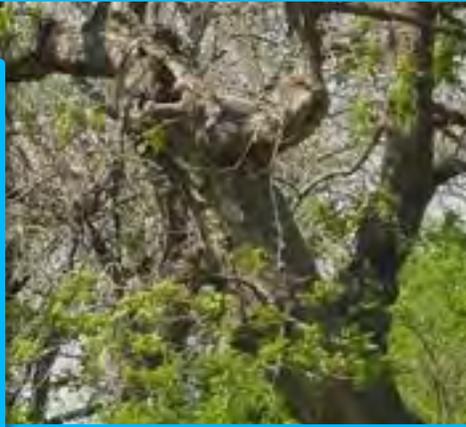


2014 Texas

# Asthma

*Burden Report*



# Acknowledgements

## **2014 Texas Asthma Burden Report**

**December 2014**

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Office of Surveillance, Evaluation, and Research



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# Introduction

Asthma is a chronic lung disease that affects adults and children of all ages. It is characterized by inflammation and narrowing or blocking of the airways in the lungs which causes repeated episodes of wheezing, breathlessness, chest tightness, and nighttime or early morning coughing.

The exact causes of asthma are unknown and there is no cure for the disease. However, most people with asthma can control their symptoms by avoiding things that trigger an asthma attack or episode and by receiving appropriate medical care. Without proper management, asthma can result in reduced quality of life, frequent and costly emergency department (ED) visits, hospitalizations, and premature death (rarely).

In 2012, asthma affected 25.6 million people, including 6.8 million children under age 18 in the US.<sup>1</sup> The health and economic burden of asthma on patients and their families is significant. In 2010, 1.8 million people visited an ED for asthma-related care and 439,000 people were hospitalized because of asthma in the US.<sup>2,3</sup>

In Texas and the US, the burden of asthma disproportionately affects people with certain demographic characteristics, socioeconomic status, and in particular geographic locations.

The Texas Asthma Control Program (TACP) is located within the Chronic Disease Branch, Health Promotion and Chronic Disease Prevention Section at the Texas Department of State Health Services (DSHS). In collaboration with other state organizations and community partners, TACP strives to improve the quality of life for Texans living with asthma. Activities include conducting asthma surveillance, disseminating data, providing information to the public concerning asthma resources, supporting and promoting state and local partnerships, promoting policies that address and improve asthma outcomes, funding effective interventions that increase asthma self-management and reduce the burden of asthma for Texans, and evaluating activities to guide the use of program resources and interventions.

The 2014 Asthma Burden Report was produced by the DSHS Office of Surveillance, Evaluation and Research (OSER) at the request of the TACP to provide essential information concerning the burden of asthma in the state of Texas. TACP offers this report as a resource to guide projects and programs to control and manage asthma and to raise public awareness of this important and common chronic disease. We hope that this report will facilitate further research and work on asthma prevention and the elimination of asthma disparities.

# Key Findings

The following key findings are for the state of Texas and based on the most recent data available to the Texas Asthma Control Program as of November 2014.

## Asthma Prevalence (2013)

- An estimated 7.3% of adults and 9.1% of children had asthma. This means that more than 1.4 million adults and 617,000 children had asthma.
- Adult asthma prevalence was highest among females, blacks, current smokers, persons with medical insurance, persons with a lower household income, and those who were obese (Body Mass Index 30+).
- Adult asthma prevalence was highest among persons living in Health Service Regions 1 and 2.
- Child asthma prevalence was highest among boys and older children.
- Child asthma prevalence was not significantly different by Health Service Region.

## Asthma Hospitalizations (2012)

- There were 15,083 asthma hospital discharges reported among adults.
- For every 10,000 adults, nearly 8 asthma hospital discharges occurred annually.
- The asthma hospital discharge rate among adults was highest among females, blacks and other race/ethnicities, and age 65 years and over.
- There were 10,075 asthma hospital discharges reported among children.
- For every 10,000 children, nearly 15 asthma hospital discharges occurred annually.
- The asthma hospital discharge rate among children was highest among boys, blacks, and younger children.
- Medicaid was the intended payer for a majority of child asthma hospital discharges.

## Asthma Mortality (2006 to 2012)

- There were 1,429 asthma deaths due to asthma among all ages.
- More asthma deaths occurred among females, whites, and persons age 65 years and over.
- The asthma mortality rate was highest among females, blacks, and persons age 65 years and over.
- The asthma mortality rate decreased from 11.5 per 1 million people in 2002 to 7.8 per 1 million people in 2012.

## Medicaid Beneficiaries with Asthma (2013)

- There were over 201,000 asthma Medicaid claims among adults and over 635,000 asthma Medicaid claims among children.
- Asthma Medicaid expenditures totaled \$28.7 million among adults and \$91.9 million among children.
- More than 80% of asthma Medicaid claims among adults and children were for physician visits.
- Among adult Medicaid beneficiaries with asthma, inpatient hospitalization claims made up 1.7% of total asthma Medicaid claims, but about 25.0% of asthma Medicaid expenditures.

- Among child Medicaid beneficiaries with asthma, inpatient hospitalization claims made up 0.8% of total asthma Medicaid claims but about 24.0% of asthma Medicaid expenditures.

### **Pediatric Asthma Emergency Department Visits (2002 to 2013)**

- There were 30,388 pediatric asthma emergency department (ED) visits captured by the Baylor Asthma Care for Kids Educational Resource (BACKER) program among persons age 1 to 18 years at five Texas hospitals in Houston, Galveston, and Dallas and their affiliated organizations.
- More pediatric asthma ED visits occurred among boys, blacks, and children age 1 to 4 years.
- About 1 in 5 pediatric asthma ED visits were among uninsured patients. Medicaid was the insurance provider for the largest percent of visits followed by Managed Care.
- Among the pediatric asthma ED visits captured by the BACKER program, the majority were not a patient's first asthma ED visit.
- Most pediatric asthma ED patients came to the ED without an asthma action plan. The prevalence was highest among uninsured patients.
- Almost half of pediatric asthma ED visits had a chronic severity classification of mild intermittent.
- 4 in 5 pediatric asthma ED visits had an acute severity classification of mild or moderate. Nearly half of asthma ED visits were classified as well controlled. Both acute classification and asthma control classification varied by insurance status.

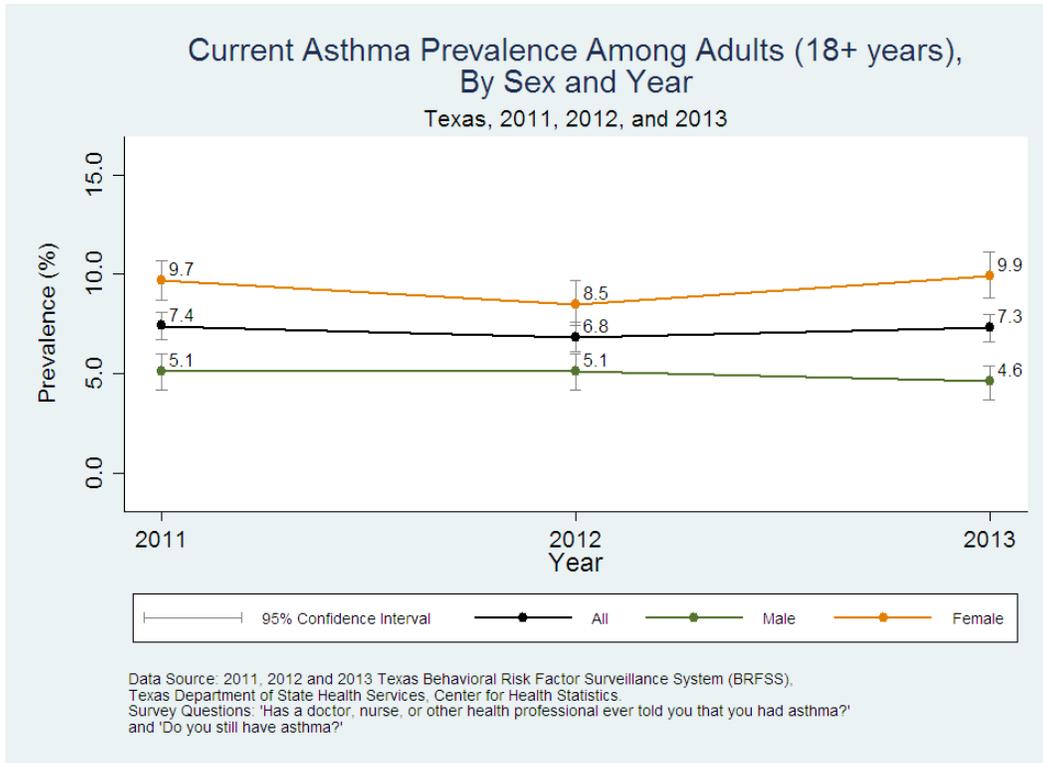
### **Asthma Callback Survey (2012)**

- About 36.0% of adults with current asthma missed one or more days of work due to their asthma in the past 12 months.
- Half of children with current asthma missed one or more days of school due to their asthma in the past 12 months.
- Almost 3 in 4 children with current asthma and 1 in 2 adults with current asthma had received asthma education.
- Nearly 1 in 4 adults with current asthma had at least one cost barrier to asthma care (seeing a primary care doctor, seeing a specialist, or buying needed asthma medication) in the past 12 months.
- Nearly 1 in 5 adults with current asthma had an ED visit or urgent care visit due to asthma in the past 12 months.

# Asthma Prevalence

## Adult Asthma Prevalence

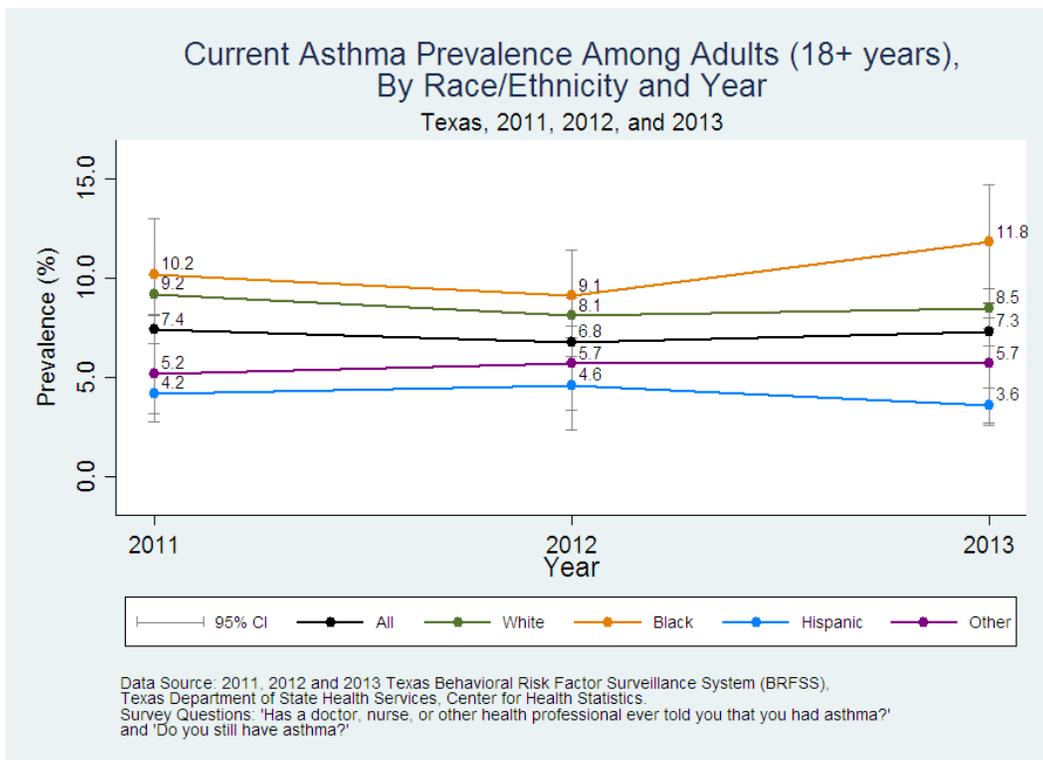
Fig. 1-1



### SUMMARY

From 2011 to 2013, the prevalence of current asthma did not change significantly among adult Texans. Asthma prevalence was 7.4 percent in 2011, 6.8 percent in 2012, and 7.3 percent in 2013. During each of these years, the prevalence of asthma remained significantly higher among females compared to males.

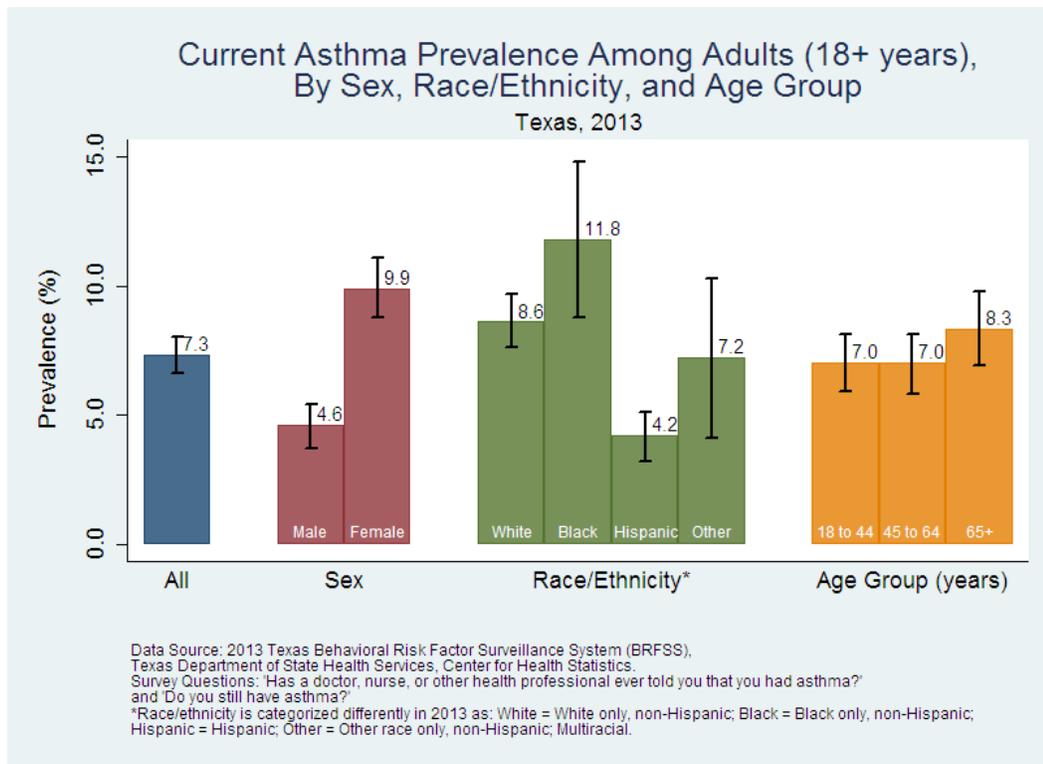
Fig. 1-2



### SUMMARY

From 2011 to 2013, the prevalence of current asthma was highest among non-Hispanic blacks and lowest among Hispanics, with the largest difference in 2013. From 2011 to 2013, the prevalence of current asthma among adults did not differ significantly by age group (not shown).

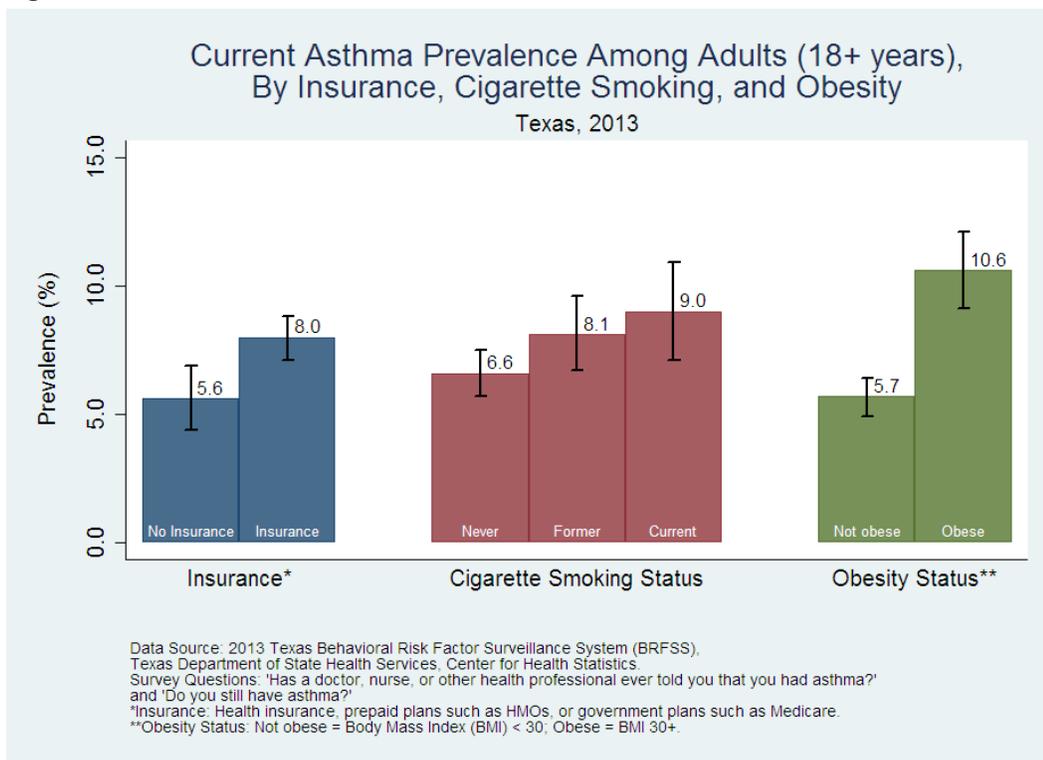
Fig. 1-3



**SUMMARY**

In 2013, 7.3 percent of adults had current asthma. The prevalence of asthma was significantly higher among females at 9.9 percent (95% Confidence Interval (CI): 8.8-11.1) than among males at 4.6 percent (95% CI: 3.7-5.4). The prevalence of asthma was significantly higher among non-Hispanic blacks at 11.8 percent (95% CI: 8.8-14.8) compared to Hispanics at 4.2 percent (95% CI: 3.2-5.1). Adult current asthma prevalence did not differ significantly by age group.

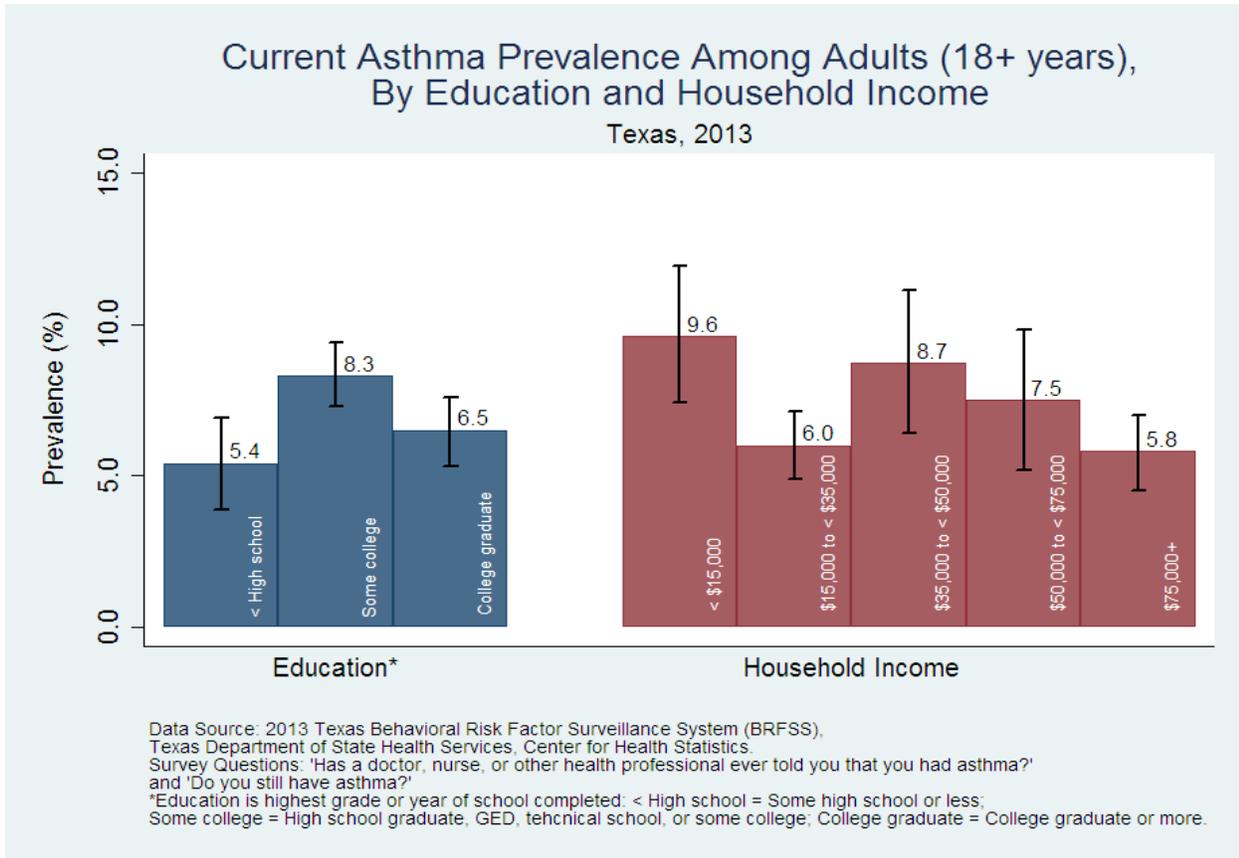
Fig. 1-4



**SUMMARY**

The prevalence of current asthma was significantly higher among adults with insurance at 8.0 percent (95% CI: 7.1-8.8), compared to adults without insurance at 5.6 percent (95% CI: 4.4-6.9). The prevalence of current asthma did not differ significantly by smoking status, however, it was lowest among persons who never smoked cigarettes and highest among those who were current cigarette smokers. The prevalence of current asthma was significantly higher among adults with obesity at 10.6 percent (95% CI: 9.1-12.1), compared to adults without obesity at 5.7 percent (95% CI: 4.9-6.4).

Fig. 1-5

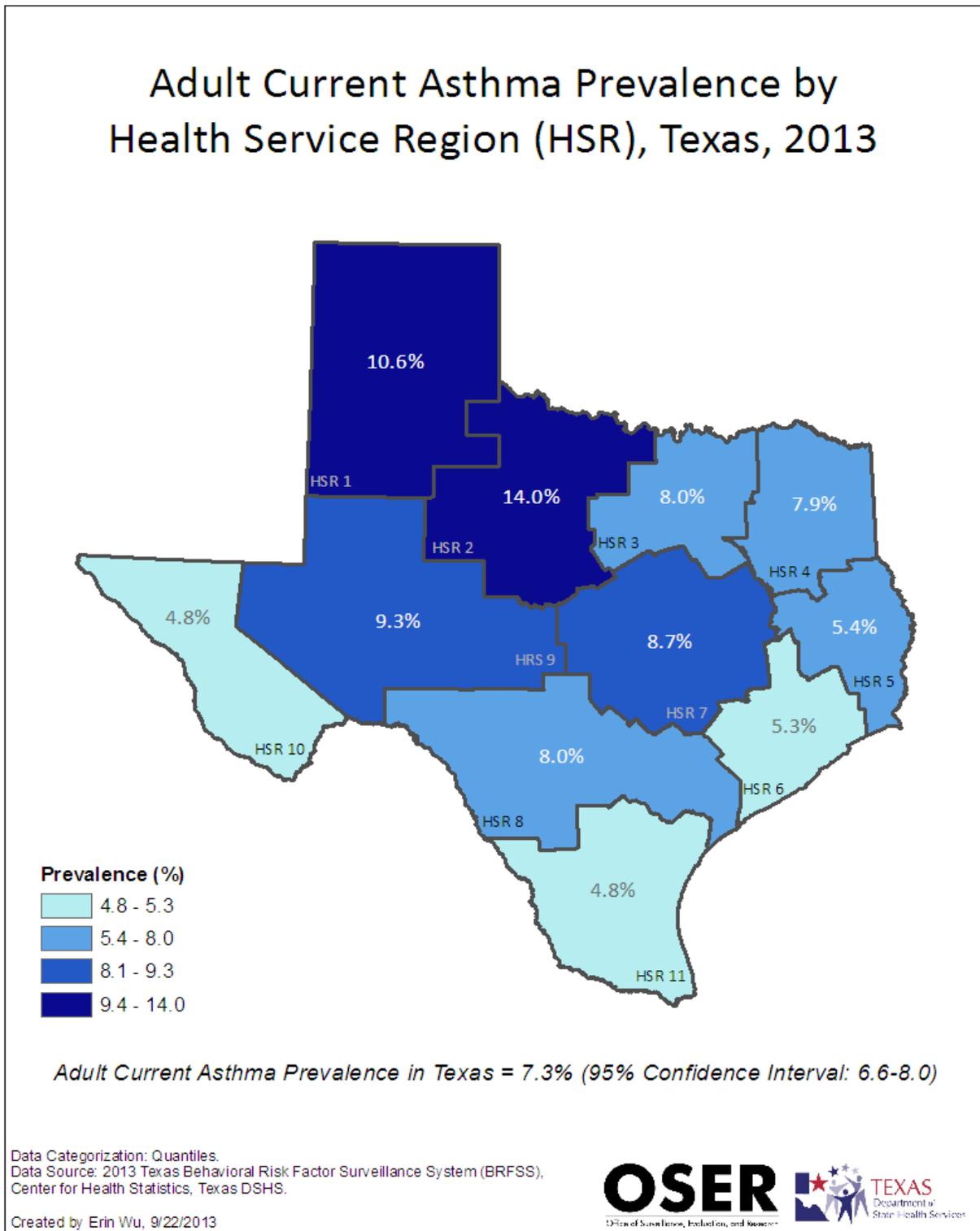


#### SUMMARY

The prevalence of current asthma among adults was significantly higher among those with a high school degree, GED, technical school training, or some college education at 8.3 percent (95% CI: 7.3-9.4), compared to adults with less than a high school degree at 5.4 percent (95% CI: 3.9-6.9).

Among adults with an annual household income less than \$15,000, asthma prevalence was 9.6 percent (95% CI: 7.4-11.9). This was significantly higher than the asthma prevalence among adults with an annual household income of \$15,000 to less than \$35,000 at 6.0 percent (95% CI: 4.9-7.1) and adults with an annual household income of \$75,000 or more at 5.8 percent (95% CI: 4.5-7.0).

Fig. 1-6

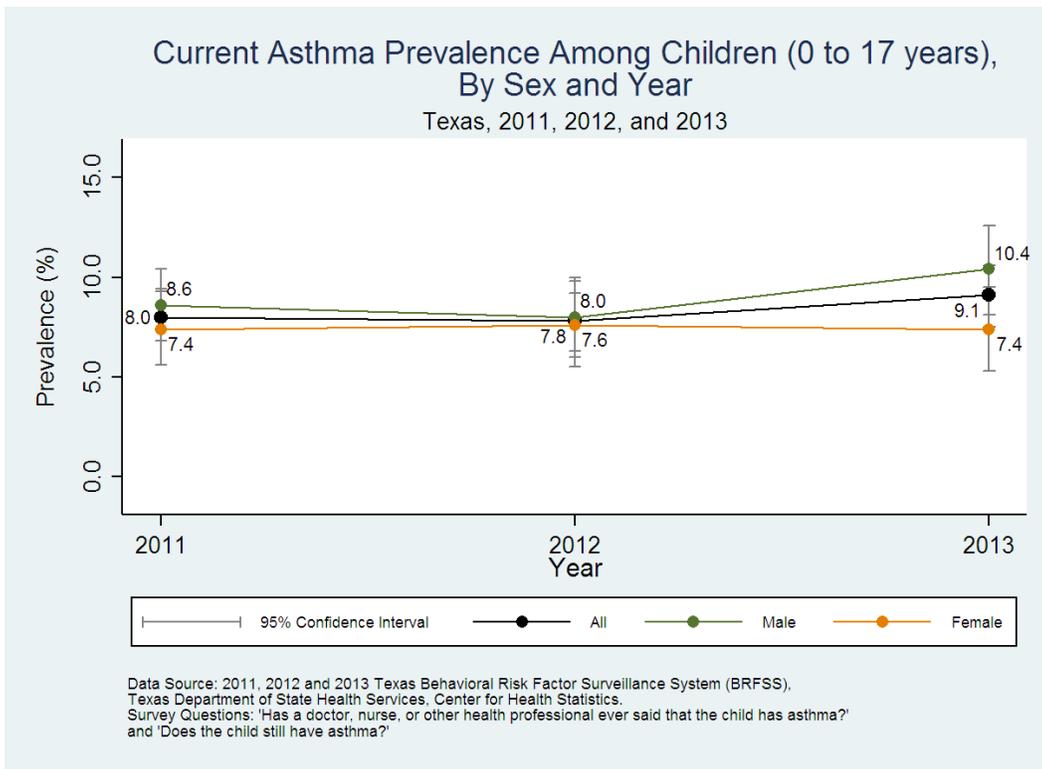


#### SUMMARY

The prevalence of current asthma among adults varied geographically in Texas. Asthma prevalence was significantly higher among adults in Health Service Region (HSR) 2 at 14.0 percent (95% CI: 7.8-20.1) and HSR 1 at 10.6 percent (95% CI: 7.5-13.6), compared to adults in HSR 10 at 4.8 percent (95% CI: 2.6-7.0), HSR 11 at 4.8 percent (95% CI: 3.1-6.6), and HSR 6 at 5.3 percent (95% CI: 3.6-6.9).

# Child Asthma Prevalence

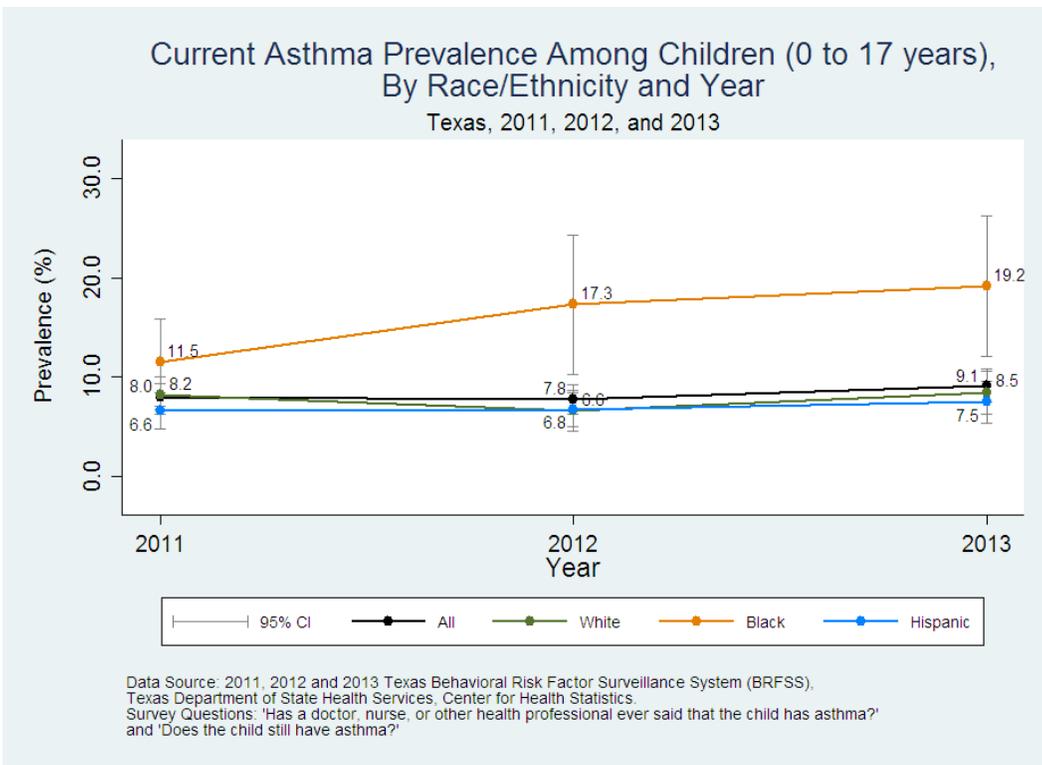
Fig. 1-7



## SUMMARY

From 2011 to 2013, the prevalence of current asthma did not change significantly among children in Texas. Asthma prevalence was 8.0 percent in 2011, 7.8 percent in 2012, and 9.1 percent in 2013. During the same three year period, the prevalence of asthma was not statistically significantly different between males and females.

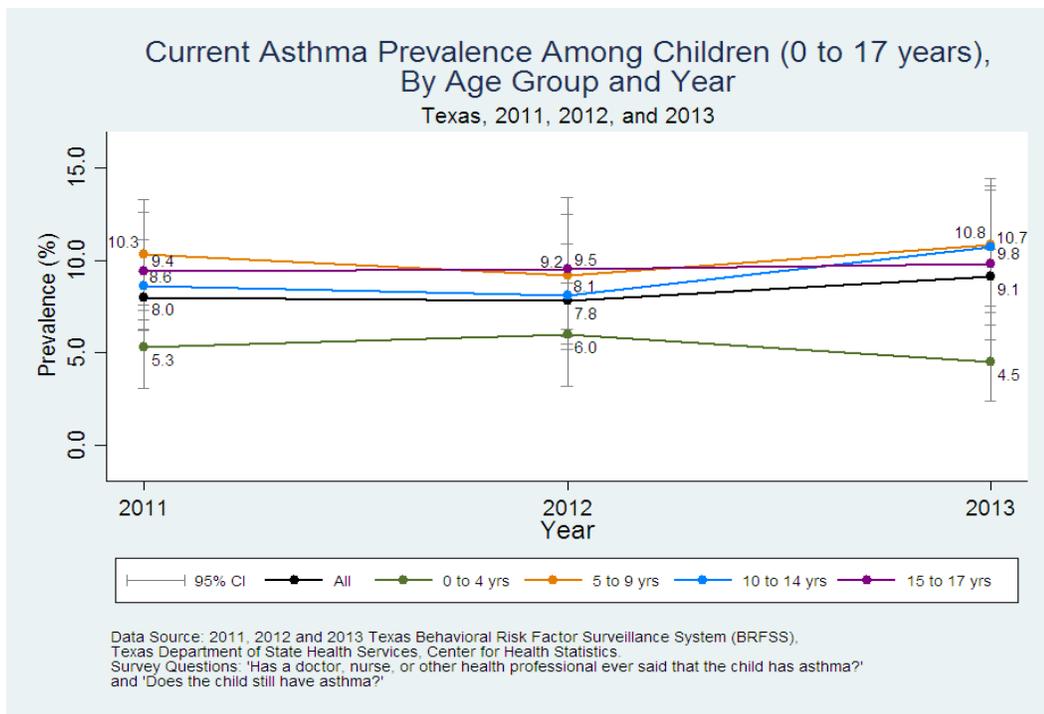
Fig. 1-8



## SUMMARY

In 2011, the prevalence of current asthma among children did not differ significantly by race/ethnicity. In 2012 and 2013, the prevalence of current asthma among children was significantly higher among non-Hispanic blacks compared to whites and Hispanics.

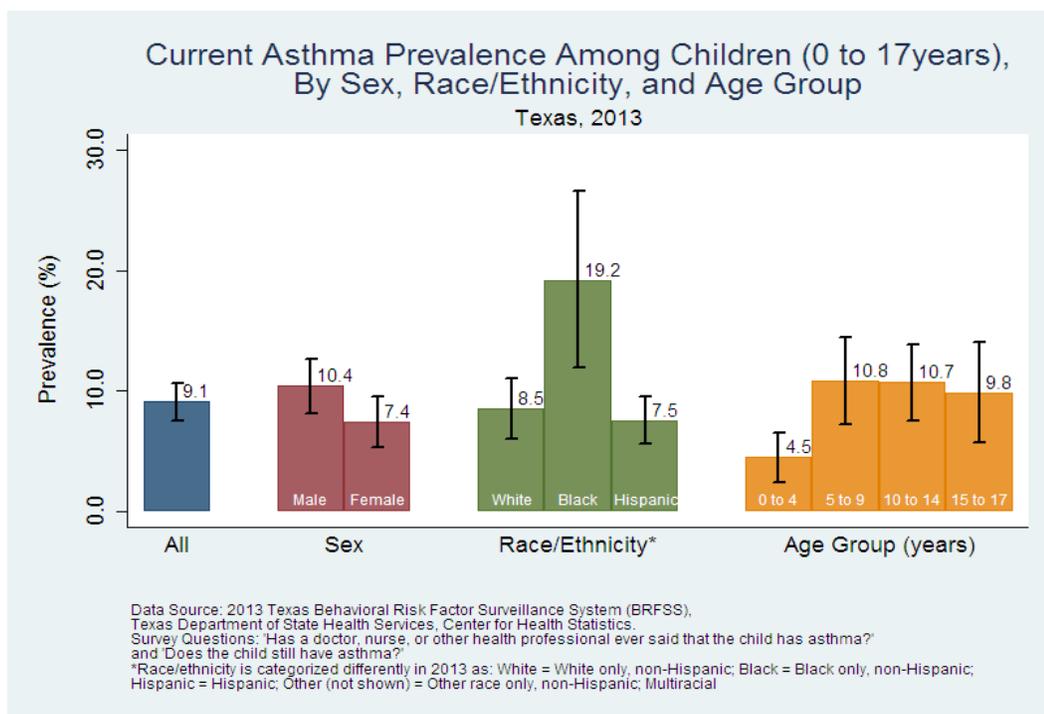
Fig. 1-9



**SUMMARY**

In 2011 and 2012 the prevalence of current asthma among children did not differ significantly by age group. In 2013 child asthma prevalence was significantly lower among children age 0 to 4 years, compared to children age 5 to 9 years and 10 to 14 years.

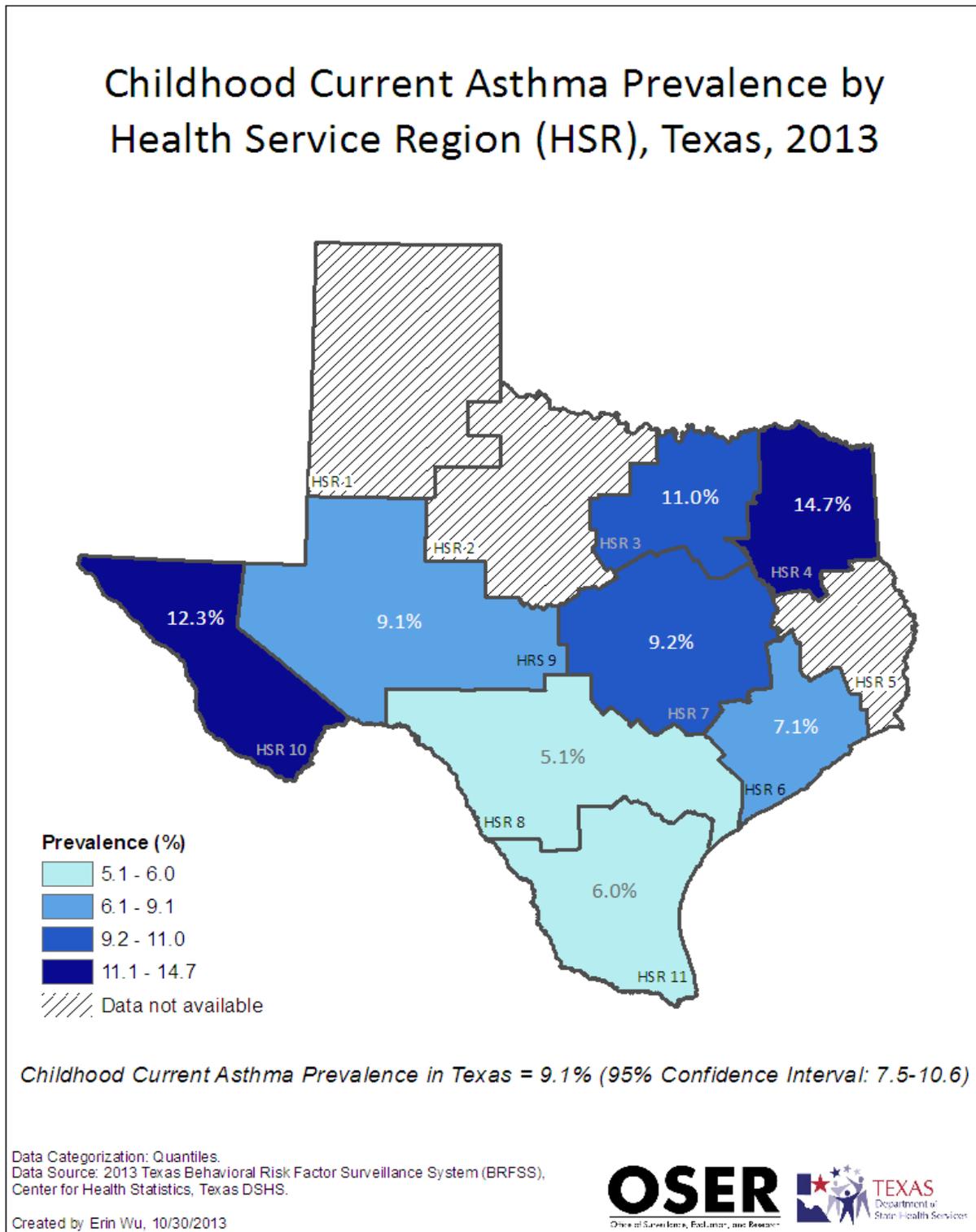
Fig. 1-10



**SUMMARY**

In 2013, 9.1 percent of children had current asthma. The prevalence of asthma was higher among males than females but not significantly. The prevalence of asthma was more than twice as high among non-Hispanic blacks at 19.2 percent (95% IC: 11.9-26.6), compared to whites at 8.5 percent (95% CI: 6.0-11.0) and Hispanics at 7.5 percent (95% CI: 5.6-9.5). The prevalence of asthma was higher among children age 5 to 9 years at 10.8 percent (95% CI: 7.2-14.4) and age 10 to 14 years at 10.7 percent (95% CI: 7.5-13.8), compared to children age 0 to 4 years at 4.5 percent (95% CI: 5.7-14.0).

Fig. 1-11



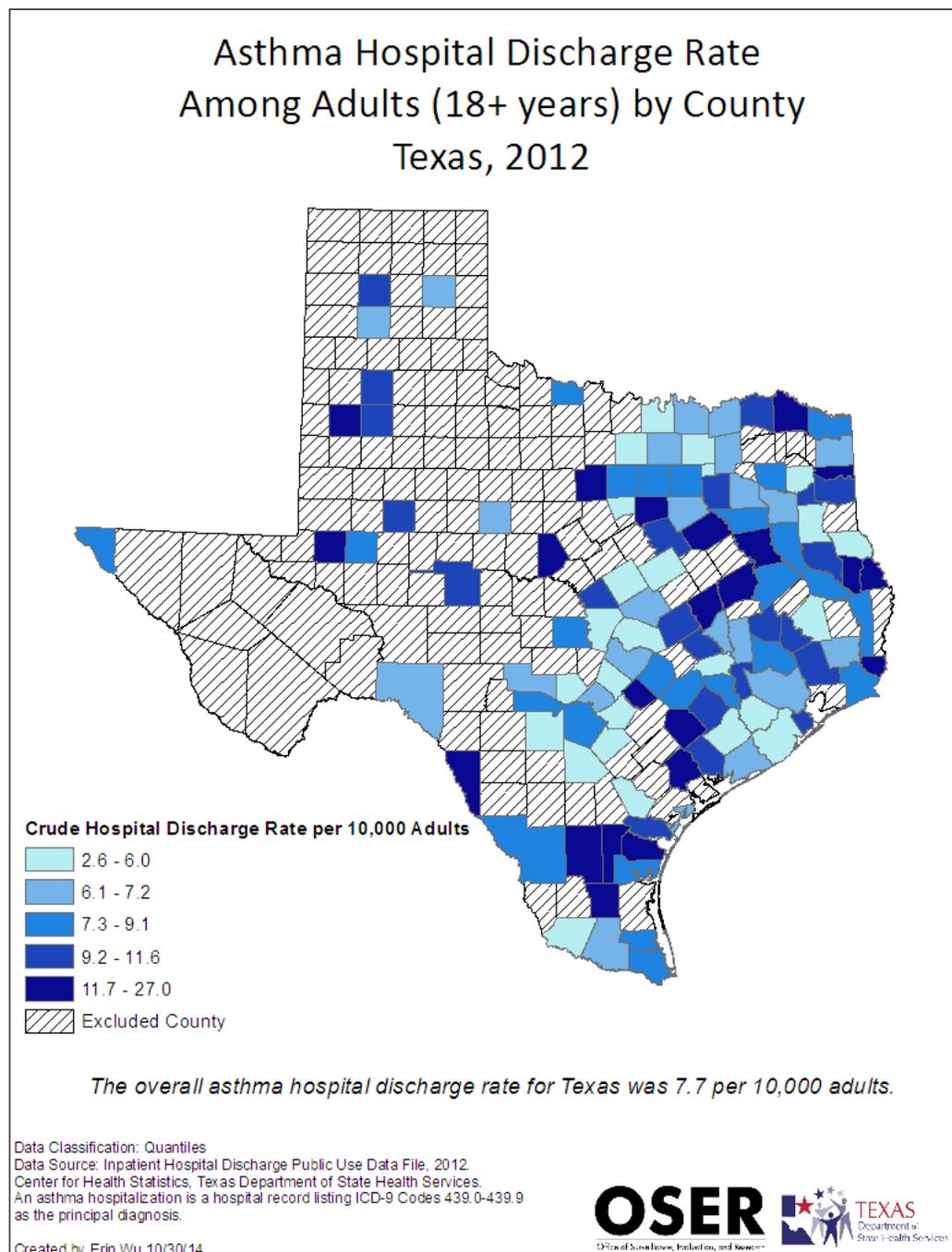
#### SUMMARY

The prevalence of current asthma among children may vary geographically in Texas, although there were no statistically significant differences between Health Service Regions in 2013. Due to small sample sizes in Health Service Regions 1, 2 and 5, prevalence estimates for current asthma among children are not reliable and could not be reported.

# Asthma Hospital Discharges

## Adult Asthma Hospital Discharges

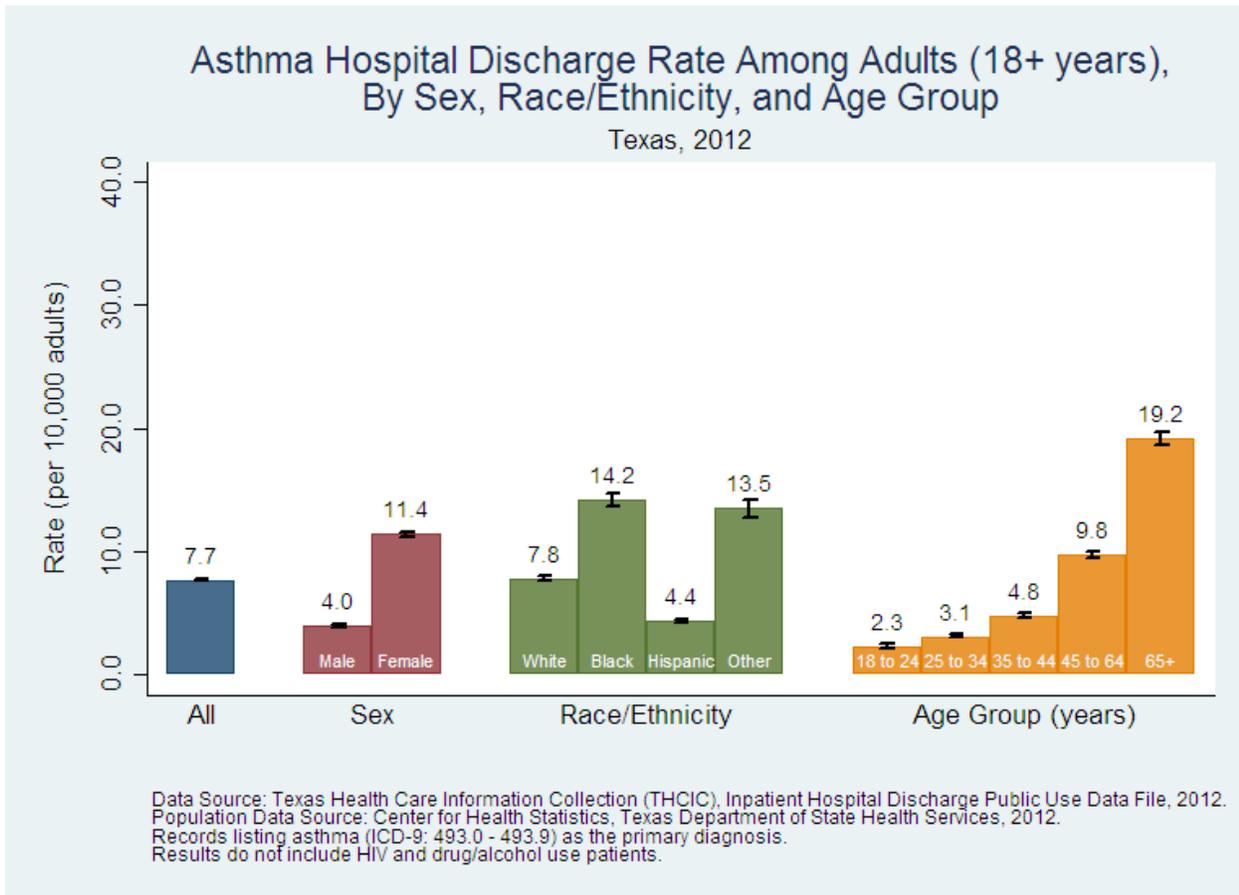
Fig. 2-1



### SUMMARY

In 2012, the asthma hospital discharge rate for adults in Texas was 7.7 per 10,000 adults. The asthma hospital discharge rate varies widely from county to county and ranges from a low of 2.6 per 10,000 adults to a high of 27.0 per 10,000 adults. Among adults, there were 15,083 asthma hospital discharges reported in 2012.

Fig. 2-2



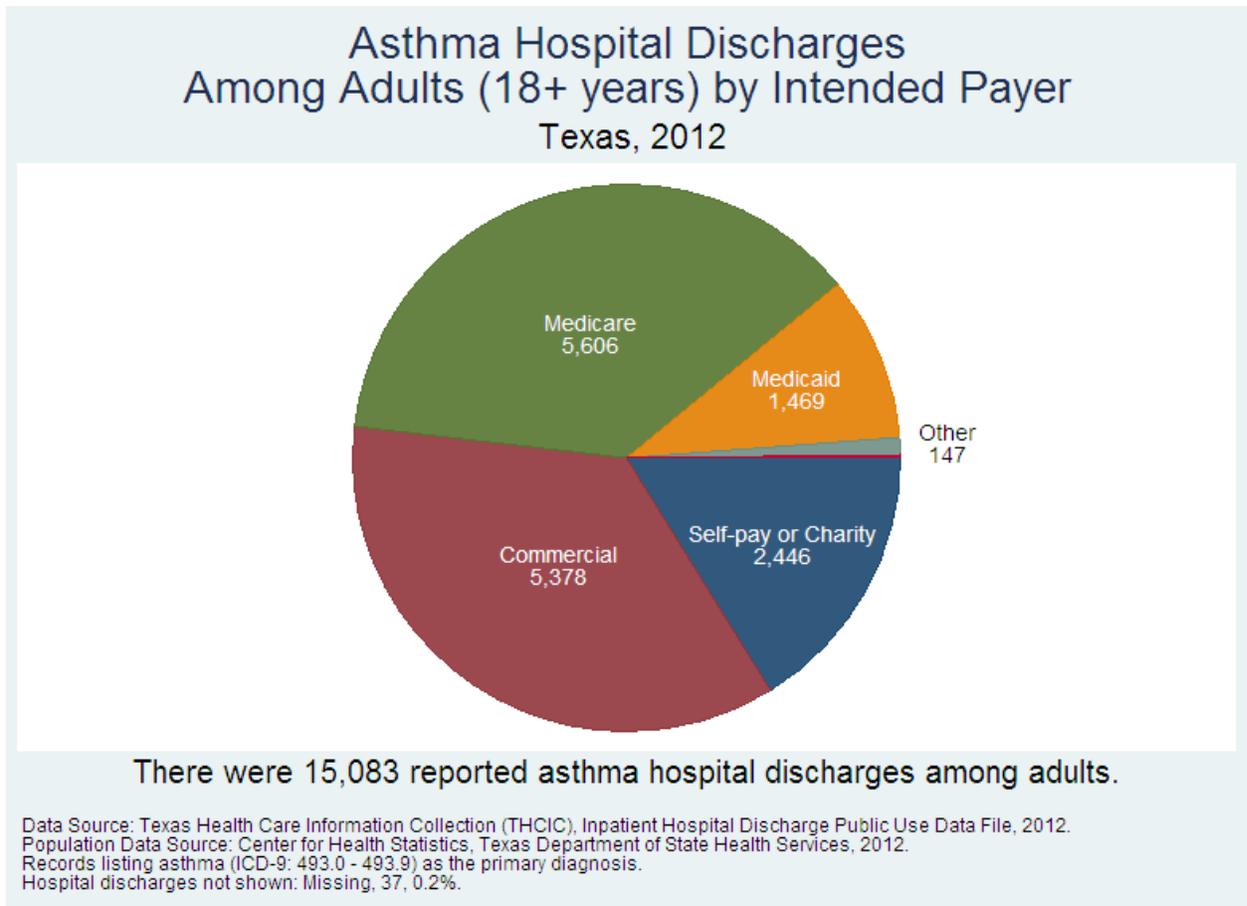
### SUMMARY

The asthma hospital discharge rate among adults in Texas was 7.7 per 10,000 adults. The asthma hospital discharge rate was nearly three times higher among females (11.4 per 10,000 adults; 95% CI: 11.2-11.6) than among males (4.0 per 10,000 adults; 95% CI: 3.8-4.1).

The asthma hospital discharge rate was significantly higher among blacks (14.2 per 10,000; 95% CI: 13.7-14.7) and adults of other race/ethnicities (13.5 per 10,000; 95% CI: 12.8-14.2), compared to whites (7.8 per 10,000; 95% CI: 7.6-8.0) and Hispanics (4.4 per 10,000 adults; 95% CI: 4.2-4.5).

The asthma hospital discharge rate increased significantly with increasing age group among adults. The rate was lowest among adults age 18 to 24 years (2.3 per 10,000 adults; 95% CI: 2.1-2.5) and highest among adults age 65 years or more (19.2 per 10,000 adults; 95% CI: 18.7-19.7).

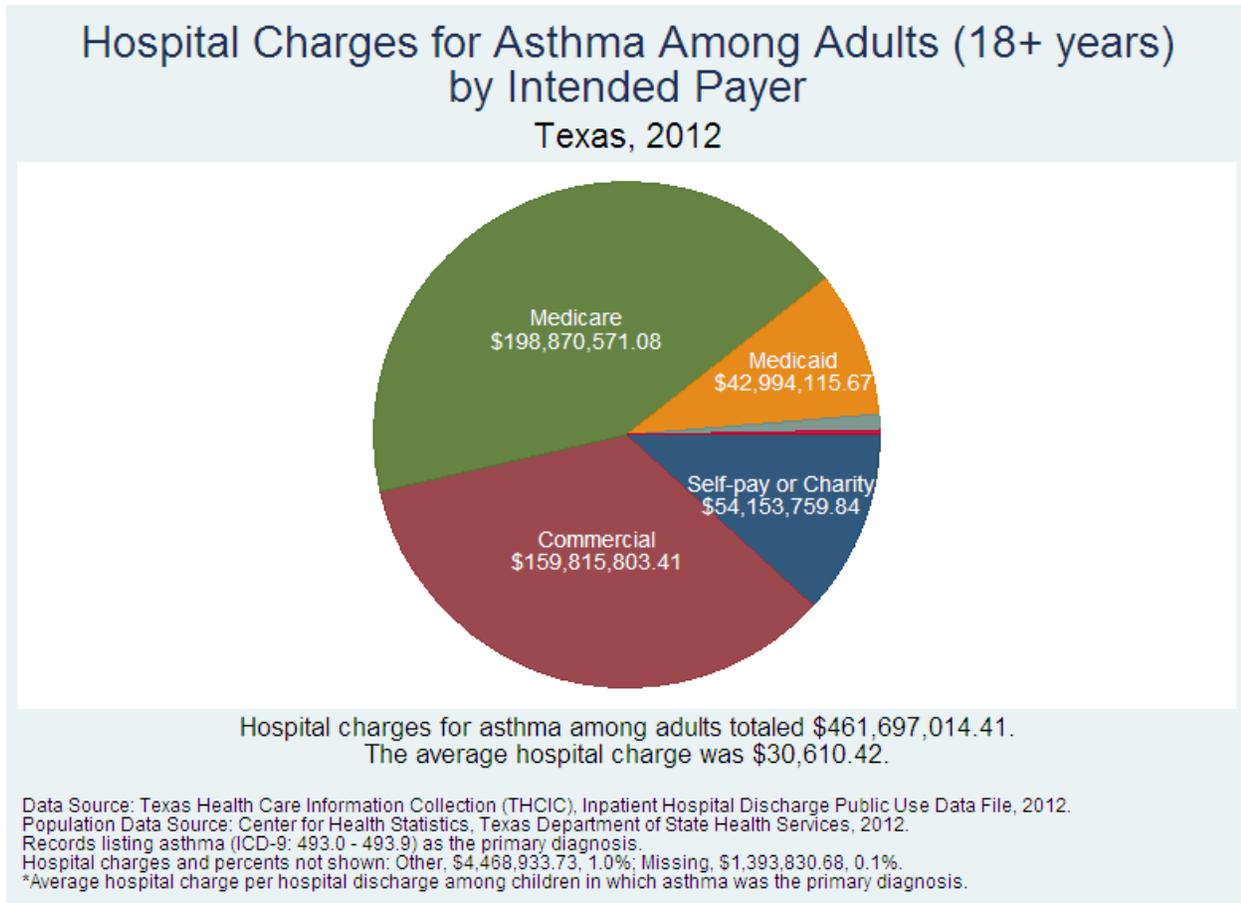
Fig. 2-3



#### SUMMARY

Of the 15,083 asthma hospital discharges among adults in Texas, nearly 3 out of 4 reported either Medicare (37.2 percent) or commercial insurance (35.6 percent) as the intended payer. Most of the remaining asthma hospital discharges reported self-pay or charity (uninsured) (16.2 percent) or Medicaid (9.7 percent) as the intended payer.

Fig. 2-4



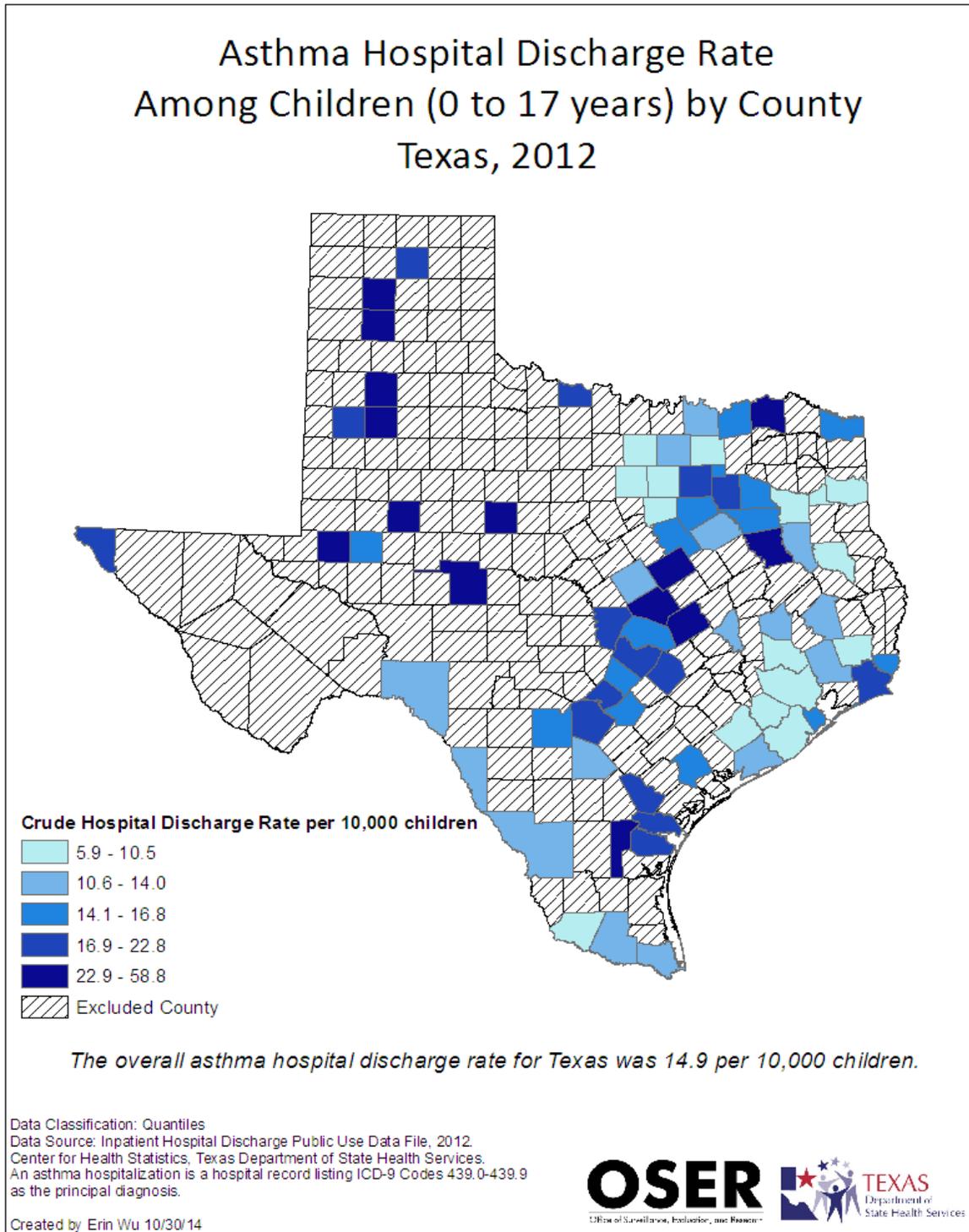
#### SUMMARY

Asthma hospital charges among adults totaled \$461.7 million, with an average charge per hospital discharge of about \$30,600. The distribution of hospital charges by intended payer was somewhat similar to the distribution of asthma hospital discharges by intended payer.

Among hospital discharges in which Medicare was the intended payer, hospital charges totaled \$198.9 million, with an average charge of about \$35,500 per discharge. Among hospital discharges in which a commercial insurance provider was the intended payer, hospital charges totaled \$159.8 million, with an average charge of \$29,700. Among hospital discharges in which self-pay or charity was the intended payer, hospital charges totaled \$54.2 million, with an average charge of \$22,100. Among hospital discharges in which Medicaid was the intended payer, hospital charges totaled \$43.0 million, with an average charge of about \$29,300.

# Child Asthma Hospital Discharges

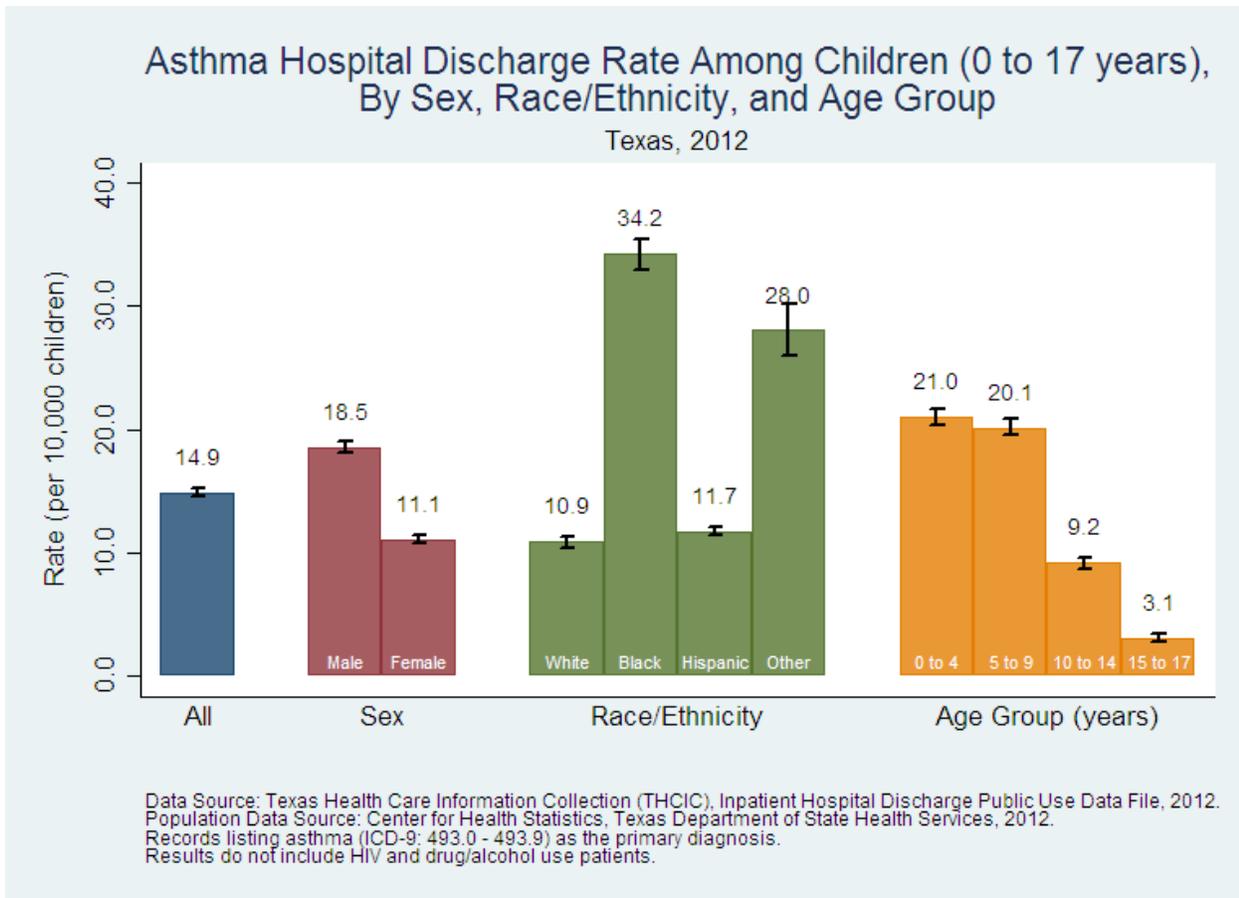
Fig. 2-5



## SUMMARY

In 2012, the asthma hospital discharge rate for children in Texas was 14.9 per 10,000 children. The asthma hospital discharge rate varies widely from county to county and ranges from a low of 5.9 per 10,000 children to a high of 58.8 per 10,000 children. Among children, there were 10,075 asthma hospital discharges reported in 2012.

Fig. 2-6



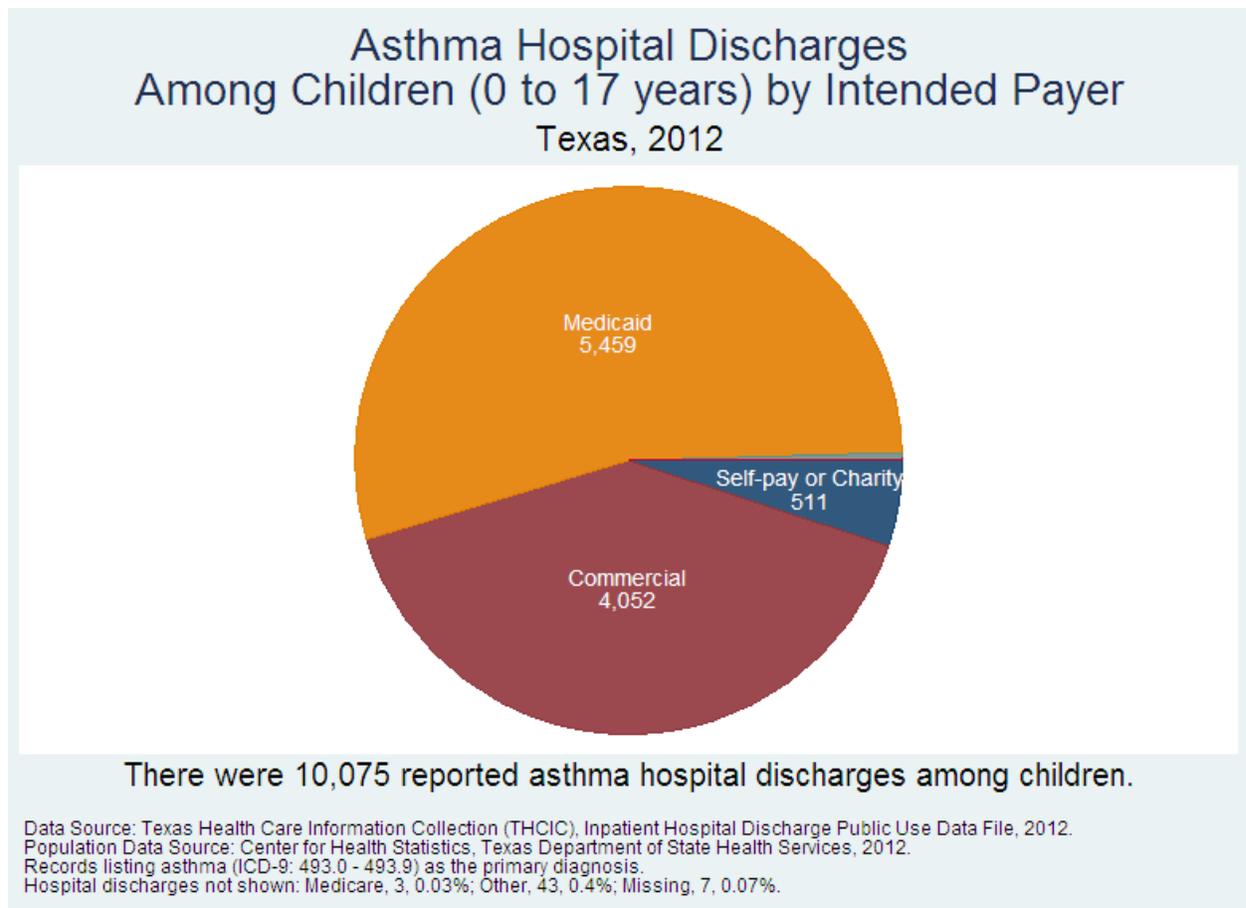
#### SUMMARY

The asthma hospital discharge rate among children in Texas was 14.9 per 10,000 children. The asthma hospital discharge rate was significantly higher among males (18.5 per 10,000 children; 95% CI: 18.1-19.0) than among females (11.1 per 10,000 children; 95% CI: 10.8-11.5).

The asthma hospital discharge rate was more than three times higher among blacks than among whites. The rate was significantly higher among blacks (34.2 per 10,000 children; 95% CI: 32.9-35.4) and children of other race/ethnicities (28.0 per 10,000 children; 95% CI: 26.0-30.1), compared to whites (10.9 per 10,000 children; 95% CI: 10.4-11.3) and Hispanics (11.7 per 10,000 children; 95% CI: 11.4-12.1).

The asthma hospital discharge rate decreases significantly with increasing age group among children. The rate was highest among children age 0 to 4 years (21.0 per 10,000 children; 95% CI: 20.4-21.7) and children age 5 to 9 years (20.1 per 10,000 children; 95% CI: 20.4-21.7) and lowest among children age 15 to 17 years (3.1 per 10,000 children; 95% CI: 2.8-3.5).

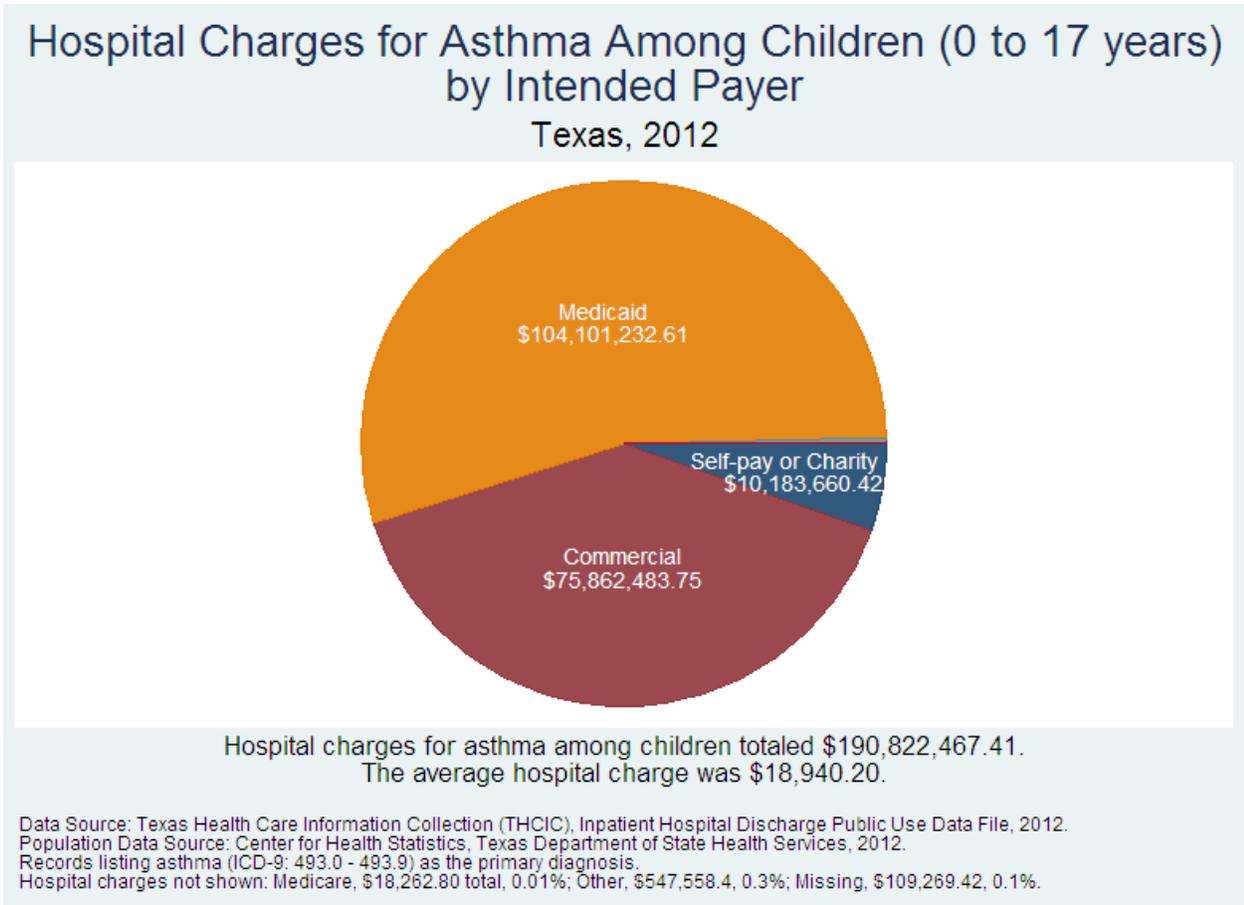
Fig. 2-7



#### SUMMARY

Of the 10,075 asthma hospital discharges among children in Texas, more than half reported Medicaid as the intended payer (54.2 percent). For the remaining discharges, commercial insurance (40.2 percent) and self-pay or charity (uninsured) (5.1 percent) were reported as the intended payer. Only 0.5% of child asthma hospital discharges had an intended payer listed as Medicare, other, or was missing.

Fig. 2.8



#### SUMMARY

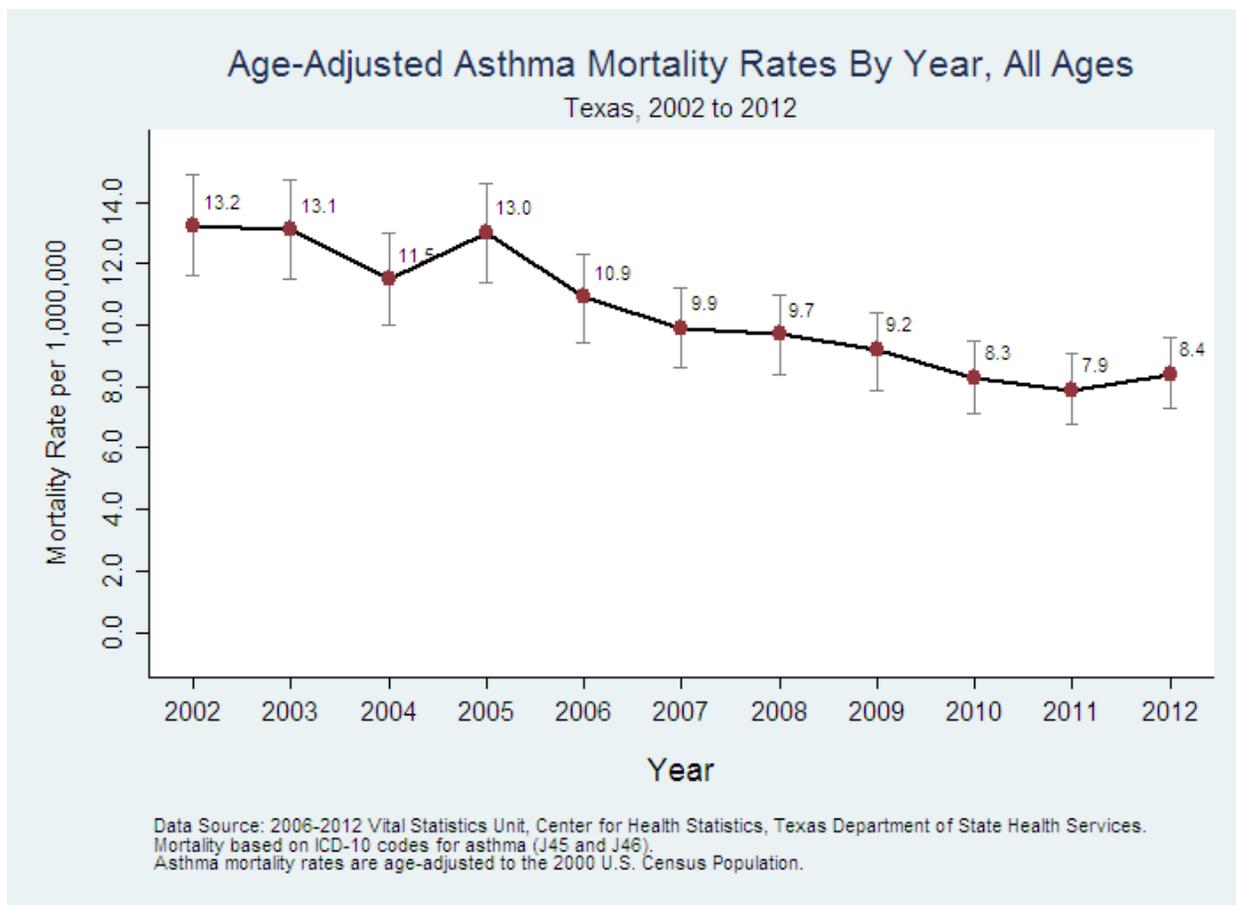
Asthma hospital charges among children totaled \$190.8 million with an average charge per hospital discharge of about \$18,900. The distribution of hospital charges by intended payer was very similar to the distribution of asthma hospital discharges by intended payer.

Among hospital discharges in which Medicaid was the intended payer, hospital charges totaled \$104.1 million, with an average charge of about \$19,100. Among hospital discharges in which a commercial insurance provider was the intended payer, hospital charges totaled \$75.9 million, with an average charge of \$18,700. Among hospital discharges in which self-pay or charity was the intended payer, hospital charges totaled \$10.2 million, with an average charge of \$19,900.

# Asthma Mortality

Although asthma is not a highly fatal disease, it can affect a person's quality of life. Asthma deaths can often be prevented with proper treatment and disease management. From 2006 to 2012, there were 1,429 deaths due to asthma among Texans of all ages. More asthma deaths occurred among females (888 deaths) than among males (541 deaths). More asthma deaths occurred among whites (807 deaths) than any other race or ethnicity group. The number of asthma deaths increased with age and were most common among persons age 65 years and over (620 deaths).

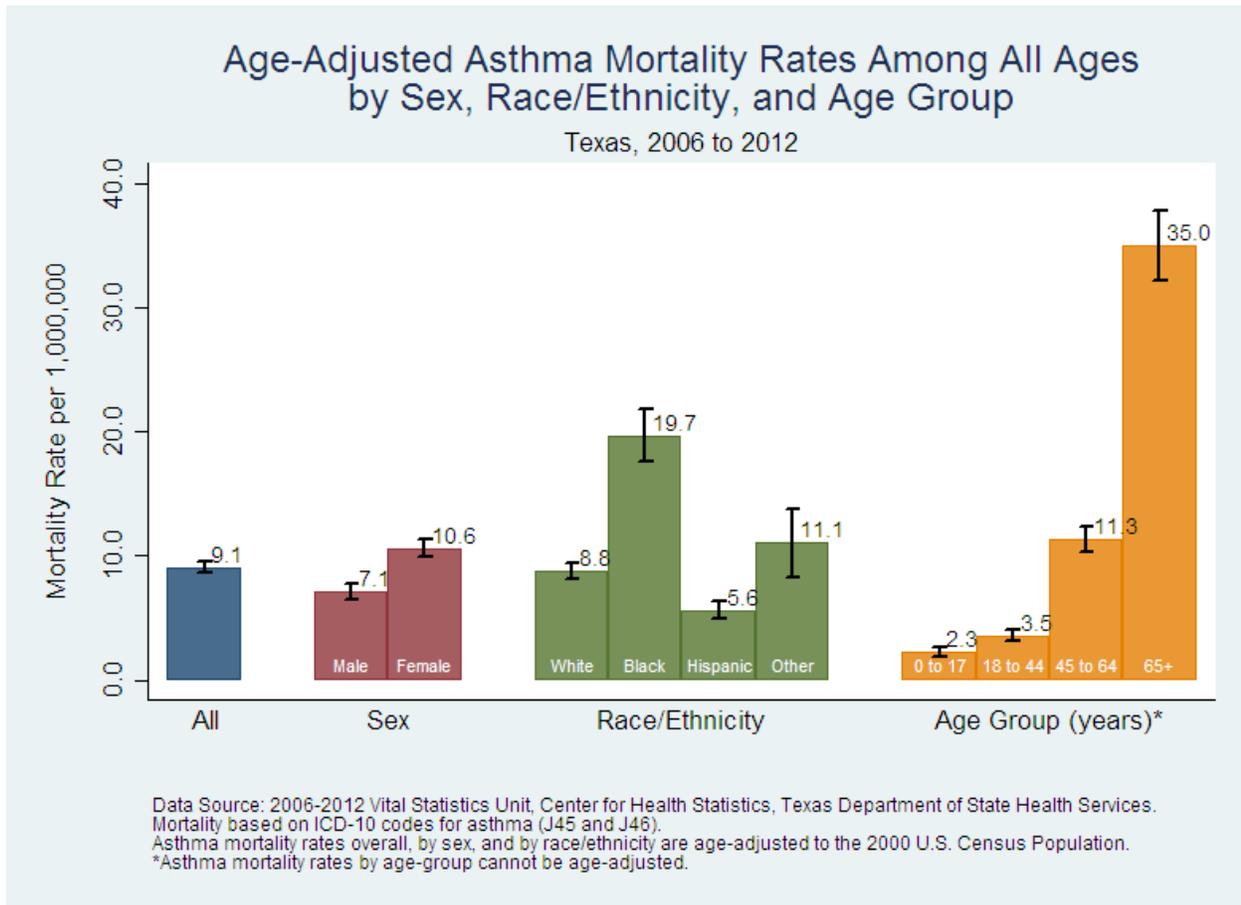
Fig. 3.1



## SUMMARY

From 2002 to 2012, the age-adjusted asthma mortality rate for Texans of all ages has gradually decreased from 13.2 deaths per 1,000,000 (95% CI: 11.6-14.9) in 2002 to 8.4 deaths per 1,000,000 (95% CI: 7.3-9.6) in 2012.

Fig. 3-2



#### SUMMARY

From 2006 to 2012, the age-adjusted asthma mortality rate for all Texans was 9.1 deaths per 1,000,000 persons (95% CI: 8.7-9.6). The age-adjusted asthma mortality rate was significantly higher among females at 10.6 deaths per 1,000,000 persons (95% CI: 9.9-11.3), compared to males at 7.1 deaths per 1,000,000 persons (95% CI: 6.5-7.7).

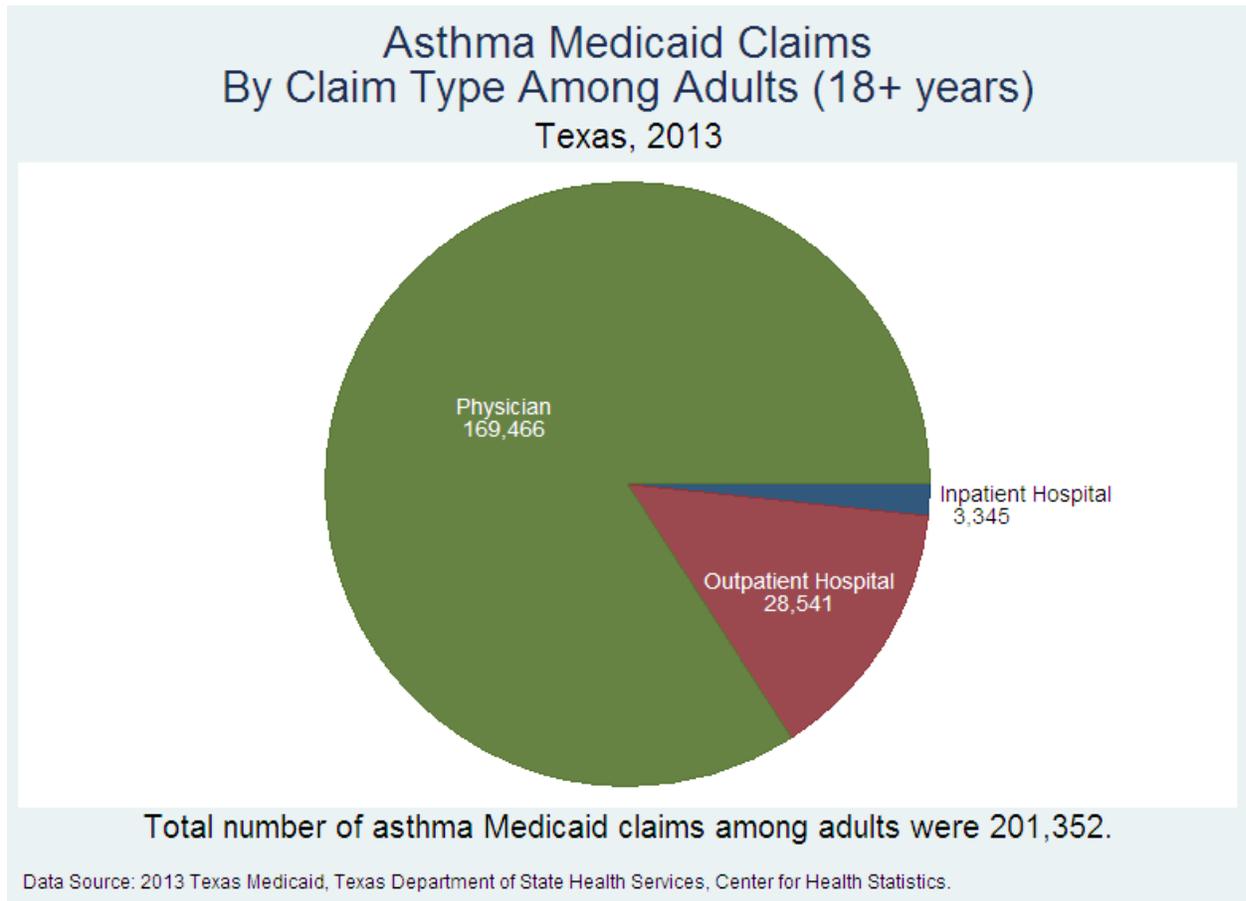
The age-adjusted asthma mortality rate was more than three times higher among blacks at 19.7 deaths per 1,000,000 persons (95% CI: 17.6-21.8) than among Hispanics at 5.6 deaths per 1,000,000 persons (95% CI: 4.9-6.4). The asthma mortality rate was also significantly higher among blacks than whites at 8.8 deaths per 1,000,000 persons (95% CI: 8.2-9.4) and other race or ethnic groups at 11.1 deaths per 1,000,000 persons (95% CI: 8.3-13.8).

The asthma mortality rate increased with age and was significantly higher among persons age 65 years and over at 35.0 deaths per 1,000,000 (95% CI: 32.2-37.8), compared to all other age groups. The asthma mortality rate among persons age 65 years and over was 15 times higher than among children age 0 to 17 years at 2.3 deaths per 1,000,000 (95% CI: 1.9-2.7).

# Medicaid

## Medicaid-Adults

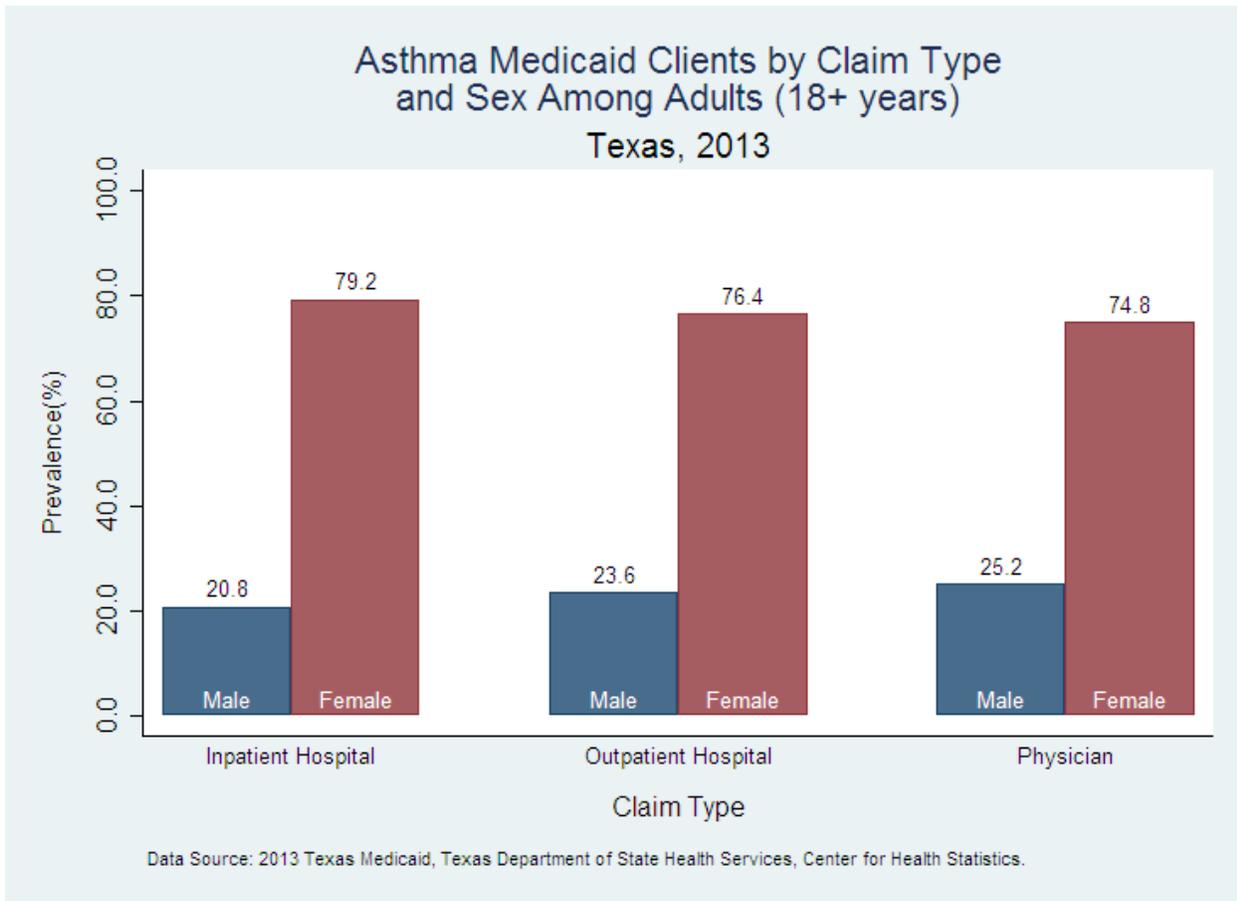
Fig. 4-1



### SUMMARY

In 2013, there were 201,352 Medicaid reimbursement claims for asthma among adults in Texas. Physician claims made up the majority of asthma claims at 84.2 percent. The remaining claims were outpatient hospital claims (14.2 percent) and inpatient hospital claims (1.7 percent).

Fig. 4-2



### SUMMARY

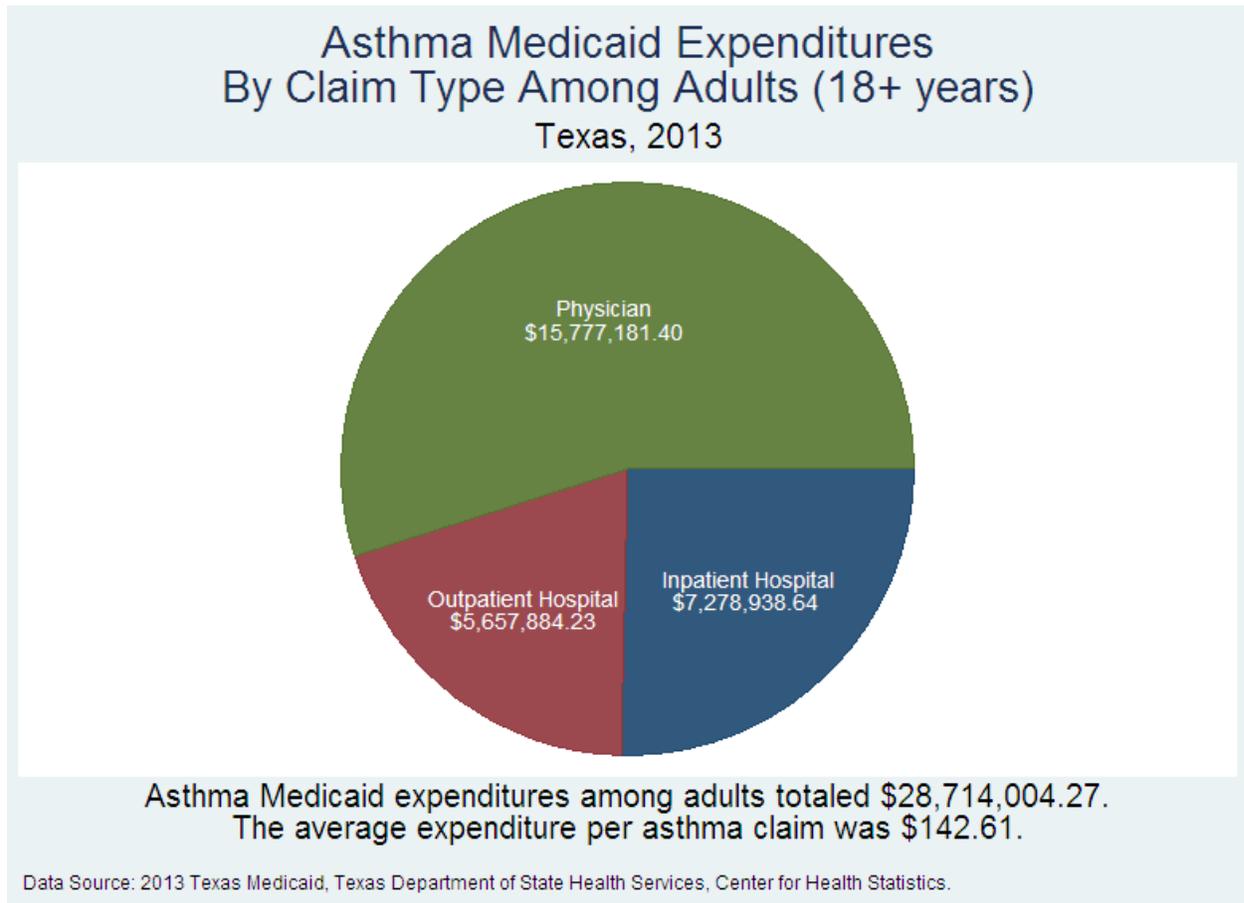
The vast majority of asthma Medicaid claims occurred among females regardless of the type of claim. Among inpatient hospital claims for asthma, 79.2 percent were for females. Among outpatient hospital claims for asthma, 76.4 percent were for females. And, among physician claims for asthma, 74.8 percent were for females.

The percent of adult Medicaid claims for asthma may vary by race and ethnicity (not shown). However, for each of the three types of claims, the highest percentage of claims was categorized as other race and ethnicity. The other race and ethnicity category was largely made up of asthma claims in which race and ethnicity were unknown or not reported.

The prevalence of adult Medicaid claims for asthma varies by age and claim type. Asthma Medicaid claims among adults were most common among adults age 45 to 64, regardless of the type of claim. Many people age 65 and over may be covered by Medicare rather than Medicaid. The age distribution for asthma outpatient hospital claims and asthma physician claims is similar. Each of the remaining age groups (18 to 29 years, 30 to 44 years, and 65 years and over) represent about 20.0 to 25.0 percent of the claims.

However, the age distribution for inpatient hospital claims is different and possibly an indication that asthma severity increases with age. Among inpatient hospital stays, 32.3 percent were for adults age 65 and over, 15.0 percent were for adults age 30 to 44 years, and 6.8 percent were for adults age 18 to 29 years.

Fig. 4-3



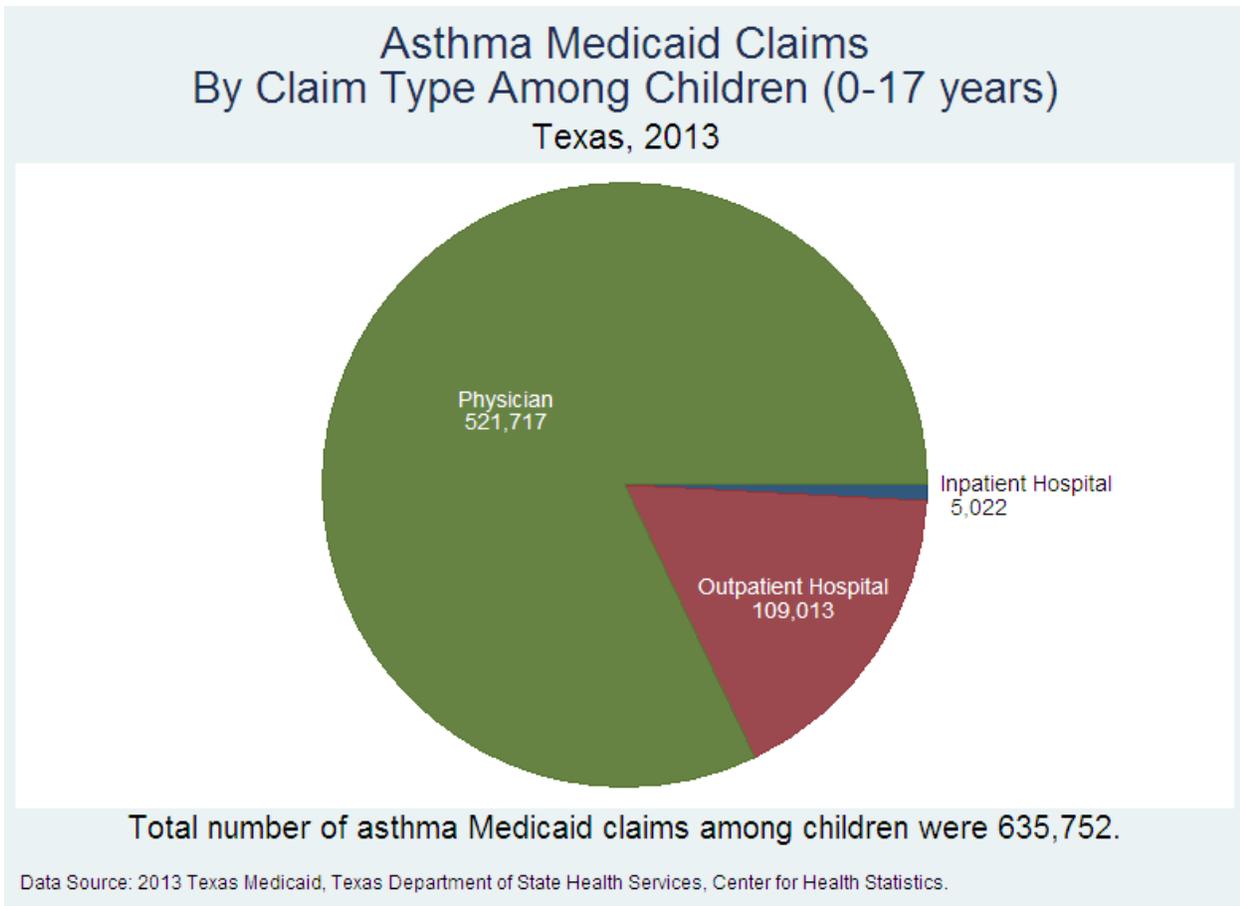
#### SUMMARY

In 2013, Medicaid expenditures for adult asthma claims totaled \$28.7 million. Among adult asthma Medicaid expenditures, more than half were for physician claims (54.9 percent), 1 in 4 were for inpatient hospital claims (25.3 percent), and 1 in 5 were for outpatient hospital claims (19.7 percent).

Overall, the average Medicaid expenditure per asthma claim among adults was \$142.61. However, asthma inpatient hospital claims were the most expensive at an average of \$2,176.07 per claim. The average expenditure for an asthma outpatient hospital claim was \$198.24 and for a physician visit was \$93.10.

# Medicaid-Children

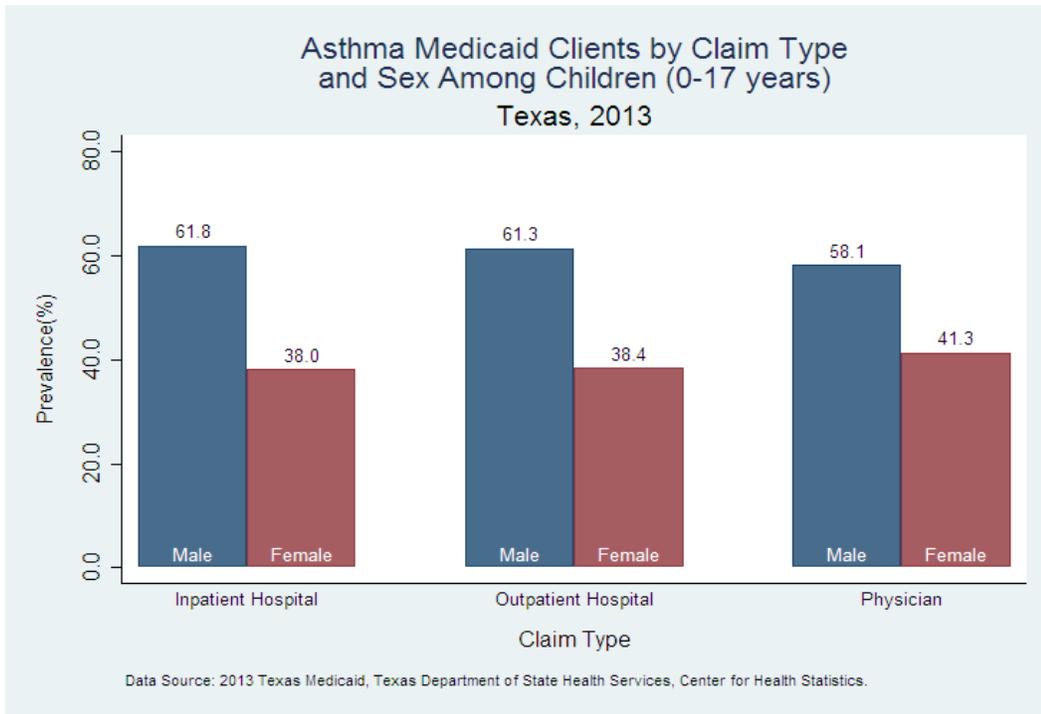
Fig. 4-4



## SUMMARY

In 2013, there were 635,752 Medicaid reimbursement claims for asthma among children in Texas. Physician claims made up the majority of asthma claims at 82.1 percent. The remaining claims were outpatient hospital claims (17.1 percent) and inpatient hospital claims (0.8 percent).

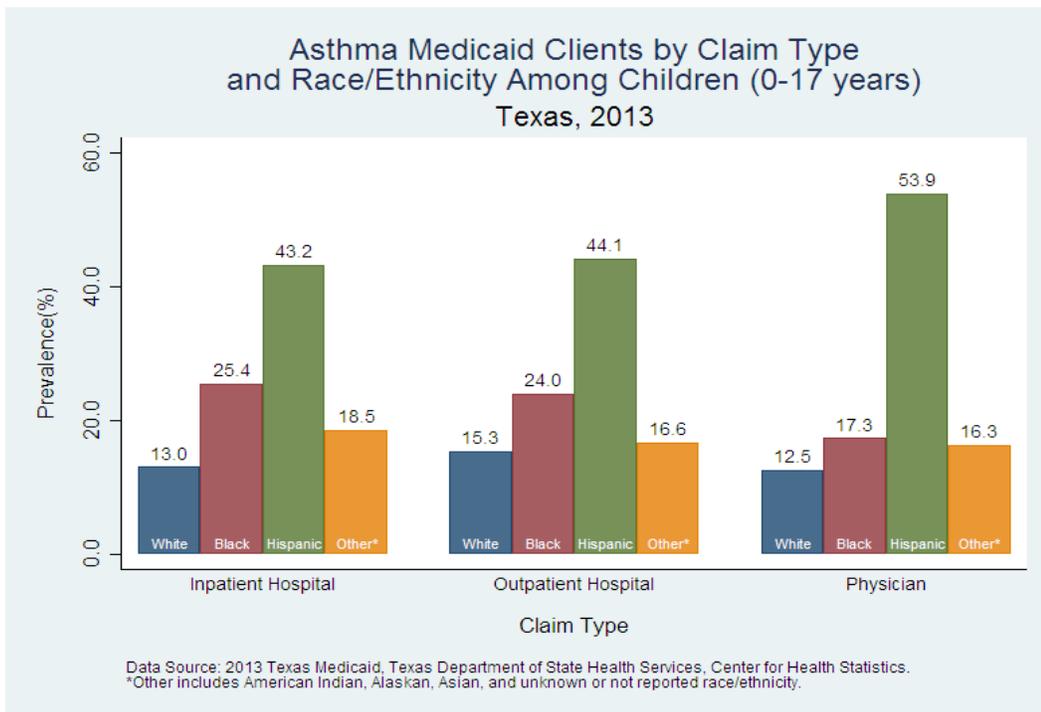
Fig. 4-5



**SUMMARY**

The majority of asthma Medicaid claims occurred among males, regardless of the type of claim. Among inpatient hospital claims for asthma, 61.8 percent were for males. Among outpatient hospital claims for asthma, 61.3 percent were for males. And, among physician claims for asthma, 58.1 percent were for males.

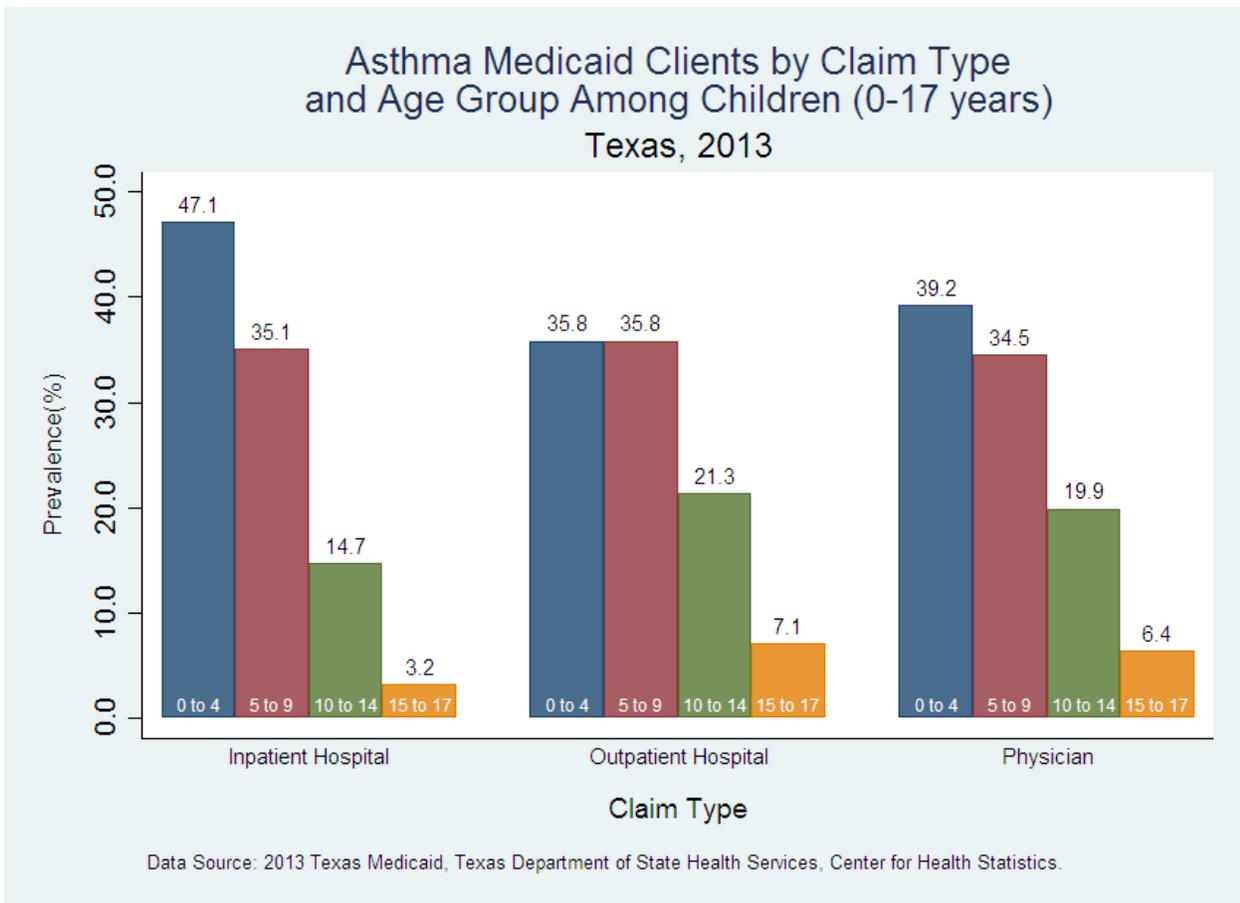
Fig. 4-6



**SUMMARY**

The percent of child Medicaid claims for asthma may vary by race and ethnicity. The distribution of race and ethnicity was similar for all three claim types; the highest percentage of claims was among Hispanics. Blacks represented the second highest percentage and whites represented the lowest percentage of child asthma Medicaid claims. Children categorized as other race and ethnicity represent about 16 to 19 percent of asthma Medicaid claims depending on the type of claim. The other race and ethnicity category was largely made up of asthma claims in which race and ethnicity were unknown or not reported.

Fig. 4-7

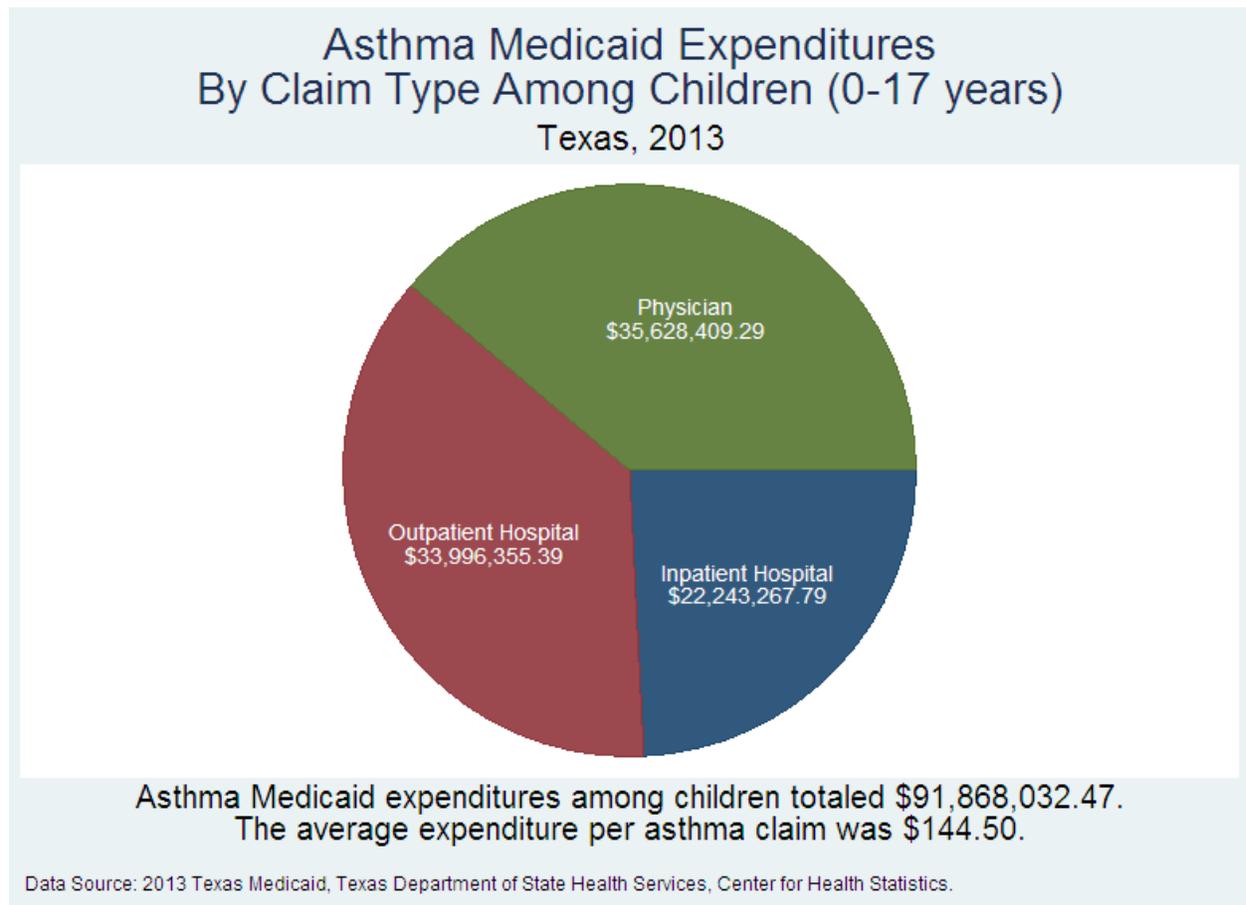


#### SUMMARY

The prevalence of child Medicaid claims for asthma varies by age group. The age distribution for asthma claims was similar for all claim types, as the percent of claims decreased with increasing age.

Asthma Medicaid claims among children were most common among children the age 0 to 4 years and 5 to 9 years and made up more 70 percent of all claims, regardless of the type of claim. Among inpatient hospital stays, 47.1 percent were for children age 0 to 4 years.

Fig. 4-8



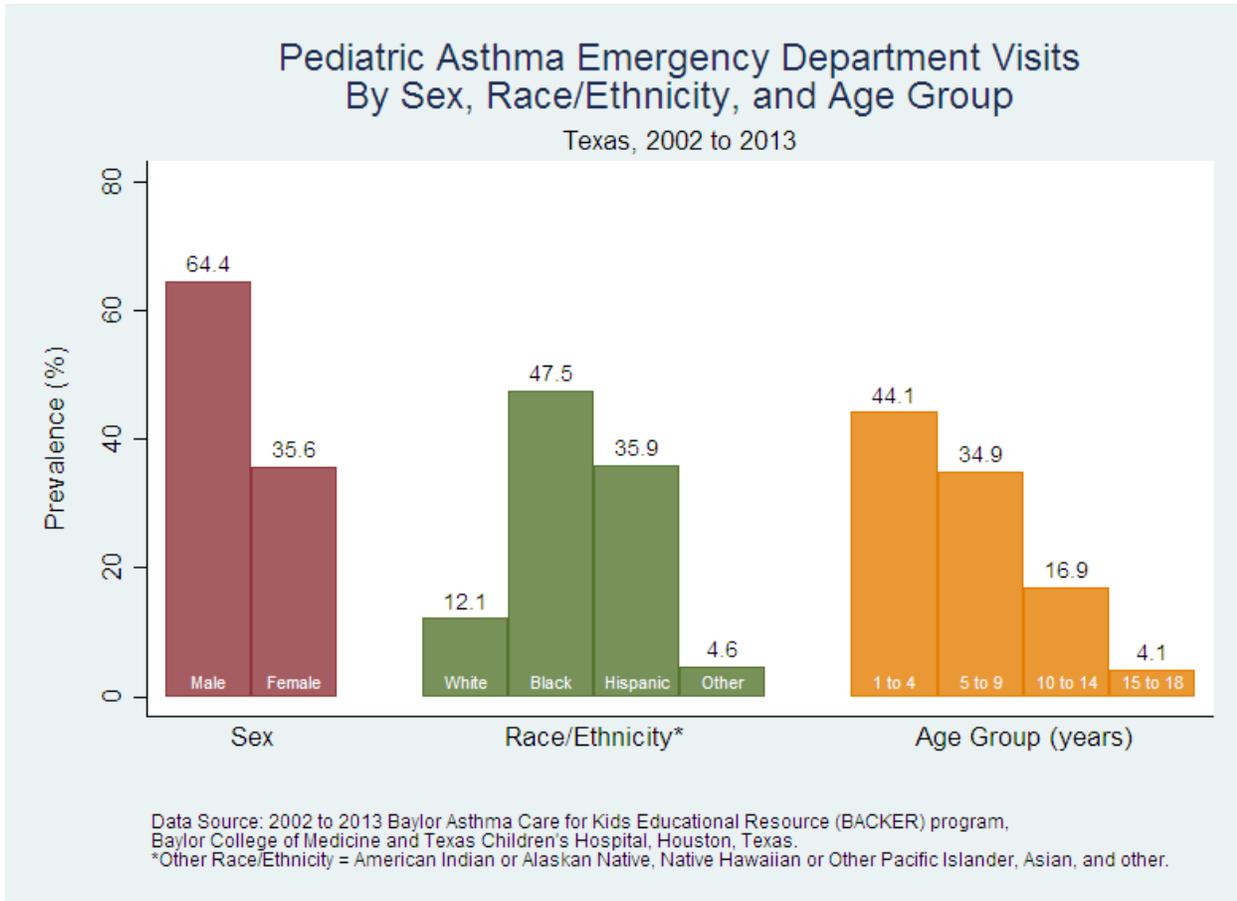
#### SUMMARY

In 2013, Medicaid expenditures for child asthma claims totaled nearly \$91.9 million. Among child asthma Medicaid expenditures, 38.8 percent were for physician claims, 37.0 percent were for outpatient hospital claims, and 24.2 percent were for inpatient hospital claims.

Overall, the average Medicaid expenditure per asthma claim among children was \$144.50. However, asthma inpatient hospital claims were the most expensive at an average of \$4,429.17 per claim. The average expenditure for an asthma outpatient hospital claim was \$311.86 and for a physician visit was \$68.29.

# Pediatric Asthma ED Visits- TEDAS/BACKER

Fig. 5-1

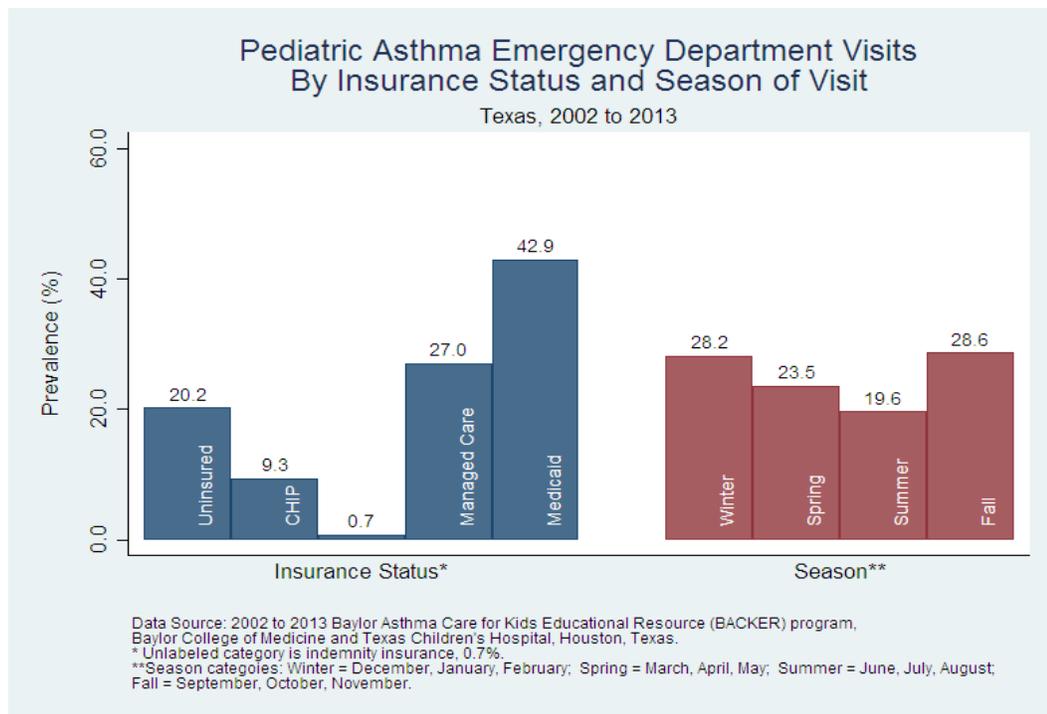


## SUMMARY

To reduce ED visits and hospitalizations, the BACKER/TEDAS program collected information from all pediatric asthma ED visits among children age 1 to 18 years at five participating hospitals and their affiliated organizations in Houston, Galveston, and Dallas. The program identified patient characteristics, instructed ED physicians in standardized asthma diagnosis and treatment, and educated patients and caregivers in asthma management.

From 2002 to 2013, there were 30,388 pediatric asthma emergency department visits captured by the BACKER program. A majority of the pediatric asthma ED visits were among males (64.4 percent). Over 80.0 percent of the pediatric asthma ED visits were among blacks (47.5 percent) and Hispanics (35.9 percent). Nearly 80.0 percent of the pediatric asthma ED visits were among children age 1 to 9 years (age 1 to 4 years, 44.1 percent; age 5 to 9 years, 34.9 percent).

Fig. 5-2



**SUMMARY**

About 1 in 5 pediatric asthma ED visits were among uninsured patients. Medicaid was the insurance provider for the largest percent of visits (42.9 percent) followed by Managed Care (27.0 percent). Pediatric asthma ED visits may be more common in the fall (28.6 percent) and winter (28.2 percent), than in the summer (19.6 percent).

**SUMMARY**

Among pediatric asthma ED visits, nearly 3 in 4 (72.0 percent) had a prior visit to the ED for asthma. Most children came to the ED without an asthma action plan (77.2 percent). Prior to the ED visit for asthma, the majority of children were at school (67.4 percent) while a smaller percent were at home (21.4 percent). Almost half of the pediatric asthma ED visits were classified as mild intermittent (45.0 percent, data not shown), indicating that many children only had mild exacerbations. This may suggest an opportunity to handle more of the mild asthma cases in the home or a doctor's office, which could be less costly to the family and the healthcare system than the ED.

Fig. 5-3

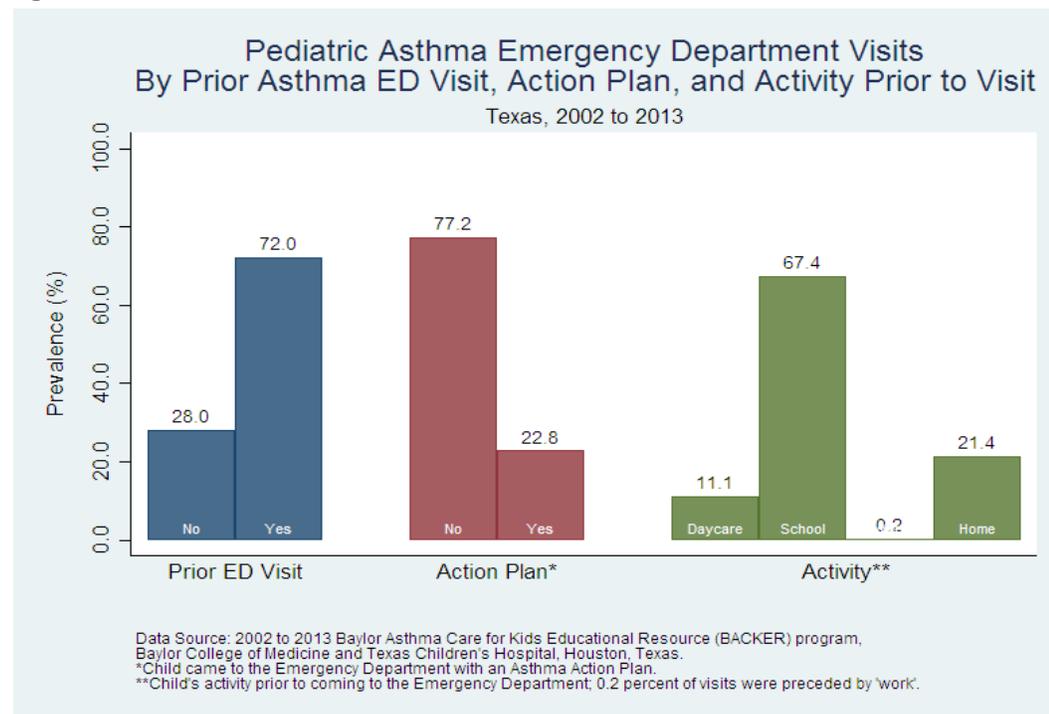
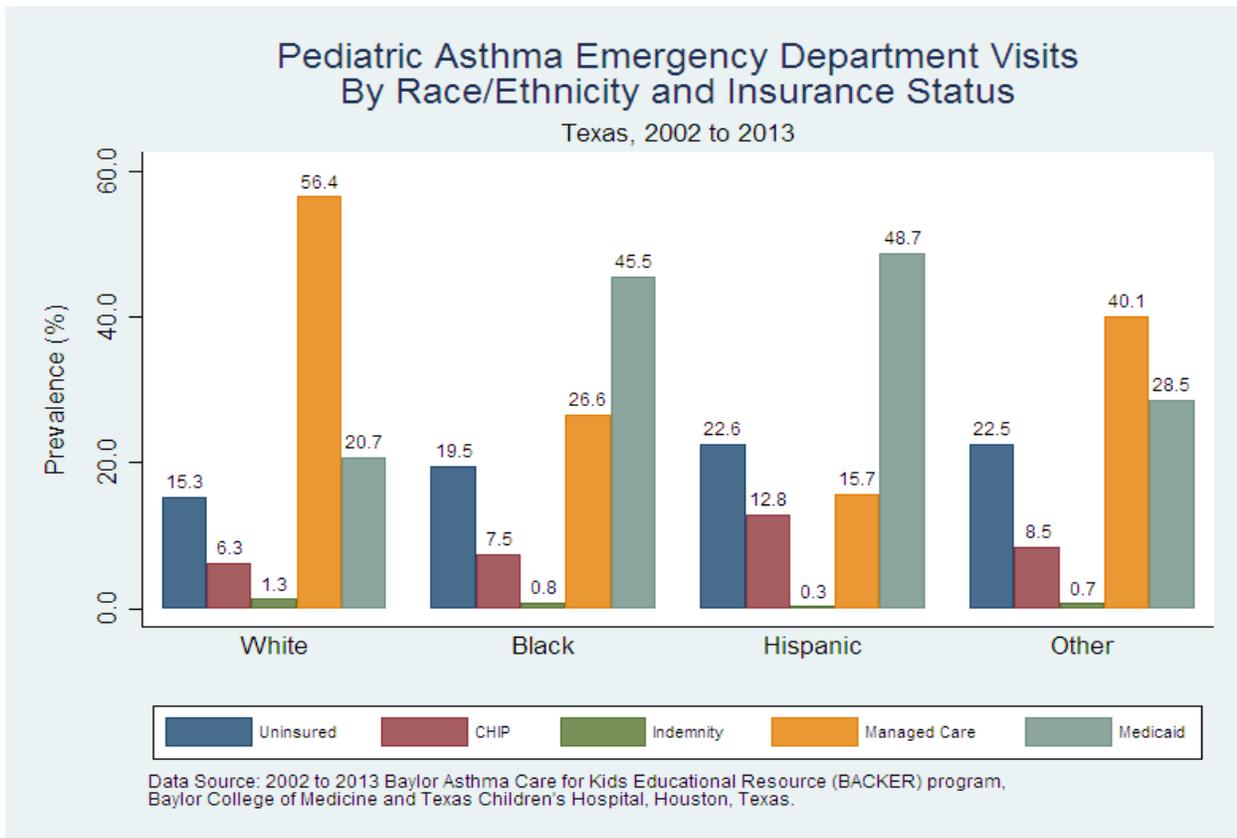


Fig. 5-4



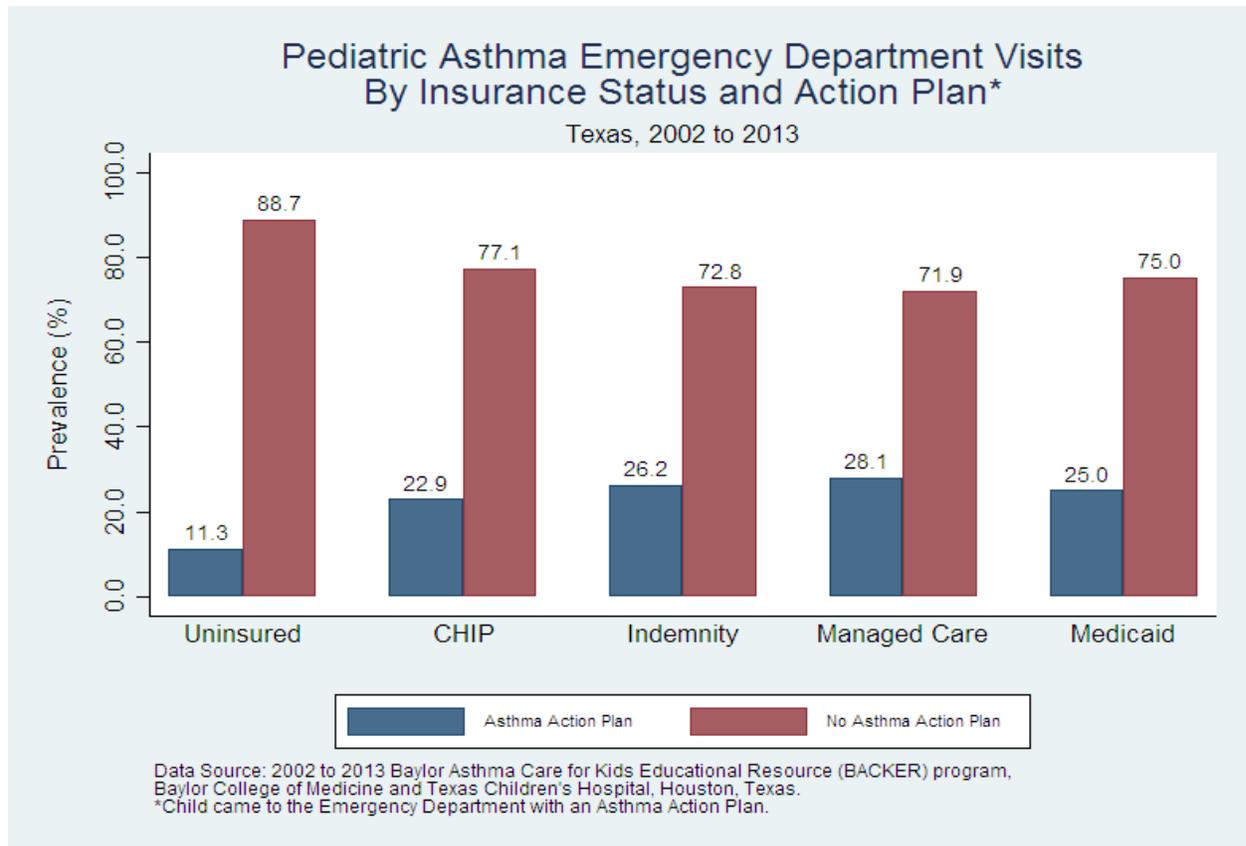
#### SUMMARY

Among pediatric asthma ED visits, the distribution of insurance status varied by race/ethnicity. Among white children, the majority had insurance provided by a managed care organization (56.4 percent), 20.7 percent were covered by Medicaid, and 15.3 percent were uninsured.

Among black and Hispanic patients, nearly half of asthma ED visits were covered by Medicaid (45.5 percent and 48.7 percent, respectively) and about 1 in 5 were uninsured (19.5 percent and 22.6 percent, respectively).

Among children categorized as other race and ethnicity, 40.1 percent of asthma ED visits were covered by a managed care organization, 28.5 were covered by Medicaid, and 22.5 were uninsured.

Fig. 5-5



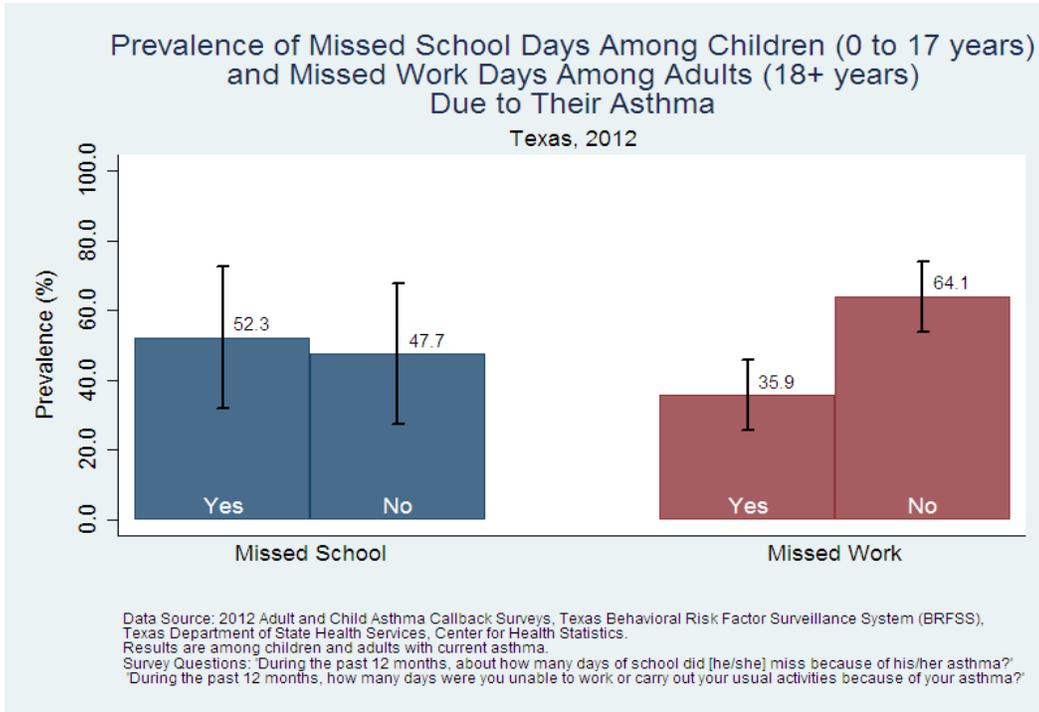
#### SUMMARY

The percent of children arriving at the ED with an Asthma Action Plan varied by insurance status. The percent was lowest among uninsured children in which 11.3 percent had an Asthma Action Plan. The percent was highest among children covered by a managed care organization, in which, 28.1 percent had an Asthma Action Plan.

Pediatric asthma ED visits covered by a managed care organization had the lowest percent classified as very poorly controlled asthma (8.4 percent) (not shown). Compared to patients covered by managed care, uninsured patients and patients covered by CHIP and Medicaid had a higher percent of visits classified as very poorly controlled asthma (12.8 percent, 13.0 percent, and 13.2 percent, respectively).

# Asthma Call Back Survey Data

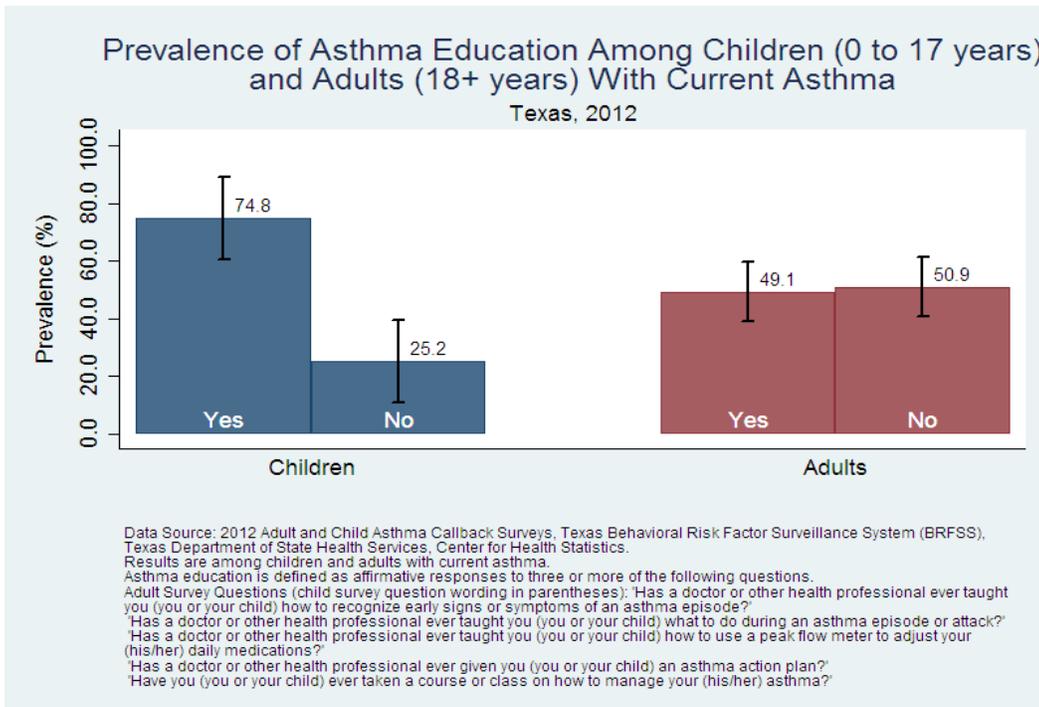
Fig. 6-1



## SUMMARY

Among children (0 to 17 years) with current asthma, 52.3 percent had missed one or more days of school in the previous 12 months due to their asthma. Among adults (18+ years) with current asthma, 35.9 percent (95% CI: 25.8-46.0) had missed one or more days of work in the previous 12 months due to their asthma. This was significantly lower than the 64.1 percent (95% CI: 54.0-74.2) of adults with current asthma who had not missed work due to their asthma.

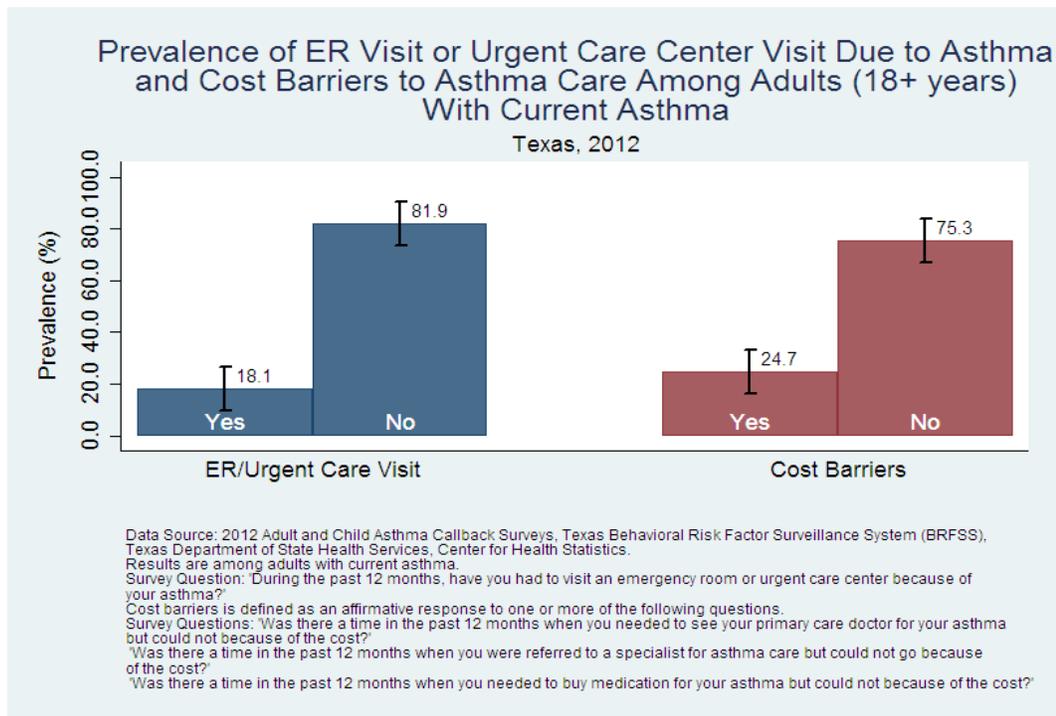
Fig. 6-2



## SUMMARY

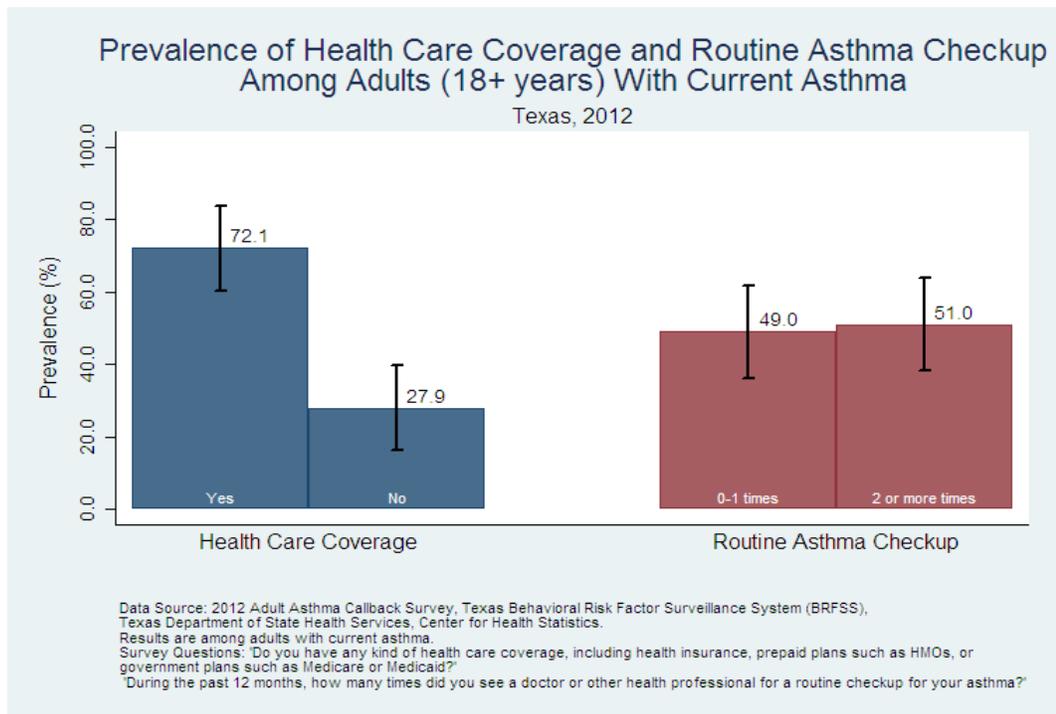
Among children (0 to 17 years) with current asthma, 74.8 percent (95% CI: 60.5-89.2) had received asthma education. This was significantly more than the 25.2 percent (95% CI: 10.8-39.5) of children with current asthma who had not received asthma education. Among adults (18+ years) with current asthma, 49.1 percent had received asthma education.

Fig. 6-3



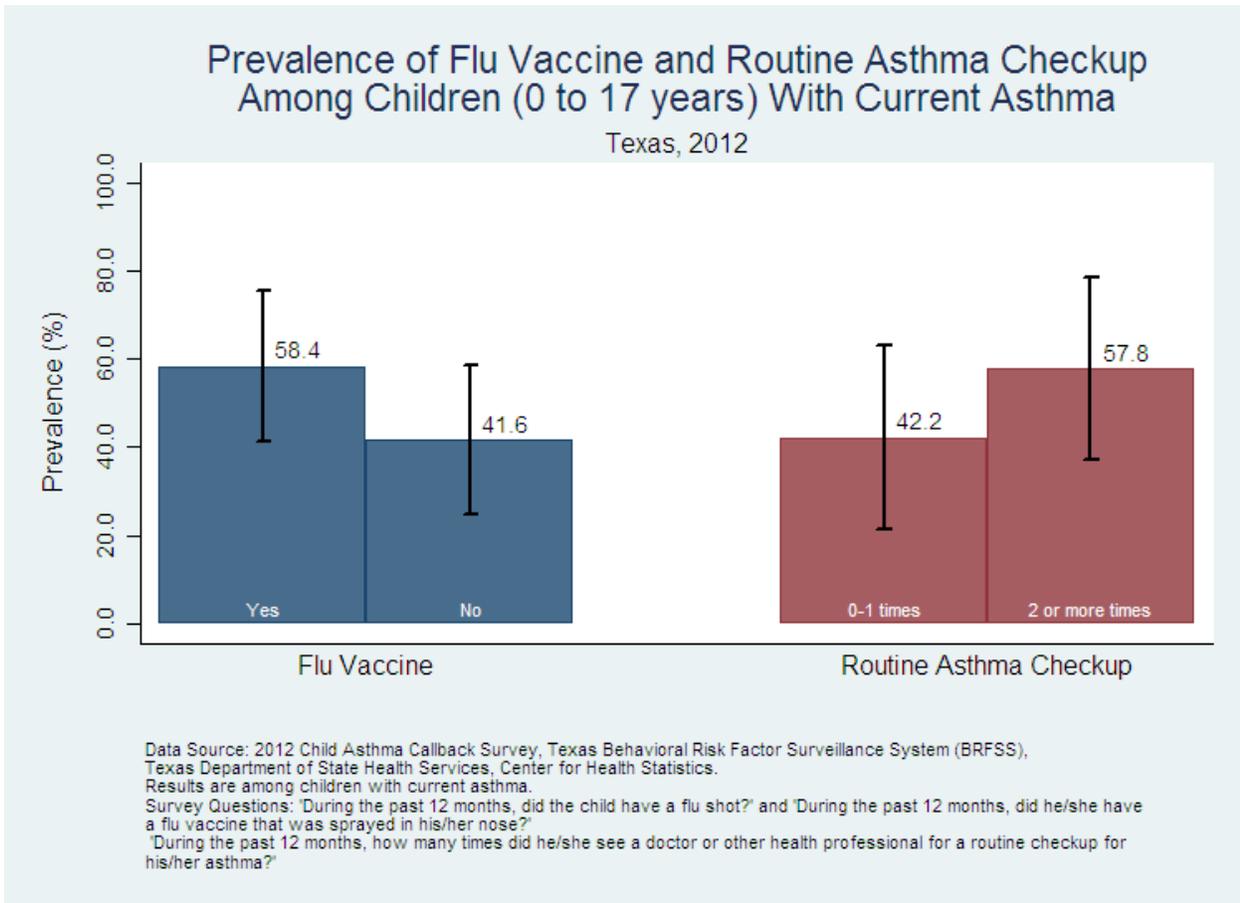
**SUMMARY**  
 Among adults with current asthma, 18.1 percent (95% CI: 9.5-26.7) visited an ER or an urgent care center due to their asthma in the previous 12 months. Among adults with current asthma, nearly 1 in 4 (24.7 percent; 95% CI: 16.3-33.1) reported one or more cost barriers to asthma care in the previous 12 months.

Fig. 6-4



**SUMMARY**  
 Nearly 3 in 4 adults with current asthma had some kind of health care coverage, while more than 1 in 4 did not. It is recommended that persons with asthma see a doctor for a routine asthma checkup every 1 to 6 months. In the past 12 months among adults with current asthma, 51.0 percent saw a doctor or other health professional for a routine asthma checkup two or more times and 49.0 percent saw a doctor or other health professional for a routine asthma checkup one time or not at all.

Fig. 6-5

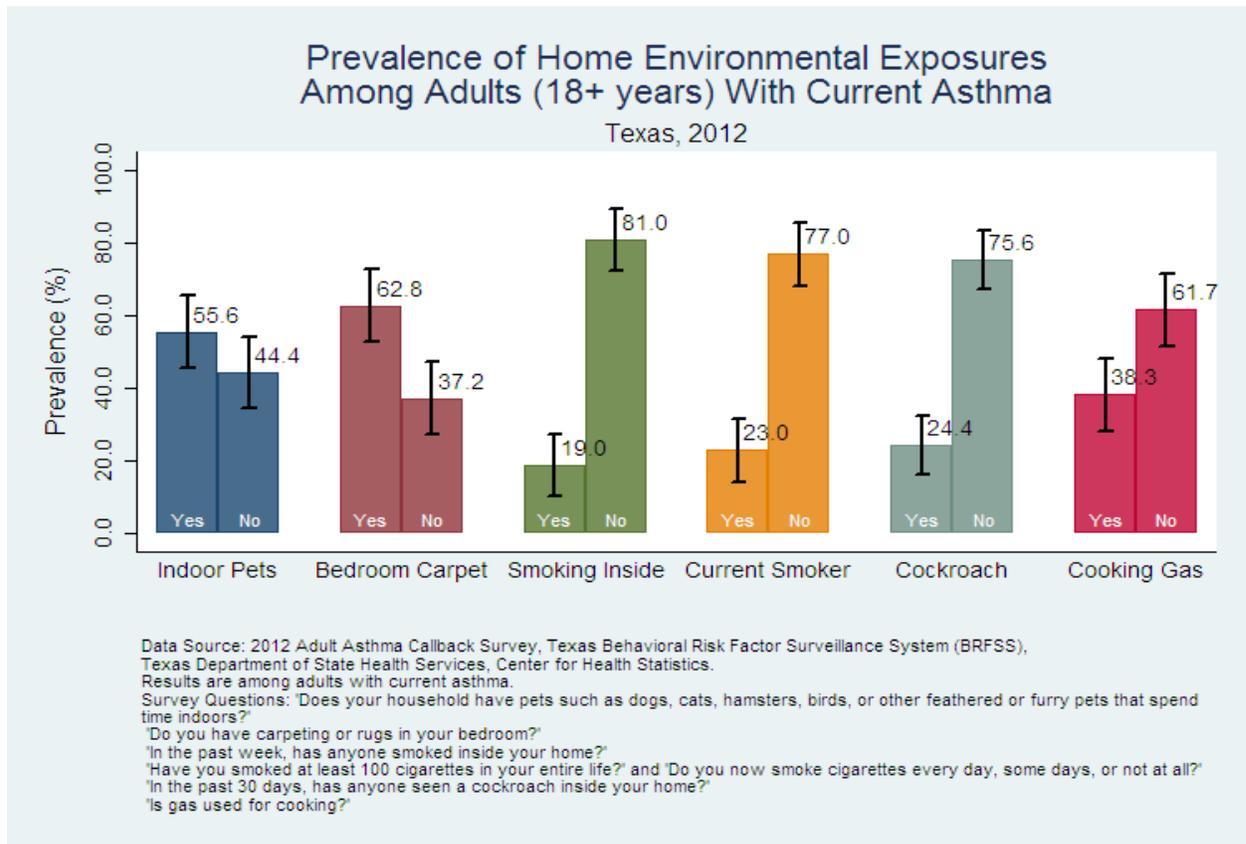


#### SUMMARY

The Centers for Disease Control and Prevention recommend that people with asthma receive a flu vaccine every year. For persons with asthma, a respiratory infection such as the flu can affect the lungs, causing an asthma attack. Among children with current asthma, 58.4 percent had had a flu vaccine (either a flu shot or flu spray) in the past 12 months.

In the past 12 months among children with current asthma, 57.8 percent saw a doctor or other health care professional two or more times for a routine asthma checkup and 42.4 percent saw a doctor or other health professional for a routine asthma checkup once or not at all.

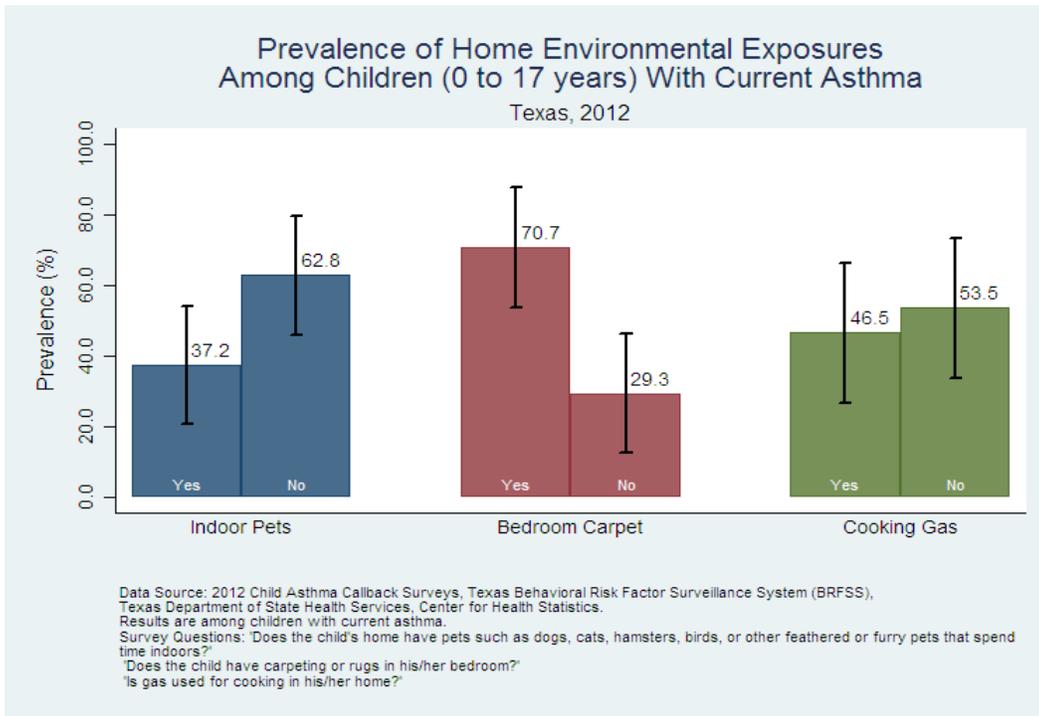
Fig. 6-6



### SUMMARY

There are many different environmental exposures in the home that could trigger a child or adult to have an asthma exacerbation, episode, or attack. It is important to note that all people with asthma may not react to each potential asthma trigger. In about 1 in 5 homes of adults with current asthma, someone smoked inside their home in the past week. Nearly 1 in 4 adults with current asthma were current cigarette smokers. Among adults with current asthma, about 55.6 percent had furry or feathered pets that spent time inside their home, 62.8 percent had carpeting or rugs in their bedroom, a cockroach was spotted in about 1 in 4 homes, and gas was used for cooking in 38.3 percent of homes. Among adults with current asthma, 47.3 percent (95% CI: 36.6-57.9) were advised by a health professional to change things in their home, school, or work to improve their

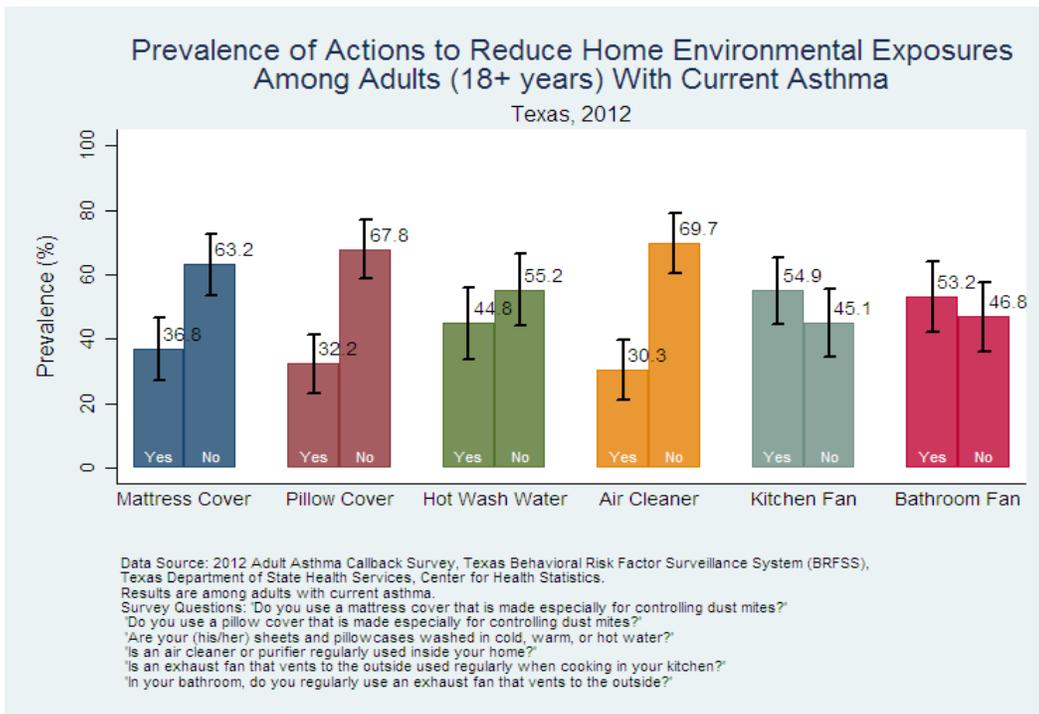
Fig. 6-7



**SUMMARY**

Among children with current asthma, about 37.2 percent had furry or feathered pets that spent time inside the home, 70.7 percent had carpeting or rugs in their bedroom, and gas was used for cooking in 46.5 percent of homes. Among children with current asthma, 30.6 percent (95% CI: 14.6-46.5) of their parents or guardians were advised by a health professional to change things in their home, school, or work to improve the child's asthma.

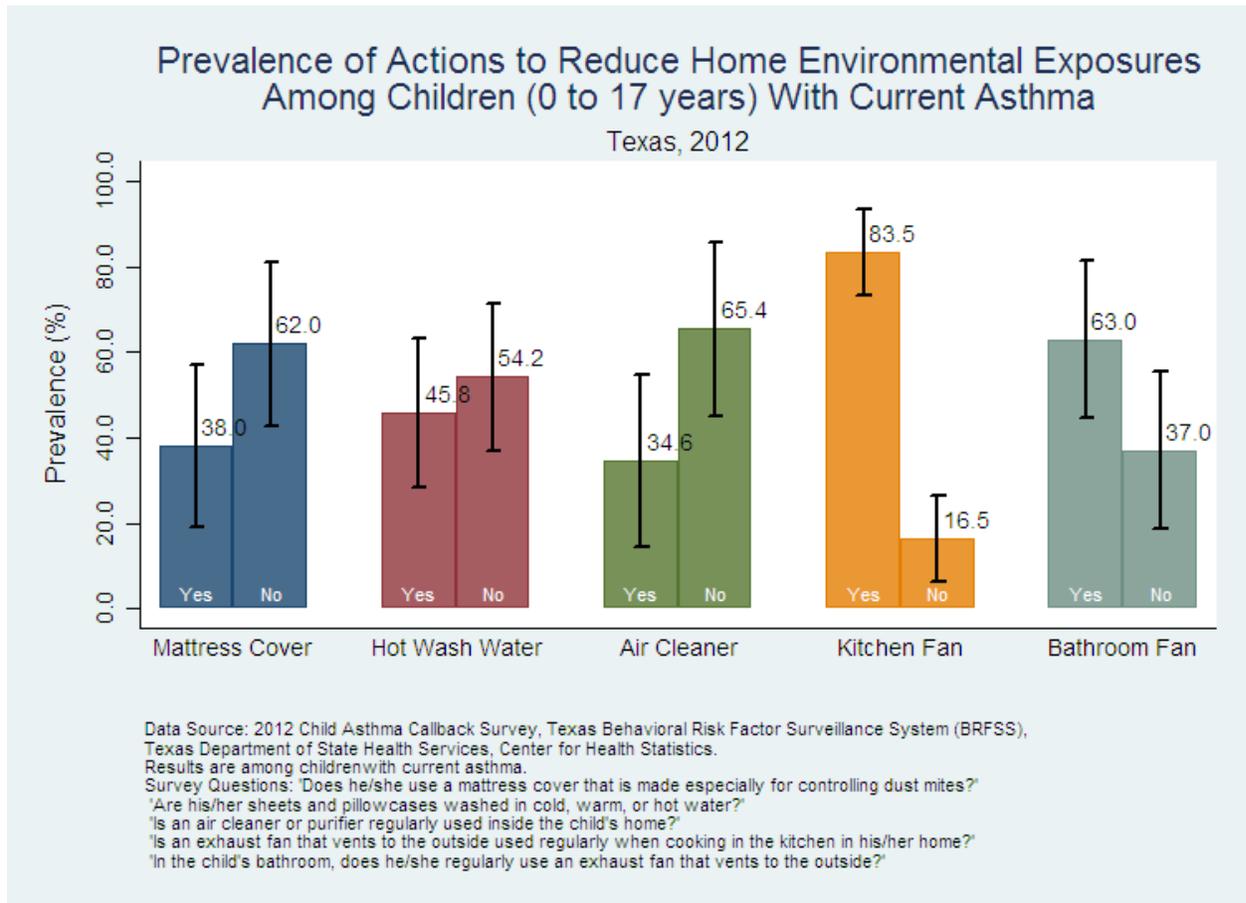
Fig. 6-8



**SUMMARY**

A variety of actions may help reduce home environmental exposures for children and adults with asthma. Among adults with current asthma, about 36.8 percent used a mattress cover and 32.2 percent used a pillow cover made to control dust mites, 44.8 percent washed their sheets and pillowcases in hot water only, 30.3 percent lived in a home where an air cleaner or purifier was regularly used inside, 54.9 percent lived in a home where an exhaust fan that vents to the outside was regularly used when cooking in the kitchen, and 53.2 percent regularly used an exhaust fan that vents to the outside from their bathroom.

Fig. 6-9



### SUMMARY

Among children with current asthma, 38.0 percent used a mattress cover made to control dust mites, 45.8 percent had their sheets and pillowcases washed in hot water only, 34.6 percent lived in a home where an air cleaner or purifier was regularly used inside, 83.9 percent lived in a home where an exhaust fan that vents to the outside was regularly used when cooking in the kitchen, and 63.0 percent regularly used an exhaust fan that vents to the outside from their bathroom.

# Appendix: Data Sources

## Asthma Prevalence

The Texas Behavioral Risk Factor Surveillance System (BRFSS) is the source of asthma prevalence data, including current asthma prevalence estimates among adults and children, as well as risk factor prevalence estimates such as education, health insurance, and smoking. Prevalence estimate trends over time use 2011, 2012, and 2013 BRFSS data. Detailed prevalence estimates for both children and adults by various demographic factors use 2013 BRFSS data.

In 2013, the BRFSS categorization of race changed to include a multiracial category which aligns with the categories used by the federal Office of Management and Budget (OMB). For comparing trends over time, the old categorization of race was used. However, the new race categorization was used for analyses that only include 2013 BRFSS asthma prevalence data.

The BRFSS is a landline- and cell phone-based survey conducted among randomly selected, non-institutionalized, adult Texans (18 years or older). Data are weighted to be representative of the Texas adult population. The 2013 BRFSS continues to reflect changes initially made in 2011 in the weighting methodology and the addition of cell phone only respondents. Data from 2011, 2012, and 2013 are not directly comparable to data from 2010 or before.

Affirmative responses to two questions are used to assess current asthma among adults: “Has a doctor, nurse or other health professional ever told you that you had asthma?” and “Do you still have asthma?” Data for children (0 to 17 years) are based on information provided by an adult respondent about a randomly selected child living in the home. Affirmative responses to two questions are used to assess current asthma among children: “Has a doctor, nurse or other health professional EVER said that the child has asthma?” and “Does the child still have asthma?”

Detailed information about the Texas BRFSS can be found at: <https://www.dshs.state.tx.us/chs/brfss/>.

Detailed information about the national BRFSS can be found at: <http://www.cdc.gov/brfss/>.

## Hospital Discharges

The Texas Health Care Information Collection (THCIC) Inpatient Public Use Data Files are the source of hospital discharge data for asthma. Asthma hospital discharges are those with a principal diagnosis of asthma using International Classification of Diseases Version 9 (ICD-9) codes 490.0 to 493.9. Data from 2012 hospital discharges for asthma among adults (18 years or older) and children (0 to 17 years) were included.

Hospitalization data are based on inpatient hospitalization and do not include emergency department (ED) visits which did not result in hospital admission. By not including these ED asthma visits, the burden of serious asthma episodes is not fully captured.

The data represent the number of inpatient hospitalizations. Since the data have been de-identified and an individual can be hospitalized more than once for the same condition during the data collection period (2012), multiple hospitalizations for the same individual and the same diagnosis cannot be distinguished.

Additional information about Texas THCIC can be found at: <http://www.dshs.state.tx.us/thcic/>

## **Mortality**

The Texas Department of State Health Services (DSHS) Center for Health Statistics is the data source for asthma mortality data. Asthma deaths were those with a primary cause of death listed as asthma using International Classification of Diseases Version 10 (ICD-10) codes J45 and J46. Data for persons of all ages for each year from 2002 to 2012 were used for overall asthma mortality rates over time. Mortality data from persons of all ages for years 2006 to 2012 are combined for a large enough sample size to calculate asthma mortality rates by demographic factors.

Additional information about Texas death data can be found at:

<http://soupfin.tdh.state.tx.us/deathdoc.htm>

Additional information about DSHS Center for Health Statistics can be found at:

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

## **Medicaid**

The Texas Health and Human Services Strategic Decision Support Research Team prepared the Medicaid data. Both Fee-for-service (FFS) and Star and StarPlus (managed care organizations (MCOs)) data were selected. FFS data were selected from the Texas Medicaid and Health Partnership (TMHP) Ad Hoc Query Platform (AHQP) Claims Universe. Star and StarPlus data were selected from the Texas Medicaid and Health Partnership (TMHP) ENC\_Best Picture Universe.

Persons were identified with a paid or partially paid claim and a primary diagnosis of asthma base on ICD-9 codes 493.0 to 493.9. Medicaid claims data from fiscal year 2013 for adults (18 years or older) and children (0 to 17 years) were included.

Inpatient hospital claims were claim types 040 and 050. Outpatient hospital claims were claim types 023 and 031. Physician claims were claim types 020 and 030.

Expenditures include FFS reimbursement and Star and StarPlus (MCOs) reimbursement. Reimbursement for MCOs is paid on a capitation basis and Texas Medicaid does not reimburse individual providers under contract with the health plans.

## **Pediatric Asthma Emergency Department Visits**

Baylor College of Medicine and Texas Children's Hospital collaborated to create the Baylor Asthma Care for Kids Educational Resource (BACKER) program, which is the data source for pediatric asthma emergency department (ED) visits. BACKER was formerly the Texas Emergency Department Asthma Surveillance (TEDAS) partnership.

To reduce ED visits and hospitalizations, the BACKER/TEDAS program collected information from all pediatric asthma ED visits among children age 1 to 18 years at participating hospitals, identified patient characteristics, instructed ED physicians in standardized asthma diagnosis and treatment, and educated patients and caregivers in asthma management. The assessment of asthma severity was recorded along with demographic information, insurance status, and other data.

From 2002 to 2013 five Texas hospitals in Houston, Galveston, and Dallas and their affiliated organizations collected data for the program. Participating hospital names, years of data collection, and the percentage of observations in the final dataset are as follows: Texas Children’s Hospital (years 2002 to 2013, n = 18,523 or 61.1%), Ben Taub General Hospital (years 2002 to 2007, n = 1,598 or 5.3%), Lyndon B. Johnson General Hospital (years 2002 to 2007, n = 1,365 or 4.5%), University of Texas Medical Branch (years 2002 to 2005, n = 854 or 2.8%), and Children’s Medical Center of Dallas (years 2005 to 2008, n = 8,037 or 26.5%).

Additional information about the BACKER/TEDAS program can be found at:

[http://www.pediatricasthma.org/emergency\\_departments/houston](http://www.pediatricasthma.org/emergency_departments/houston)

The National Asthma Education and Prevention Program (NAEPP) Expert Panel Report: Guidelines for the Diagnosis and Management of Asthma 2007 (EPR-3) can be found at: <http://www.nhlbi.nih.gov/health-pro/guidelines/current/asthma-guidelines/index.htm>

### **Asthma Call-back Survey**

The Texas Asthma Call-back Survey (ACBS) was the source of data on adults and children with asthma state-wide. The Texas ACBS is an in-depth asthma survey conducted with Texas BRFSS respondents who reported an asthma diagnosis. There is an Adult ACBS for adults with an asthma diagnosis and a Child ACBS for children with an asthma diagnosis. Questions about children with asthma were answered by a parent or guardian age 18 years or older. Data from the 2012 Texas ACBS were used. The topics included in this report were: missed school and work days due to asthma, asthma education, ER or urgent care center visits, and cost barriers to asthma care.

Additional information about the national Asthma Call-back Survey can be found at:

<http://www.cdc.gov/Brfss/acbs/index.htm>

# Appendix: References

1. 2012 Current Asthma Population Estimates table. National Health Interview Survey, National Center for Health Statistics, CDC. <http://www.cdc.gov/asthma/nhis/2012/table3-1.htm>.
2. National Hospital Ambulatory Medical Care Survey: 2010 Emergency Department Summary Tables, National Center for Health Statistics, CDC. <http://www.cdc.gov/nchs/fastats/asthma.htm>.
3. National Hospital Ambulatory Medical Care Survey: 2010 Outpatient Department Summary Tables, National Center for Health Statistics, CDC. <http://www.cdc.gov/nchs/fastats/asthma.htm>.

**Texas Asthma Control Program**  
**[www.dshs.state.tx.us/asthma](http://www.dshs.state.tx.us/asthma)**

