

2012

GEORGIA

Tobacco-related Cancers Report

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Suggested citation: Davis V., Lavender A., Bayakly R., Ray K., Moon T. Georgia Tobacco-related Cancers Report, 2012. Georgia Department of Public Health, Epidemiology Program, May 2012.

This publication was supported by Cooperative Agreement Numbers U58/CCU000815-05 and UC58/CCU422885-03022 from the Centers for Disease Control and Prevention (CDC). ts contents are solely the responsibility of the authors and do not necessarily represent the official views of CDC.

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Doll and Hill's groundbreaking study in 1950 showed that smoking was associated with lung cancer manifestation¹. Then in 1964, the Surgeon's General committee further described the relationship as causal². Over the past decades, cancers in other sites have been proven to be associated with smoking. Cancers associated with tobacco use, or tobacco-related cancers (TRC), have become a major research topic and used as an evaluation mechanism for tobacco control and cancer control programs. The term tobacco-related cancers refer to cancers of the oral cavity and pharynx, larynx, esophagus, stomach, kidney and renal pelvis, urinary bladder, lung and bronchus, cervix and acute myelogenous leukemia (AML)³. In Georgia, although an overall decrease in TRC mortality rates has been observed since 2000, there is still more work to be done. This report provides an overview of the smoking prevalence from years 1985-2009 among adults and from 2003-2009 among youth in Georgia as well as trends in TRC incidence and mortality rates. The current prevalence of adult cigarette smoking will be used to project future incidence of lung cancer up to the year 2020. The results show the need for full implementation of the state's Tobacco Use Prevention Program. Below are some of the major findings from this report:

- ❖ An estimated 16% of all deaths among adults in Georgia age 35 years and older, during 2003-2007, were the result of cigarette smoking
- ❖ About 87% of lung cancer deaths among men and 70% of lung cancer deaths among women in Georgia were due to cigarette smoking during 2003-2007
- ❖ Adult smokers in Georgia lost an average of 18 years of potential life due to smoking-related cancer compared to adult nonsmokers during 2003-2007
- ❖ The overall prevalence of cigarette smoking among adults has declined significantly since 1985 from 30% to 18% in 2009
- ❖ Since 2007, the overall adult smoking prevalence has remained fairly stable from around 20% in 2007 to 18% in 2009
- ❖ From 1994-2002, the overall smoking prevalence in Georgia increased by an average of 0.2% per year
- ❖ From 2003-2009, the overall prevalence of smoking among adult Georgians declined by an average of 3% per year
- ❖ For nearly the past decade, the percent of ever smokers in Georgia who have quit was slightly higher among adult males than females
- ❖ Smoking among middle school students in Georgia declined from 9% in 2003 to 5% in 2009
- ❖ Among high school students, smoking prevalence decreased from 21% in 2003 to 17% in 2009
- ❖ If the current adult smoking prevalence persists, an estimated 219,000 youth in Georgia who were between ages 0-17 years in 2010 are projected to die prematurely from smoking-related illnesses
- ❖ Overall, men are diagnosed and die from tobacco-related cancers at higher rates than women
- ❖ Overall, incidence and mortality rates for tobacco-related cancers are decreasing in Georgia
- ❖ Lung cancer incidence rates for women aged 35 years and older have been slightly increasing since 2001
- ❖ Lung cancer incidence rates among men aged 35 years and older are projected to decrease from 155.6 to 141.1 per 100,000 population by the year 2020
- ❖ Lung cancer incidence rates among women aged 35 years and older are projected to increase from 76.0 per 100,000 to 79.8 per 100,000 by the year 2020
- ❖ Lung cancer mortality rates among men aged 35 years and older are projected to decrease from 128.3 to 96.1 per 100,000 by the year 2020
- ❖ Lung cancer mortality rates among women aged 35 years and older are projected to decrease from 53.6 to 48.3 per 100,000 by the year 2020



Description of Tobacco and Cancer Programs in Georgia

Georgia Tobacco Use Prevention Program

Established in 2000, the Georgia Tobacco Use Prevention Program (GTUPP) is a health promotion and disease prevention program designed to meet the overall goal of reducing the health and economic burden associated with tobacco use in Georgia. In collaboration with the 18 Public Health Districts, non-profit health and community-based organizations, and various partners and youth groups, GTUPP plans, implements and evaluates activities designed to reduce tobacco-related illnesses and deaths in Georgia. Best practice strategies are developed to address the following goals:

- ❖ Prevent the initiation of tobacco use among youth and young adults
- ❖ Promote quitting among youth and adults
- ❖ Eliminate nonsmokers’ exposure to environmental tobacco smoke (ETS); and
- ❖ Identify and eliminate the disparities related to tobacco use among various population groups

Tobacco-free Schools Project

Comprehensive school-based tobacco use prevention policies and programs have been shown to reduce and prevent youth tobacco use.⁸ The Georgia Tobacco Free Schools Project was initiated in 2005 to reduce teen tobacco use and youth exposure to secondhand smoke. Implementation of the Tobacco Free Schools Policy prohibits the use of tobacco products on school property and includes buildings, grounds, stadiums, and vehicles used to transport students. The policy also applies to all off-campus sponsored events. Adoption of the policy protects students, staff, and visitors from the harmful effects of secondhand smoke 24 hours a day, 7 days per week. Currently, 83 of 181 public school districts in Georgia have adopted the model policy, protecting over a million youth from the dangers of secondhand smoke.

Tobacco-free Colleges and Universities Project

To reduce the health and economic burden of tobacco use in Georgia, the Georgia Tobacco Use Prevention Program encourages all public and private colleges and universities to participate in the Georgia Tobacco-Free College/University Tobacco Project. The goal of this project is to reduce tobacco use by college age students, employees and visitors. Students, staff and visitors are encouraged to quit by calling the Georgia Tobacco Quit Line. Currently, 16 of Georgia’s colleges and universities have adopted the model policy.

Georgia Tobacco Quit Line

The Georgia Tobacco Quit Line is a free service available to all Georgia residents 13 years of age and older. The service provides telephone-based cessation counseling and follow-up by a certified tobacco cessation specialist. The counseling services are offered in both English and Spanish, as well as for the hearing impaired. Local cessation classes and providers are available throughout the state.

Tobacco-free Parks and Recreation Facilities

Georgia outdoor and indoor park and recreation sites are protecting the health of Georgians 24 hours a day, 7 days a week by adopting a model tobacco-free policy. Currently 15 out of 197 of the Georgia Park and Recreation Association have adopted the model tobacco-free policy. This 100% tobacco-free policy means no tobacco use is allowed on all park and recreation property by staff or visitors.

Smoke-free Ordinance Project

Local cities and counties in Georgia are currently adopting model smoke-free ordinances designed to protect all citizens from the dangers of secondhand smoke exposure in all public places, including workplaces, restaurants, and bars. In August 2010, the City of Savannah adopted a model smoke-free ordinance and in March 2012, Chatham County also adopted the model policy. Georgia currently has three cities with model smoke-free ordinances (Savannah, Morrow, and Buena Vista). In addition, 10 of 197 sites of the Georgia Parks and Recreation Association have adopted the model tobacco-free policy. According to the 2006 U.S. Surgeon General’s Report, there is no safe amount of secondhand smoke exposure.

Disparity Project

Although the current prevalence of cigarette smoking among adults aged 18 years and older in Georgia is 18%, there are several population groups whose prevalence is disproportionately higher than other population groups. Examples of disparate populations in Georgia include but are not limited to: males, adults with less than a high school diploma, uninsured adults, adults with an annual income less than \$30,000, and persons who reside in the Albany, Waycross, Valdosta, Rome, Macon and Savannah Health Districts. In 2006, a pilot project was developed to target counties within the disparate health districts to identify community assets, provide technical assistance and training, and conduct community-wide education campaigns promoting the adoption of evidence-based policy, systems, and environmental changes that are effective in reducing tobacco use (i.e., tobacco-free worksites). Approximately 14 smokefree/tobacco-free policies have been adopted in five counties (Chattooga, Miller, Long, Houston, and Clinch counties) in Georgia since 2007. These policies restrict tobacco use in public places and are supported by the dissemination of two Nicotine Replace Therapy (NRT) interventions (2008 and 2010-2011) and the Georgia Smokefree Air Act of 2005.



Georgia Comprehensive Cancer Control Program

The Georgia Comprehensive Cancer Control Program (GCCCCP) is part of a national effort launched by the Centers for Disease Control and Prevention (CDC) aimed at reducing cancer related morbidity and mortality. The GCCCCP supports a collaborative process through which a community and its partners pool resources to promote cancer prevention, improve cancer detection, increase access to health and social services, and reduce the burden of cancer. These efforts will contribute to reducing cancer risk, detecting cancers earlier, improving treatments, and enhancing survivorship and quality of life for cancer patients.

Program Objective:

The Georgia Comprehensive Cancer Control Plan is used as a guide to develop and implement initiatives that addresses Georgia’s cancer burden. Under the Georgia Comprehensive Cancer Control Plan, three values shape the activities of the GCCCCP:

- 1) Saving more lives
- 2) Improving health outcomes and quality of life for those living with cancer
- 3) Reducing disparities in cancer prevention, screening, diagnosis, and outcomes

GCCCCP strives to:

- ❖ Reduce the incidence of cancer in Georgia
- ❖ Remove barriers to cancer screening services
- ❖ Increase participation in recommended screenings for breast, colorectal, cervical, and prostate cancers
- ❖ Reduce the number of Georgians exposed to the harmful effects of tobacco
- ❖ Reduce overweight and obesity and increase physical activity among children, adolescents, and adults in Georgia
- ❖ Improve the quality and effectiveness of cancer screening and follow-up services
- ❖ Become a leader in translational research related to screening practices for cancers with the greatest burden in Georgia

Regional Cancer Coalitions of Georgia

GCCCCP funds the six Regional Cancer Coalitions of Georgia (RCCG) to implement programs to assist Georgia in its mission to become a national leader in cancer care. The RCCGs use their unique competence and expertise in cancer to move forward the agenda of Georgia’s Comprehensive Cancer Control Plan.

Colorectal Cancer Education Program

In Georgia, colorectal cancer is the third most common cancer diagnosed among males and females. Improving screening efforts provides a promising leverage point for reducing disparities in cancer outcomes. The six Regional Cancer Coalitions of Georgia (RCCG) use evidenced-based education and media campaigns to promote colorectal cancer screening among low risk individuals between the ages of 50-64 years and Medicare recipients aged 65-75 years.

Cancer Prevention in Schools

In collaboration with the Georgia Association of School Nurses Cancer Task Force, GCCCP implemented a cancer prevention project in local schools. The project goal is to promote cervical cancer prevention in an effort to reduce the number of new cervical cancer cases and increase knowledge about cervical cancer and the human papillomavirus (HPV) vaccine. The project targets middle school-aged females, especially in underserved populations such as African Americans, Hispanics/Latinas, and others. In addition, American Cancer Society Client Navigators will collaborate with GCCCP and the Georgia Association of School Nurses Cancer Task Force to implement Mother-Daughter Educational Events.

Georgia Tobacco Use Prevention Program

GCCCP partners with GTUPP to increase the number of school districts that implement the Tobacco Free Schools Policy (TFSP). Through this partnership, GCCCP has provided funding and resources to reduce tobacco use among teens and youth exposure to secondhand smoke. Members of the Georgia Association of School Nurses Cancer Task Force have also assisted in this effort by recruiting students and attending school board meetings to promote the adoption and implementation of the TFSP policy in their corresponding school districts.



BRFSS

The Georgia Behavioral Risk Factor Surveillance System (BRFSS) was used to estimate adult smoking prevalence and 95% confidence intervals. Established by the Centers and Disease Control and Prevention (CDC) in 1984, the BRFSS is a cross-sectional random-digit-dialed telephone survey of noninstitutionalized civilian adults age 18 years and older conducted annually in all 50 states, DC, Puerto Rico, Guam, and the U.S. Virgin Islands. This state-based surveillance system collects information on health risk behaviors, preventive health practices, and healthcare access primarily related to chronic disease and injury. BRFSS data are used to identify emerging health problems, establish and track health objectives, and develop and evaluate public health policies and programs. The BRFSS covers a wide range of modifiable health behaviors related primarily to chronic diseases, including high blood pressure, obesity, binge drinking, and cigarette smoking. BRFSS data have been collected in Georgia annually since 1984. All prevalence estimates presented in this report are based on 1985-2009 BRFSS survey findings. The average annual percent change in adult smoking prevalence for years 1985-1993, 1994-2002, and 2003-2009 were calculated by: 1) subtracting the prevalence of the final year of interest from the prevalence of the initial year of interest; and 2) dividing this difference by the prevalence of initial year of interest and multiplying by 100. This percent change was then divided by the total number of years to determine the average annual percent change.

YRBS

Youth smoking prevalence and 95% confidence intervals were estimated using the Georgia Youth Risk Behavior Survey (YRBS). Administered by the Georgia Department of Public Health in collaboration with the CDC, the YRBS obtains information from public middle and high school students about the prevalence and age of initiation of various health risk behaviors such as tobacco use, physical activity, eating habits, alcohol and drug use, and behaviors that contribute to unintentional injuries and violence. YRBS data are used to measure progress towards achieving national health objectives for Healthy People 2020 and other program and policy indicators, assess trends in priority health risk behaviors among high school students, and evaluate the impact of broad school and community interventions at the national, state, and local levels. This report uses results from the 2003-2009 YRBS. The average annual percent change in youth smoking prevalence for years 2003-2009 was calculated using the same method that was used for adults.

SAMMEC

The CDC’s Smoking-Attributable Morbidity, Mortality, and Economic Costs (SAMMEC) application was used to estimate the number and percent of deaths attributable to smoking, years of potential life lost (YPLL), and smoking-attributable expenditures and productivity losses. SAMMEC, developed by the CDC, derives smoking-attributable mortality (SAM) estimates using an attributable-fraction formula. The smoking-attributable fractions (SAF) of adult deaths for 19 smoking-related diseases are calculated using sex-specific smoking prevalence and relative risk (RR) of death for adult current and former smokers aged ≥35 years. SAFs for each disease and sex are derived using the following formula:

SAF = [(p₀ + p₁(RR₁) + p₂(RR₂)) - 1] / [p₀ + p₁(RR₁) + p₂(RR₂)]

p₀ = Percentage of adult never smokers in study group
p₁ = Percentage of adult current smokers in study group
p₂ = Percentage of adult former smokers in study group
RR₁ = Relative risk of death for adult current smokers relative to adult never smokers
RR₂ = Relative risk of death for adult former smokers relative to adult never smokers.

Estimation of the Average Annual Smoking-Attributable Mortality

SAMMEC applies the age- and sex-specific adult SAFs to adult mortality data for each smoking-related disease in the population under study. Mortality data by cause of death in Georgia for 2003-2007 were obtained from the Georgia Vital Records system. The average annual number of deaths is multiplied by the relevant SAF for each smoking-related cause of death.

The following formula is used to calculate the SAM:

SAM = Number of deaths x SAF

Summing across age categories provides the sex-specific estimate of SAM for each cause of death. The average annual SAM is the sum of smoking-attributable deaths across age groups and across causes of death for both sexes combined.

GCCR

Cancer incidence cases (1998-2008) were obtained from the Georgia Comprehensive Cancer Registry (GCCR) which is affiliated with the CDC’s National Program of Cancer Registries (NPCR). Tobacco related cancer definitions and codes were based on the 2008 Morbidity and Mortality Weekly Report (MMWR), “Surveillance for Cancers Associated with Tobacco Use- United States, 1999-2004 (CDC, 2008). Cancer site and morphology codes were used based on the International Classification of Diseases for Oncology, third edition (ICD-O-3). The codes for each site are as follows: lung and bronchus (C34), larynx (C32), oral cavity (C00-14), esophagus (C15), stomach (C16), pancreas (C25), kidney and renal pelvis (C64), urinary bladder (C67), cervix (C53), and Acute Myeloid Leukemia (AML) (M9840, 9861, 9866, 9867, 9871-9874, 9891, 9895-9897, 9910, 9920)⁴. Georgia incidence rates were also calculated for the years 2004-2008.

Age-adjusted incidence rates were calculated per 100,000 persons for adults 35 years and older using the direct method, adjusted to the 2000 United States standard population. Incidence rates were calculated with respect to the cancer specific smoking attribute risk percentage. Except where calculated to show trends, incidence rates reflect the average annual rate for the intervals: 1998-2001, 2001-2008, and 2004-2008. Incidence rates were calculated for the non-Hispanic white and non-Hispanic black populations. However, for years 1998 and 1999, the black population includes the Hispanic population because prior to 2000, ethnicity was not accounted for in the incidence data or in the Census denominator data.

Cancer death data (1990-2007) were obtained from the Georgia Department of Public Health, Vital Records Program. Tobacco related cancer definitions and codes were based on the same codes described for incidence cases. Site codes were used based on the International Classification of Diseases, ninth (ICD-9) and tenth (ICD-10) editions and the Surveillance, Epidemiology, and End Results (SEER) Cause of Death Recode. Deaths occurring from 1990-1998 were categorized using ICD-9 codes, and deaths occurring from 1999 to 2007 were categorized using ICD-10 codes.

Age-adjusted mortality rates were calculated per 100,000 persons for adults 25 years and older using the direct method, adjusted to the United States standard population. Mortality rates were calculated with respect to the cancer specific smoking-attribute risk percentage. Except where calculated to show trends, rates reflect the average annual rate for the interval: 1990-1995, 1995-2000, 2000-2007, and 2003-2007. Calculated mortality rates do not distinguish ethnicity.

Trend analysis by cancer site was performed for cancers with attributable risk percents that are greater than 50% (oral cavity, larynx, esophagus, and lung and bronchus). Trends in 10-year age specific incidence and mortality rates beginning with adults aged 35-44 years were analyzed for lung cancer. Annual percent change (APC) was determined by: 1) calculating the age-adjusted rate for each year; 2) subtracting the initial age-adjusted rate (AAR_O) from the final age-adjusted rate (AAR_F); 3) dividing by initial age-adjusted rate; 4) dividing the answer by the number of years in the interval; and, 5) multiplying by 100.

APC= $\frac{AAR_F - AAR_O}{AAR_O}$

Projected lung cancer incidence and mortality rates were determined by: 1) calculating the age-adjusted rates for each year; and 2) multiplying the age-adjusted rate by the respective smoking- attributable rate for all adults, males, and females (Tables 1 and 2); and, 3) multiplying the rate by the annual percent change from 2001 to 2008 for incidence rates and 2000 to 2007 for mortality rates (Appendices 2 and 3).

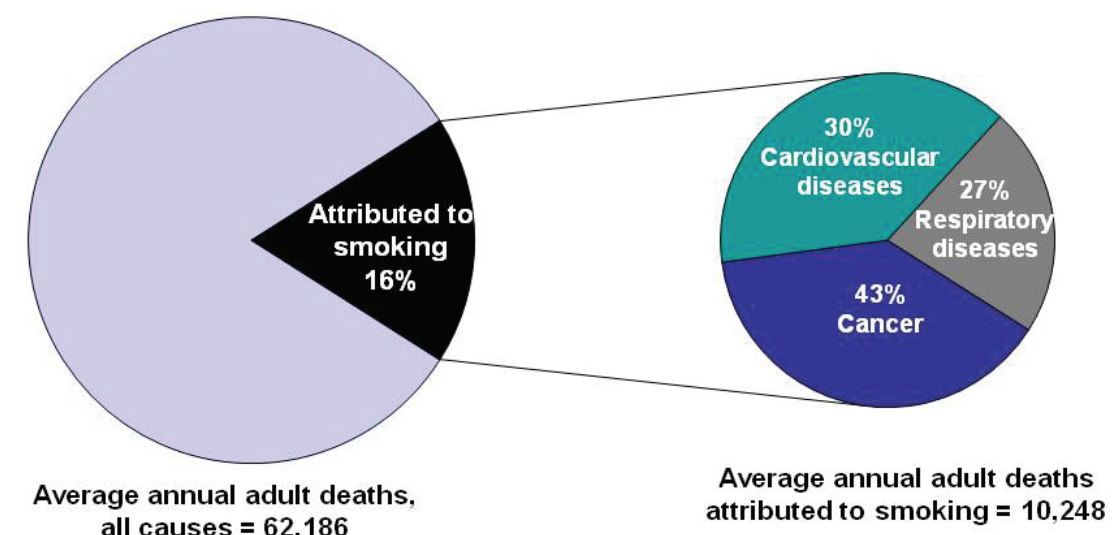
SAS version 9.2 was used to generate age-adjusted incidence and mortality rates and age-specific incidence and mortality rates.



Smoking-attributable Mortality

In Georgia, during 2003-2007, smoking caused an estimated average of 10,248 deaths annually among adults age 35 years and older. An estimated 16% of all deaths among adults aged ≥ 35 years in Georgia were the result of cigarette smoking (total number of all deaths for this age group during 2003-2007 was 62,186). Of these deaths, smoking caused 43% of all deaths from cancer, 30% of all cardiovascular deaths, and 27% of all respiratory deaths (Figure 1). In the cancer category, the major cause of death was tracheal, lung, or bronchial cancer. In the cardiovascular category, the major cause was ischemic heart disease, and in the respiratory category, the major cause was chronic obstructive pulmonary disorder (COPD). For both blacks and whites in Georgia, regardless of sex, the major cause of smoking-attributable death was cancer. An estimated 14% (2,217) of deaths among black adults aged ≥ 35 years in Georgia were the result of smoking, while an estimated 17% (7,963) of deaths among white adults in Georgia age ≥ 35 years were the result of smoking.

Figure 1. Average Annual Smoking-Attributable Deaths among Adults Aged 35 Years and Older, Georgia, 2003-2007



As shown in Table 1, the percent of cancers due to smoking differed by sex. During 2003-2007, about 87% of lung cancer deaths among men in Georgia were due to smoking. Among women in Georgia, 70% of lung cancers were due to smoking. Tables 2 and 3 below show the percent of cancers in Georgia during 2003-2007 attributed to smoking by race and sex. Laryngeal cancer was the cancer with the highest percent attributable to smoking among non-Hispanic white (73%) and non-Hispanic black (71%) females. Among non-Hispanic white females, about 70% of lung cancer deaths were due to smoking. About 69% of lung cancer deaths among non-Hispanic black females were attributed to smoking. Among non-Hispanic white males 87% of lung cancers were attributed to smoking; whereas 89% of lung cancers among non-Hispanic black males are attributed to smoking.

Table 1. Smoking-Attributable Mortality by Sex, Georgia, 2003-2007

Cancer Type	% Attributable to Smoking, Female	% Attributable to Smoking, Male
Trachea, Lung, Bronchus	70%	87%
Larynx	72%	82%
Lip, Oral cavity, Pharynx	45%	73%
Esophagus	57%	71%
Urinary bladder	28%	46%
Kidney, other urinary	5%	37%
Stomach	12%	27%
Acute myeloid leukemia	11%	22%
Pancreas	23%	21%
Cervix, Uterine	11%	~

Table 2. Smoking-Attributable Mortality, non-Hispanic Whites by Sex, Georgia, 2003-2007

Cancer Type	% Attributable to Smoking, Female	% Attributable to Smoking, Male
Trachea, Lung, Bronchus	70%	87%
Larynx	73%	81%
Lip, Oral cavity, Pharynx	46%	71%
Esophagus	56%	70%
Urinary bladder	28%	45%
Kidney, other urinary	5%	37%
Stomach	12%	26%
Acute myeloid leukemia	11%	21%
Pancreas	23%	19%
Cervix, Uterine	12%	~

Table 3. Smoking-Attributable Mortality, non-Hispanic Blacks by Sex, Georgia, 2003-2007

Cancer Type	% Attributable to Smoking, Female	% Attributable to Smoking, Male
Trachea, Lung, Bronchus	69%	89%
Larynx	71%	83%
Lip, Oral cavity, Pharynx	45%	75%
Esophagus	56%	71%
Urinary bladder	27%	49%
Kidney, other urinary	4%	39%
Stomach	11%	28%
Pancreas	22%	26%
Acute myeloid leukemia	9%	24%
Cervix, Uterine	10%	~

Smoking Prevalence

Adult Smoking Prevalence

Figure 2 shows the trend in smoking among all Georgia adults (age ≥ 18 years) from 1985-2009. The overall prevalence of cigarette smoking among adults has declined significantly since 1985, from 30% to 18% in 2009. However, this has been a slow decline over the past two and a half decades. Increases in smoking prevalence were seen in 1993, 1998-2003, and 2005. However, since 2006, the overall adult smoking prevalence in Georgia has remained stable at about 18%-20%. Smoking among males declined from 39% in 1985 to 20% in 2009. Smoking among females declined from 22% in 1985 to about 16% in 2009.

Table 4 compares the adult smoking prevalence in Georgia during 2003 with the current smoking prevalence in 2009 by race/ethnicity and sex. The smoking prevalence decreased significantly since 2003 for male and female adults overall. However, when categorized by race/ethnicity and sex, marginally significant declines were observed for only non-Hispanic white males and females. For more reliability, we compared adult smoking prevalence in combined years 2001-2005 with 2005-2009 (Appendix 1). Marginally significant declines were observed for non-Hispanic white males and females and non-Hispanic black males.



Figure 2. Current Adult Smoking, Georgia, 1985-2009

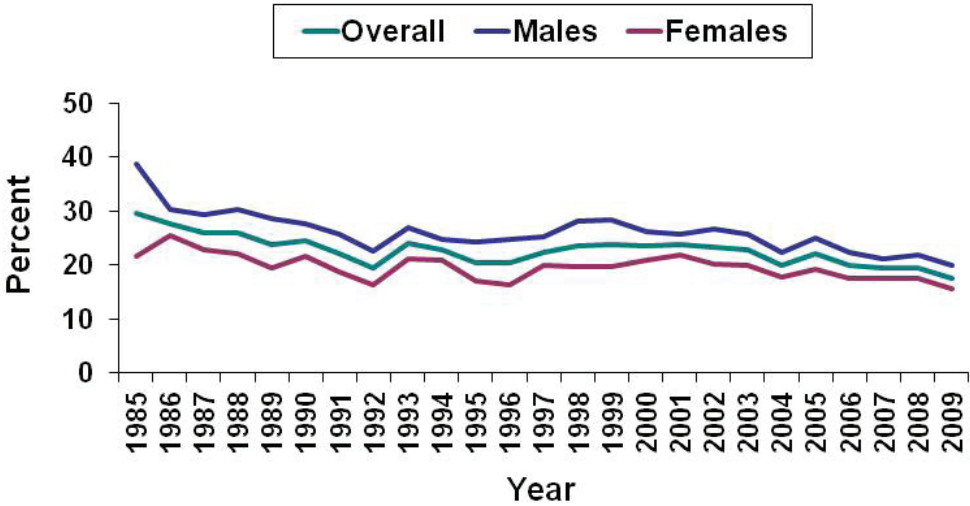


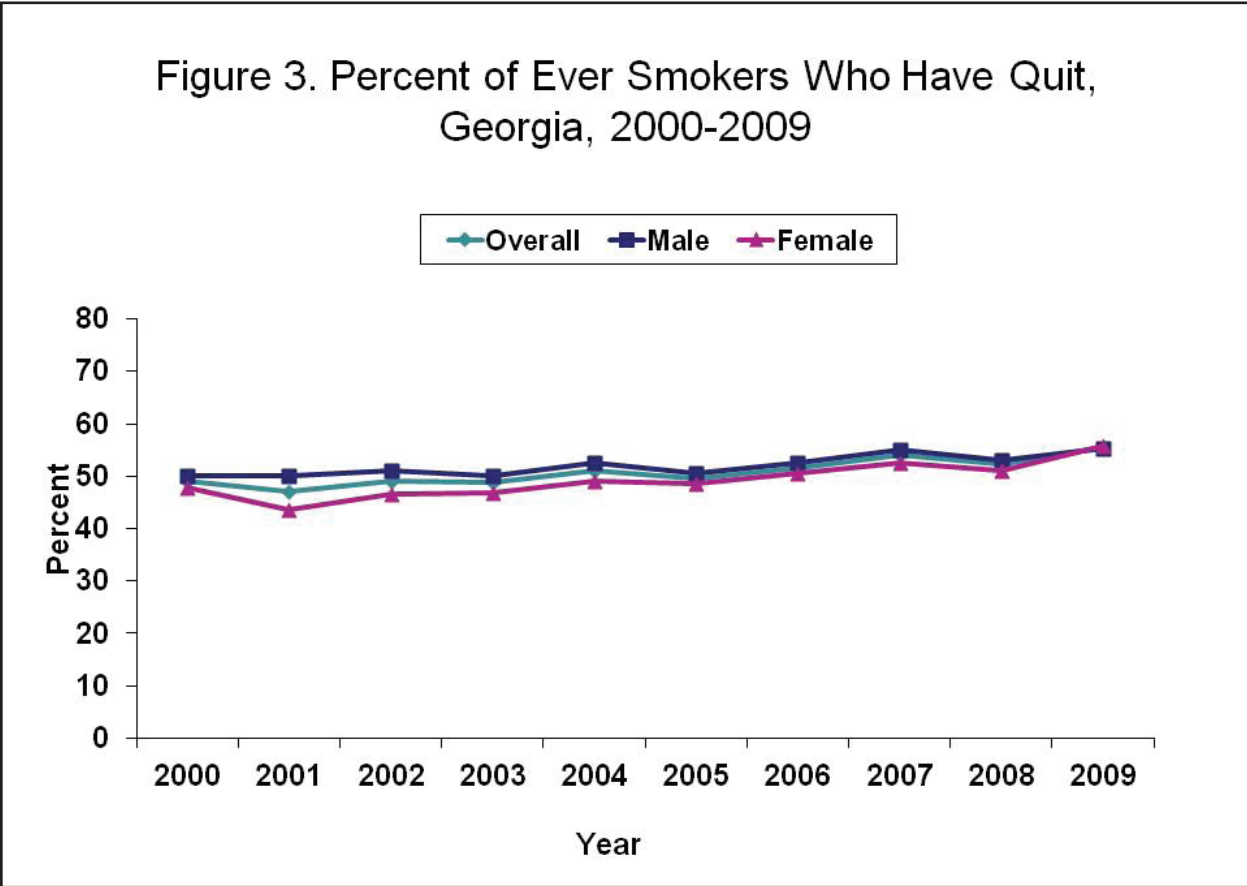
Table 4. Current Adult Smoking by Race/Ethnicity and Sex, Georgia, 2003 and 2009

	2003 % (CI)	2009 % (CI)
Males	25.8 (23.5-28.1)	20.0 (17.2-22.7)
NH White	25.6 (23.0-28.3)	21.2 (18.2-24.5)
NH Black	25.7 (20.4-31.0)	17.4 (12.1-24.4)
Hispanic	18.2 (8.6-27.8)	19.7 (6.2-21.9)
Females	19.9 (18.3-21.4)	15.5 (13.8-17.2)
NH White	21.7 (19.8-23.5)	17.5 (15.4-19.8)
NH Black	14.9 (12.0-17.8)	13.0 (10.4-16.1)
Hispanic	18.7 (8.8-28.6)	3.2 (1.3-7.7)

CI = 95% Confidence Interval; NH = non-Hispanic

Adult Quit Ratios

A quit ratio is used as an indicator of quitting behavior among people who have ever smoked. It is defined as the number of former smokers in a given population divided by the number of ever smokers in that same population. In 2009, about 56% of adults in Georgia who had ever smoked reported that they were not currently smoking. From 2000 to 2009, the percent of ever smokers who have quit increased significantly from 49% to 56%. For nearly the past decade in Georgia, the percent of ever smokers who have quit has been slightly higher among males than females (Figure 3).



Youth Smoking Prevalence

Smoking among middle school students in Georgia declined from 9% in 2003 to 5% in 2009. Among high school students, smoking decreased from 21% in 2003 to 17% in 2009. Smoking among middle school males and females decreased significantly since 2003 from 11% to 6% for males and from 8% to 5% for females. When categorized by race/ethnicity and sex, a marginally significant decline in smoking was observed among non-Hispanic white male middle school students. There were no significant declines in smoking for male and female high school students since 2003. Although there have been declines in smoking among youth overall, there are not many significant declines when looking at specific race and sex categories (Tables 6 and 7).

Table 6. Current Middle School Smoking by Race/Ethnicity and Sex, Georgia, 2003 and 2009

	2003 % (CI)	2009 % (CI)
Males	10.5 (8.1-13.4)	6.1 (4.8-7.8)
NH White	12.9 (9.0-18.0)	5.7 (3.5-9.3)
NH Black	7.6 (4.8-11.7)	7.1 (5.2-9.6)
Hispanic	~	5.8 (2.9-11.4)
Females	8.4 (6.2-11.2)	4.5 (3.4-5.9)
NH White	10.0 (7.3-13.6)	5.3 (3.2-8.5)
NH Black	6.1 (3.4-10.6)	2.7 (1.5-5.0)
Hispanic	~	5.0 (2.7-9.0)

CI = 95% Confidence Interval; NH = non-Hispanic

Table 7. Current High School Smoking by Race/Ethnicity and Sex, Georgia, 1993, 2003, and 2009

	1993	2003	2009
Males	24.7 (19.9-30.2)	23.2 (20.1-26.5)	19.5 (16.7-22.7)
NH White	32.9 (25.3-41.4)	29.8 (25.8-34.0)	27.0 (22.9-31.6)
NH Black	9.6 (5.7-15.7)	12.3 (8.5-17.3)	10.5 (7.3-14.9)
Hispanic	~	~	~
Females	24.0 (17.9-31.3)	18.7 (15.2-22.8)	14.6 (11.3-18.7)
NH White	33.2 (23.6-44.3)	27.1 (22.7-32.1)	20.9(15.4-27.8)
NH Black	9.5 (6.0-14.6)	5.8 (3.8-8.8)	7.2 (4.6-11.2)
Hispanic	~	~	~

CI = 95% Confidence Interval; NH = non-Hispanic

Percent Change in Smoking

Adults

From 2003-2009 the prevalence of smoking among adult Georgians declined by an average of 3% per year (Figure 4). This is a sign of improvement compared to the 0.2% average increase in smoking seen in Georgia during 1994-2002. Since implementation of the state’s Tobacco Use Prevention Program (TUPP) in 2000, the state’s smoking prevalence has been declining. The overall adult smoking prevalence is currently 18%, the lowest it has been since surveillance for tobacco use began. From 1985-1993, the smoking prevalence among adult males in Georgia declined by an average of 3% per year, while females saw an annual average decrease of about 0.2% per year. In Georgia, smoking has decreased by an average of 3% per year from 2003-2009 for both adult males and females (Figures 5 and 6).

Youth

In Georgia, smoking among middle school students overall declined by an average of 6% per year from 2003-2009 (Figure 7). The percent decrease was slightly higher for female middle school students (at 7%) than for male middle school students (6% decline). Similar to adults, smoking among high school students declined by an average of 3% per year from 2003-2009. The average annual percent decrease was 2% for male and 3% for female high school students (Figures 8 and 9).

Figure 4. Current Adult Smoking, Georgia, 1985-2009

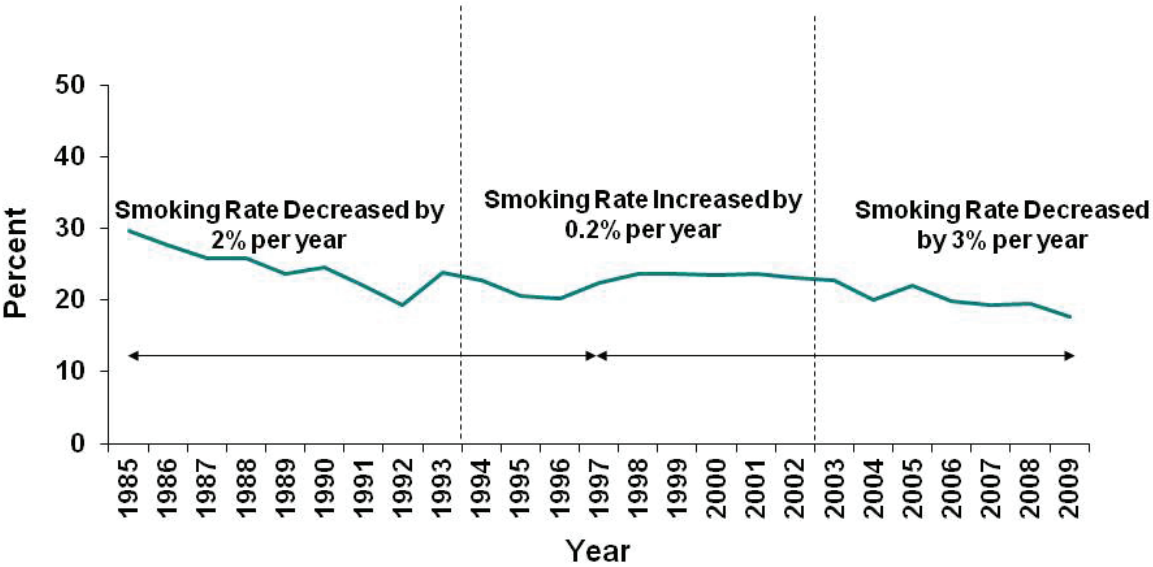


Figure 5. Current Smoking among Adult Males, Georgia, 1985-2009

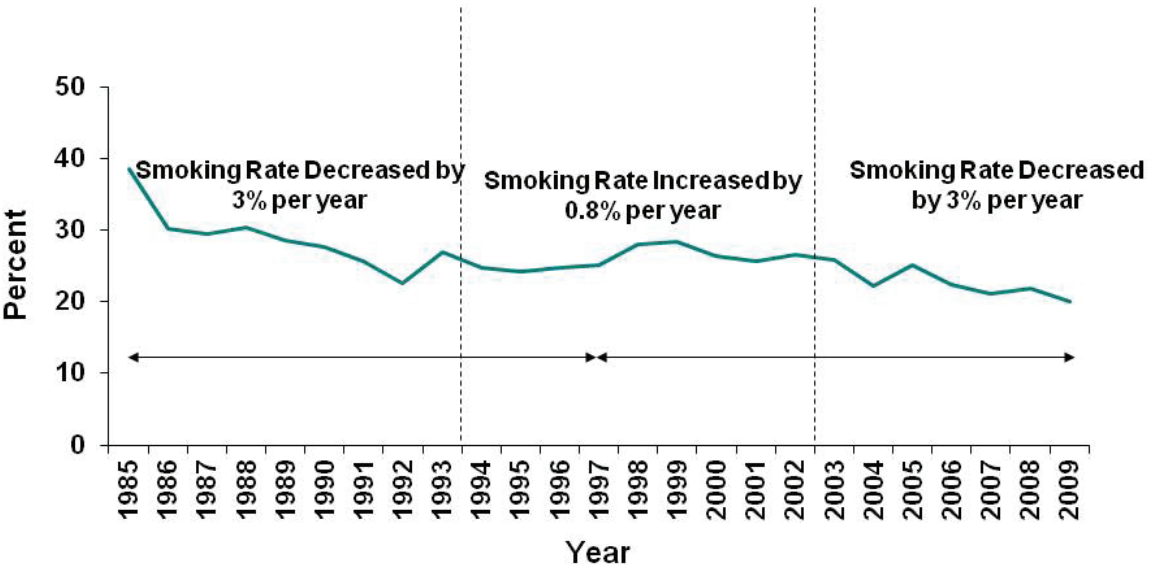


Figure 6. Current Smoking among Adult Females, Georgia, 1985-2009

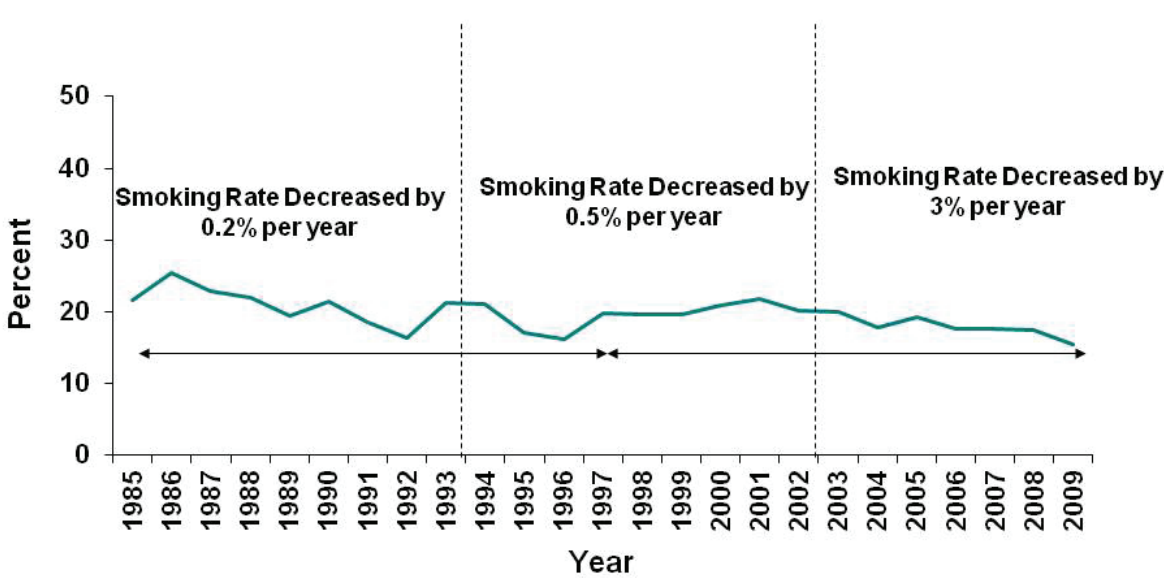


Figure 7. Percent of Students Who Currently Smoke Cigarettes, Georgia, 2003-2009

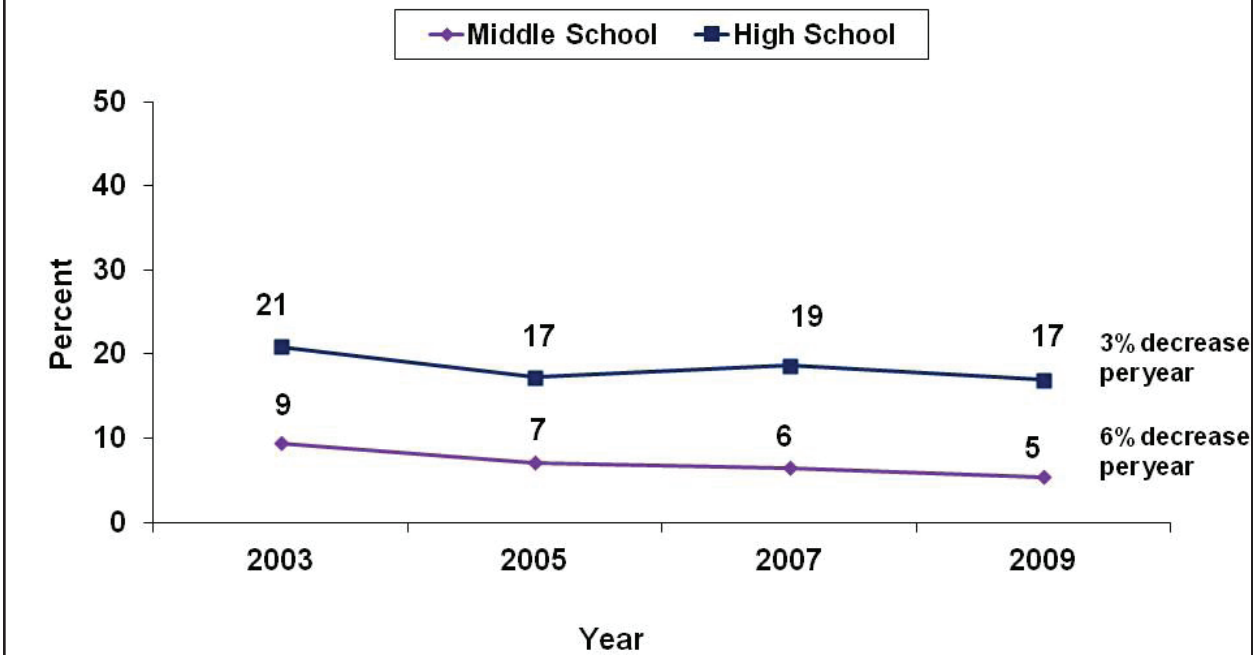


Figure 9. Percent of High School Students Who Currently Smoke Cigarettes by Sex, Georgia, 2003-2009

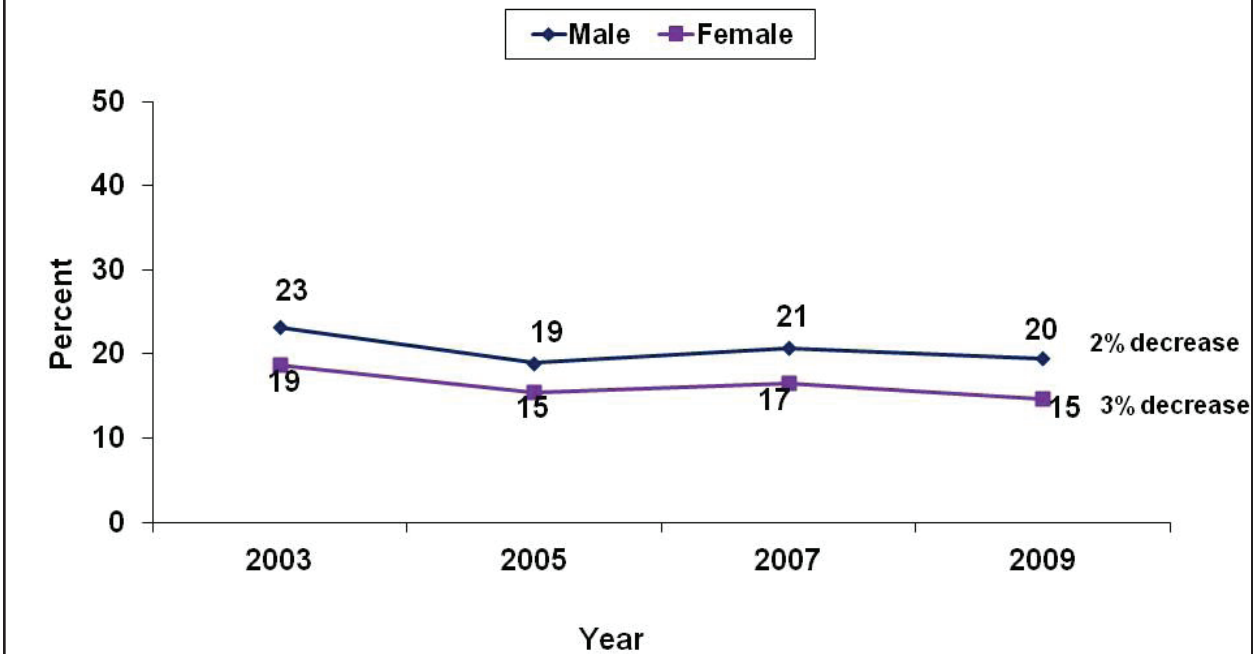
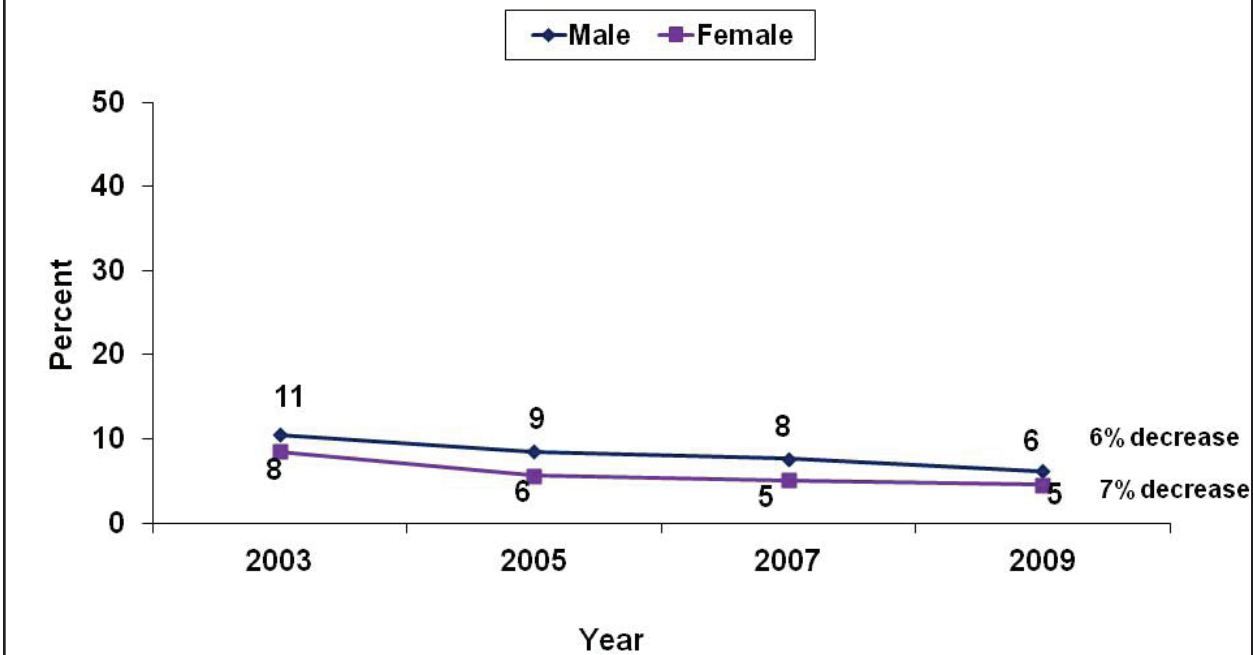


Figure 8. Percent of Middle School Students Who Currently Smoke Cigarettes by Sex, Georgia, 2003-2009





Tobacco-Related Cancer Incidence, Mortality and Trends

Table 8. Age-Adjusted Tobacco-Related Cancer Incidence Rates (per 100,000 population), Adults 35 Years and Older, by Sex and Race, Georgia, 2004-2008

	Total	Males	Black Males	White Males	Females	Black Females	White Females
Site	Rate*	Rate	Rate	Rate	Rate	Rate	Rate
Lung	112.8	165.1	172.4	165.0	74.5	56.9	80.1
Bladder (incl. In Situ)	14.6	29.6	16.6	32.2	4.4	3.3	4.7
Oral Cavity	13.5	23.9	22.2	23.9	4.9	4.1	5.2
Larynx	7.1	13.5	18.0	12.3	2.1	1.8	2.3
Kidney and Renal Pelvis	6.7	13.8	0.0	13.5	0.9	0.8	0.9
Esophagus	6.2	11.5	16.0	10.2	2.2	3.5	1.7
Pancreas	4.9	5.5	8.7	4.6	4.4	5.3	4.1
Stomach	2.5	4.6	8.8	3.3	1.0	1.7	0.7
Acute Myelogenous Leukemia(AML)	1.1	1.8	1.3	1.8	0.6	0.4	0.6
Cervical	--	--	--	--	1.5	1.8	1.4

*per 100,000 population

Table 9. Age-Adjusted Tobacco-Related Cancer Mortality Rates (per 100,000 population), Adults 35 Years and Older, by Sex and Race, Georgia, 2003-2007

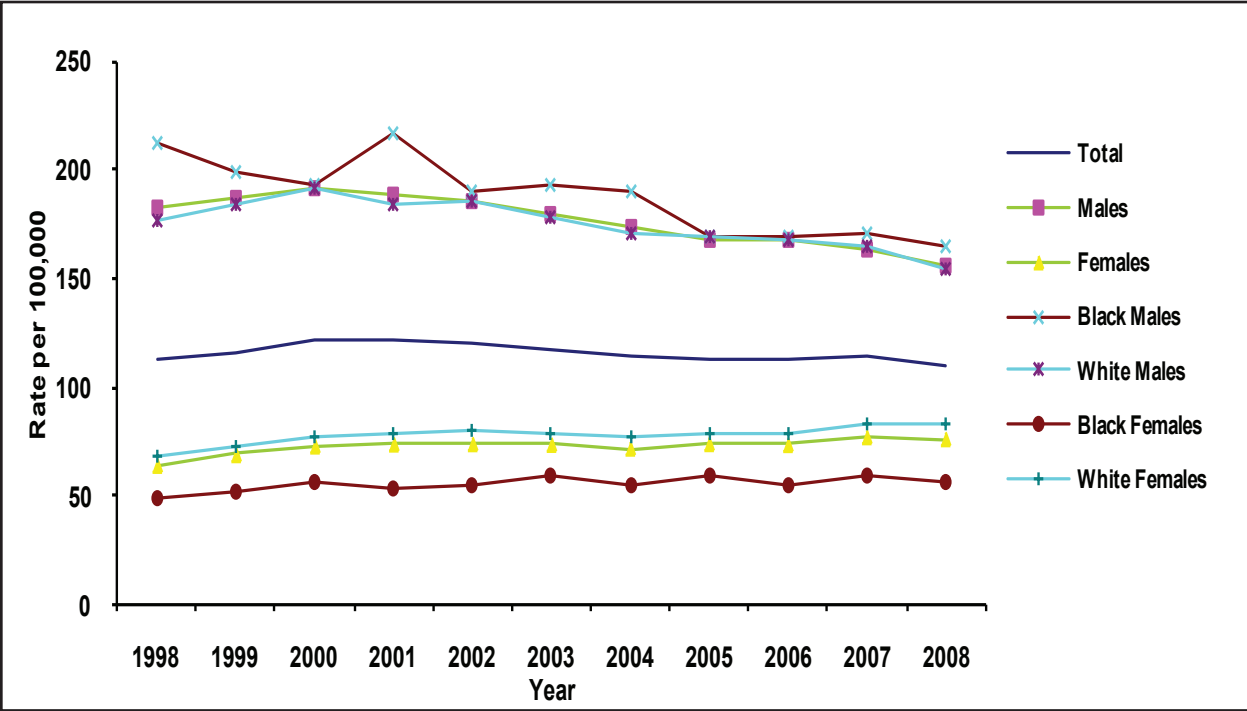
	Total	Males	Black Males	White Males	Females	Black Females	White Females
Site	Rate*	Rate	Rate	Rate	Rate	Rate	Rate
Lung	88.2	137.2	145.6	137.8	53.9	43.3	57.8
Esophagus	5.4	10.2	14.3	9.1	1.9	3.0	1.6
Pancreas	4.5	5.1	7.4	4.4	4.0	5.2	3.7
Oral Cavity	3.5	6.4	9.1	5.7	1.3	1.2	1.3
Bladder (incl. In Situ)	3.0	6.1	5.5	6.3	1.1	1.4	1.0
Larynx	1.9	3.7	6.1	3.1	0.6	0.6	0.7
Kidney and Renal Pelvis	1.9	4.1	0.0	4.1	0.3	0.2	0.3
Stomach	1.4	2.7	6.0	1.8	0.6	1.0	0.5
Acute Myelogenous Leukemia(AML)	0.7	1.2	1.1	1.2	0.4	0.3	0.4
Cervical	--	--	--	--	0.5	0.8	0.5

*per 100,000 population

Lung and Bronchus Cancer

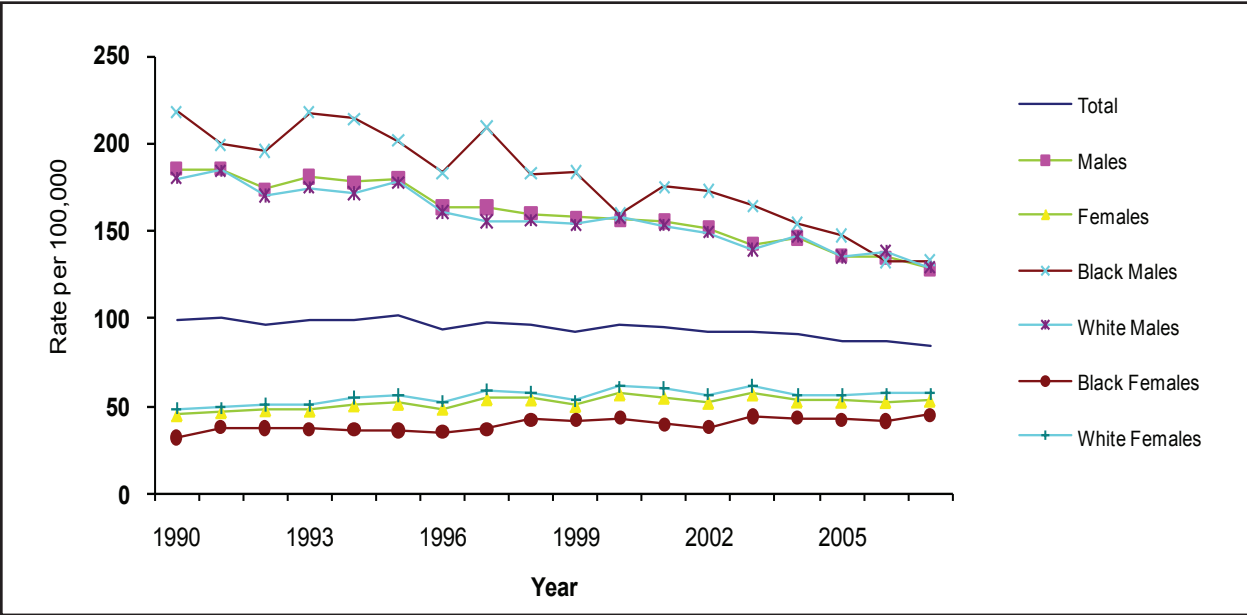
The incidence rate of lung and bronchus cancer was higher among males (165.1 per 100,000 persons) than females (74.5 per 100,000) (Table 8). Black males (172.4) had the highest incidence rates when compared to white males (165.0), white females (80.1) and black females (56.9). Overall, lung cancer incidence rates increased by 2% per year from 1998-2001 and decreased by 1.1% per year from 2001-2008 (Figure 10). Incidence rates among females increased by 3.7% per year from 1998-2001 and 0.4% from 2001-2008. Incidence rates for males increased from 1998-2001 followed by a decrease of 2.2% per year from 2001-2008. The largest increase occurred among white females (3.8%) from 1998-2001, while the largest decrease occurred in black males (3.0%) from 2001-2008.

Figure 10. Age-Adjusted Lung and Bronchus Cancer Incidence Rates, Adults 35 Years and Older, by Sex and Race, Georgia, 1998-2008



The mortality rate for lung cancer was nearly 3 times higher among males (137.2 per 100,000 persons) than females (53.9) (Table 9). Black males (145.6) had the highest mortality rate when compared to white males (137.8), white females (57.8), and black females (43.3) (Table 9). Among females, white females (57.8) had a higher mortality rate than black females (43.3). Overall, mortality rates increased slightly from 1990-1995 by 0.4% per year, followed by a decrease of 0.7% per year from 1995-2000, and a decrease of 1.6% from 2000-2007 (Figure 11). The largest decrease occurred among black males (3.4%) from 1995-2000, the largest increase occurred among black females (3.2%) during that same time period. Among males, mortality rates decreased during all three time periods. Among females, rates increased during the 1990-1995 time period and the 1995-2000 time period. While, there was a slight decrease during the 2000-2007 time period.

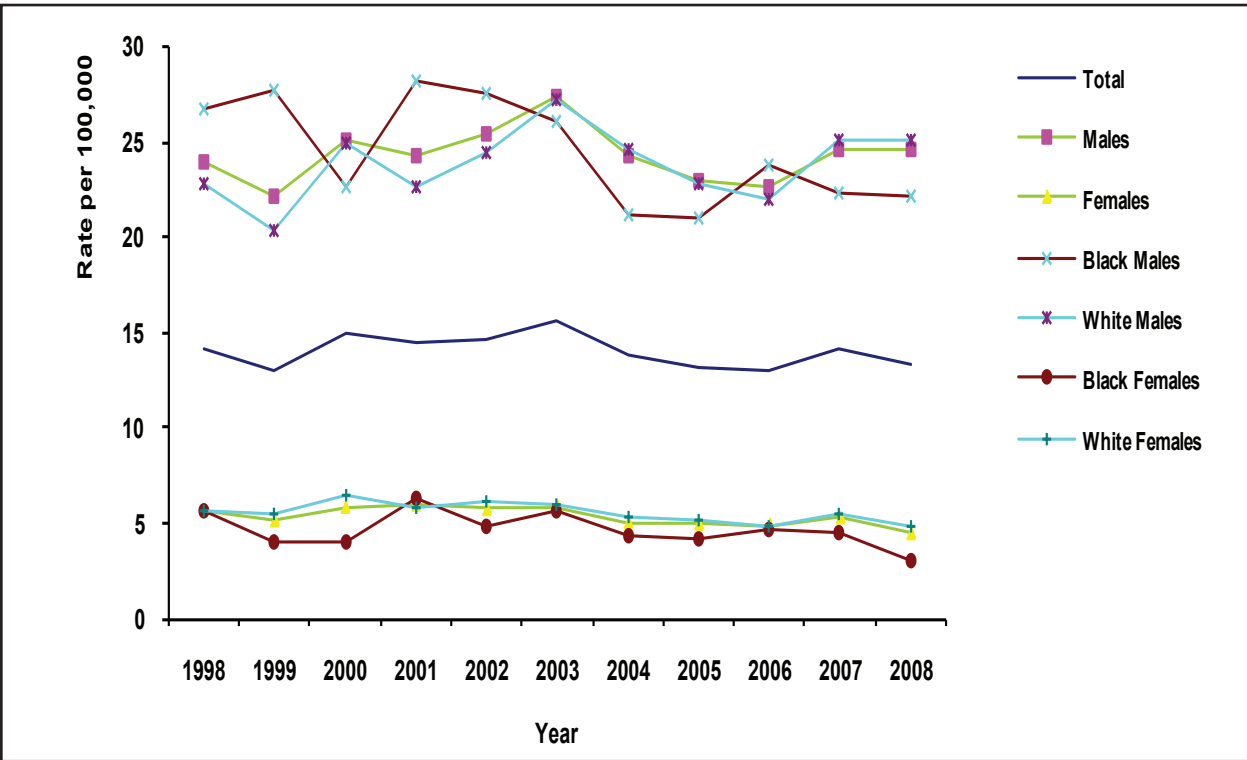
Figure 11. Age-Adjusted Lung and Bronchus Cancer Mortality Rates, Adults 35 Years and Older, by Sex and Race, Georgia, 1990-2007



Oral Cavity

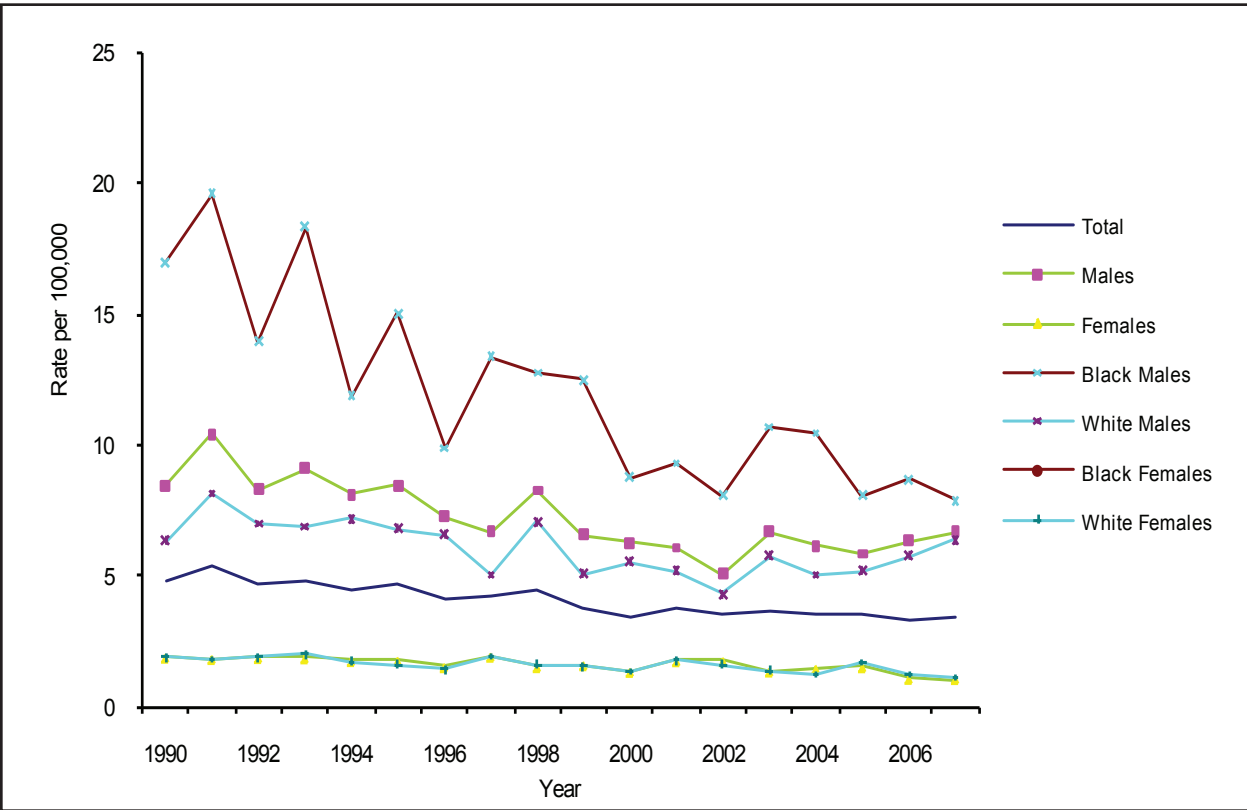
During 2004-2008, incidence rates of oral cavity cancer were highest among white males (23.9 per 100,000 persons) compared to black males (22.2), white females (5.2), and black females (4.1) (Table 8). Incidence rates were nearly 5 times higher in males (23.9) than females (4.9). From 1998-2001, the incidence rate for oral cavity cancer increased at an average annual rate of 0.8% followed by a 1% decrease from 2001-2008 (Figure 12). Regardless of sex or race, rates generally increased from 1998-2001 and decreased from 2001-2008 except among white males, who had an increase of 1.3% per year during 2001-2008. The largest decrease was seen among black females during 2001-2008 (6.4%). The largest increase was also seen in black females during 1998-2001 (2.7%).

Figure 12. Age-Adjusted Oral Cavity Cancer Incidence Rates, Adults 35 Years and Older, by Sex and Race, Georgia, 1998-2008



Mortality rates of oral cancer were nearly 5 times higher among males (6.4 per 100,000 persons) than females (1.3 per 100,000) (Table 9). Mortality rates were highest among black males (9.1). Black and white females had similar mortality rates (1.2 and 1.3, respectively). Among black males and white females, incidence rates decreased during the years 1990-1995, 1995-2000, and 2000-2007 (Figure 13). However among white males, mortality rates increased from 1990-1995, then decreased by 3.1% per year followed by another decrease from 2000-2007. Oral cancer incidence rates among black males showed the largest decrease during 2000-2007(7%).

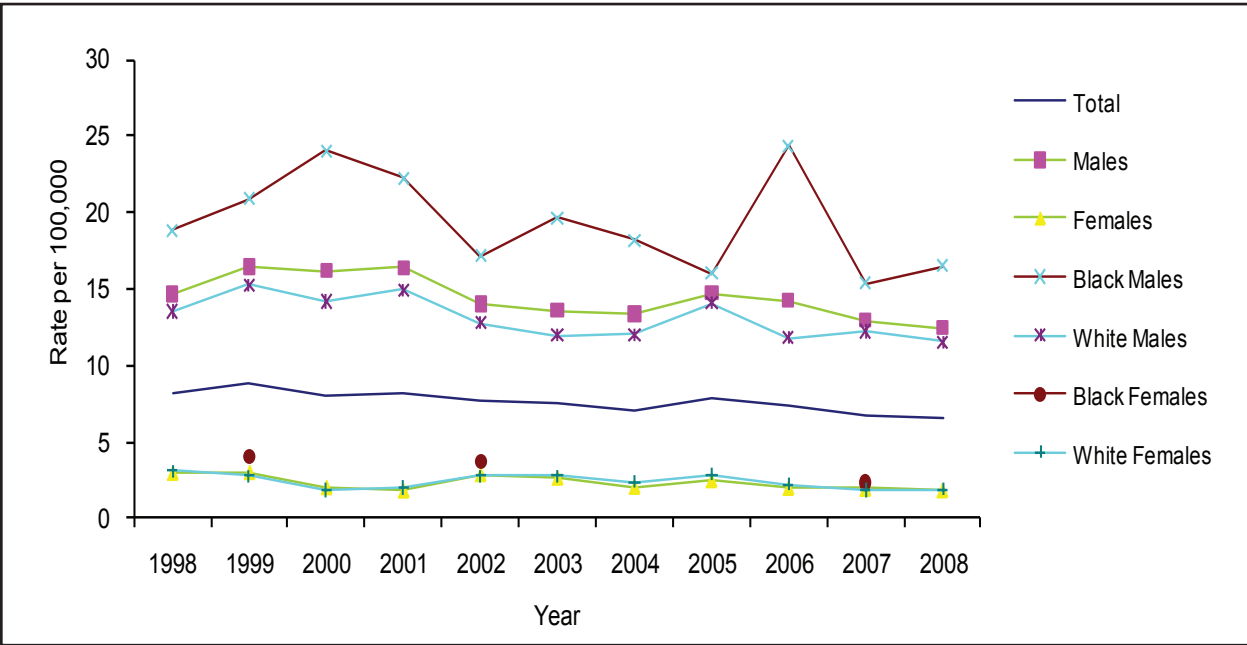
Figure 13. Age-Adjusted Oral Cavity Cancer Mortality Rates, Adults 35 Years and Older, by Sex and Race, Georgia, 1990-2007



Larynx Cancer

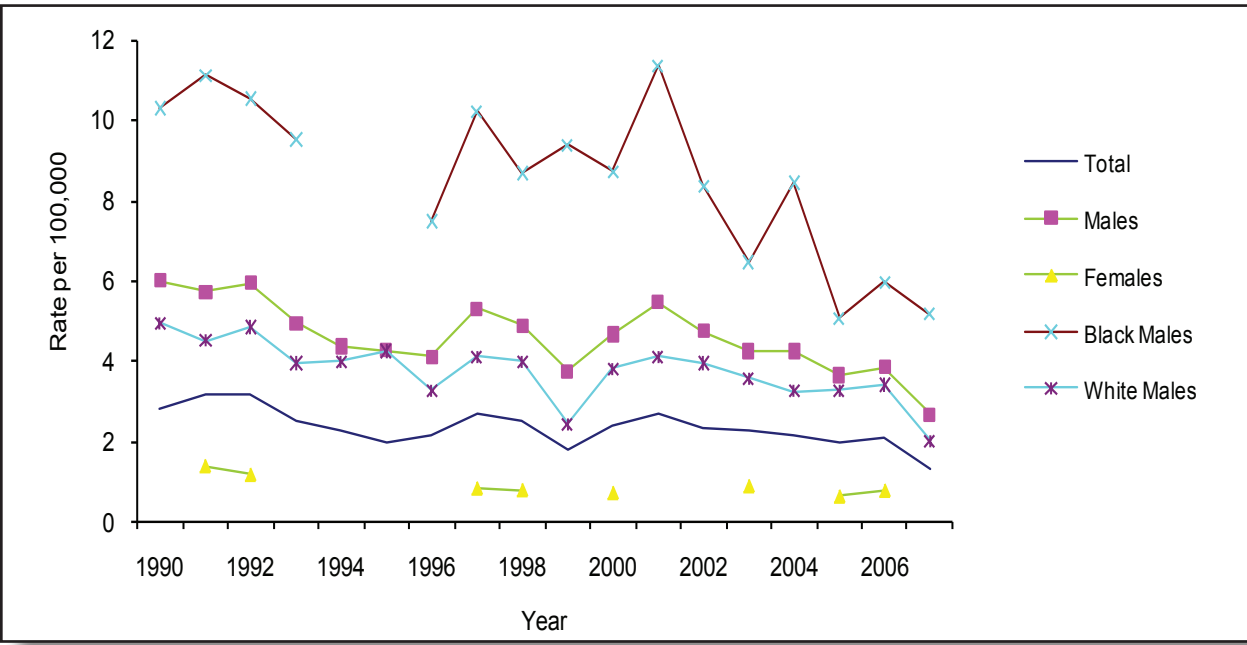
During 2004-2008, incidence rates of larynx cancer were nearly 6 times higher among males than females (Table 8). Black males (18.0 per 100,000 persons) had higher incidence rates than white males (12.3). White females (2.3) had higher incidence rates than black females (1.8). Overall, there was a decline in larynx cancer incidence rates beginning in 1998, with females (9.4%) having a larger decrease than males (2.9%) per year from 1998-2001 (Figure 14). From 2001-2008, males had a decrease of 3% per year while female rates (0.1%) were stable. White females (8.8%) had the largest decrease from 1998-2001. Although an overall decrease was seen in rates of larynx cancer, both black males and white males saw an increase during 1998-2001 (4.5% and 2.6%, respectively).

Figure 14. Age-Adjusted Larynx Cancer Incidence Rates, Adults 35 Years and Older, by Sex and Race, Georgia, 1998-2008



During 2003-2007, larynx cancer mortality rates were 6 times higher among males (3.7 per 100,000 persons) than among females (0.6) (Table 9). Black males (6.1) had the highest mortality rates. Mortality rates were similar among black and white females (0.6 and 0.7, respectively). Since 2000, there has been an overall decrease in mortality rates (Figure 15). Overall rates also decreased during 1990 through 1995 by 4.7% per year. White males had the largest decrease from 2000-2007. Mortality rates among black males increased during 1995-2000 by 2.8% per year.

Figure 15. Age-Adjusted Larynx Cancer Mortality Rates, Adults 35 Years and Older, by Sex and Race, Georgia, 1990-2007

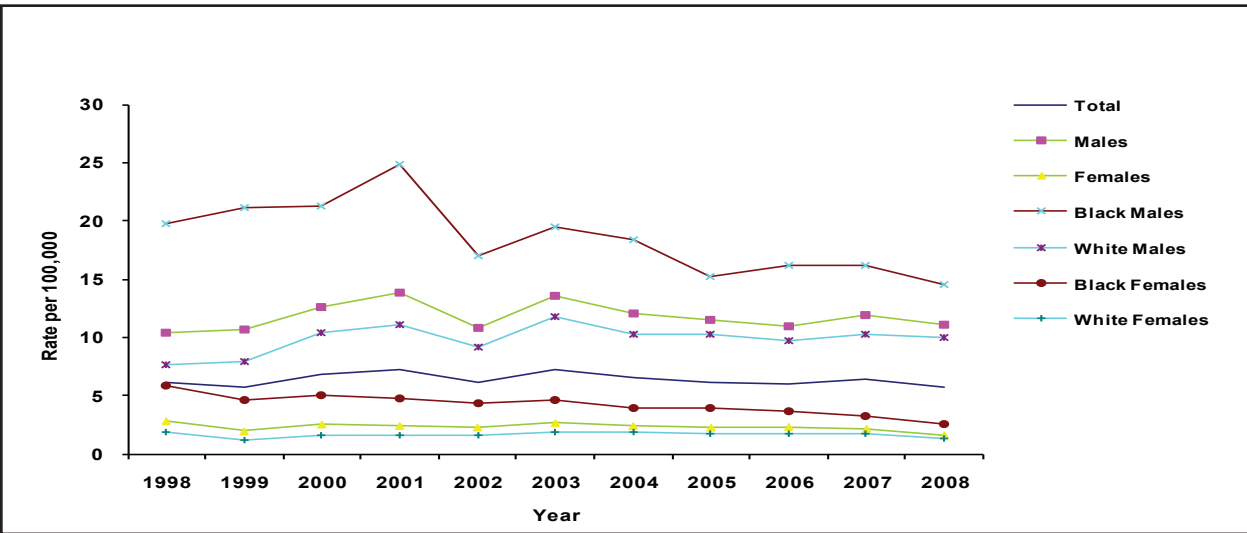


*Gaps in the graph represents rates that cannot be calculated where the count is less than 20

Esophagus Cancer

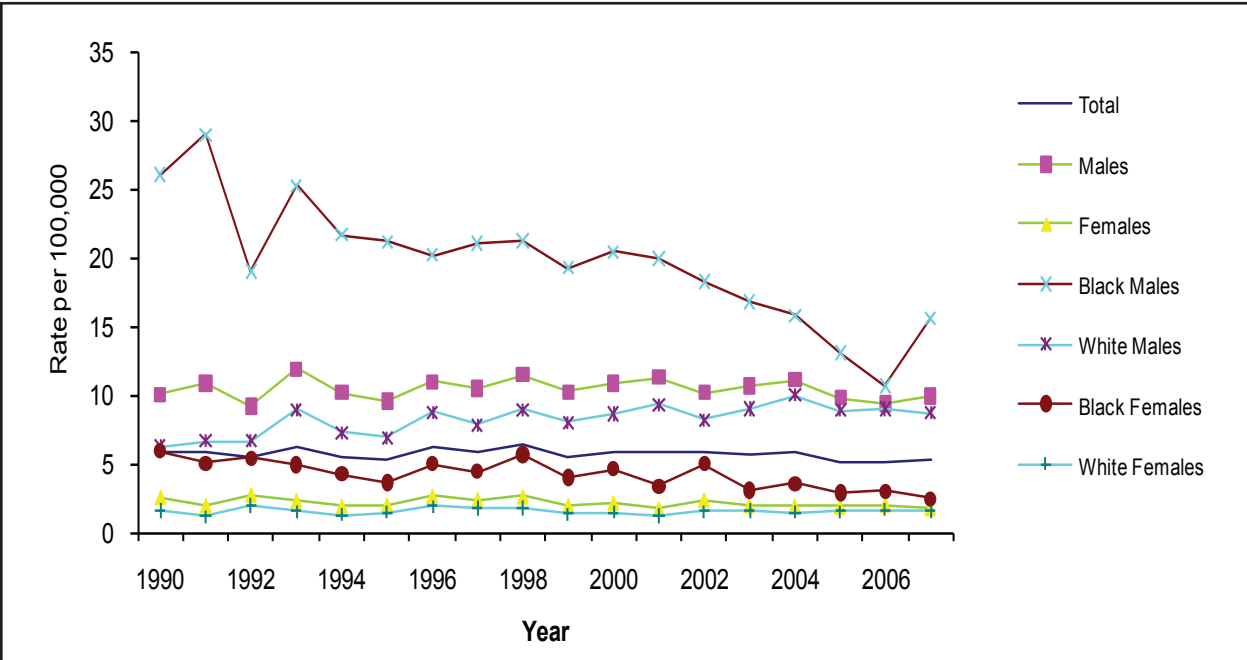
During 2004-2008, incidence rates of esophagus cancer were nearly 5 times higher among males (11.5 per 100,000 persons) than females (2.2 per 100,000) (Table 8). Black males (16.0) and black females (3.5) had higher incidence rates than white males (10.2) and white females (1.7). Overall, from 1998-2001, incidence rates increased 4.3% per year (Figure 16). While, from 2001-2008, incidence rates decreased by 2.7% per year. From 1998-2001, incidence rates for males increased by 8.3% per year and decreased by 3.5% per year for females. From 2001-2008, rates decreased by 3.0% per year for males and 3.9% per year for females. The largest increase (11.2%) was seen among white males from 1998-2001. The largest decrease (5.5%) was seen among black females from 2001-2008.

Figure 16. Age-Adjusted Esophagus Cancer Incidence Rates, Adults 35 Years and Older, by Sex and Race, Georgia, 1998-2008



During 2003-2007, mortality rates of esophagus cancer among males (10.2 per 100,000 persons) were 5 times higher than among females (1.9) (Table 9). Among females, black females (3.0) had higher mortality rates than white females (1.6) (Figure 17). Overall, esophagus cancer mortality rates decreased by 1.6% per year from 1990-1995, followed by an increase of 1.9% per year from 1995-2000, and a decrease of 1.3% per year from 2000-2007. Black females had the largest decrease during 1990-1995 and 2000-2007. White males had an increase during all three time periods while black males had a decrease during 1990-1995, 1995-2000, and 2000-2007.

Figure 17. Age-Adjusted Esophagus Cancer Mortality Rates, Adults 35 Years and Older, by Sex and Race, Georgia, 1990-2007



Age-Specific Incidence Rate Trends in Lung and Bronchial Cancer

From 1998-2008, incidence rates of lung cancer decreased in all age groups except adults 75-84 years of age and 85 years and older (Figure 18). The largest decrease occurred among adults 35-44 years of age (1.5%). During the same period, the largest increase occurred among adults 85 years and older (3.1%), this increase per year was even larger from 1998-2001 (6.6%). From 1998-2008, among males, the incidence rates decreased in all age groups except males 85 years and older (1.2%) who had an increase (Figure 19). The largest decrease occurred among males 35-44 years of age from 2001-2008 (5.7%). From 1998-2008, among females, incidence rates decreased among the three youngest age groups and increased among three oldest age groups (Figure 20). The largest increase among females occurred among females 75-84 years of age.

Figure 18. Age-Specific Lung and Bronchus Cancer Incidence Rates, All Adults 35 Years and Older, by Age, Georgia, 1998-2008

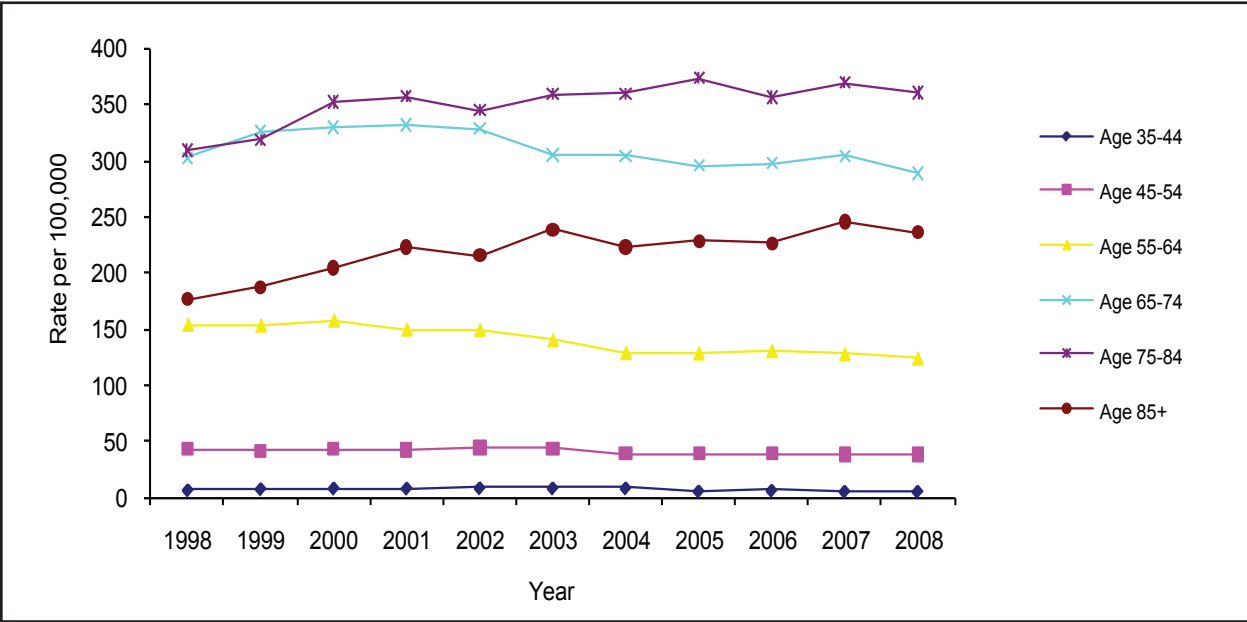


Figure 19. Age-Specific Lung and Bronchus Cancer Incidence Rates, Males 35 Years and Older, by Age, Georgia, 1998-2008

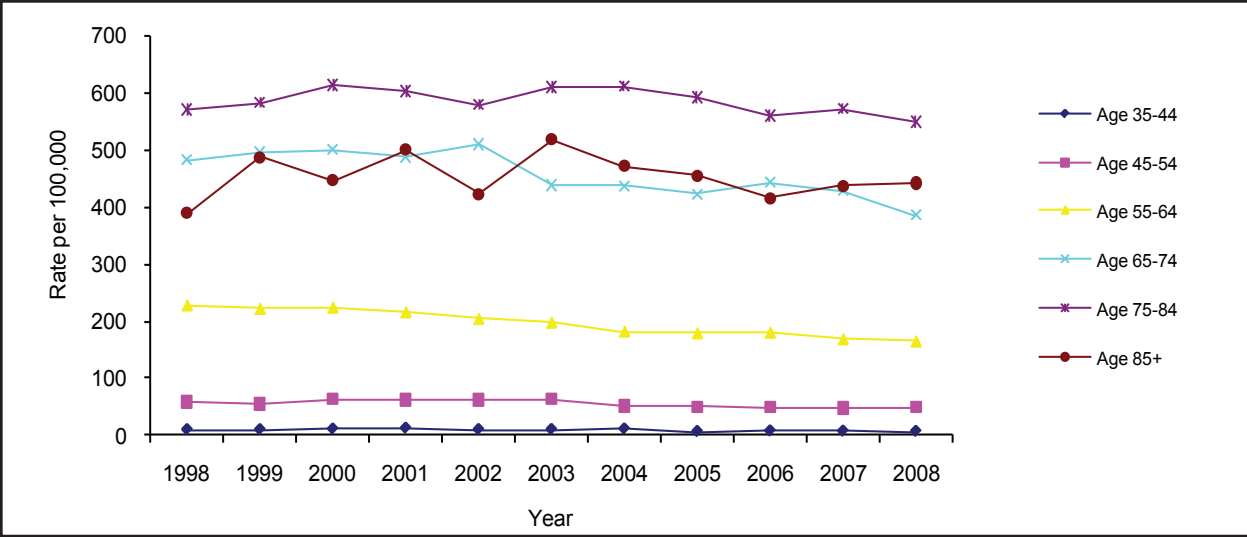
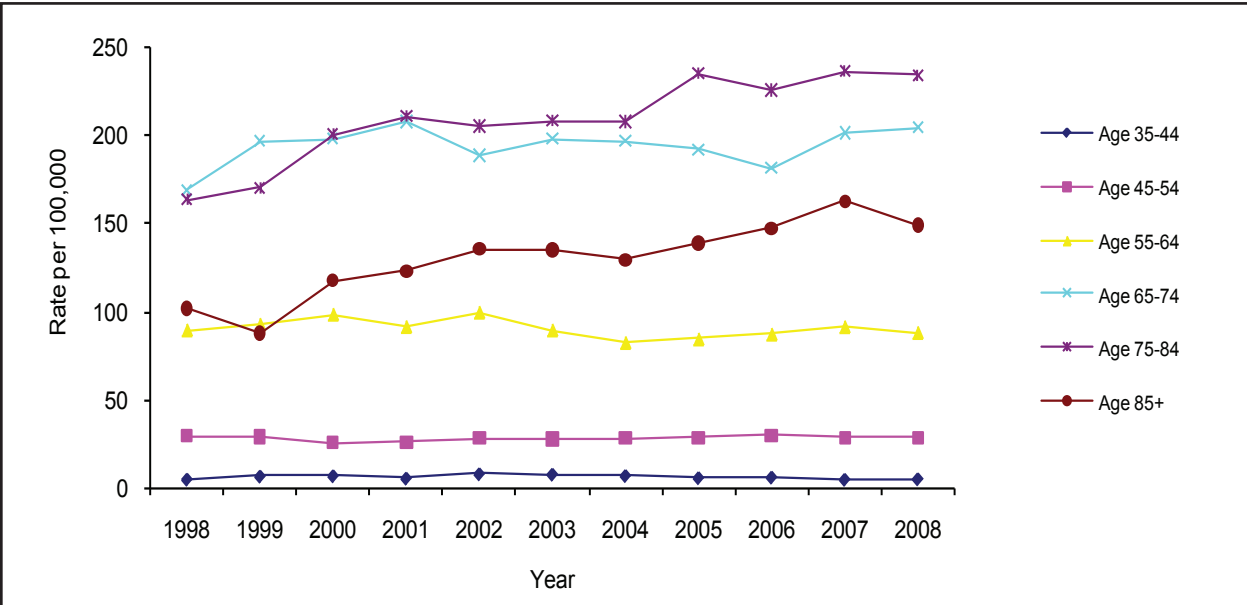


Figure 20. Age-Specific Lung and Bronchus Cancer Incidence Rates, Females 35 Years and Older, by Age, Georgia, 1998-2008



Age-Specific Mortality Rate Trends in Lung and Bronchus Cancer

From 1990-2007, mortality rates for lung cancer decreased in all age groups except adults 75-84 years of age and 85 years and older (Figure 21). The largest decrease occurred among adults 45-54 years of age (2.5%), while the largest increase occurred in adults 85 years and older (1.6%). From 1990-2007, mortality rates among males decreased in all age groups (Figure 22). The largest decrease occurred in males 45-54 years of age (2.9%). The smallest decrease occurred in males 85 years and older (0.5%). Among females, mortality rates decreased among the three youngest age groups and increased among three oldest age groups (Figure 23). The largest increase among females occurred among females 75-84 years of age (4.9%).

Figure 21. Age-Specific Lung and Bronchus Cancer Mortality Rates, Adults 35 Years and Older by Age, Georgia, 1990-2007

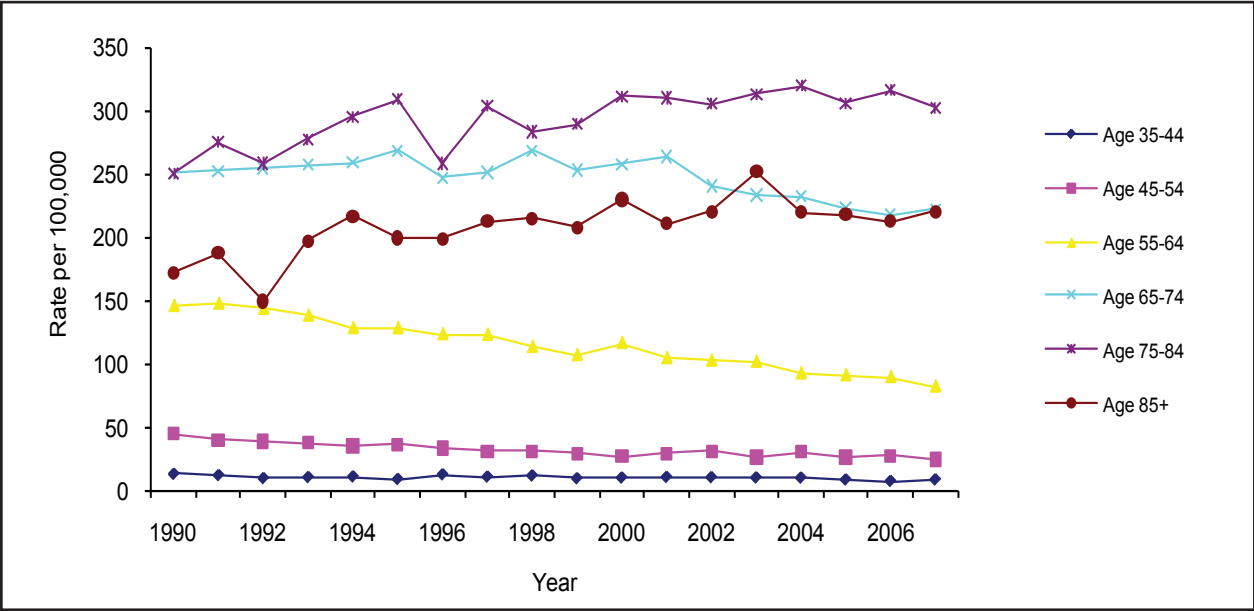


Figure 22. Age-Specific Lung and Bronchus Cancer Mortality Rates, Males 35 Years and Older, by Age, Georgia, 1990-2007

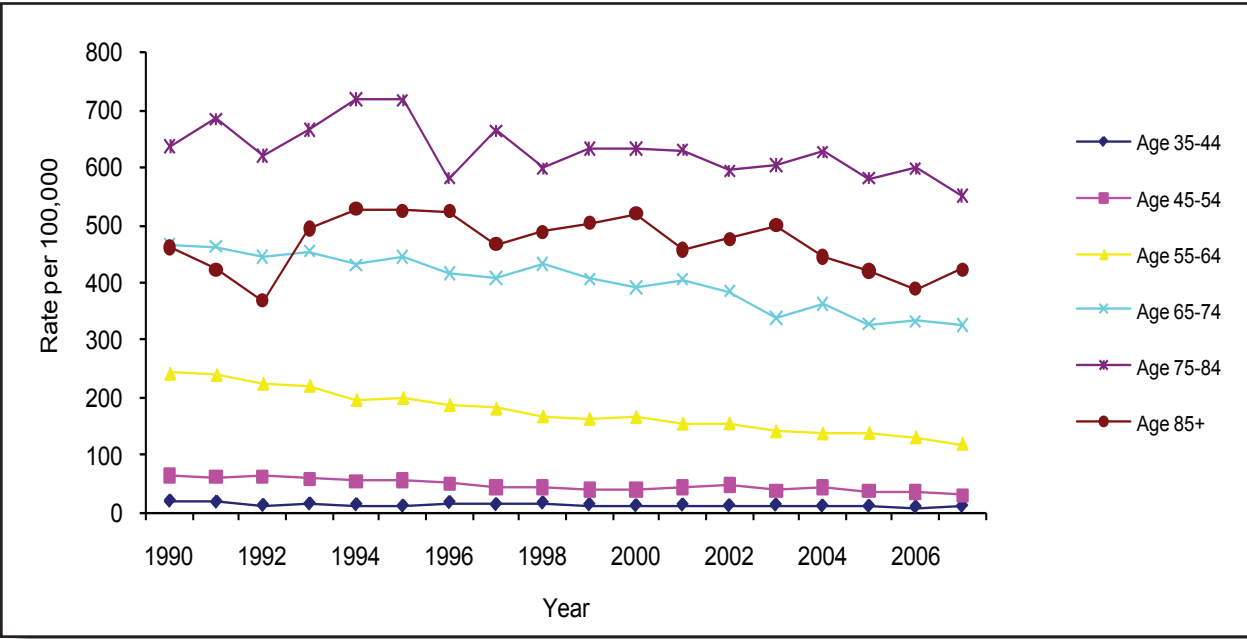
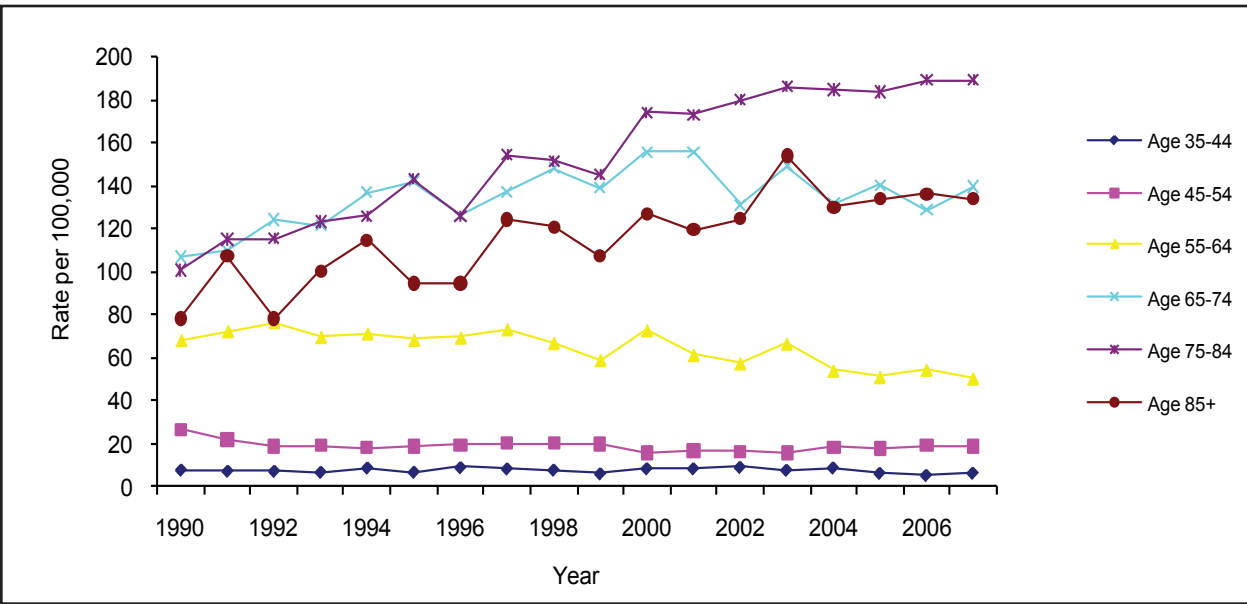


Figure 23. Age-Specific Lung and Bronchus Cancer Mortality Rates, Females 35 Years and Older, by Age, Georgia, 1990-2007

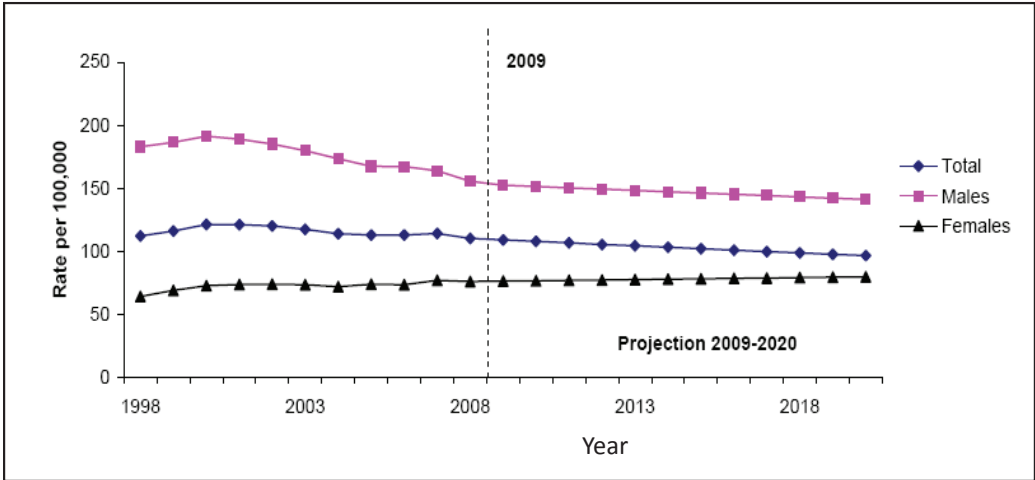




Lung Cancer Incidence Projections

Lung cancer incidence rates in Georgia were projected for the years 2009-2020 (Figure 24). In 2020, lung cancer incidence rates for Georgia are projected to be 96.5 per 100,000 for all adults 35 years and older, 141.1 for males, and 79.8 for females. In males, this represents an overall decrease of 9.0% from 2008 to 2020, or an annual decrease of 1.0%. In females, the overall increase is projected to be 5.0% which corresponds to a 0.4% increase per year.

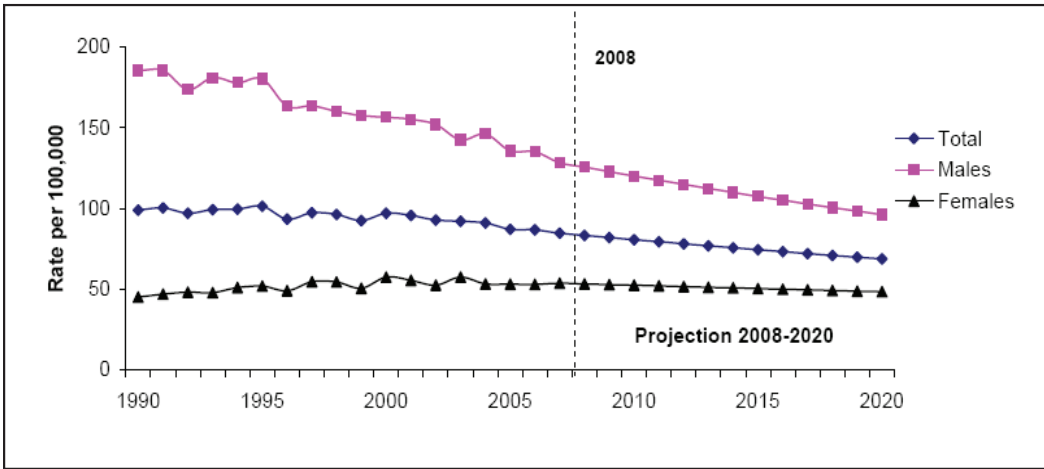
Figure 24. Age-Adjusted Lung Cancer Incidence Rates (1998-2008) and Projections (2009-2020), Adults 35 Years and Older, by Sex, Georgia



Lung Cancer Mortality Projections

Lung cancer mortality rates were projected for the years 2008-2020 (Figure 25). In 2020, lung cancer mortality rates for Georgia are projected to be 68.6 per 100,000 for all adults 35 years and older, 96.1 for males, and 48.3 for females. In males, this represents an overall decrease of 25% from 2007 to 2020, or an annual decrease of 2.0%. In females, the overall decrease is projected to be 10.0%, which corresponds to an annual 1% decrease.

Figure 25. Age-Adjusted Lung Cancer Mortality Rates (1990-2007) and Projections (2008-2020), Adults 35 Years and Older, by Sex, Georgia






Lost Productivity, Years of Potential Life Lost (YPLL), and Economic Costs


In Georgia, about \$3.4 billion annually in lost productivity costs are attributed to smoking. Smoking-related adult healthcare costs in Georgia were estimated to be at almost \$1.8 billion annually. Thus, each year, Georgia spends over \$5.2 billion dollars in smoking-attributable healthcare costs and lost productivity costs. Adult smokers in Georgia lost an average of 18 years of potential life due to smoking-related cancers compared to adult nonsmokers. During 2003-2007, non-Hispanic white adult smokers lost an average of 17 years of potential life due to cancer, while black adult smokers lost an average of 19 years of potential life due to cancer. If the current smoking prevalence persists, an estimated 219,000 Georgia residents who were between ages 0-17 years in 2010 could die prematurely from smoking related illnesses. This projected number of smoking-related deaths could result in an estimated \$4 billion in future healthcare costs⁴.

Lung Cancer Healthy People 2020 Target

The risk of lung cancer drops by as much as half even 10 years after a smoker quits smoking⁵. Since lung cancer rates can begin to decline as soon as five years after smoking rates decline, lung cancer incidence rates are expected to decline in Georgia⁶. However, since 2006, there have not been any significant declines in adult smoking prevalence in Georgia. The overall smoking prevalence has remained stable at around 18%-20%. It is projected that by 2020, the lung cancer mortality rate among men in Georgia will be 96.1 per 100,000 and 48.3 among women. The lung cancer mortality rates projected in this report are far from meeting the Healthy People 2020 goal of 46 per 100,000.





Quitting tobacco can lead to a healthier and longer life.
Live to enjoy more precious moments with your baby.
Live to watch your family grow healthy and thrive.
NOW IS THE BEST TIME TO QUIT. TAKE THE FIRST STEP.



Georgia Tobacco Quit Line
A Free and Effective Telephone Counseling Service That Helps Georgians Quit Smoking and Using Tobacco For Life

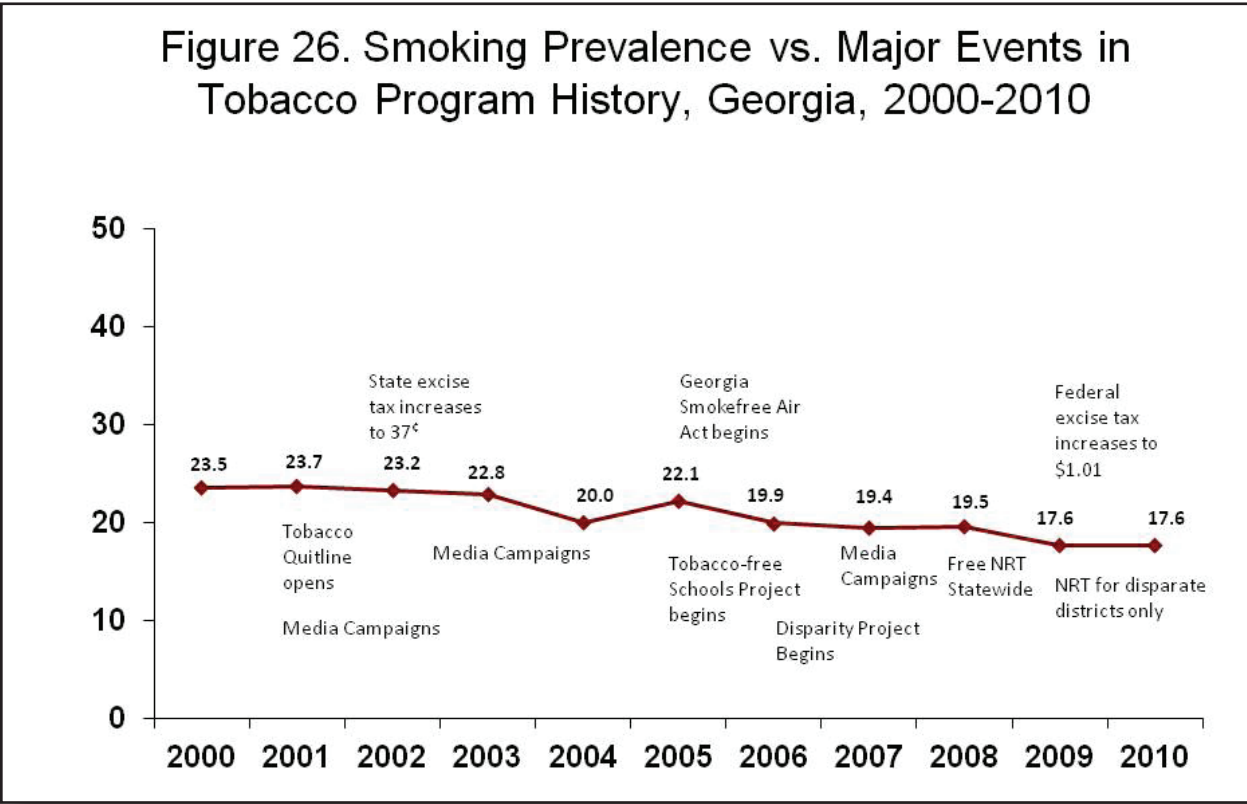
Breathe 1-877-270-STOP (7867) | 1-877-2NO-FUME (Spanish)
Hearing Impaired: TTY services 1-877-777-6534
WWW.LIVEHEALTHYGEORGIA.ORG

Funding provided by the Centers for Disease Control and Prevention-Office of Smoking and Health



State Tobacco Control Program

During the twelve-year period of the Georgia Tobacco Use Prevention Program’s (GTUPP) existence, there have been several major events that may have contributed to some of the increases and decreases and eventual stabilization of the current smoking prevalence in Georgia (Figure 26). Some of these programming efforts have included media campaigns, counseling through the tobacco quitline, and free nicotine replacement therapy (NRT). The CDC has recommended and supported state implementation and sustaining of comprehensive tobacco control programs to discourage smoking initiation, encourage smoking cessation, and protect nonsmokers from secondhand smoke⁶.



State Tobacco Control Program Spending

The CDC recommends that Georgia invest \$116.5 million annually to fight tobacco use across the state.⁷ In 2003, GTUPP received about \$25 million from the state’s master settlement agreement funds (MSA). With these funds \$2-3 million were spent on massive media campaigns statewide. This, in turn, increased the call volume to the tobacco quitline. In 2004, GTUPP received \$11 million in MSA funds. In 2005, the MSA funds received by GTUPP were reduced from \$11 million to \$2 million. The program still currently receives \$2 million MSA funds per year. This \$2 million in state funds plus the \$3.2 million currently received from federal funds provides the state’s tobacco control program with a total of about \$5.2 million each year to spend towards the prevention of tobacco use in Georgia. This is only 4.5% of the \$116.5 million recommended by the CDC.⁸ The tobacco industry spends about \$426 million in Georgia every year to market and advertise their products. For every dollar that Georgia spends to prevent and reduce tobacco use and the resultant negative health effects, the tobacco industry spends over \$200 to promote tobacco use.⁹ Georgia ranks number 50 in tobacco prevention spending.¹⁰ Faster declines in adult and youth smoking prevalence have been seen in states that invest more fully in comprehensive tobacco control programs.¹¹ This includes bigger investments in state and community interventions, media interventions, cessation interventions, surveillance and evaluations, and administration and management.⁷

Tobacco Prevention Policies

Currently 83 of 181 school districts in Georgia have adopted model tobacco-free school policies (Appendix 4). However, policies still need to be enforced to stop students from using smokeless tobacco on school property. Schools, however, cannot be the only source of tobacco prevention activities.

More can be done in the community and in the home to prevent youth from using tobacco. Other activities that have been shown to prevent or reduce tobacco use include:

- Conducting mass media education campaigns combined with other community interventions
- Counter-advertising mass media campaigns geared toward youth to counter pro-tobacco marketing
- Implementing school-based interventions in combination with mass media campaigns and additional community efforts
- Mobilizing the community to restrict minors’ access to tobacco products combined with additional interventions (stronger local laws directed at retailers, active enforcement of retailer sales laws, retailer education with reinforcement)
- Community interventions that reduce tobacco advertising, promotions, and commercial availability of tobacco products
- Increasing the unit price of tobacco products
- Higher costs for tobacco products through increased excise taxes.^{7, 12}

State Excise Taxes

State excise taxes in the nation range from \$0.17 (Missouri) to \$4.35 (New York). Georgia has the 48th lowest state cigarette excise tax in the nation. The current excise tax on a pack of cigarettes in Georgia is \$0.37.¹³ Studies show that increasing the cost of cigarettes is the single most effective means of reducing the initiation of tobacco use by youth.¹⁴ Increases in the excise tax are expected to have a major impact on tobacco prevention efforts for both youth and adults.¹⁴

Supportive National Regulations

In April of 2009, the federal tax on cigarettes increased by \$0.62, raising the federal tax to \$1.01 per pack.^{13, 14} In June of 2009, the Family Smoking Prevention and Tobacco Control Act was passed. This law creates a tobacco control center within the Food and Drug Administration (FDA) which gives the FDA authority to regulate content, marketing, and sale of tobacco products. These regulations prohibit the distribution of free samples of cigarettes; limit distribution of smokeless tobacco products; and prohibit tobacco brand name sponsorship of any athletic, musical, social, or cultural events, are designed to make tobacco products less accessible and attractive to youth.^{14,15, 16}

Youth Cessation Services Needed

According to the 2009 YRBS survey, about 56% of high school students who currently smoke responded that they made an attempt to quit in the past year. Due to nicotine addiction, about three of four teens who smoke will continue smoking into adulthood.¹⁷ Although many students may think about quitting and make attempts to quit, many may be unaware of or unable to access cessation services. In addition, many youth do not think it is difficult to quit using tobacco or that professional assistance may be needed. Youth also lack interest in participating in such interventions, especially if the interventions do not appear to address their particular needs or concerns.¹⁸ Cessation services that are effective and geared towards youth are needed in Georgia. Consistent efforts by the state and federal governments will make an impact, however the work must not end there. Communities, organizations, and families must step in and play a role in preventing and reducing youth tobacco use and exposure to secondhand smoke.

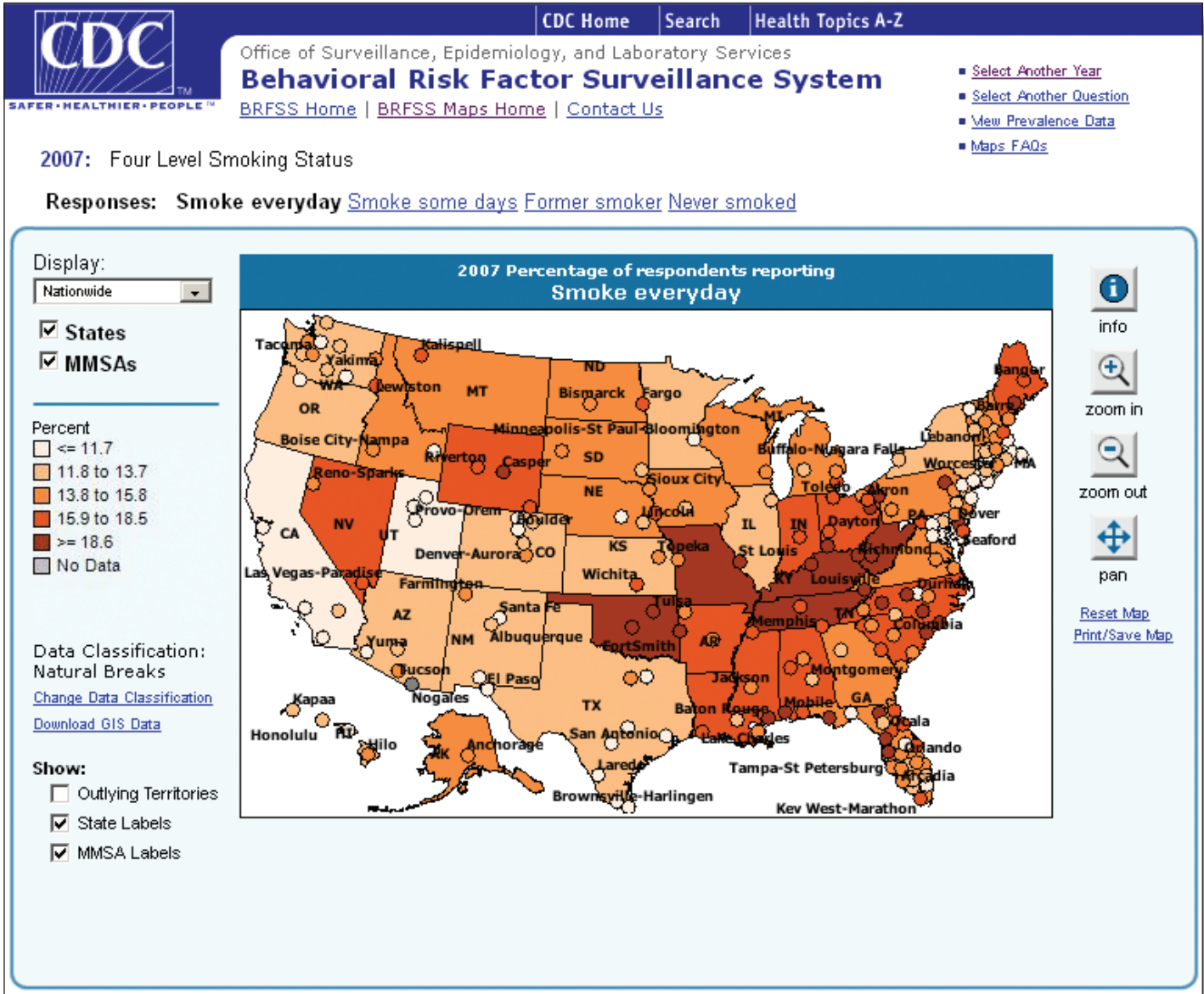




Conclusion

Georgia’s Tobacco Use Prevention Program (GTUPP) is currently funded at a little over 5.2 million dollars, far from the \$116.5 million recommended funding level by the CDC⁷. In one year after receiving \$25 million in MSA funds in 2003, the smoking prevalence dropped from 23% to 20% in 2004. By 2005, the program was receiving only \$2 million in MSA funding and the smoking prevalence increased to 22%. Now only receiving enough funding to focus prevention and intervention activities in disparate regions, the smoking prevalence has declined but is reaching stabilization.

A substantial reduction in tobacco-related morbidity and mortality as well as billions of dollars in savings from medical costs and lost productivity could result if GTUPP was funded at CDC recommended funding levels. This would allow for full implementation of GTUPP with more comprehensive tobacco control policies and programs. Full program implementation would allow for more sustained and intensified efforts at reducing cigarette smoking and secondhand smoke exposure in Georgia, including increasing state excise taxes, implementing model smoke free air ordinances, enforcing restrictions on tobacco advertising, promotion, and sponsorship, increasing statewide mass media campaigns, and providing access to effective cessation interventions¹¹.



In this report, the prevalence of smoking was determined using self-reported data from the BRFSS and YRBS, which may be influenced by recall bias. Since a landline survey was used, adults with wireless-only service were not included. These adults are known to smoke more than the rest of the population⁶, thus the smoking prevalence provided may be underestimated. Also, smoking-attributable mortality was estimated using smoking prevalence and mortality data from 2003-2007, whereas actual smoking-attributable deaths are the result of cumulative exposure to tobacco from previous decades. Information pertaining to smoking status is not contained in cancer registry data. Therefore, the direct causal association between smoking status and the development of cancers presented in this report cannot be determined. Another limitation that is there are other risk factors that may affect cancer incidence and mortality rates, which may also play a role in the projections.

In the U.S., the BRFSS and YRBS are widely used to estimate individual states' smoking prevalence. Both surveys are weighted to allow the survey findings to be generalizable to Georgia's population. Only the percent of cancers that are attributable to smoking were applied to the projected rates, which may help control for other possible risk factors. The Georgia data used for cancer incidence rates is gold certified by the North American Association of Central Cancer Registries as high quality. An evaluation of the Georgia Comprehensive Cancer Registry showed that 100% of cancer cases are true cases. The cancer registry data also represents 98% of Georgia's population.





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Appendix 1

Average Prevalence of Current Adult Smoking by Race/Ethnicity and Sex, Georgia, 2001-2005 and 2005-2009

	2001-2005 Average % (CI)	2005-2009 Average % (CI)
Males	25.1 (23.8-26.3)	21.3 (20.1-22.6)
NH White	24.8 (23.4-26.2)	21.3 (20.0-22.7)
NH Black	25.4 (22.6-28.2)	20.3 (17.4-23.2)
Hispanic	20.4 (13.4-27.4)	18.5 (11.8-25.2)
Females	19.9 (19.0-20.7)	17.0 (16.2-17.8)
NH White	22.1 (21.0-23.1)	18.5 (17.5-19.6)
NH Black	15.2 (13.7-16.8)	14.0 (12.5-15.5)
Hispanic	12.9 (8.5-17.2)	11.9 (8.0-15.7)

CI = 95% Confidence Interval; NH = non-Hispanic

Appendix 2

Annual Percent Change (APC) in Age-Adjusted Incidence Rates (1998-2001 and 2001-2008), Tobacco-Related Cancers with Attributable Risk Percent Greater than 50%, Age 35 Years and Older, by Sex and Race, Georgia

	Total		Black		White	
	1998-2001 APC	2001-2008 APC	1998-2001 APC	2001-2008 APC	1998-2001 APC	2001-2008 APC
Both Sexes						
Oral Cavity	0.8%	-1.0%	1.7%	-3.9%	0.3%	0.1%
Larynx	-0.1%	-2.4%	1.4%	-2.7%	-0.4%	-2.2%
Esophagus	4.3%	-2.7%	2.0%	-5.3%	6.6%	-1.1%
Lung and Bronchus	2.0%	-1.1%	1.1%	-1.6%	2.2%	-0.9%
Males						
Oral Cavity	0.4%	0.2%	1.4%	-2.6%	-0.2%	1.3%
Larynx	2.9%	-3.0%	4.5%	-3.2%	2.6%	-2.9%
Esophagus	8.3%	-2.5%	6.4%	-5.2%	11.2%	-1.1%
Lung and Bronchus	0.8%	-2.2%	0.5%	-3.0%	1.0%	-2.0%
Females						
Oral Cavity	1.4%	-3.3%	2.7%	-6.4%	0.9%	-2.2%
Larynx	-9.4%	0.1%	~	~	-8.8%	-0.6%
Esophagus	-3.5%	-3.9%	-5.0%	-5.5%	-3.2%	-2.7%
Lung and Bronchus	3.7%	0.4%	2.8%	0.7%	3.8%	0.6%

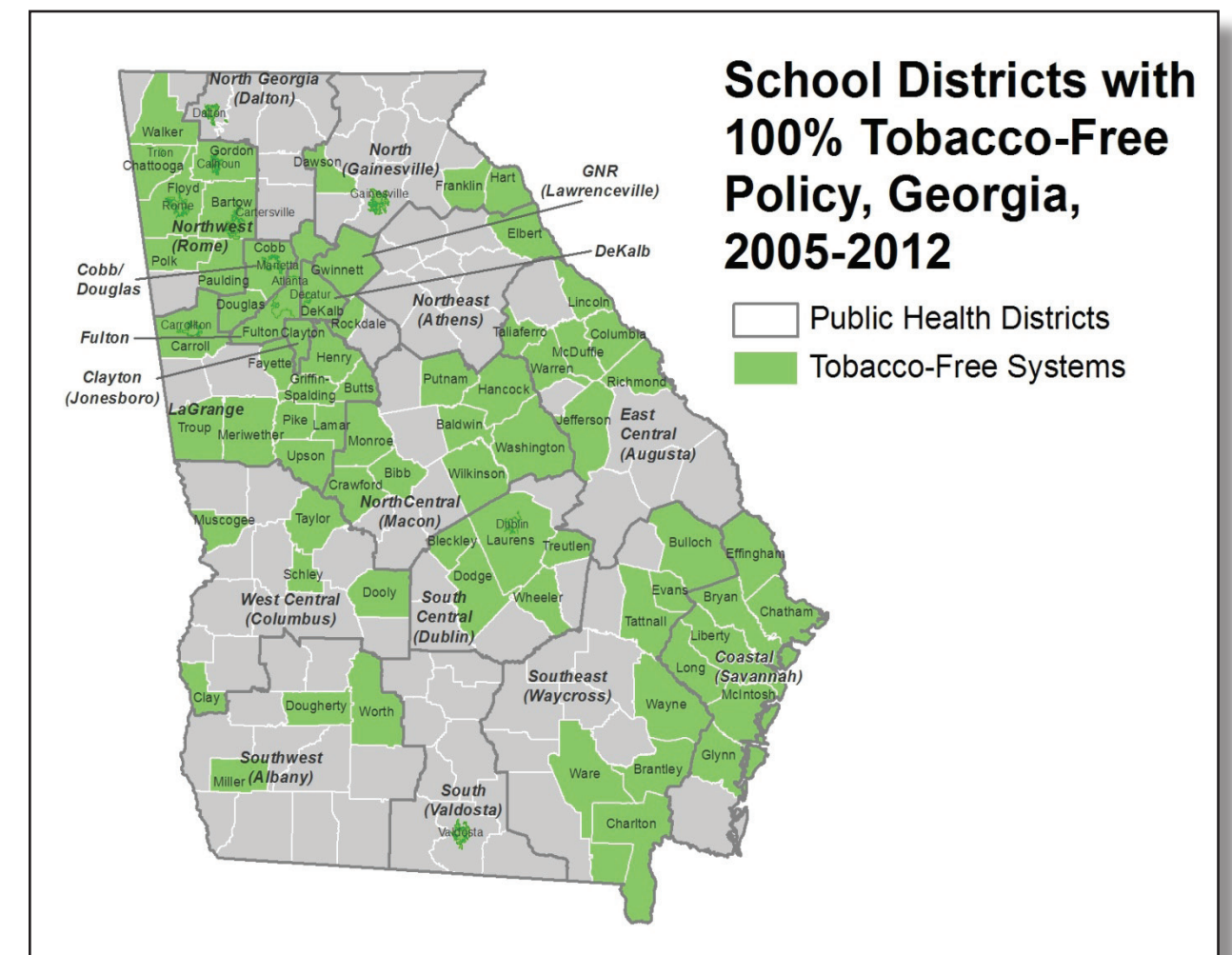
Appendix 3

Annual Percent Change (APC)in Age-Adjusted Mortality Rates (1990-1995, 1995-2000, and 2000-2007),Tobacco-Related Cancers with Attributable Risk Percent Greater than 50%, Age 35 Years and Older, by Sex and Race, Georgia

	Total			Black			White		
	1990-1995 APC	1995-2000 APC	2000-2007 APC	1990-1995 APC	1995-2000 APC	2000-2007 APC	1990-1995 APC	1995-2000 APC	2000-2007 APC
Both Sex									
Oral Cavity	-0.4%	-4.3%	-0.3%	-0.6%	-7.7%	-1.5%	0.0%	-3.0%	0.7%
Larynx	-4.7%	3.1%	-5.6%	-4.9%	2.6%	-6.4%	-1.5%	-0.2%	-5.5%
Esophagus	-1.6%	1.9%	-1.3%	-4.0%	0.2%	-3.9%	0.6%	3.2%	0.3%
Lung and Bronchus	0.4%	-0.7%	-1.6%	-0.6%	-1.6%	-1.1%	0.7%	-0.5%	-1.6%
Males									
Oral Cavity	0.0%	-4.3%	0.9%	-1.9%	-7.0%	-1.3%	1.3%	-3.1%	1.9%
Larynx	-4.8%	1.6%	-5.3%	-4.6%	2.8%	-5.1%	-2.3%	-1.7%	-5.9%
Esophagus	-0.9%	2.3%	-1.1%	-3.1%	-0.5%	-3.0%	1.7%	4.2%	0.1%
Lung and Bronchus	-0.5%	-2.2%	-2.2%	-1.3%	-3.4%	-2.1%	-0.2%	-1.9%	-2.3%
Females									
Oral Cavity	-1.1%	-4.1%	-2.6%	~	~	~	-2.4%	-2.6%	-2.2%
Larynx	~	~	~	~	~	~	~	~	~
Esophagus	-3.5%	1.1%	-2.2%	-6.5%	4.5%	-5.9%	-1.3%	-0.5%	0.7%
Lung and Bronchus	2.5%	1.8%	-0.8%	2.2%	3.2%	0.5%	2.5%	1.5%	-0.8%



Appendix 4



Notes:

[illegible]

Notes:

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