

Lung Cancer in Georgia, 1999-2002



Acknowledgments

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What is Lung Cancer?

The lungs, a pair of sponge-like, cone-shaped organs, are part of the respiratory system. The right lung has three sections, called lobes; it is a little larger than the left lung, which has two lobes. When we breathe in, the lungs take in oxygen, which our cells need to live and carry out their normal functions. When we breathe out, the lungs get rid of carbon dioxide, which is a waste product from the body's cells.

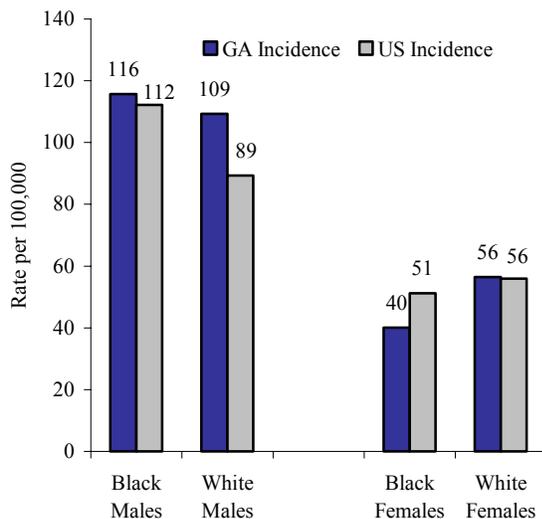
Cancers that begin in the lungs are divided into two major types, non-small cell lung cancer and small cell lung cancer, depending on the cells from which the cancer originates and how the cells look under a microscope. Each type of lung cancer grows and spreads in different ways and is treated differently.

Non-small cell lung cancer is more common than small cell lung cancer, and it generally grows and spreads more slowly. There are three main types of non-small cell lung cancer. They are named for the type of cells in which the cancer develops: squamous cell carcinoma (also called epidermoid carcinoma), adenocarcinoma, and large cell carcinoma.

Small cell lung cancer, sometimes called oat cell cancer, is less common than non-small cell lung cancer. About 13% of all lung cancers are of the small cell type. This type of lung cancer grows more quickly and is more likely to spread to other organs in the body.

Who Develops Lung Cancer?

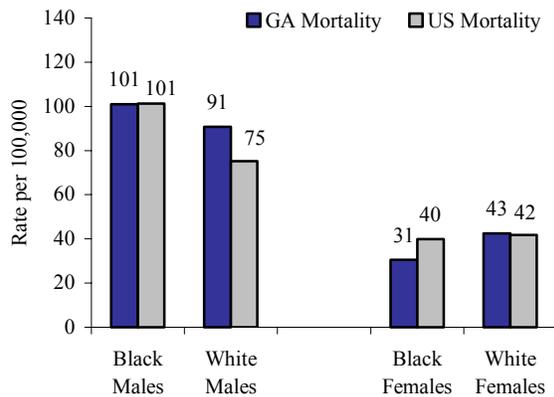
Lung Cancer Incidence Rates* by Race and Sex, Georgia (1999-2002) and US (1998-2002)



Each year from 1999-2002, over 5,200 lung cancers were reported to the Georgia Comprehensive Cancer Registry. The overall age-adjusted lung cancer incidence rate in Georgia is 76 per 100,000. Males are 108% more likely to be diagnosed with lung cancer than females (age-adjusted rate 110/100,000 vs 53/100,000). Black males were more likely than white males to be diagnosed with the disease, while white females were more likely than black females to be diagnosed.

*Rates are age-adjusted to 2000 US standard population.

Lung Cancer Mortality Rates* by Race and Sex, Georgia and US, 1998-2002



*Rates are age-adjusted to 2000 US standard population.

Each year from 1998-2002, over 4,000 Georgians died from lung cancer. The overall age-adjusted lung cancer mortality rate is 61 per 100,000. Males are 130% more likely to die of lung cancer than females (age-adjusted mortality rate 92/100,000 vs 40/100,000). Mortality rates were higher among black males than white males and among white females than black females.

What are the Causes and Risk Factors for Lung Cancer?

A risk factor is anything that increases a person's chance of getting a disease such as cancer. Different cancers have different risk factors. Some risk factors, such as smoking, can be controlled. Others, like a person's age or family history, can't be changed. Researchers have discovered several causes of lung cancer -- most are related to the use of tobacco.

While everyone is at risk for lung cancer, the following factors can increase one's chances of getting the disease.

- **Smoking:** Smoking causes lung cancer. Tobacco use accounts for 87% of all lung cancers. The longer a person has been smoking and the more packs per day smoked, the greater the risk. If a person stops smoking before lung cancer develops, the lung tissue slowly returns to normal. Stopping smoking at any age lowers the risk of lung cancer.
Economic burden: Smoking-related productivity losses in Georgia for 2003 totaled \$3.2 billion and smoking-related healthcare costs reached \$1.8 billion for adults 18 years and older.
- **Environmental Tobacco Smoke:** Non-smoking spouses of smokers have a 30% greater risk of developing lung cancer than do spouses of non-smokers. Workers exposed to tobacco smoke in the workplace are also more likely to develop lung cancer.
- **Certain Industrial Substances:** Exposure to arsenic, some organic chemicals, radon, and asbestos increases the risk of lung cancer, particularly for persons who smoke. Studies have shown that workers who have been exposed to large amounts of asbestos have a risk of developing lung cancer that is 3 to 4 times greater than that for workers who have not been exposed to asbestos.
- **Lung Diseases.** Certain lung diseases, such as tuberculosis (TB), increase a person's chance of developing lung cancer. Lung cancer tends to develop in areas of the lung that are scarred from TB.
- **Personal History.** A person who has had lung cancer once is more likely to develop a second lung cancer compared with a person who has never had lung cancer. Quitting smoking after lung cancer is diagnosed may help prevent the development of a second lung cancer.

What are the Symptoms for Lung Cancer?

Different people have different symptoms for lung cancer. Some people don't have any symptoms at all. About 25% of people diagnosed with advanced lung cancer do not have symptoms.

Common signs and symptoms of lung cancer include:

- A cough that doesn't go away and gets worse over time
- Constant chest pain
- Coughing up blood
- Shortness of breath, wheezing, or hoarseness
- Repeated problems with pneumonia or bronchitis
- Swelling of the neck and face
- Loss of appetite or weight loss
- Fatigue

These symptoms may be caused by lung cancer or by other conditions. It is important to check with a doctor.

How Common is Lung Cancer?

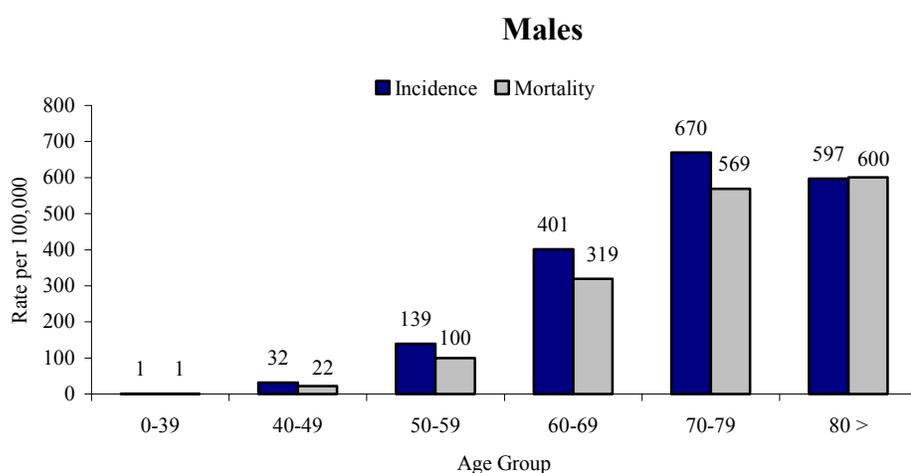
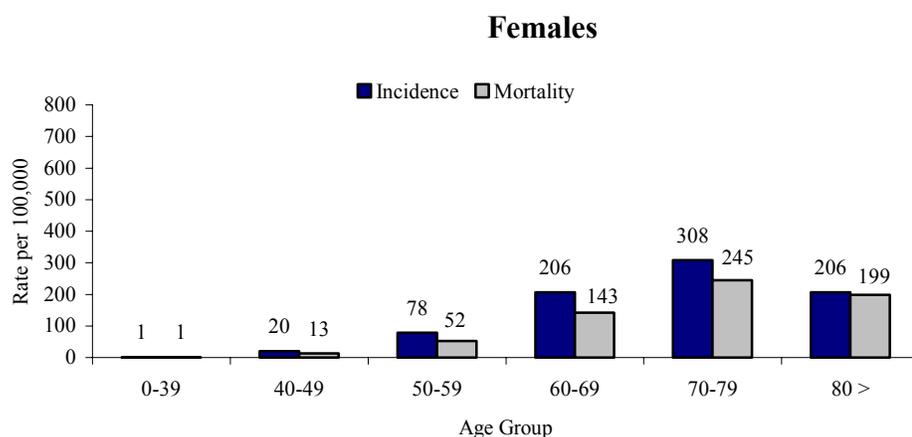
Top Five Cancer Types and Cancer-Related Deaths in Georgia

Cases		Deaths	
Male	Female	Male	Female
Prostate	Breast	Lung & Bronchus	Lung & Bronchus
Lung & Bronchus	Lung & Bronchus	Prostate	Breast
Colorectal	Colorectal	Colorectal	Colorectal
Bladder	Uterus	Pancreas	Pancreas
Melanoma	Ovary	Leukemia	Ovary

Lung Cancer is the second most common cancer diagnosed and leading cause of cancer deaths among males and females in Georgia. One in 13 American males and one in 18 American females will develop lung cancer in their lifetime.

At What Age is Lung Cancer Most Often Diagnosed?

Georgia Lung Cancer Incidence (1999-2002) and Mortality (1998-2002) by Age Group and Sex



Lung cancer incidence and mortality rates increase with age, especially after 60. Mean age at diagnosis for men is 67 and for women is 68. Lung cancer is rare among individuals less than 40 years of age. In Georgia, men and women in the age group 70-79 have the highest incidence of lung cancer.

The highest mortality rates are also seen in men and women in the age group 70-79. Before the age of 40, lung cancer deaths are rare. Fewer than 30 deaths occurred every year in males and females under 40 years of age from 1998-2002.

What is the Treatment for Lung Cancer?

Each type of treatment has benefits and side effects. Age, overall health, type of lung cancer (non-small or small cell lung cancer), size, location, and extent of the tumor are all factors to be considered. Staging is a standardized way to summarize information about how far a cancer has spread from its point of origin. In situ lung cancers fulfill the microscopic criteria for cancer, but do not invade surrounding tissues. Localized lung cancers are confined to the lung with no evidence of spreading to other parts of the body. Regional lung cancer has spread beyond the limits of the lung into the adjacent organs or tissues by direct extension or through regional lymph nodes, but appears to have spread no further. Distant lung cancer has spread to parts of the body remote from the lung such as the other lung, lymph nodes on the other side of the chest, bones, brain, liver and adrenal glands.

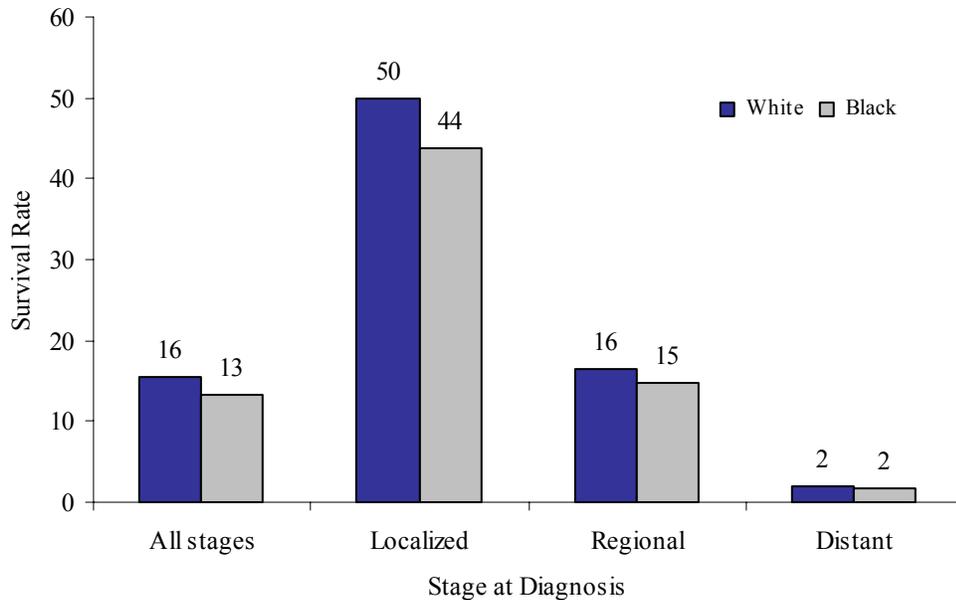
Many different treatments and combinations of treatments may be used to control lung cancer, and/or to improve quality of life by reducing symptoms.

Four types of standard treatments are:

- **Surgery:** The type of surgery a doctor performs depends on the location of the tumor in the lung. An operation to remove only a small part of the lung is called a segmental or wedge resection. When the surgeon removes an entire lobe of the lung, the procedure is called a lobectomy. Pneumonectomy is the removal of an entire lung. Surgery is rarely used for small cell lung cancer.
- **Chemotherapy:** Chemotherapy may be used to control cancer growth or to relieve symptoms. Most anticancer drugs are given by injection directly into a vein (IV) or by means of a catheter, a thin tube that is placed into a large vein and remains there as long as it is needed. Some anticancer drugs are given in the form of a pill.
- **Radiation Therapy:** This treatment uses x-rays or other type of radiation to kill cancer cells. There are two types of radiation therapies: External – radiation comes from a machine and is directed to the cancer. Internal – radioactive material/implants are put directly into or near the cancer. Doctors may also use radiation therapy, often combined with chemotherapy, as primary treatment instead of surgery.
- **Photodynamic therapy (PDT):** PDT is a type of laser therapy, involving the use of a special chemical that is injected into the bloodstream and absorbed by cells all over the body. The chemical rapidly leaves normal cells but remains in cancer cells for a longer time. A laser light aimed at the cancer activates the chemical, which then kills the cancer cells that have absorbed it. Photodynamic therapy may be used to reduce symptoms of lung cancer or to treat very small tumors in patients for whom the usual treatments for lung cancer are not appropriate.

Who Survives Lung Cancer?

Percent of US Men and Women Surviving Five Years after Diagnosis of Lung Cancer, by Stage of Disease and Race, 1995-2001



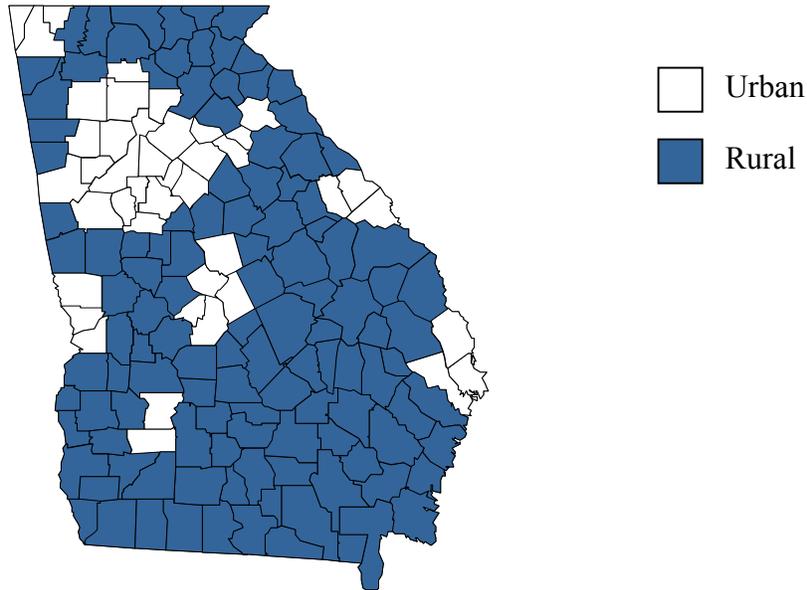
		Localized	Regional	Distant
% of	US White†	17%	37%	39%
Tumors	US Black†	14%	38%	41%
found at	GA White†	19%	27%	41%
this stage*	GA Black†	15%	29%	46%

*Unstaged tumors are not shown.

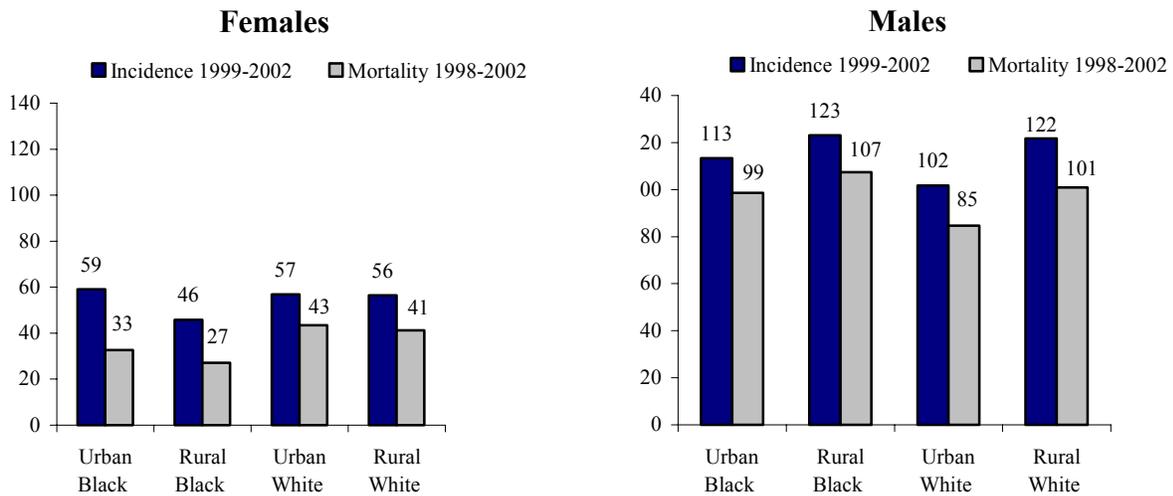
†US data are for 1995-2001, GA data are for 1999-2002.

Early detection is important because survival for early stage lung cancer is much greater than for later stage disease. Early diagnosis for lung cancer is very hard, treatment for late stage disease is very poor, and therefore prevention is very important. Five-year survival for tumors found in the localized stage, when the cancer is still contained within the lung, is 50 percent among US whites and 44 percent among US blacks. In Georgia, about 19 percent of whites and about 15 percent of blacks are diagnosed at a localized stage. If the cancer spreads to organs away from the lung (distant stage), five-year survival drops to about 2 percent for all US men and women.

How does Lung Cancer Vary by Region?



Georgia Lung Cancer Incidence and Mortality Rates* by Geography



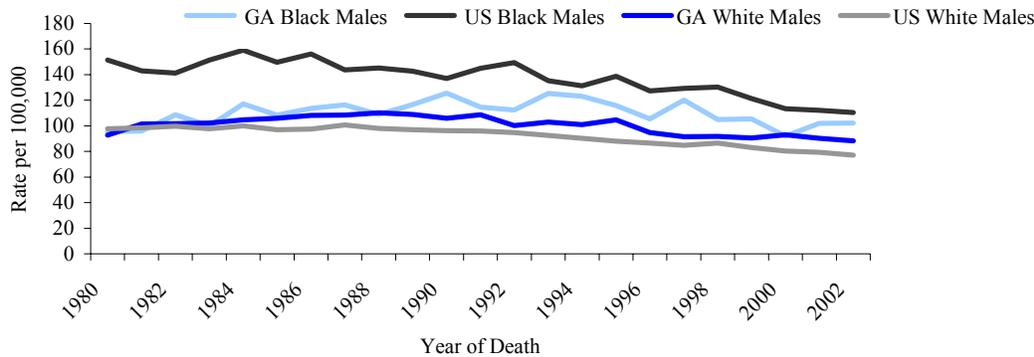
*Rates are age-adjusted to 2000 US standard population.

Incidence rates (1999-2002) for both rural black and rural white males were significantly higher than the rates for urban black and urban white males. Incidence rates for urban black females were significantly higher than the rates for rural black females.

Mortality rates (1998-2002) for rural white males and rural black males were significantly higher than the rates for urban white and urban black males. Mortality rates among urban white and urban black females were significantly higher than the rates for rural white and rural black females.

How Does Georgia Compare with the United States?

Male Lung Cancer Mortality Rate*, by Race, Georgia vs United States, 1980-2002

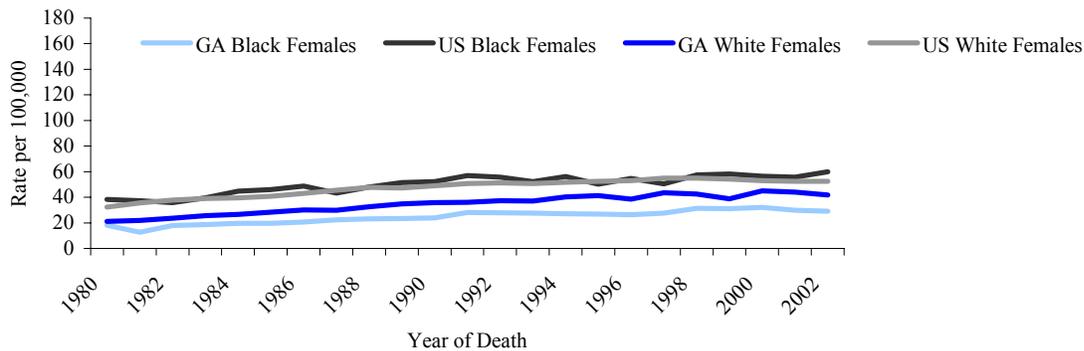


*Rates are age-adjusted to 2000 US standard population.

From 1980 to 2002, the lung cancer mortality rates were lower for Georgia black males than the mortality rates for US black males. The mortality rates for Georgia white males were higher than the rates for US white males.

In Georgia, from 1980 to 1990, lung cancer mortality rates increased among black males by 3.1 percent per year. Since 1990 the rates have been decreasing by 0.6 percent per year. From 1980 to 1990, the mortality rates among white males increased by 1.4 percent per year and since 1990 rates are declining by 1.8 percent per year.

Female Lung Cancer Mortality Rate*, by Race, Georgia vs United States, 1980-2002



*Rates are age-adjusted to 2000 US standard population.

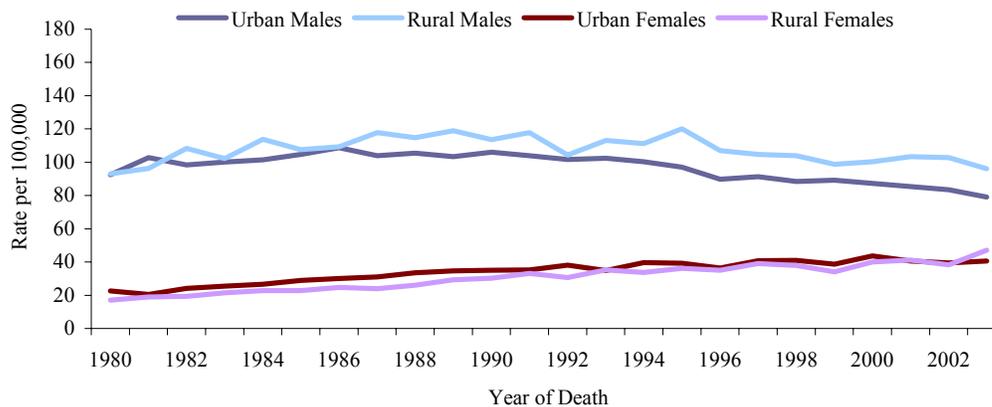
From 1980 to 2002, the lung cancer mortality rates for Georgia white as well as black females were lower than the rates for US white and black females.

In Georgia, since 1980, lung cancer mortality has been increasing among black females by 2.9 percent per year. Since 1980, lung cancer mortality has been increasing among white females by 3.3 percent per year.

In 1989, lung cancer surpassed breast cancer to become the number one cancer killer among Georgia women.

How Do Lung Cancer Mortality Rates Vary Over Time by Geography?

Lung Cancer Mortality Rate*, by Sex and Geography, Georgia, 1980-2002



*Rates are age-adjusted to 2000 US standard population.

From 1980 to 1986, lung cancer mortality rates among urban males increased 2.8% per year. Since 1986 the rates decreased 1.8% per year.

From 1980 to 1987, lung cancer mortality rates among rural males increased by 3.6% per year. The rates remained steady until 1991 and, since then, have decreased by 1.5% per year.

From 1980 to 2000, lung cancer mortality rates among urban females increased by 3.6% per year. Since then, the rates appear to have stabilized.

Since 1980, lung cancer mortality rates among rural females increased by 4.8% per year.

Where can I Find Out More about Lung Cancer?

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

American Cancer Society
Telephone: 1-800-ACS-2345

Internet Address: <http://www.cancer.org>

Cancer Control Planet

Internet Address:

<http://cancercontrolplanet.cancer.gov/>

National Cancer Institute, Cancer Information Service
Telephone: 1-800-4-CANCER

Internet Address: <http://www.nci.nih.gov>

The American Lung Association

Telephone: 1-800-586-4872 or 1-212-315-8700

Internet address: www.lungusa.org

Cancer Research and Prevention Foundation
Telephone: 1-800-227-2732

Internet Address: <http://www.preventcancer.org>

Lung Cancer Alliance

Telephone: 1-800-298-2436 (United States Only) or
202-463-2080

Internet address: www.lungcanceralliance.org

Georgia Division of Public Health

Internet Address:

<http://www.health.state.ga.us/pdfs/chronic/tobacco/Datasummarytobacco2005.pdf>

Technical Notes

Definitions:

Age-adjusted rate: A rate calculated in a manner that allows for the comparison of rates derived from populations with different age structures.

Cancer incidence rate: The number of new cancer cases occurring in a population during a specified period of time. Often expressed per 100,000 population.

Cancer mortality rate: The number of cancer deaths occurring in a population during a specified period of time. Often expressed per 100,000 population.

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 (1998) and ICD-10 codes (1999-2002). The ICD-9 codes for lung cancer are 162.2–162.9 while the ICD-10 codes for lung cancer are C340:C349.

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. 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 lung cancer are C340:C349.

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

Population projections for 2005 were obtained from the Office of Planning and Budget for the state of Georgia. Population estimates for 1999-2002 and the 2000 US standard population were obtained from the US Bureau of the Census.

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 1998 through 2002. 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 1999-2002, as these are the years in which Cancer Registry data are greater than 95% complete.

The estimated number of cases for 2005 was calculated by multiplying age-specific incidence rates for 1999-2002 by age-specific population projections for 2005. The estimated number of deaths for 2005 was calculated by multiplying age-specific mortality rates for 1998-2002 by age-specific population projections for 2005.