

The Burden of Asthma in Georgia 2003



- Prevalence
- Risk Factors
- Prevention

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Highlights

In Georgia:

- 13.1% of public middle school students have asthma.
- 10.7% of public high school students have asthma.
- 6.7% of adults aged 18 years and older have asthma.
- Asthma causes approximately 9,400 hospitalizations every year.
- Hospital charges total approximately \$59 million annually.
- Every year approximately 120 persons die because of asthma.
- Blacks and women are more likely than whites and men to be hospitalized or die because of asthma.
- Despite the fact that cigarette smoking may trigger asthma attacks, 26.3% of adults with asthma, 24.7% of high school students with asthma, and 11.6% of middle school students with asthma currently smoke.
- Exposure to environmental tobacco smoke (ETS) also may trigger an asthma attack. Middle school students with asthma (73.0%) are more likely than students without asthma (63.2%) to report exposure to ETS.
- A significant number of people with asthma (22.3%) were unable to see a doctor because of cost.
- About one-third of the adults with asthma in Georgia reported receiving a flu shot (34.4%) in the past year.
- A high percentage (21.4%) of high school students with asthma are overweight, compared to 9.0% of those without asthma. Sixty-seven percent of adults with asthma are currently overweight or obese compared to 58.9% of those without asthma.



Introduction



Asthma is a chronic inflammatory disorder of the lungs and airways that causes recurrent episodes of wheezing, breathlessness, chest tightness, and coughing. The cause or causes of asthma are not well understood and likely differ among individuals. Heredity, behaviors such as smoking, and environmental exposures such as viral infections all play a role. Once a person has asthma, a variety of things may trigger an attack. Respiratory infections, tobacco smoke (both from smoking and from secondhand smoke), pollen, molds, food, vigorous exercise, and air pollution are some of the things that trigger attacks in individuals. Being overweight may also be a risk factor for attacks.

Asthma affects people of all ages, races, ethnic groups, and both sexes. Estimates from the 1998 National Health Interview Survey suggest that 26 million Americans have been diagnosed with asthma at some point in their life and nearly 11 million currently have asthma.¹ Annually, asthma is responsible for more than 500,000 hospitalizations and 5,000 deaths nationwide.^{2,3} Georgia accounts for approximately 9,400 of the hospitalizations and 120 of the deaths. Asthma costs our nation approximately \$11 billion a year.⁴

The 2000 Asthma in Georgia Report confirmed that asthma is a major public health problem in Georgia, as it is in the rest of the nation, especially for children.⁵ Based on data from the 2000 Georgia Childhood Asthma Survey, the report showed that an estimated 10.5% (210,000) of Georgia children from age 0 to 17 years have asthma and that asthma has a significant impact on their lives. Sixty-five percent (140,000) of the children with asthma had an attack in the past year and 30.0% (64,000) visited a hospital emergency department. Asthma also affects school attendance: 54.0% (88,000) of the children with asthma missed one or more days of school during the year because of asthma. In addition, parents and other caretakers of children with asthma are affected: 30.0% (64,000) missed one or more days of work or school due to the child's asthma.

The Burden of Asthma in Georgia 2003 focuses on the prevalence of asthma in public middle and high school students and in adults. It provides information on risk factors associated with asthma, hospitalizations, and deaths from asthma in Georgia. The purpose of this report is to provide statewide, county, and district data to guide public health programs, policy makers, and other healthcare providers in their efforts to reduce the burden of asthma in Georgia.



Prevalence of Asthma in Georgia

Prevalence of Asthma Among Public Middle and High School Students

In middle school and high school, 13.1% and 10.7% of students report they currently have asthma (Figure 1). In middle school and high school students there are no significant differences in the prevalence of asthma among the four major race/sex groups in Georgia (Figure 2).

Asthma prevalence decreases as the grade level increases (Figure 3). Similar results have been reported in other studies that have shown asthma prevalence tends to decrease as children get older.⁵

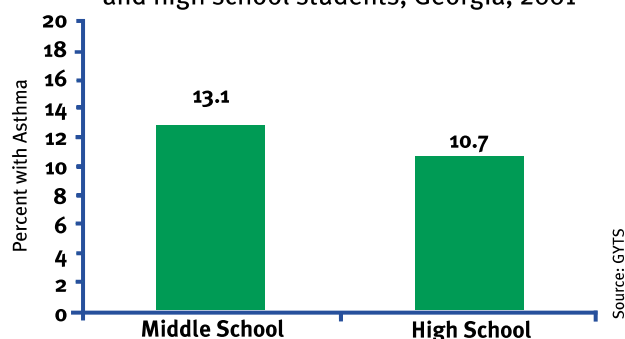
Among the students with asthma, approximately half in middle school (54.0%) and in high school (48.0%) experienced an attack or episode of asthma in the past twelve months. The frequency of attacks can be reduced and controlled with proper treatment and modification of certain environmental factors, such as reduced exposure to tobacco smoke.

Prevalence of Asthma Among Public Middle and High School Students by Public Health District

District-specific data are available for middle schools from nine of 19 Public Health Districts and for high schools from six Public Health Districts. In middle school, the prevalence of current asthma ranges from 10.4%-15.8% by district (Table 1). There is little variation among the six public health districts in the prevalence of current asthma among high school students (Table 1).

figure 1

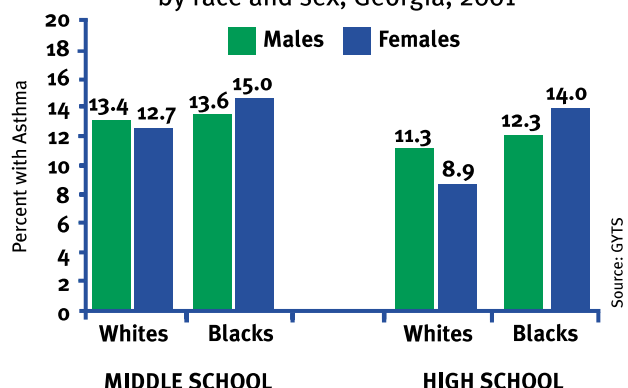
Prevalence of current asthma among middle and high school students, Georgia, 2001



Source: GYTS

figure 2

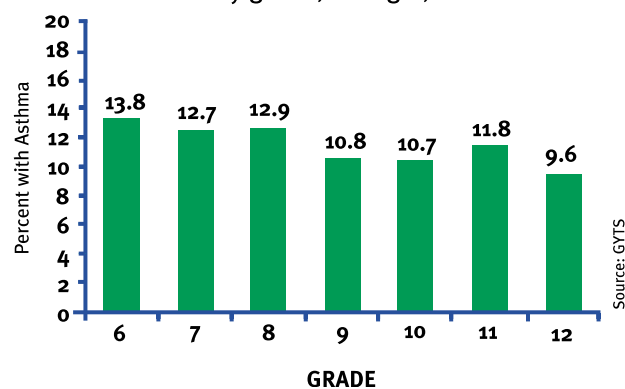
Prevalence of current asthma among middle and high school students by race and sex, Georgia, 2001



Source: GYTS

figure 3

Prevalence of current asthma among middle and high school students by grade, Georgia, 2001



Source: GYTS



Prevalence of Asthma *continued...*

Table 1. Prevalence of asthma among middle and high school students by public health district, Georgia, 2001

Districts	Percent with Asthma	
	Middle School	High School
GEORGIA	13.1	10.7
(1-1) Northwest (Rome)	N/A	N/A
(1-2) North Georgia (Dalton)	13.2	N/A
(2-0) North (Gainesville)	N/A	N/A
(3-1) Cobb/Douglas (Marietta)	N/A	N/A
(3-2) Fulton (Atlanta)	15.8	N/A
(3-3) Clayton (Morrow)	N/A	N/A
(3-4) East Metro (Lawrenceville)	N/A	N/A
(3-5) DeKalb (Decatur)	N/A	N/A
(4-0) LaGrange	11.3	N/A
(5-1) South Central (Dublin)	12.4	10.5
(5-2) North Central (Macon)	N/A	N/A
(6-0) East Central (Augusta)	10.5	10.2
(7-0) West Central (Columbus)	10.4	10.7
(8-1) South (Valdosta)	N/A	N/A
(8-2) Southwest (Albany)	13.7	10.0
(9-1) East (Savannah)	N/A	N/A
(9-2) Southeast (Waycross)	11.3	11.7
(9-3) Coastal (Brunswick)	12.5	10.3
(10-0) Northeast (Athens)	N/A	N/A

N/A=Not Available

Source: GYTS



Risk Factors for Asthma Attacks Among Middle and High School Students

Despite the fact that smoking may trigger asthma attacks, middle and high school students with asthma in Georgia are just as likely to smoke as students without asthma (Figure 4). Exposure to environmental tobacco smoke (ETS) also may trigger an asthma attack.⁶⁻⁸ Middle school students with asthma are more likely to report exposure to ETS (73.0%) than students without asthma (63.2%). There are no significant differences in prevalence of ETS among high school students with asthma (76.1%) and those without asthma (77.0%) (Figure 5).

In high school, the prevalence of students who are overweight (BMI for age \geq 95th percentile) is higher among students with asthma (21.4%) than students without asthma (9.0%). There are no significant differences in overweight status detected among middle school students (Figure 6). Although the nature of the relationship between asthma and bodyweight requires more research, some evidence suggests that people with asthma who are overweight experience more symptoms than people with asthma who are not overweight.⁹⁻¹¹ Therefore people with asthma have yet another reason to maintain proper bodyweight.

figure 4

Prevalence of current smoking among middle and high school students by asthma status, Georgia, 2001

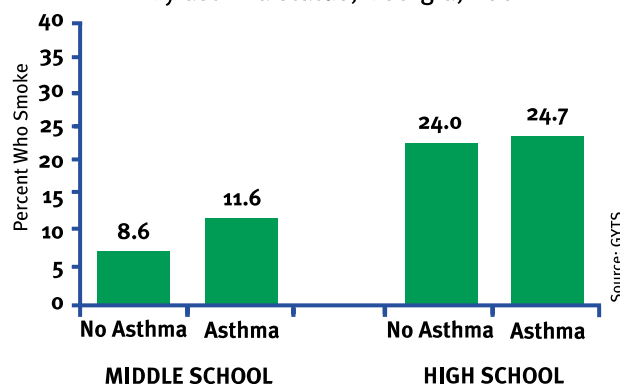


figure 5

Prevalence of exposure to environmental tobacco smoke among middle and high school students by asthma status, Georgia, 2001

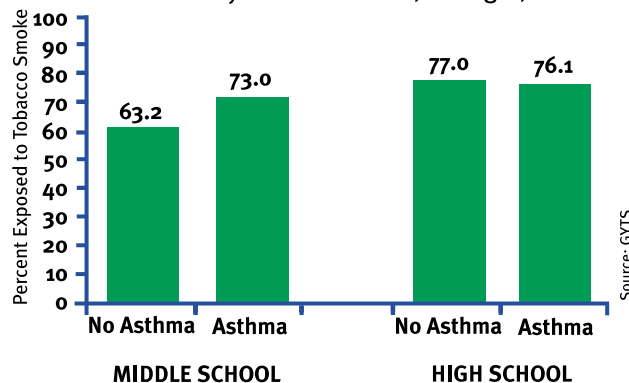
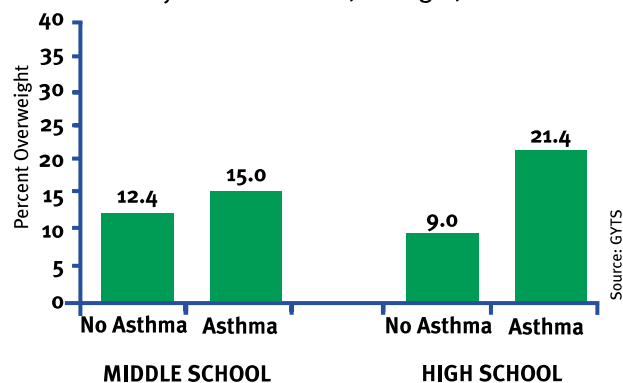


figure 6

Prevalence of overweight among middle and high school students by asthma status, Georgia, 2001





Prevalence of Asthma *continued...*

Prevalence of Asthma Among Adults

The prevalence of asthma among adults in Georgia in 2000-2001 was 6.7%, indicating that approximately 370,000 adults were affected. The prevalence of asthma among females (7.9%) was significantly higher than among males (5.5%). The prevalence among blacks (7.3%) was similar to whites (6.6%). The prevalence by race and sex ranged from 5.1% for white males to 8.1% for black females (Figure 7). There were no significant differences among age groups (Figure 8).

The asthma prevalence in adults with less than high school education (9.1%) is higher than in those with a college education (5.5%) (Figure 9). The prevalence is higher in adults with annual household incomes less than \$15,000 than in adults with household incomes more than \$15,000 (Figure 10). Reasons for these differences are unknown but may be related to environmental exposures more common in low socioeconomic populations.

Current asthma prevalence among adult Georgians in the 19 public health districts ranged from 5.1% to 8.5% in 2000-2001 (Table 2). There were no significant differences among the public health districts when compared to each other or to the state.

figure 7

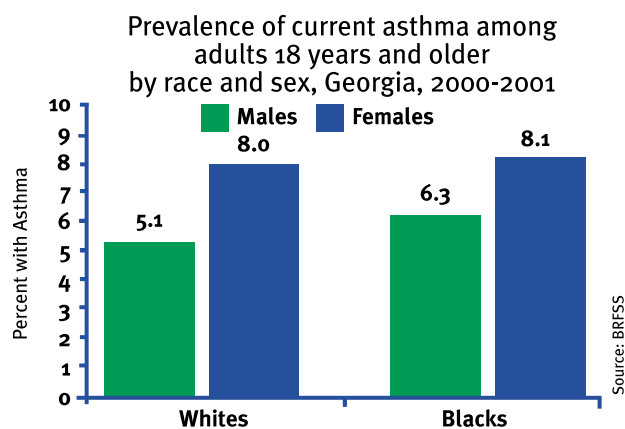


figure 8

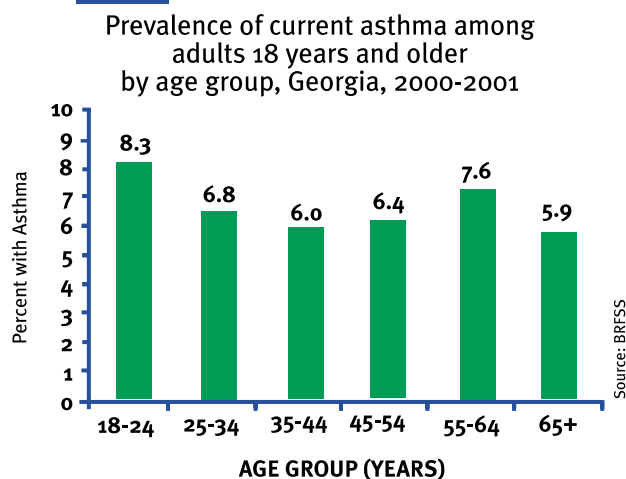


figure 9

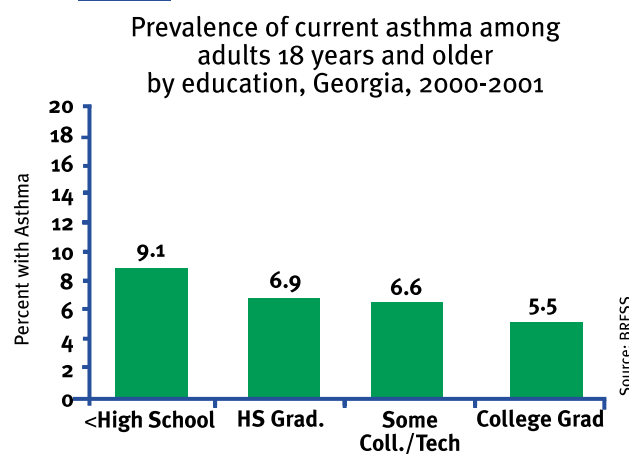
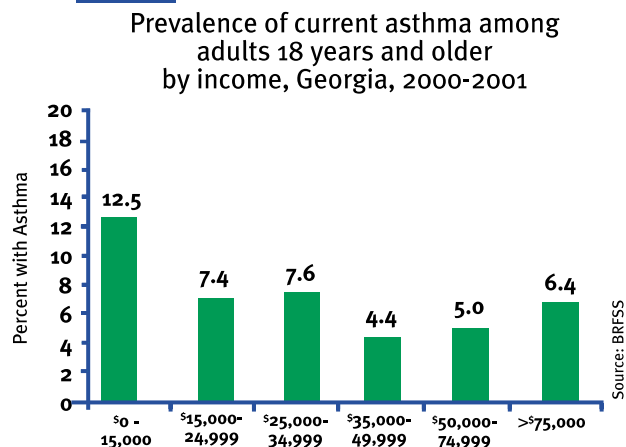


figure 10





Prevalence of Asthma *continued...*

Table 2. Prevalence of asthma among adults 18 years and older by public health district, Georgia 2000-2001

Districts	Percent with Asthma
Georgia	6.7
(1-1) Northwest (Rome)	8.2
(1-2) North Georgia (Dalton)	8.5
(2-0) North (Gainesville)	6.6
(3-1) Cobb/Douglas (Marietta)	5.3
(3-2) Fulton (Atlanta)	7.6
(3-3) Clayton (Morrow)	7.6
(3-4) East Metro (Lawrenceville)	5.4
(3-5) DeKalb (Decatur)	7.6
(4-0) LaGrange	6.4
(5-1) South Central (Dublin)	6.9
(5-2) North Central (Macon)	6.1
(6-0) East Central (Augusta)	6.2
(7-0) West Central (Columbus)	6.3
(8-1) South (Valdosta)	7.9
(8-2) Southwest (Albany)	7.9
(9-1) East (Savannah)	5.4
(9-2) Southeast (Waycross)	7.7
(9-3) Coastal (Brunswick)	5.1
(10-0) Northeast (Athens)	6.1

Source: BRFSS



Prevalence of Asthma *continued...*

Risk Factors and Preventive Behaviors for Asthma Attacks Among Adults

There are many conditions and risk factors that can affect adults with asthma. Despite the fact that smoking may trigger asthma attacks, 26.3% of adults who currently have asthma report cigarette smoking (Figure 11). Sixty-seven percent of adults with asthma are currently overweight or obese (Figure 12). This is significantly higher than for people without asthma (58.9%).

Influenza is associated with substantial adverse effects including time lost from work or school and hospitalization, especially among people who have asthma.^{12,13} Vaccination reduces morbidity in patients with asthma and immunization is recommended for all such patients.^{14,15} Unfortunately only about one-third of the adults with asthma in Georgia reported receiving a flu shot (34.4%) in the past year (Figure 13). The importance of flu shots in patients with asthma needs to be emphasized.

Asthma and Adult Health Status

Asthma has a considerable effect on how adult Georgians perceive their health status. Persons with asthma (33.5%) are more likely to report fair or poor health than those who do not have asthma (14.2%). Adults with asthma (19.2%) are also more likely to report mental distress than adults without asthma (10.4%). Adults with asthma (22.3%) are significantly more likely to be unable to see a doctor due to cost than those without asthma (10.8%).

figure 11

Prevalence of current smoking among adults 18 years and older by asthma status, Georgia, 2000-2001

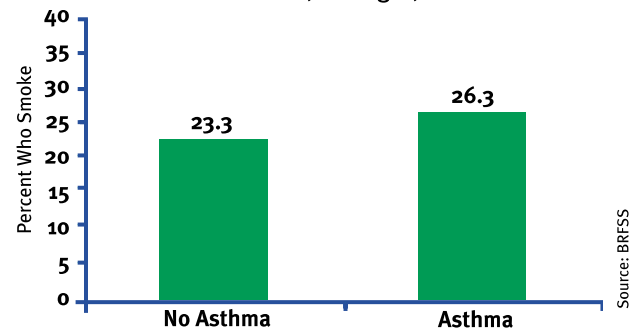


figure 12

Prevalence of overweight/obesity among adults 18 years and older by asthma status, Georgia, 2000-2001

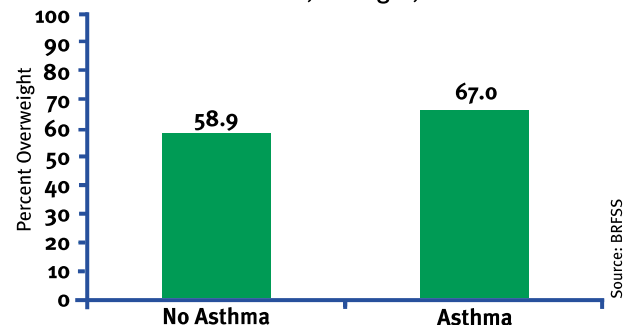
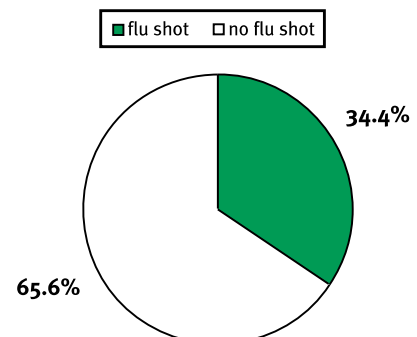


figure 13

Percentage of adults 18 years and older with asthma who received flu shot, Georgia, 2000-2001





Asthma Mortality in Georgia

Deaths from Asthma in Georgia

From 1996 through 2000 there were an average of 120 deaths per year from asthma (2.4 per 100,000). Age-adjusted asthma death rates in the United States and Georgia increased during the 1980's and early 1990's (Figure 14). In 1999, the classification system for cause of death coding changed from ICD-9 to ICD-10, making it difficult to interpret recent trends in asthma mortality, but the rate appears to be falling.

Asthma deaths affect all races and sexes but death rates disproportionately affect minority populations in the U.S. and Georgia. In Georgia, blacks are three times more likely to die from asthma than whites (3.6 per 100,000 vs. 1.2 per 100,000 population). Women are 1.3 times more likely to die from asthma than men (2.0 per 100,000 vs. 1.6 per 100,000 population). Death rates by race and sex ranged from 1.0 per 100,000 population for white males to 3.7 per 100,000 population for black females (Figure 15).

Deaths from asthma are more common among the elderly. Death rates are approximately 24 times higher for persons 65 years or older than for the youngest age groups (0-4 years and 5 to 24 years) (Figure 16).

figure 14

Age-adjusted asthma death rates in Georgia and United States, 1979-2000

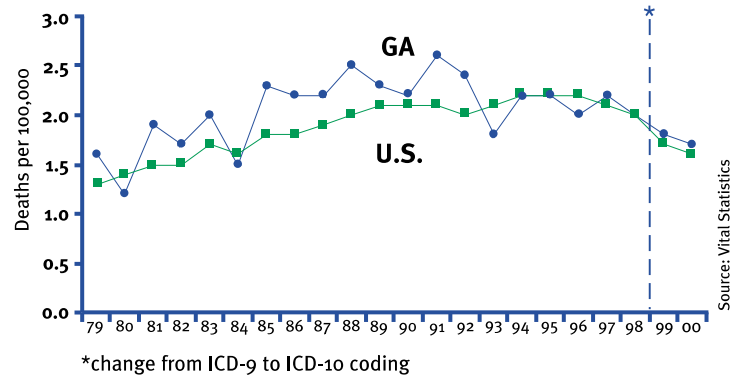


figure 15

Age-adjusted asthma death rates by race and sex, Georgia, 1996-2000

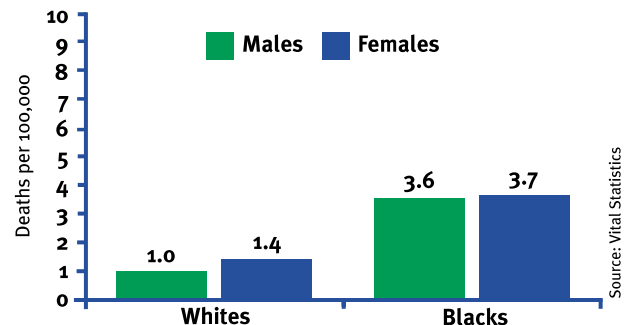
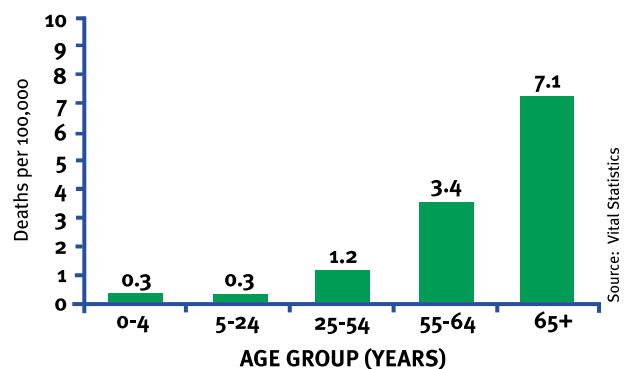


figure 16

Asthma death rates by age group, Georgia, 1996-2000





Asthma Morbidity in Georgia

Asthma Hospitalizations in Georgia

During 1999-2000 there were more than 9,400 hospitalizations per year in Georgia (120.5 per 100,000 population) with asthma as the primary diagnosis. Hospital charges total approximately \$59 million dollars annually. Hospitalization rates in Georgia are 50 times higher than death rates. There are more hospitalizations in the fall and winter than spring and summer (Figure 17).

Blacks are 2.1 times more likely to be hospitalized with asthma than whites (195.7 vs. 93.3 per 100,000 population). Females are 1.5 times more likely to be hospitalized than males (142.4 vs. 93.4 per 100,000 population). Black females have the highest hospitalization rate (218.8 per 100,000 population) among the four major race/sex groups in Georgia (Figure 18).

Hospitalization rates are the highest for the young and the elderly (Figure 19). Rates are 2-4 times higher in the 0 to 4 year age group than for other age groups. A possible explanation is that asthma is often misdiagnosed and confused with other upper respiratory diseases in this age group.

Thirty-nine of Georgia's 159 counties had hospitalization rates in 1999-2000 that were significantly higher than the state rate (120.5 hospitalizations per 100,000 per year) (Table 3).

Counties with high rates are located throughout Georgia, but high rates are more common in the counties extending from Augusta to the southwest corner of the state (Map 1).

Seven of Georgia's 19 Public Health Districts had hospitalization rates 1999-2000 that were significantly higher than the state rate (Table 4).

figure 17

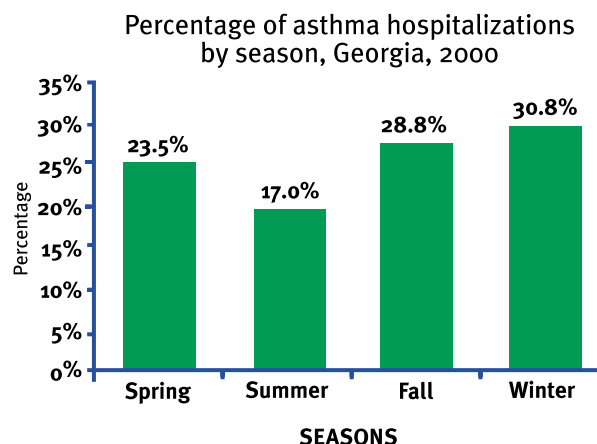


figure 18

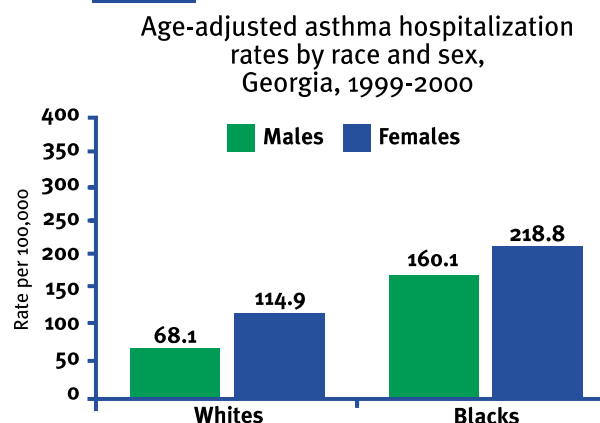
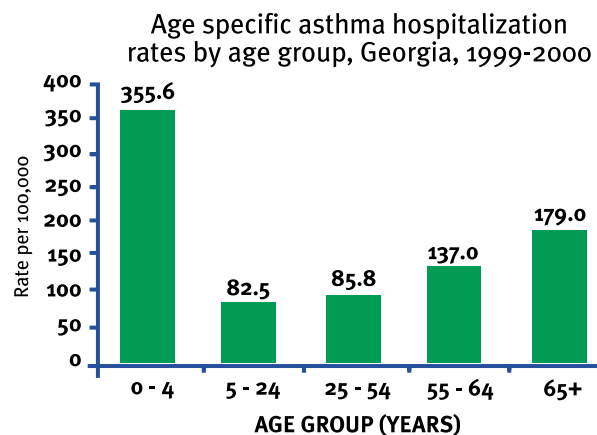
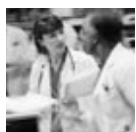


figure 19





Asthma Morbidity in Georgia *continued...*

Table 3. Annual number of hospitalizations for asthma, age-adjusted asthma hospitalization rates, and hospital charges per year by county, Georgia, 1999-2000

County	Number	Rate	Charges	County	Number	Rate	Charges
Georgia	9,403	120	\$58,800,000	Dade	5	##	\$25,000
Appling	41	239*	190,000	Dawson	10	64 [†]	30,000
Atkinson	11	150	60,000	Decatur	47	168*	215,000
Bacon	9	85	50,000	DeKalb	591	101 [†]	4,110,000
Baker	2	##	5,000	Dodge	30	158	135,000
Baldwin	40	100	210,000	Dooley	49	440*	220,000
Banks	20	140	125,000	Dougherty	176	181*	970,000
Barrow	61	136	425,000	Douglas	126	142*	695,000
Bartow	69	89 [†]	390,000	Early	18	149	70,000
Ben Hill	45	243*	220,000	Echols	3	##	15,000
Berrien	49	290*	220,000	Effingham	17	49 [†]	105,000
Bibb	217	141*	1,680,000	Elbert	32	162*	145,000
Bleckley	18	156	60,000	Emanuel	37	167*	210,000
Brantley	19	127	80,000	Evans	11	108	55,000
Brooks	35	206*	145,000	Fannin	13	65 [†]	75,000
Bryan	28	136	270,000	Fayette	42	49 [†]	225,000
Bulloch	66	142	515,000	Floyd	117	136	540,000
Burke	47	200*	220,000	Forsyth	52	55 [†]	405,000
Butts	18	95	130,000	Franklin	36	184*	180,000
Calhoun	28	508*	90,000	Fulton	1,203	164*	10,005,000
Camden	19	60 [†]	90,000	Gilmer	48	216*	255,000
Candler	26	276*	135,000	Glascok	5	##	25,000
Carroll	108	129	575,000	Glynn	107	158*	560,000
Catoosa	17	32	105,000	Gordon	30	69 [†]	185,000
Charlton	12	130	70,000	Grady	30	131	200,000
Chatham	214	94 [†]	1,250,000	Greene	25	175*	135,000
Chattahoochee	5	##	35,000	Gwinnett	448	92 [†]	2,810,000
Chattooga	24	99	155,000	Habersham	52	150	250,000
Cherokee	77	56 [†]	470,000	Hall	144	112*	970,000
Clarke	125	166*	830,000	Hancock	24	257*	160,000
Clay	4	##	20,000	Haralson	32	125	160,000
Clayton	229	108	1,400,000	Harris	16	69 [†]	70,000
Clinch	17	242*	80,000	Hart	24	98	100,000
Cobb	541	96 [†]	3,940,000	Heard	15	135	80,000
Coffee	66	177*	365,000	Henry	103	90 [†]	645,000
Colquitt	55	130	285,000	Houston	130	120	530,000
Columbia	40	47 [†]	430,000	Irwin	14	146	60,000
Cook	61	382*	270,000	Jackson	69	173*	435,000
Coweta	92	109	625,000	Jasper	7	62 [†]	25,000
Crawford	6	54	40,000	Jeff Davis	15	109	70,000
Crisp	45	209*	220,000	Jefferson	29	165	135,000



Asthma Morbidity in Georgia *continued...*

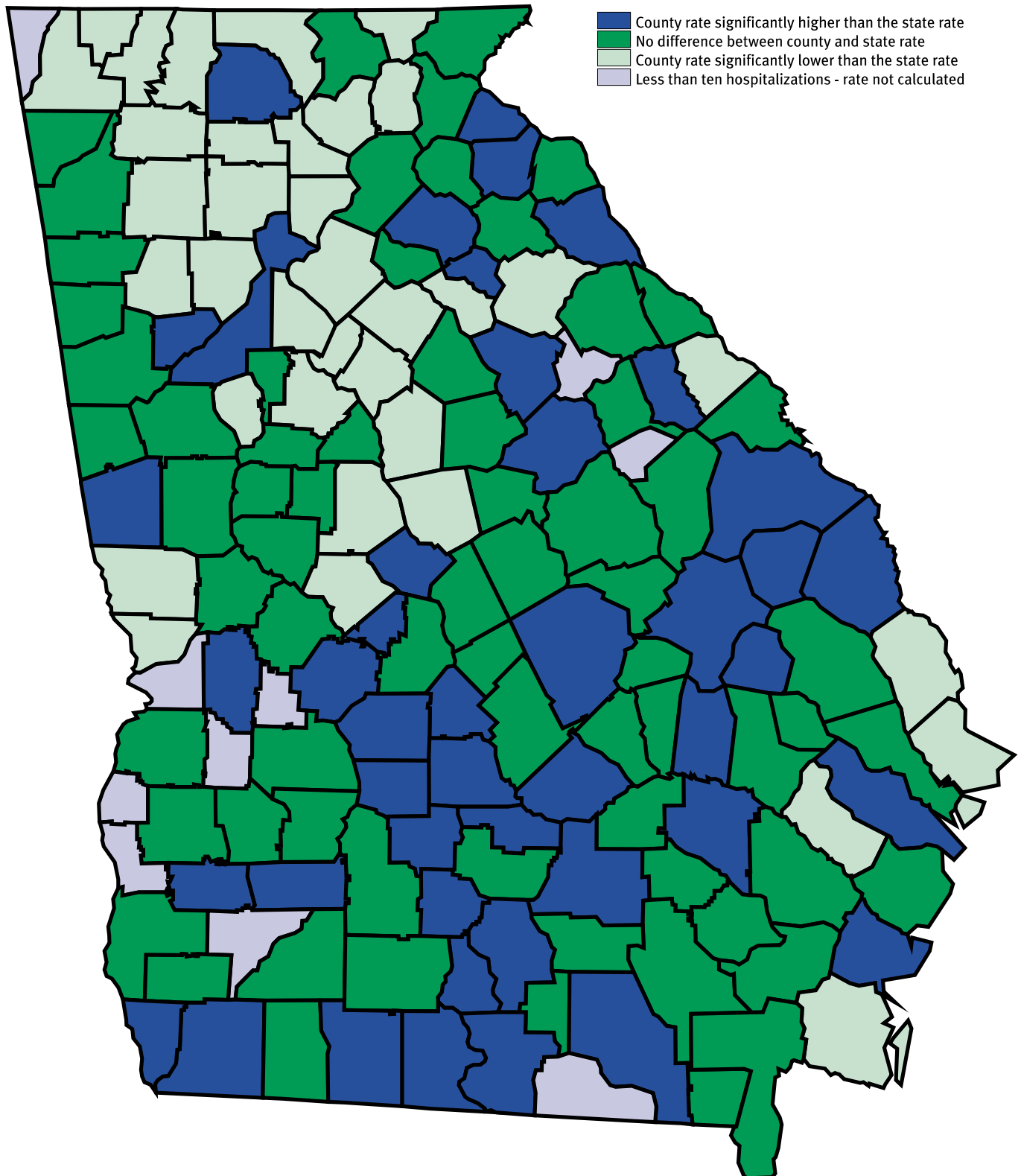
Table 3. *continued...*

County	Number	Rate	Charges	County	Number	Rate	Charges
Jenkins	20	239*	\$95,000	Schley	4	##	\$20,000
Johnson	12	133	55,000	Screven	40	257*	200,000
Jones	15	65 [†]	90,000	Seminole	28	289*	135,000
Lamar	23	151	135,000	Spalding	81	140	585,000
Lanier	10	147	75,000	Stephens	58	245*	230,000
Laurens	97	214*	580,000	Stewart	9	155	70,000
Lee	25	104	115,000	Sumter	49	151	285,000
Liberty	76	160*	385,000	Talbot	6	88	45,000
Lincoln	11	136	60,000	Taliaferro	4	199	15,000
Long	5	55 [†]	15,000	Tattnall	32	160	140,000
Lowndes	212	245*	905,000	Taylor	11	120	45,000
Lumpkin	13	65 [†]	35,000	Telfair	21	181*	85,000
McDuffie	47	213*	205,000	Terrell	19	168	130,000
McIntosh	15	146	90,000	Thomas	98	222*	520,000
Macon	26	184*	110,000	Tift	86	213*	315,000
Madison	47	183*	300,000	Toombs	53	196*	280,000
Marion	6	78	30,000	Towns	7	52 [†]	35,000
Meriwether	32	136	160,000	Treutlen	9	126	70,000
Miller	11	181	65,000	Troup	124	210*	585,000
Mitchell	30	134	135,000	Turner	20	191*	70,000
Monroe	17	80 [†]	100,000	Twiggs	10	98	75,000
Montgomery	9	120	55,000	Union	22	119	110,000
Morgan	21	130 [†]	115,000	Upson	33	120	150,000
Murray	29	76 [†]	155,000	Walker	54	86 [†]	375,000
Muscogee	164	91 [†]	1,115,000	Walton	37	64 [†]	200,000
Newton	55	88 [†]	260,000	Ware	48	133	335,000
Oconee	24	90 [†]	125,000	Warren	11	181	40,000
Oglethorpe	10	82 [†]	60,000	Washington	22	105	110,000
Paulding	44	52 [†]	215,000	Wayne	36	138	185,000
Peach	39	159*	210,000	Webster	4	##	15,000
Pickens	18	79 [†]	130,000	Wheeler	7	130	35,000
Pierce	20	125	145,000	White	14	74 [†]	100,000
Pike	19	141	100,000	Whitfield	75	91 [†]	500,000
Polk	44	116	180,000	Wilcox	25	313*	100,000
Pulaski	29	327*	95,000	Wilkes	17	158	95,000
Putnam	20	109	75,000	Wilkinson	15	136	95,000
Quitman	1	##	5,000	Worth	35	149	185,000
Rabun	25	159	120,000	Numbers, rates, and charges are annual.			
Randolph	15	183	50,000	*Hospitalization rate significantly higher than the Georgia rate			
Richmond	249	131	2,260,000	†Hospitalization rate significantly lower than the Georgia rate			
Rockdale	44	66 [†]	245,000	## Rates are not calculated for counties with < 5 hospitalizations per year			



Asthma Morbidity in Georgia *continued...*

Map 1. Age-adjusted hospitalization rates for asthma by county, 1999-2000





Asthma Morbidity in Georgia *continued. . .*

Table 4. Age-adjusted annual asthma hospitalization rates and average charges per year by public health district, Georgia, 1999-2000

Districts	Hospitalizations		Charges
	Number	Rate	
GEORGIA	9,403	120	\$58,800,000
(1-1) Northwest (Rome)	435	85 [†]	\$2,320,000
(1-2) North Georgia (Dalton)	258	81 [†]	\$1,580,000
(2-0) North (Gainesville)	473	107 [†]	\$2,695,000
(3-1) Cobb/Douglas (Marietta)	666	102 [†]	\$4,635,000
(3-2) Fulton (Atlanta)	1203	164 *	\$10,005,000
(3-3) Clayton (Morrow)	229	108	\$1,400,000
(3-4) East Metro (Lawrenceville)	545	88 [†]	\$3,315,000
(3-5) DeKalb (Decatur)	591	101 [†]	\$4,110,000
(4-0) LaGrange	686	114	\$3,995,000
(5-1) South Central (Dublin)	255	193 *	\$1,265,000
(5-2) North Central (Macon)	560	121	\$3,395,000
(6-0) East Central (Augusta)	554	132 *	\$3,995,000
(7-0) West Central (Columbus)	411	119	\$2,355,000
(8-1) South (Valdosta)	533	237 *	\$2,295,000
(8-2) Southwest (Albany)	599	170 *	\$3,120,000
(9-1) East (Savannah)	231	87 [†]	\$1,355,000
(9-2) Southeast (Waycross)	477	155 *	\$2,770,000
(9-3) Coastal (Brunswick)	249	119	\$1,415,000
(10-0) Northeast (Athens)	448	133 *	\$2,765,000

* Hospitalization rate significantly higher than the Georgia rate

[†]Hospitalization rate significantly lower than the Georgia rate



Discussion



Asthma is a major public health issue in Georgia as it is in the United States. Approximately 13.1% of Georgia's public middle school students, 10.7% of Georgia's high school students, and 6.7% of adult Georgians report currently having asthma. This report shows that asthma affects all age, race, and sex groups. Blacks and women are more likely to be hospitalized and die from asthma than whites and men. Asthma hospitalizations are highest among the older and younger age groups. Death rates are 24 times higher for the elderly (65 years of age and older) than for the younger age groups (0 to 4 years and 5 to 24 years).

Findings presented in this report suggest at least four ways by which the burden of asthma in Georgia can be reduced:

- 1) Reduce cigarette smoking and exposure to environmental tobacco smoke (ETS).
- 2) Improve access to quality healthcare.
- 3) Increase receipt of annual flu shot.
- 4) Increase physical activity and improve diet to reduce overweight and obesity.

Reduce smoking and exposure to environmental tobacco smoke

Despite the fact that cigarette smoking may trigger asthma attacks, 26.3% of adults with asthma, 24.7% of high school students with asthma, and 11.6% of middle school students with asthma currently smoke. Approximately 3 in 4 middle school students and high school students with asthma are exposed to environmental tobacco smoke. Smoking and exposure to environmental tobacco smoke have been shown to increase the frequency and severity of asthma attacks. Stopping smoking and limiting exposure to ETS can help reduce the frequency and severity of asthma attacks. Policies against smoking in public places also will help prevent asthma attacks.

Improve access to quality healthcare

A significant number of adults with asthma (22.3%) were unable to see a doctor because of cost. Lack of access to adequate healthcare can make it difficult for individuals to keep their asthma under control. Asthma is a disease that can be controlled with proper treatment and management. Therefore, programs which provide education regarding proper treatment and self-management need to be made available.

Increase receipt annual flu shot

Respiratory infections are a common trigger of asthma attacks. Annual flu shots for people with asthma will reduce the incidence of asthma attacks or their severity. However, only about one-third of adults with asthma have received the annual flu shot (34.4%).

Increase physical activity and improve diet

A high percentage (21.4%) of high school students with asthma are overweight, compared to 9.0% of those without asthma. Sixty-seven percent of adults with asthma are currently overweight or obese. The relationship between asthma and obesity is not well understood, but overweight or obese individuals tend to experience more symptoms than people of normal weight. Asthma is a disease that should not limit an individual's normal activities. Participation in physical activities and eating a healthy diet can help reduce asthma symptoms.

Education, policy changes, and modification of risk factors will help reduce frequency and severity of attacks in individuals with asthma and possibly delay or prevent the development of asthma in individuals without asthma. These actions will ultimately reduce the burden of asthma in Georgia and improve the quality of life of Georgians with asthma.





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Appendix 1: Acknowledgements

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Appendix 2: About the Data

There are four data sources discussed in the 2002 Georgia Asthma Report: 1) the Georgia Youth Tobacco Survey for public middle and high school students, 2) the Behavioral Risk Factor Surveillance System for adults 18 years and older, 3) the Georgia vital statistics data, and 4) the Georgia hospital inpatient discharge data.

The Georgia Youth Tobacco Survey (GYTS) is a self-administered pencil and paper survey. This survey was last administered to Georgia public middle and high school students in fall 2001. The main focus of this survey was tobacco but two questions on height and weight were included to calculate BMI and three questions concerning asthma were included: 1) Have you ever been told by a doctor or nurse that you have asthma? 2) Do you still have asthma? 3) Have you had an episode or attack of asthma in the past twelve months? Current asthma was defined as a "yes" answer to the first two questions. For both middle school and high school data, a weight variable was calculated for each record to reflect the likelihood of sampling each student and to reduce bias by compensating for differing patterns of non-response. SUDAAN was used to compute the 95% confidence intervals, which were used to determine the differences between subgroups. Differences between prevalence estimates were considered statistically significant if the 95% confidence intervals did not overlap. This survey does not include students who do not attend public middle school and high school, were home schooled, or those who do not attend school at all.

The Behavioral Risk Factor Surveillance System (BRFSS) is conducted in cooperation with Centers for Disease Control and Prevention (CDC). Georgia residents 18 years and older are interviewed by telephone about health conditions, behaviors, and the use of preventive services. Asthma was one of the topics included in 2000 and 2001. The questions were 1) Have you ever been told that you have asthma? 2) Do you still have asthma? Current asthma was classified by a "yes" answer to both questions. Prevalence for 2000-2001 combined were estimated using SAS and SUDAAN, which take into account the stratified sample design of the BRFSS. People without a telephone are not included in the survey.

Mortality data are based on deaths of Georgia residents whose underlying cause of death was asthma. Deaths from 1996 to 1998 with ICD-9 code 493 and deaths in 1999 and 2000 with ICD-10 codes J45-J46 were selected. To combine the data from 1996-2000 the estimated comparability ratio 0.8938 was used to calculate the "comparability modified" number of deaths in 1996-1998, which was added to actual number of deaths in 1999-2000. Death rates were age adjusted to the 2000 US standard population via the direct method. Recent trends in mortality are difficult to interpret because of the change from ICD-9 to ICD-10 coding of deaths in 1999.

Hospitalization data in the report are based on hospital discharge data for Georgia residents who were hospitalized in 1999 or 2000 with asthma as the primary diagnosis. The ICD-9 codes used to select hospitalizations were 493.0-493.9. Hospitalization data only included information reported by non-federal acute care hospitals in Georgia. Rates were age-adjusted to the 2000 US standard population via the direct method. Hospitalization charges may differ from costs. Charges are based upon the hospital's full-established rates. The amount a hospital is reimbursed is usually less than what is charged.

Death and hospitalization rates are expressed per 100,000 population throughout the report.



Appendix 3: Definitions

Age-adjusted rate: A rate calculated in a manner that allows comparison of populations with different age structures

Comparability ratio (CR): The ratio used to compare number of deaths using ICD-9 codes for years ≤ 1998 and ICD-10 codes for years ≥ 1999 ; the comparability ratio for asthma is 0.8938

Current smoking (adults): Smoked at least 100 cigarettes in their lifetime and who currently smoke

Current smoking (students): Smoked cigarettes on one or more days of the past 30 days

Exposure to environmental tobacco smoke: Exposure to tobacco smoke in the home, a room, or in a car in the past seven days

Fair or poor health: Self-reported health status as fair or poor

Flu shot: Flu shot received in the past twelve months

Income: Annual household income from all sources

Mental distress: Mental health not good on 14 or more of the past 30 days; may be caused by stress, depression, or problems with emotions

Overweight or obese (adults): A body mass index (BMI) equal to or greater than 25.0; BMI is weight in kilograms divided by height in meters squared

Overweight (students): BMI for age ≥ 95 th percentile based on the CDC's growth chart for BMI determined by age and sex

Prevalence: The percentage of persons who have a disease or a risk factor at a given time

Risk factor: A habit, characteristic, or finding on clinical examination that is associated with an increased probability of disease

Seasons: Winter = December-February; Spring = March-May; Summer = June-August; and Fall = September-November

Statistically significant: In this report, a p-value < 0.05 is considered statistically significant; observed results are probably different from what might have occurred as a result of chance alone



Appendix 4: Abbreviations

BMI: Body mass index

BRFSS: Behavioral Risk Factor Surveillance System

CDC: Centers for Disease Control and Prevention

ETS: Environmental tobacco smoke

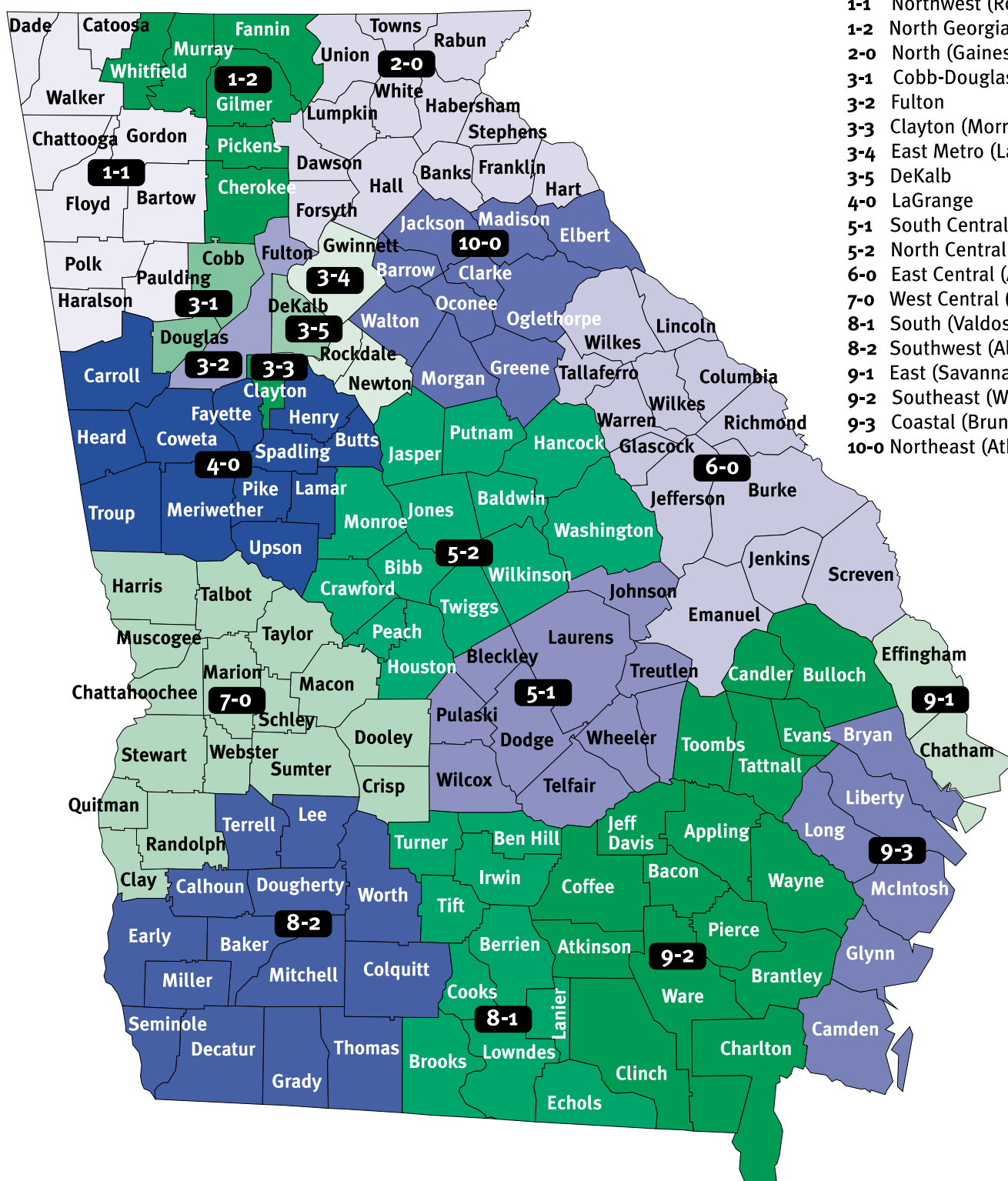
GYTS: Georgia Youth Tobacco Survey

ICD-9: International Classification of Diseases, 9th Revision

ICD-10: International Classification of Diseases, 10th Revision



Appendix 5: Georgia Public Health Districts



- 1-1 Northwest (Rome)
- 1-2 North Georgia (Dalton)
- 2-0 North (Gainesville)
- 3-1 Cobb-Douglas
- 3-2 Fulton
- 3-3 Clayton (Morrow)
- 3-4 East Metro (Lawrenceville)
- 3-5 DeKalb
- 4-0 LaGrange
- 5-1 South Central (Dublin)
- 5-2 North Central (Macon)
- 6-0 East Central (Augusta)
- 7-0 West Central (Columbus)
- 8-1 South (Valdosta)
- 8-2 Southwest (Albany)
- 9-1 East (Savannah)
- 9-2 Southeast (Waycross)
- 9-3 Coastal (Brunswick)
- 10-0 Northeast (Athens)



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