

**Asthma Hospitalization Rates and Prevalence Among Children in the
Greater Houston Area, Texas, 2011**

Data Requested by

Children's Environmental Health Institute

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Table 1. Crude and Age-Adjusted Asthma* Hospital Discharge Rates per 10,000 Texas Residents for Children (0-17 years) by County, Greater Houston Area, Texas, 2011

County	Discharges	Population	Crude Discharge Rate	Age-Adjusted Discharge Rate	95% Confidence Interval	
					Lower	Upper
Austin	--	6,584	--	--	--	--
Brazoria	74	81,797	9.0	9.0	7.0	11.1
Chambers	--	8,852	--	--	--	--
Fort Bend	98	37,850	7.1	7.9	6.3	9.4
Galveston	99	71,609	13.8	13.2	10.6	15.8
Harris	1,103	1,117,039	9.9	9.4	8.9	10.0
Liberty	22	20,386	10.8	10.4	6.1	14.8
Montgomery	107	118,020	9.1	9.6	7.8	11.4
San Jacinto	--	6,055	--	--	--	--
Waller	--	10,387	--	--	--	--
All 10 Counties, Greater Houston Area	1,517	3,157,772	4.8	9.1	8.6	9.5

Data Source: Texas Health Care Information Collection (THCIC), Inpatient Hospital Discharge Public Use Data File, 2011.

Population Data Source: Center for Health Statistics, Texas Department of State Health Services.

* Hospital records listing ICD-9 codes 493.0 - 493.9 as the principal diagnosis.

'--' Value suppressed if number of discharges is less than 12.

Results do not include HIV and drug/alcohol use patients.

Interpretation for Table 1:

- According to 2011 Texas Health Care Information Collection (THCIC) inpatient hospital discharge public use data, six out of 10 of the counties in the Greater Houston Area reported 12 or more asthma hospital discharges among children age 0-17 years.
- Overall 10 counties in the Greater Houston Area, there were 1,517 asthma hospital discharges reported among children.
- Overall 10 counties in the Greater Houston Area, the age-adjusted hospital discharge rate was 9.1 per 10,000 (95% Confidence Interval: 8.6-9.5).
- Among the 10 counties in the Greater Houston Area, the greatest number of asthma hospital discharges among children occurred in Harris County with 1,103 asthma discharges.
- Among the 10 counties in the Greater Houston Area, Galveston County had the highest crude and age-adjusted asthma hospital discharge rates at 13.8 per 10,000 and 13.2 per 10,000, respectively.

Table 2. Crude and Age-Adjusted Asthma* Hospital Discharge Rates Per 10,000 for Children in the Greater Houston Area, Texas, 2011

Demographics	Discharges	Population	Crude Discharge Rate	Age-Adjusted Discharge Rate†	95% Confidence Interval	
					Lower	Upper
Overall Rate	1,517	3,157,772	4.8	9.1	8.6	9.5
Gender						
Male	967	3,090,735	3.1	11.4	10.7	12.1
Female	550	3,036,910	1.8	6.6	6.0	7.2
Race/Ethnicity						
Non-Hispanic White	338	2,312,715	1.5	6.7	5.9	7.4
Hispanic	452	2,356,034	1.9	5.7	5.1	6.2
Non-Hispanic Black	620	1,004,789	6.2	22.7	20.9	24.5
Other Non-Hispanic	96	454,107	2.1	10.2	8.1	12.3
Age (years)						
0-4	626	473,156	13.2	.	13.0	13.5
5-9	606	443,677	13.7	.	13.4	14.0
10-14	231	406,805	5.7	.	5.5	5.9
15-17	54	1,834,134	0.3	.	0.3	0.3

Data Source: Texas Health Care Information Collection (THCIC), Inpatient Hospital Discharge Public Use Data File, 2011.

Population Data Source: Center for Health Statistics, Texas Department of State Health Services.

* Hospital records listing ICD-9 codes 493.0 - 493.9 as the principal diagnosis.

† Discharge rates by age group cannot be age-adjusted.

'-' Value suppressed if number of admissions is less than 12.

Results do not include HIV and drug/alcohol use patients.

Interpretation for Table 2:

- According to 2011 THCIC, the age-adjusted asthma hospital discharge rate for children residing within the 10 counties of the Greater Houston Area was statistically significantly higher for boys (11.4 per 10,000, 95% CI: 10.7-12.1) compared to girls (6.6 per 10,000; 95% CI: 6.0-7.2). The crude hospital discharge rate was also higher for boys (3.1 per 10,000) than for girls (1.8 per 10,000).
- The greatest number of asthma hospital discharges reported among children residing in the Greater Houston Area occurred among Non-Hispanic black children compared to Non-Hispanic white, Hispanic, or children of another race/ethnicity.
- The age-adjusted asthma hospital discharge rate was statistically significantly higher among Non-Hispanic black children at 22.7 per 10,000 (95%CI: 20.9-24.5) compared to all other race/ethnicity groups. The age-adjusted asthma hospital discharge rate was lowest among Hispanic children at 5.7 per 10,000 (95% CI: 5.1-6.2).
- The greatest number of asthma hospital discharges reported among children residing in the Greater Houston Area occurred among those ages 0-4 years.

- The asthma hospital discharge rate was significantly higher among children age 5-9 years (13.7 per 10,000; 95% CI: 13.0-13.5) compared to those age 10-14 (5.7 per 10,000; 95% CI: 5.5-5.9) or 15-18 years (0.3 per 10,000; 95% CI: .0.3-0.3).

Table 3. Lifetime Asthma Prevalence Among Children (0-17 years), in Five Counties in the Greater Houston Area*, Texas, BRFSS 2011

Characteristics	Greater Houston Area			Texas		
	Sample Size	Estimated Number of Children with Lifetime Asthma	Prevalence (95% CI)	Sample Size	Estimated Number of Children with Lifetime Asthma	Prevalence (95% CI)
Total	803	204,671	13.7 (10.2, 17.2)	3,713	992,826	14.3 (12.6, 15.9)
Gender						
Boy	410	115,790	15.9 (10.6, 21.2)	1,921	573,908	16.2 (13.7, 18.6)
Girl	385	88,508	11.7 (6.9, 16.4)	1,755	414,804	12.3 (10.0, 14.6)
Race/Ethnicity						
White Non-Hispanic	327	57,880	12.3 (7.5, 17.1)	1,625	358,863	14.5 (12.1, 17.0)
Black Non-Hispanic	111	37,184	15.6 (6.6, 24.5)	325	140,270	16.7 (11.1, 22.2)
Hispanic	259	91,355	12.8 (7.4, 18.2)	1,538	445,172	12.9 (10.5, 15.4)
Other Non-Hispanic	88	3,458	6.8 (2.3, 11.2)	179	16,212	11.2 (4.9, 17.5)
Age (years)						
0-4	173	19,542	4.7 (0.4, 9.0)	792	144,124	8.0 (5.3, 10.6)
5-9	192	58,932	15.2 (7.8, 22.5)	879	319,810	17.3 (13.5, 21.1)
10-14	188	39,125	14.3 (7.1, 21.5)	963	249,980	16.7 (13.5, 20.0)
15-17	159	-	-	700	199,228	18.4 (13.9, 23.0)
County						
Brazoria	24	--	--			
Fort Bend	314	34,524	17.1 (3.6, 10.1)			
Galveston	13	--	--			
Harris	392	138,825	14.9 (2.5, 9.9)			
Montgomery	34	--	--			

Data Source: Texas Behavioral Risk Factor Surveillance System (BRFSS), 2011.

*Data for this analysis were only available for Brazoria, Fort Bend, Galveston, Harris, and Montgomery Counties. Counties in the Greater Houston Area without data available for this analysis were: Austin, Chambers, Liberty, San Jacinto, and Waller Counties.

- Estimate is unreliable because confidence interval half-width is > 10.

-- Estimate suppressed for small sample size (if numerator is < 5 or denominator is < 50).

Note: Data for children are based on information provided by an adult respondent about a child living in the home.

Survey question: "Has a doctor, nurse or other health professional ever said that the child has asthma?"

Numerator: Respondents who answered "Yes" to the previous survey question.

Denominator: All respondents excluding refusals and unknowns.

Interpretation for Table 3:

- According to the 2011 Texas Behavioral Risk Factor Surveillance System (BRFSS) the prevalence of lifetime asthma among children was 13.7 percent (95% CI: 10.2-17.2) in the five counties within the Greater Houston Area and was 14.3 percent (95% CI: 12.6-15.9) in Texas.
- In 2011, an estimated 204,671 children in five counties within the Greater Houston Area had lifetime asthma and 992,826 children in Texas had lifetime asthma.
- Among the five counties within the Greater Houston Area the prevalence of lifetime asthma was higher among boys (15.9 percent) compared to girls (11.7 percent), although not statistically significantly different. In Texas the prevalence of lifetime asthma was also higher among boys (16.2 percent) compared to girls (12.3 percent), although not statistically significantly different.
- The prevalence of lifetime asthma was not statistically significantly different by race/ethnicity in the five counties within the Greater Houston Area or in Texas.
- The prevalence of lifetime asthma among children was lowest among children ages 0-4 years in the five counties within the Greater Houston Area (4.7 percent), although not statistically significant.
- The prevalence of lifetime asthma among children was statistically significantly lower among children age 0-4 years in Texas (8.0 percent) compared to the other age groups.
- The prevalence of lifetime asthma among children was 14.9 percent in Harris County and 17.1 percent in Fort Bend County in 2011.

Table 4. Current Asthma Prevalence Among Children (0-17 years), in Five Counties in the Greater Houston Area*, Texas, BRFSS 2011

Characteristic	Greater Houston Area			Texas		
	Sample Size	Estimated Number of Children with Current Asthma	Prevalence (95% CI)	Sample Size	Estimated Number of Children with Current Asthma	Prevalence (95% CI)
All Five Counties	799	102,404	6.9 (4.2, 9.6)	3,695	556,773	8.3 (6.7, 9.3)
Gender						
Boy	410	49,953	6.8 (3.3, 10.4)	1,915	305,732	8.6 (6.8, 10.4)
Girl	381	52,078	6.9 (2.8, 11.1)	1,744	249,464	7.4 (5.6, 9.3)
Race/Ethnicity						
White Non-Hispanic	325	23,073	4.9 (2.0, 7.8)	1,619	201,043	8.2 (6.3, 10.1)
Black Non-Hispanic	110	23,060	9.7 (2.2, 17.2)	321	95,244	11.5 (7.1, 15.8)
Hispanic	258	40,333	5.7 (1.7, 9.6)	1,530	227,212	6.6 (4.8, 8.5)
Other Non-Hispanic	88	--	--	179	10,237	7.1 (2.0, 12.1)
Age (years)						
0-4	173	--	--	787	96,043	5.3 (3.1, 7.6)
5-9	191	35,940	9.3 (3.1, 15.5)	878	190,587	10.3 (7.3, 13.3)
10-14	187	22,702	8.4 (2.1, 14.7)	958	128,380	8.6 (6.2, 11.1)
15-17	158	20,468	8.6 (1.5, 15.6)	697	100,530	9.4 (6.3, 12.6)
County						
Brazoria	24	--	--			
Fort Bend	313	12,912	6.5 (3.8, 9.3)			
Galveston	13	--	--			
Harris	391	75,124	8.0 (4.0, 12.1)			
Montgomery	33	--	--			

Data Source: Texas Behavioral Risk Factor Surveillance System (BRFSS), 2011.

*Data for this analysis were only available for Brazoria, Fort Bend, Galveston, Harris, and Montgomery Counties. Counties in the Greater Houston Area without data available for this analysis were: Austin, Chambers, Liberty, San Jacinto, and Waller Counties.

- Estimate is unreliable because confidence interval half-width is > 10.

-- Estimate suppressed for small sample size (if numerator is < 5 or denominator is < 50).

Note: Data for children are based on information provided by an adult respondent about a child living in the home.

Survey question: "Has a doctor, nurse or other health professional ever said that the child has asthma?" and "Does the child still have asthma?"

Numerator: Respondents who answered "Yes" to the previous survey questions.

Denominator: All respondents excluding refusals and unknowns.

Interpretation for Table 4:

- According to the 2011 Texas BRFSS, the prevalence of current asthma among children was 6.9 percent (95% CI: 4.2-9.6) in the five counties within the Greater Houston Area and was 8.3 percent (95% CI: 6.7-9.3) in Texas.
- In 2011, an estimated 102,404 children in five counties within the Greater Houston Area had current asthma and 556,773 children in Texas had current asthma.
- In Texas and in the five counties within the Greater Houston Area the prevalence of current asthma was not statistically significantly different between boys and girls.
- The prevalence of current asthma did not differ significantly by race/ethnicity in the five counties within the Greater Houston Area or in Texas.
- The prevalence of current asthma among children was not statistically significantly different by age group in the five counties within the Greater Houston Area or in Texas.
- The prevalence of current asthma among children was 8.0 percent in Harris County and 6.5 percent in Fort Bend County in 2011.

Limitations of the data used in this report:

Hospitalization Data

- Fewer than 12 asthma hospitalizations were reported in 2011 among children (0-17 years) in Austin, Chambers, San Jacinto, and Waller counties, therefore the number and rate of asthma hospitalizations cannot be reported for those counties.
- 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 Texas Hospital Inpatient Discharge Public Use 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, multiple hospitalizations for the same individual and the same diagnosis cannot be distinguished.
- Texas Hospital Inpatient Discharge Public Use Data is not a complete source of information on asthma-related discharges because some hospitals in Texas are exempt from reporting requirements. This may result in an underestimation of the number of related discharges.
- Incidence rates and patterns of newly diagnosed asthma cases are not captured by the data in this report. Using hospitalization data, we cannot determine if a hospitalization serves as an initial diagnosis of asthma.
- The Texas Hospital Inpatient Discharge Public Use Data results do not include HIV and drug/alcohol use patients.

BRFSS Prevalence Data

- 2011 Texas BRFSS data for childhood asthma were not available for Austin, Chambers, Liberty, San Jacinto, or Waller Counties, therefore, prevalence estimates for those counties were not available.
- Prevalence estimates for lifetime asthma among children were suppressed for ages 15-17 years because the 95% confidence interval was too wide; and for Brazoria County, Galveston County, and Montgomery County due to small sample sizes.
- Prevalence estimates for current asthma among children were suppressed for Other Non-Hispanics, ages 0-4 years, Brazoria County, Galveston County, and Montgomery County due to small sample sizes.
- Prevalence estimates from BRFSS may underestimate the true prevalence of asthma among Texas children because the survey does not identify undiagnosed cases of asthma.
- Due to the improvements in BRFSS sampling methodology and a change in weighting procedures used for the survey data, 2011 BRFSS data cannot be compared to survey data from previous years, such as combined 2007-2010 BRFSS, in order to assess trends. Shifts in prevalence estimates for 2011 might not represent trends in prevalence in the population but instead merely reflect improved methods of measuring disease and risk factors.