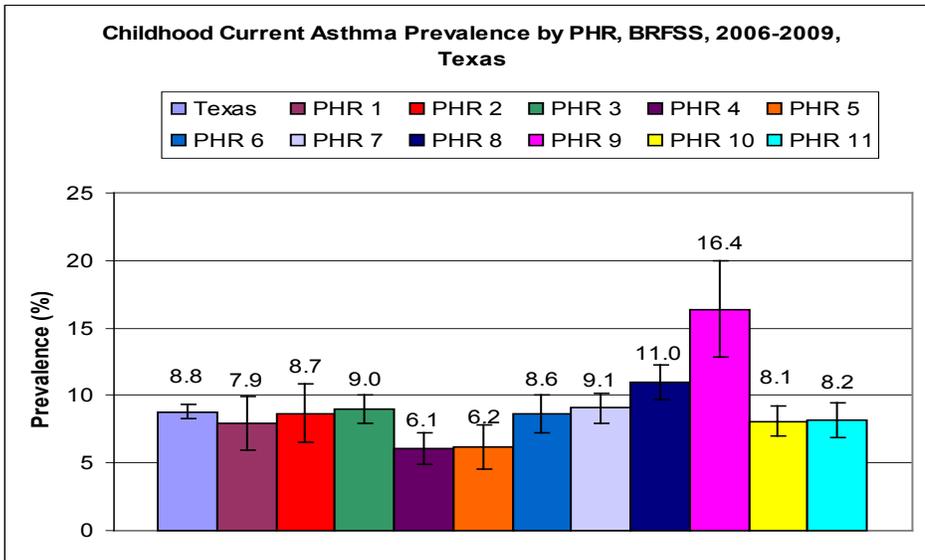


**Figure 15. Prevalence of Childhood Lifetime and Current Asthma by Age Group, BRFSS, 2006-2009**



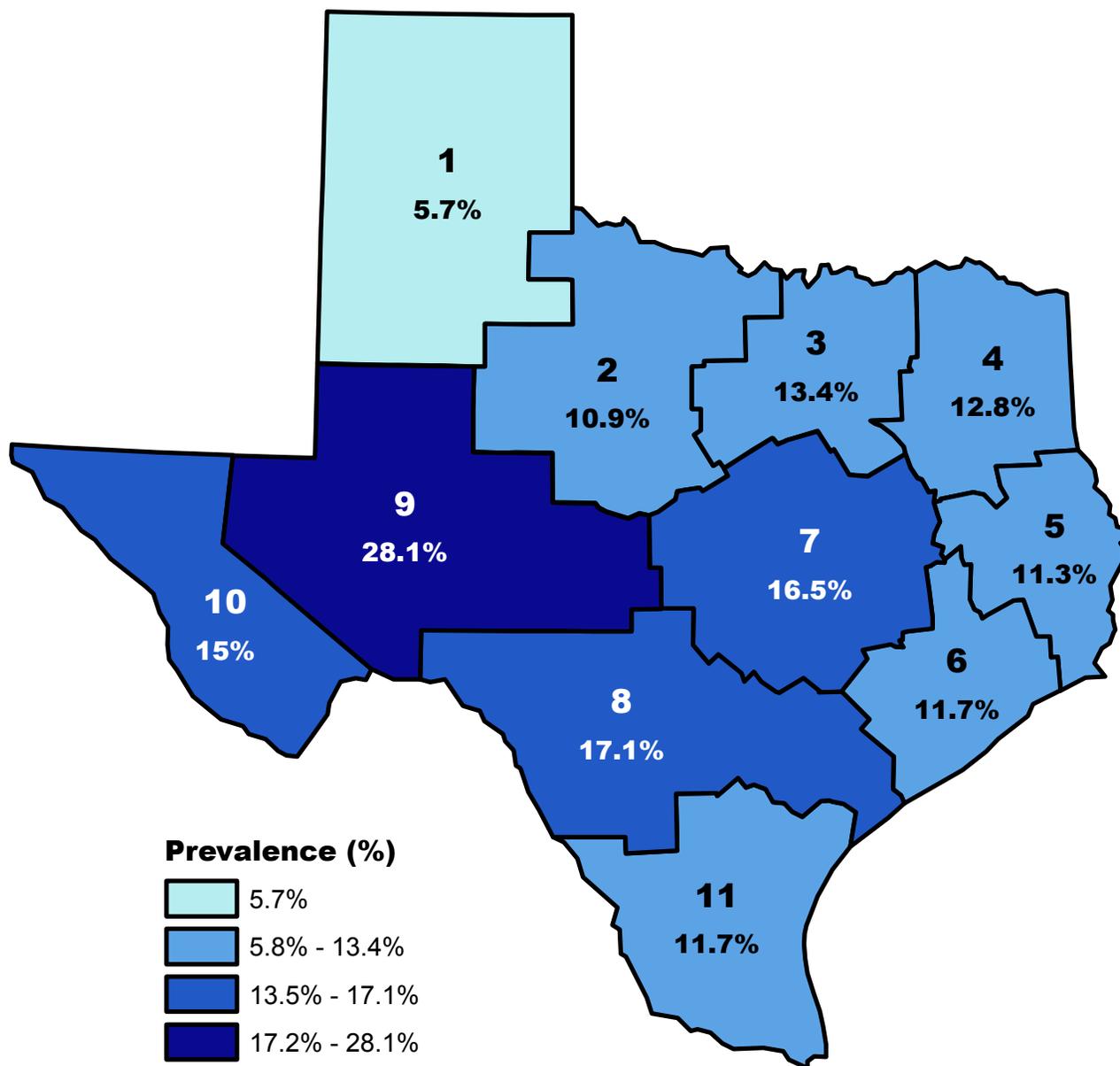
According to 2006-2009 Texas BRFSS, those between the ages of 10-14 years had the highest childhood lifetime and current asthma prevalence at 18.1 percent (95% CI: 15.4, 20.8) and 11.3 percent (95% CI: 9.0, 13.6), respectively. Childhood lifetime asthma prevalence for those aged 10-14 years was significantly higher than childhood lifetime asthma prevalence for the age category 0-4 years and childhood lifetime asthma prevalence for Texas. Childhood current asthma prevalence for those aged 10-14 years old was significantly higher than the 0-4 age category.

**Figure 16. Prevalence of Childhood Current Asthma by PHR, BRFSS, Texas, 2006-2009**



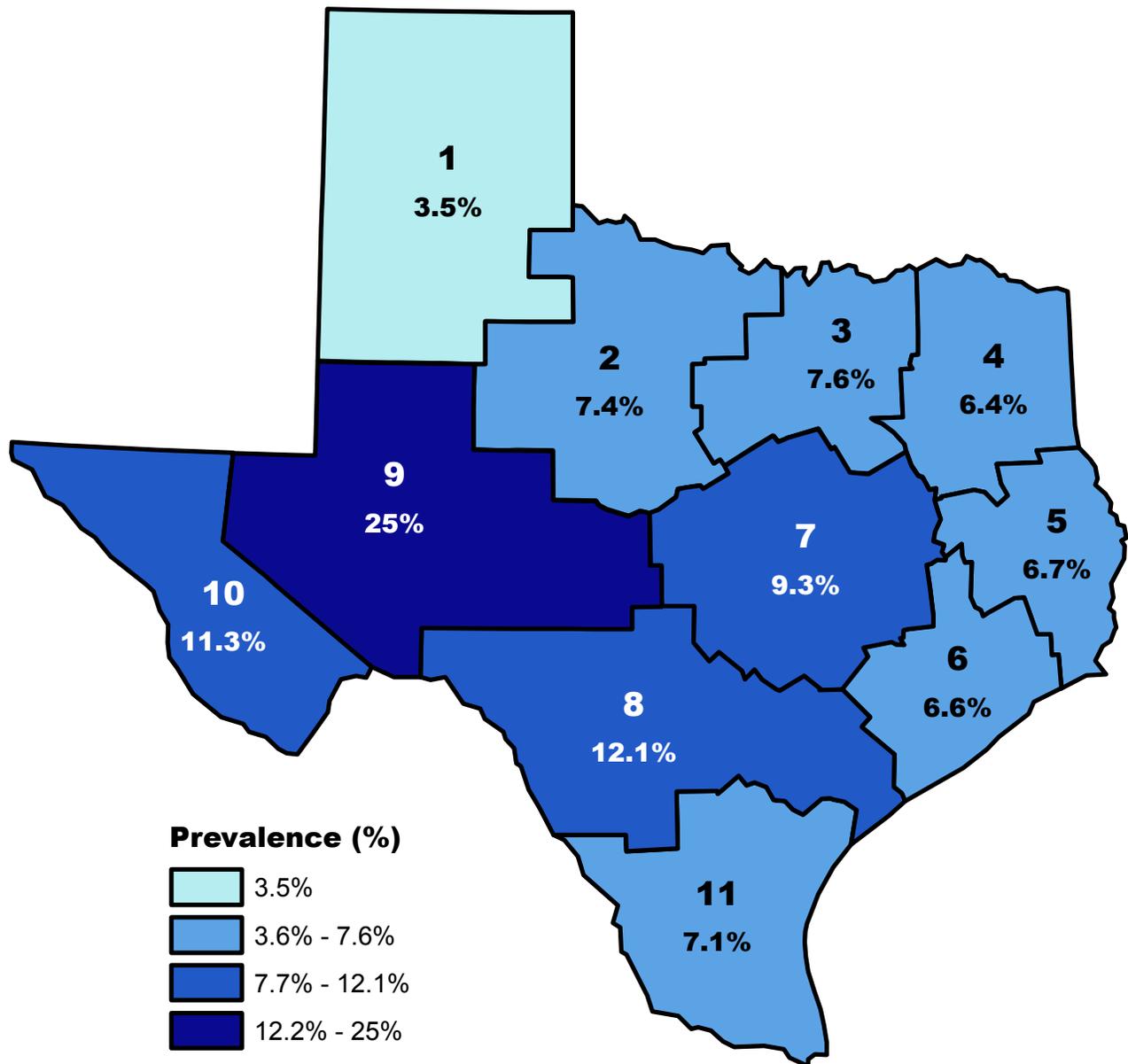
Childhood current asthma prevalence was highest in PHR 9 at 16.4 percent (95% CI: 9.4, 23.5). However, the childhood current asthma prevalence in PHR 9 was only significantly higher than childhood current asthma prevalence in PHR 4 at 6.1 percent (95% CI: 3.7, 8.4).

Figure 17. Childhood Lifetime Asthma Prevalence by PHR, BRFSS, Texas, 2009



In 2009, childhood lifetime asthma prevalence was highest in PHR 9 at 28.1 percent (95% CI: 12.0, 44.1), and lowest in PHR 1 at 5.7 percent (95% CI: 2.3, 9.2).

Figure 18. Childhood Current Asthma Prevalence by PHR, BRFSS, Texas, 2009



In 2009, childhood current asthma prevalence was highest in PHR 9 at 25.0 percent (95% CI: 8.6, 41.3), and lowest in PHR 1 at 3.5 percent (95% CI: 0.7, 6.3).

# About the Data: Hospitalization

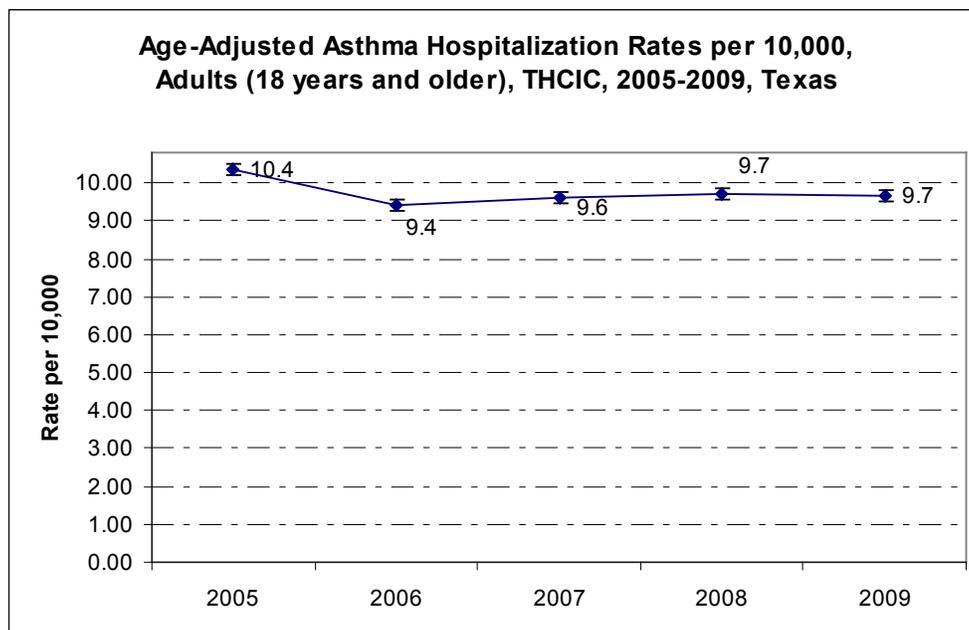
Hospitalization data for asthma are obtained from the Texas Health Care Information Collection (THCIC) Inpatient Hospital Discharge Public Use Data Files. Hospital discharge data have been available in Texas since 1999. The data presented here are from years 2005-2009.

All non-maternal, non-neonatal, and non-transfer hospitalizations listing asthma as the primary diagnosis, according to the International Classification of Diseases Version 9 (ICD-9) with codes of 493.0 – 493.9, were selected from the data set.<sup>12</sup>

The rates in this report are age-adjusted using the direct method to the 2000 U.S. population. Hospitalizations missing information on the age of the patient were excluded when calculating age-adjusted rates.

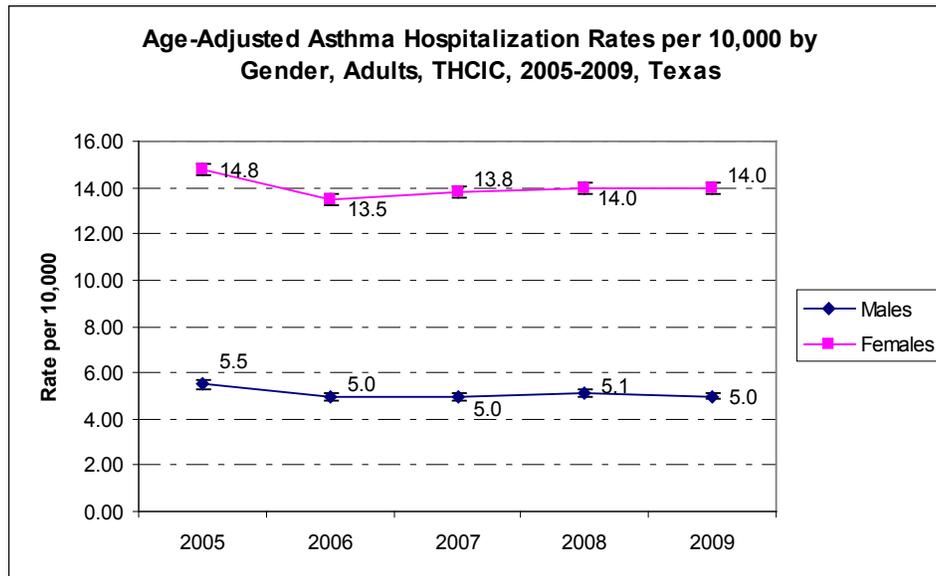
*Limitations of the data: For conditions such as asthma, an individual can be hospitalized more than once for the same condition. Multiple hospitalizations cannot be distinguished from this data source since the data have been de-identified. These estimates may also underestimate the true rate of hospitalization for asthma because some Texas hospitals are exempt from the reporting requirement.*

**Figure 19. Age-Adjusted Asthma Hospitalization Rates per 10,000, Adults (18 years and older), THCIC, Texas, 2005-2009**



According to the 2005-2009 THCIC Public Use Data File, age-adjusted asthma hospitalization rates for adults aged 18 and older significantly decreased since 2005. From 2005 to 2006 adult asthma hospitalization rates dropped from 10.4 per 10,000 (95% CI: 10.2, 10.5) to 9.4 per 10,000 (95% CI: 9.3, 9.6). Adult asthma hospitalization rates have not increased significantly since 2006.

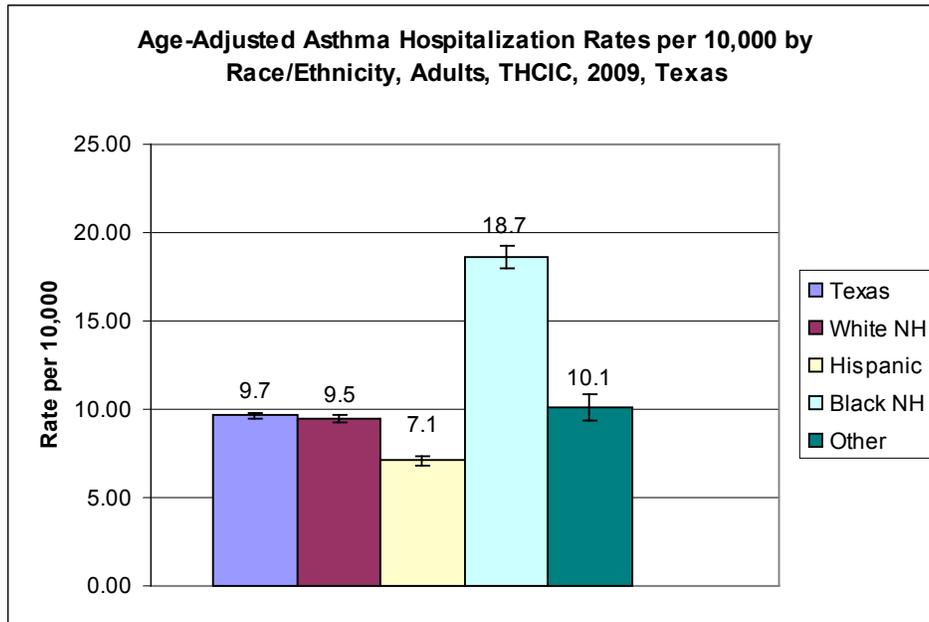
**Figure 20. Age-Adjusted Asthma Hospitalization Rates per 10,000 by Gender, Adults, THCIC, Texas, 2005-2009.**



Age-adjusted asthma hospitalization rates for male adults decreased significantly from 2005-2009. In 2005, the male age-adjusted hospitalization rate was 5.5 per 10,000 (95% CI: 5.3, 5.7). Most recently, the male age-adjusted hospitalization rate was 5.0 per 10,000 (95% CI: 4.8, 5.2). For each year from 2005 to 2009, the adult male age-adjusted asthma hospitalization rates were significantly less than the state age-adjusted asthma hospitalization rates for adults.

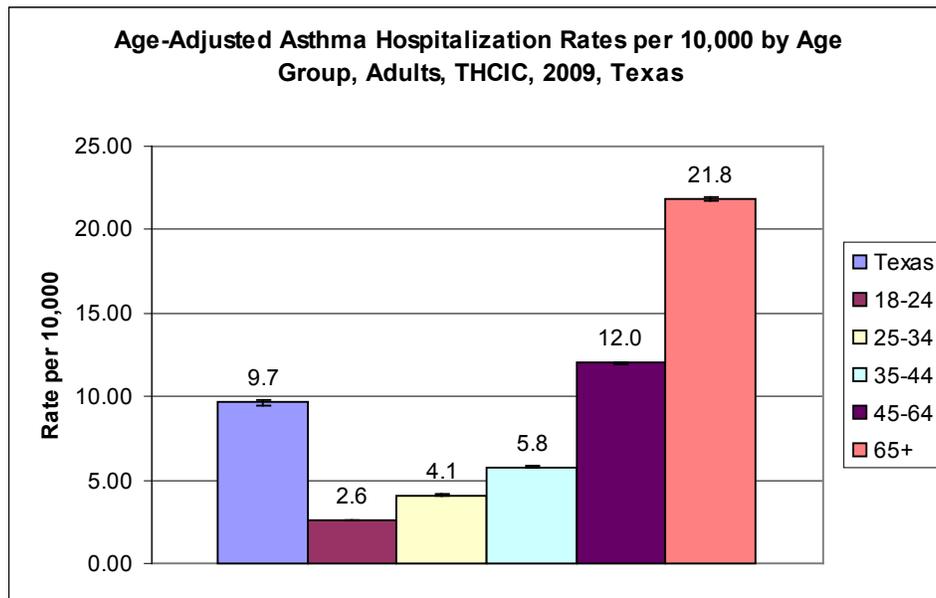
The adult female age-adjusted asthma hospitalization rate also decreased significantly since 2005. In 2005, the adult female asthma hospitalization rate was 14.8 per 10,000 (95% CI: 14.5, 15.1). In 2009, the adult female asthma hospitalization rate was 14.0 per 10,000 (95% CI: 13.7, 14.2). For each year from 2005 to 2009, the adult female asthma hospitalization rate remained significantly higher than the state asthma hospitalization rate for adults.

**Figure 21. Age-Adjusted Asthma Hospitalization Rates per 10,000 by Race/Ethnicity, Adults, THCIC, Texas, 2009**



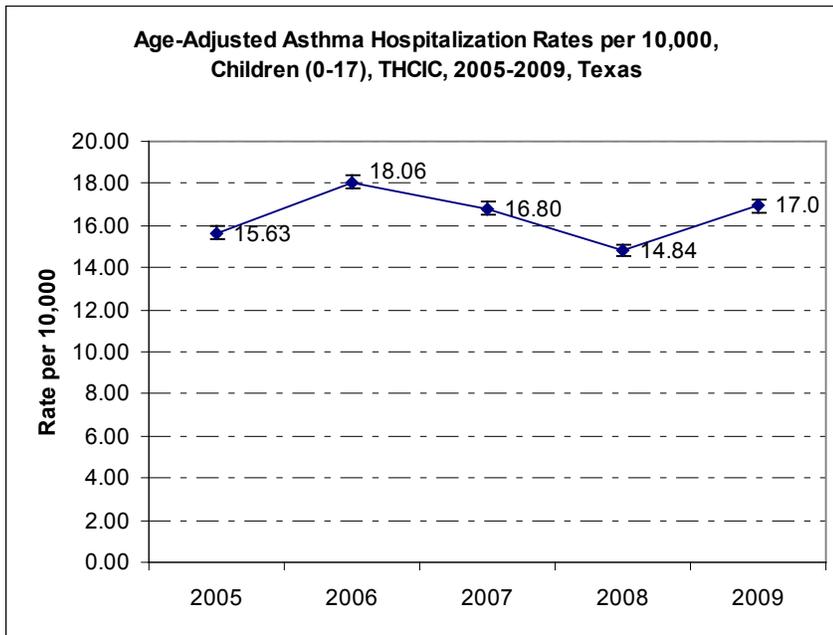
According to 2009 THCIC, Black NH had the highest age-adjusted asthma hospitalization rate at 18.7 per 10,000 (95% CI: 18.0, 19.3). The 2009 asthma hospitalization rate for Black NH was significantly higher than the state asthma hospitalization rate for all adults in 2009. Hispanics had the lowest asthma hospitalization rate at 7.1 per 10,000 (95% CI: 6.8, 7.4), which was significantly less than the state asthma hospitalization rate for adults. The asthma hospitalization rate for White NH was 9.5 per 10,000 (95% CI: 9.3, 9.7) and was not significantly less than the state asthma rate. The asthma hospitalization rate for Other NH was 10.1 per 10,000 (95% CI: 9.3, 10.9) and was not significantly higher than the state asthma hospitalization rate.

**Figure 22. Age-Adjusted Asthma Hospitalization Rates per 10,000 by Age Group, Adults, THCIC, Texas, 2009**



According to THCIC, the 2009 asthma hospitalization rates were 2.6 per 10,000 (95% CI: 2.6, 2.6) for individuals aged 18-24 years, 4.1 per 10,000 (95% CI: 4.1, 4.1) for ages 25-34 years, and 5.8 per 10,000 (95% CI: 5.7, 5.8) for ages 35-44 years. The asthma hospitalization rates for those 18-44 years of age were significantly less than the state asthma hospitalization rate for adults. Asthma hospitalization rates were 12.0 per 10,000 (95% CI: 11.9, 12.1) for individuals aged 45-64 years and 21.8 per 10,000 (95% CI: 21.7, 22.0) for age 65 years and older. The asthma hospitalization rates for those 45 years of age and over were significantly higher than the state asthma hospitalization rate for adults.

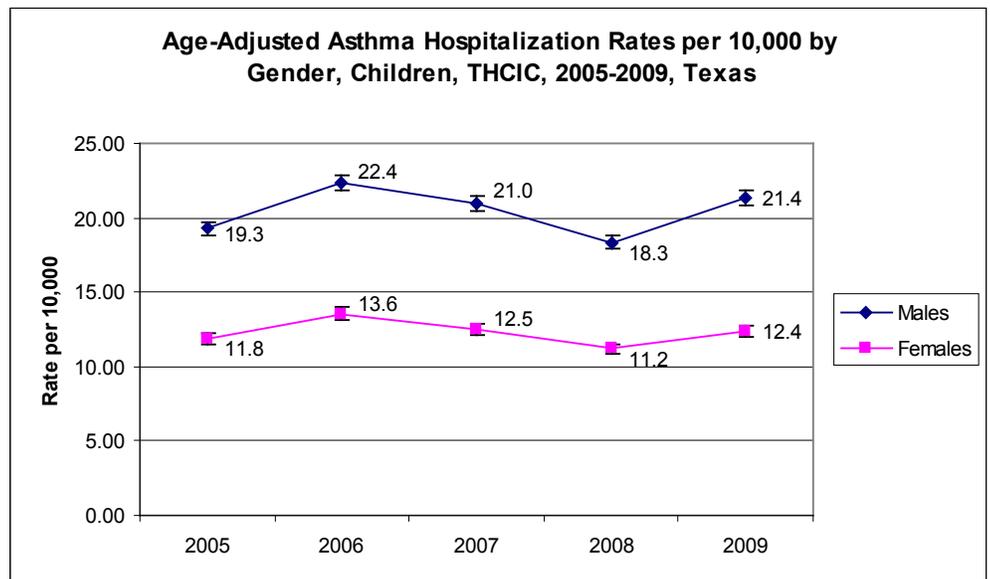
**Figure 23. Age-Adjusted Asthma Hospitalization Rates per 10,000, Children (0-17), THCIC, Texas, 2005-2009**



From 2005-2009, asthma hospitalization rates for children aged 0-17 years have fluctuated significantly. In 2006, the asthma hospitalization rate for children peaked at 18.1 per 10,000 (95% CI: 17.7, 18.4), then decreased significantly to 14.8 per 10,000 (95% CI: 14.5, 15.1) in 2008. From 2008 to 2009, there was another significant increase to 17.0 per 10,000 (95% CI: 16.6, 17.3).

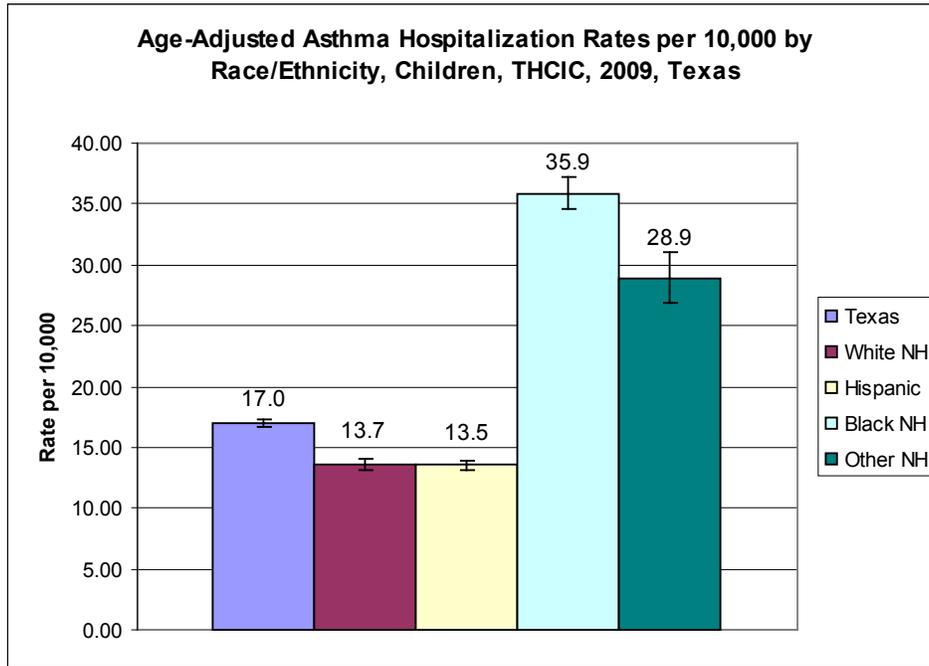
**Figure 24. Age-Adjusted Asthma Hospitalization Rates per 10,000 by Gender, Children, THCIC, Texas, 2005-2009**

Age-adjusted asthma hospitalization rates for male children are higher than rates for female children. This is in direct contrast to asthma hospitalization rates for adults, where adult females have higher asthma hospitalization rates than males. In 2006, male asthma hospitalization rates peaked at 22.4 per 10,000 (95% CI: 21.9, 22.9). Since 2006, these rates have reduced significantly, reaching 21.4 per 10,000 (95% CI: 20.9, 21.8) in 2009.



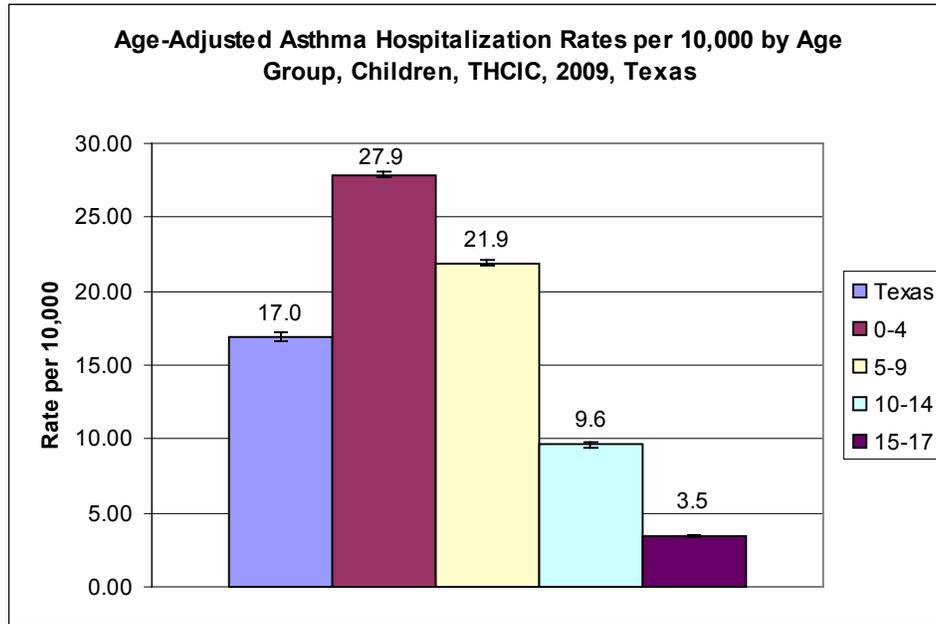
Age-adjusted asthma hospitalization rates for female children fluctuated significantly between 2005-2009. In 2006, the asthma hospitalization rate for females was 13.6 per 10,000 (95% CI: 13.2, 14.0), reducing significantly to 12.4 per 10,000 (95% CI: 12.0, 12.8) in 2009.

**Figure 25. Age-Adjusted Asthma Hospitalization Rates per 10,000 by Race/Ethnicity, Children, THCIC, Texas, 2009**



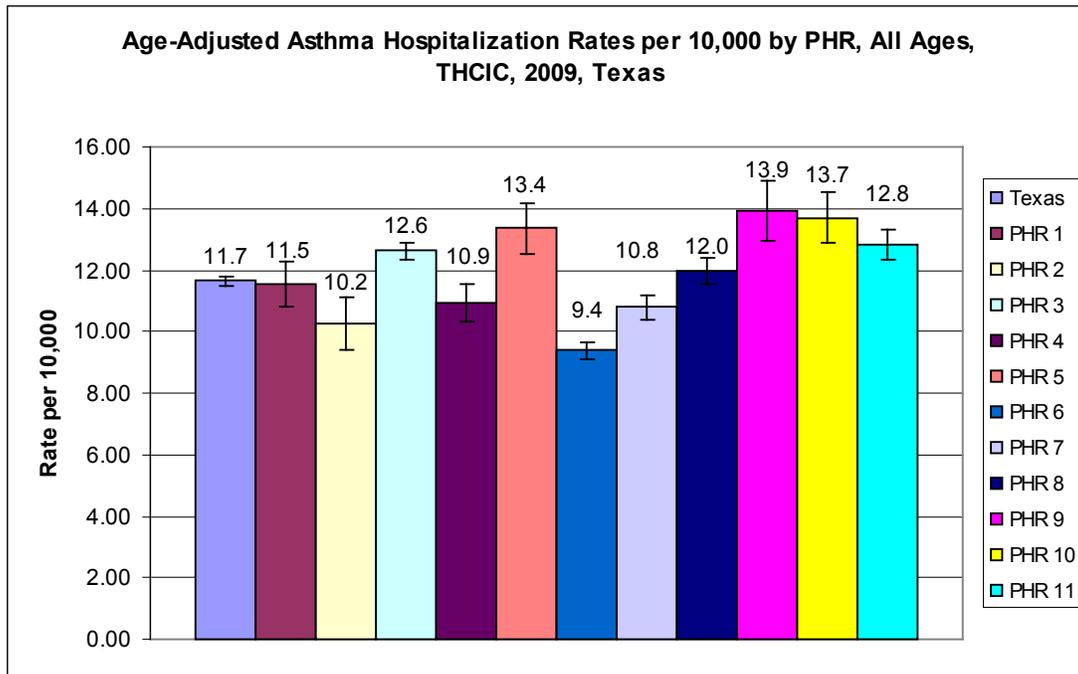
According to the 2009 THCIC, Black NH had the highest asthma hospitalization rate at 35.9 per 10,000 (95% CI: 34.5, 37.2). The asthma hospitalization rate for Black NH was significantly higher than the asthma hospitalization rates for all other race/ethnicity groups and for the state at 17.0 per 10,000 (95% CI: 16.6, 17.3). Both White NH at 13.7 per 10,000 (95% CI: 13.2, 14.1) and Hispanics at 13.5 per 10,000 (95% CI: 13.1, 14.0) had asthma hospitalization rates that were significantly lower than the state asthma hospitalization rate. Black NH and Other NH at 28.9 per 10,000 (95% CI: 26.9, 31.0) had asthma hospitalization rates that were significantly higher than the state asthma hospitalization rate.

**Figure 26. Age-Adjusted Asthma Hospitalization Rates per 10,000 by Age Group, Children, THCIC, Texas, 2009**



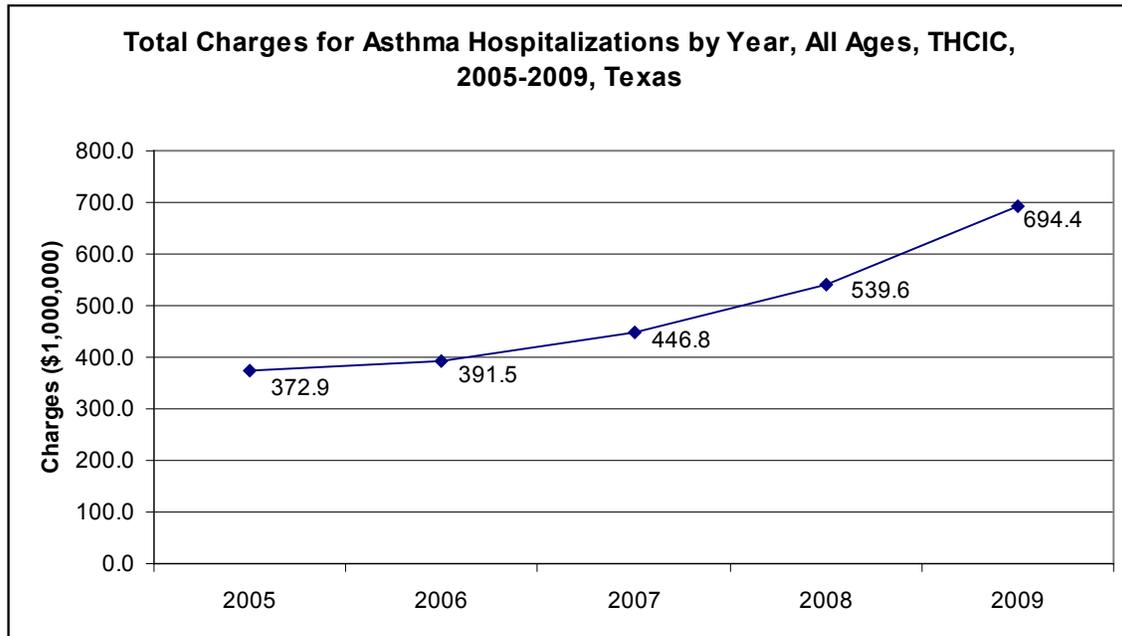
Children between the ages of 0-4 years had the highest asthma hospitalization rate at 27.9 per 10,000 (95% CI: 27.7, 28.1) in comparison to all other age groups. Asthma hospitalization rates for children between the ages of 0-4 years and 5-9 years at 21.9 per 10,000 (95% CI: 21.7, 22.1) were significantly higher than the state asthma hospitalization rate for children at 17.0 per 10,000 (95% CI: 16.6, 17.3). Asthma hospitalization rates for children between the ages of 10-14 years at 9.6 per 10,000 (95% CI: 9.5, 9.7) and 15-17 years at 3.5 per 10,000 (95% CI: 3.4, 3.5) were significantly lower than the state asthma hospitalization rate.

**Figure 27. Age-Adjusted Asthma Hospitalization Rates per 10,000 by Public Health Region (PHR), All Ages, THCIC, Texas, 2009**



According to 2009 THCIC, PHR 6 had the lowest asthma hospitalization rate at 9.4 per 10,000 (95% CI: 9.1, 9.6). The asthma hospitalization rate for PHR 6 was significantly lower than that for the state at 11.7 per 10,000 (95% CI: 11.5, 11.8), and each public health region, except PHR 2 at 10.2 per 10,000 (95% CI: 9.4, 11.1). PHR 9 had the highest asthma hospitalization rate at 13.9 per 10,000 (95% CI: 12.9, 14.9), which was significantly higher than the asthma hospitalization rate for the state.

**Figure 28. Total Charges for Asthma Hospitalizations by Year, All Ages, THCIC, Texas, 2005-2009**



According to 2005-2009 THCIC, total charges related to asthma hospitalizations increased substantially over the past five years. In 2005, total costs for asthma hospitalizations were \$372.9 million. In 2009, that number increased by 80 percent to \$694.4 million.

# About the Data: Mortality Data

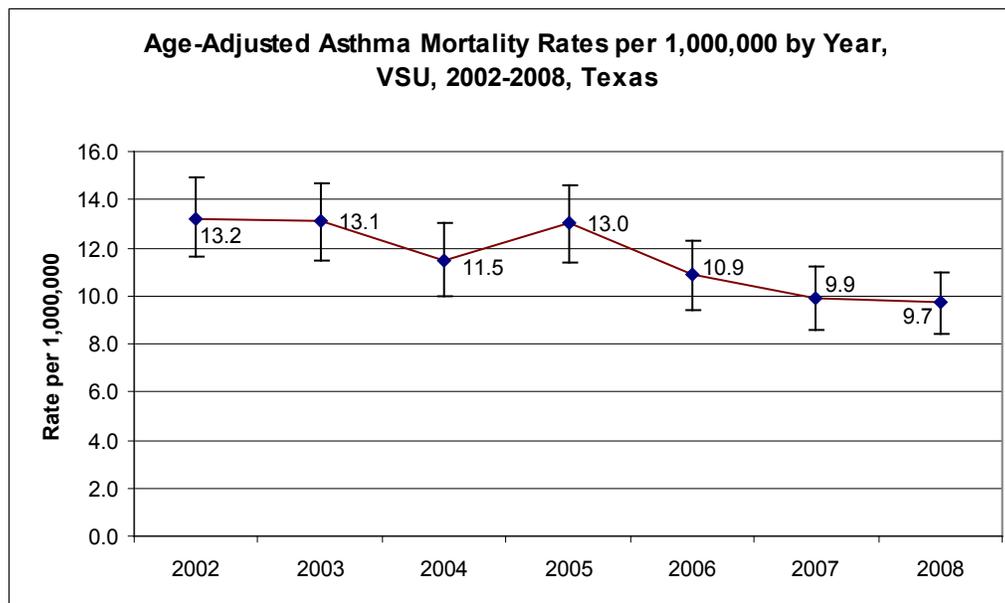
Mortality data are obtained from the Texas Center for Health Statistics. The data represented here are from years 2002-2008.

For the purpose of this report, an asthma death is defined as any death for which asthma is listed as the underlying cause. Deaths occurring through 1998 were classified according to the International Classification of Diseases Version 9 (ICD-9) with codes of 493.0 to 493.9. Deaths occurring in 1999 and later are classified according to the International Classification of Diseases Version 10 (ICD-10) with codes of J45 and J46.

Age-adjusted asthma mortality rates are calculated and presented per 1,000,000 population. Rates are age-adjusted so that valid comparisons can be made between populations with differing age distributions. Mortality rates for demographic units with a small number of events (less than 12) or a small population size (less than 5,000) are not calculated because these rates are statistically unstable.

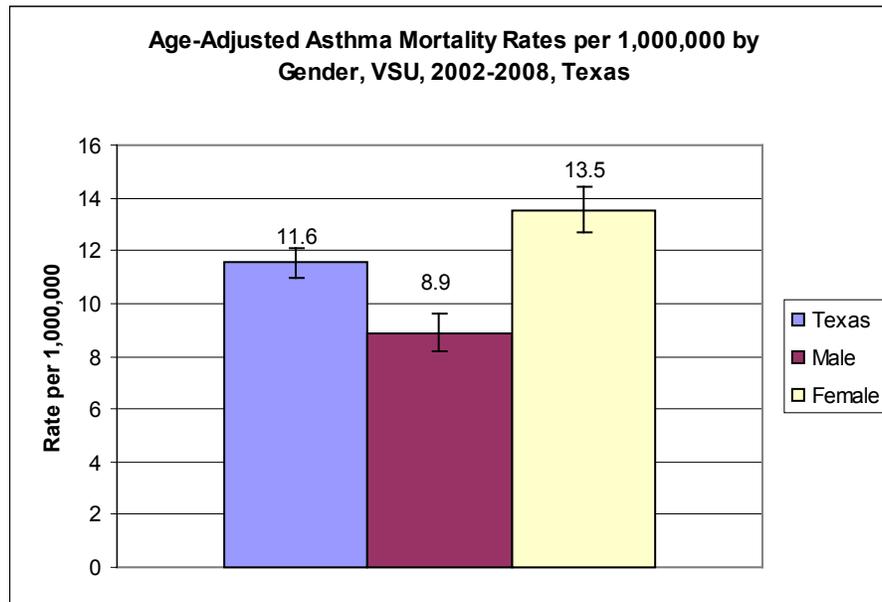
*Limitations of the data: The mortality data from 1999 and later cannot be directly compared with the data from previous years due to the ICD-9 to ICD-10 coding change. In addition, there is potential for diagnostic error, which may lead to incorrect coding of the cause of death on the death certificate.*

**Figure 29. Age-Adjusted Asthma Mortality Rate per 1,000,000 by Year, Vital Statistics Unit (VSU), All Ages, 2002-2008, Texas**



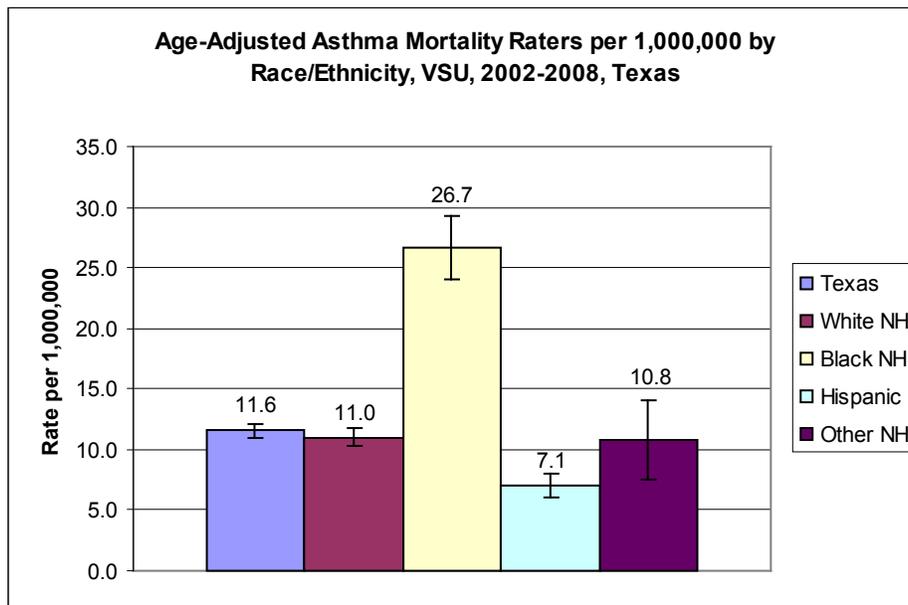
According to the Vital Statistics Unit, Center for Health Statistics, the age-adjusted asthma mortality rate has decreased significantly since 2002, when the age-adjusted asthma mortality rate was 13.2 per 1,000,000 (95% CI: 11.6, 14.9). In 2008, the age-adjusted asthma mortality rate decreased significantly to 9.7 per 1,000,000 (95% CI: 8.4, 11.0).

**Figure 30. Age-Adjusted Asthma Mortality Rate per 1,000,000 by Gender, VSU, All Ages, 2002-2008, Texas**



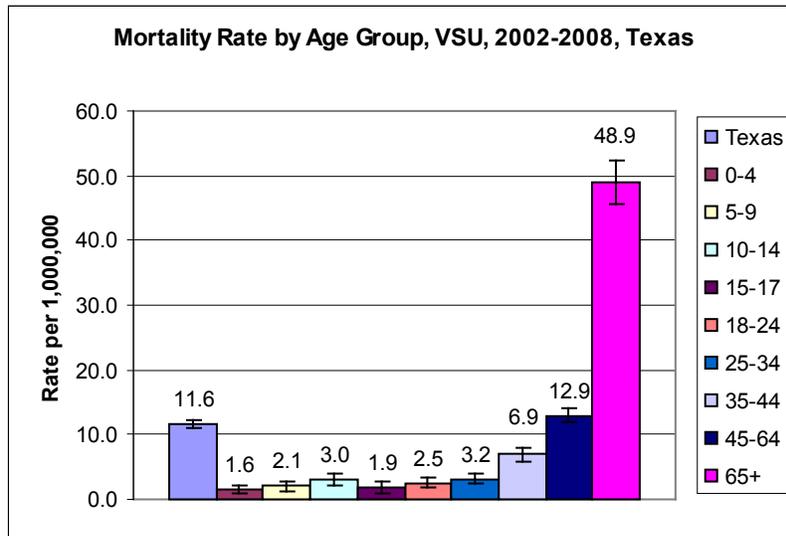
From 2002-2008, the male age-adjusted asthma mortality rate was 8.9 per 1,000,000 (95% CI: 8.2, 9.6), which was significantly lower than the state asthma mortality rate of 11.6 per 1,000,000 (95% CI: 11.0, 12.1). The female age-adjusted asthma mortality rate was 13.5 per 1,000,000 (95% CI: 12.7, 14.4), and was significantly higher than the 2002-2008 state asthma mortality rate.

**Figure 31. Age-Adjusted Asthma Mortality Rate per 1,000,000 by Race/Ethnicity, VSU, All Ages, 2002-2008, Texas**



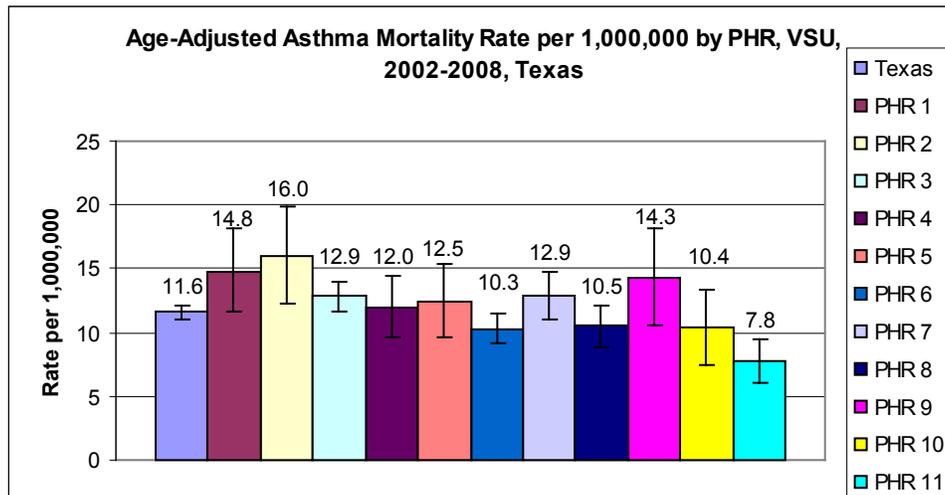
Black NH had the highest age-adjusted asthma mortality rate at 26.7 per 1,000,000 (95% CI: 24.1, 29.3), which was significantly higher than the mortality rate for the state and all other race/ethnicity groups. Hispanics had the lowest age-adjusted asthma mortality rate at 7.1 per 1,000,000 (95% CI: 6.1, 8.0).

**Figure 32. Asthma Mortality Rate per 1,000,000 by Age Group, VSU, 2002-2008, Texas**



Adults age 65 years and older had the highest age-adjusted asthma mortality rate at 48.9 per 1,000,000 (95% CI: 45.5, 52.4), which was significantly higher than the age-adjusted asthma mortality rate for the state and all other age groups. Children ages 0-4 years had the lowest age-adjusted asthma mortality rate at 1.6 per 1,000,000 (95% CI: 0.9, 2.2).

**Figure 33. Age-Adjusted Asthma Mortality Rate per 1,000,000 by PHR, VSU, All Ages, 2002-2008, Texas**



According to 2002-2008 VSU data, PHR 2 had the highest age-adjusted asthma mortality rate at 16.0 per 1,000,000 (95% CI: 12.2, 19.8). The asthma mortality rate for PHR 2 was significantly higher than PHR 6 at 10.3 per 1,000,000 (95% CI: 9.2, 11.5), PHR 8 at 10.5 per 1,000,000 (95% CI: 8.9, 12.1), PHR 11 at 7.8 per 1,000,000 (95% CI: 6.1, 9.4) and the state at 11.6 per 1,000,000 (95% CI: 11.0, 12.1).

# About the Data: Medicaid

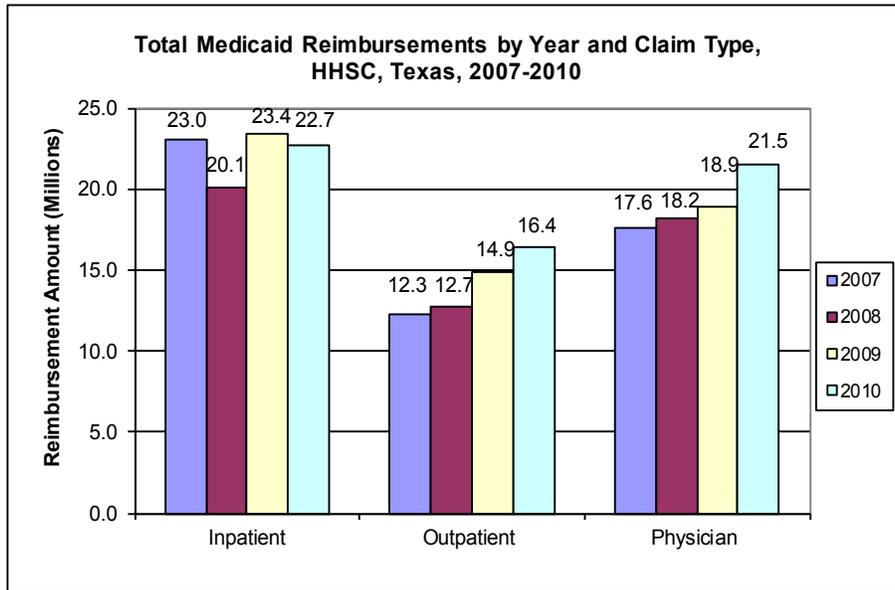
Medicaid data are prepared by the Research Team, Strategic Decision Support, Texas Health and Human Services Commission. Fee-for-service (FFS) and primary care case management (PCCM) data were selected from the Texas Medicaid and Health Partnership (TMHP) Ad Hoc Query Platform (AHQP) Claims Universe.

This section of the report contains data on Medicaid claims, recipients, and reimbursements. Claim types include professional\*, outpatient and inpatient. Recipients include those having at least one claim (professional, emergency department, inpatient hospital) with a primary or secondary diagnosis of asthma. Data are included for both adults (18 years and older) and children (under 18 years of age).

Asthma is defined as paid or partially paid claims with a primary or secondary diagnosis of ICD-9 Clinically Modified (CM): 493.00-493.99. Inpatient hospital claims are defined as claim types 40 and 50. Emergency care is defined as events in which procedure codes 99281, 99282, 99283, 99284, 99285, W0004, W0005, Y001, 450, 456, and 459 are utilized.

\*Professional claims include claims filed by physicians, physician assistants, nurses, laboratories, and durable medical equipment suppliers.

**Figure 34. Total Medicaid Reimbursements by Year and Claim Type, HHSC, Texas, 2007-2010**



Outpatient and physician claims increased from 2007 to 2010, while inpatient claims have remained approximately the same from 2007-2010. Inpatient hospital reimbursements were the greatest, followed by physician and outpatient claims reimbursements, respectively from 2007-2010. Inpatient, outpatient and physician reimbursements in 2010 totaled \$60.6 million.

**Table 1. Number of Medicaid Recipients by Gender and Claim Type, HHSC, Texas, 2010**

	<b>Inpatient</b>	<b>Outpatient</b>	<b>Physician</b>
	Number of Recipients	Number of Recipients	Number of Recipients
<b>Male</b>	2,787	21,225	75,448
<b>Female</b>	4,024	21,702	75,443
<b>Total</b>	6,811	42,927	150,891

For outpatient and physician claims in 2010, the number of recipients did not vary widely by gender. However, there was a marked difference between males and females for the number of inpatient recipient claims. Of the 6,811 total inpatient hospital claims, females represented approximately 60 percent of those claims.

**Table 2. Number of Medicaid Recipients by Race/Ethnicity and Claim Type, HHSC, Texas, 2010**

	<b>Inpatient</b>	<b>Outpatient</b>	<b>Physician</b>
	Number of Recipients	Number of Recipients	Number of Recipients
<b>White NH</b>	1,727	11,435	30,646
<b>Black NH</b>	1,410	10,053	25,181
<b>Hispanic</b>	2,484	17,385	80,856
<b>Other NH</b>	81	395	1,675
<b>Unknown/Not Reported</b>	1,110	3,660	12,538

For asthma-related inpatient, outpatient and physician claims in 2010, Hispanics had the highest number of recipients in each of these categories.

**Table 3. Number of Medicaid Recipients by Age Group and Claim Type, HHSC, Texas, 2010**

	<b>Inpatient</b>	<b>Outpatient</b>	<b>Physician</b>
	Number of Recipients	Number of Recipients	Number of Recipients
<b>0-4</b>	1,503	13,200	78,364
<b>5-9</b>	635	22,791	89,387
<b>10-14</b>	158	15,020	53,562
<b>15-17</b>	258	5,731	16,980
<b>18-29</b>	730	6,785	18,151
<b>30-44</b>	2,092	4,098	20,077
<b>45-64</b>	1,351	7,466	47,077
<b>65+</b>	1,361	5,342	50,093

Adults aged 30-44 years represented the highest number of recipients for inpatient hospital claims, while children aged 5-9 years represented the highest number of recipients for outpatient and physician claims.

# About the Data: Asthma Call-Back Survey

**This section looks at quality of life, health care utilization, knowledge of asthma/management plans, environmental asthma, cost of care, work-related and school-related asthma among adults and children with asthma using data from the Asthma Call-Back Survey. Those questions designated for children were answered by a parent or guardian 18 years and older. Data reported in this section are for adults and children. For this report, the following questions were analyzed:**

1. During the past 30 days, on how many days did symptoms of asthma make it difficult for you to stay asleep?
2. During the past 30 days, on how many days did you have any symptoms of asthma?
3. During the past 12 months, have you had an episode of asthma or an asthma attack?
4. During the past three months, how many asthma episodes or attacks have you had?
5. During the past 12 months, have you had to visit an emergency room or urgent care center because of your asthma?
6. During the past 12 months, how many times did you visit an emergency room or urgent care center because of your asthma?
7. During the past 12 months, how many days were you unable to work or carry out your usual activities because of your asthma?
8. Has a doctor or other health professional ever taught you what to do during an asthma episode or attack?
9. Has a doctor or other health professional ever taught you how to use a peak flow meter to adjust your daily medications?
10. Has a doctor or other health professional ever given you an asthma action plan?
11. Does your household have pets such as dogs, cats, hamsters, birds or other feathered or furry pets that spend time indoors?
12. Are pets allowed in your bedroom?

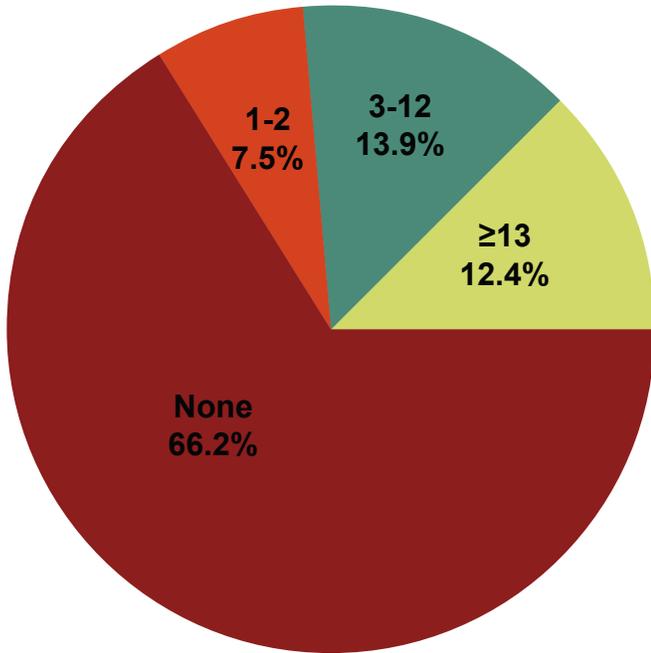
## About the Data: Asthma Call-Back Survey (cont.)

13. In the past 30 days, has anyone seen a cockroach inside your home?
14. In the past 30 days, has anyone seen mice or rats inside your home?
15. Was there a time in the past 12 months when you needed to see your primary care doctor for your asthma but could not because of the cost?
16. Was there a time in the past 12 months when you were referred to a specialist for asthma care but could not go because of the cost?
17. Was there a time in the past 12 months when you needed to buy medication for your asthma but could not because of the cost?
18. Was your asthma caused by chemicals, smoke, fumes or dust in your current job?
19. Is your asthma made worse by chemicals, smoke, fumes or dust in your current job?
20. Did you ever change or quit a job because chemicals, smoke, fumes, or dust caused your asthma or made your asthma worse?
21. Were you ever told by a doctor or other health professional that your asthma was related to any job you ever had?
22. During the past 12 months, about how many days of school did the child miss because of [his/her] asthma?
23. Does the child have a written asthma action plan or asthma management plan on file at school?
24. Does the school the child attends allow children with asthma to carry their medication with them while at school?

# Asthma Call-Back Survey: Adults

## Quality of Life

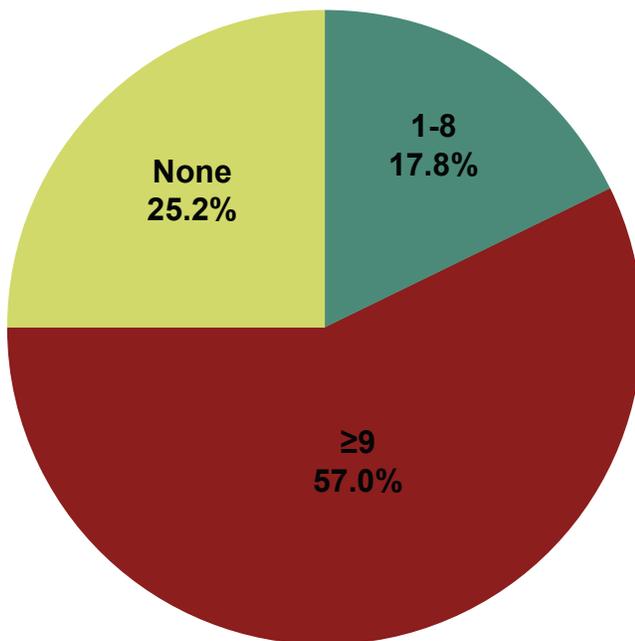
Figure 35. Number of Days Respondents Reported Having Difficulty Staying Asleep in the Past 30 days, Texas, 2006-2009



Of respondents with current asthma, 12.4 percent reported difficulty staying asleep 13 or more days within the past 30 days.

## Quality of Life

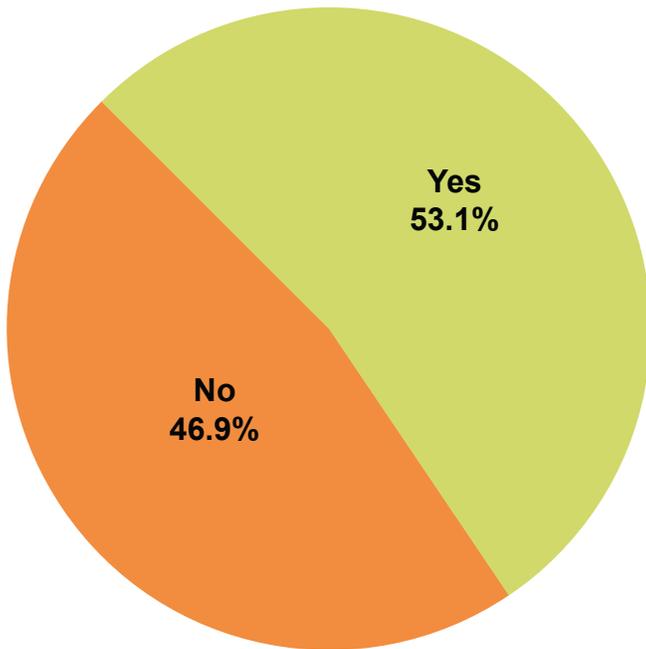
Figure 36. Percent of Respondents by Number of Days with Asthma Symptoms in the Past 30 Days, Texas, 2006-2009



Respondents with current asthma, (25.2 percent) reported having zero days with asthma symptoms within the past 30 days. Symptoms included coughing, wheezing and/or other symptoms of asthma.

## Quality of Life

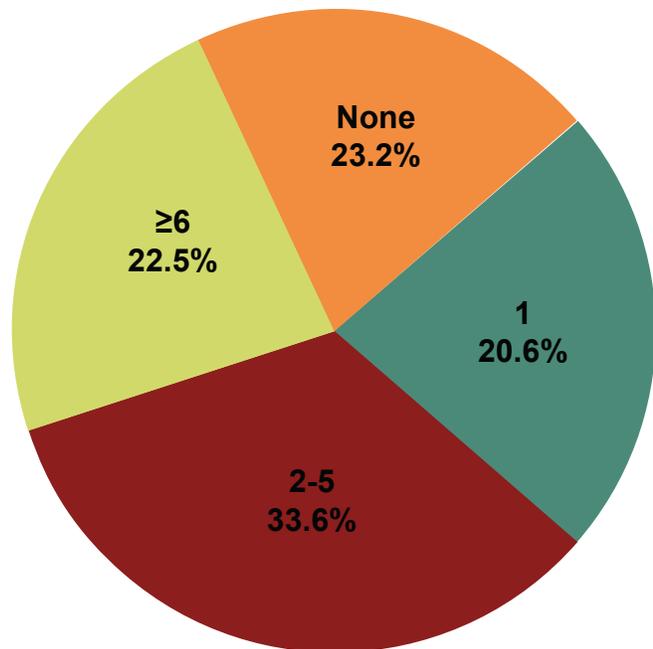
Figure 37. Percent of Respondents Reporting Having at Least One Asthma Episode or Attack in the Past 12 Months, Texas, 2006-2009



More than half (53.1 percent) of those with current asthma reported having had at least one episode of asthma or an asthma attack during the past 12 months.

## Quality of Life

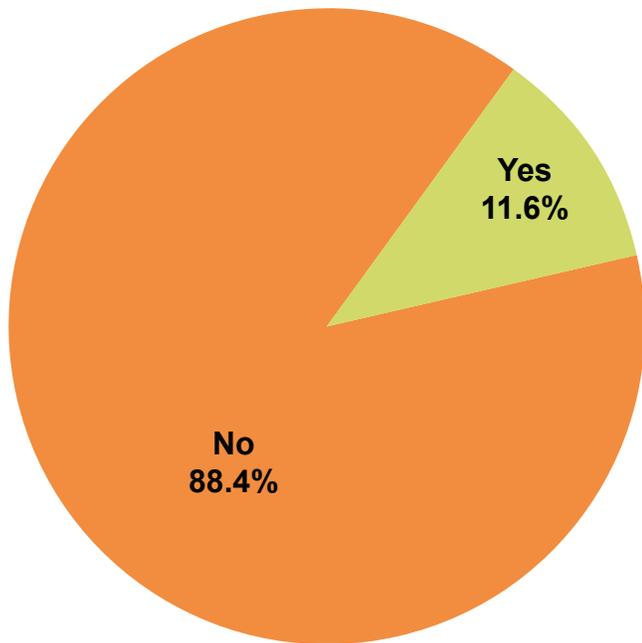
Figure 38. Percent of Respondents Reporting Number of Asthma Episodes or Attacks in the Past Three Months, Texas, 2006-2009



Of respondents who experienced an episode of asthma or an asthma attack within the past 12 months, 22.5 percent had experienced six or greater episodes or asthma attacks within the past three months.

## Health Care Utilization

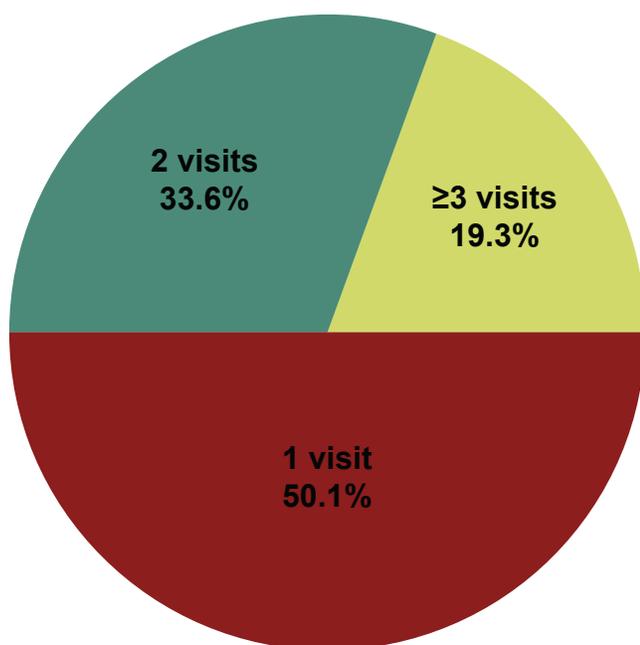
Figure 39. Percent of Respondents Reporting One or More Visits to the Emergency Room or Urgent Care Center, Texas, 2006-2009



Within the past 12 months, 11.6 percent of respondents with current asthma reported having to visit an emergency room or urgent care center due to their asthma.

## Health Care Utilization

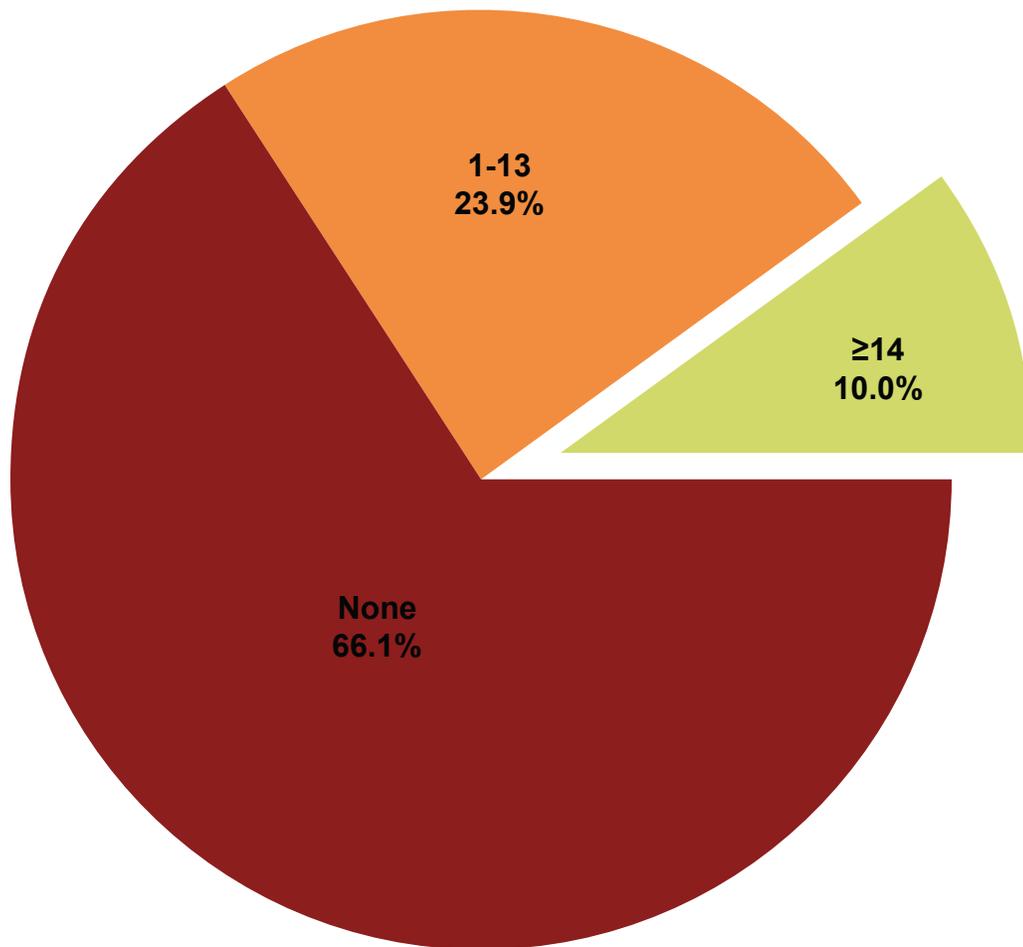
Figure 40. Percent of Respondents Reporting Number of Visits to the Emergency Room or Urgent Care Center, Texas, 2006-2009



Of respondents with current asthma who visited the emergency room or urgent care center, 19.3 percent reported visiting an emergency room or urgent care center three or more times within the past 12 months. There were no respondents who did not visit the emergency room or urgent care center within the past 12 months.

## Health Care Utilization

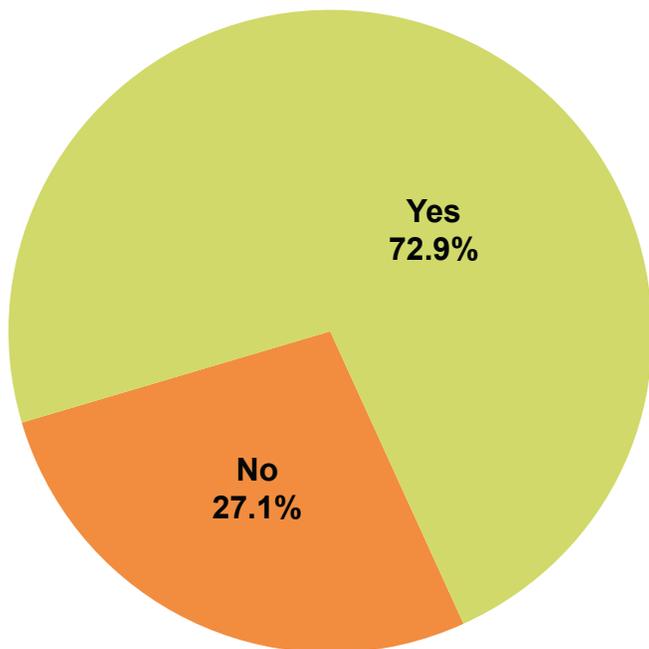
Figure 41. - Percent of Respondents with Current Asthma Reporting Number of Days Unable to Work or Carry Out Normal Activities, Texas, 2006-2009



Almost 24 percent of respondents reported being unable to work or carry out their normal activities for up to 13 days within the past 12 months because of their asthma. Ten percent reported being unable to work or carry out their normal activities for more than two weeks.

## Knowledge of Asthma/Management Plan

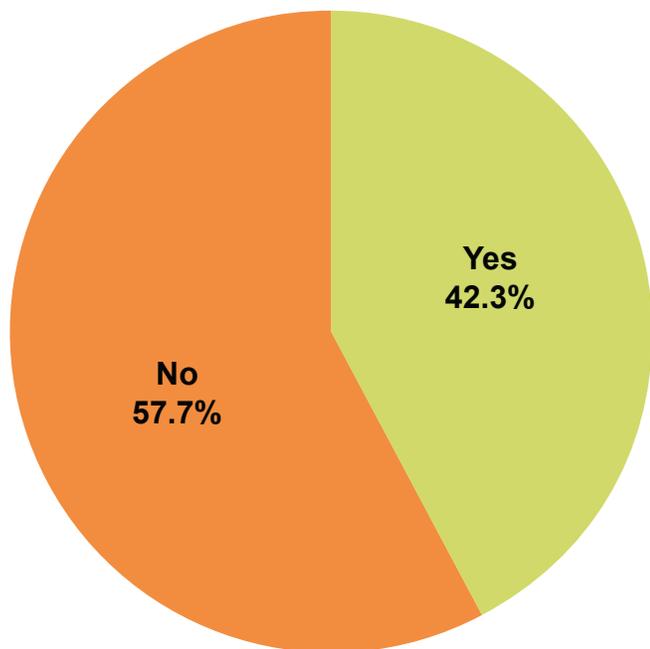
Figure 42. - Percent of Respondents Reporting Being Taught What to do During an Asthma Attack, Texas, 2006-2009



Of respondents with current asthma, 72.9 percent (95% CI: 67.3, 78.4) reported ever being taught by a health professional what to do during an asthma episode or attack. This was significantly higher than the 27.1 percent (95% CI: 21.6, 32.7) who had never been taught what to do during an asthma episode or attack.

## Knowledge of Asthma/Management Plan

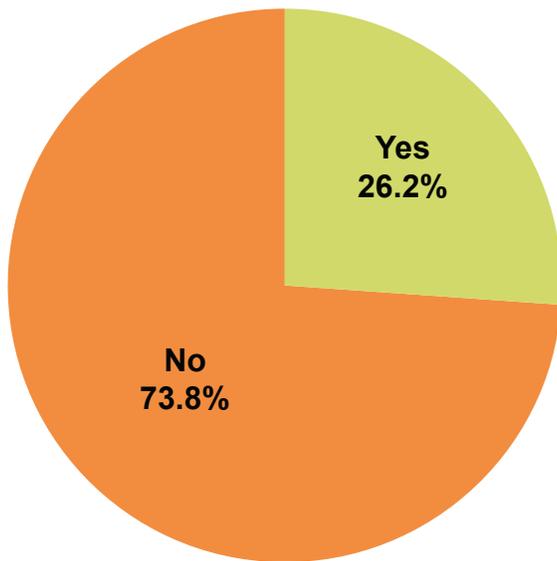
Figure 43. - Percent of Respondents Reporting Being Taught How to Use a Peak Flow Meter, Texas, 2006-2009



Of respondents with current asthma, 42.3 percent (95% CI: 37.2, 47.4) reported being taught how to use a peak flow meter by a health care professional. This was significantly lower than the 57.7 percent (95% CI: 52.6, 62.8) of current asthma respondents who had never been taught how to use a peak flow meter by a health care professional.

## Knowledge of Asthma/Management Plan

**Figure 44. Percent of Respondents Reporting Being Given an Asthma Action Plan by a Doctor or Health Professional, Texas, 2006-2009**



Of respondents with current asthma, 73.8 percent (95% CI: 69.4, 78.2) had not been given an asthma action plan by a doctor or other health professional. This was significantly higher than the 26.2 percent (95% CI: 21.8, 30.6) with current asthma who had been given an asthma action plan.

## Environmental Asthma

**Table 4. Percent of Respondents Allowing Pets Indoors and in the Bedroom, Reporting Seeing a Cockroach, Mice or Rats in the Home in the Past 30 Days, Texas, 2006-2009**

	Prevalence (%)	Confidence Interval	
		Lower Limit	Upper Limit
<b>Allowed Pets Indoors</b>	55.2	49.7	60.6
<b>Allowed Pets in the Bedroom (among those who Allowed Pets Indoors)</b>	73.2	66.5	80.0
<b>Saw a Cockroach Inside the Home</b>	27.3	22.6	32.0
<b>Saw Mice or Rats Inside the Home</b>	4.9	2.9	6.9

More than half of those with current asthma reported allowing pets such as dogs, cats, hamsters, birds or other feathered or furry pets indoors. Of those who allowed pets indoors, about 73.2 percent allowed their pets in their bedrooms, 26.8 percent of those with current asthma reported having seen a cockroach inside the home within the past 30 days, and only about five percent reported having seen mice or rats inside the home within the past 30 days.

## Cost of Asthma Care

**Table 5. Percent of Respondents Reporting Inability to See Primary Care Doctor, Specialist, and Afford Asthma Medications, Texas, 2006-2009**

	Prevalence (%)	Confidence Interval	
		Lower Limit	Upper Limit
<b>Unable to See Primary Care Doctor</b>	17.2	13.3	21.0
<b>Unable to See Asthma Specialist</b>	9.6	6.8	12.4
<b>Unable to Afford Asthma Medications</b>	19.7	15.9	23.4

Within the past 12 months, 17.2 percent of respondents with current asthma were unable to see their primary care doctor for their asthma due to cost, approximately one-tenth of those with current asthma could not see a specialist for their asthma due to cost, and 19.7 percent of those with current asthma could not buy their asthma medications due to cost.

## Work-Related Asthma

**Table 6. Percent of Respondents Reporting their Current Job Caused or Exacerbated their Asthma, Forced Them to Quit, or had Doctor Diagnosed Asthma**

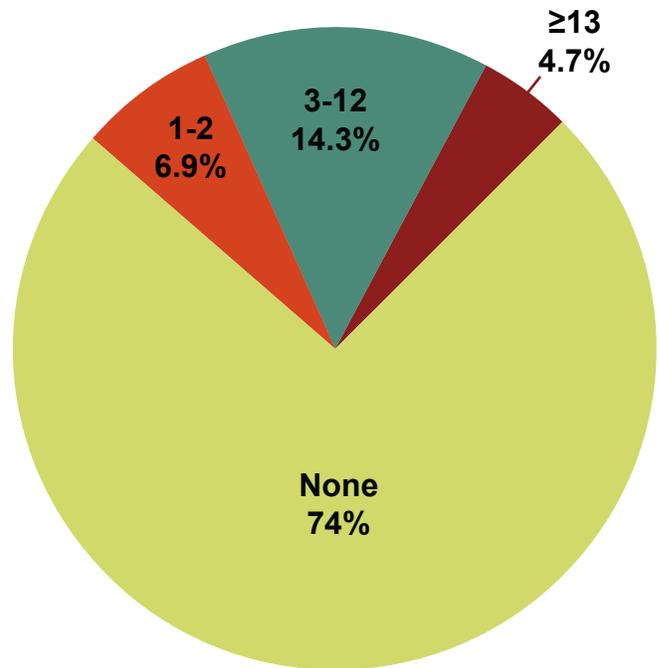
	Prevalence (%)	Confidence Interval	
		Lower Limit	Upper Limit
<b>Asthma Caused by Work</b>	18.2	9.9	26.5
<b>Asthma Exacerbated by Work</b>	34.4	26.3	42.4
<b>Forced to Quit due to Asthma</b>	27.0	18.9	35.1
<b>Doctor Diagnosed Asthma</b>	8.3	6.0	10.6

Of those respondents with current asthma and current job employment, 18.2 percent reported that their asthma was caused by chemicals, smoke, fumes and/or dust in their current job positions, and about 34 percent reported that their asthma was exacerbated by chemicals, smoke, fumes and/or dust in their current job positions. Of those with asthma caused or made worse by chemicals, smoke, fumes and or dust, approximately 27 percent reported having to change or quit a job. Slightly over eight percent of those currently employed reported ever being told by a doctor or health professional that their asthma was related to a job they ever had.

# Asthma Call-Back Survey: Children

## Quality of Life

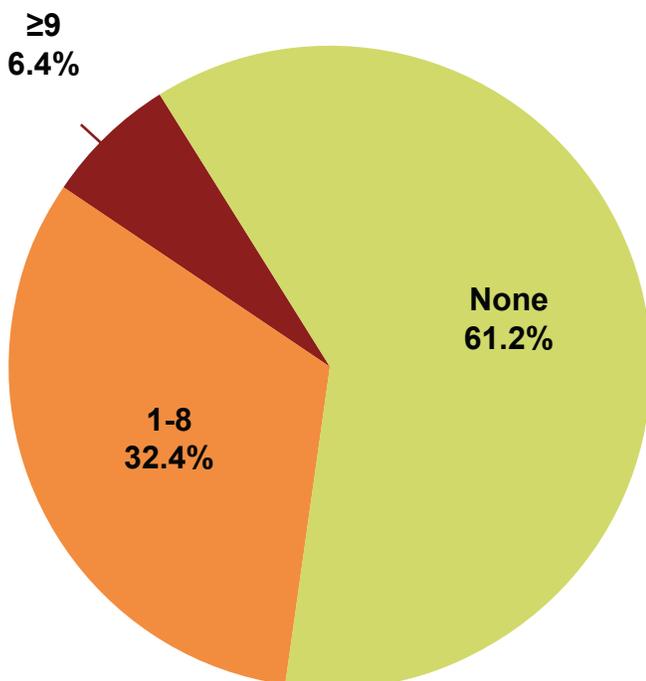
Figure 45. Percent of Children with Difficulty Staying Asleep Within the Past 30 Days, Texas, 2006-2009



Of children with current asthma, 74 percent had no difficulty staying asleep within the past 30 days.

## Quality of Life

Figure 46. Percent of Children by Number of Days with Asthma Symptoms within the Past 30 Days, Texas, 2006-2009

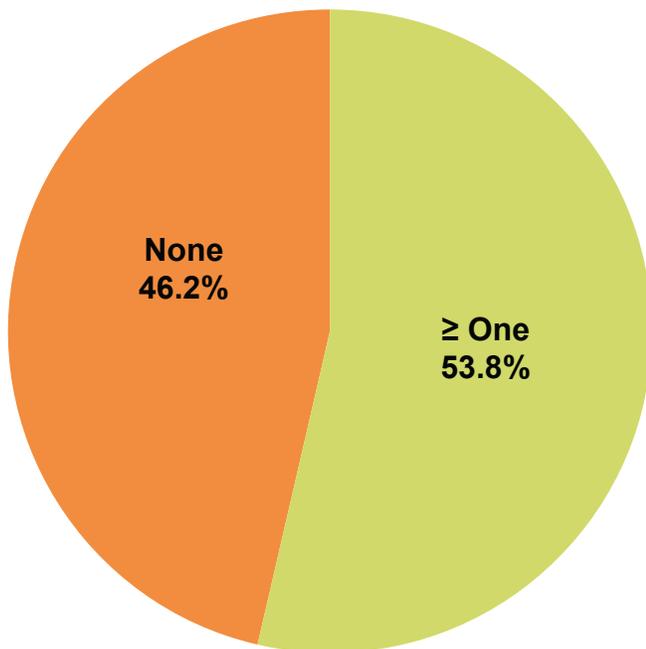


Of children with current asthma, nearly 61.2 percent reported zero days with asthma symptoms. Symptoms include coughing, wheezing and/or other symptoms of asthma.

Only 6.4 percent of children had asthma symptoms on nine or more days within the past 30 days.

## Quality of Life

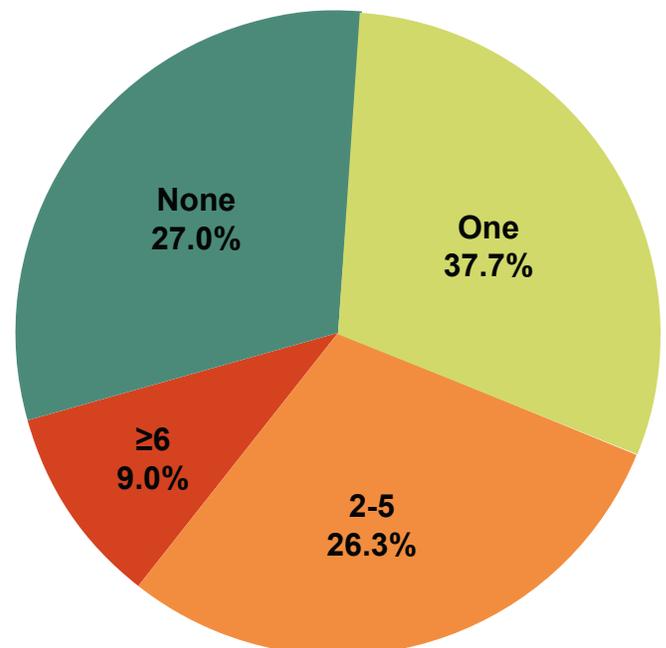
Figure 47. Percent of Children who Had at Least One Asthma Episode or Attack in the Past 12 Months, Texas, 2006-2009



Of children with current asthma 53.8 percent had one or more episodes of asthma or an asthma attack within the past 12 months.

## Quality of Life

Figure 48. Percent of Children by Number of Asthma Episodes or Attacks in the Past Three Months, Texas, 2006-2009

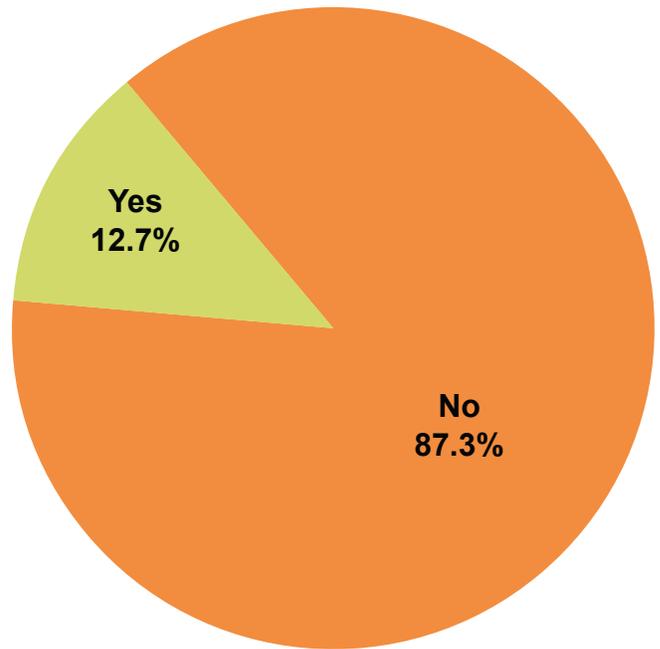


Of children who experienced an episode of asthma or an attack, 37.7 percent had one asthma episode or attack within the past three months.

## Health Care Utilization

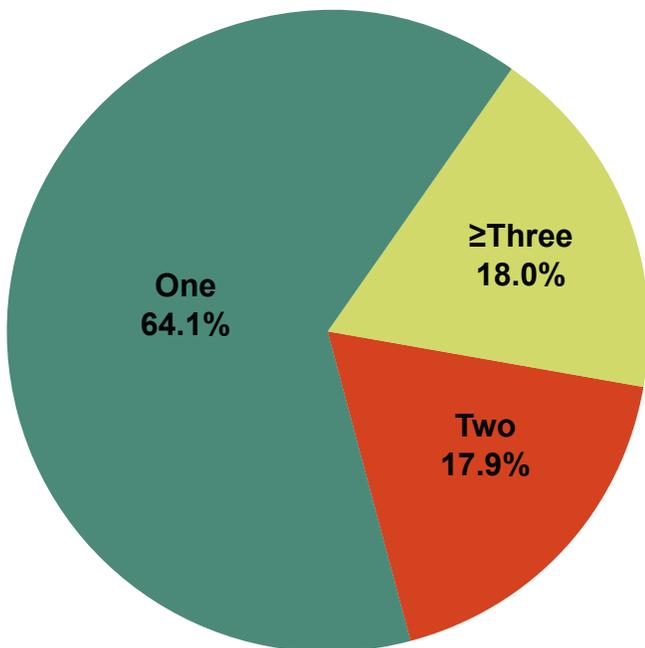
**Figure 49. Percent of Children that Had at Least One Visit to the Emergency Room or Urgent Care Center, Texas, 2006-2009**

About 13 percent of children with current asthma had to visit an emergency room or urgent care center due to their asthma within the past 12 months.



## Health Care Utilization

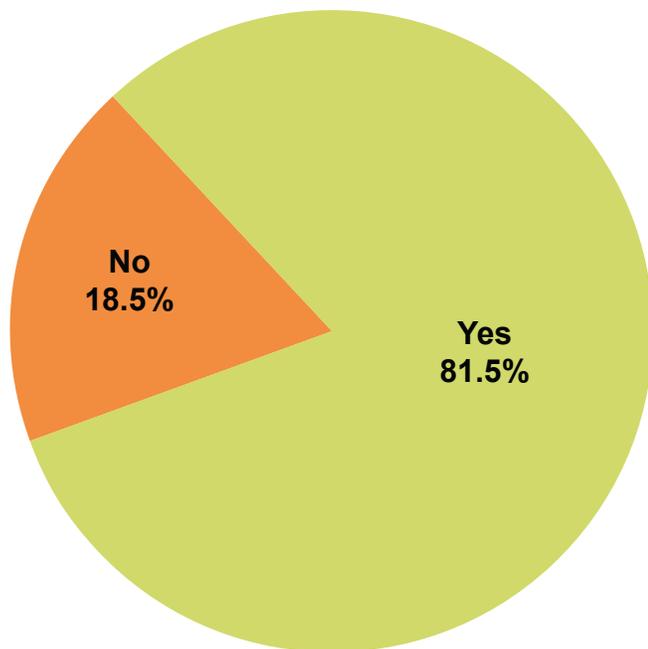
**Figure 50. Percent of Children by Number of Visits to the Emergency Room or Urgent Care Center, Texas, 2006-2009**



Of children who had visited the emergency room or urgent care center within the past 12 months, 18 percent presented at the emergency room or urgent care center three or more times within the past 12 months.

## Knowledge of Asthma/Management Plan

Figure 51. Percent of Children Who Had Been Told What to do During an Asthma Episode or Attack, Texas, 2006-2009

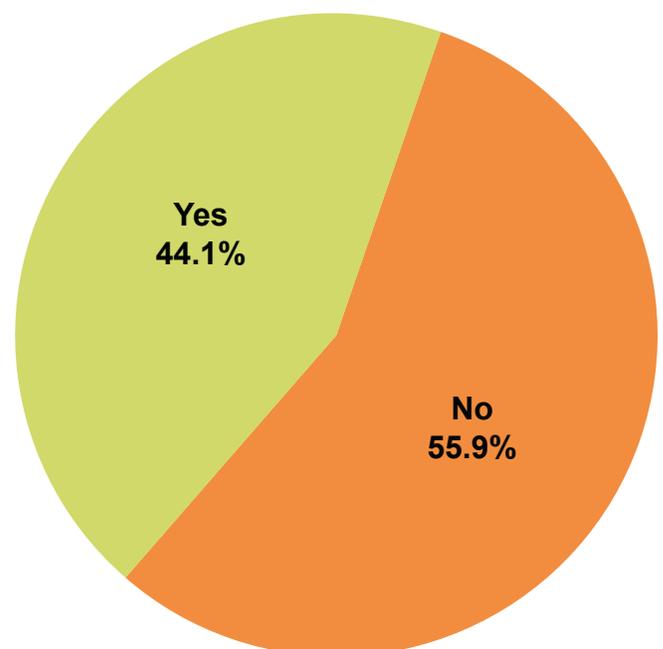


About 82 percent of children with current asthma reported having been told by a doctor or other health professional what to do during an asthma episode or attack.

## Knowledge of Asthma/Management Plan

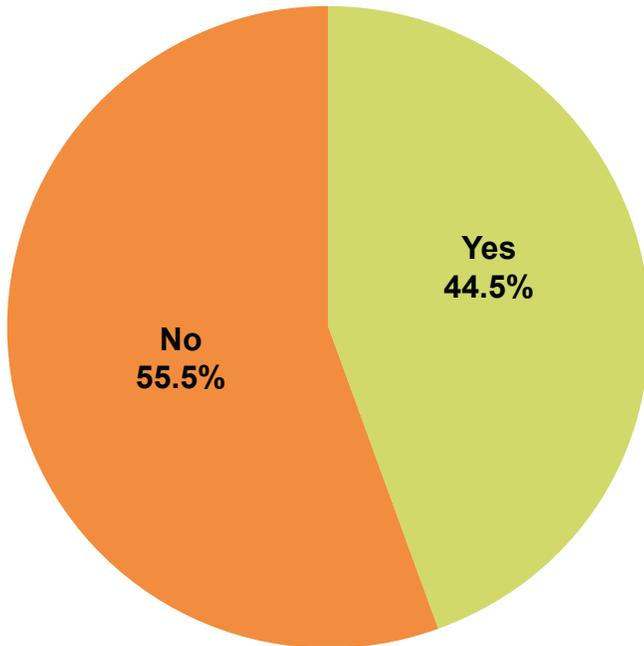
Figure 52. Percent of Children Who Had Been Taught How to Use a Peak Flow Meter, Texas, 2006-2009

About 44 percent of children with current asthma had been taught how to use a peak flow meter.



## Knowledge of Asthma/Management Plan

Figure 53. Percent of Children Who Had Received an Asthma Action Plan from a Doctor or Health Professional, Texas, 2006-2009



Almost 45 percent (95% CI: 36.9, 52.1) of current asthma respondents reported having received an asthma action plan from a doctor or other health professional. This was not significantly different from the percentage of respondents who reported not having received an asthma action plan from a doctor or other health professional.

## Environmental Asthma

Table 7. Percent of Children Living in Households Where Pets were Allowed in the Household, Bedroom, and Cockroaches, Mice and/or Rats were Seen in the Child's Household, Texas, 2006-2009

	Prevalence (%)	Confidence Interval	
		Lower Limit	Upper Limit
<b>Allowed Pets Indoors</b>	46.4	38.8	53.9
<b>Allowed Pets in the Bedroom (among those who Allowed Pets Indoors)</b>	65.6	55.9	75.3
<b>Saw a Cockroach Inside the Home</b>	24.5	17.3	31.6
<b>Saw Mice or Rats Inside the Home</b>	3.5	1.3	5.7

Of children with current asthma, 46.4 percent allowed pets such as dogs, cats, hamsters, birds or other feathered or furry pets indoors and of those, about two-thirds allowed their pets inside their bedroom; 24 percent had seen a cockroach inside the home.

## Cost of Asthma Care

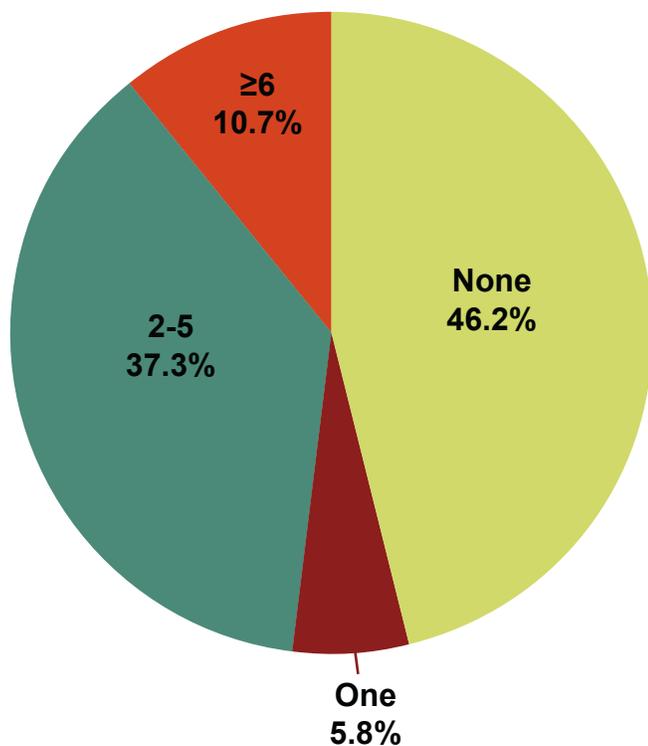
**Table 8. Percent of Children Who were Unable to See their Primary Care Doctor, Specialist, or Afford Prescriptions Within the Past 12 Months, Texas, 2006-2009**

	Prevalence (%)	Confidence Interval	
		Lower Limit	Upper Limit
Unable to see Primary Care Doctor	11.4	6.6	16.1
Unable to see Asthma Specialist	8.2	3.5	12.8
Unable to Afford Asthma Medications	12.6	7.7	17.4

Within the past 12 months, 11.4 percent of children with current asthma were unable to see their primary care doctor for their asthma due to cost, 8.2 percent were unable to see a specialist for their asthma due to cost, and almost 13 percent were unable to buy their asthma medications due to cost.

## School-Related Asthma

**Figure 54. Percent of Children that Missed School due to their Asthma Within the Past 12 Months, Texas, 2006-2009**

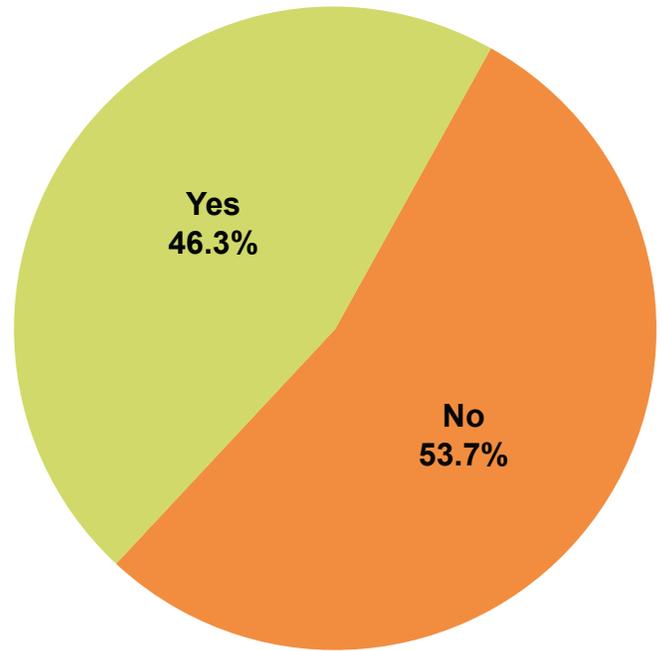


During the past 12 months, 46.2 percent of children with current asthma, who were enrolled in school did not miss any days from school; however, 37.3 percent of children missed between two and five days of school due to their asthma.

## School-Related Asthma

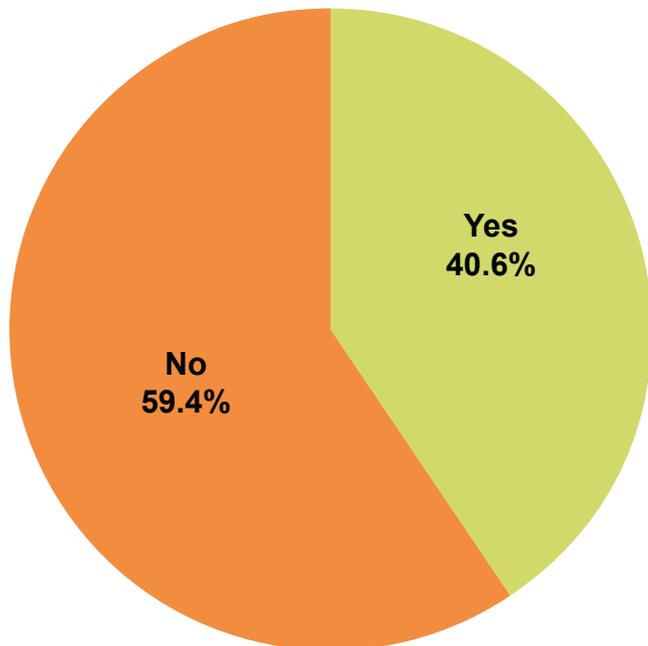
**Figure 55. Percent of Children with Ability to Carry their Asthma Medications with Them While at School, Texas, 2006-2009**

Among children with current asthma and who were enrolled in school, 46.3 percent (95% CI: 37.9, 54.6) were able to carry their asthma medications with them while at school. However, this number was not significantly different from the 53.7 percent (95% CI: 45.4, 62.1) of children who were not able to carry their asthma medications at school.



## School-Related Asthma

**Figure 56. Percent of Children Who Had an Asthma Action Plan on File at School, Texas, 2006-2009**



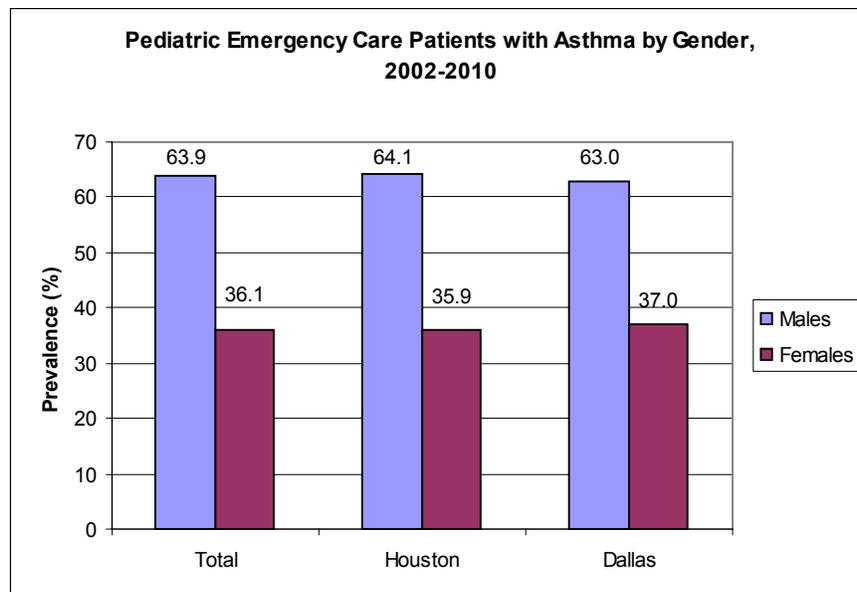
Among children with current asthma who were enrolled in school, approximately 41 percent had an asthma action plan on file at their school. This was significantly lower than the 59.4 percent (95% CI: 51.2, 67.7) of children who did not have an asthma action plan on file.

# About the Data: TEDAS Program

The Texas Emergency Department Asthma Surveillance (TEDAS) program is a prospective and retrospective data tracking system for pediatric emergency department (ED) asthma visits. It is a collaborative project between the TACP, Baylor College of Medicine, and hospitals in the Houston and Dallas areas. Participating hospitals include Texas Children's Hospital, Lyndon B. Johnson General Hospital, The University of Texas Medical Branch, Ben Taub General Hospital, and Children's Medical Center of Dallas. The program provides ongoing surveillance of pediatric ED asthma visits by linking data with demographic and environmental asthma triggers and risk factors to ED utilization outcomes.

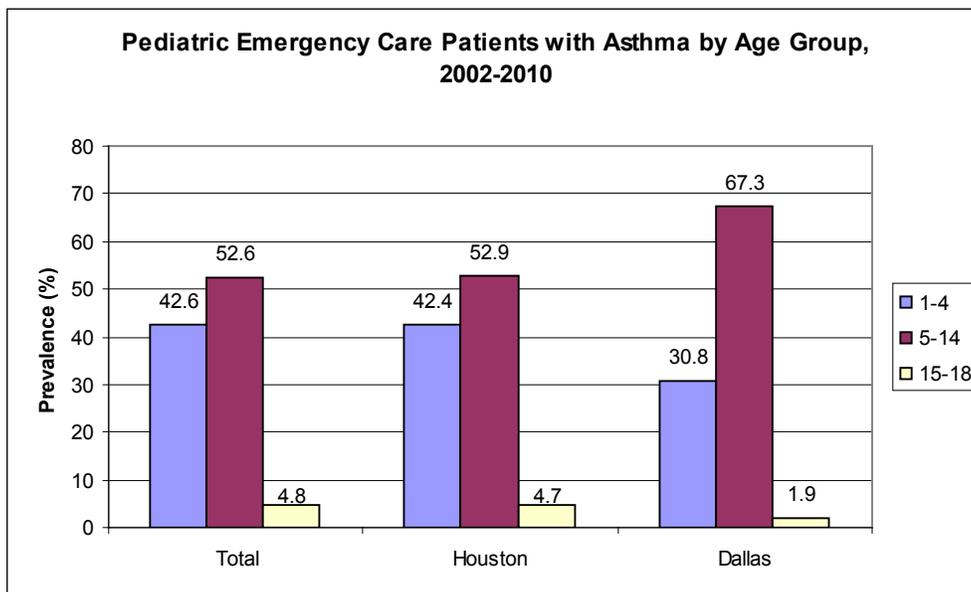
The database records all ED visits by children age one through 18 at participating hospitals. This section of the report presents data on demographics, insurance status, chronic severity classification, and acute severity classification for participating hospitals in Houston and Dallas. Both chronic and acute severity were assessed at the time of presentation by the ED physician, and are captured from retrospective chart review or by real-time data collection. Chronic and acute severity classifications are consistent with the National Asthma Education and Prevention Program (NAEPP) Guidelines.

**Figure 57. Pediatric Emergency Care Patients with Asthma by Gender in Houston and Dallas, 2002-2010**



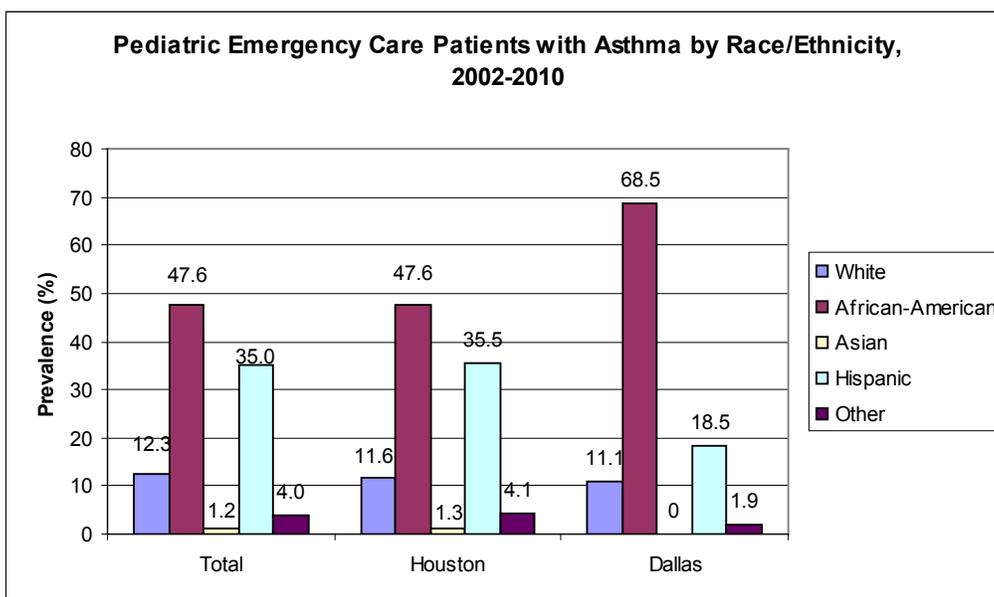
In the Houston and Dallas areas, the number of males in the TEDAS program was nearly double that of females.

**Figure 58. Pediatric Emergency Care Patients with Asthma in Houston and Dallas by Age Group, 2002-2010**



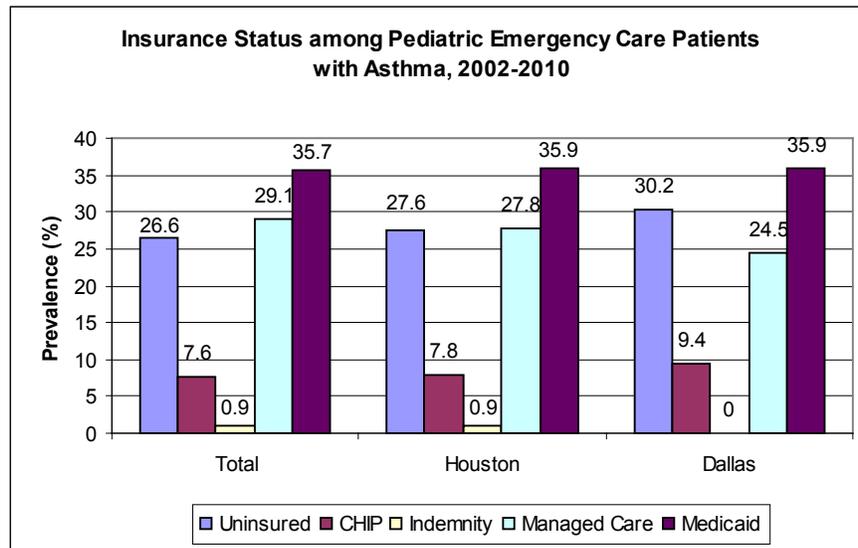
Children between the ages of 5-14 represented slightly more than half of the pediatric asthma patients in the Houston area. In Dallas, children between the ages of 5-14 represented two-thirds of the pediatric asthma patients.

**Figure 59. Pediatric Emergency Care Patients with Asthma in Houston and Dallas by Race/Ethnicity, 2002-2010**



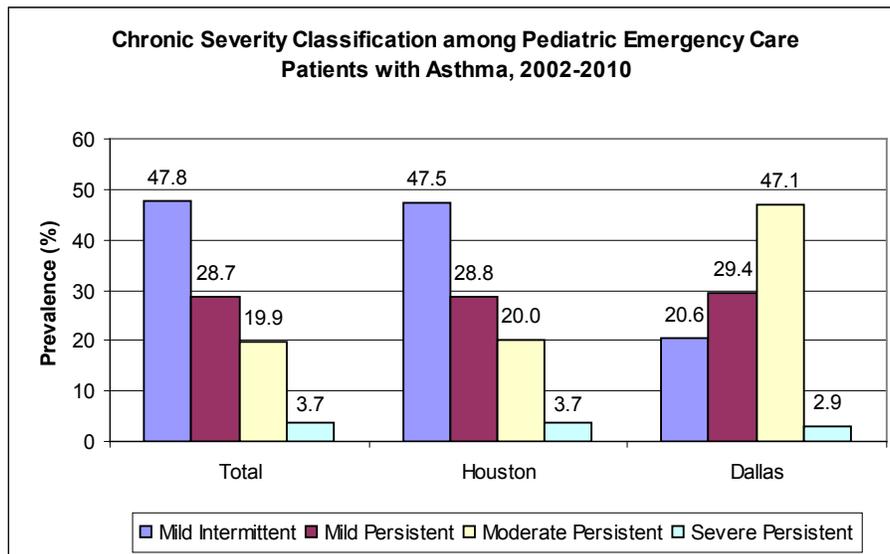
Almost half of total patients and Houston patients participating in the TEDAS program were African American. In Dallas, more than two-thirds of the patients were African-American. Asians represented the smallest number of pediatric emergency care patients both in Houston and Dallas.

**Figure 60. Insurance Status among Pediatric Emergency Care Patients with Asthma in Houston and Dallas, 2002-2010**



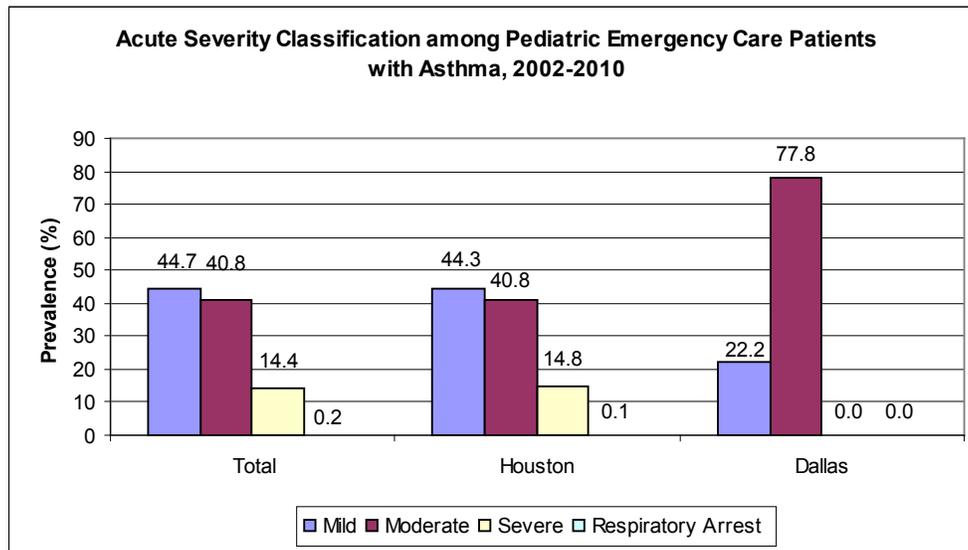
The majority of children in the TEDAS program had public insurance, whereas more than one in four pediatric emergency care patients were uninsured in both Houston and Dallas.

**Figure 61. Chronic Severity Classification of Pediatric Emergency Care Patients with Asthma, 2002-2010**



The percentage of pediatric emergency care patients in Dallas with a chronic severity classification of moderate persistent asthma was more than double the number of pediatric emergency care patients with the same classification in Houston.

**Figure 62. Acute Severity Classification of Pediatric Emergency Care Patients with Asthma in Houston and Dallas, 2002-2010**



Approximately 85 percent of pediatric emergency care patients in Houston had an acute severity classification of mild or moderate disease. The number of pediatric emergency care patients in Dallas with a moderate acute severity classification was almost double the number of pediatric emergency care patients in Houston with the same classification.

# Defining the Healthy People 2020 Objectives

Healthy People 2020 (HP2020) provides a framework for disease prevention and reducing burden through a comprehensive plan that includes goals and objectives for many public health focus areas for the United States. HP2020 sets national health objectives designed to identify the most significant preventable threats to health, establish national goals to reduce these threats, and promote and maintain the health of all Americans. Each goal is achieved by meeting several measurable objectives.

This section compares Texas rates to the HP2020 goals related to asthma.

## **Respiratory Diseases(RD)-1. Reduce asthma deaths.**

Target: Children and adults under age 35 years - No objective identified  
Adults aged 35 to 64 years old - 6.0 deaths per million  
Adults aged 65 years and older - 22.9 deaths per million

## **RD-2. Reduce hospitalizations for asthma.**

Target: Children under age 5 years - 18.1 hospitalizations per 10,000  
Children and adults aged 5 to 64 years - 8.5 hospitalizations per 10,000  
Adults aged 65 years and older - 20.3 hospitalizations per 10,000  
\*Age-adjusted to the 2000 U.S. standard population

## **RD-3. Reduce hospital emergency department visits for asthma\*.**

Target: Children under age 5 years - 95.5 emergency department visits per 10,000  
Children and adults aged 5 to 64 years - 49.1 emergency department visits per 10,000  
Adults aged 65 years and older - 13.2 emergency department visits per 10,000

## **RD-4. Reduce activity limitations among persons with current asthma\*\*.**

Target: 10.2 percent

## **RD-5. Reduce the proportion of persons with asthma who miss school or work days.**

Target: Children aged 5 to 17 years with asthma who miss school days - 48.7 percent  
Adults aged 18-64 with asthma who miss work days - 26.8 percent

*\*Objective RD-3: Texas does not have data to compute asthma emergency department visits to compare to Healthy People 2020 targets.*

*\*\*Objective RD-4: Texas does not have data to compute the percentage of all persons with asthma that experience activity limitations to compare to Healthy People 2020 targets.*

**Table 9. Asthma Mortality Rates per 1,000,000 by Age Group Compared to Healthy People 2020 Targets, Texas, 2002-2008**

	0- 34 Years		35-64 Years		65+ Years	
	Rate	Count	Rate	Count	Rate	Count
<b>2002</b>	3.0	38	12.0	93	55.0	119
<b>2003</b>	3.0	30	12.0	97	56.0	122
<b>2004</b>	3.0	38	9.0	78	49.0	109
<b>2005</b>	2.0	27	12.0	102	57.0	128
<b>2006</b>	2.0	26	9.0	80	50.0	115
<b>2007</b>	3.0	34	10.0	94	36.0	84
<b>2008</b>	2.0	23	9.0	86	40.0	97
<b>HP2020 Target</b>	<i>Unidentified</i>		<b>6.0</b>		<b>22.9</b>	

For adults aged 35-64 and age 65 and older, Texas asthma mortality rates from 2002-2008 were higher than the Healthy People 2020 target rates of 6.0 per 1,000,000 and 22.9 per 1,000,000, respectively.

**Table 10. Age-Adjusted Asthma Hospitalization Rates per 10,000 by Age Group Compared to Healthy People 2020 Targets, Texas, 2005-2009**

	0-4 Years		5-64 Years		65+ Years	
	Rate	Count	Rate	Count	Rate	Count
<b>2005</b>	25.6	4,743	7.9	14,727	23.9	5,331
<b>2006</b>	28.4	5,349	7.8	14,978	21.2	4,855
<b>2007</b>	27.7	5,279	7.7	15,054	21.4	4,974
<b>2008</b>	26.1	5,024	7.7	15,300	23.9	5,738
<b>2009</b>	27.9	5,430	8.5	17,211	21.8	5,403
<b>HP 2020 Target</b>	<b>18.1</b>		<b>8.5</b>		<b>20.3</b>	

For the age category 0-4 and those age 65 and older, age-adjusted asthma hospitalization rates have been higher than the Healthy People 2020 objective since 2005. Age-adjusted asthma hospitalization rates for those between ages five and 64 have met the Healthy People 2020 objective since 2005.

**Table 11. Prevalence of Work and School Days Missed in the Past 12 Months  
Compared to Healthy People 2020 Targets, Texas, 2006-2009**

	<b>Percent of Adults who Missed Work Days</b>	<b>Percent of Children who Missed School Days</b>
<b>2006-2009</b>	47.0	66.9
<b><i>HP2020 Target</i></b>	<b>26.8</b>	<b>48.7</b>

From 2006-2009, the number of adults and children who missed work and school days were higher than the Healthy People 2020 targets.

# Appendix A

## Technical Notes

### Acronyms

BMI	Body Mass Index
BRFSS	Behavioral Risk Factor Surveillance System
CHS	Center for Health Statistics
CI	Confidence Interval
DSHS	Texas Department of State Health Services
HHSC	Texas Health and Human Services Commission
PHR	Public Health Region
ICD	International Classification of Diseases
LOS	Length of Stay
MSA	Metropolitan Statistical Area
TEDAS	Texas Emergency Department Asthma Surveillance
THCIC	Texas Health Care Information Collection

### Metropolitan Statistical Areas

**Austin:** Bastrop, Caldwell, Hays, Travis, Williamson

**Dallas:** Collin, Dallas, Delta, Denton, Ellis, Hunt, Kaufman, Rockwall

**El Paso:** El Paso

**Fort Worth:** Johnson, Parker, Tarrant, Wise

**Houston:** Austin, Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty  
Montgomery, San Jacinto, Waller

### Race/Ethnicity

The three major population subgroups in Texas by race\ethnicity are Hispanic or Latino, Anglo or White non-Hispanic, and Black or non-Hispanic African American. The category labeled “Other” denotes all persons in race categories not explicitly included in the three major subgroups, and includes Asian alone (81 percent of Other statewide) and American Indian or Alaska Native alone (10 percent of Other statewide), some other race alone (4.5 percent of Other statewide), and all persons reporting two or more races combined.

## Terminology

**Age-Adjusted Rate** - A weighted average of age group specific rates in the population under study. Rates are age-adjusted using the direct method to the 2000 U.S. population.

**Confidence Interval** - A measure of the precision of an estimate. The wider the interval, the less precise the estimate. In this report, 95 percent CIs are used. The interpretation of the 95% percent CI means there is a 95 percent chance that the true value of the estimate lies within the range of the interval.

**Prevalence** - The number of existing cases of a disease or health condition in a population at some designated point in time.

**Lifetime Asthma Prevalence** - The proportion of the population that has ever been diagnosed with asthma.

**Current Asthma Prevalence** - The proportion of the population that reports currently having asthma. The current asthma population is a subset of the population that has ever been diagnosed with asthma.

# Appendix B

## Data Sources

Name: **Texas Behavioral Risk Factor Surveillance System**

Acronym: BRFSS

Purpose: The Texas BRFSS is a source of prevalence estimates of certain health behaviors, conditions, and practices associated with leading causes of death.

History: Texas has conducted the BRFSS survey since 1987. Asthma related questions were added to the Texas survey in 1999.

Methodology: Annual estimates are based on data collected from a random-digit dialed telephone survey of a sample of Texas households. The data is a population based representative sample of Texas residents. The data are weighted to represent estimates for the general adult population age 18 years and older. BRFSS interviewers use a Computer Assisted Telephone Interviewing (CATI) system, which provides the interviewer with prompts. The interviewer enters the respondent's responses directly onto the computer screen, which provides quality control and minimizes interviewer error.

Population: The selected respondent must be a Texas resident, 18 years of age or older who lives in a private residence and has a landline telephone. One randomly selected adult from a household is interviewed. Texas is also interviewing respondents with cell phones, but these data are not currently included in this report.

Asthma Data: The BRFSS has two questions dedicated to estimating lifetime and current adult asthma prevalence for the general population of adults. In addition to the core questions, the Texas BRFSS has included the childhood asthma prevalence module, which includes two questions that estimate the prevalence of lifetime and current childhood asthma prevalence.

For more information about BRFSS, please visit:

<http://www.cdc.gov/brfss/> or <http://www.dshs.state.tx.us/chs/brfss/default.shtm>

## Data Sources

Name: **Texas Health Care Information Collection**

Acronym: THCIC

Purpose: THCIC is a source of hospital admissions and hospitalization costs from state licensed hospitals.

History: THCIC was created by Chapter 108 of the Texas Health and Safety Code (THSC) and is responsible, under Sections 108.011 through 108.0135, for collecting hospital discharge data from all state licensed hospitals except those that are statutorily exempt from the reporting requirement. Exempt hospitals include those located in a county with a population less than 35,000, those located in a county with a population more than 35,000, or those hospitals with fewer than 100 licensed hospital beds and not located in an area that is delineated as an urbanized area by the United States Bureau of the Census. Exempt hospitals also include hospitals that do not seek insurance payment or government reimbursement.

Methodology: THCIC receives quarterly hospital discharge data from all state licensed hospitals. At the end of each year, the compiled data are available in a Public Use Data File (PUDF). The PUDF contains patient-level information for inpatient hospital stays. These data are extracted from DSHS's Hospital Discharge Database (HDD). Data not available in the PUDF, excluding confidential data protected by §108.0135, Health and Safety Code, are available for research purposes with the approval of the THCIC Scientific Review Panel (SRP).

Asthma Data: The PUDF covers both adult and child Texans who have an inpatient hospitalization due to asthma (ICD-9: 493.0 – 493.9). Information such as, but not limited to demographics, average length of stay, hospital charges, primary source of payment, and patient status, are included in the system.

For more information about THCIC, please visit:

<http://www.dshs.state.tx.us/thcic/>

# Appendix B

## Data Sources

Name: **Population Data, Center for Health Statistics (CHS)**

Purpose: The CHS was established to provide a convenient access point for health-related data for Texas and serves as a source of population and demographic information. The CHS provides data on births, deaths, fetal deaths, abortions, marriages, and divorces. CHS responds to statistical data requests and develops and publishes the Texas Vital Statistics Annual Report.

Methodology: Each year, CHS and the Vital Statistics Unit coordinate their efforts to collect, enter, and edit vital statistics data for Texas. After the data are edited, staff perform analyses and create tables on various topics to produce the Texas Vital Statistics Annual Report.

Population: The Texas Vital Statistics includes records for births or deaths that have occurred in Texas from 1903 to present.

Asthma Data: Asthma mortality data are obtained from the information on the Texas Certificate of Death according to the appropriate ICD code. ICD-9 codes of 493.0 to 493.9 were used before 1999. ICD-10 codes of J45 and J46 are used for 1999 and later.

For more information about vital statistics, please visit:

<http://www.dshs.state.tx.us/CHS/VSTAT/>

or

<http://www.dshs.state.tx.us/vs/default.shtm>

## Data Sources

Name: **Medicaid, Texas Health and Human Services Commission (HHSC)**

Purpose: HHSC oversees the operations of the Texas Health and Human Services System, provides administrative oversight to Texas Health and Human Services Programs, and provides direct administration of select programs, including the Medicaid program.

Methodology: Medicaid data are prepared by the Research Team, Strategic Decision Support at HHSC. Fee-for-service (FFS) and primary care case management (PCCM) data were selected from the Texas Medicaid and Health Partnership (TMHP) Ad Hoc Query Platform (AHQP) Claims Universe.

Population: The population data presented in this report are the number of asthma Medicaid recipients who have filed professional, outpatient, or inpatient hospital claims. This is a subset of all Medicaid clients for the calendar year indicated.

Asthma Data: Asthma is defined as paid or partially paid claims with a primary or secondary diagnosis of ICD-9 CM: 493.00-493.99. Inpatient hospital claims are defined as claim types 40 and 50. Emergency care is defined as events of which procedure codes 99281, 99282, 99283, 99284, 99285, W0004, W0005, Y001, 450, 456, and 459 were utilized.

For more information about HHSC, please visit:

[http://www.hhsc.state.tx.us/about\\_hhsc/index.html](http://www.hhsc.state.tx.us/about_hhsc/index.html)

or

<http://www.hhsc.state.tx.us/Medicaid/index.html>

# Appendix B

## Data Sources

Name: **Asthma Call-Back Survey**

Acronym: ACBS

**Purpose:** The purpose of the Asthma Call-Back Survey is to expand upon the existing asthma data available to date. The in-depth asthma questions on the survey help to improve and continue asthma surveillance on a state level. As a result, health care providers and professionals, public health professionals, members of the community and school sectors can use this data to better guide their educational and intervention strategies towards improving the health of people with asthma.

**Methodology:** The ACBS is administered in conjunction with the Texas BRFSS. If a person answers that they or their child has asthma on the BRFSS, approximately two weeks later, the adult is called again to complete the Asthma Call-Back Survey. If a child is randomly selected, the adult or randomly selected parent or guardian age 18 years or older in the household who is knowledgeable about the child's asthma serves as a surrogate to answer the questions. If both the parent/guardian and the child have asthma, one is chosen to take the survey. Adult and child surveys are conducted separately.

**Population:** Adults (ages 18+) and children (aged 0-17) with lifetime and/or current asthma who have responded to the Texas BRFSS.

**Asthma Data:** The ACBS provides data on quality of life, health care utilization, cost of care, medications, school related, work-related and environmental asthma triggers for adults and children with asthma.

For more information about the ACBS, please visit:

[www.cdc.gov/brfss/acbs/index.htm](http://www.cdc.gov/brfss/acbs/index.htm)

## Data Sources

Name: **Texas Emergency Department Asthma Surveillance**

Acronym: TEDAS

**Purpose:** The TEDAS program is a prospective and retrospective data tracking system for pediatric emergency department (ED) asthma visits. It is a collaborative project between TACP, Baylor College of Medicine, and hospitals in the Houston, Dallas, and Galveston areas. Information on ED pediatric asthma visits is collected at participating hospitals and analyzed to identify patient characteristics. Members of a collaborative Baylor/Texas Children's Hospital research team act as key investigators. Charles G. Macias, M.D. directs the project.

**Methodology:** TEDAS is a surveillance system that uses both prospective and retrospective information to build a database covering all ED asthma visits at participating hospitals by children between ages one and 18.

The system also collects the ED physician's diagnosis and severity assessment of the patient. Physicians assess both chronic severity and acute severity.

For patients enrolled prospectively in the database, a TEDAS interviewer obtains patient information, including insurance status and demographic details, during the ED visit. Some patients are missed by this prospective mechanism, often because physicians were too busy to complete the enrollment process or the patient came at night when no interviewer was present. TEDAS staff captures information on the visit retrospectively from a review of hospital records. The use of retrospective data, although more limited, permits inclusion of all visits.

**Population:** Children between the ages of one and 18 presenting with asthma at participating hospitals.

**Asthma Data:** This report presents data on demographics, insurance status, chronic severity classification, and acute severity classification for patients of participating pediatric EDs in Houston and Dallas.

# References

1. What is Asthma?, National Center for Environmental Health, Centers for Disease Control, 20 Oct. 2009.  
<http://cdc.gov/asthma/faqs.htm>
2. National Health Interview Survey (NHIS) Data: 2009 Lifetime and Current Asthma. National Center for Health Statistics, Centers for Disease Control and Prevention, 3 Nov. 2010.  
[www.cdc.gov/asthma/nhis/07/data.htm](http://www.cdc.gov/asthma/nhis/07/data.htm)
3. Margaret Jean Hall, Ph.D.; Carol J. DeFrances, Ph.D.; Sonja N. Williams, M.P.H.; Aleksandr Golosinskiy, M.S.; and Alexander Schwartzman, National Health Statistics Reports: 2007 National Hospital Discharge Survey. Rep. no. 29. Division of Health Care Statistics, Centers for Disease Control and Prevention, 26 October 2010.  
[www.cdc.gov/nchs/data/nhsr/nhsr029.pdf](http://www.cdc.gov/nchs/data/nhsr/nhsr029.pdf)
4. Jiaquan Xu, M.D.; Kenneth D. Kochanek, M.A.; Sherry L. Murphy, B.S.; and Betzaida Tejada-Vera, B.S.; National Vital Statistics Reports. Deaths: Final Data for 2007. Rep. no. 19. Vol. 58. Division of Vital Statistics, Centers for Disease Control and Prevention, 20 May 2010.  
[www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58\\_19.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58_19.pdf)
5. Texas Behavioral Risk Factor Surveillance System. Texas Department of State Health Services, Center for Health Statistics, Austin, Texas.
6. Texas Hospital Inpatient Discharge Public Use Data File. Texas Department of State Health Services, Center for Health Statistics, Austin, Texas.
7. Data Management Team. Texas Department of State Health Services, Center for Health Statistics, Austin, Texas.
8. "Texas Population Data Downloads. Census Data & Intercensal Estimates." Texas Department of State Health Services, Center for Health Statistics.  
[www.dshs.state.tx.us/chs/popdat/detailX.shtm](http://www.dshs.state.tx.us/chs/popdat/detailX.shtm)
9. Texas State Data Center. 2009 Population Estimates: Age, Sex, and Race/Ethnicity Population Estimates.  
[http://txsdc.utsa.edu/Resources/TPEPP/Estimates/2009/2009\\_ASRE\\_Estimate\\_alldata.pdf](http://txsdc.utsa.edu/Resources/TPEPP/Estimates/2009/2009_ASRE_Estimate_alldata.pdf).
10. "Population Distribution and Change: 2000 to 2010." U.S. Census Bureau.  
<http://www.census.gov/popest/states/NST-comp-chg.html>
11. U.S. Census Bureau. U.S. Department of Commerce. Texas Becomes Nation's Newest "Majority-Minority" State, Census Bureau Announces. 11 Aug. 2005.  
<http://www.census.gov/prod/cen2010/briefs/c2010br-01.pdf>
12. "The International Classification of Diseases, 9th Revision, Clinical Modification" (ICD-9-CM), Sixth Edition  
<http://icd9cm.chrisendres.com/>

# Notes

For more information please contact:

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