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# Cancer Incidence in Virginia

## 1999

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Virginia Cancer Registry  
Virginia Department of Health  
Robert B. Stroube, MD, MPH  
Commissioner



Virginia Cancer Registry has more information available at:  
<http://www.vdh.virginia.gov/epi/cancer/index.asp>

### **What can the registry provide?**

- ◆ Summary statistics on demographic information: age at diagnosis, gender, race and ethnicity, county or city of residence at diagnosis;
- ◆ Summary statistics on medical history: diagnosis, primary site, cell type, stage of disease at diagnosis;
- ◆ Special studies that support public health planning and academic research;
- ◆ Education and training for hospital cancer registrars and non-hospital cancer reporters.

### **Who may have a use for information from the Virginia Cancer Registry?**

- |                              |   |
|------------------------------|---|
| ◆ Citizens                   | ◆ Physicians                                |
| ◆ Nurses                     | ◆ Medical Researchers                       |
| ◆ Health Care Planners       | ◆ Cancer Service Organizations              |
| ◆ Health Care Administrators | ◆ Hospital Cancer Committees                |
| ◆ Students                   | ◆ Patient Care Evaluators                   |
| ◆ Pharmaceutical Companies   | ◆ Government Officials                      |
| ◆ Cancer Facility Planners   | ◆ Oncology Conference Planners and Speakers |

### **How can I request information?**

Contact the registry Monday - Friday between 8 am and 5 pm (ET) at:

Virginia Cancer Registry

109 Governor St, 10th Fl.

Richmond, VA 23219

Phone: (804) 864-7866

Fax: (804) 864-7870

E-mail: [vcr\\_comments@vdh.state.va.us](mailto:vcr_comments@vdh.state.va.us)

Web address: <http://www.vdh.virginia.gov/epi/cancer/index.asp>

*Please note: To comply with confidentiality laws and regulations, the Virginia Cancer Registry reserves the right to limit the amount and type of data released in response to a request.*

# Cancer Incidence in Virginia 1999

Virginia Department of Health  
Robert B. Stroube, MD, MPH  
Commissioner

Virginia Cancer Registry  
Division of Chronic Disease Prevention and Control  
Office of Family Health Services



**Chronic Disease Prevention You Can**  
DIVISION OF CHRONIC DISEASE PREVENTION AND CONTROL

## **Publication Information**

The Virginia Cancer Registry is an office in the Virginia Department of Health. The registry is part of the Division of Chronic Disease Prevention and Control, within the Office of Family Health Services. Unless noted, all the contributors to this report are on the staff of the Division of Chronic Disease Prevention and Control.

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Members of the VCR Medical Advisory Committee (MAC) provide medical and scientific advice about cancer to VCR. The committee consists of individuals who contribute their time and their ideas to the registry by attending meetings, fielding questions and making presentations. We do appreciate the time and effort MAC members take on behalf of VCR.

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This and other Virginia Cancer Registry information is available at:  
<http://www.vdh.virginia.gov/epi/cancer/index.asp>



## TABLE OF CONTENTS

<b>Executive Summary .....</b>	<b>9</b>
<b>Section I: Cancer-Related Programs in the Virginia Department of Health .....</b>	<b>13</b>
Breast and Cervical Cancer Early Detection Program .....	16
Comprehensive Cancer Prevention and Control Project .....	17
Tobacco Use Control Project.....	18
<b>Section II: Virginia Cancer Registry.....</b>	<b>19</b>
<b>Section III: Reportable Cancer in Virginia: An Overview .....</b>	<b>25</b>
1. Distribution of Reported Cancer for Virginia, Total Population.....	28
2. Distribution of Reported Cancer, Ten Most Commonly Reported Sites, Males .....	29
3. Distribution of Reported Cancer, Ten Most Commonly Reported Sites, Females .....	29
<b>Section IV: Reportable Cancer in Virginia: Selected Invasive Cancers .....</b>	<b>31</b>
1. All Sites Combined .....	35
2. Female Breast Cancer .....	36
3. Cancer of the Cervix .....	37
4. Cancer of the Colon and Rectum .....	38
5. Cancer of the Kidney and Renal Pelvis .....	39
6. Cancer of the Lung and Bronchus .....	40
7. Melanoma of the Skin .....	41
8. Non-Hodgkin Lymphoma .....	42
9. Cancer of the Oral Cavity and Pharynx .....	43
10. Prostate Cancer .....	44
11. Cancer of the Urinary Bladder .....	45
12. Cancer of the Uterus .....	46
<b>Section V: Reportable Cancer in Virginia: Cancer Incidence, 1995 – 1999 .....</b>	<b>47</b>
1. Age-adjusted incidence, all sites, by Health District and locality.....	51
2. Stage at diagnosis by major site .....	56
3. Stage at diagnosis by major site, males.....	57
4. Stage at diagnosis by major site, females.....	58
5. Age-adjusted incidence by primary site .....	59
6. Age-adjusted incidence by primary site, females.....	60
7. Age-adjusted incidence by primary site, males.....	61
8. Age-adjusted incidence, all sites, by sex and race.....	62
9. Age-adjusted incidence, all sites, by age group.....	63
10. Age-adjusted incidence, all sites, males, by age group .....	64
11. Age-adjusted incidence, all sites, females, by age group .....	65

## TABLE OF CONTENTS

<b>Section VI: Appendices.....</b>	<b>67</b>
Appendix A. Data Limitations.....	69
Appendix B. Technical Terms .....	70
Appendix C. Year 2000 Standard Population.....	73
Appendix D. SEER Definition of Cancer Site Categories.....	74
Appendix E. References .....	75

## **Executive Summary**



## Executive Summary

The Virginia Cancer Registry (VCR) produced this publication to report on cancer incidence in Virginia for 1999. The purpose is to present to the state's citizens data on the occurrence of cancer among Virginians. The report also highlights cancer and cancer-related programs in the Virginia Department of Health (VDH). These programs are the Breast and Cervical Cancer Early Detection Program, the Virginia Comprehensive Cancer Prevention and Control Program, and the Tobacco Use Control Project.

State law makes cancer a reportable disease. Hospital cancer registries, independent pathology laboratories, and physicians all must report certain cancers. VCR cancer registrars process these reports and enter them into a database. Registry statisticians extract information from the database and analyze it. Different segments of society have a use for information VCR provides. Those who use VCR data include public health administrators, academic researchers, non-profit organizations, private citizens, and cancer care providers.

The burden of cancer in Virginia is increasing. The number of reportable cancers diagnosed in 1999 was 27,754. This figure is 14.8 percent higher than the 24,182 cases diagnosed in 1995. The cancer incidence rate increased from 402.3 per 100,000 people in 1995 to 429.3 in 1999. Cancer strikes older Virginians more often than it does younger ones. Almost 75 percent of cancers diagnosed in 1999 occurred among people aged 55 and above. Cancer incidence peaked in 1999 at 2,086.5 per 100,000 in the 75-79 age group.

Incidence also varies by race. The 1999 African American incidence rate of 453.9 per 100,000 was 6.9 percent higher than the white rate of 424.7. Cancer is more often diagnosed among males than it is among females but the incidence rate is increasing in both sexes. The male incidence rate increased from 487.2 per 100,000 in 1995 to 511.1 in 1999. The female incidence rate increased from 348.4 per 100,000 in 1995 to 374.5 in 1999. The five cancers most commonly diagnosed in 1999, and their respective incidence rates, were prostate (162.2 per 100,000), female breast (128.6), lung and bronchus (62.6), colon and rectum (50.7), and uterine (21.7).

Inside the front cover are examples of how to use cancer data and who may need to use them. **Section I** highlights cancer programs in the Virginia Department of Health. **Section II** discusses VCR, what cancer is and how to prevent it. The section also outlines screening options the American Cancer Society recommends. **Section III** is a statistical summary of cancer incidence in Virginia in 1999. **Section IV** presents statistics, trends and a brief discussion of risks and primary prevention methods for commonly diagnosed cancers. **Section V** has a set of tables that expand on the numbers presented in Sections III and IV. These tables focus on the interval 1995 to 1999. Readers can use them to look at trends. **Section VI** provides appendices that discuss data limitations, definitions for technical terms and reference material. The report lists internet resources devoted to cancer research, treatment, and education inside the back cover.



## **Section I**

# **Cancer-Related Programs in the Virginia Department of Health**



## Section I

### Cancer-Related Programs in the Virginia Department of Health

This report is a resource that anyone with an interest in cancer in Virginia can use. It is foremost a statistical summary of cancer in the state, but it also contains information about cancer and tobacco programs the Virginia Department of Health (VDH) sponsors. The report is organized as follows. An introduction to what the Virginia Cancer Registry (VCR) can do for people who need information is inside the front cover. Section I presents information on VDH cancer and tobacco programs. Section II discusses the Virginia Cancer Registry, issues of patient confidentiality, cancer as a disease, and cancer prevention and control. This section also provides a table, adapted from the American Cancer Society, of recommendations for detecting cancer. Section III provides a discussion of cancers commonly diagnosed in 1999. It presents statistical tables that give an overview of cancer in the state. Summaries of eleven specific cancers appear in Section IV; each summary provides information on age, race and sex and summaries of diagnosis by stage of disease. Section V contains detailed cancer data tables. These tables present information on cancers diagnosed by Virginia locality and by sex, race, and age. The tables in Section V present comparative figures for cancers diagnosed between 1995 and 1999. Appendices at the end of the report contain technical and reference material. The report

lists internet web sites related to cancer.

VCR is an office in the Virginia Department of Health. It is in the Division of Chronic Disease Prevention and Control, which is part of the Office of Family Health Services. The registry collects reports of cancers diagnosed in the state, makes sure the information is correct and complete, analyzes the information, and provides statistical summaries about cancer in Virginia to people and organizations that need them. By law, all Virginia hospitals, independent laboratories, clinics and physicians have to report cancer diagnoses to VCR.<sup>1</sup> The registry is a population-based disease registry; this means VCR collects reports of all cancers diagnosed among Virginia's population.

VDH sponsors programs that help in the fight against cancer. Unlike the Virginia Cancer Registry, which is primarily a disease surveillance and analytical operation, the programs discussed in this section engage in public health service delivery, education and intervention activities. These programs have varying degrees of direct citizen involvement. The descriptions below provide information on what the programs do for Virginia's citizens and how to contact them.

<sup>1</sup> The *Code of Virginia* establishes the Virginia Cancer Registry and designates who should report cancer cases to the registry. See the *Code of Virginia*, sections § 32.1-70 and § 32.1-71.

## Breast and Cervical Cancer Early Detection Program

The VDH Division of Women's and Infants' Health sponsors a program to screen for breast and cervical cancer. Screening services are available to all women who meet the eligibility requirements. Women who are diagnosed with breast or cervical cancer or pre-cancer by a participating medical provider will be referred to Medicaid for treatment, if eligible.

### Breast and cervical cancer screening services:

- ◆ Mammogram
- ◆ Clinical breast exam
- ◆ Pap test
- ◆ Pelvic exam
- ◆ Patient education

These services are available through a state-wide network of medical providers.

### Eligibility requirements:

- ◆ Virginia resident
- ◆ Ages 40-64 (restrictions apply to women who are 40-49)
- ◆ Uninsured or underinsured
- ◆ Annual income at or below 200% of the federal poverty level

### Contact information:

Call the screening hotline at 1-800-ACS-2345 (1-800-227-2345) or visit [www.vahealth.org/breastcancer](http://www.vahealth.org/breastcancer) to find a screening site.

### Resources in this publication:

- ◆ Breast and cervical cancer statistics, pages 28-29, 36-37, 56, 58, 60, and inside the back cover.
- ◆ Preventing breast and cervical cancer, pages 36 and 37.
- ◆ Risks for getting breast and cervical cancer, pages 36 and 37.
- ◆ Breast and cervical cancer resources, inside the back cover.

### Program details:

Breast and Cervical Cancer Early Detection Program (BCCEDP)  
Virginia Department of Health  
109 Governor St, 8th Fl  
Richmond, VA 23219

Phone: (804) 864-7761

Fax: (804) 864-7771

Hotline: (800) ACS-2345 (227-2345)

◆ for referral for screening services  
E-mail: [Breast\\_Cancer@vdh.state.va.us](mailto:Breast_Cancer@vdh.state.va.us)  
Internet: [www.vahealth.org/breastcancer](http://www.vahealth.org/breastcancer)

Hours: 8:00 am – 5:00 pm, Monday through Friday except holidays

## Virginia Comprehensive Cancer Prevention and Control Project

The Virginia Comprehensive Cancer Prevention and Control Project (CPCP) has two primary goals. First is to help reduce the incidence of cancer and cancer related deaths. Second is to enhance access to quality treatment and support services through educating health professionals, legislators, public and private organizations, and the general public.

The Cancer Plan Action Committee (CPAC), formed in 1998, consists of representatives from public and private organizations and agencies; and spokespersons for target populations concerned about the prevention and control of cancer. The mission of CPAC is to eliminate preventable cancers and to minimize the burden of cancer in Virginia by joining forces for cancer control.

The CPAC and the Virginia Department of Health developed the state's comprehensive Virginia Cancer Plan for 2001-2005. The Virginia Cancer Plan is the centerpiece of the project and provides the framework for action to reduce the burden of cancer. The plan includes an executive summary, list of committee members, an introduction and a description of the burden of cancer. It outlines goals, recommendations, and strategies for

- Prevention
- Early detection
- Treatment
- Rehabilitation and palliation
- Surveillance

The Virginia plan is one of a national network of cancer control plans developed to meet the Centers for Disease Control and Prevention's Division of Cancer Prevention and Control (DCPC) efforts to prevent cancer and to increase early detection of cancer. DCPC works

with partners in the government, private, and nonprofit sectors to develop, implement, and promote effective cancer prevention and control practices nationwide.<sup>2</sup>

The documents listed below are available on the Virginia Department of Health web site at: <http://www.vahealth.org/cancerprevention/pubs/bscpc.htm>.

### Cancer Control Documents

- ◆ The *Virginia Cancer Plan for 2001-2005*
- ◆ Analysis of Cancer Risks in District Health Departments in Virginia
- ◆ Cancer Prevention Activities Provided by District Health Departments in Virginia, 1994 to 1998

### Mini-Grants

The CPCP offers opportunities for health districts and community organizations to address strategies in the cancer plan through competitive mini-grants. Mini-grants target health risk behaviors and early detection related to skin cancer, lung cancer, prostate cancer and colorectal cancer.

### Contact Information

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Email: [theresa.teekah@vdh.virginia.gov](mailto:theresa.teekah@vdh.virginia.gov)  
Website:  
<http://www.vahealth.org/cancerprevention>  
Hours: 8:00 am – 5:00 pm, Monday-Friday,  
except holidays.

<sup>2</sup> CPAC 2000:10.

## Tobacco Use Control Project

The Tobacco Use Control Project (TUCP) is a Virginia Department of Health program that is funded by the Centers for Disease Control and Prevention (CDC) to work to control tobacco use in Virginia. Tobacco use remains the leading preventable cause of death in Virginia and based on 2001 Behavioral Risk Factor Surveillance Survey results, approximately 21.4% of Virginians smoke. The TUCP program works with local coalitions and partner organizations not only to focus on the goals of prevention and cessation of tobacco use, but also to decrease Virginia citizens' exposure to secondhand smoke. Funded local coalitions are composed of individuals and local community groups that organize with the purpose of controlling tobacco use within their specific area or region. In addition to working with local coalitions and partner organizations, sixteen Virginia colleges and universities are also funded to promote policies for tobacco use control for their campuses. The TUCP also works in partnership with several non-government organizations (NGOs) on promoting state and local policies related to tobacco use control.

**Project Goals.** There are four goal areas for tobacco related policy change that the TUCP is charged to focus on. These include:

1. Prevent initiation of tobacco use among young people
2. Eliminate exposure to environmental tobacco smoke
3. Promote smoking cessation among adults and young people
4. Identify and eliminate tobacco-related disparities in specific population groups

**Coalitions and Partners.** In order to meet the project's goals, the Tobacco Use Control Project provides grant money to coalitions and partners on a yearly basis for the goal of creating and implementing policies to control tobacco

use and exposure to the secondhand smoke associated with it.

**Virginia Clean Air Act.** The project works to control exposure to secondhand smoke in public places. As part of this, the TUCP promotes the Virginia Clean Air Act, which mandates certain standards for a smoke-free public environment:

- ◆ Certain public places must be completely free of tobacco smoke or provide non-smoking sections. These places include: restaurants with over 50 seats outside a bar; service lines in commercial establishments; retail stores larger than 15,000 sq. ft.; schools, when students are present; public health departments; and hospital emergency rooms.
- ◆ For the privately owned businesses which do not fall under this act, owners/managers have the right to determine if their establishment will be smoke-free. TUCP recommends that patrons of these establishments speak with the owners and managers and advocate the adoption of a smoke free policy.

**Resources in this publication:** Tobacco causes many cancers. Among the more important ones are oral, lung and bronchus, and urinary bladder cancer. For information on risks, prevention and statistics, see pages 28-29, 40, 43, 45, 56-58, 59-61, and inside the back cover. Numerous web-based resources are listed inside the back cover.

### Program details:

Tobacco Use Control Project  
Virginia Department of Health  
109 Governor St, 10th Fl  
Richmond, VA 23219  
Phone: (804) 864-7731  
Fax: (804) 864-7880  
Internet: [www.vahealth.org/tobaccocontrol](http://www.vahealth.org/tobaccocontrol)

## **Section II**

# **Virginia Cancer Registry**



## Section II

### Virginia Cancer Registry

The Virginia Cancer Registry is in the Office of Family Health Services of the Virginia Department of Health. The registry is a program in the Division of Chronic Disease Prevention and Control. Functions the registry performs include:

- ◆ collecting, editing and analyzing cancer case reports;
- ◆ supporting and training hospital cancer registries;
- ◆ providing statistical summaries of cancer incidence;
- ◆ providing data for planning and evaluating cancer control activities;
- ◆ promoting cancer research and providing data for such research;
- ◆ educating health professionals, health managers, and physicians about reporting cancer and using cancer data; and
- ◆ responding to citizen requests for help with suspected cancer clusters.

VCR has collected demographic and clinical information on cancer patients diagnosed or treated in Virginia since 1970. The registry mission expanded in 1990 to cover the whole population of Virginia; reporting newly-diagnosed cancer cases became mandatory for hospitals, clinics, and pathology laboratories in 1990 (*Code of Virginia §32.1-70*). To improve the completeness of case reporting, the Virginia legislature amended the cancer registry law in 1998 to require that physicians report in certain instances. VCR is dedicated to fulfilling its legislative intent, which is to monitor cancer incidence in Virginia for the purposes of understanding, controlling, and reducing the occurrence of cancer in the state. Virginia general revenues support the registry; since 1995, the Centers for Disease

Control and Prevention's National Program of Cancer Registries (NPCR) has provided additional funding.

#### Confidentiality

All confidential information received and processed by the registry is protected from unlawful disclosure. Data are secured from unauthorized access, and published statistical reports and data summaries only provide aggregated data that cannot be used to identify individuals.

The registry works to ensure that Virginia's cancer incidence data is complete, accurate, comparable to national data, and timely. In order to meet national standards in these areas, the registry performs activities to monitor progress, to highlight areas for additional effort, and to improve the quality of the cancer surveillance and registration program.

#### Cancer

Cancer is not one disease. It is a group of diseases. All cancers are characterized by cells that grow and spread out of control. Cancer develops at any age and may spread to any part of the body. It is the second leading cause of death in the United States, and accounted in 1999 for about 23 percent of all deaths.<sup>3</sup> External and internal factors can cause cancer. External factors include tobacco, chemicals, radiation, and infectious organisms. Internal factors include hormones, immune conditions, and mutations that are either inherited or occur from metabolism. The causes of particular cancers may work together or in sequence; it may take ten or more years for a cancer to develop to a detectable point. Doctors treat cancer with surgery, radiation, chemotherapy, hormones and immunotherapy.<sup>4</sup>

### **Cancer Prevention and Control**

Illness and death due to cancer are increasingly preventable. Growing knowledge about the causes of cancer, improved screening and early diagnostic techniques, and more effective treatment all contribute. Various strategies are used to prevent cancer. Primary prevention helps healthy people avoid developing cancer. Secondary prevention detects cancer as early as possible, when it can be treated most effectively and with the fewest side effects.

Primary prevention depends on making changes in one's behaviors to reduce the risk of developing cancer. Major reductions in cancer rates and in an individual's likelihood of developing cancer can be achieved through primary prevention. For example, eliminating smoking tobacco may reduce the lung cancer death rate by over eighty-five percent. It would also markedly reduce rates of cancers of the oral cavity and pharynx, esophagus, bladder, kidney, pancreas, and cervix.<sup>5</sup> Changing eating habits can reduce the risk of developing cancer. According to the American Cancer Society, a diet that is low in fat, high in fiber, and includes five or more servings per day of fruits and vegetables is likely to reduce the risk of cancers of the colon and rectum, lung, prostate, bladder, esophagus, stomach, and other organs. Regular, moderate exercise has also shown benefits in preventing cancer at a number of sites. The overall benefit of these healthy habits makes them wise choices for cancer prevention.

Secondary prevention refers to detecting tumors at an early stage, when they can be treated with the best likelihood of a cure. Early detection screening programs have a clear role in detecting and successfully treating cancers of the female breast and the cervix. Screening for cancers of the colon, rec-

tum and prostate is increasingly recognized as an effective secondary prevention technique. For many other cancers, however, the value of routine screening is not clear and various authorities make different recommendations. The table at the end of this section shows the American Cancer Society's recommendations for the early detection of cancer. The information applies to persons without symptoms who have an average risk for cancer.<sup>6</sup>

The war on cancer requires collaboration between individuals, organizations, physicians, researchers, and agencies. Each has essential roles to play. Individuals can make responsible choices about diet, exercise and cancer screening. Non-profit organizations educate health care providers and the public. They also provide important support services for cancer patients and their families. Health care providers perform screening tests, care for patients, and educate patients and their families. Researchers investigate new ways to detect and treat cancer, and search for the causes of cancer. Agencies such as the Virginia Department of Health create programs that promote screening and education, and assure access to personal health services. Government agencies also create policies and regulations to minimize environmental hazards such as cigarette smoke, and control occupational exposure to carcinogens. The Virginia Cancer Registry provides current, accurate data to these and many other organizations and individuals. Information the registry provides is a foundation for public awareness and education campaigns, for research studies evaluating causes, detection, and treatment of cancer and for cancer control initiatives.

<sup>3</sup> Anderson 2001:6.

<sup>4</sup> ACS 2002:1.

<sup>5</sup> Lubin, in Harris 1996:158-161.

<sup>6</sup> American Cancer Society, 2001:35.

American Cancer Society Recommendations for the Early Detection of Cancer in Average Risk, Asymptomatic People*			
Cancer Site	Population	Test or Procedure	Frequency
Breast	Women, age 20+	Breast self-examination	Monthly, starting at age 20
		Clinical breast examination	Every 3 years, ages 20-39 Annually, starting at age 40**
		Mammography	Annually, starting at age 40
Colorectal	Men & women, age 50+	Fecal occult blood test (FOBT) & flexible sigmoidoscopy <sup>+</sup> -or-	Annual FOBT and flexible sigmoidoscopy every 5 years, starting at age 50
		Flexible sigmoidoscopy -or-	Every 5 years, starting at age 50
		FOBT -or-	Annually, starting at age 50
		Colonoscopy -or-	Every 10 years, starting at age 50
		Double contrast barium enema (DCBE)	Every 5 years, starting at age 50
Prostate	Men, age 50+	Digital rectal examination (DRE) & prostate specific antigen (PSA) test	Offer the PSA test and the DRE annually, starting at age 50, for men who have a life expectancy of at least 10 years.‡
Cervix	Women, age 18+	Pap test & pelvic examination	All women who are, or have been, sexually active, or have reached age 18 should have an annual Pap test and pelvic examination. After a woman has had 3 or more consecutive satisfactory normal annual examinations, the Pap test may be performed less frequently at the discretion of the physician.
Cancer-related check-up	Men & women, age 20+		Examinations every 3 years from ages 20 to 39 years and annually after age 40. The cancer-related check-up should include examination for cancers of the thyroid, testicles, ovaries, lymph nodes, oral cavity, and skin, as well as health counseling about tobacco, sun exposure, diet and nutrition, risk factors, sexual practices, and environmental and occupational exposures.
** Beginning at age 40, annual clinical breast examination should be performed prior to mammography.			
+ Flexible sigmoidoscopy together with FOBT is preferred compared with FOBT or flexible sigmoidoscopy alone.			
‡ Provide men with information about the benefits and limitations of screening.			

\* Source: American Cancer Society, 2001, p. 35.



## **Section III**

# **Reportable Cancer in Virginia: An Overview**



## Section III

### Reportable Cancer in Virginia: An Overview

Section III summarizes reports of cancers diagnosed in 1999. Facilities continue to report 1999 cases so the data appearing here are provisional. Case counts and rates may change over time, but such changes will not be large. The tables that follow describe all cancers diagnosed and reported to VCR, the top ten most common cancers, and cervical cancer. Although cervical cancer is not among the top ten cancers, citizens, researchers and policy makers are greatly interested in it, so it is included.

During 1999, 27,754 new cases of invasive cancer were diagnosed among Virginians. The state's *age-adjusted incidence rate*<sup>7</sup> was 429.3 cancers per 100,000 people. Cancer accounted for 13,326 deaths of Virginia residents or 24.1 percent of all deaths.<sup>8</sup> Although cancer strikes all ages, older people have higher rates than younger people; the highest incidence rate was 2,086.5 per 100,000 among people 75-79 years old. The lowest was 9.2 among children aged 10-14. Racial differences also exist. The overall rate for African Americans in 1999 was 453.9 per 100,000 population. This is 6.9 percent higher than the white rate of 424.7. Males in Virginia were diagnosed with cancer more frequently than females. The male rate, 511.1 per 100,000, was 36.5 percent higher than the female rate of 374.5 in 1999.

#### **Cancers most commonly diagnosed in 1999**

The five cancers discussed below total 17,467 cases, or almost two thirds of the 27,754 cancers diagnosed in 1999. The next five most commonly diagnosed cancers were Non-Hodgkins Lymphoma, melanomas of the skin, uterine cancers, oral and pharyngeal cancer, and cancers of the kidney and renal pelvis.

**Female breast cancer** was most frequent with

4,593 cases and a rate of 128.6. Female breast cancer accounted for 34.2 percent of all female cancers. It was the second leading cause of female deaths due to cancer, with 1,006 deaths. **Prostate cancer**, with 4,521 cases diagnosed, was the second most common cancer. This male cancer occurred at a rate of 162.2 per 100,000 in 1999. Prostate cancer was the most common cancer among men, accounting for 31.5 percent of male cancers. It caused 785 deaths, making it the second leading cause of cancer death for males. **Lung and bronchus cancers** were the third most commonly diagnosed cancers. In 1999, 3,991 cases were reported. The male rate, 84.1 per 100,000, was about 80 percent higher than the female rate, which was 46.4. Lung and bronchus cancer caused 3,776 deaths among Virginians in 1999, making it the most common cause of cancer deaths. **Cancers of the colon and rectum** were fourth. During the year, 3,197 Virginians were diagnosed with colorectal cancer. The rate was 50.7 per 100,000 population. With 1,319 deaths, colorectal cancer was the second leading cause of death from cancer in 1999. **Cancer of the urinary bladder** was the fifth leading cancer diagnosed among Virginians in 1999; the number of cases was 1,165, or 4.2 percent of all cancers. The rate was 18.6 per 100,000.

<sup>7</sup>Technical terms in italics are defined in appendix B.

<sup>8</sup> Mortality frequencies and rates presented in this publication come from the Virginia Center for Health Statistics through a data sharing agreement with VCR. More information about the Center for Health Statistics can be had by visiting the center's web site at: <http://www.vdh.state.va.us/stats/index.htm>.

Distribution of Reported Cancer, Virginia, 1999  
 Number, Percentage, and Age-Adjusted Incidence Rate  
 By Site  
 Total Population

SITE	Cases	%	Rate
Female Breast*	4,593	34.8	128.6
Prostate*	4,521	31.5	162.2
Lung/Bronchus	3,991	14.4	62.6
Colon/Rectum	3,197	11.5	50.7
Urinary Bladder	1,165	4.2	18.6
Non-Hodgkin Lymphoma	1,003	3.6	15.5
Melanoma of the Skin	963	3.5	14.4
Corpus and Uterus, NOS*	775	5.8	21.7
Oral Cavity and Pharynx	718	2.6	11.0
Kidney/Renal Pelvis	643	2.3	9.8
Pancreas	533	1.9	8.4
Ovary*	471	3.5	13.1
Leukemia	449	1.6	6.9
Brain/Other Nervous System	425	1.5	6.4
Thyroid	396	1.4	5.6
Stomach	394	1.4	6.3
Cervix*	358	2.7	9.8
Larynx	308	1.1	4.7
Esophagus	290	1.0	4.5
Multiple Myeloma	264	1.0	4.1
Liver/Intrahepatic Bile Duct	228	0.8	3.6
Hodgkin Lymphoma	186	0.7	2.7
Testis*	175	1.2	4.8
Other	1,635	5.9	25.5
<b>All Sites</b>	<b>27,754</b>		<b>429.3</b>

Note: Data exclude localized basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. All rates are per 100,000 population and are adjusted to 2000 U.S. standard population (5 year age-groups). \* Percents do not total 100%; rates and percentages calculated for sex-specific population.



Distribution of Reported Cancer, Virginia, 1999  
Number, Percentage, and Age-Adjusted Incidence Rate  
By Site  
Ten Most Commonly Reported Sites--Males

SITE	Cases	%	Rate
Prostate	4,521	31.5	162.2
Lung/Bronchus	2,336	16.3	84.1
Colon/Rectum	1,632	11.4	60.4
Urinary Bladder	870	6.1	33.1
Melanoma of the Skin	550	3.8	18.6
Non-Hodgkin Lymphoma	527	3.6	18.3
Oral Cavity and Pharynx	469	3.2	15.9
Kidney/Renal Pelvis	398	2.7	13.4
Pancreas	276	1.9	10.1
Leukemia	273	1.9	9.6

Note: Data exclude localized basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. All rates are per 100,000 population and are adjusted to 2000 U.S. standard population (5 year age-groups).

Distribution of Reported Cancer, Virginia, 1999  
Number, Percentage, and Age-Adjusted Incidence Rate  
By Site



Ten Most Commonly Reported Sites--Females

SITE	Cases	%	Rate
Breast	4,593	34.2	128.6
Lung/Bronchus	1,655	12.3	46.4
Colon/Rectum	1,565	11.7	43.4
Corpus and Uterus, NOS	775	5.7	21.7
Non-Hodgkin Lymphoma	476	3.5	13.3
Ovary	471	3.5	13.1
Melanoma of the Skin	413	3.0	11.4
Cervix	358	2.6	9.8
Urinary Bladder	295	2.2	8.2
Thyroid	293	2.1	8.1

Note: Data exclude localized basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. All rates are per 100,000 population and are adjusted to 2000 U.S. standard population (5 year age-groups).



## **Section IV**

### **Reportable Cancer in Virginia: Selected Invasive Cancers**



## Section IV

### Reportable Cancer in Virginia: Selected Invasive Cancers

This section presents material on selected cancer sites. Each site is presented in a standardized way. A table presents incidence and mortality data for cancers diagnosed among Virginians in 1999. Both the number of cases diagnosed and the *age-adjusted incidence rate* per 100,000 are presented. The data are broken out by *race* and *ethnicity*. A pie chart details the distribution of the 1999 diagnoses by *stage at diagnosis*. A line graph tracks *age-specific incidence rates* per 100,000 population from ages 0-4 to ages 85+. Each

description includes notes on risks and prevention and reminds the reader to look inside the back cover of this report for links to internet sites specifically devoted to that cancer. The number or the rate for certain table cells may be blank. This is due to the policy the Virginia Cancer Registry has on data suppression. The data limitation discussion in Appendix A explains this policy.<sup>9</sup>

<sup>9</sup>Suppressing cell counts is a standard practice to help protect patient confidentiality. See: Coughlin 1999; Klein 2002; McLaughlin 2002.



# All Sites Combined

## Number of Cases and Age-Adjusted Rates by Sex and by Race

	Incidence		Mortality	
	Cases	Rate	Deaths	Rate
Total*	27,754	429.3	13,326	213.5
Male	14,343	511.1	6,974	273.0
Female	13,411	374.5	6,352	175.9
White	22,184	424.7	10,387	240.0
Black	4,763	453.9	2,749	275.1
Other	490	269.8	190	118.5

The 1999 age-adjusted rate of 511.1 per 100,000 among males in Virginia was lower than the U.S. rate of 552.3 per 100,000. Cancer among Virginia females, at 374.5 per 100,000, was also lower than the U.S. rate of 420.1.<sup>10</sup>

In 1999, the white male rate of 492.4 per 100,000 Virginia males was lower than the U.S. rate of 542.0. The national rate among black males, at 617.4, was higher than the rate among white males. In Virginia, the black male rate of 603.1 was also higher than the corresponding white rate.

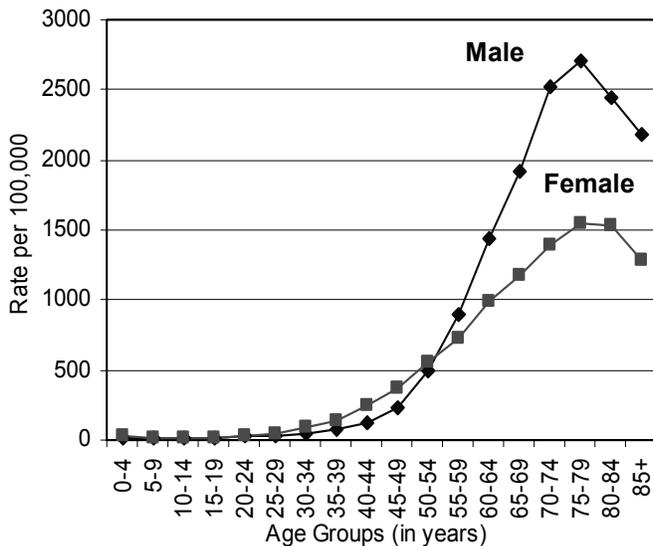
Female cancer rates are lower nationally than male rates. The 1999 U.S rate among white females was 423.8 and the Virginia rate was 381.0. The rate among Black females in Virginia was 352.1 and the U.S. rate was 381.7.

**Note.** Mortality data were obtained from the Virginia Center for Health Statistics (VCHS). Incidence data exclude localized basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. All rates are per 100,000 population and are adjusted to the 2000 U.S. Standard Population (5 year age-groups).

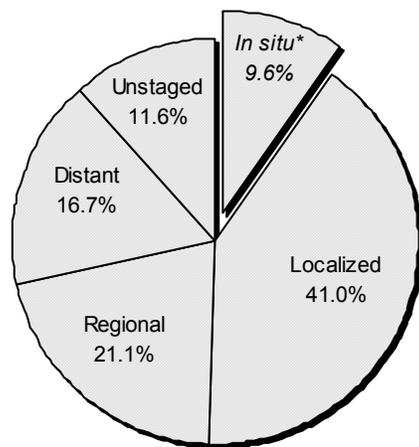
\*Total figures include persons of unknown race.

<sup>10</sup>U.S. data: USCS 2002:16,18

## Invasive Cancer, All Sites Combined Age-Specific Incidence Rate by Sex



## Percentage of Cases by Stage at Diagnosis for All Sites Combined



N=30,294

\*In situ cancers except those of the urinary bladder have been excluded from all rates presented.

# Female Breast Cancer

## Number of Cases and Age-Adjusted Rates by Race

	Incidence		Mortality	
	Cases	Rate	Deaths	Rate
Total*	4,593	128.6	1,006	28.1
White	3,740	131.9	775	26.7
Black	747	120.3	221	36.1
Other	82	68.3	10	9.3

**Note.** Mortality data were obtained from the Virginia Center for Health Statistics (VCHS). Incidence data exclude localized basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. All rates are per 100,000 population and are adjusted to the 2000 U.S. Standard Population (5 year age-groups).  
\*Total figures include persons of unknown race.

The 1999 U. S. age-adjusted rate for female breast cancer was 134.1 per 100,000. The white rate was 136.3 per 100,000 and the black rate was 112.7.<sup>11</sup>

Factors that increase the risk of breast cancer are:

- ◆ Family history of the cancer
- ◆ Having genes BRCA-1 or BRCA-2
- ◆ Having a first child after age 30
- ◆ Personal history of breast cancer

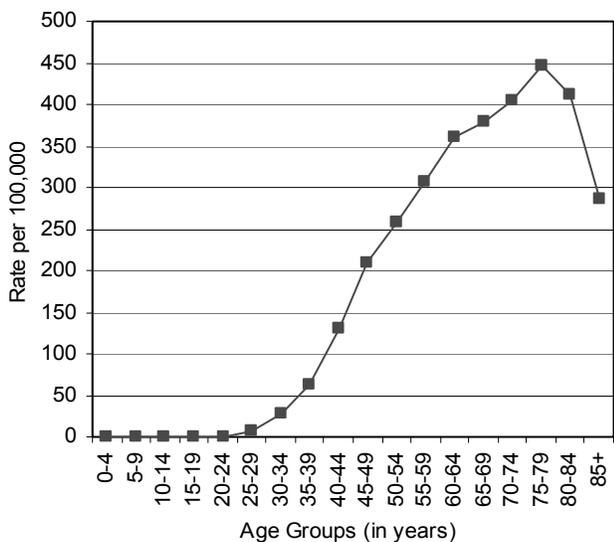
Mammography is a standard screening method; women should also know their family history and perform regular breast self examinations.<sup>12</sup>

See the inside of the back cover for breast cancer resources.

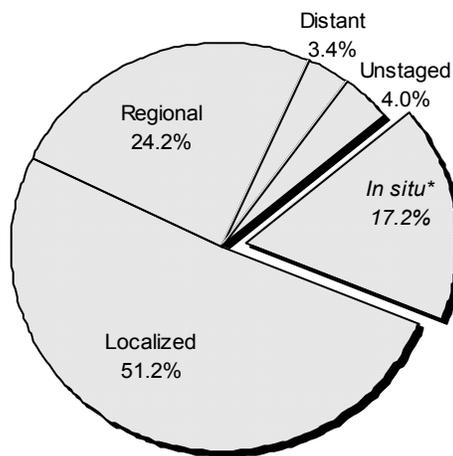
<sup>11</sup>U.S. data: USCS 2002:64

<sup>12</sup> Harris 1996: 120-123

## Invasive Female Breast Cancer Age-Specific Incidence Rate



## Percentage of Cases by Stage at Diagnosis



**N=5,547**

\*In situ cancers have been excluded from all rates presented.

# Cancer of the Cervix

## Number of Cases and Age-Adjusted Rates by Race

	Incidence		Mortality	
	Cases	Rate	Deaths	Rate
Total*	358	9.8	97	2.7
White	231	8.2	59	2.1
Black	78	12.0	34	5.5
Other	13	10.6	4	†

**Note.** Mortality data were obtained from the Virginia Center for Health Statistics (VCHS). Incidence data exclude localized basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. All rates are per 100,000 population and are adjusted to the 2000 U.S. Standard Population (5 year age-groups).

\*Total figures include persons of unknown race.

† Rates based on fewer than 10 cases are not reported because they are unreliable.

The 1999 U. S. age-adjusted rate for cervical cancer was 9.5 per 100,000. The white rate was 8.8 per 100,000 and the black rate was 13.9.<sup>13</sup>

Factors that increase the risk of cervical cancer are:

- ◆ Early age at first sexual intercourse
- ◆ Having multiple sex partners
- ◆ Human papillomavirus (HPV) infection
- ◆ Smoking and nutritional deficiencies (vitamin C, beta carotene, folacin)

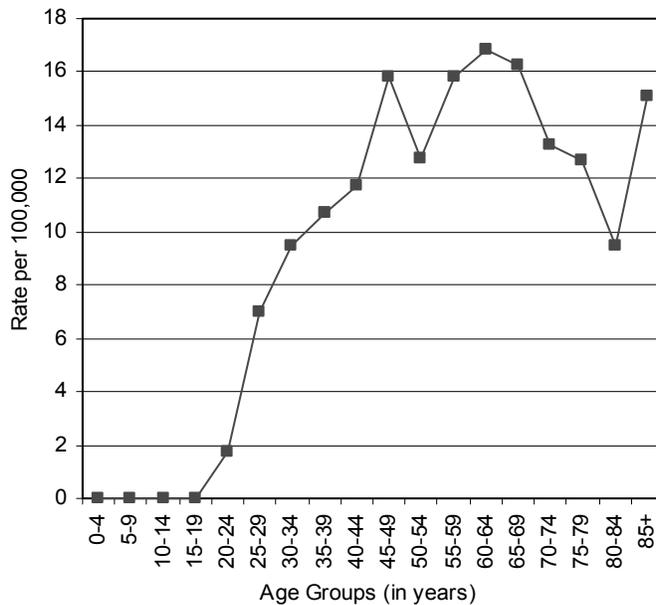
Using barrier contraceptives reduces risk. Pap tests are routine screening tests.<sup>14</sup>

See the inside of the back cover for cervical cancer resources.

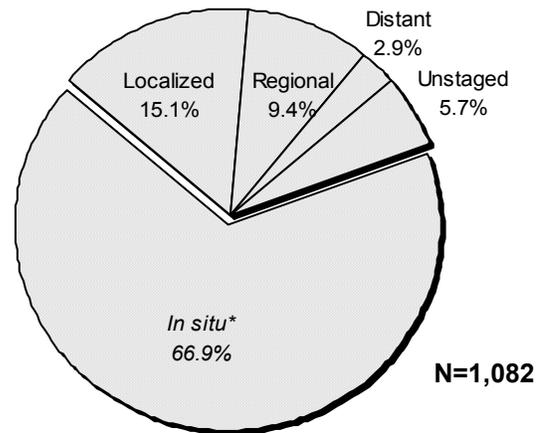
<sup>13</sup> U.S. data: USCS 2002:68

<sup>14</sup> Harris 1996: 200-202

## Invasive Cancer of the Cervix Age-Specific Incidence Rate



## Percentage of Cases by Stage at Diagnosis



\*In situ cancers have been excluded from all rates presented.

# Cancer of the Colon and Rectum

## Number of Cases and Age-Adjusted Rates by Sex and by Race

	Incidence		Mortality	
	Cases	Rate	Deaths	Rate
Total*	3,197	50.7	1,319	21.5
Male	1,632	60.4	641	25.5
Female	1,565	43.4	678	18.6
White	2,545	49.5	1,016	20.2
Black	589	58.5	285	29.0
Other	53	33.0	18	9.5

**Note.** Mortality data were obtained from the Virginia Center for Health Statistics (VCHS). Incidence data exclude localized basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. All rates are per 100,000 population and are adjusted to the 2000 U.S. Standard Population (5 year age-groups).

\*Total figures include persons of unknown race.

The 1999 U. S. age-adjusted rate for cancers of the colon and rectum was 66.4 per 100,000 for males and 48.5 per 100,000 for females.<sup>15</sup>

Factors that increase the risk of colon and rectum cancer are:

- ◆ Males are more at risk than females
- ◆ Diets high in fat or red meat, or both
- ◆ Lack of exercise
- ◆ Family history of the cancer

To help lower the risk for this cancer, exercise and eat a diet that is low in fat and red meat and high in fiber. Aspirin may help lower risk.<sup>16</sup>

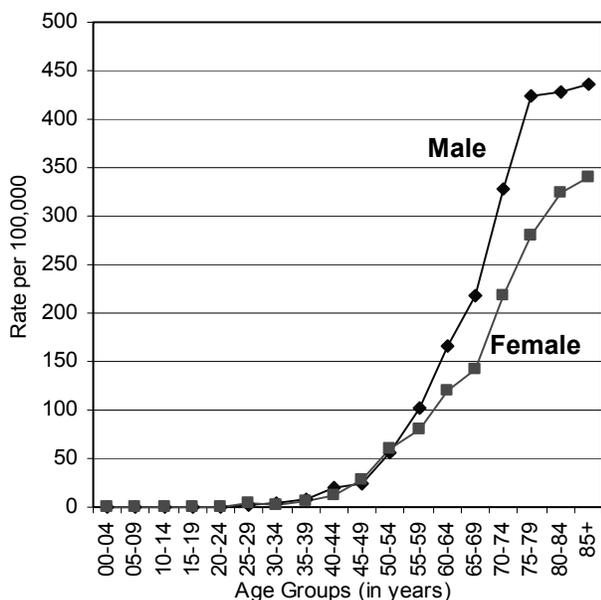
Screening methods include fecal occult blood test (FOBT), sigmoidoscopy, and colonoscopy.

See the inside of the back cover for colon and rectum cancer resources.

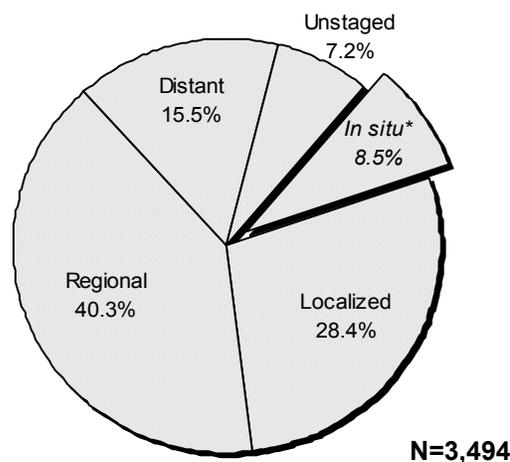
<sup>15</sup> U.S. data: USCS 2002:40, 42

<sup>16</sup> Harris 1996: 129-135

## Invasive Cancer of the Colon and Rectum Age-Specific Incidence Rate by Sex



## Percentage of Cases by Stage at Diagnosis



\*In situ cancers have been excluded from all rates presented.

# Cancer of the Kidney and Renal Pelvis

## Number of Cases and Age-Adjusted Rates by Sex and by Race

	Incidence		Mortality	
	Cases	Rate	Deaths	Rate
Total*	643	9.8	284	4.5
Male	398	13.4	179	6.6
Female	245	6.9	105	2.9
White	501	9.5	232	4.5
Black	130	12.2	51	5.1
Other	12	6.7	1	†

**Note.** Mortality data were obtained from the Virginia Center for Health Statistics (VCHS). Incidence data exclude localized basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. All rates are per 100,000 population and are adjusted to the 2000 U.S. Standard Population (5 year age-groups).

\*Total figures include persons of unknown race.

† Rates based on fewer than 10 cases are not reported because they are unreliable.

The 1999 U. S. age-adjusted rate for cancers of the kidney and renal pelvis was 16.0 per 100,000 for males and 8.4 per 100,000 for females.<sup>17</sup>

Factors that increase the risk of kidney and renal pelvis cancer are:

- ◆ Using tobacco increases the risk 1.5 to 2.5 times
- ◆ Obesity increases the risk of kidney cancer

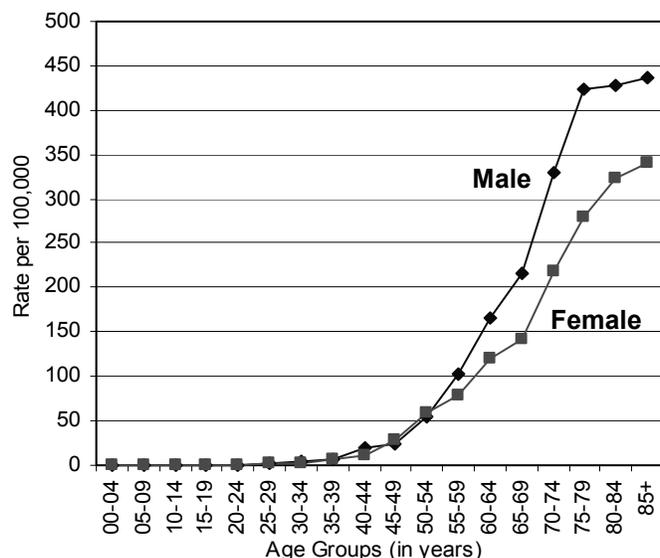
Stopping tobacco use may prevent up to 50% of these cancers. Coffee, tea, and alcohol are not risks.<sup>18</sup>

See the inside of the back cover for kidney and renal pelvis cancer resources.

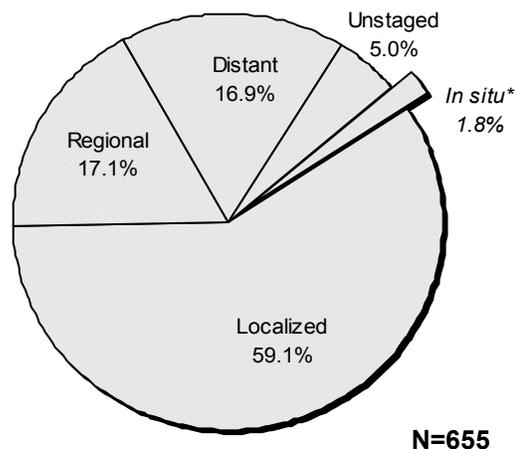
<sup>17</sup> U.S. data: USCS 2002:82, 84

<sup>18</sup> Harris 1996: 145-147

## Invasive Cancer of the Kidney and Renal Pelvis Age-Specific Incidence Rate by Sex



## Percentage of Cases by Stage at Diagnosis



\*In situ cancers have been excluded from all rates presented.

# Cancer of the Lung and Bronchus

## Number of Cases and Age-Adjusted Rates by Sex and by Race

	Incidence		Mortality	
	Cases	Rate	Deaths	Rate
Total*	3,991	62.6	3,776	60.1
Male	2,336	84.1	2,267	85.5
Female	1,655	46.4	1,509	42.1
White	3,238	62.3	3,057	56.5
Black	697	68.4	678	67.9
Other	51	32.7	41	27.2

**Note.** Mortality data were obtained from the Virginia Center for Health Statistics (VCHS). Incidence data exclude localized basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. All rates are per 100,000 population and are adjusted to the 2000 U.S. Standard Population (5 year age-groups).  
\*Total figures include persons of unknown race.

The 1999 U. S. age-adjusted rate for cancers of the lung and bronchus was 89.1 per 100,000 for males and 53.4 per 100,000 for females.<sup>19</sup>

Factors that increase the risk of lung and bronchus cancer are:

- ◆ Smoking tobacco causes up to 85% of cancers of the lung
- ◆ High alcohol consumption
- ◆ Exposure to radon gas and asbestos

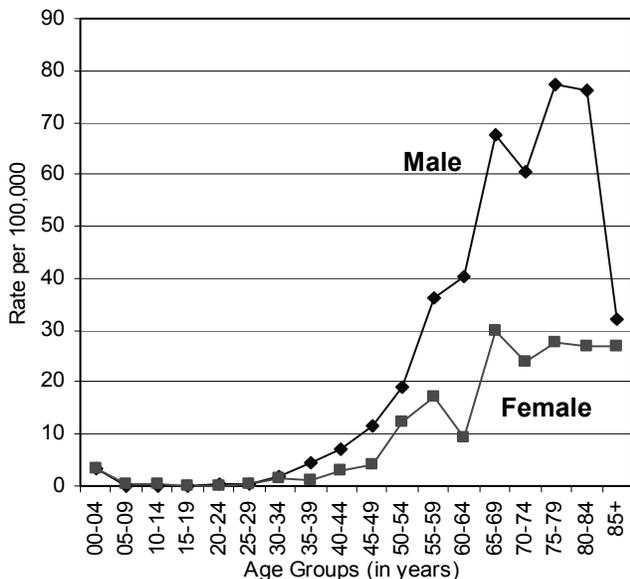
Although all are at risk for these cancers, to lower the risk, do not start smoking or quit smoking. A diet high in fruits and vegetables can also reduce one's risk.<sup>20</sup>

See the inside of the back cover for lung and larynx cancer resources.

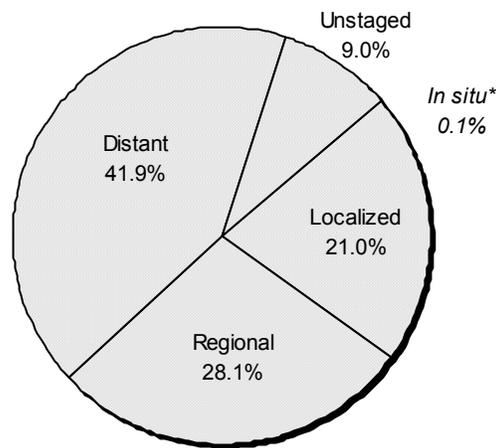
<sup>19</sup> U.S. data: USCS 2002:56, 58

<sup>20</sup> Harris 1996: 158-162

## Invasive Cancer of the Lung and Bronchus Age-Specific Incidence Rate by Sex



## Percentage of Cases by Stage at Diagnosis



N=3,994

\*In situ cancers have been excluded from all rates presented.

# Melanoma of the Skin<sup>‡</sup>

## Number of Cases and Age-Adjusted Rates by Sex and by Race

	Incidence		Mortality	
	Cases	Rate	Deaths	Rate
Total*	963	14.4	164	2.6
Male	550	18.6	101	3.8
Female	413	11.4	63	1.8
White	884	16.6	157	3.0
Black	10	1.0	6	†
Other	5	†	1	†

**Note.** Mortality data were obtained from the Virginia Center for Health Statistics (VCHS). Incidence data exclude localized basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. All rates are per 100,000 population and are adjusted to the 2000 U.S. Standard Population (5 year age-groups).

\*Total figures include persons of unknown race.

† Rates based on fewer than 10 cases are not reported because they are unreliable.

The 1999 U. S. age-adjusted rate for melanoma of the skin was 19.0 per 100,000 for males and 12.1 per 100,000 for females.<sup>21</sup>

Factors that increase the risk of melanoma of the skin are:

- ◆ Repeated, severe sunburns
- ◆ Having light skin and freckles
- ◆ Family history increases risk up to three times
- ◆ Some immunosuppressed conditions

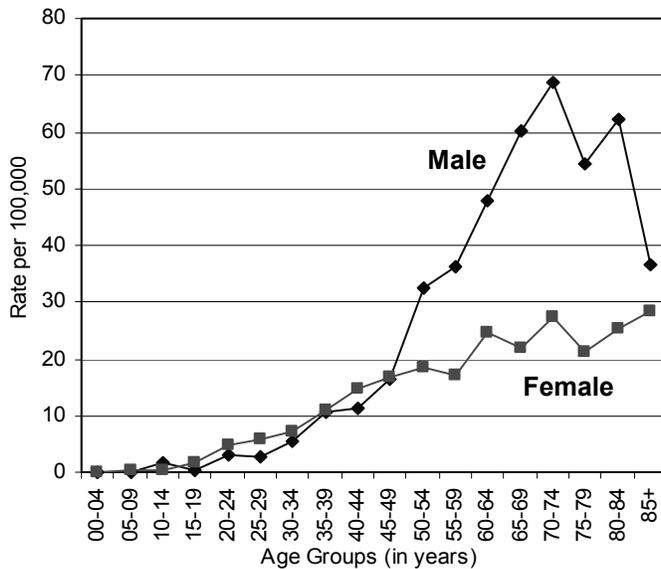
Limit exposure to sunlight, dress properly in sunlight and use adequate sunscreen to prevent many melanomas.<sup>22</sup>

See the inside of the back cover for skin melanoma resources.

<sup>21</sup> U.S. data: USCS 2002:60, 62

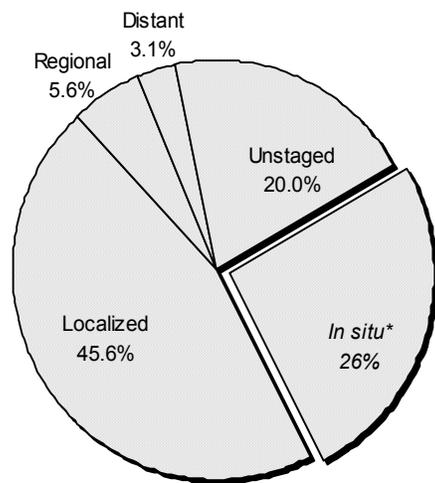
<sup>22</sup> Harris 1996: 163-166

## Invasive Melanoma of the Skin Age-Specific Incidence Rate by Sex



<sup>‡</sup>Data exclude basal and squamous cell skin cancers.

## Percentage of Cases by Stage at Diagnosis



N=1,297

\*In situ cancers have been excluded from all rates presented.

# Non-Hodgkin Lymphoma

## Number of Cases and Age-Adjusted Rates by Sex and by Race

	Incidence		Mortality	
	Cases	Rate	Deaths	Rate
Total*	1,003	15.5	528	8.5
Male	527	18.3	269	10.2
Female	476	13.3	259	7.1
White	864	16.6	463	9.1
Black	121	10.8	58	5.5
Other	15	8.8	7	†

Note. Mortality data were obtained from the Virginia Center for Health Statistics (VCHS). Incidence data exclude localized basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. All rates are per 100,000 population and are adjusted to the 2000 U.S. Standard Population (5 year age-groups).

\*Total figures include persons of unknown race.

† Rates based on fewer than 10 cases are not reported because they are unreliable.

The 1999 U. S. age-adjusted rate for Non-Hodgkin lymphoma was 22.0 per 100,000 for males and 15.7 per 100,000 for females.<sup>23</sup>

Factors that increase the risk of Non-Hodgkin lymphoma are:

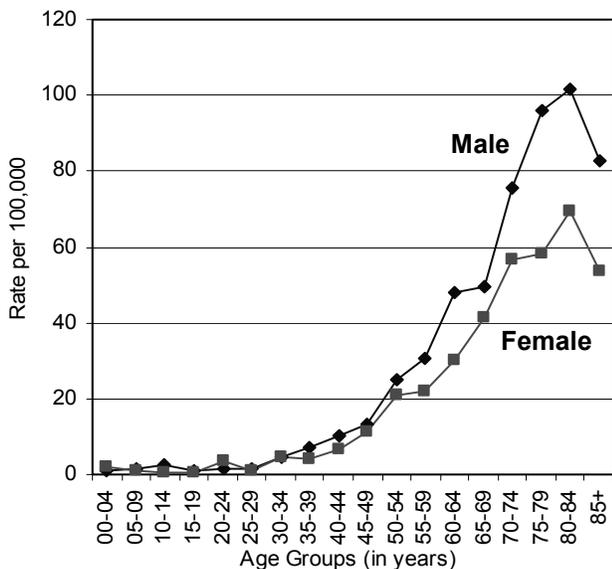
- ◆ Certain viruses
- ◆ Immune system deficiencies
- ◆ Transplant recipients and AIDS patients have a higher risk
- ◆ Routinely handling some pesticides and organic solvents can increase risk<sup>24</sup>

See the inside of the back cover for Non-Hodgkin lymphoma resources.

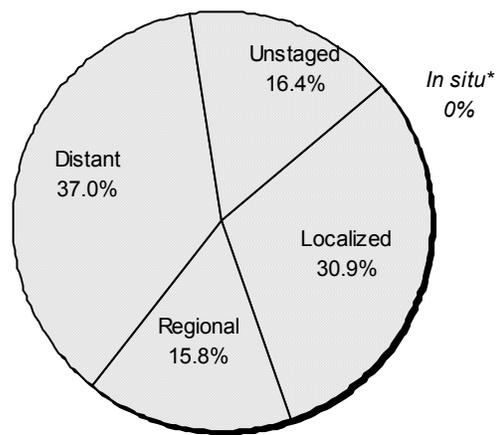
<sup>23</sup> U.S. data: USCS 2002:98, 100

<sup>24</sup> Harris 1996: 170-174

## Non-Hodgkin Lymphoma Age-Specific Incidence Rate by Sex



## Percentage of Cases by Stage at Diagnosis



N=1,003

\*Non-Hodgkin Lymphoma's cannot be in situ.

# Cancer of the Oral Cavity and Pharynx

## Number of Cases and Age-Adjusted Rates by Sex and by Race

	Incidence		Mortality	
	Cases	Rate	Deaths	Rate
Total*	718	11.0	154	2.4
Male	469	15.9	101	3.6
Female	249	6.9	53	1.5
White	581	11.1	99	1.9
Black	121	11.1	52	4.9
Other	12	6.4	3	†

Note. Mortality data were obtained from the Virginia Center for Health Statistics (VCHS). Incidence data exclude localized basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. All rates are per 100,000 population and are adjusted to the 2000 U.S. Standard Population (5 year age-groups).

\*Total figures include persons of unknown race.

† Rates based on fewer than 10 cases are not reported because they are unreliable.

The 1999 U. S. age-adjusted rate for cancers of the oral cavity and pharynx was 15.8 per 100,000 for males and 6.3 per 100,000 for females.<sup>25</sup>

Factors that increase the risk for cancers of the oral cavity and pharynx are:

- ◆ Smoking increases risk up to four times in males and ten times in females
- ◆ Alcohol alone increases risk up to nine times
- ◆ Smoking and using alcohol increase risk up to 35 times

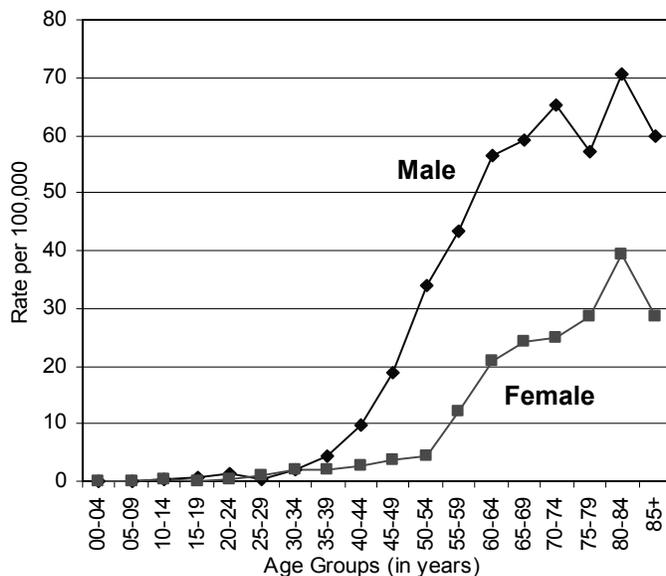
Stopping tobacco use decreases risk by over half at five years and by almost 100% at ten years. Limiting alcohol intake also decreases risk. Dental exams help detect oral cancers.<sup>26</sup>

See the inside of the back cover for oral cancer resources.

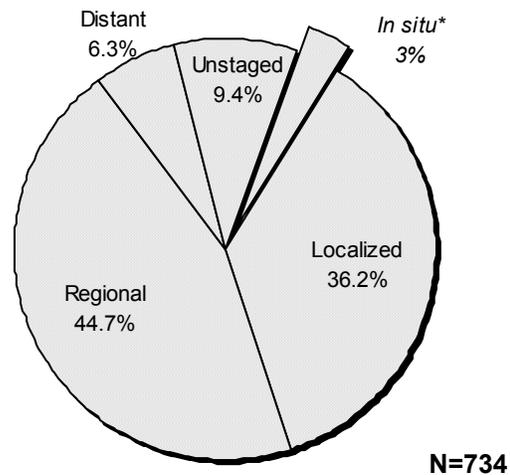
<sup>25</sup> U.S. data: USCS 2002:28, 30

<sup>26</sup> Harris 1996: 175-178

## Invasive Cancer of the Oral Cavity and Pharynx Age-Specific Incidence Rate by Sex



## Percentage of Cases by Stage at Diagnosis



\*These in situ cancers have been excluded from all rates presented.

# Prostate Cancer

## Number of Cases and Age-Adjusted Rates by Race

	Incidence		Mortality	
	Cases	Rate	Deaths	Rate
Total*	4,521	162.2	785	36.5
White	3,281	143.0	524	29.9
Black	1,030	242.3	257	76.3
Other	71	110.1	4	†

**Note.** Mortality data were obtained from the Virginia Center for Health Statistics (VCHS). Incidence data exclude localized basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. All rates are per 100,000 population and are adjusted to the 2000 U.S. Standard Population (5 year age-groups).

\*Total figures include persons of unknown race.

† Rates based on fewer than 10 cases are not reported because they are unreliable.

The 1999 U. S. age-adjusted rate for prostate cancer was 162.0 per 100,000. The rate for whites was 152.3 per 100,000 and the rate for blacks was 229.3.<sup>27</sup>

Factors that increase the risk of prostate cancer are:

- ◆ It is highest among African Americans, intermediate among whites, and lowest among Asians
- ◆ A family history elevates risk
- ◆ Diets high in animal fat increase risk

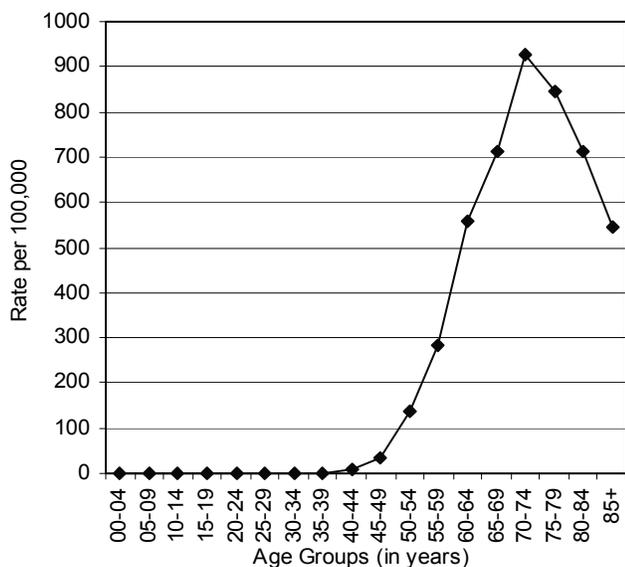
Some studies indicate certain drugs or vitamins may reduce risk, and diets high in fruits and vegetables may lower risk. Screening methods include digital rectal exams (DRE) and tests for prostate specific antigen (PSA).<sup>28</sup>

See the inside of the back cover for prostate cancer resources.

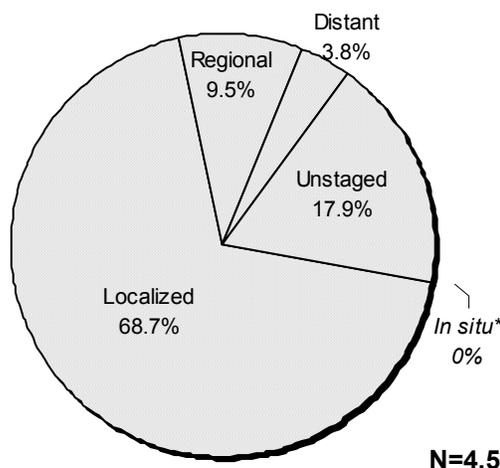
<sup>27</sup> U.S. data: USCS 2002:74

<sup>28</sup> Harris 1996: 185-187

## Invasive Prostate Cancer Age-Specific Incidence Rate



## Percentage of Cases by Stage at Diagnosis



\*In situ cancers have been excluded from all rates presented.

# Cancer of the Urinary Bladder

## Number of Cases and Age-Adjusted Rates by Sex and by Race

	Incidence		Mortality	
	Cases	Rate	Deaths	Rate
Total*	1,165	18.6	257	4.3
Male	870	33.1	171	7.5
Female	295	8.2	86	2.4
White	1,058	20.6	213	4.3
Black	93	9.4	43	4.5
Other	9	5.9	1	†

The 1999 U. S. age-adjusted rate for cancers of the urinary bladder was 38.3 per 100,000 for males and 10.0 per 100,000 for females.<sup>29</sup>

Factors that increase the risk of bladder cancer are:

- ◆ Tobacco use increases risk by four to seven times
- ◆ Whites have higher rates than African Americans
- ◆ Men have higher rates than women
- ◆ Most new cases occur after age sixty

**Note.** Mortality data were obtained from the Virginia Center for Health Statistics (VCHS). Incidence data exclude localized basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. All rates are per 100,000 population and are adjusted to 2000 U.S. Standard Population (5 year age-groups).

\*Total figures include persons of unknown race.

† Rates based on fewer than 10 cases are not reported because they are unreliable.

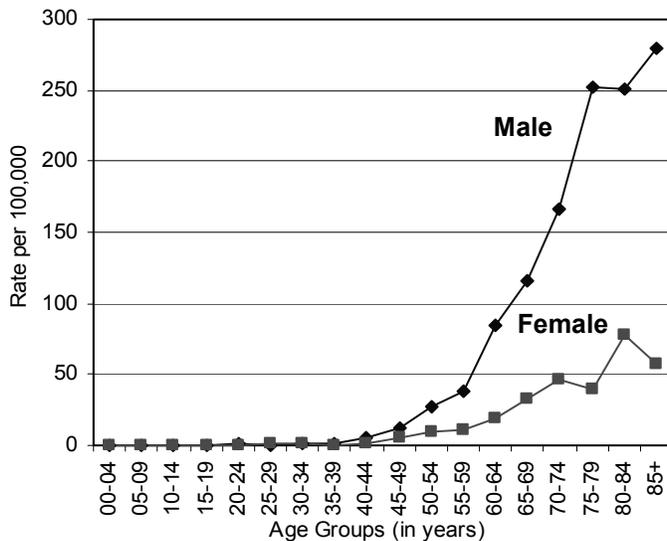
Stopping tobacco use reduces risk. Physicians may recommend hematuria testing or urinary cytology testing to diagnose bladder cancer.<sup>30</sup>

See the inside of the back cover for urinary bladder cancer resources.

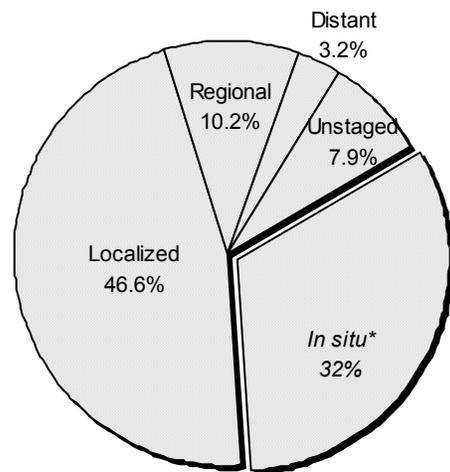
<sup>29</sup> U.S. data: USCS 2002:78, 80

<sup>30</sup> Harris 1996: 197-199

## Cancer of the Urinary Bladder Age-Specific Incidence Rate by Sex



## Percentage of Cases by Stage at Diagnosis



**N=1,165**

\*In situ cancers have been excluded from all rates presented.

# Cancer of the Uterus

## Number of Cases and Age-Adjusted Rates by Race

	Incidence		Mortality	
	Cases	Rate	Deaths	Rate
Total*	775	21.7	136	3.8
White	654	22.9	92	3.2
Black	96	15.5	44	7.4
Other	19	14.6	0	†

**Note.** Mortality data were obtained from the Virginia Center for Health Statistics (VCHS). Incidence data exclude localized basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. All rates are per 100,000 population and are adjusted to the 2000 U.S. Standard Population (5 year age-groups).

\*Total figures include persons of unknown race.

†Rates based on fewer than 10 cases are not reported because they are unreliable.

The 1999 U. S. age-adjusted rate for uterine cancer was 24.6 per 100,000. The white rate was 25.3 per 100,000 and the black rate was 18.6.<sup>31</sup>

Factors that increase the risk of uterine cancer are:

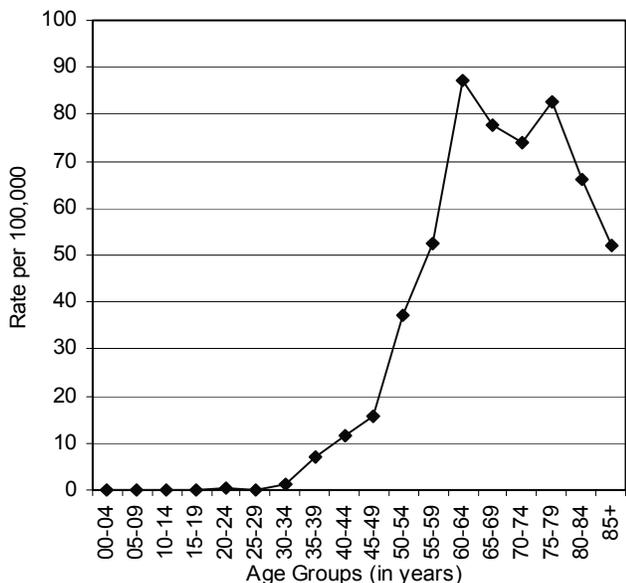
- ◆ Early age at menarche, infertility, or first birth over age 30
- ◆ A high-fat diet; being obese
- ◆ Family history of the cancer
- ◆ Excess estrogen production
- ◆ Hormone replacement therapy

Behavioral changes and using oral contraceptive containing both estrogen and progestin can reduce risk. Diagnostic tests on blood and urine, pelvic examinations, examination of cells and transvaginal ultra sound are used to diagnose this cancer.<sup>32</sup> See the inside of the back cover for uterine cancer resources.

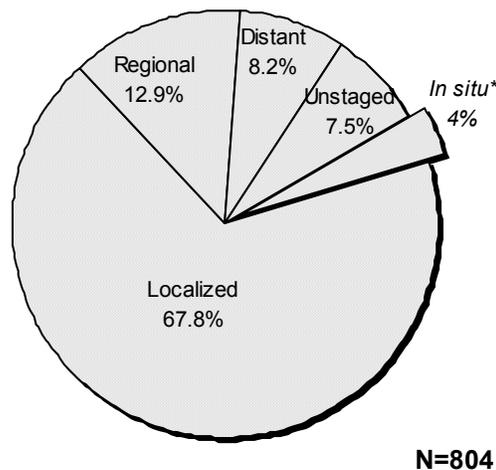
<sup>31</sup> U.S. data: USCS 2002:70

<sup>32</sup> Harris 1996: 203-205

## Invasive Cancer of the Uterus Age-Specific Incidence Rate



## Percentage of Cases by Stage at Diagnosis



\*These in situ cancers have been excluded from all rates presented.

## **Section V**

### **Reportable Cancer in Virginia: Cancer Incidence, 1995-1999**



## Section V

### Reportable Cancer in Virginia: Cancer Incidence, 1995 - 1999

The tables in Section V describe cancer incidence in Virginia for the years 1995 through 1999 by sex, race, age group, locality and stage at diagnosis. The frequencies are annual case counts. To maintain confidentiality, VCR suppresses frequencies when cell counts are fewer than five if there is a demographic breakout. When it is necessary, VCR also suppresses cells adjacent to suppressed cells to maintain patient confidentiality.

Rates are per 100,000 population. Rates calculated for populations of fewer than 100 are not reliable and are not calculated. Rates are age-adjusted to the 2000 standard U.S. population. *Prior annual reports present rates that are age-adjusted to the 1970 standard U.S. population. The rates in this report cannot be directly compared with rates that the Virginia Cancer Registry published in prior annual reports.* Appendix C discusses age-adjusting using the 2000 U.S. standard population. VCR calculates rates from population figures for which age, sex, and race are known. VCR does receive cancer reports that do not include race. Because such cases do not coincide with a defined subpopulation for which race is unknown, the registry cannot calculate rates for such cases.

The first table presents cancer incidence by the Virginia health district and city or county of residence. Past annual reports presented locality data only by state health district, many of which are composed of two or more localities. Registry staff added locality names to this table because it is easier for most readers to understand the local burden of cancer by reference to counties and cities than by reference to health districts.

The tables appearing in Section V are extracted from a larger set. The full set provides Virginia cancer incidence and age-adjusted rates by cancer site, age, sex, race, locality, and stage at diagnosis in greater depth. The tables are posted on the VCR web site, which may be accessed at: <http://www.vdh.virginia.gov/epi/cancer/index.asp>

Researchers, citizens, public health officials, non-government cancer organizations and others who have an interest in Virginia cancer data are encouraged to contact the Virginia Cancer Registry. Instructions for contacting VCR are inside the front cover. Inside the back cover is a list of useful resources for state and national educational and scientific purposes.



Five Year Cancer Incidence and Age-adjusted (2000 U.S. Population) Rates per 100,000 Population by Health District and City or County of Residence, Virginia, 1995-1999  
 Note: Data exclude localized basal and squamous cell skin carcinomas and in situ carcinomas except urinary bladder.  
 Data: Virginia Department of Health, Virginia Cancer Registry (12/02).

Health District City or County	1995-1999		1995		1996		1997		1998		1999	
	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count
<b>Alexandria</b>	390.5	2,157	413.3	432	406.4	441	370.8	409	372.2	420	391.6	455
<b>Alleghany</b>	426.8	3,966	433.7	797	435.0	802	397.6	737	422.7	791	445.9	839
Alleghany County	514.0	349	501.8	68	497.5	69	439.0	59	488.9	66	640.6	87
Botetourt County	396.6	616	361.6	105	452.2	131	370.2	116	367.3	118	437.3	146
Clifton Forge	429.6	138	395.9	27	641.7	42	400.2	26	356.8	21	354.5	22
Covington City	417.0	214	349.7	38	372.2	40	402.5	42	474.6	48	478.3	46
Craig County	421.0	114	456.1	24	532.4	29	302.8	16	382.4	21	435.3	24
Roanoke County	439.7	1,963	456.7	403	428.1	382	421.6	376	446.5	402	446.7	400
Salem City	396.2	572	451.4	132	379.0	109	358.5	102	394.4	115	396.2	114
<b>Arlington</b>	391.4	3,062	347.4	542	412.1	641	374.7	588	400.0	632	419.1	659
<b>Central Shenandoah</b>	432.2	5,566	416.0	1,041	404.1	1,036	445.8	1,150	433.4	1,129	462.7	1,210
Augusta County	475.5	1,391	469.8	262	470.8	265	483.3	285	494.5	293	461.5	286
Bath County	486.1	150	461.4	28	695.0	42	439.8	27	397.3	25	441.7	28
Buena Vista City	335.1	136	354.6	27	275.5	23	392.0	31	330.8	28	324.0	27
Harrisonburg City	444.8	583	436.3	109	354.1	94	492.5	131	439.8	116	499.5	133
Highland County	419.5	69	386.6	12	^	^	470.0	16	577.6	18	497.6	17
Lexington City	393.9	139	404.1	29	486.4	35	342.2	23	410.5	29	328.3	23
Rockbridge County	291.9	329	234.8	51	254.6	56	332.5	74	263.9	62	369.7	86
Rockingham County	413.4	1,376	412.9	270	349.4	235	448.9	301	428.2	286	434.5	284
Staunton City	475.2	763	428.5	134	468.9	151	450.5	144	493.5	162	532.6	172
Waynesboro City	508.4	630	493.5	119	531.0	129	477.4	118	437.6	110	599.8	154
<b>Central Virginia</b>	401.5	4,875	404.4	952	424.3	1,012	349.2	846	407.1	1,003	422.9	1,062
Amherst County	398.2	636	442.0	137	364.9	114	337.7	108	395.5	128	450.8	149
Appomattox County	392.4	283	412.5	58	414.9	59	275.1	40	465.4	67	399.1	59
Bedford City	369.7	185	359.0	32	338.9	35	374.4	34	343.7	37	430.3	47
Bedford County	429.6	1,198	376.1	196	459.8	252	436.4	244	399.9	229	472.0	277
Campbell County	419.3	1,079	488.1	237	399.5	205	317.3	163	452.4	237	442.5	237
Lynchburg City	391.3	1,494	379.2	292	448.6	347	339.1	257	416.1	305	374.2	293
<b>Chesapeake</b>	440.6	3,309	412.1	578	422.2	608	444.0	667	451.6	707	467.7	749
<b>Chesterfield</b>	537.6	5,055	470.4	871	523.1	971	542.1	1,021	560.1	1,068	585.6	1,124
Chesterfield County	567.9	4,260	487.2	724	546.0	812	566.8	851	597.5	907	634.8	966
Colonial Heights City	455.7	469	417.0	85	428.1	88	546.8	112	427.8	89	454.8	95
Powhatan County	404.6	326	410.0	62	459.1	71	349.1	58	445.1	72	365.1	63

^ Statistic not displayed due to less than 10 cases.

Five Year Cancer Incidence and Age-adjusted (2000 U.S. Population) Rates per 100,000 Population by Health District and City or County of Residence, Virginia, 1995-1999  
 Note: Data exclude localized basal and squamous cell skin carcinomas and in situ carcinomas except urinary bladder.  
 Data: Virginia Department of Health, Virginia Cancer Registry (12/02).

Health District City or County	1995-1999		1995		1996		1997		1998		1999	
	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count
<b>Crater</b>	446.4	3,280	452.3	658	435.5	638	454.9	665	449.0	662	439.7	657
Dinwiddie County	444.5	566	469.5	117	396.2	101	440.6	110	461.7	121	455.4	117
Emporia City	415.2	159	374.1	29	374.0	28	410.8	31	467.7	37	452.2	34
Greensville County	381.9	188	291.5	28	307.5	29	374.3	38	399.2	40	539.3	53
Hopewell City	379.6	458	370.2	91	372.1	90	374.4	90	393.3	94	383.2	93
Petersburg City	508.5	1,028	558.7	224	507.8	207	561.9	226	455.5	182	458.1	189
Prince George County	468.1	432	476.5	81	444.5	83	441.7	79	554.2	107	426	82
Surry County	441.5	151	326.3	22	570.2	38	450.7	30	407.2	29	455.9	32
Sussex County	495.9	298	548.8	66	533.8	62	519.3	61	433.9	52	435.3	57
<b>Cumberland Plateau</b>	326.0	2,069	263.7	330	332.8	420	363.8	462	317.8	405	352.4	452
Buchanan County	349.3	477	272.3	75	391.0	110	406.5	107	327.2	90	351.8	95
Dickenson County	261.0	236	179.8	32	300.9	55	331.7	60	219.5	40	274.7	49
Russell County	268.8	392	155.0	45	292.6	85	322.2	95	258.5	75	314.6	92
Tazewell County	368.5	964	347.8	178	332.3	170	380.2	200	381.0	200	402.5	216
<b>Eastern Shore</b>	455.4	1,372	401.5	238	513.1	305	476.9	286	445.7	275	438.8	268
Accomack County	451.0	958	405.4	168	495.7	210	480.7	202	443.2	193	429	185
Northampton County	468.2	414	391.1	70	561.9	95	466.7	84	455.0	82	466.3	83
<b>Fairfax</b>	416.6	15,238	395.8	2,725	428.9	3,069	398.8	2,897	422.8	3,167	433.6	3,380
Fairfax City	472.7	502	423.8	85	602.5	122	420.5	92	432.7	94	489.5	109
Fairfax County	416.2	14,497	395.1	2,593	423.9	2,893	399.3	2,761	426.5	3,040	432.3	3,210
Falls Church City	413.9	239	421.3	47	478.1	54	380.3	44	295.6	33	493	61
<b>Hampton</b>	432.1	2,619	452.5	537	433.2	516	428.6	522	398.9	481	447.1	563
<b>Hanover</b>	404.9	2,339	399.2	419	428.3	462	392.9	449	416.9	507	389.8	502
Charles City County	380.7	135	332.3	23	393.1	26	415.0	30	451.9	34	307.6	22
Goochland County	454.2	398	538.4	88	444.4	74	336.9	61	408.8	74	539.6	101
Hanover County	400.0	1,580	378.5	267	448.1	325	399.5	309	411.6	346	369.2	333
New Kent County	388.4	226	367.4	41	316.0	37	421.0	49	463.5	53	371.4	46
<b>Henrico</b>	433.3	5,147	427.3	989	402.0	949	417.1	997	449.8	1,076	469.1	1,136
<b>Lenowisco</b>	231.1	1,168	114.7	115	323.6	329	390.4	391	140.2	141	188.1	192
Lee County	260.1	352	186.2	51	346.6	95	362.5	97	199.2	54	204.3	55
Norton City	326.1	73	334.2	15	361.8	16	451.5	22	233.9	10	252.2	10
Scott County	179.3	256	42.4	11	341.4	99	433.7	125	^	^	59.7	16
Wise County	237.6	487	94.1	38	290.8	119	365.9	147	176.5	72	260.9	111

^ Statistic not displayed due to less than 10 cases.

Five Year Cancer Incidence and Age-adjusted (2000 U.S. Population) Rates per 100,000 Population  
by Health District and City or County of Residence, Virginia, 1995-1999

Note: Data exclude localized basal and squamous cell skin carcinomas and in situ carcinomas except urinary bladder.  
Data: Virginia Department of Health, Virginia Cancer Registry (12/02).

Health District City or County	1995-1999		1995		1996		1997		1998		1999	
	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count
<b>Lord Fairfax</b>	370.2	3,538	392.1	721	357.1	668	377.2	720	364.0	710	362.6	719
Clarke County	321.0	234	334.9	48	302.3	43	306.4	45	297.4	44	365.3	54
Frederick County	397.7	964	416.1	185	398.7	191	392.8	189	377.8	194	405.2	205
Page County	344.2	469	310.2	81	330.3	90	413.5	113	342.7	95	326.1	90
Shenandoah County	370.5	796	421.8	175	337.6	143	371.8	160	380.0	164	345.7	154
Warren County	367.2	563	411.6	122	303.8	93	388.0	118	367.5	115	363.3	115
Winchester City	393.1	512	431.8	110	421.3	108	370.2	95	381.4	98	366.8	101
<b>Loudoun</b>	438.3	1,984	405.0	311	462.4	388	434.5	377	470.5	448	415.9	460
<b>Mount Rogers</b>	336.7	3,757	264.0	578	359.1	786	376.5	842	281.0	633	402.0	918
Bland County	357.3	135	378.1	28	279.4	21	323.3	24	409.1	31	397.5	31
Bristol City	262.7	310	69.2	14	358.3	83	441.1	104	^	^	413.2	101
Carroll County	265.7	459	205.6	72	230.1	78	209.6	73	314.7	107	367.6	129
Galax City	346.3	159	356.3	33	326.7	30	300.7	28	295.1	27	447.7	41
Grayson County	408.9	431	394.5	80	408.6	83	452.9	97	367.1	79	424.7	92
Smyth County	291.2	569	197.8	76	326.5	127	309.4	120	240.3	93	382.3	153
Washington County	364.1	1,013	281.6	151	406.5	219	475.1	268	243.4	137	414.2	238
Wythe County	437.5	681	403.3	124	478.0	145	412.6	128	479.6	151	413.2	133
<b>New River</b>	382.7	2,766	336.9	477	374.5	535	385.1	559	421.7	617	393.1	578
Floyd County	363.0	283	328.1	50	334.3	54	360.5	56	371.1	58	416.6	65
Giles County	370.9	386	281.5	60	357.8	75	343.9	71	487.1	101	382.0	79
Montgomery County	404.3	1,118	355.4	191	375.2	202	439.8	243	391.0	223	457.0	259
Pulaski County	354.3	721	334.7	132	356.4	146	347.4	141	450.2	186	280.8	116
Radford City	452.5	258	403.8	44	523.2	58	412.2	48	424.3	49	498.8	59
<b>Norfolk</b>	473.6	4,547	466.5	912	509.3	997	431.6	826	473.5	891	485.4	921
<b>Peninsula</b>	428.1	5,501	411.2	1,015	439.3	1,101	414.3	1,066	451.8	1,180	421.9	1,139
James City County	486.2	1,136	469.0	203	509.3	225	480.2	225	510.5	248	457.1	235
Newport News City	411.7	2,970	396.7	566	426.6	607	391.2	561	424.7	618	418.2	618
Poquoson City	505.4	213	550.0	47	478.8	43	563.7	50	475.0	38	474.4	35
Williamsburg City	550.5	278	400.9	39	623.7	60	509.3	52	705.6	76	512.3	51
York County	401.9	904	397.6	160	389.0	166	390.3	178	424.2	200	408.1	200

^ Statistic not displayed due to less than 10 cases.

Five Year Cancer Incidence and Age-adjusted (2000 U.S. Population) Rates per 100,000 Population by Health District and City or County of Residence, Virginia, 1995-1999  
 Note: Data exclude localized basal and squamous cell skin carcinomas and in situ carcinomas except urinary bladder.  
 Data: Virginia Department of Health, Virginia Cancer Registry (12/02).

Health District City or County	1995-1999		1995		1996		1997		1998		1999	
	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count
<b>Piedmont</b>	442.1	2,262	414.0	419	424.7	429	423.5	434	507.8	526	437.3	454
Amelia County	479.9	257	382.6	39	523.0	54	469.4	50	475.6	53	547.0	61
Buckingham County	354.1	267	307.6	46	355.7	52	333.9	51	466.9	71	306.5	47
Charlotte County	487.7	386	542.4	85	442.9	71	495.3	76	527.9	85	427.4	69
Cumberland County	530.1	227	590.2	49	397.1	34	532.7	46	572.3	50	555.6	48
Lunenburg County	375.3	267	285.7	42	363.5	54	318.5	46	469.1	66	435.1	59
Nottoway County	478.0	447	443.6	83	413.2	77	388.9	73	669.4	125	472.5	89
Prince Edward County	438.1	411	402.0	75	484.5	87	472.8	92	403.0	76	428.9	81
<b>Pittsylvania/Danville</b>	451.8	2,970	452.8	591	411.6	538	494.4	650	453.7	597	446.9	594
Danville City	462.6	1,607	527.5	362	427.4	300	492.8	345	441.0	305	424.4	295
Pittsylvania County	442.0	1,363	375.6	229	390.3	238	494.5	305	472.0	292	475.9	299
<b>Portsmouth</b>	479.3	2,471	452.4	478	490.0	506	518.7	531	444.6	455	489.7	501
<b>Prince William</b>	444.0	3,586	418.1	634	443.8	684	458.8	718	445.2	742	449.5	808
<b>Rappahannock</b>	464.7	3,883	475.2	738	457.7	732	460.9	763	458.0	799	470.5	851
Caroline County	455.5	478	480.4	99	364.3	76	513.1	106	405.0	87	509.2	110
Fredericksburg	442.7	476	531.8	116	418.4	92	393.4	90	530.2	105	355.2	73
King George County	447.6	326	440.8	61	482.3	67	357.4	52	484.4	73	468.4	73
Spotsylvania County	504.1	1,435	491.1	258	480.9	259	527.9	296	488.4	294	527.8	328
Stafford County	448.9	1,168	429.0	204	486.4	238	436.6	219	434.0	240	457.9	267
<b>Rappahannock/Rapidan</b>	373.7	2,449	371.5	461	386.8	495	353.8	466	395.6	530	360.6	497
Culpeper County	364.3	551	384.4	111	396.1	117	390.0	118	345.3	107	308.0	98
Fauquier County	322.8	770	286.8	129	327.3	151	263.1	126	383.3	188	348.4	176
Madison County	359.8	259	350.6	49	467.6	67	322.6	47	331.1	48	328.5	48
Orange County	490.3	742	528.9	150	487.6	143	489.6	150	493.5	153	457.3	146
Rappahannock County	311.4	127	296.2	22	207.3	17	303.1	25	407.2	34	335.1	29
<b>Richmond</b>	435.1	4,653	465.7	978	443.6	922	439.6	961	438.5	943	388.9	849
<b>Roanoke</b>	437.5	2,506	459.5	545	406.4	464	430.5	490	435.7	497	452.7	510
<b>Southside</b>	404.4	2,067	389.2	392	396.2	407	360.2	364	435.8	449	439.4	455
Brunswick County	523.8	482	576.5	103	515.8	96	491.5	87	444.1	83	592.0	113
Halifax County	352.5	778	272.3	122	371.2	167	320.6	138	392.4	173	405.2	178
Mecklenburg County	411.9	807	443.2	167	369.4	144	347.9	139	491.7	193	407.6	164
South Boston City/Halifax County	352.5	778	272.3	122	371.2	167	320.6	138	392.4	173	405.2	178

^ Statistic not displayed due to less than 10 cases.

Five Year Cancer Incidence and Age-adjusted (2000 U.S. Population) Rates per 100,000 Population

by Health District and City or County of Residence, Virginia, 1995-1999  
 Note: Data exclude localized basal and squamous cell skin carcinomas and in situ carcinomas except urinary bladder.  
 Data: Virginia Department of Health, Virginia Cancer Registry (12/02).

Health District City or County	1995-1999		1995		1996		1997		1998		1999	
	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count
<b>Thomas Jefferson</b>												
Albemarle County	484.5	1,636	450.3	288	506.6	336	464.0	313	474.2	330	525.7	369
Charlottesville City	450.2	818	435.1	155	464.5	165	417.0	151	493.6	187	441.6	160
Fluvanna County	451.3	430	431.4	74	450.5	83	432.1	81	459.9	92	482.7	100
Greene County	387.3	222	365.1	38	355.8	37	336.4	39	437.1	52	427.9	56
Louisa County	425.8	529	430.2	102	407.9	99	461.5	114	403.2	103	425.1	111
Nelson County	498.1	418	459.9	73	531.1	86	492.9	82	585.8	102	420.8	75
<b>Three Rivers</b>												
Essex County	427.7	3,469	400.7	644	399.7	642	430.7	694	449.2	735	456.0	754
Gloucester County	513.2	292	575.1	66	402.8	47	546.0	63	474.4	54	562.3	62
King and Queen County	391.2	625	351.4	109	371.5	117	357.3	115	406.5	130	464.9	154
King William County	371.6	136	260.0	20	364.0	25	463.3	35	387.7	29	383.1	27
Lancaster County	404.0	245	379.4	44	426.0	50	384.3	46	486.4	60	346.4	45
Mathews County	459.0	448	368.9	70	415.7	77	520.1	104	508.7	107	479.7	90
Middlesex County	436.8	293	462.8	62	449.2	62	437.7	58	454.9	63	376.7	48
Northumberland County	419.5	311	436.6	65	438.3	63	407.6	55	435.4	67	381.4	61
Richmond County	432.9	418	415.3	76	367.9	71	427.8	83	484.1	92	463.7	96
Westmoreland County	412.2	200	316.4	33	395.4	38	405.7	38	394.0	38	544.0	53
Virginia Beach	467.2	501	440.4	99	429.1	92	468.0	97	458.0	95	539.6	118
<b>West Piedmont</b>												
Franklin County	421.8	6,281	437.3	1,216	421.9	1,235	388.9	1,178	436.6	1,325	424.8	1,327
Henry County	437.5	3,415	432.4	657	430.5	658	410.0	642	428.5	682	484.0	776
Martinsville City	436.8	1,054	450.0	207	462.9	217	376.1	180	441.3	221	453.7	229
Patrick County	441.4	1,375	406.0	253	423.7	259	432.2	269	395.6	250	546.4	344
<b>Western Tidewater</b>												
Franklin City	485.8	535	492.9	110	421.9	90	473.4	106	503.1	108	541.6	121
Isle of Wight County	392.5	451	410.0	87	415.7	92	368.4	87	430.2	103	334.9	82
Southampton County	420.1	2,438	418.2	461	413.5	472	414.5	481	419.8	500	434.9	524
Suffolk City	326.0	155	348.5	33	298.5	30	335.4	32	377.0	36	268.7	24
<b>VIRGINIA</b>												
	442.3	619	483.3	128	432.0	116	420.0	117	445.1	129	437.3	129
	366.8	352	343.6	64	302.4	59	383.1	72	388.4	75	415.7	82
	444.4	1,312	427.2	236	459.6	267	436.9	260	428.5	260	468.6	289
	416.9	129,818	402.3	24,182	419.8	25,664	411.9	25,629	419.8	26,589	429.3	27,754

^ Statistic not displayed due to less than 10 cases.

Distribution of Reported Cancer in Virginia, 1995, 1999  
 By Stage, Sex, Site, and Year of Diagnosis for the Top 11 Sites  
 Virginia Cancer Registry, June 2003

		Male and Female											
		In Situ		Localized		Regional		Distant		Unstaged		Total	
	Year	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count
Female Breast	1995	19.1	624	7.0	2,324	31.6	1,047	6	202	7.1	238	133.7	4,435
Female Breast	1999	26.8	954	79.7	2,842	37.6	1,344	5.2	187	6.1	220	155.5	5,547
Prostate	1995	~	9	87.6	2,302	17.2	469	9.5	217	25	566	139.6	3,563
Prostate	1999	~	2	108.2	3,108	14.7	431	6.8	174	32.5	808	162.3	4,523
Lung and Bronchus	1995	~	3	14.1	839	18.8	1,132	28	1,683	4.6	271	65.6	3,928
Lung and Bronchus	1999	~	3	13.2	837	17.5	1,121	26.2	1,675	5.7	358	62.6	3,994
Colon and Rectum	1995	4.5	265	12	695	23	1,334	8.6	501	3.3	188	51.4	2,983
Colon and Rectum	1999	4.7	297	15.8	993	22.4	1,409	8.5	543	4.1	252	55.4	3,494
Urinary Bladder	1995	5.8	338	7.5	438	1.5	90	0.7	40	1.8	106	17.3	1,012
Urinary Bladder	1999	5.9	374	8.7	543	1.9	119	0.6	37	1.5	92	18.6	1,165
Non-Hodgkin Lymphomas	1995	~	0	4.3	261	2.7	161	5.7	344	2.3	136	15	902
Non-Hodgkin Lymphomas	1999	~	0	4.8	310	2.4	158	5.7	371	2.6	164	15.5	1,003
Melanomas of the Skin	1995	3.9	241	7.8	492	0.5	33	0.4	22	3.4	212	16	1,000
Melanomas of the Skin	1999	5.1	334	8.9	592	1.1	72	0.6	40	3.9	259	19.5	1,297
Corpus and Uterus, NOS	1995	0.7	23	14.2	471	2.9	97	2.3	75	1.3	45	21.4	711
Corpus and Uterus, NOS	1999	0.8	29	15.3	545	2.9	104	1.9	66	1.7	60	22.5	804
Oral Cavity and Pharynx	1995	0.2	15	3.9	236	5.1	306	1	64	0.8	48	11	669
Oral Cavity and Pharynx	1999	0.4	25	4.2	269	5.1	332	0.7	47	1.1	70	11.4	743
Kidney and Renal Pelvis	1995	0.2	10	4.9	300	1.6	95	1.9	112	0.6	39	9.2	556
Kidney and Renal Pelvis	1999	0.2	12	5.9	387	1.7	112	1.7	111	0.5	33	10	655
Cervix	1995	26.1	966	5	174	2.9	99	0.9	29	0.6	20	35.4	1,288
Cervix	1999	19.5	724	4.5	163	2.8	102	0.9	31	1.7	62	29.3	1,082

Rates are per 100,000 population except: female breast, corpus and uterus, and cervix are per 100,000 females; and prostate is per 100,000 males. Rates are age-adjusted to the 2000 U.S. (18 age groups) standard.  
 ~ Rate not calculated due to fewer than 10 cases.

Distribution of Reported Cancer in Virginia, 1995, 1999  
by Stage, Sex, Site and Year of Diagnosis for the Top 11 Sites  
Virginia Cancer Registry, June 2003

		Male						Total	
		In situ	Localized	Regional	Distant	Unstaged	Total	Rate	Count
		Rate	Rate	Rate	Rate	Rate	Rate	Rate	Count
Prostate	1995	~	87.6	17.2	9.5	25	139.6	139.6	3,563
Prostate	1999	~	108.2	14.7	6.8	32.5	162.3	162.3	4,523
Lung and Bronchus	1995	~	19.1	28.7	40	6.6	94.4	94.4	2,416
Lung and Bronchus	1999	~	17.2	23.4	35.7	7.8	84.2	84.2	2,337
Colon and Rectum	1995	5.8	14.6	27.1	9.7	4	61.2	61.2	1,477
Colon and Rectum	1999	5.8	19.2	25.8	10.7	4.8	66.2	66.2	1,795
Urinary Bladder	1995	10	13.4	2.4	1	3.5	30.4	30.4	714
Urinary Bladder	1999	10.3	15.6	3.3	1	2.8	33.1	33.1	870
Non-Hodgkin Lymphomas	1995	~	5.4	3.1	6.6	3.1	18.1	18.1	479
Non-Hodgkin Lymphomas	1999	~	5.5	2.7	7	3	18.3	18.3	527
Melanomas of the Skin	1995	4.7	10.2	0.9	0.6	4.4	20.8	20.8	580
Melanomas of the Skin	1999	6.4	11.3	1.3	1	5	24.9	24.9	731
Oral Cavity and Pharynx	1995	0.4	6.1	7.8	1.9	1.3	17.5	17.5	472
Oral Cavity and Pharynx	1999	0.6	5.6	7.7	1.3	1.4	16.5	16.5	486
Kidney and Renal Pelvis	1995	~	6.9	2.4	2.8	0.6	13	13	352
Kidney and Renal Pelvis	1999	0.3	7.9	2.6	2.1	0.8	13.7	13.7	408

~ Rates are per 100,000 male population and are age-adjusted to the 2000 U.S. (18 age groups) standard.  
~ Rate not calculated due to fewer than 10 cases.

Distribution of Reported Cancer in Virginia, 1995, 1999  
by Stage, Sex, Site and Year of Diagnosis for the Top 11 Sites  
Virginia Cancer Registry, June 2003

		Female									
		In situ	Localized	Regional	Distant	Unstaged	Total				
		Rate Count	Rate	Rate	Rate	Count					
Female Breast	1995	19.1 624	70 2,324	31.6 1,047	6 202	7.1 238	133.7 4,435				
Female Breast	1999	26.8 954	79.7 2,842	37.6 1,344	5.2 187	6.1 220	155.5 5,547				
Lung and Bronchus	1995	~ 1	10.6 357	11.7 389	19.3 648	3.5 117	45.2 1,512				
Lung and Bronchus	1999	~ 2	10.5 374	12.9 459	18.8 671	4.2 151	46.4 1,657				
Colon and Rectum	1995	3.5 118	10.1 341	20.3 680	8.1 268	2.9 99	44.9 1,506				
Colon and Rectum	1999	3.7 134	13.3 477	19.9 715	6.7 244	3.5 129	47.2 1,699				
Urinary Bladder	1995	2.8 96	3.7 125	0.9 30	0.5 16	0.9 31	8.8 298				
Urinary Bladder	1999	2.5 91	3.8 138	0.9 33	0.3 12	0.6 21	8.2 295				
Non-Hodgkin Lymphomas	1995	~ 0	3.6 120	2.2 73	5.1 173	1.7 57	12.6 423				
Non-Hodgkin Lymphomas	1999	~ 0	4.3 154	2.2 77	4.5 163	2.3 82	13.3 476				
Melanomas of the Skin	1995	3.2 108	6.1 208	~ 8	~ 5	2.6 91	12.2 420				
Melanomas of the Skin	1999	4.2 153	7.1 258	0.8 29	0.3 12	3.1 114	15.7 566				
Corpus and Uterus, NOS	1995	0.7 23	14.2 471	2.9 97	2.3 75	1.3 45	21.4 711				
Corpus and Uterus, NOS	1999	0.8 29	15.3 545	2.9 104	1.9 66	1.7 60	22.5 804				
Oral Cavity and Pharynx	1995	~ 4	2.3 77	2.7 90	0.4 13	0.4 13	5.9 197				
Oral Cavity and Pharynx	1999	~ 8	3 109	2.8 100	0.3 10	0.8 30	7.2 257				
Kidney and Renal Pelvis	1995	~ 3	3.5 114	0.8 27	1.2 39	0.6 21	6.2 204				
Kidney and Renal Pelvis	1999	~ 2	4.2 149	1 37	1.3 47	0.3 12	6.9 247				
Cervix	1995	26.1 966	5 174	2.9 99	0.9 29	0.6 20	35.4 1,288				
Cervix	1999	19.5 724	4.5 163	2.8 102	0.9 31	1.7 62	29.3 1,082				

~ Rate not calculated due to fewer than 10 cases.

Rates are per 100,000 female population and are age-adjusted to the 2000 U.S. (18 age groups) standard.

Five Year Cancer Incidence and Age-adjusted (2000 U.S. Population) Rates per 100,000 Population by Primary Site and Sex, Virginia, 1995-1999

Note: Data exclude localized basal and squamous cell skin carcinomas and in situ carcinomas except urinary bladder.  
Data: Virginia Department of Health, Virginia Cancer Registry (11/02).

Male and Female

Cancer Sites	1995-1999		1995		1996		1997		1998		1999	
	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count
Oral Cavity and Pharynx	11.1	3,472	10.8	654	11.4	699	11.0	690	11.1	711	11.0	718
Esophagus	4.9	1,519	5.2	313	5.2	314	5.0	309	4.7	293	4.5	290
Stomach	6.4	1,932	6.2	363	6.7	399	6.4	385	6.3	391	6.3	394
Colon and Rectum	50.2	15,200	46.9	2,718	50.1	2,972	50.1	3,026	53.3	3,287	50.7	3,197
Liver and Intrahepatic Bile Duct	3.4	1,046	3.0	177	3.7	223	3.3	203	3.5	215	3.6	228
Pancreas	8.0	2,432	7.4	435	8.3	497	7.4	451	8.3	516	8.4	533
Larynx	5.0	1,563	5.2	319	5.5	341	4.5	278	4.9	317	4.7	308
Lung and Bronchus	64.7	19,969	65.6	3,925	67.3	4,078	66.0	4,067	62.3	3,908	62.6	3,991
Melanomas of the Skin	13.2	4,280	12.1	759	13.2	843	12.9	833	13.4	882	14.4	963
Urinary Bladder	17.6	5,331	17.3	1,012	17.1	1,018	16.5	990	18.6	1,146	18.6	1,165
Kidney and Renal Pelvis	9.5	2,989	9.0	546	10.0	612	8.6	538	10.2	650	9.8	643
Brain and Other Nervous System	5.7	1,851	5.6	352	5.3	344	5.4	348	5.8	382	6.4	425
Thyroid	4.8	1,618	3.9	260	4.6	303	4.9	335	4.7	324	5.6	396
Hodgkin Disease	2.5	873	2.4	164	2.5	172	2.8	193	2.2	158	2.7	186
Non-Hodgkin Lymphomas	15.5	4,845	15.0	902	16.2	993	15.8	985	15.1	962	15.5	1,003
Multiple Myeloma	4.3	1,314	4.7	276	4.3	260	4.2	259	4.1	255	4.1	264
Leukemias	7.3	2,287	6.9	419	7.9	488	7.1	451	7.5	480	6.9	449
Other and Unknown	26.3	8,143	25.7	1,535	28.0	1,710	26.9	1,666	25.4	1,597	25.5	1,635
All Sites	416.9	129,818	402.3	24,182	419.8	25,664	411.9	25,629	419.8	26,589	429.3	27,754

^ Statistic not displayed due to fewer than 10 cases.

Five Year Cancer Incidence and Age-adjusted (2000 U.S. Population) Rates per 100,000 Population  
by Primary Site and Sex, Virginia, 1995-1999

Note: Data exclude localized basal and squamous cell skin carcinomas and in situ carcinomas except urinary bladder.  
Data: Virginia Department of Health, Virginia Cancer Registry (1/1/02).

Cancer Sites	1995-1999		1995		1996		1997		1998		1999	
	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count
Oral Cavity and Pharynx	6.6	1,140	5.8	193	6.5	223	7.4	258	6.1	217	6.9	249
Esophagus	2.1	371	2.3	77	1.8	63	2.5	88	1.9	67	2.1	76
Stomach	4.5	786	4.4	149	4.7	160	4.6	161	4.5	161	4.3	155
Colon and Rectum	43.7	7,602	41.4	1,388	44.6	1,528	42.4	1,477	46.5	1,644	43.4	1,565
Liver and Intrahepatic Bile Duct	2.1	368	1.6	54	2.1	70	2.2	75	2.4	86	2.3	83
Pancreas	6.8	1,176	6.6	222	7.2	246	6.1	213	6.7	238	7.2	257
Larynx	1.8	311	2.0	67	2.3	77	1.4	47	1.8	62	1.6	58
Lung and Bronchus	46.1	7,966	45.1	1,511	47.2	1,603	46.1	1,598	45.6	1,599	46.4	1,655
Melanomas of the Skin	10.7	1,881	9.1	312	11.5	399	10.8	378	10.7	379	11.4	413
Breast	123.1	21,198	114.6	3,811	120.5	4,072	123.1	4,245	127.8	4,477	128.6	4,593
Cervix	9.3	1,655	9.3	322	10.2	356	9.2	327	8.2	292	9.8	358
Corpus and Uterus, NOS	20.7	3,562	20.7	688	20.4	685	20.5	705	20.3	709	21.7	775
Ovary	14.0	2,419	14.8	492	13.9	471	14.1	486	14.2	499	13.1	471
Prostate	^	^	^	^	^	^	^	^	^	^	^	^
Testis	^	^	^	^	^	^	^	^	^	^	^	^
Urinary Bladder	8.3	1,451	8.8	298	8.4	288	7.7	269	8.5	301	8.2	295
Kidney and Renal Pelvis	6.3	1,092	6.1	201	6.4	216	5.9	205	6.4	225	6.9	245
Brain and Other Nervous System	4.9	842	4.6	154	5.0	168	4.5	157	5.3	185	5.1	178
Thyroid	6.6	1,167	5.6	193	6.2	215	6.8	240	6.3	226	8.1	293
Hodgkin Disease	2.2	396	2.0	73	2.2	79	2.6	94	1.7	60	2.5	90
Non-Hodgkin Lymphomas	13.1	2,271	12.6	423	13.5	462	13.0	453	13.0	457	13.3	476
Multiple Myeloma	3.3	575	3.5	118	3.5	119	3.1	107	3.5	123	3.0	108
Leukemias	5.5	950	5.2	176	5.6	189	5.6	192	6.2	217	5.0	176
Other and Unknown	23.9	4,145	22.1	742	25.7	879	24.6	855	23.4	827	23.5	842
All Sites	365.7	63,324	348.4	11,664	369.3	12,568	364.3	12,630	371.0	13,051	374.4	13,411

^ Statistic not displayed due to fewer than 10 cases.

Five Year Cancer Incidence and Age-adjusted (2000 U.S. Population) Rates per 100,000 Population  
by Primary Site and Sex, Virginia, 1995-1999

Note: Data exclude localized basal and squamous cell skin carcinomas and in situ carcinomas except urinary bladder.  
Data: Virginia Department of Health, Virginia Cancer Registry (11/02).

Male

Cancer Sites	1995-1999		1995		1996		1997		1998		1999	
	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count
Oral Cavity and Pharynx	16.6	2,332	17.1	461	17.4	476	15.4	432	17.1	494	15.9	469
Esophagus	8.4	1,148	8.8	236	9.4	251	8.0	221	8.3	226	7.7	214
Stomach	9.1	1,146	8.9	214	9.9	239	8.9	224	8.8	230	8.8	239
Colon and Rectum	59.4	7,598	55.4	1,330	57.2	1,444	60.6	1,549	62.8	1,643	60.4	1,632
Liver and Intrahepatic Bile Duct	5.1	678	4.8	123	5.9	153	4.6	128	4.8	129	5.1	145
Pancreas	9.6	1,256	8.7	213	9.8	251	9.2	238	10.2	278	10.1	276
Larynx	8.9	1,252	9.3	252	9.6	264	8.5	231	8.8	255	8.4	250
Lung and Bronchus	90.5	12,003	94.3	2,414	95.4	2,475	93.8	2,469	85.4	2,309	84.1	2,336
Melanomas of the Skin	16.7	2,399	16.1	447	15.8	444	16.1	455	16.9	503	18.6	550
Breast	1.7	228	0.9	24	1.5	39	1.7	44	1.7	48	2.6	73
Cervix	^	^	^	^	^	^	^	^	^	^	^	^
Corpus and Uterus, NOS	^	^	^	^	^	^	^	^	^	^	^	^
Ovary	^	^	^	^	^	^	^	^	^	^	^	^
Prostate	145.2	19,318	139.3	3,554	140.0	3,629	138.4	3,676	144.9	3,938	162.2	4,521
Testis	4.3	774	4.4	162	4.0	146	3.8	139	4.3	152	4.8	175
Urinary Bladder	31.1	3,880	30.4	714	29.6	730	29.1	721	33.3	845	33.1	870
Kidney and Renal Pelvis	13.5	1,897	12.7	345	14.5	396	11.9	333	14.9	425	13.4	398
Brain and Other Nervous System	6.7	1,009	6.9	198	6.1	176	6.4	191	6.4	197	7.9	247
Thyroid	2.9	451	2.1	67	2.8	88	3.0	95	3.1	98	3.1	103
Hodgkin Disease	2.9	477	2.7	91	2.9	93	3.0	99	2.8	98	2.9	96
Non-Hodgkin Lymphomas	18.7	2,574	18.1	479	19.7	531	19.3	532	18.1	505	18.3	527
Multiple Myeloma	5.6	739	6.3	158	5.6	141	5.8	152	4.9	132	5.5	156
Leukemias	9.8	1,337	9.3	243	11.4	299	9.1	259	9.4	263	9.6	273
Other and Unknown	29.8	3,998	30.7	793	31.6	831	29.9	811	28.4	770	28.5	793
All Sites	496.3	66,494	487.2	12,518	500.0	13,096	486.7	12,999	495.3	13,538	511.1	14,343

^ Statistic not displayed due to fewer than 10 cases.

Five Year Cancer Incidence and Age-adjusted (2000 U.S. Population) Rates per 100,000 Population by Race and Sex, Virginia, 1995-1999

Note: Data exclude localized basal and squamous cell skin carcinomas and in situ carcinomas except urinary bladder.  
Data: Virginia Department of Health, Virginia Cancer Registry (11/02).

	1995-1999		1995		1996		1997		1998		1999		
	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	
Male and Female	All races	416.9	129,818	402.3	24,182	419.8	25,664	411.9	25,629	419.8	26,589	429.3	27,754
	White	409.6	103,473	388.5	19,018	410.3	20,380	407.3	20,581	415.6	21,310	424.7	22,184
	Black	450.0	22,715	450.8	4,385	455.5	4,528	445.1	4,459	444.2	4,580	453.9	4,763
	Other	279.2	2,238	290.7	403	274.0	413	287.7	450	277.0	482	269.8	490
	Unknown	~	1,392	~	376	~	343	~	139	~	217	~	317
Male	All races	496.3	66,494	487.2	12,518	500.0	13,096	486.7	12,999	495.3	13,538	511.1	14,343
	White	475.3	52,174	458.3	9,668	475.1	10,199	469.4	10,298	479.7	10,711	492.4	11,298
	Black	594.3	12,368	600.5	2,410	607.3	2,488	584.6	2,392	576.0	2,463	603.1	2,615
	Other	324.6	1,042	340.6	185	322.5	191	341.3	219	315.5	218	308.3	229
	Unknown	~	910	~	255	~	218	~	90	~	146	~	201
Female	All races	365.7	63,324	348.4	11,664	369.3	12,568	364.3	12,630	371.0	13,051	374.5	13,411
	White	369.2	51,299	346.2	9,350	372.0	10,181	369.4	10,283	376.3	10,599	381.0	10,886
	Black	353.0	10,347	351.4	1,975	353.6	2,040	354.0	2,067	354.0	2,117	352.1	2,148
	Other	249.5	1,196	259.0	218	243.4	222	250.5	231	253.1	264	243.3	261
	Unknown	~	482	~	121	~	125	~	49	~	71	~	116

~ Statistic could not be calculated.

^ Statistic not displayed due to less than 10 cases.

Five Year Cancer Incidence and Age-adjusted (2000 U.S. Population) Rates per 100,000 Population by Age, Virginia, 1995-1999

Note: Data exclude localized basal and squamous cell skin carcinomas and in situ carcinomas except urinary bladder.  
Data: Virginia Department of Health, Virginia Cancer Registry (1/1/02).

	Male and Female											
	1995-1999		1995		1996		1997		1998		1999	
	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count
00-04 years	18.9	427	19.6	90	16.6	75	16.3	73	23.6	106	18.4	83
05-09 years	10.3	240	8.3	38	10.6	49	10.9	51	9.8	46	11.9	56
10-14 years	11.2	251	10.0	44	11.3	50	13.4	60	11.9	54	9.2	43
15-19 years	18.0	411	16.1	70	18.8	84	19.4	89	18.6	87	17.0	81
20-24 years	28.3	665	26.7	129	28.1	131	27.5	127	27.6	128	31.6	150
25-29 years	44.6	1,150	42.3	221	48.7	255	47.0	244	41.8	213	43.4	217
30-34 years	73.2	2,105	73.5	440	73.1	432	71.1	411	73.1	409	75.5	413
35-39 years	115.5	3,476	110.1	649	120.6	722	110.6	668	111.7	677	124.2	760
40-44 years	186.5	5,185	165.7	876	189.6	1,030	184.7	1,031	196.3	1,118	194.3	1,130
45-49 years	319.4	7,738	322.3	1,507	313.4	1,531	318.7	1,541	319.6	1,555	323.0	1,604
50-54 years	534.8	10,663	498.5	1,813	550.0	2,047	503.8	2,043	549.4	2,295	567.3	2,465
55-59 years	819.5	12,492	770.0	2,169	823.8	2,388	796.8	2,402	836.3	2,665	862.3	2,868
60-64 years	1,240.4	15,179	1,196.1	2,861	1,245.7	2,986	1,235.2	2,995	1,254.4	3,102	1,268.3	3,235
65-69 years	1,632.8	18,698	1,659.4	3,803	1,634.2	3,760	1,604.2	3,678	1,572.4	3,590	1,693.5	3,867
70-74 years	1,969.2	19,517	1,912.3	3,787	2,027.2	4,004	1,943.9	3,827	1,953.6	3,889	2,008.9	4,010
75-79 years	2,071.0	15,983	1,979.8	2,855	2,081.5	3,136	2,076.5	3,237	2,122.4	3,376	2,086.5	3,379
80-84 years	1,918.8	9,262	1,812.3	1,663	1,865.3	1,757	1,883.7	1,827	1,982.9	1,959	2,036.4	2,056
85+ years	1,619.8	6,376	1,587.2	1,167	1,612.1	1,227	1,685.9	1,325	1,621.9	1,320	1,591.4	1,337
Virginia	416.9	129,818	402.3	24,182	419.8	25,664	411.9	25,629	419.8	26,589	429.3	27,754

Rates are per 100,000 and age-adjusted to the 2000 U.S. (5-year groups) standard.

^ Statistic not displayed due to less than 10 cases.

Five Year Cancer Incidence and Age-adjusted (2000 U.S. Population) Rates per 100,000 Population by Age, Virginia, 1995-1999

Note: Data exclude localized basal and squamous cell skin carcinomas and in situ carcinomas except urinary bladder.  
Data: Virginia Department of Health, Virginia Cancer Registry (1/1/02).

Male

	1995-1999		1995		1996		1997		1998		1999	
	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count
00-04 years	20.1	232	24.7	58	16.0	37	18.3	42	21.8	50	19.6	45
05-09 years	11.4	136	11.1	26	12.7	30	11.3	27	11.2	27	10.8	26
10-14 years	11.3	130	12.0	27	10.2	23	12.3	28	14.6	34	7.6	18
15-19 years	18.9	222	19.3	43	19.6	45	17.0	40	20.4	49	18.4	45
20-24 years	26.2	317	26.5	66	25.8	62	24.0	57	27.4	65	27.6	67
25-29 years	38.5	492	37.2	97	41.1	107	42.8	110	36.1	91	35.2	87
30-34 years	56.0	793	59.0	175	55.8	163	53.4	152	53.8	148	57.7	155
35-39 years	81.2	1,204	87.0	253	76.9	227	74.6	222	76.4	228	90.9	274
40-44 years	127.8	1,750	114.5	298	144.4	386	123.7	340	135.5	380	120.7	346
45-49 years	246.7	2,953	243.6	563	238.1	575	254.2	607	241.0	579	256.5	629
50-54 years	490.6	4,826	453.7	814	503.4	924	447.2	895	512.8	1,057	529.7	1,136
55-59 years	897.2	6,626	838.0	1,143	891.8	1,252	870.4	1,271	927.0	1,432	947.6	1,528
60-64 years	1,523.9	8,796	1,479.9	1,665	1,533.8	1,732	1,528.8	1,749	1,506.4	1,760	1,567.7	1,890
65-69 years	2,108.6	11,058	2,163.8	2,252	2,127.2	2,233	2,046.4	2,150	1,990.1	2,089	2,215.9	2,334
70-74 years	2,669.4	11,356	2,637.8	2,227	2,706.6	2,282	2,611.5	2,201	2,634.1	2,260	2,755.5	2,386
75-79 years	2,787.0	8,689	2,665.1	1,534	2,794.9	1,694	2,755.0	1,734	2,867.3	1,852	2,838.0	1,875
80-84 years	2,585.7	4,419	2,577.9	815	2,526.2	829	2,514.0	861	2,610.0	925	2,688.8	989
85+ years	2,393.3	2,495	2,432.7	462	2,485.9	495	2,451.1	513	2,350.2	512	2,266.8	513
Virginia	496.3	66,494	487.2	12,518	500.0	13,096	486.7	12,999	495.3	13,538	511.1	14,343

Rates are per 100,000 and age-adjusted to the 2000 U.S. (5-year groups) standard.

^ Statistic not displayed due to less than 10 cases.

Five Year Cancer Incidence and Age-adjusted (2000 U.S. Population) Rates per 100,000 Population by Age, Virginia, 1995-1999

Note: Data exclude localized basal and squamous cell skin carcinomas and in situ carcinomas except urinary bladder.  
Data: Virginia Department of Health, Virginia Cancer Registry (11/02).

Female

	1995-1999		1995		1996		1997		1998		1999	
	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count
00-04 years	17.6	195	14.2	32	17.1	38	14.1	31	25.4	56	17.2	38
05-09 years	9.2	104	5.4	12	8.4	19	10.5	24	8.3	19	13.0	30
10-14 years	11.0	121	7.9	17	12.5	27	14.7	32	9.0	20	11.0	25
15-19 years	16.9	189	12.7	27	17.9	39	21.9	49	16.6	38	15.5	36
20-24 years	30.5	348	27.0	63	30.5	69	31.1	70	27.8	63	35.9	83
25-29 years	50.7	658	47.3	124	56.2	148	51.1	134	47.3	122	51.3	130
30-34 years	90.0	1,312	87.6	265	90.0	269	88.3	259	91.7	261	92.6	258
35-39 years	148.8	2,272	132.6	396	163.1	495	145.6	446	145.9	449	156.4	486
40-44 years	243.4	3,435	215.5	578	233.6	644	243.8	691	255.4	738	265.9	784
45-49 years	390.4	4,785	399.3	944	387.1	956	381.7	934	396.3	976	388.0	975
50-54 years	577.9	5,837	542.1	999	595.2	1,123	558.9	1,148	585.1	1,238	603.9	1,329
55-59 years	746.5	5,866	706.1	1,026	759.9	1,136	727.6	1,131	750.9	1,233	782.0	1,340
60-64 years	987.3	6,383	944.0	1,196	989.1	1,254	972.9	1,246	1,028.7	1,342	1,000.0	1,345
65-69 years	1,230.7	7,640	1,239.9	1,551	1,220.6	1,527	1,230.1	1,528	1,217.0	1,501	1,246.2	1,533
70-74 years	1,442.6	8,161	1,373.1	1,560	1,521.1	1,722	1,444.1	1,626	1,438.1	1,629	1,436.9	1,624
75-79 years	1,585.7	7,294	1,524.6	1,321	1,601.4	1,442	1,617.1	1,503	1,613.1	1,524	1,568.6	1,504
80-84 years	1,553.2	4,843	1,409.9	848	1,512.0	928	1,539.6	966	1,632.1	1,034	1,662.5	1,067
85+ years	1,341.1	3,881	1,292.7	705	1,302.5	732	1,408.2	812	1,355.7	808	1,342.3	824
Virginia	365.7	63,324	348.4	11,664	369.3	12,568	364.3	12,630	371.0	13,051	374.4	13,411

Rates are per 100,000 and age-adjusted to the 2000 U.S. (5-year groups) standard.

^ Statistic not displayed due to less than 10 cases.



## **Section VI**

## **Appendices**



## Section VI

### Appendices

#### A. Data Limitations

The figures presented in this report are conservative ones. One reason is that not all cases are included because some cancer diagnoses are not reported or are reported late. This is called underreporting, and it occurs to varying degrees in different parts of Virginia. Second, Virginia residents may travel out of Virginia for treatment and diagnosis. VCR collects data on cancer in Virginia residents diagnosed or treated in Kentucky, Maryland, North Carolina, Tennessee, Washington D.C., and West Virginia from their respective central registries through interstate data exchange agreements. Virginia residents diagnosed or treated outside these states may not be reported to the Virginia Cancer Registry. Third, counts may be more accurate in urban areas because case ascertainment is more complete. Counts may be more complete for certain races, sites or stages. All these factors

affect the completeness with which cases are counted and affect the accuracy of rates presented. However, the effect on the rates in this report is thought to be minor.

The Virginia Cancer Registry has a data suppression policy and follows this policy to protect patient confidentiality and to provide meaningful rates. When cell counts fall below five, the registry staff do not present the counts in tabled data. The exception to this rule is if the table presents frequencies for the whole state and no demographic distinctions are made among patients. The Virginia Cancer Registry does not present rates when the number of cases in a table cell is ten or fewer. VCR considers that rates calculated for cells having 10 or fewer cases are unstable and do not reliably represent actual rates.

## B. Technical Terms

**Reportable Cancer Cases.** The Virginia Board of Health publishes *Regulations for Disease Reporting and Control*. This document defines cancer as "...all carcinomas, sarcomas, melanomas, leukemias, and lymphomas excluding localized basal and squamous cell carcinomas of the skin, except for lesions of the mucous membranes." Any cancer meeting this definition must be reported to the VCR. Benign tumors of the brain and central nervous system are also reportable. Localized basal and squamous cell skin carcinomas greater than five centimeters at the time of diagnosis are also reportable. Skin cancer diagnosed at the regional or distant stage and any other type of skin malignancy, such as melanomas, mycosis fungoides, and Kaposi's sarcoma, should also be reported.<sup>33</sup>

**Cancer Site Categories.** VCR uses standard categories to describe the site in the body in which a cancer originates. This facilitates interpreting and comparing data. VCR uses categories that the Surveillance, Epidemiology and End Results (SEER) program established. The SEER program is part of the National Cancer Institute (NCI). Most cancers are categorized by anatomical site; examples include prostate and lung and bronchus cancers. Other cancers, such as lymphomas and leukemias, are categorized by cell type. SEER site category definitions are in Appendix D., below.

**Rates.** A rate is the number of events that occurs in a population during a period. This report uses several rates, depending on the topic. All Virginia-specific cancer incidence rates are calculated from VCR data. Except where noted, annual incidence rates are per 100,000 people and exclude in situ carcino-

mas for all sites except the urinary bladder.

**Incidence rate (R).** A crude cancer incidence rate is the number of cancers counted in a population divided by the number of people in the population during a specified period. The numerator of the rate can include multiple primaries occurring in one patient. The numerator is not the number of people diagnosed with cancer; it is the number of cancers diagnosed in the population. The formula VCR uses to calculate crude incidence rates is:

$$R = (c/n)$$

*R* is the population-specific incidence rate; *c* is the number of cases in the population; *n* is the population at risk. For example, the population at risk for the overall cancer rate for any locality is the population of that locality. For female breast cancer, the population at risk is the female population of Virginia.

**Incidence rate per 100,000 population.** Incidence rates developed for different populations, such as males and females or residents of rural and urban areas, are made comparable by multiplying crude incidence rates by 100,000. The number that results is an incidence rate per 100,000 people. VCR uses this standard to report rates in this report.

$$R = \left(\frac{c}{n}\right) \times 100,000$$

**Age-specific incidence rate (ASIR<sub>i</sub>).** Age-specific rates are calculated by dividing the number of cases in a specific age group by the total population in that age group during a period. VCR categorizes age at diagnosis

into five-year groups beginning with 0 – 4 years old and ending with 85 and older.

$$ASIR_i = (c_i/n_i)$$

*ASIR<sub>i</sub>* is the age-specific rate for the age group *i*; *c<sub>i</sub>* is the count of cases in that group; *n<sub>i</sub>* is the count of those at risk for that group; it is the number of people in the population who are in the group.

Cancer incidence rates vary substantially by age; older populations have higher rates of most cancers.

**Age-adjusted incidence rate (AAIR).** Age-adjusted incidence rates are calculated by adjusting age-specific rates to a standard population. Age-adjusted rates remove the effect of different age structures and provide single measures that can be used to compare two or more populations. VCR calculated the age-adjusted rates in this report using the year 2000 Standard Population by the direct method. The 2000 Standard Population is discussed in Appendix C., below.<sup>34</sup>

$$AAIR = \sum_{i=0-4}^{i=85+} (w_i \times r_i)$$

Age at diagnosis is categorized into five-year groups beginning with 0 – 4 years old and ending with 85 and older. *i* = 0–4 is the first age group in the series and *i* = 85+ is the last; *w<sub>i</sub>* is the proportion of age group *i* in the 2000 Standard Population; *r<sub>i</sub>* is the age-specific rate for the age group *i* in the local population.

**Mortality rate, Age-adjusted mortality rate.** The crude cancer mortality rate is a measure of the number of deaths due to cancer in a given population for a given time. Similar to

cancer incidence rates, cancer mortality rates vary with age; mortality rates for most cancers increase at older ages. VCR calculated mortality rates in this publication using the same method used for incidence rates. Except where noted, the annual mortality rates in this report are per 100,000 people and exclude in situ carcinomas for all sites except the urinary bladder. The Virginia Center for Health Statistics of the Virginia Department of Health provided the mortality data used in this report.

**Summary Stage.** When cancer is diagnosed, it is “staged”. A stage identifies how far a malignant tumor has spread from its origin at the time it is diagnosed. Defining the stage of a cancer is useful in evaluating what will happen in the future (the *prognosis*) and in choosing treatment. This report categorizes stages using the *SEER Summary Stage Standard*.<sup>35</sup>

**In situ.** A malignant tumor that does not invade or penetrate surrounding tissue.

**Localized.** An invasive tumor confined to the site of origin.

**Regional.** 1) A tumor that has spread by direct extension to immediately adjacent organs or tissues. 2) A tumor that has metastasized (spread through the bloodstream) to regional lymph nodes, but which appears not to have spread further. 3) A tumor that has spread by direct extension and has metastasized to the extent described.

**Distant.** 1) A tumor that has spread by direct extension beyond the immediately adjacent organs or tissues. 2) A tumor that has metastasized to distant lymph nodes or other distant tissues. 3) A tumor that both has

spread by direct extension beyond the immediately adjacent organs or tissues and has metastasized to distant lymph nodes or other distant tissues.

**Unstaged.** The stage of the disease cannot be determined at the time of diagnosis because insufficient information is available.

**Race and Ethnicity.** VCR collects information on race and ethnicity. Not all sources, however, reliably report race and ethnicity. Some groups are undercounted and individuals may be misclassified. As a consequence, incidence numbers for certain races and ethnic groups may not be an accurate count of the burden of cancer in these groups. This limitation of the data means that VCR calculates rates only for whites, Blacks and all other races combined. Other includes Native American/Alaskan Natives and Asian/Pacific Islanders. Hispanic persons may be of any race. The registry cannot

calculate cancer incidence rates for patients whose race is unknown because no comparable group can be identified in the population of the state.

**International Classification of Disease (ICD) codes.** Cancers reported to VCR are classified according to the *International Classification of Diseases for Oncology, Second Edition* (ICD-O-2; Percy, 1990) and the *International Classification of Diseases, Ninth Edition, Clinical Modification* (ICD-9-CM, DHHS, 1989). These coding systems are international standards that allow researchers and others to compare cancers and cancer statistics reliably across populations. Appendix D, below, lists ICD-O-2 and ICD-9 codes the Virginia Cancer Registry uses.

<sup>33</sup>Commonwealth of Virginia, 1999:1, 14.

<sup>34</sup> Klein and Schoenborn, 2001:2.

<sup>35</sup> SEER 1977

### C. Year 2000 Standard Population

Age-adjusted rates in this report are directly standardized to the age distribution of the U. S. projected population for 2000; this is the year 2000 Standard Population.<sup>36</sup> Previous Virginia Cancer Registry annual reports used the year 1970 Standard Population to produce age-adjusted rates. *Because of the change from the 1970 to the 2000 standard population, rates that appear in prior VCR reports cannot be reliably compared to the rates that appear in this report.*

Age-adjustment is a statistical technique used to produce a summary measure of the risk a population has of developing or dying of cancer. Age-adjustment produces rates that are not biased by how old or young the population is. Age-adjusting is important because it allows comparisons between groups of people or periods of time. Populations can vary considerably by race and ethnicity, sex, geographic area, and time. If rates are compared without age-adjusting them, determining whether differences result from different age distributions or from a cancer risk not related to age is not possible. This is important because cancer risk increases with age.

An age-adjusted rate is a measure of what the overall rate in a population would be if that population had the same age distribution as the standard population. Appendix B. Technical Terms, explains the formula the VCR uses.

Year 2000 Projected Population and Age-Adjustment Weights

Age in years	Population in thousands	Adjustment weight
<b>All ages</b>	<b>274,634</b>	<b>1.000000</b>
00-04	18,987	0.069135
05-09	19,920	0.072532
10-14	20,057	0.073032
15-19	19,820	0.072168
20-24	18,257	0.066478
25-29	17,722	0.064530
30-34	19,511	0.071044
35-39	22,180	0.080762
40-44	22,479	0.081851
45-49	19,806	0.072118
50-54	17,224	0.062716
55-59	13,307	0.048454
60-64	10,654	0.038793
65-69	9,410	0.034264
70-74	8,726	0.031773
75-79	7,415	0.027000
80-84	4,900	0.017842
85 +	4,259	0.015508

Source: Calculated from Klein and Schoenborn, 2001, p. 2

<sup>36</sup> Klein and Schoenborn, 2001.

**D. SEER Definition of Cancer Site Categories**

<b>Site Categories</b>	<b>ICD-O-2 Codes*</b>	<b>ICD-9 Codes</b>
Oral Cavity and Pharynx	C00.0 - C14.8	140.0 - 145.6 145.8 - 145.9 146.0 - 149.9
Esophagus	C15.0 - C15.9	150.0 - 150.9
Stomach	C16.0 - C16.9	151.0 - 151.9
Colon and Rectum	C18.0 - C18.9, C19.9, C20.9, C21.0 - C21.8	153.0 - 153.9, 154.0 - 154.1, 159.0
Liver and Intrahepatic Bile Duct	C22.0 - C22.1	155.0 - 155.2
Pancreas	C25.0 - C25.9	157.0 - 157.9
Larynx	C32.0 - C32.9	161.0 - 161.9
Lung and Bronchus	C34.0 - C34.9	162.2 - 162.9
Melanoma of the Skin	C44.0 - C44.9 (histologies 8720-8790 only)	172.0 - 172.9
Female Breast	C50.0 - C50.9	174.0 - 174.9
Cervix	C53.0 - C53.9	180.0 - 180.9
Uterus	C54.0 - C54.9, C55.9	179._, 182.0 - 182.1, 182.8
Ovary	C56.9	183.0
Prostate	C61.9	185._
Testis	C62.0 - C62.9	186.0 - 186.9
Urinary Bladder	C67.0 - C67.9	188.0 - 188.9
Kidney and Renal Pelvis	C64.9, C65.9	189.0 - 189.1
Brain and Other Nervous System	C70.0 - C70.9, C71.0 - C71.9, C72.0 - C72.9,	191.0 - 191.9 192.0 - 192.3, 192.8 - 192.9
Thyroid	C73.9	193._
Hodgkin Lymphoma	Histologies 9650-9667	201.0 - 201.9
Non-Hodgkin Lymphoma	Histologies 9590-9595, 9670-9717	200.0 - 200.8, 202.0 - 202.2, 202.8 - 202.9
Multiple Myeloma	Histologies 9731-9732	203.0, 203.2 - 203.8
Leukemia	Histologies 9800-9804, 9820-9827, 9830-9831, 9840-9842, 9850, 9860-9864, 9866-9868, 9870- 9874, 9880, 9890-9894, 9900, 9910, 9930-9941	202.4, 203.1, 204.0 - 207.2, 207.8 - 207.9 208.0 - 208.9

\*Except where noted or otherwise specified, each grouping excludes histologic types 9590-9989.

## E. References

VCR staff consulted many references to prepare this report. Cancer reports that other states have published were an especially fruitful source of ideas. Other medical, technical and reference sources consulted and cited in the text also appear.

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## Cancer Information on the Internet

The number of internet sites related to cancer is vast. Readers should be aware that many sites do not present scientifically or medically valid information. This list collects some general pages and some pages dedicated to particular cancers. The

National Cancer Institute's *Cancer.gov* page (<http://www.nci.nih.gov>) is a useful place to begin looking for scientifically valid, objective information about cancer.

Site	Address
American Cancer Society	<a href="http://www.cancer.org/docroot/home/index.asp">http://www.cancer.org/docroot/home/index.asp</a>
American Association for Cancer Research	<a href="http://www.aacr.org/">http://www.aacr.org/</a>
American College of Surgeons Cancer Programs	<a href="http://www.facs.org/dept/cancer/index.html">http://www.facs.org/dept/cancer/index.html</a>
Cancer Control Planet (NCI)	<a href="http://cancercontrolplanet.cancer.gov/">http://cancercontrolplanet.cancer.gov/</a>
The Cancer Information Network	<a href="http://www.thecancer.info/">http://www.thecancer.info/</a>
CancerLinks (internet site resources)	<a href="http://www.cancerlinks.com">http://www.cancerlinks.com</a>
Centers for Disease Control and Prevention, Cancer Prevention and Control	<a href="http://www.cdc.gov/cancer/">http://www.cdc.gov/cancer/</a>
International Agency for Research on Cancer	<a href="http://www.iarc.fr/">http://www.iarc.fr/</a>
National Cancer Institute (NCI)	<a href="http://www.nci.nih.gov/">http://www.nci.nih.gov/</a>
National Cancer Institute Surveillance, Epidemiology and End Results (SEER) program	<a href="http://seer.cancer.gov/">http://seer.cancer.gov/</a>
National Center for Health Statistics (CDC)	<a href="http://www.cdc.gov/nchs/">http://www.cdc.gov/nchs/</a>
National Institutes of Health Clinical Trials	<a href="http://clinicaltrials.gov/">http://clinicaltrials.gov/</a>
National Library of Medicine	<a href="http://www.nlm.nih.gov/hinfo.html">http://www.nlm.nih.gov/hinfo.html</a>
United States Cancer Statistics (CDC and NIH joint publication)	<a href="http://www.cdc.gov/cancer/npcr/uscs/index.htm">http://www.cdc.gov/cancer/npcr/uscs/index.htm</a>
United States Department of Health and Human Services	<a href="http://www.dhhs.gov/">http://www.dhhs.gov/</a>
<b>Breast cancer</b>	
National Cancer Institute breast cancer home page	<a href="http://www.cancer.gov/cancer_information/cancer_type/breast/">http://www.cancer.gov/cancer_information/cancer_type/breast/</a>
Breastcancer.org	<a href="http://www.breastcancer.org/">http://www.breastcancer.org/</a>
Susan B. Komen Breast Cancer Foundation	<a href="http://www.komen.org/bci/">http://www.komen.org/bci/</a>
<b>Colorectal cancer</b>	
National Cancer Institute colon and rectal cancer home page	<a href="http://www.cancer.gov/cancer_information/cancer_type/colon_and_rectal/">http://www.cancer.gov/cancer_information/cancer_type/colon_and_rectal/</a>
Colon Cancer Alliance	<a href="http://www.ccalliance.org/">http://www.ccalliance.org/</a>
<b>Kidney cancer</b>	
National Cancer Institute kidney cancer home page	<a href="http://www.cancer.gov/cancerinfo/types/kidney/">http://www.cancer.gov/cancerinfo/types/kidney/</a>
Kidney Cancer Association	<a href="http://www.kidneycancerassociation.org/">http://www.kidneycancerassociation.org/</a>

Site	Address
<b>Lung and bronchus cancer</b>	
National Cancer Institute lung cancer home page	<a href="http://www.cancer.gov/cancer_information/cancer_type/lung/">http://www.cancer.gov/cancer_information/cancer_type/lung/</a>
Alliance for Lung Cancer Advocacy, Support, and Education	<a href="http://www.alcase.org/">http://www.alcase.org/</a>
<b>Melanoma skin cancer</b>	
National Cancer Institute melanoma cancer home page	<a href="http://www.cancer.gov/cancer_information/cancer_type/melanoma/">http://www.cancer.gov/cancer_information/cancer_type/melanoma/</a>
Melanoma Education Foundation	<a href="http://www.skincheck.com/">http://www.skincheck.com/</a>
<b>Non-Hodgkin's Lymphoma</b>	
National Cancer Institute leukemia home page (leukemia, lymphoma)	<a href="http://www.cancer.gov/cancerinfo/types/non-hodgkins-lymphoma/">http://www.cancer.gov/cancerinfo/types/non-hodgkins-lymphoma/</a>
Lymphoma Information Network	<a href="http://www.lymphomainfo.net/">http://www.lymphomainfo.net/</a>
<b>Oral cancer</b>	
National Cancer Institute oral cancer home page (head, neck and oral)	<a href="http://www.cancer.gov/cancer_information/cancer_type/head_and_neck/">http://www.cancer.gov/cancer_information/cancer_type/head_and_neck/</a>
American Oral Cancer Foundation	<a href="http://www.aocf.org/index.htm">http://www.aocf.org/index.htm</a>
<b>Prostate cancer</b>	
National Cancer Institute prostate cancer home page	<a href="http://www.cancer.gov/cancer_information/cancer_type/prostate/">http://www.cancer.gov/cancer_information/cancer_type/prostate/</a>
National Prostate Cancer Coalition	<a href="http://www.pcacoalition.org/index.php">http://www.pcacoalition.org/index.php</a>
Virginia Prostate Cancer Coalition	<a href="http://www.vapcacoalition.org/">http://www.vapcacoalition.org/</a>
<b>Tobacco Use Control</b>	
Virginia Department of Health Tobacco Use Control Program	<a href="http://www.vahealth.org/tobaccocontrol">www.vahealth.org/tobaccocontrol</a>
CDC Tobacco Information and Prevention	<a href="http://www.cdc.gov/tobacco">www.cdc.gov/tobacco</a>
American Lung Association tobacco control page	<a href="http://www.lungusa.org/tobacco/index.html">www.lungusa.org/tobacco/index.html</a>
<b>Urinary bladder cancer</b>	
National Cancer Institute bladder cancer home page	<a href="http://www.cancer.gov/cancerinfo/types/bladder">http://www.cancer.gov/cancerinfo/types/bladder</a>
Urology Channel	<a href="http://www.urologychannel.com/bladdercancer/index.shtml">http://www.urologychannel.com/bladdercancer/index.shtml</a>
<b>Uterine (endometrial) cancer</b>	
National Cancer Institute endometrial cancer homepage	<a href="http://www.cancer.gov/cancer_information/cancer_type/endometrial/">http://www.cancer.gov/cancer_information/cancer_type/endometrial/</a>
National Foundation for Cancer Research	<a href="http://www.researchforacure.com/site/PageServer?pagename=cancers_uterine">http://www.researchforacure.com/site/PageServer?pagename=cancers_uterine</a>

**Disclaimer:** The Virginia Cancer Registry provides links to non-state organizations here solely as a service to our readers. These links do not constitute an endorsement of these organizations or their programs by the Virginia Cancer Registry, and none should be inferred. VCR is not responsible for the content of the web pages found at these links.



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DIVISION OF CHRONIC DISEASE PREVENTION AND CONTROL



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