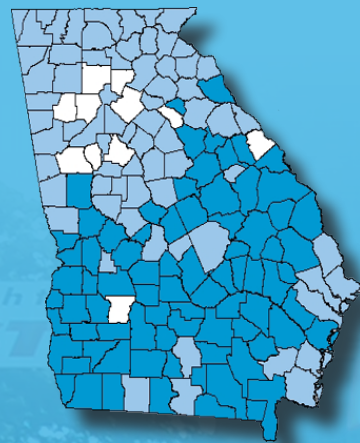


# Colorectal CANCER

in Georgia, 2002 - 2006



GEORGIA DEPARTMENT OF  
COMMUNITY HEALTH  
*Division of Public Health*



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## Acknowledgments

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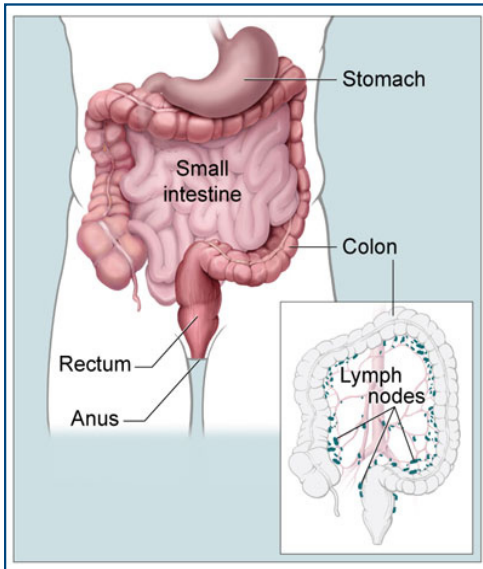
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**Figure 1. Anatomy of the Digestive System**



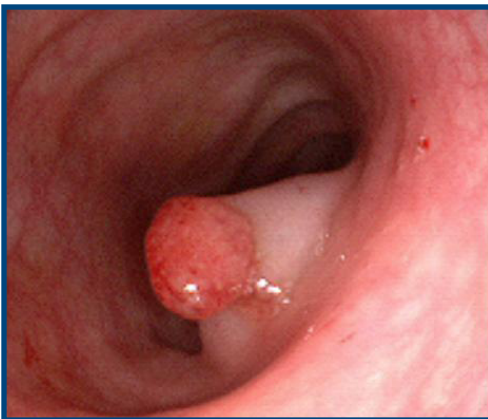
## Introduction

Colorectal cancer is a collective term for cancers of the colon and rectum. Since cancers of the colon and rectum share many common features, they are often referred to as colorectal cancer. The colon and rectum are parts of the digestive system. Together, they form a long, muscular tube called the large intestine. The colon is the first four to five feet of the large intestine and the last four to five inches is the rectum (Figure 1).

Once food is chewed and swallowed, it travels through the esophagus to the stomach. In the stomach, it is partially digested and transferred to the small intestine. The small intestine continues digesting the food and absorbs most of the nutrients. The small intestine is connected to the large intestine. In the large intestine, the colon absorbs water and electrolytes from the food and serves as a storage place for waste products. The waste then moves from the colon into the rectum and passes out of the body through an opening called the anus during a bowel movement.

Colorectal cancers develop slowly over a period of several years. Most of them begin as a polyp, a growth of tissue protruding into the center of the colon or rectum (Figure 2). Polyps are also known as adenomas. Removing the polyp early may prevent it from becoming cancerous. Over 95 percent of colorectal cancers are adenocarcinomas, which arise from cells that line the inside of the colon and the rectum.

**Figure 2. Colon Polyp**



Colorectal cancer affects both men and women and most often occurs in people over 50 years of age. It is the third most commonly diagnosed cancer and cause of cancer death among Georgia men and women, respectively. The Georgia Comprehensive Cancer Registry estimates that, over 3,700 new cases of colorectal cancer will be diagnosed statewide in 2009 and about 1,300 Georgians will die from this disease.

## Screening & Detection

Treatment is more likely to be successful if colorectal cancers are detected early. Several screening tests are available to detect the disease. The American Cancer Society recommends that people at average risk for colorectal cancer should begin screening at age 50.

Screening options include:

Tests that find polyps and cancer

- Flexible Sigmoidoscopy every 5 years
- Double contrast barium enema every 5 years
- CT colonography (virtual colonoscopy) every 5 years
- Colonoscopy every 10 years

Tests that mainly find cancer

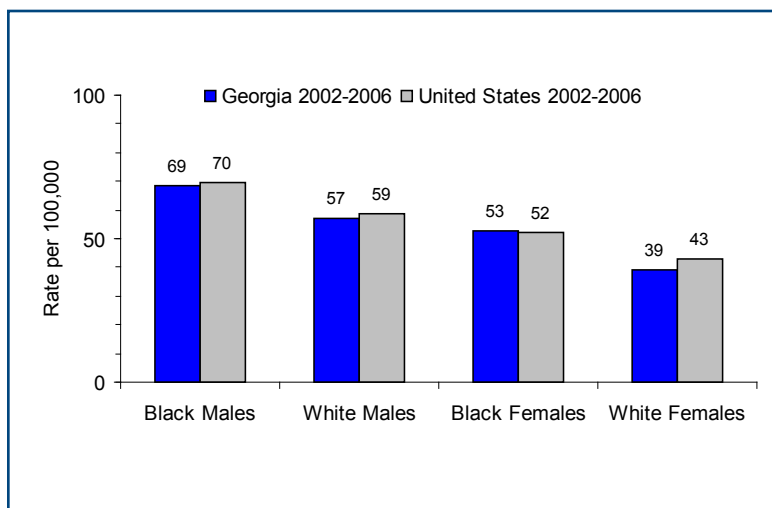
- Fecal occult blood test every year (FOBT)\*
- Fecal immunochemical test every year (FIT)\*
- Stool DNA test (sDNA), interval uncertain

\*For FOBT or FIT used as a screening test, the take-home multiple sample method should be used.

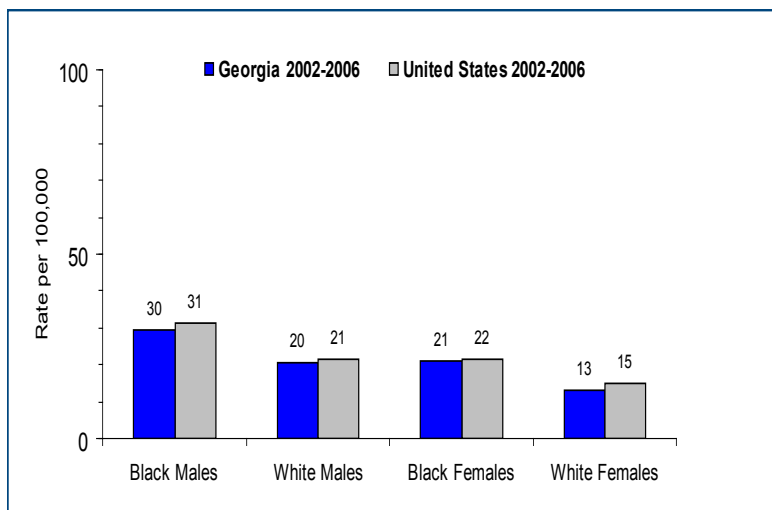
## Incidence and Mortality

- The overall age-adjusted colorectal cancer incidence rate in Georgia is 49 per 100,000 in males and females combined. Males are 40% more likely to be diagnosed with colorectal cancer than females (age-adjusted rate 59/100,000 vs. 42/100,000)
- The overall age-adjusted colorectal cancer mortality rate in Georgia is 18 per 100,000 in males and females combined. Males are 47% more likely to die of colorectal cancer than females (age-adjusted rate 22/100,000 vs. 15/100,000)
- In Georgia and the United States, black males are more likely than white males to be diagnosed with colorectal cancer. Similarly, black females are more likely than white females to be diagnosed with this disease (Figure 3)
- Black males are more likely than white males to die from colorectal cancer in Georgia and the United States. Similarly, black females are more likely than white females to die from this disease (Figure 4)

**Figure 3. Age-adjusted Incidence Rate by Race and Sex, 2002-2006**



**Figure 4. Age-adjusted Mortality Rate by Race and Sex, 2002-2006**





## Causes and Risk Factors

Everyone is at risk for colorectal cancer, some more than others. Different cancers have different risk factors. A risk factor is anything that increases a person's chance of getting a disease such as cancer. Some get colorectal cancer in the absence of any apparent risk factors. Although, it is hard to measure the contribution of a risk factor or know the exact cause for the development of precancerous polyps or cancer, researchers have found factors that can increase the risk of colorectal cancer.

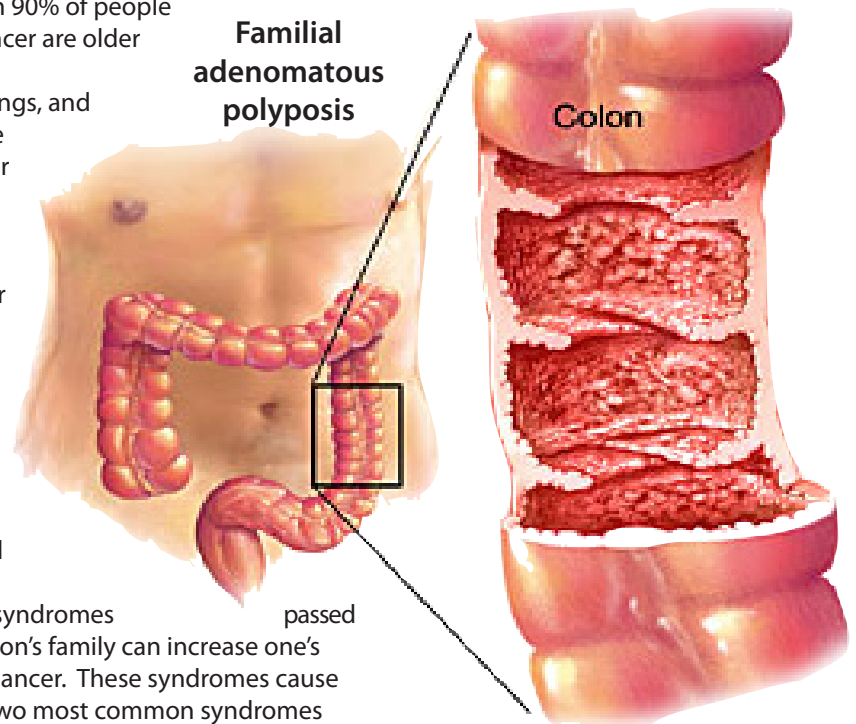
### Risk Factors You Can Change

- **Diet:** People who eat a diet similar to that of Western countries, such as United States and Europe, have a higher risk of developing colon cancer than do people who eat diets typically seen in developing countries. The higher risk may be associated with a diet high in animal fat and processed meat, which is low in fiber. Diets high in vegetables and fruits have been linked with a decreased risk of colorectal cancer. The American Cancer Society recommends choosing most of your food from plant sources and limiting the amount of high-fat foods
- **Physical inactivity:** If you are not active, there is a greater chance of developing colorectal cancer. Getting regular physical activity may reduce your risk. To gain substantial health benefits, the U.S. Department of Health and Human Services recommends 60 minutes, five times a week of moderate-intensity aerobic physical activity for adults
- **Obesity:** People who are obese have an increased risk of developing colon cancer and an increased risk of dying of colon cancer when compared with people who are considered to be at normal weight
- **Smoking:** Long term smokers are more likely than non-smokers to develop and die from colorectal cancer
- **Alcohol Consumption:** Heavy use of alcohol may increase the odds of getting colorectal cancer. The American Cancer Society recommends that alcohol use should be limited to no more than two drinks per day for men and one drink per day for women

## Risk Factors You Cannot Change

- **Age:** The risk of developing colorectal polyps and cancer increases with age. More than 90% of people diagnosed with colorectal cancer are older than 50
- **Family History:** Parents, siblings, and children of a person who have colorectal adenomas or cancer are at least two to three times more likely to develop colorectal cancer themselves. The risk increases even further if any first-degree relative is affected before the age of 60, or if two or more first-degree relatives are affected. Cancers within the same family may result from inherited genes, shared exposure to an environmental carcinogen, diet, or lifestyle factors. Also, certain genetic syndromes passed through generations of a person's family can increase one's risk of developing colorectal cancer. These syndromes cause 5% of all colon cancers. The two most common syndromes are Familial Adenomatous Polyposis (FAP) and Hereditary Non-Polyposis Colorectal Cancer (HNPCC). People with FAP (Figure 5) develop hundreds or thousands of polyps in their colon and rectum in their teens or early adulthood. Cancer may develop in these polyps as early as age 20. Similar to FAP, HNPCC develops when people are relatively young. However, individuals with HNPCC have fewer polyps and develop colorectal cancers at an average age of 44. These genetic syndromes can be detected through genetic testing. For those who have changes in their genes or have family history of colorectal cancer, health care providers suggest reducing the risk of colorectal cancer by implementing strategies such as receiving regular screenings, eating a healthy diet, exercising, and other preventive measures at an early age
- **Racial and Ethnic Background:** African Americans have the highest colorectal cancer incidence and mortality rates of all racial groups in the United States. The reason for this is not yet understood
- **Personal history of Colorectal Cancer or Polyps:** Once a person suffers from colorectal cancer, it is likely to recur. Also, some types of polyps, such as adenomatous polyps and hyperplastic polyps increase the risk of colorectal cancer
- **Personal history of bowel disease:** Inflammatory Bowel Disease (IBD), which includes Ulcerative Colitis or Crohn's disease, is a condition in which the colon is inflamed over a long period of time. People with IBD have an increased risk of developing colorectal cancer and they should be screened for colorectal cancer on a more frequent basis
- **Diabetes:** People with Type 2 diabetes have an increased risk of developing colorectal cancer. The disease may also develop more aggressively in these patients

**Figure 5. Familial Adenomatous Polyposis**





## Prevalence of Behavioral Risk Factors

Table 1: Prevalence(%), Behavioral Risk Factor Surveillance System (BRFSS), 2008						
Risk Factors	Georgia			United States		
	All	Males	Females	All	Males	Females
Obesity	28	28	28	27	27	26
Smoking	20	22	17	18	20	17
Physical Inactivity	23	20	26	25	23	27

According to the Georgia 2008 Behavioral Risk Factor Surveillance System (Table1):

- The prevalence of obesity in males and females is similar
- Males (22%) are more likely to be current smokers than females (17%), however this difference is not significant
- Females (26%) are significantly more likely to be physically inactive than males (20%)

## Symptoms

In the early stages of colorectal cancer, individuals with the disease may not have any symptoms. When symptoms appear, they vary depending on the location and size of the cancer in the large intestine. Signs and symptoms of colorectal cancer include:

- A change in bowel habits such as diarrhea, constipation, or change in the consistency of the stool that lasts for more than a couple of weeks
- A feeling that the bowel does not empty completely
- Rectal bleeding or blood in the stool
- Persistent cramping abdominal pain
- Abdominal pain during a bowel movement
- Weakness and fatigue
- Unexplained weight loss

Other conditions such as hemorrhoids and inflammatory bowel disease may also have symptoms that mimic colorectal cancer. If you have any of the above symptoms, it is very important to talk to your doctor because it could be a sign of a serious medical condition such as colorectal cancer.

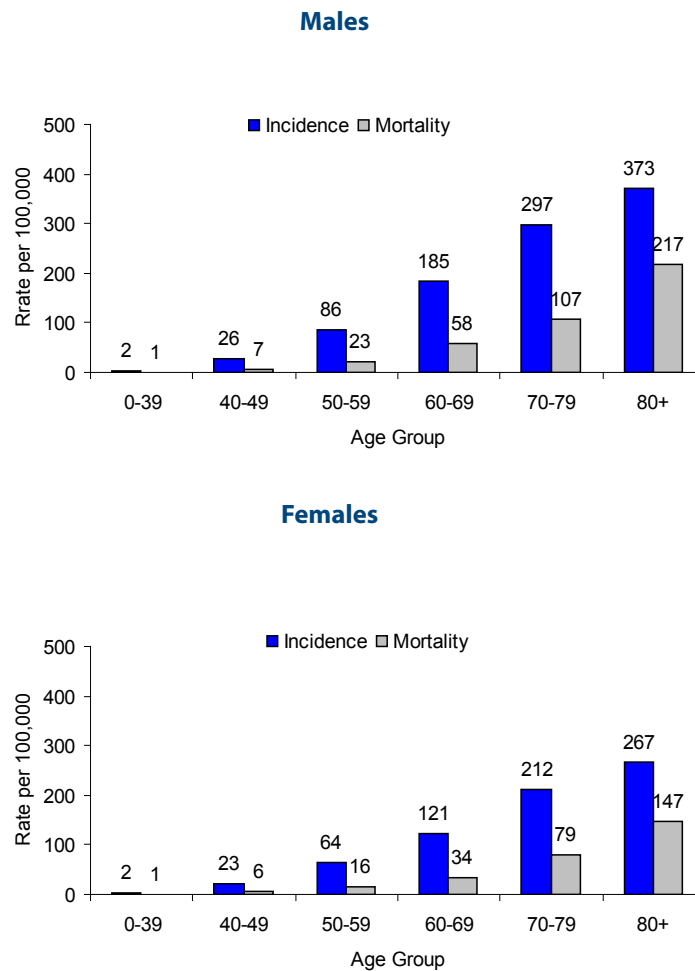
## Leading Causes of Cancer Incidence and Mortality

Table 2: Leading Causes of Cancer Incidence and Mortality, Georgia 2002-2006			
Top 5 Causes of Cancer Incidence		Top 5 Causes of Cancer Mortality	
Males	Females	Males	Females
Prostate	Breast	Lung & bronchus	Lung & Bronchus
Lung & Bronchus	Lung & Bronchus	Prostate	Breast
<b>Colorectal</b>	<b>Colorectal</b>	<b>Colorectal</b>	<b>Colorectal</b>
Bladder	Uterus	Pancreas	Pancreas
Melanoma	Melanoma	Leukemia	Ovary

*Colorectal cancer is the third most commonly diagnosed cancer and cause of cancer death among males and females in Georgia.*

## Age at Diagnosis

**Figure 6. Age-specific Colorectal Cancer Incidence and Mortality Rates by Sex, Georgia 2002-2006**



- The incidence and mortality rates of colorectal cancer increases with age for both males and females (Figure 6)
- The risk of being diagnosed with colorectal cancer increases sharply between ages 50-59 years for both males and females
- Similarly, the risk of dying from colorectal cancer increases sharply between ages 50-59 years for both males and females
- Fewer than 70 cases and 35 deaths due to colorectal cancer occur each year in individuals less than 40 years of age in both males and females

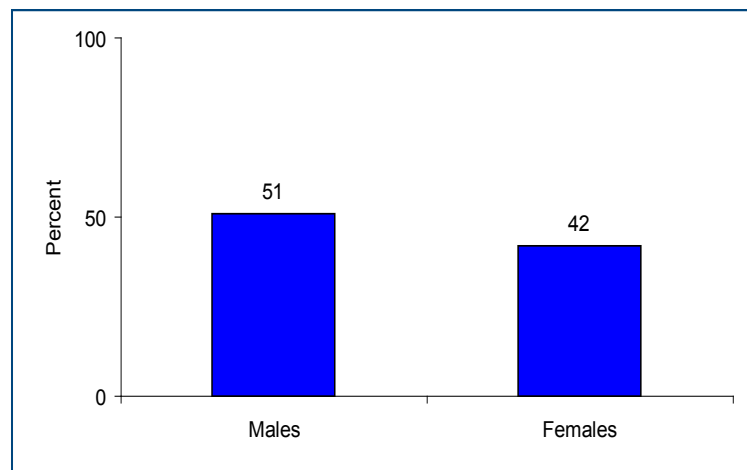


## Screening

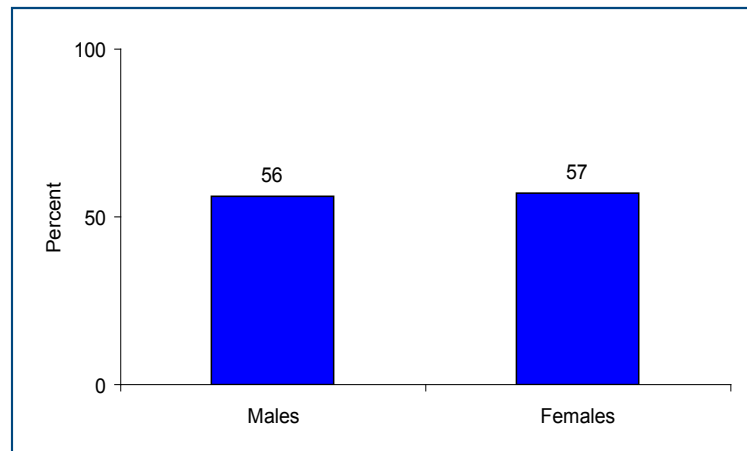
According to the Georgia Behavioral Risk Factor Surveillance System (BRFSS):

- The percent of screening by sigmoidoscopy /colonoscopy is similar among both men and women 50 years of age and older (Figure 7)
- Adult males, 50 years of age and older have a significantly higher prevalence of receiving the fecal occult blood test in the past 12 months when compared to adult females 50 years of age and older (Figure 8)

**Figure 7. Percent of Adults age 50+, who ever had a Sigmoidoscopy/Colonoscopy by Sex, Georgia 2002-2008**



**Figure 8. Percent of Adults age 50+, who had a Fecal Occult Blood Test (FOBT) in the past 12 months, by Sex, Georgia 2002-2008**



## Treatment

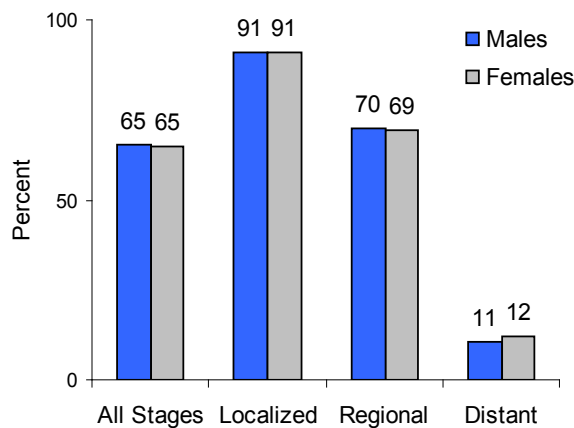
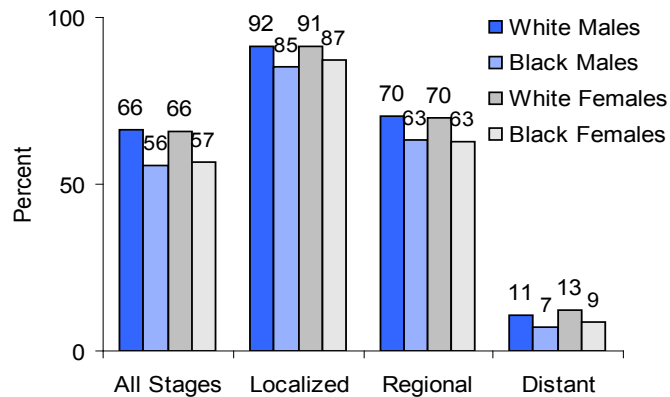
Different types of treatment are available for patients with colon cancer. The choice of treatment depends on a variety of factors such as age, overall health, and type and stage of colorectal cancer. Staging is a standardized way to summarize information about how far a cancer has spread from its point of origin. The three standard types of treatment used in colorectal cancer are surgery, radiation therapy, and chemotherapy. Depending on the stage of cancer, multiple treatment modalities may be used at the same time or one after another.

- **Surgery:** This is the main treatment for early stage colorectal cancer. If the cancer is at an early stage the doctor removes it without cutting through the abdominal wall, with a colonoscope (a tube that is inserted through the rectum into the colon, to cut the cancer out). This is called a local excision. If the cancer is found in a polyp, the operation is called a polypectomy. If the cancer is larger, the doctor removes a length of the large intestine on either side of the cancer including some lymph nodes and sews the healthy parts of the intestine together. This is termed as a colectomy. If the doctor is not able to sew the ends of the colon back together, an opening is made outside of the body for the waste to pass through. This procedure is called as a colostomy. A bag is placed around the stoma to collect the waste
- **Radiation Therapy:** This treatment uses high energy x-rays or other type of radiation to kill cancer cells. There are two types of radiation therapies: external radiation and internal radiation. External radiation comes from a machine and is directed at the cancer. For internal radiation therapy, radioactive material/implants are put directly into or near the cancer. This therapy is used when the cancer is attached to an internal organ or lining of the abdomen. In such instances the cancer may not be completely removed by surgery. Radiation therapy then helps to kill any cancer cells remaining after surgery
- **Chemotherapy:** This treatment uses drugs to stop the growth of cancer cells. Systemic chemotherapy uses drugs that are injected into a vein, muscle or taken by mouth. These drugs enter the blood stream and reach cancer cells throughout the body. In regional chemotherapy, drugs are placed directly into an artery leading to a part of the body containing the tumor. Chemotherapy is used in a variety of situations to treat colorectal cancers
- **Adjuvant and Neoadjuvant Therapy:** Chemotherapy may be used after surgery even when there is no evidence of cancer remaining, to kill cancer cells that may have escaped from the primary tumor and settled in other parts of the body. This is called as adjuvant chemotherapy. Neoadjuvant chemotherapy is used for some rectal cancers before surgery (along with radiation), to shrink the tumor size. Chemotherapy in advanced cancers helps to shrink tumors and relieve symptoms from the tumor. Although it is unlikely this procedure will completely remove the cancer, it helps to increase the survival time

## Survival

- Early detection saves lives. Individuals diagnosed at an early stage (localized) have a better chance of surviving five years after diagnosis than those diagnosed at a later stage (Figure 9)

**Figure 9. Colorectal Cancer Five-Year Survival Rates by Sex, Race and Stage, United States, 1999-2005**



- Overall, five-year survival rate is 65% for both males and females at all stages of the disease. However, when detected at a localized stage the five-year survival rate increases to 91%
- Overall, the five year survival rates for white males and females (66% each) for all stages are higher than those for blacks (56% for males, 57% for females)
- Black males (85%) and black females (87%) diagnosed at a localized stage have a lower five-year survival rate than white males (92%) and white females (91%)
- Five-year survival rates drop significantly for all individuals when diagnosed at a distant stage



## Colorectal Cancer by Stage of Disease

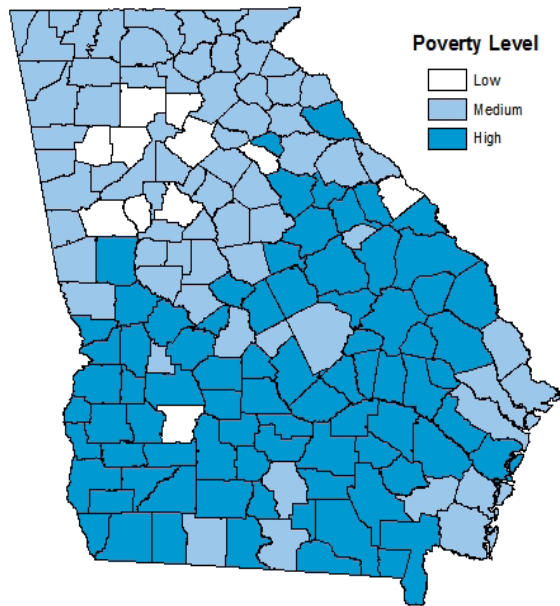
<b>Table 3: Percent of Colorectal Cancer found by Stage of Disease, Sex and Race, Georgia (2002-2006) and United States (1999-2005)</b>				
	<b>Localized (%)</b>	<b>Regional (%)</b>	<b>Distant (%)</b>	<b>Unstaged/Unknown (%)</b>
<b>US Males</b>	39	37	19	4
<b>GA Males</b>	39	37	19	5
<b>US Females</b>	38	38	19	5
<b>GA Females</b>	40	37	18	6
<b>US Black Males</b>	34	36	25	5
<b>GA Black Males</b>	37	34	24	5
<b>US White Males</b>	40	37	19	4
<b>GA White Males</b>	40	38	18	4
<b>US Black Females</b>	34	35	24	6
<b>GA Black Females</b>	39	34	21	6
<b>US White Females</b>	38	38	19	5
<b>GA White Females</b>	40	38	17	6

The distribution of stage at diagnosis for colorectal cancer patients in Georgia is similar to the colorectal cancer patients in the U.S.



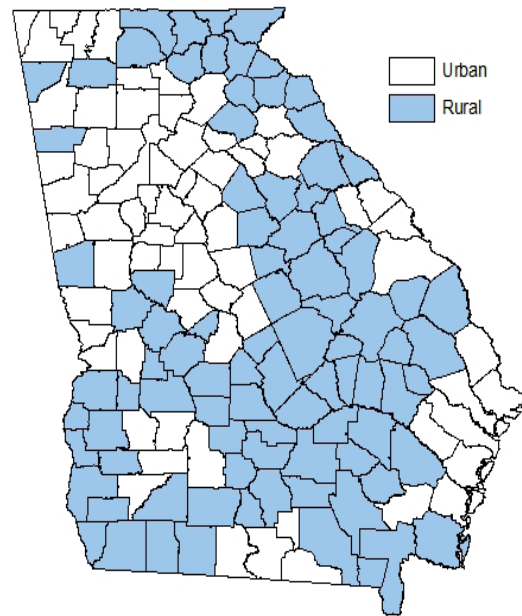
## Urban vs. Rural Georgia

**Figure 10-1. Urban -Rural Counties, Georgia, 2003**



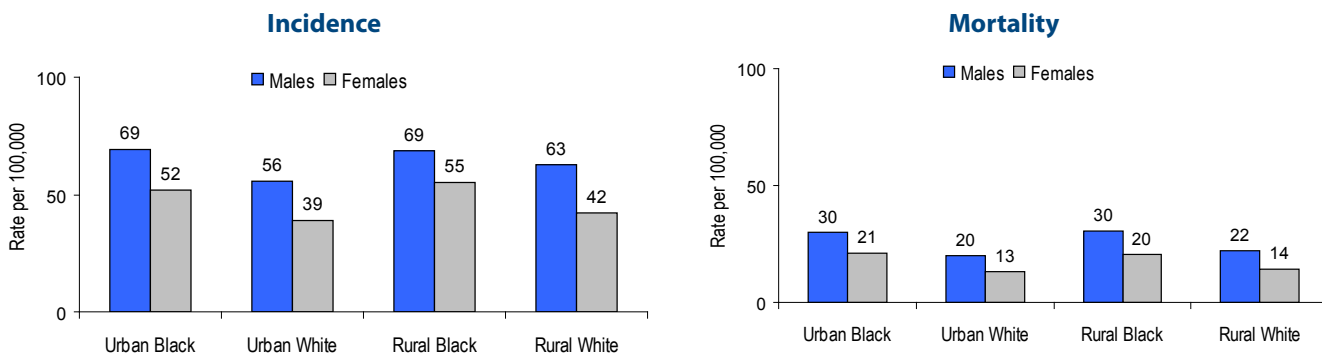
Based on the U.S Department of Agriculture, Georgia has 89 rural counties and 70 urban counties.

**Figure 10-2. Counties by Poverty Level, Georgia, 2005**



Georgia has 79 counties at high poverty level, 69 counties at medium poverty level and 11 counties at low poverty level.

**Figure 11. Age-adjusted Colorectal Cancer Incidence and Mortality Rate by Geography, Race and Sex, Georgia, 2002-2006**



- The age-adjusted colorectal cancer incidence and mortality rates are consistently higher among blacks than among whites living in urban and/or rural areas (Figure 11)
- Colorectal cancer incidence and mortality rates are significantly higher among urban black males and females than among urban white males and females
- Incidence rates are not significantly different between rural black males and rural white males
- Mortality rates are significantly different between rural black males and rural white males
- Colorectal cancer incidence and mortality rates are significantly higher among rural black females than among rural white females

## Associations between Poverty and Geography

**Table 4. Age-adjusted Colorectal Cancer Incidence Rates by Sex, Urban-Rural and Poverty, Georgia 2002-2006**

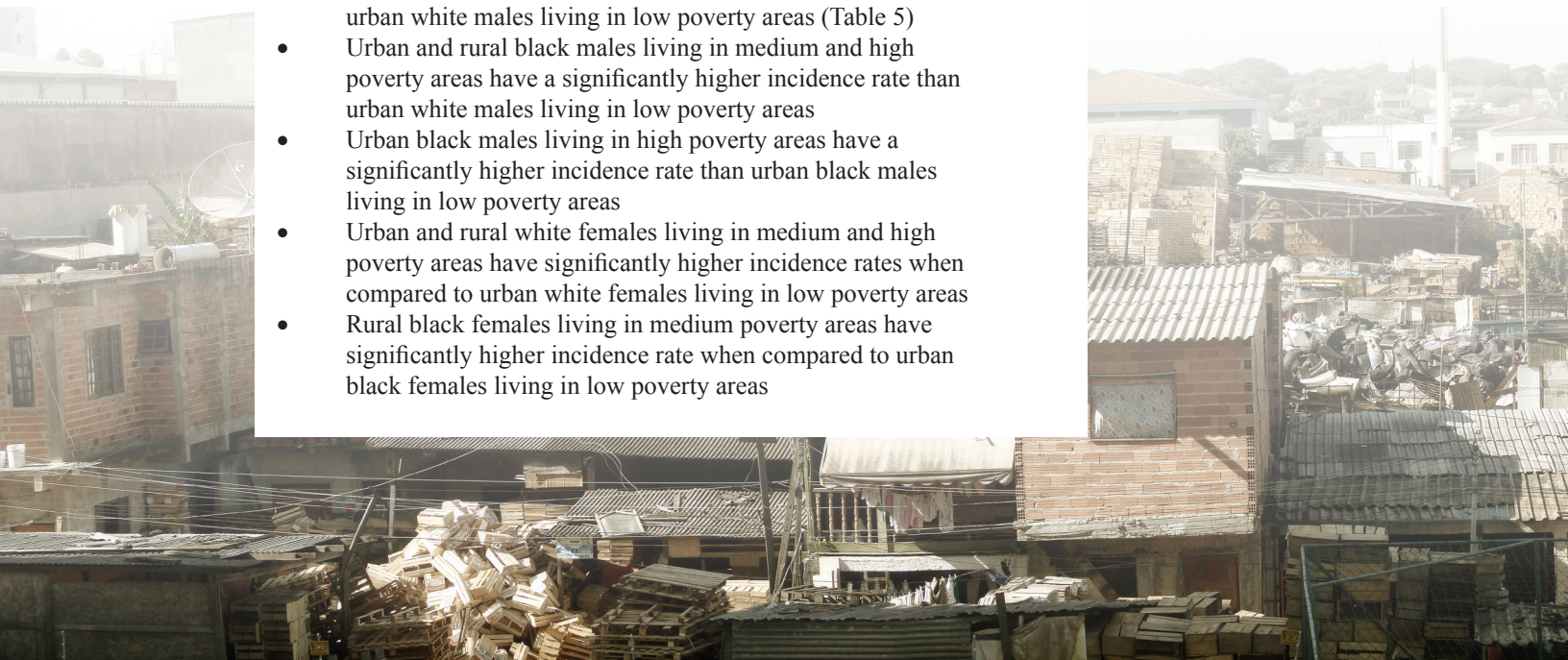
	Males		Females	
Level of Poverty	Urban	Rural	Urban	Rural
Low	52	***	41	***
Medium	57*	63*	42	47*
High	68*	63*	45	44

- Urban and rural males living in medium and high poverty level areas have significantly higher incidence rates when compared to urban males living in low poverty areas (Table 4)
- Rural females living in medium poverty areas have a significantly higher incidence rate when compared to urban females living in low poverty areas

**Table 5. Age-adjusted Colorectal Cancer Incidence Rates by Sex, Race, Urban-Rural and Poverty, Georgia 2002-2006**

	Males				Females			
Level of Poverty	Urban White	Rural White	Urban Black	Rural Black	Urban White	Rural White	Urban Black	Rural Black
Low	53	***	62	***	40	***	47	***
Medium	56	63*	66*	68*	38*	44*	53	65*
High	62*	62*	83*	69*	39*	40*	53	52

- Urban white males living in high poverty areas as well as rural white males living in medium and high poverty areas have significantly higher incidence rates when compared to the urban white males living in low poverty areas (Table 5)
- Urban and rural black males living in medium and high poverty areas have a significantly higher incidence rate than urban white males living in low poverty areas
- Urban black males living in high poverty areas have a significantly higher incidence rate than urban black males living in low poverty areas
- Urban and rural white females living in medium and high poverty areas have significantly higher incidence rates when compared to urban white females living in low poverty areas
- Rural black females living in medium poverty areas have significantly higher incidence rate when compared to urban black females living in low poverty areas





**Table 6. Age-adjusted Colorectal Cancer Mortality Rates by Sex, Urban-Rural and Poverty, Georgia 2002-2006**

	Males		Females	
Level of Poverty	Urban	Rural	Urban	Rural
Low	21	***	14	***
Medium	22	22	15	16
High	23	26*	17*	15

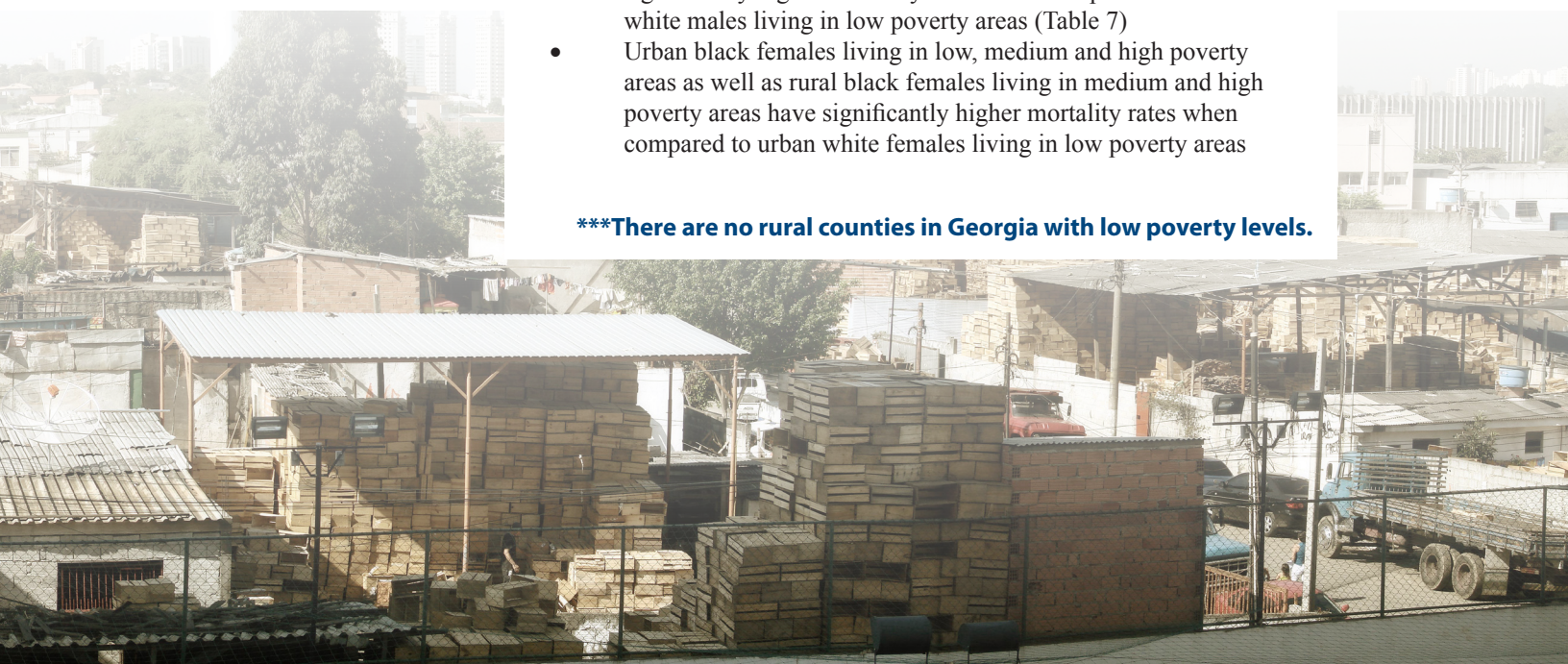
- Rural males living in high poverty areas have significantly higher mortality rates when compared to urban males living in low poverty areas (Table 6)
- Urban females living in high poverty areas have significantly higher mortality rates when compared to urban females living in low poverty areas

**Table 7. Age-adjusted Colorectal Cancer Mortality Rates by Sex, Race, Urban-Rural and Poverty, Georgia 2002-2006**

	Males				Females			
Level of Poverty	Urban White	Rural White	Urban Black	Rural Black	Urban White	Rural White	Urban Black	Rural Black
Low	21	***	27	***	13	***	20*	***
Medium	20	21	29*	29	13	15	22*	25*
High	20	24	32*	31 *	15	14	19*	19*

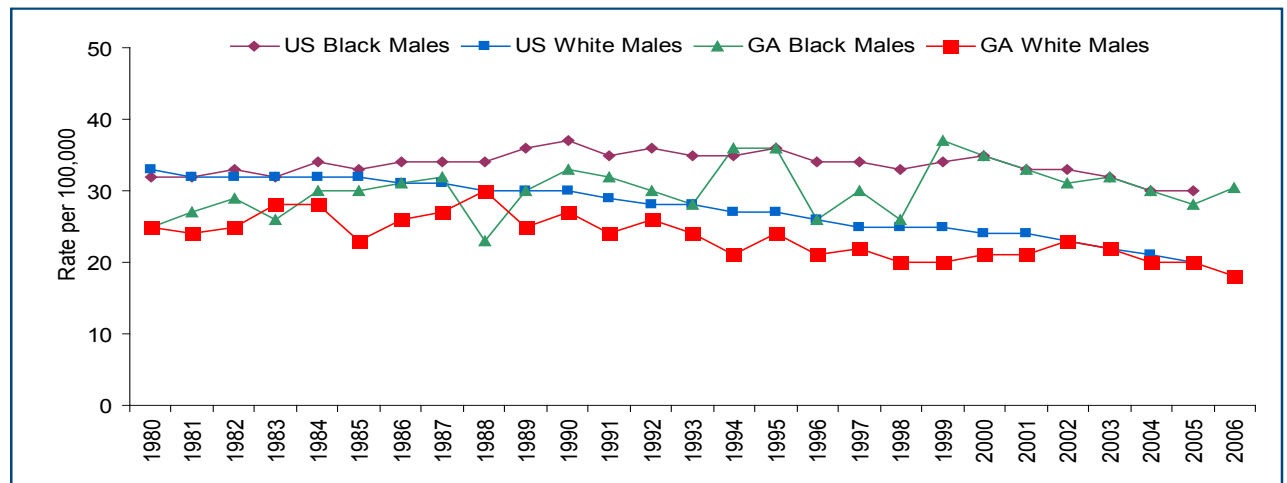
- Urban black males living in medium and high poverty areas as well as rural black males living in high poverty areas have significantly higher mortality rates when compared to urban white males living in low poverty areas (Table 7)
- Urban black females living in low, medium and high poverty areas as well as rural black females living in medium and high poverty areas have significantly higher mortality rates when compared to urban white females living in low poverty areas

**\*\*\*There are no rural counties in Georgia with low poverty levels.**



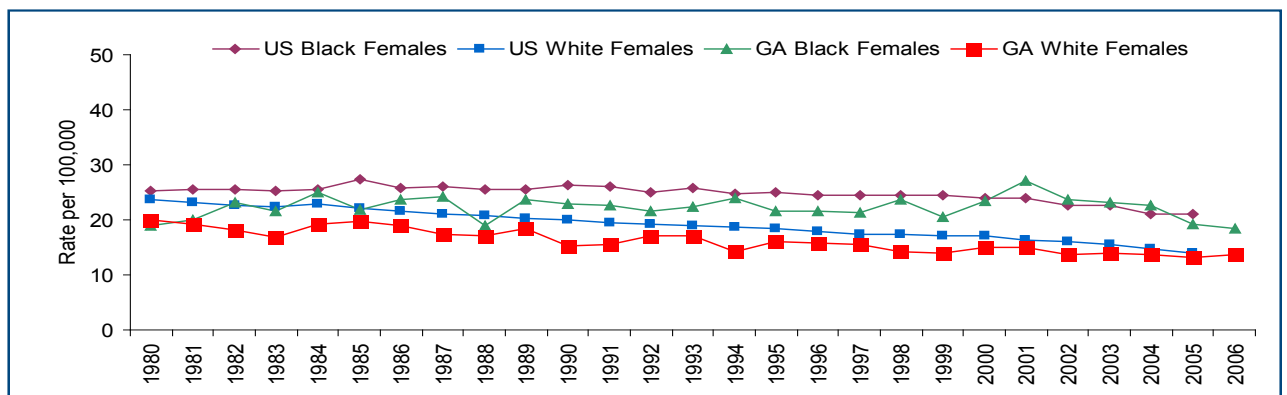
## Mortality Trends

**Figure 12. Age-adjusted Colorectal Cancer Mortality Rate among Males by Race, Georgia (1980-2006) vs. United States (1980-2005)**



- From 1980 to 2005, the U.S. colorectal cancer mortality rate decreased at an average annual rate of 0.2% for black males and 1.96 % for white males (Figure 12)
- In Georgia from 1980 to 2006, the colorectal cancer mortality rate increased at an average annual rate of 1.9% for black males while it decreased by 0.76% for white males
- Since 2000, the colorectal cancer mortality rate decreased at an average annual rate of 3% for U.S. black males and 3.5% for U.S. white males; in Georgia the average annual rate decreased by 2.2% for both black and white males

**Figure 13. Age-adjusted Colorectal Cancer Mortality Rate among Females by Race, Georgia (1980-2006) vs. United States (1980-2005)**



- Mortality rates among white females have been generally lower than those in black females, both in Georgia and in the U.S. (Figure 13)
- From 1980 to 2005, the colorectal cancer mortality rate decreased at an average annual rate of 0.7% for U.S. black females and 2% for U.S. white females, whereas in Georgia there was a slight increase at an average annual rate of 0.5% among black females and decrease at an average annual rate of 1.2% among white females
- Since 2000, there has been a decrease at an average annual rate in colorectal cancer mortality rates among females for both U.S. and Georgia (2.4% in U.S. black females, 3.7% in U.S. white females vs. 3.3% in Georgia black females and 1.7% in Georgia white females)

## Colorectal Cancer: Resources



You can learn more about colorectal cancer from the following organizations:

American Cancer Society  
Telephone: 1-800-ACS-2345  
[www.cancer.org](http://www.cancer.org)



Centers for Disease Control & Prevention  
Telephone: 1-800-CDC-INFO  
[www.cdc.gov](http://www.cdc.gov)



National Cancer Institute, Cancer Information Service  
Telephone: 1-800-4-CANCER  
<http://www.nci.nih.gov>



National Colorectal Cancer Research Alliance  
Telephone: 818-760-7722  
<http://www.eifoundation.org/national/nccra/splash/>



Cancer Research and Prevention Foundation  
Telephone: 1-800-227-2732  
<http://www.preventcancer.org>



Cancer Control Planet  
<http://cancercontrolplanet.cancer.gov/>



## Technical Notes

### Definitions:

**Age-Adjusted Rate** is calculated in a manner that minimizes the effects of differences in age composition when comparing rates derived from populations with different age structures. It is expressed per 100,000 population.

**Cancer Incidence Rate** is a measure of the development of new cancer cases in a population within a specified period of time. It is expressed as a rate per 100,000 persons.

**Cancer Mortality Rate** is defined as the number of deaths, due to cancer, occurring in a specified population during a specified period of time. It is also expressed as a rate per 100,000 population.

**Average Risk Population** includes most people who develop colorectal cancer and have no identifiable risk factors. People at increased risk of colorectal cancer consist of those with personal or family history of colorectal cancer, those with colorectal cancer symptoms or those who already have inflammatory bowel disease or certain genetic conditions.

### Data Sources:

The number of deaths and mortality rates for the State of Georgia were obtained from the Georgia Department of Human Resources, Division of Public Health, Vital Records Branch. The number of deaths and mortality rates for the United States were obtained from the National Center for Health Statistics, Centers for Disease Control and Prevention (CDC). Mortality data were coded using ICD-9 codes (1980-1998) and ICD-10 codes (1999-2005). The ICD-9 codes for colorectal cancer are 153.0–154.1, 159.0, while the ICD-10 codes for colorectal cancer are C180:C209, C260.

The number of new cases and incidence rates for the state of Georgia were obtained from the Georgia Department of Human Resources, Division of Public Health, Georgia Comprehensive Cancer Registry. Incidence rates are calculated for the non-hispanic black and white population for the State of Georgia. The number of new cases and incidence rates for the United States were obtained from the North American Association of Central Cancer Registries (NAACCR). Incidence data were coded using ICD-O3 codes. The ICD-O3 codes used for colorectal cancer are C180:C209, C260.

Cancer stage and survival data for the United States were obtained from the Surveillance, Epidemiology, and End Results (SEER) program, National Cancer Institute.

Prevalence of risk factors, such as obesity, smoking and physical inactivity (for the year 2008) and screening for colorectal cancer (average of years 2002, 2004, 2005 2006, 2008) in Georgia was analyzed from the Behavioral Risk Factor Surveillance System, Office of Epidemiology, Health Information and Evaluation, Georgia Department of Community Health. National data for the prevalence of similar risk factors was retrieved from Centers for Disease Control and Prevention at [www.cdc.gov/brfss/](http://www.cdc.gov/brfss/)

Clinical information on colorectal cancer was retrieved from the Mayo Clinic at [www.mayoclinic.com](http://www.mayoclinic.com), Colorectal Cancer Medline Plus at [www.nlm.nih.gov/medlineplus](http://www.nlm.nih.gov/medlineplus), National Cancer Institute at [www.cancer.gov](http://www.cancer.gov) and the American Cancer Society at [www.cancer.org](http://www.cancer.org)

**Methods:**

Mortality rates were calculated per 100,000 population and age-adjusted by the direct method to the 2000 US standard population. Except where calculated to show trends, the mortality rates are five-year average annual rates for the period 2002 through 2006.

Incidence rates were calculated per 100,000 population and age-adjusted by the direct method to the 2000 US standard population. Rates were calculated for 2002-2006, as these are the years in which Cancer Registry data are greater than 95% complete.

The estimated number of cases for 2009 was calculated by multiplying age-specific incidence rates for 2002-2006 by age-specific population projections for 2009. The estimated number of deaths for 2009 was calculated by multiplying age-specific mortality rates for 2002-2006 by age-specific population projections for 2009.

The Rural-Urban classification of Georgia counties was based on the 2003 Rural-Urban Continuum Codes from the United States Department of Agriculture, Economic Research Service. Information about the Rural-Urban Continuum Codes can be retrieved from <http://www.ers.usda.gov/Data/RuralUrbanContinuumCodes/>.

Poverty data for Georgia was retrieved from the U.S Census Bureau's Small Area Income and Poverty Estimates (SAIPE) Program at <http://www.census.gov/did/www/saipe/>. The Georgia Comprehensive Cancer Registry further categorized the poverty percent into three groups, low poverty areas (less than 10% of county's population is below United States poverty level), medium poverty areas (10%-19% of county's population is below United States poverty level) and high poverty areas (20% or more of county's population is below United States poverty level) for the data analysis.

