

Texas Asthma Report



Assessing the Burden
of Asthma in Texas:
A Summary of the
Texas Asthma
Surveillance System

Introduction

Asthma is a widespread public health problem that has increased in the past two decades in Texas and the United States.¹ Asthma affects more children than any other chronic disease² and is one of the most frequent reasons for hospital admissions among children.³ Although asthma cannot be cured, it can be controlled with proper education and medical treatment.

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 raise awareness about the affect of asthma on the health of the community. This report identifies particular communities, settings and characteristics at risk for developing life threatening episodes of asthma

The key findings of this report indicate that, in Texas:

- § Approximately 1,000,000 adult Texans report having asthma.
- § The prevalence of asthma is higher among adult women than men.
- § The prevalence is highest among African-American adults.
- § Many adult Texans with asthma are not in control of their asthma symptoms.
- § Health related quality of life is lower in adults with asthma compared to adults without asthma.
- § Less than 50% of adults with asthma reported having had routine healthcare visits for their asthma in the past 12 months.
- § Eighty-five percent of people with asthma report having regular symptoms and approximately one quarter report having had to visit the emergency department or urgent care facility in the last year.
- § Asthma is responsible for approximately 25,000 hospitalizations a year, costing Texas more than \$200,000,000 dollars per year in hospital charges.
- § Since 1998, 822 Texans have died from asthma.

The mission of the Texas Asthma Program is to decrease preventable asthma morbidity and reduce the social and economic impact of asthma. Along with many partners across the state who have a common vision for asthma health, we seek to reduce the severity of asthma symptoms and decrease the number of emergency department, hospital visits and deaths due to asthma through education and awareness campaigns. The data in this report are used to focus resources to areas and populations that are disproportionately experiencing a higher asthma burden.

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Asthma Prevalence

The prevalence of a disease is the number of existing cases of the disease in a population. For asthma surveillance, prevalence data are used to identify how many people in Texas have asthma as well as for

characterizing the population of persons with asthma. This information helps researchers, health care providers, and policy makers know which populations are disproportionately affected by asthma so that they may deliver effective services.

Since 1999, the Texas Behavioral Risk Factor Surveillance System (BRFSS) an ongoing, random-digit-dialed telephone survey of adults 18 years and older, has included questions related to the prevalence of asthma. Respondents are asked:

- Have you ever been told by a doctor, nurse or other health care professional that you have asthma?

Respondents were classified as having “lifetime asthma” if they answered “yes” to this question. Among the lifetime asthma population, the “current asthma” population was identified as those respondents answering “yes” to the question:

- Do you still have asthma?

• Asthma is a highly prevalent condition that has a significant impact on the United States and Texas.

• Nationally, the prevalence of asthma has increased over the past two decades.

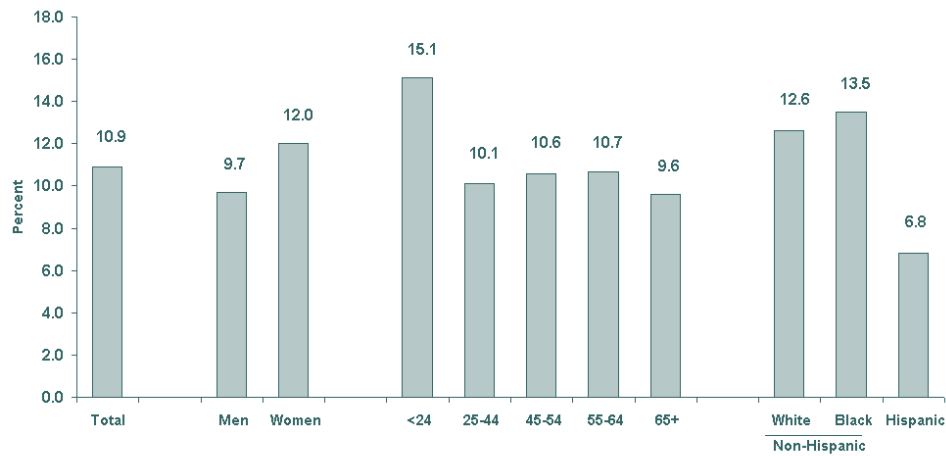
• In Texas, approximately 1,000,000 Texas adults (6.5% of the adult population) report currently having asthma.*

*According to BRFSS data, applied to state demographic information.

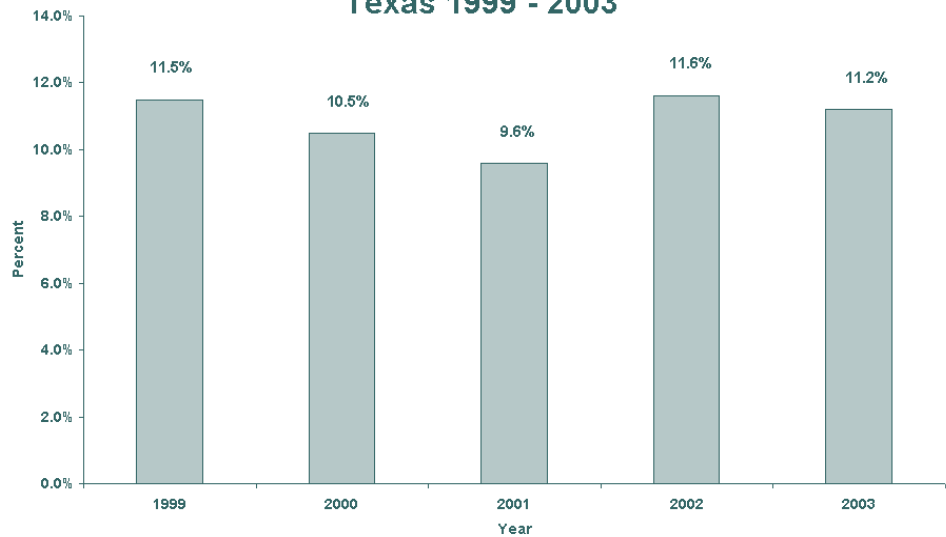
Table 1: Percent of adults (at least 18 years old) by asthma status and demographic group, Texas, 1999-2003

	Total number of respondents	Percent with Lifetime Asthma		Percent with Current Asthma	
		%	95% CI	%	95% CI
Age					
<24	2769	15.1	(13.4, 16.9)	8.4	(7.1, 9.7)
25-44	11833	10.1	(9.4, 10.8)	5.8	(5.3, 6.3)
45-54	5192	10.6	(9.5, 11.6)	6.2	(5.5, 7.0)
55-64	3542	10.7	(9.4, 11.9)	6.9	(5.9, 7.9)
65+	4542	9.6	(8.6, 10.6)	6.9	(6.0, 7.8)
Sex					
Men	11160	9.7	(9.1, 10.4)	5.0	(4.5, 5.6)
Women	16906	12.0	(11.4, 12.7)	7.9	(7.4, 8.4)
Race/Ethnicity					
Non-Hispanic White	17327	12.6	(11.9, 13.2)	7.4	(6.9, 7.9)
Non-Hispanic Black	2443	13.5	(11.8, 15.3)	9.2	(7.8, 10.7)
Hispanic	6811	6.8	(6.1, 7.6)	3.9	(3.3, 4.5)
Other	1225	11.9	(9.6, 14.2)	7.5	(5.7, 9.3)
Total	28066	10.9	(10.4, 11.4)	6.5	(6.2, 6.9)

**Figure 1: The prevalence of lifetime asthma diagnosis
Texas adults, 1999 - 2003**



**Figure 2: Adult Lifetime Asthma Prevalence,
Texas 1999 - 2003**



- Approximately 11% of the adult population in Texas has had a diagnosis of asthma in their lifetime.
- Women report having lifetime asthma more frequently than men.
- A higher proportion of 18-24 year old report having had an asthma diagnosis in their lifetime.
- Hispanics are significantly less likely to be diagnosed than non-Hispanics.
- The prevalence of lifetime asthma has remained stable over the last five years.

- The prevalence of current asthma is highest among the 18-24 year old age group.

- In all age groups, women report having asthma with greater frequency than men.

- Asthma affects proportionally fewer Hispanics than non-Hispanics.

Figure 3: Current Asthma Prevalence, by age and sex group - Texas adults, 1999 - 2003

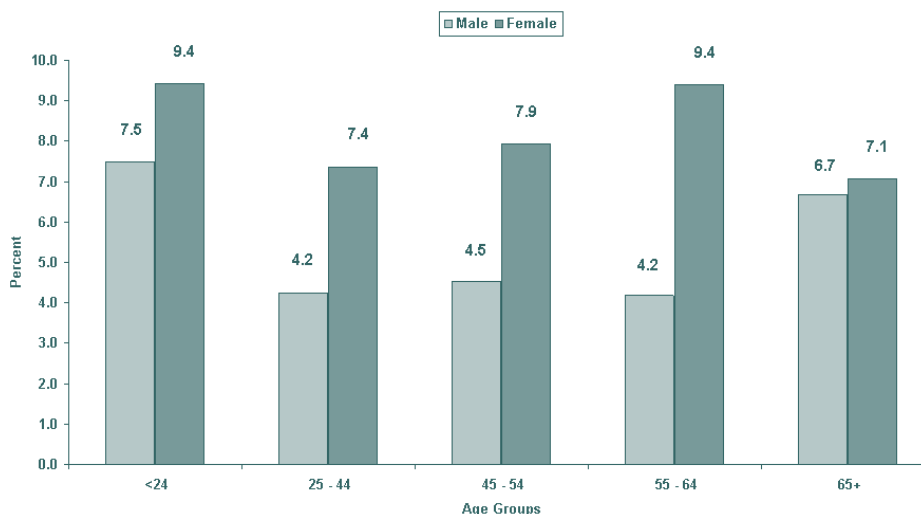
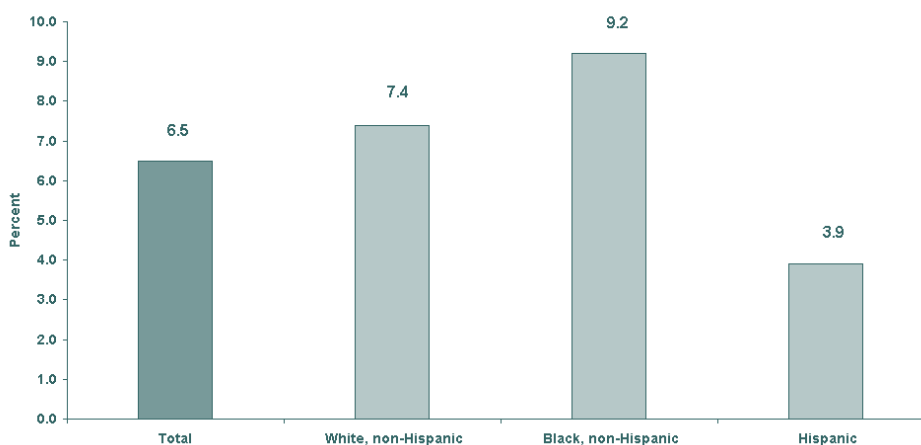
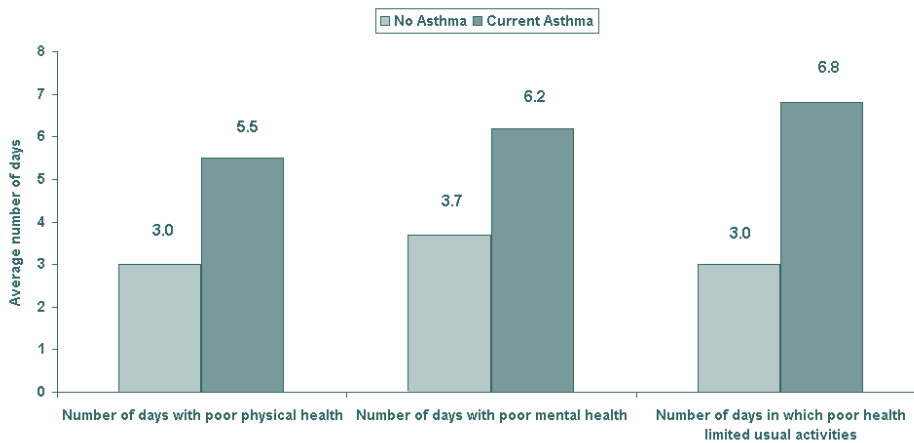


Figure 4: Current Asthma Prevalence, by race/ethnicity - Texas adults, 1999 - 2003



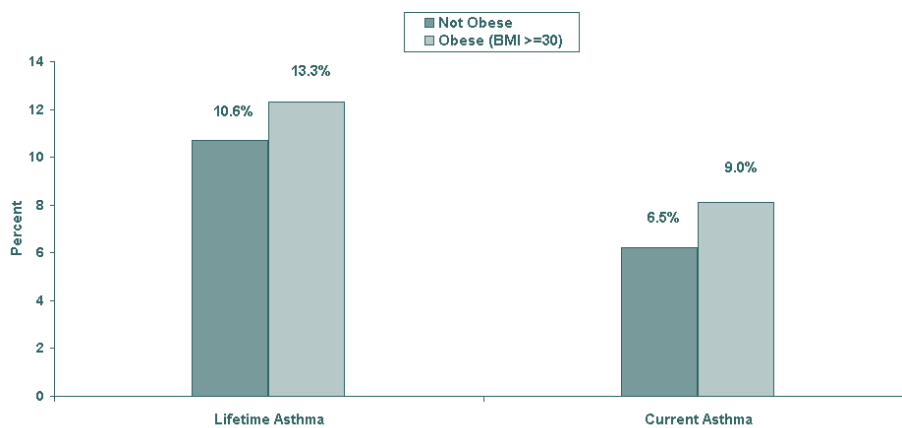
Asthma can have an impact on one's quality of life. Respondents to the BRFSS are asked to report the number of days they would categorize their physical and mental health as being "poor" as well as the number of days in which poor health limited their usual activities.

Figure 5: Average number of poor health days, by asthma status - Texas adults, 1999 - 2003



Researchers have hypothesized that asthma may be related to obesity. Many parts of the world experiencing an obesity epidemic have also seen increases in asthma. Several studies have shown associations between the two, however there is little understanding about why the relationship exists.

Figure 6: Asthma prevalence, by obesity status Texas adults, 1999-2003



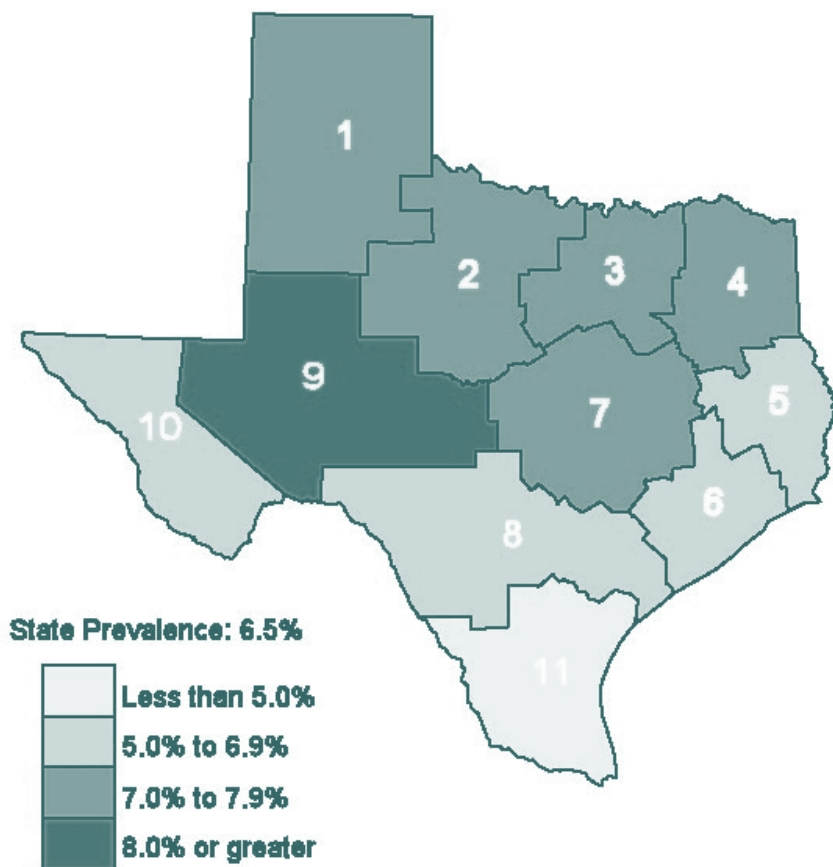
- Persons with current asthma consistently reported having more poor health days and days with limited activity than those without asthma.

- Respondents who reported having asthma had, on average, a higher average Body Mass Index than respondents who did not report having asthma.

Table 2: Current Asthma Prevalence, by Public Health Region 1999-2003

Public Health Region	Total Number of Respondents*	Percent with Current Asthma	
		%	95% Confidence Limit
1	1344	7.5	(5.8, 9.1)
2	1019	7.7	(5.6, 9.8)
3	6838	7.0	(6.3, 7.8)
4	1635	7.7	(6.2, 9.2)
5	1184	6.7	(4.8, 8.8)
6	5515	5.6	(4.8, 8.8)
7	3592	7.8	(6.8, 8.9)
8	2717	6.1	(4.9, 7.2)
9	872	8.0	(5.9, 10.0)
10	873	5.4	(3.1, 7.2)
11	1949	4.6	(3.3, 5.9)
State Prevalence	28066	6.5	(6.2, 6.9)

*Does not include 528 records that were missing information on county of residence

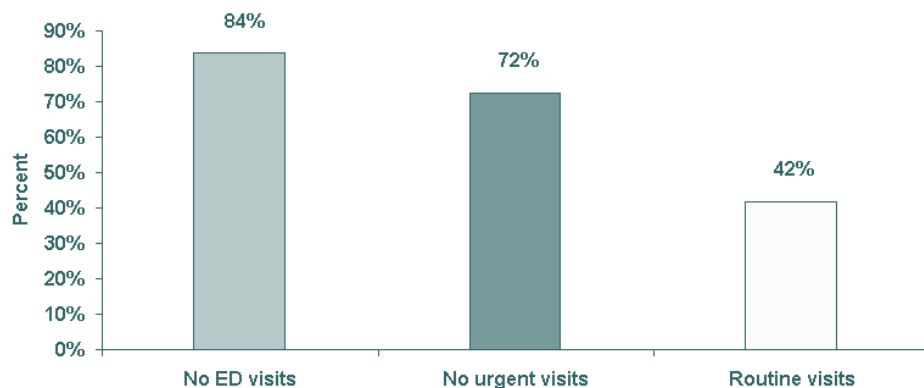


Asthma Control

Since 2001, the BRFSS has included questions used to measure the level of asthma control in re-

spondents with current asthma. Respondents were asked to report the number of visits to an emergency department (ED), urgent (unscheduled) doctor visits, and routine check-ups in the past 12 months.

Figure 7: Asthma control characteristics among adults with current asthma Texas 2001-2003



Footnote: The control characteristics presented are configured so high values represent positive aspects of asthma management

Table 3: Number and percentage of persons reporting current asthma and selected control characteristics, by race/ethnicity and sex - Texas, 2001 - 2003

	Current asthma prevalence		ED Visit	Urgent visit	Routine visit
	n	%	(%)	(%)	(%)
Sex					
Men	357	5.1	13.0	21.8	37.1
Women	928	8.2	15.7	27.5	44.5
Race/Ethnicity					
Non-Hispanic White	847	7.4	11.1	24.8	44.3
Non-Hispanic Black	152	10.4	25.7	26.4	35.4
Hispanic	70	7.8	7.1	18.7	36.8
Other	193	4.0	21.9	28.5	38.8
Total	1285	6.7	14.7	25.4	41.7

- The majority of Texans with asthma reported no emergency department (ED), or urgent care visits in the last twelve months. Only half reported routine office visits.

- Women were consistently more likely to report visits to the ED, urgent care centers, and routine office visits than men.

- Non-Hispanic blacks were more likely to report visiting the ED or seeking urgent care and less likely to report routine checkups.

- Among BRFSS respondents with current asthma, an estimated 68% reported no days in which activity was limited, 57% reported no disturbed sleep, and 15% reported no symptoms during the past 30 days.
- An estimated 34% reported not having an asthma attack or episode.
- Men reported more symptoms during the previous 30 days, but fewer asthma attacks.
- Non-Hispanic whites reported more asthma symptoms, more activity limitations, and more frequent asthma attacks.

Respondents to the BRFSS who reported having current asthma are asked to report the number of days they could not perform their usual activities, had trouble with sleep, or had asthma symptoms during the past 30 days. They are also asked whether they have had an asthma attack or episode during the preceding 12 months.

Figure 8: Asthma control characteristics among adults with current asthma Texas 2001-2003

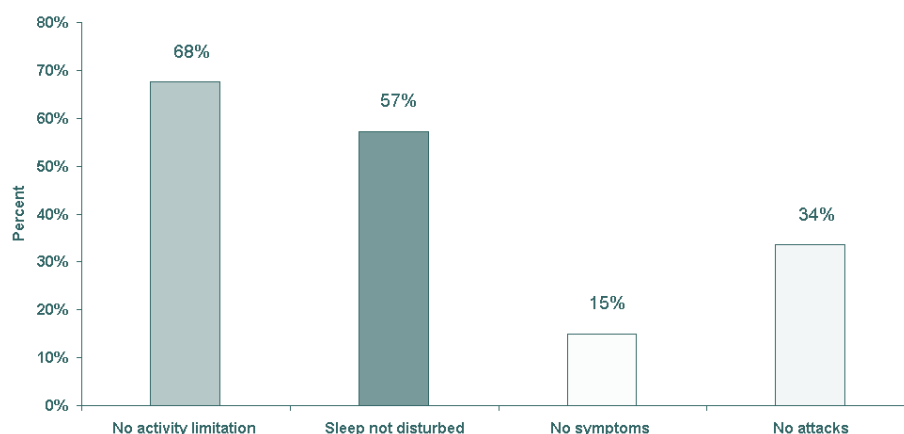


Table 4: Number and percentage of persons reporting current asthma and selected control characteristics, by race/ethnicity and sex - Texas, 2001 - 2003

	Current asthma prevalence		No activity limit	Sleep not disturbed	No symptoms	No Attacks
	n	%	(%)	(%)	(%)	(%)
Sex						
Men	357	5.1	87.7	36.4	28.2	46.3
Women	928	8.2	83.4	42.5	29.4	49.0
Race/Ethnicity						
Non-Hispanic White	847	7.4	89.0	39.7	30.1	52.2
Non-Hispanic Black	152	10.4	79.7	32.4	25.1	38.7
Hispanic	70	7.8	70.4	48.2	17.8	43.2
Other	193	4.0	63.2	45.2	32.5	43.6
Total	1285	6.7	85.1	40.2	29.0	48.0

Asthma Hospitalizations

One way we can assess the morbidity or impact on quality of life due to asthma is by determining the rate of hospitalizations due to asthma. Hospital discharge data are useful for characterizing the populations that are most severely affected by asthma. Between 1999 and 2003, there have been over 22,000 hospitalizations for asthma per year in Texas. In most cases, these hospitalizations could have been avoided with appropriate treatment and care. These hospitalizations unnecessarily create a burden, not only in financial costs, but also in terms of missed school, work, and other activities.

Table 5: Asthma Hospitalization Rates, by Demographic Characteristics Texas, 1999 – 2003

	N	Rate* (95% C.I.)
Total	120632	11.71 (11.64, 11.78)
Sex		
Female	70013	13.54 (13.44, 13.64)
Male	50594	9.58 (9.49, 9.66)
Race		
Hispanic	33977	10.18 (10.06, 10.30)
Black, non-Hispanic	26258	22.04 (21.77, 22.32)
White, non-Hispanic	53721	10.0 (9.91, 10.08)
Age		
0-4 yrs	31176	37.25 (36.84, 37.66)
5-9 yrs	14800	17.97 (17.68, 18.26)
10-14 yrs	8168	9.99 (9.78, 10.21)
15-34	14581	4.58 (4.50, 4.65)
35-64	34748	9.07 (8.98, 9.17)
65+	17159	16.39 (16.15, 16.64)

* rate per 10,000 population; Race, sex and overall estimates are age-adjusted to the 2000 U.S. population.

- Overall, women have higher hospitalization rates than men.
- Black, non-Hispanic Texans are hospitalized with asthma more frequently than white, non-Hispanic or Hispanic residents.
- The highest rates of asthma hospitalizations are among children under the age of five.

- The frequency of asthma hospitalizations varies by age and gender.
- Among the younger age groups, boys have higher rates of asthma hospitalizations than girls. For ages 15 and higher, women have higher rates.
- The difference in asthma hospitalization rates between men and women is seen in all race/ethnicity groups and is most distinct among African Americans.

Figure 9: Asthma Hospital Admissions, by Age Group and Sex - Texas 1999-2003

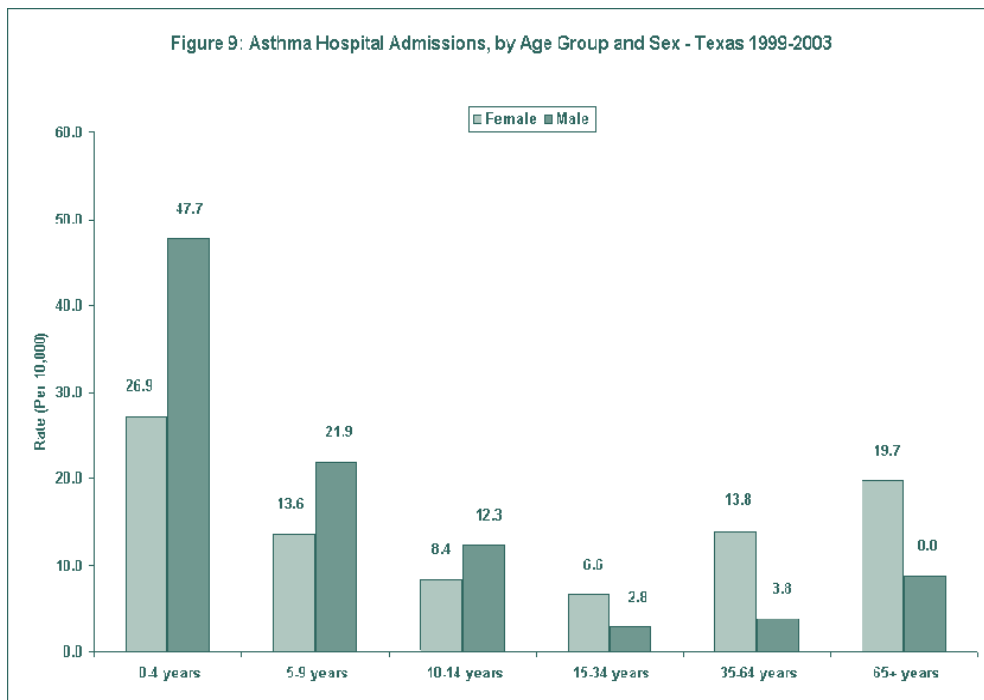
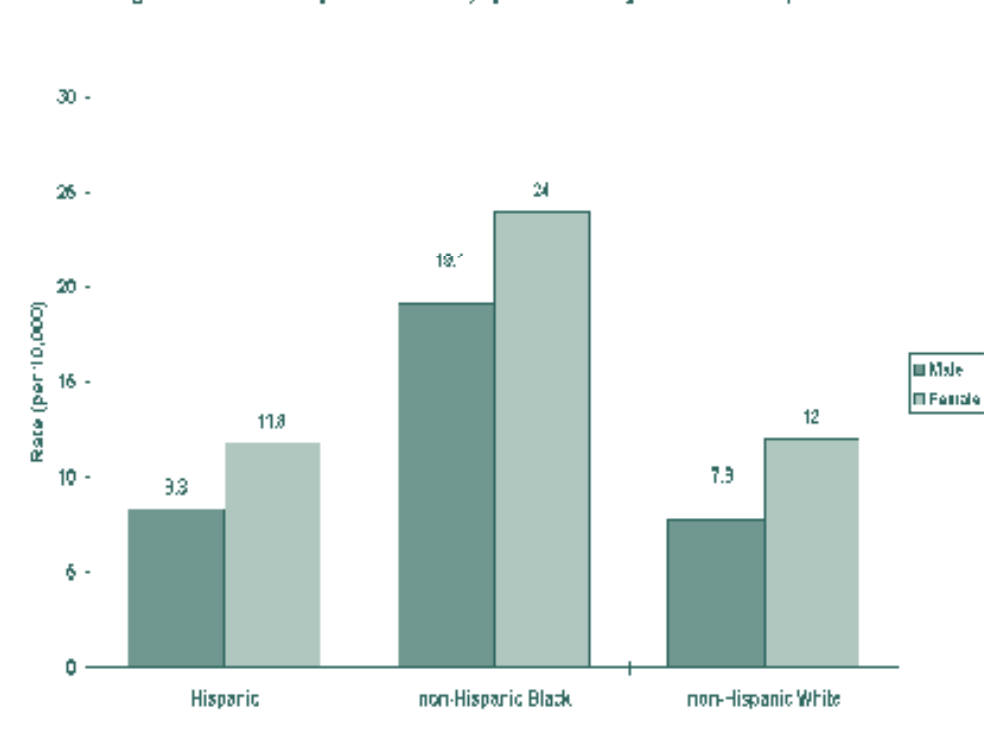
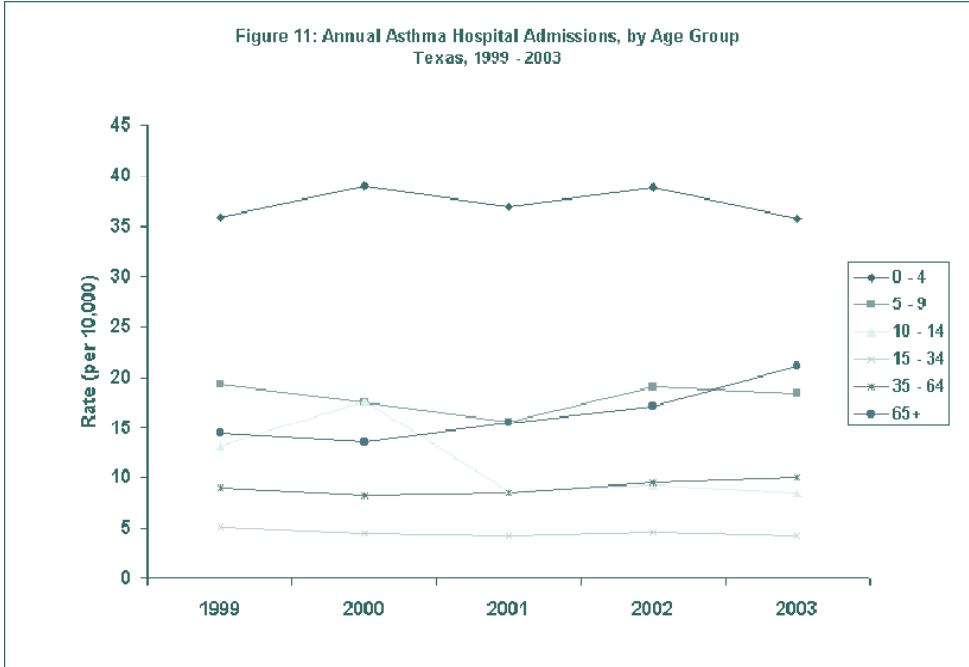


Figure 10: Asthma Hospital Admissions, by Race/Ethnicity and Sex - Texas, 1999-2003

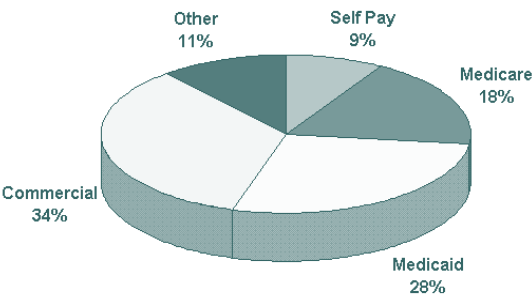




- Annual asthma hospitalization rates remained stable between 1999 and 2003.

- The data suggest that hospitalizations for asthma may be increasing among the elderly (ages 65 and older)

Figure 12: Asthma Admissions, by Payer - Texas, 2001-2002



	<u>Number of hospitalizations</u>	<u>Total charges</u>
2001:	22,588	\$221,000,000
2002:	25,318	\$277,000,000

- In 2001 - 2002, asthma was responsible for more than \$200,000,000 in hospital charges each year.

- The largest sources of the payment for the hospitalizations were commercial (34%) and Medicaid (28%).

Table 6: Asthma Hospital Admission Rates by Metropolitan Statistical Area - Texas, July, 1999-2003

Metropolitan Area	Number of Admissions	Rate* per 10,000 population
Abilene	829	21.7
Amarillo	1512	22.5
Austin	4287	15.4
Beaumont	1950	20.0
Brownsville	2038	22.6
Bryan-College Station	888	18.3
Corpus Christi	2979	26.9
Dallas	26111	20.6
El Paso	3942	22.5
Houston	21631	18.8
Killeen-Temple-Fort Hood	1239	14.8
Laredo	963	19.4
Longview	1464	12.9
Lubbock	1840	28.8
McAllen-Edinburg-Pharr	3028	19.0
Midland-Odessa	2107	34.6
San Angelo	1073	29.6
San Antonio	10145	23.1
Texarkana**	620	19.2
Tyler	926	20.1
Victoria	1113	31.4
Waco	856	15.5
Wichita Falls	739	16.4

*Age-adjusted to the 2000 US population.

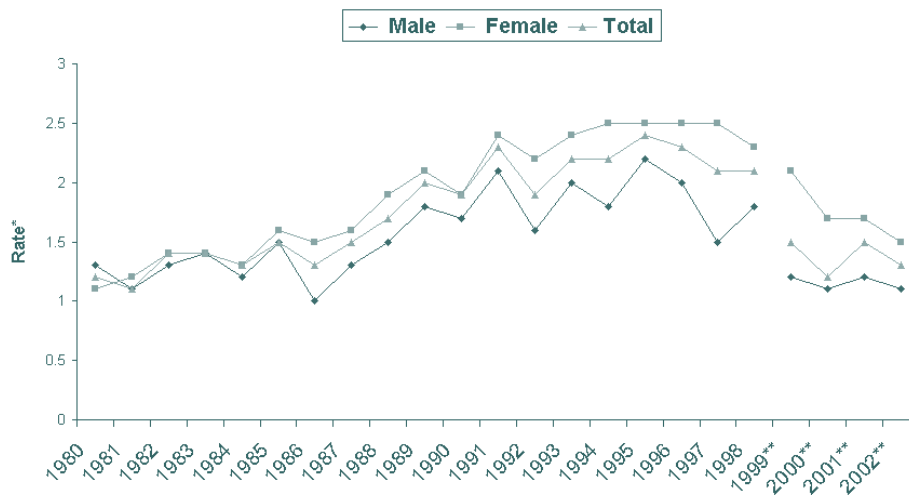
* Rates do not include (12,506 asthma hospitalizations that occurred prior to July ,1999)

** Rates do not include hospitalizations that occurred in Miller County, Arkansas

Asthma Mortality

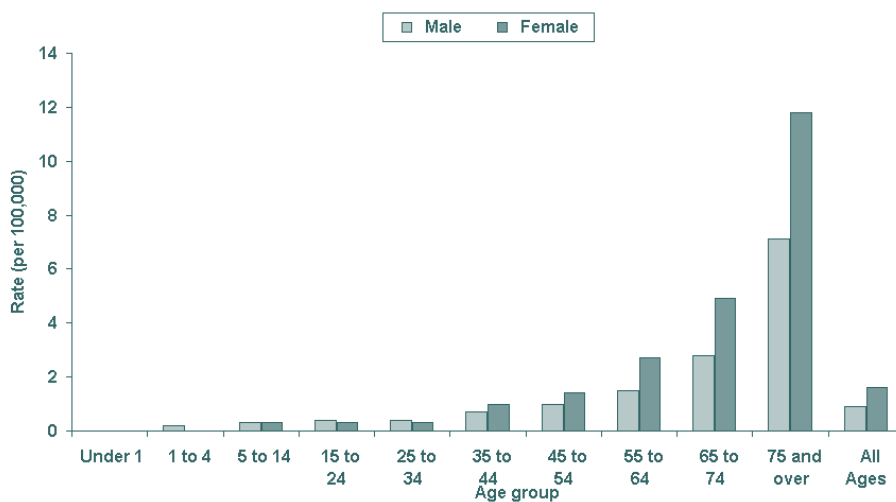
Overall, deaths due to asthma are rare compared to other major illnesses. Nationally, asthma deaths have increased over time since 1980, though recent data have suggested that the trend may be starting to plateau or decrease. In Texas, the asthma mortality rate nearly doubled from 1980 to 1998 in all age groups, with the highest death rates occurring in the population over 60 years of age. Since 1998, 822 Texans have died from asthma.

Figure 13: Age-adjusted asthma mortality rates*, by sex and year - Texas, 1980-2002



* Per 100,000; age-adjusted to the 2000 U.S. Population
 ** International Classification of Diseases, 10th Revision

Figure 14: Mortality rate per 100,000 population, by age and sex - Texas, 1999 - 2002



* Rate for "All Ages" are age-adjusted. Others are age-group specific; Age-adjustment uses 2000 U.S. standard population.

- Mortality rates have been decreasing in the last five years.

- Asthma deaths are more likely to occur in females than males.

- The difference in mortality rates between men and women is significantly different in the oldest age groups.

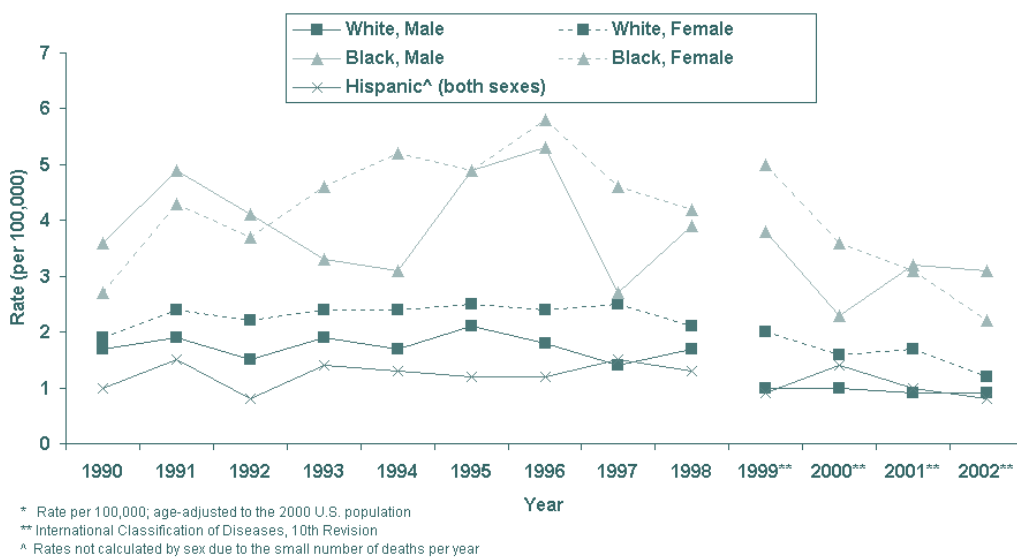
- Asthma deaths are significantly more likely to occur among African Americans.

Figure 15: Age-adjusted asthma mortality rate*, by race/ethnicity and year - Texas, 1980 - 2002



- African-American women are at greatest risk for asthma death, however differences between sex groups among different race/ethnicities are not significant.

Figure 16: Annual rate* of death for asthma as the underlying cause of death, by race/ethnicity and sex Texas 1990-2002



About the data...

Prevalence Data

The Texas Behavioral Risk Factor Surveillance System (BRFSS) data were analyzed to estimate the asthma prevalence among adult Texans. The BRFSS is a survey conducted annually by the Texas Department of State Health Services. Each year, approximately 5,000 randomly selected adults 18 years of age and older are interviewed by telephone using standardized methods and questionnaires. The BRFSS covers a wide range of health behaviors and status indicators. Since 1999, the BRFSS has included questions related to asthma. All estimates presented in this report are based on combined data from 1999 through 2003, except for the asthma control estimates which use data from 2001 through 2003 only. The margin of error was estimated using SUDAAN statistical software to account for the complex sampling design of the BRFSS.

These estimates are derived from self reported interviews and may be an underestimate of the true asthma prevalence among Texas adults because they reflect only those cases of asthma that have been diagnosed by a health care professional.

Hospitalization Data

Data on hospitalizations for asthma are available from the Texas Health Care Information Council, Inpatient Hospital Discharge Public Use Data File. An asthma hospitalization was defined as all non-maternal, non-neonatal, and non-transfer hospital records listing asthma, (ICD-9-CM Code: 493.0 – 493.9) as the primary diagnosis. Rates were calculated using census data obtained from the Texas State Data Center, Texas Population Estimates and Projections Programs at Texas A&M University.

Hospitalization rates were age-adjusted to account for different age distributions in the populations being compared. Rates were adjusted to the 2000 US population using the direct method. Hospital admissions that were missing information on the age of the patient were excluded from the analysis.

It is important to remember that these estimates may be underestimates of the true rate of hospitalizations for asthma because some Texas hospitals (those located in a county with a population of less than 35,000) are exempted from the reporting requirement. Also, these data represent the number of asthma hospitalizations and not the number of individuals who have experienced complications due to having asthma. For conditions such as asthma, a few people may have been hospitalized on more than one occasion.

Mortality Data

Mortality data are obtained from the Texas Vital Statistics Unit. An asthma death is defined as any death for which asthma was listed as the underlying cause. For years prior to 1999, cause of death was coded according to the Ninth Revision of the International Classification of Diseases (ICD-9). Deaths with a diagnosis code of 493.0 to 493.9 were classified as asthma deaths. The Tenth Revision (ICD-10) was implemented for years 1999 and onward. Asthma deaths were identified as deaths with a diagnosis code of J-45 or J-46. ICD-10 represents a substantial change from the ICD-9, therefore, mortality statistics for years 1999 and onward are provided separately. The data from 1999 and later cannot be directly compared with the data from previous years due to this coding change.

Discussion

Asthma affects one in ten people in Texas. Asthma prevalence is reported to be higher among blacks than among whites and higher among women than men. Some, but not all of these differences in prevalence are due to genetic and environmental components, along with variations in income, place of residence and health care access. Because there is no known cause for asthma, little is known about primary prevention. However, asthma education and management programs that are designed to eliminate false beliefs about asthma, teach proper self-medication, and explain the role of environmental factors that contribute to asthma can help prevent asthma morbidity and mortality.

The burden of asthma falls disproportionately on children under the age of 10. This is reflected by the rates of asthma-related health care services, which are nearly double the rates of all other ages. Children under 5 years old are the most frequently hospitalized group. Most asthma begins early in life and is thought to arise from allergic sensitization and is possibly related to respiratory infections.⁴ Successful management of childhood asthma requires effective medication and a clear understanding of the disease by all persons involved in the child's care (including parents, teachers, and other caretakers). In a study of Texas Medicaid/CHIP children⁵, 34% of the families interviewed were worried that they did not understand what their doctor was telling them. Only 74% of the families reported that their children took their medications properly most or all of the time. These findings point to the need for more family education about asthma.

African Americans are the second largest minority groups in Texas. However, they bear the greatest burden of asthma in terms of asthma mortality and health care services, including emergency department visits and hospitalizations. In 1980, deaths due to asthma were twice as common among African Americans than among white or non-Hispanics. Even though the recent data suggest asthma mortality rates are starting to plateau or decrease, the reduction has been less discernable among African Americans. In 2002, African Americans were nearly three times as likely to die from asthma. African Americans also rely less on routine care for their asthma and more on emergency care during serious asthma episodes. Thirty-five percent of African Americans with asthma report visiting the doctor for routine asthma care compared with 42% for the entire population. Accordingly, nearly a quarter (25.7%) report visiting the emergency department for their asthma as opposed to 15% for the rest of the state. Though these data describe the differences in health care use among race/ethnicity groups, they do not explain it. More information is needed to determine if these differences are due to health access issues, differences in medication use, cultural attitudes about asthma or other factors.

In Texas, only 15% of people with asthma reported being symptom free. When asthma is managed correctly, people with asthma should be able to realize optimal health and quality of life.

Conclusions

In Texas, asthma prevalence and hospital admissions have remained steady over the past five years. Recent declines in mortality rates may indicate the benefits of newer medications and an increased understanding among health care professionals of the disease itself. Strategies for improving asthma outcomes should include increasing awareness about asthma and informing patients and doctors about how to successfully manage the disease. Persons with well-controlled asthma may experience better health outcomes, including reduced inpatient and emergency department visits and increased quality of life overall.

Recommendations for improved asthma care:

- § Physicians must be educated on proper asthma diagnosis and treatment.
- § Schools and workplaces must be prepared to manage asthma appropriately
- § Persons with asthma must be well-informed about asthma triggers and steps they can take to avoid exposures that exacerbate their asthma
- § Asthma patients and their caregivers should have universal access to quality and effective asthma treatment and education.

Educating physicians, nurses, school health professionals, asthma patients and their caretakers (with specific emphasis on groups that are disproportionately affected by asthma) can reduce preventable asthma health care encounters and increase the number of days that people with asthma are symptom free.

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