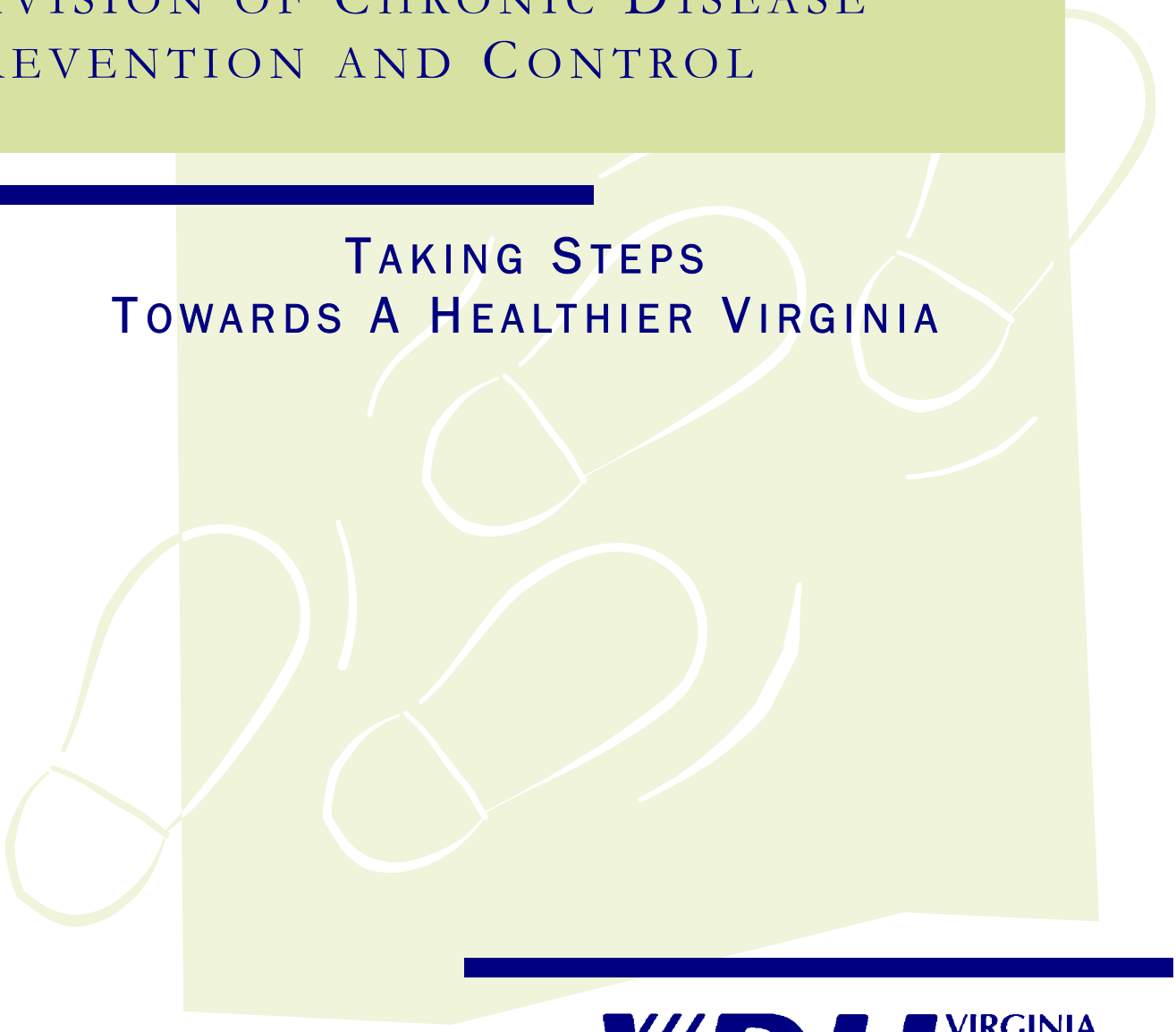
Virginia Department of Health

Chronic Disease In Virginia:

A Statistical Report By The Division of Chronic Disease Prevention and Control

Taking Steps Towards A Healthier Virginia



VDH VIRGINIA DEPARTMENT OF HEALTH

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CHRONIC DISEASE IN VIRGINIA:
A Statistical Report
by the
Division of Chronic Disease Prevention and Control,
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EXECUTIVE SUMMARY

Chronic diseases have been the leading causes of morbidity and mortality in the United States for most of the 20th century. According to the Centers for Disease Control:

- Cardiovascular disease (which includes heart disease, hypertension, and stroke) is the leading cause of death among both men and women, and across all racial and ethnic groups. More than 460,000 Americans die of CVD each year, accounting for over 40 percent of all deaths.
- Cancer is the second leading cause of death, costing the nation an estimated $107 billion annually in health care expenditures and lost productivity. The American Cancer Society estimates that 8.4 million Americans alive today have a history of cancer.
- Diabetes is the seventh leading cause of death among Americans; and it is the leading cause of new cases of blindness, kidney failure, and lower extremity amputations. About 1,700 new cases are diagnosed every day in the U.S.
- Arthritis and other rheumatic conditions currently affect nearly 43 million Americans, or about one of every six people. It is the leading cause of disability in the U.S., costing almost $65 billion annually in medical care and lost productivity.

The chronic disease trends in Virginia mirror those of the nation. In 1998:

- Cardiovascular diseases and cancer caused 39 percent and 24 percent, respectively, of all deaths.
- Diabetes was the 7th leading cause of death in 1998,and the 5th leading cause of death among 45-64 year olds. Diabetes mortality increased 36 percent from 1990 to 1998.
- Combined hospital charges for arthritis, cancer, cardiovascular disease, and diabetes exceeded $2.6 billion. Virginians spent 932,098 days in the hospital for these four chronic diseases, resulting in 2,554 years of productive time lost.
- As much as half of Virginia's population is at risk for developing one or more chronic diseases due to health behaviors. Nearly one out of every four Virginians used some form of tobacco, had high blood pressure, had high cholesterol, and/or was overweight or obese. More than half led sedentary lifestyles, and less than one third ate five or more servings of fruits and vegetables a day.

The goal of the Division of Chronic Disease Prevention and Control (DCDPC) of the Virginia Department of Health is to reduce the morbidity and mortality caused by major chronic diseases in Virginia. The DCDPC's activities are aimed at reducing the risk factors that lead to chronic disease (physical inactivity, high blood pressure, high cholesterol, high-fat/low-fiber diet, obesity, and tobacco use); detecting chronic diseases in their earliest and most treatable stages; and reducing the symptoms and complications of the diseases. Critical to the DCDPC's effectiveness in preventing and controlling chronic disease in Virginia is the ongoing systematic collection, analysis, and interpretation of chronic disease data. These data are used by the DCDPC to identify groups of people who are at risk for developing chronic disease; to identify disparities among subgroups in chronic disease morbidity and mortality; and to measure the effectiveness of program interventions.

The Chronic Disease Statistical Report begins by defining and describing chronic disease; reviewing the risk factors related to the major chronic diseases; and describing the sources of chronic disease data, including strengths and limitations of their use. These introductory sections prepare the reader for the major section of the Report, in which the incidence, prevalence, mortality, and cost of chronic disease in Virginia in 1998 (the most recent year for which all four of the above types of data are available) are presented and explained. Specifically, the following diseases are addressed: arthritis, cancer, cardiovascular disease (including heart diseases and cerebrovascular disease), and diabetes.

The Division of Chronic Disease Prevention and Control intends to use this report, and its subsequent updates, to:

- Identify data sources that are currently available for the most complete and accurate reporting of chronic disease in Virginia.
- Identify gaps in chronic disease surveillance and trend analysis, and barriers to filling those gaps.
- Provide accurate data upon which public health policy and resource allocation decisions may be based.
- Inform representatives from public health, managed care and other health care providers, and educators about chronic disease data in Virginia.
- Foster data sharing among partners in chronic disease prevention and control.

This first edition of the Virginia Chronic Disease Statistical Report, and subsequent updates, will be made available on the Virginia Department of Health (VDH) website at **http://www.vahealth.org.**

EVALUATION FORM

Virginia Chronic Disease Statistical Report

The Division of Chronic Disease Prevention and Control plans to update this Chronic Disease Statistical Report on a regular basis (approximately every 2-3 years). In order to evaluate the usefulness of this Report and to make improvements in future editions, we ask for your comments via completing the questions below, and return it to the name and address provided at the bottom of the page. Thank you!

1. Name of organization: _____

2. Name of person reviewing Report: _____ Position: _____

3. Do you think the Chronic Disease Statistical Report is a potential resource tool for your organization?
_____ Yes _____ No

   If YES, how does (or did) your organization use the Report?

   If NO, how could the Report be modified to be useful to your organization?

4. Please rate the usefulness of each of the following sections, with 1=very useful, 2=somewhat useful, 3=less useful, 4=not useful at all.

___ Chronic Disease Overview	___ Data Sources	___ Cardiovascular Disease
___ Chronic Disease Prevention Program	___ Risk Factors	
___ Chronic Disease Data	___ Arthritis	___ Diabetes
	___ Cancer	

5. Please list any other sections or information that you feel should be included in the Report:

6. Please list **names** & **phone numbers** of other organizations that you think could use the Report:

7. Please list any other comments or feedback you would like to provide about the Report:

Thank you for reviewing the Report. Please fax or mail your completed form to:

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Richmond, VA 23218
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CHRONIC DISEASE - AN OVERVIEW

What is chronic disease?

The Centers for Disease Control and Prevention defines chronic disease as illnesses that are prolonged, do not resolve spontaneously, and are rarely cured completely. A chronic disease has the following characteristics[1]:

1. It may develop silently for years before it is detected or before symptoms occur.
2. It persists over a long period of time, eventually leading to functional impairment or disability.
3. Its exact cause(s) may be unknown. It is not contagious, but it has multiple risk factors associated with its development.
4. It is rarely curable, but disease related complications can be managed to improve health.
5. It has many preventable risk factors (smoking, obesity, etc.).

Over last hundred years, many advances have been made in treating infectious disease like pneumonia, influenza and tuberculosis. As a result, individuals in the United States are living longer, and the leading causes of death have changed to chronic diseases, such as cardiovascular disease and cancer. Chronic disease is a major contributer to premature death and disability; it accounts for 70 percent of all deaths and more than 90 million Americans live with chronic diseases. The good news is that reduction of the morbidity and mortality from chronic disease is possible.

Can chronic disease be prevented?

Prevention of chronic disease is possible and effective at the three levels described below:

Level of Prevention	Purpose	Audience	Example
Primary Prevention	To reduce a person's risk of developing a chronic disease (i.e. reduce incidence).	People who do not have a chronic disease, but are susceptible to one (i.e., "at risk").	Eating five servings of fruits and vegetables a day.
Secondary Prevention	To detect disease in early stages and decrease duration and severity of disease before signs and symptoms occur.	People who have an early stage of a chronic disease, but have not been diagnosed.	Screening for early detection of cancer, such as mammography.
Tertiary Prevention	To reduce complications of and disabilities caused by the disease.	People who have developed and been diagnosed with a chronic disease.	Eye exams for people with diabetes.

Who is at higher risk for chronic disease?

- **African Americans:**
  1. Have higher cancer death rates than whites.
  2. Have higher risk of cardiovascular disease and stroke than whites.
  3. Have higher risk of diabetes than whites.

- **Women:**
  1. (African-American women) Are at twice the risk for stroke compared to white males.
  2. Are at higher risk than males for developing some forms of arthritis.

- **Young Children and Teenagers:**
  1. Are less physically active than children of earlier generations.
  2. Consume more fat and sodium in their diets than those of earlier generations.

- **Persons with Diabetes:**
  1. Are two-to-four times more likely than persons without diabetes to develop cardiovascular disease.

- **Users of alcohol, tobacco, or other drugs:**
  1. Are at higher risk than non-users of having a stroke and developing cardiovascular disease.
  2. Are at higher risk than non-users of developing cancer.

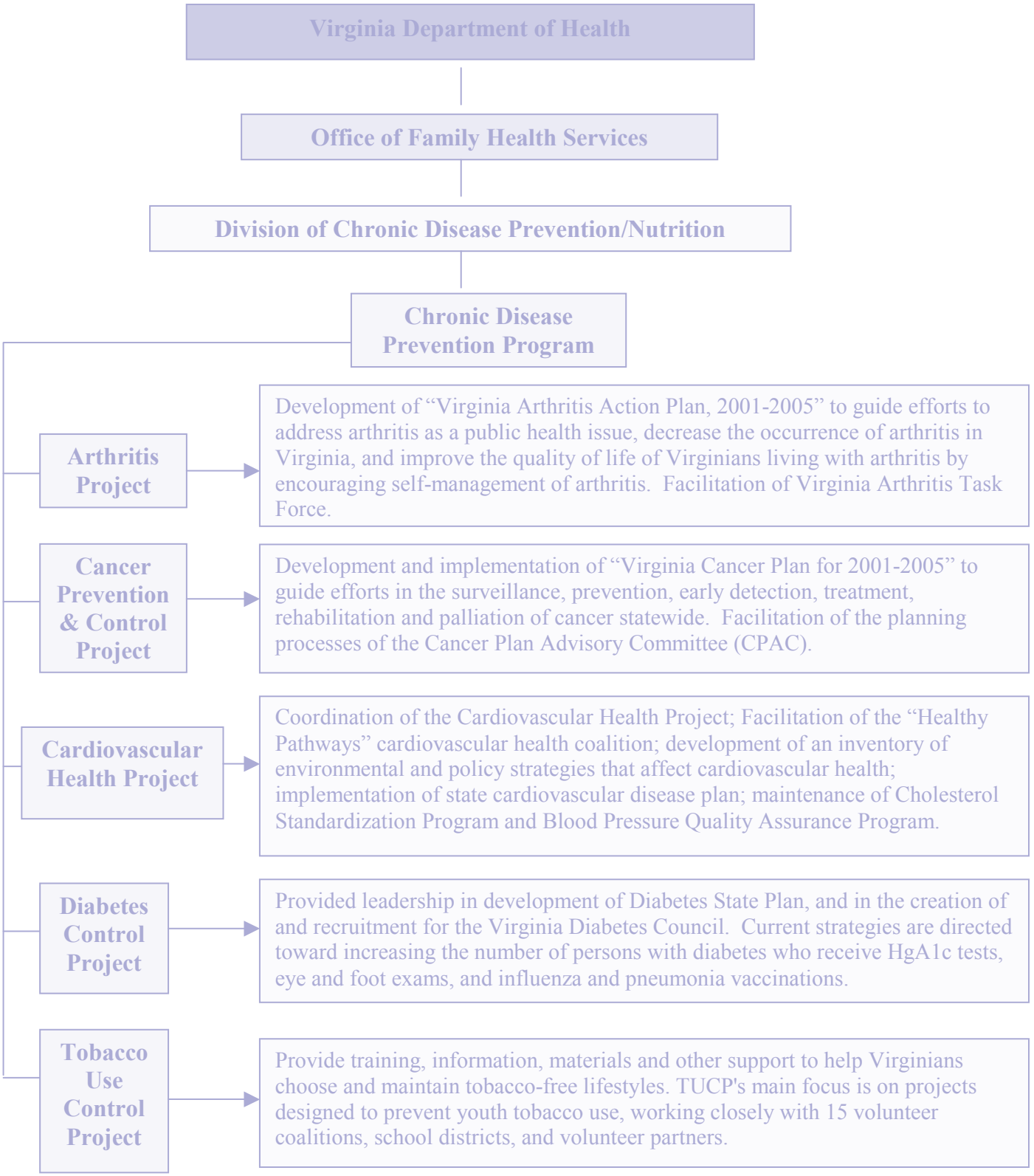
THE DIVISION OF CHRONIC DISEASE PREVENTION AND CONTROL (DCDPC)

DCDPC is focused on the reduction of the morbidity and mortality from major chronic diseases in Virginia. Chronic disease programs:

- Encourage healthy lifestyle choices such as promoting physical activity, good nutrition, reduction of tobacco use, and use of early detection practices.
- Work with a variety of partners to effect change in systems that influence the prevention or control of chronic diseases.
- Promote and support the early detection of chronic disease.
- Encourage self-management, monitoring and support when a chronic disease condition exists.
- Target Virginians who are at risk for developing chronic diseases and Virginians with chronic diseases who need assistance in managing their diseases.
- Develop, maintain and upgrade surveillance processes to monitor the burden of chronic diseases in Virginia
- Develop and implement comprehensive, disease-oriented state plans designed to address the burden of specific chronic diseases in Virginia.
- Collaborate with primary care hospital and managed care providers to initiate clinical preventive and community-based practices for lifestyle risk reduction and early screening for chronic diseases.
- Address disparities in incidence, morbidity and mortality from chronic disease for racial and ethnic minorities.

DCDPC has project teams that work to address arthritis, cancer, cardiovascular disease, diabetes, physical activity and tobacco control in Virginia. In addition to risk reduction and disease specific initiatives, the CDPP teams also work collaboratively to:

- Achieve a state comprehensive chronic disease prevention approach.
- Address environmental and policy strategies that affect chronic disease status.
- Plan, promote, and implement chronic disease prevention training events to develop and enhance program partners' knowledge and skills.
- Produce and evaluate use of chronic disease prevention reports.
- Identify and evaluate products that may be used for professional education in chronic disease prevention.
- Coordinate resources and messages for media campaigns.
- Promote chronic disease prevention opportunities with Managed Care Organizations.


Virginia Department of Health
Office of Family Health Services
Division of Chronic Disease Prevention/Nutrition
Chronic Disease Prevention Program
Arthritis Project
Development of "Virginia Arthritis Action Plan, 2001-2005" to guide efforts to address arthritis as a public health issue, decrease the occurrence of arthritis in Virginia, and improve the quality of life of Virginians living with arthritis by encouraging self-management of arthritis. Facilitation of Virginia Arthritis Task Force.
Cancer Prevention & Control Project
Development and implementation of "Virginia Cancer Plan for 2001-2005" to guide efforts in the surveillance, prevention, early detection, treatment, rehabilitation and palliation of cancer statewide. Facilitation of the planning processes of the Cancer Plan Advisory Committee (CPAC).
Cardiovascular Health Project
Coordination of the Cardiovascular Health Project; Facilitation of the "Healthy Pathways" cardiovascular health coalition; development of an inventory of environmental and policy strategies that affect cardiovascular health; implementation of state cardiovascular disease plan; maintenance of Cholesterol Standardization Program and Blood Pressure Quality Assurance Program.
Diabetes Control Project
Provided leadership in development of Diabetes State Plan, and in the creation of and recruitment for the Virginia Diabetes Council. Current strategies are directed toward increasing the number of persons with diabetes who receive HgA1c tests, eye and foot exams, and influenza and pneumonia vaccinations.
Tobacco Use Control Project
Provide training, information, materials and other support to help Virginians choose and maintain tobacco-free lifestyles. TUCP's main focus is on projects designed to prevent youth tobacco use, working closely with 15 volunteer coalitions, school districts, and volunteer partners.

CHRONIC DISEASE DATA

WHAT is *data*?
Data are systematically gathered information, not necessarily numeric, that describe the relationship of a specific population to a specific risk factor or disease. Data are analyzed to calculate statistics. These statistics provide information about how extensively a disease affects a population, who is at highest risk of dying from a disease, or whether the rate of exposure to a risk factor is increasing or decreasing.

Mortality statistics describe **causes of death**. ***Morbidity*** statistics describe **how many people have the disease**. Morbidity is expressed in one of two ways:

1. *prevalence* – the number of *known* cases of the disease at a given point in time
2. *incidence* – the number of *newly diagnosed* cases of the disease over a certain period of time (usually a year).

WHAT other terminology should I know about to understand the data in this report?

1. ***Unadjusted vs. adjusted rates*** [2, 3] –
   - An **unadjusted rate** (also called a **crude rate**) is a summary measure, calculated by dividing the total number of cases in the population by the total number of persons in that population in a specified time period. It does not take into account any other characteristic in which sub-populations may differ, such as age.
   - An **adjusted rate** is a *statistically constructed* rate that takes into account one or more *other* variables that have an effect on the variable that is being measured. Adjusted rates allow you to make comparisons between different groups without the *other* variables distorting the interpretation of the data. The most common adjustment made is for age differences.
   - **Examples:** ***Unadjusted*** mortality rates do not take into account that certain diseases are directly related to age; i.e., as age increases, so does the proportion of each age group that dies from the disease. ***Adjusted*** mortality rates would allow you to make comparisons among several racial/ ethnic groups that have significantly different age distributions. In Virginia, the "other" inclusive race category is collectively a *younger* population than the white or black population. When mortality rates for two or more populations are adjusted in the same manner, they may be compared to each other as though the populations had the same age distributions.

2. ***Confidence interval (C.I.)*** –
   - A range of values that has a specified probability (95 percent or 99 percent, usually) of containing the parameter being estimated.
   - The smaller the range of the confidence interval, the more accurate the estimate.
   - The larger the sample size, the smaller the range of the confidence interval.
   - **Example**: If a rate of 34.8 per 100,000 is reported, with a 95 percent confidence interval of 31.7-37.9, that means there is a 95 percent chance that the true rate is between 31.7 and 37.9, and the best estimate is 34.8.

3. ***Years of Potential Life Lost (YPLL)*** – There is more than one formula for calculating the YPLL. Each of them is an indicator of **premature mortality**.

WHY are chronic disease data important? An ongoing systematic collection, analysis, and interpretation of these data are necessary for monitoring trends in chronic diseases, so that these diseases can be effectively prevented and controlled.

HOW are the data used?
These data are used to[2]:

- identify groups of people who are at risk of chronic disease;
- identify disparities among subgroups in chronic disease morbidity and mortality
- measure the effect of program interventions
- identify newly emerging chronic diseases

WHERE can these data be found?

- The sources of chronic disease data for this report include the Behavioral Risk Factor Surveillance System (BRFSS), the Virginia Hospital Discharge Dataset, Vital Statistics and the Virginia Cancer Registry.
- A description of each of these sources is provided in the "DATA SOURCES" section.

WHERE are there gaps in the data and what can be done about them?

Non-specific rates for "Other" races – In Virginia, the sub-categories within the "Other" race category are not large enough to subdivide it into other race/ethnic groups (i.e., American Indian, Chinese, Filipino, Hispanic, Korean, Vietnamese, etc.).
At this time, therefore, it is not possible to determine how many deaths occurred in each of these sub-categories. As the population in these groups gets larger, the recording of deaths will be adapted to report specific mortality for a wider variety of race/ ethnic groups.

No central registry for incidence - With the exception of cancer, chronic diseases do not have a statewide recording mechanism for incidence like the one available to track mortality. Cancer is the only chronic disease that has a 'registry,' which allows a state to monitor how many people have been diagnosed with cancer. Therefore, there is no way to really know how many Virginians have been diagnosed with diabetes, cardiovascular disease, or arthritis. Reported prevalence rates are estimates, based on the BRFSS. Other 'snapshots' of information, such as hospitalization data, are not statistically representative of Virginia's population, and therefore, are limited in their usefulness (see "Limitations" column of the "Data Sources" table). Without the existence of mandatory reporting to central registries, or a single statewide health insurance provider, these morbidity data gaps will continue.

HOW will this data report be used? The Chronic Disease Prevention Program intends to use this report, and its subsequent updates, to:

1. Inform representatives from public health, managed care and other health care providers, and educators about chronic disease in Virginia.
2. Provide accurate data upon which public health policy and resource allocation decisions may be based.
3. Identify data sources that are currently available for the most complete and accurate reporting of chronic disease in Virginia.
4. Identify gaps in chronic disease surveillance, and barriers to filling those gaps.
5. Foster data sharing among partners in chronic disease prevention and control.

Database	Description	Contents	Uses	Strengths	Limitations
Behavioral Risk Factor Surveillance System (BRFSS)	Annual phone survey of un-institutionalized adults (18 years or older); completed on state level; coordinated on federal level; made up of core questions (asked annually), rotating questions (every other year), or state selected (frequency optional).	Demographics; smoking status & tobacco use; hypertension; health status; insurance coverage; cancer screening; prevalence of diabetes, hypertension & hypercholesterolemia; alcohol use; physical activity level; obesity or overweight; diabetes self-management practices.	Used to estimate prevalence of chronic disease, health status, and related risk factors; baseline data; evaluation of large scale (i.e., statewide) programs.	1. Results are comparable from state to state and year to year. 2. Allows for surveillance of risk factors and secondary prevention. 3. Flexibility of topic choice from year to year. 4. BRFSS is the only statewide, random sampled health survey.	1. Smaller populations (i.e., locality, pertinent subgroup like 'persons with diabetes') frequently have inadequate observations for extensive or reliable analysis. 2. Information is self-reported. 3. BRFSS data are collected through phone survey and therefore excludes anyone without a phone. Disparities in health may match with disparities in phone availability, thereby biasing the sample and the estimates. 4. Institutionalized adults are not surveyed. 5. Increasingly, refusal and non-response have become a problem. The increased use of cell phones, modems, and caller ID makes random sampling difficult.
Virginia Hospital Discharge Dataset (VHI)	This dataset consists of every hospital discharge in Virginia as well as discharges of Virginia residents from out of state hospitals.	All diagnosis by ICD-9 code; length of stay; charges; payer; demographics; dates; procedures.	Describing medical care by a specific disease or procedure; calculating trends in cost and length of stay; calculating annual expenditures for specific diagnoses or procedures.	1. This dataset is an entire population, not a sample; calculations are real, not estimates. 2. Has numerous fields of ICD9-CM codes, charges, type and source of admissions, procedures and extensive demographics.	1. Reporting is not complete and the extent of missing data is not known. 2. Rates may be affected by changing patterns of diagnosis based on reimbursement mechanisms. 3. Accuracy of details like race are dependent upon reporting hospitals. The dataset still contains close to 5% "unkown race" for this reason. 4. Any hospitalizations of Virginians outside of Virginia are not included in the dataset. Virginians who receive care in Wash. DC, MD, WV, KY, TN, or NC are not included in the VHI dataset.

Database	Description	Contents	Uses	Strengths	Limitations
Vital Statistics	Births, Deaths, Marriages, population estimates, communicable diseases.	Rates (both age adjusted and not adjusted) and numbers of deaths by gender, race, county; specifically highlights leading causes of death.	Establish mortality rates; compare mortality rates.	1. Complete, since data come from death certificates which are required by law 2. Contains all deaths in Virginia (total population rather than just a sample), including all Virginia residents who die outside of Virginia.	1. Cause of death information may be inaccurate (e.g. lack of autopsy information). 2. No information about risk factors as contributors to death.
Virginia Cancer Registry	Registry for mandatory reporting of all newly diagnosed cancers by hospitals and laboratories; compiles, maintains, and analyzes cancer surveillance database.	Incidence and survival; cancer site, histology, and summary stage; initial treatment as planned at the time of diagnosis; demographics; American Joint Commission on Cancer Staging Information since 1991.	Baseline data for planning comprehensive cancer control strategies; academic research; public and provider education; national data compilation; citizen concerns (cancer inquiries).	1. Data are increasingly available throughout the U.S. 2. Includes accurate tissue-based diagnoses. 3. Provides stage-of-diagnosis data.	1. Data are affected by patient out-migration from one geographic unit to another. 2. Risk factor information (associated with the cancer reported) is seldom available. 3. Under-reporting by providers in non-hospital or outpatient settings.

COMMONWEALTH OF VIRGINIA – A DEMOGRAPHIC PROFILE

Geographical Regions of the Commonwealth of Virginia

- 135 localities (95 counties and 40 independent cities)
- Population of 6,791,000 in 1998; a 15.8 percent increase in population from 1990
- Approximately 11 percent of Virginians live in areas that are federally designated health professional shortage areas (HPSAs), and approximately 12 percent of Virginians (est. 815,000) are uninsured. (Source: Health Policy Tracking Service, National Conference of State Legislatures, 1999.)
- Virginia is culturally diverse, including: African American, Bosnian, Cambodian, Central American, Chinese, Ethiopian, Filipino, Korean, Laotian, Russian/Ukrainian, Somalian, Sierra Leonian, South American, Thai, and Vietnamese. The greatest diversity is concentrated in the North region. (Source: Multicultural Health Task Force, Virginia Department of Health, 1999.)

	Estimates	Projection
	1998	2025
Race	% of Total Virginia population	% of Total Virginia population
Non-Hispanic White	72.8	64.7
African-American	20.1	22.8
American Indian	0.2	0.2
Asian/Pacific Islander	3.6	5.9
Hispanic	3.7	6.4
	1998	2010
Age	% of Total Virginia population	% of Total Virginia population
<18	24.2	22.6
18-44	42.8	37.5
45-64	21.7	27.5
65+	11.3	12.4

Source: Race data from the Multicultural Health Task Force, Virginia Department of Health, 1999;
Age data from the U.S. Census Bureau, Statistical Abstract of the U.S., 1999.

RISK FACTORS RELATED TO CHRONIC DISEASE

Chronic disease does NOT happen randomly, or just by chance. The odds of a person developing a chronic disease are directly related to one or more risk factors that he or she has. These risk factors may be generally categorized into one of two categories:

Some of these risk factors are related to several chronic diseases, as shown in the table below[1, 4, 5], and described in detail on the following pages.

Risk Factor	Cardiovascular Disease	Cancer	Diabetes	Musculoskeletal Diseases (includes Arthritis)
Tobacco Use	+	+	–	+
Alcohol Use	+	+	–	+
High Cholesterol	+			
High Blood Pressure	+		–	
Diet	+	+	+	+
Sedentary Lifestyle	+	+	+	+
Obesity	+	+	+	+

+=strong magnitude of risk

— = weaker magnitude OR affects complications and symptoms of disease

RISK FACTORS RELATED TO CHRONIC DISEASE:
Fruit & Vegetable Consumption

- Eating five or more servings of fruits and vegetables can reduce the risk of chronic diseases, such as heart disease and cancer.

- The National Cancer Institute attributes 35 percent of all cancer deaths in the U.S. to diets that are high in fat and low in fruits, vegetables and fiber.

- People who eat more fruits and vegetables may have approximately one-half the risk of cancer compared to those who do not.

- Eating a diet high in fruits and vegetables may reduce the risk of heart disease by 20-40 percent. Fruits and vegetables contain antioxidants and phytochemicals, which may play a protective role against cardiovascular disease and cancer.

- Fruits and vegetables may also play a preventive role in birth defects, cataract formation, hypertension, asthma, diverticulitis, obesity, and diabetes.

- A "serving" is:
  - a medium piece of fruit
  - one-half cup of cooked or raw fruit or vegetable
  - three-fourths cup (six ounces) of juice
  - one cup of leafy greens
  - one-fourth cup of dried fruit
  - one-half cup of cooked beans or peas (such as lentils, pinto beans, kidney beans)

- Each year during the 1994-1998 periods, nearly three-fourths of Virginians responding to the BRFSS did not eat enough servings of fruits and vegetables daily to reduce their risk for developing a chronic disease.

- BRFSS data from 1998 (see table on next page) show that:
  - More women than men ate five or more servings of fruits and vegetables a day (a 3:2 ratio).
  - The older the age group (up to age 85), the higher the percentage of Virginians who ate five or more servings a day.
  - The proportion of whites that ate five servings of fruits and vegetables a day was 17 percent higher than the proportion of blacks who did.
  - Only one out of five Virginians in the lowest income level (<$10,000) ate five or more servings, while nearly one in three in the highest income level (>$50,000) did. There was no clear trend among persons in the middle-income levels.
  - Over one-third of Virginians who completed college ate five or more servings, while less than one-fourth of those with less than a college education did.

Percent of 1998 BRFSS Respondents Who Ate Five or More Servings of Fruits and Vegetables Per Day*

Age Group		Gender		Race		Income		Education	
% (95% C.I.)		% (95% C.I.)		% (95% C.I.)		% (95% C.I.)		% (95% C.I.)	
18 - 24	21.0 (16.2, 26.7)	Male	22.4 (19.5, 25.5)	White	27.3 (24.9, 29.9)	<10,000	19.7 (13.0, 28.7)	Some High School	_
25 - 34	24.5 (19.7, 30.0)	Female	31.2 (28.1, 34.5)	Black	23.4 (19.2, 28.2)	10,000 – 14,999	20.1 (13.4, 29.0)	High School/ GED	23.8 (20.5, 27.4)
35 – 44	25.6 (21.2, 30.4)			Other	_	15,000 – 19,999	27.1 (20.9, 34.3)	Some College	23.0 (19.5, 27.0)
45 – 54	28.2 (22.8, 34.4)					20,000 – 24,999	23.5 (18.2, 29.9)	College graduate	36.1 (31.4, 41.1)
55 – 64	27.4 (22.2, 33.2)					25,000 – 34,999	27.4 (22.8, 32.5)		
65 – 74	36.6 (30.0, 43.8)					35,000 – 50,000	25.5 (20.4, 31.5)		
78 – 84	36.4 (27.7, 46.2)					>50,000	30.0 (24.0, 36.9)		
85+	30.6 (17.3, 48.0)								

* a calculated variable based on several BRFSS questions related to fruit and vegetable consumption

RISK FACTORS RELATED TO CHRONIC DISEASE:
High Blood Pressure (Hypertension)

- Hypertension can often be controlled through improvements in diet and physical activity levels alone. However, medication may also be required. Because hypertension is a "silent" disease, blood pressure should be checked regularly.

- Uncontrolled hypertension leads to strokes, heart attacks, renal damage, and retinopathy and is the primary antecedent to heart failure.

- At-risk individuals are those persons screened for blood pressure who are borderline or high in measurement. Borderline is 130/85 to 139/89 mm Hg and high blood pressure is 140/90 mm Hg and higher.

- Hypertension was the primary cause of death of 297 Virginians in 1998.

- In that same year, nearly 25 percent of Virginians had been told they had high blood pressure. That was a 12 percent increase since 1994, when 21.5 percent were told that they had high blood pressure.

- Seventy-five percent of the people who had been told they had high blood pressure were told on more than one occasion.

- BRFSS data from 1998 (see table on next page) show that:
  - In general the prevalence of high blood pressure increased with age, peaking among those ages 65-84, at 46 percent.
  - The percentage of females reporting having high blood pressure was nearly a third higher than the percentage of males reporting high blood pressure.
  - Similarly, the percentage of blacks reporting having high blood pressure was nearly a third higher than the percentage of whites reporting high blood pressure.
  - In general, the prevalence of high blood pressure decreased as income and education levels increased.

Percent of 1998 BRFSS Respondents Who Had High Blood Pressure*

Age Group		Gender		Race		Income		Education	
% (95% C.I.)		% (95% C.I.)		% (95% C.I.)		% (95% C.I.)		% (95% C.I.)	
18 - 24	10.5 (7.1, 15.4)	Male	20.9 (18.3, 23.7)	White	22.9 (20.8, 25.3)	<10,000	37.4 (28.0, 48.0)	Some High School	–
25 - 34	8.1 (5.7, 11.4)	Female	27.0 (24.0, 30.3)	Black	28.6 (24.0, 33.6)	10,000 – 14,999	38.6 (29.9, 40.0)	High School/ GED	26.0 (22.5, 29.8)
35 – 44	18.4 (14.5, 23.1)			Other	–	15,000 – 19,999	27.8 (21.9, 34.5)	Some College	21.8 (18.1, 26.1)
45 – 54	30.9 (25.5, 36.8)					20,000 – 24,999	24.9 (19.5, 31.3)	College graduate	19.8 (16.1, 24.2)
55 – 64	42.5 (36.0, 49.3)					25,000 – 34,999	23.6 (19.4, 28.3)		
65 – 74	46.8 (39.8, 54.0)					35,000 – 50,000	17.1 (13.1, 22.1)		
78 – 84	46.0 (36.6, 55.7)					>50,000	22.7 (17.2, 29.4)		
85+	37.6 (22.8, 55.2)								

* Percent of respondents who said, “Yes” to the question: “Have you ever been told that you had high blood pressure?”

RISK FACTORS RELATED TO CHRONIC DISEASE: High Cholesterol

- More than one out of every four Americans has an elevated total cholesterol level.

- Like hypertension, high cholesterol may be controlled through improvements in diet and physical activity levels alone, but often medication is also required.

- Also like hypertension, high cholesterol is a "silent" disease, and therefore regular screening is recommended. Screening provides a tool for identifying those at high risk and for initiating intervention to reduce blood cholesterol.

- Total cholesterol is the sum of the three lipoproteins that are found in blood*:
    1. high-density lipoprotein (HDL), averaging 20-30 percent of the total cholesterol
    2. low density lipoprotein (LDL), averaging 60-70 percent of the total cholesterol
    3. very low-density lipoprotein (VLDL), averaging 10-15 percent of the total cholesterol.

    (* LDLs and VDLs increase risk; HDLs lower risk.)

- At-risk individuals include the following:
    1. persons with a borderline total cholesterol level (200-239 mg/dl), especially those with two or more other coronary heart disease risk factors
    2. persons with a low HDL cholesterol level (less than 35 mg/dl)
    3. persons with a high total cholesterol level (240 mg/dl or above) in measurement.

- In 1998, 31.2 percent of respondents to the Behavioral Risk Factory Survey answered 'Yes' to the question, "Have you ever been told by a health professional that your blood cholesterol is high?"

- BRFSS data from 1998 (see table on next page) show that:
    - As age increased, so did the percentage of Virginians who had high cholesterol.
    - There was a slightly higher percentage of females than males who had high cholesterol.
    - There was a slightly higher percentage of whites than blacks that had high cholesterol.
    - The rates of high cholesterol varied across income levels, with the lowest income level (<$10,000) having the lowest percentage of Virginians (24.5 percent) with high cholesterol. Approximately one-third of Virginians with annual incomes between $10,000 and $34,999 had high cholesterol.
    - The rates of high cholesterol varied across education levels. College graduates had the lowest percentage of Virginians who had high cholesterol.

Percent of 1998 BRFSS Respondents Who Had High Cholesterol*

Age Group		Gender		Race		Income		Education	
% (95% C.I.)		% (95% C.I.)		% (95% C.I.)		% (95% C.I.)		% (95% C.I.)	
18 - 24	13.4 (6.9, 27.5)	Male	22.4 (26.3, 34.2)	White	31.2 (28.3, 34.3)	<10,000	24.1 (16.8, 34.3)	Some High School	_
25 - 34	16.3 (11.5, 22.6)	Female	31.2 (28.5, 36.0)	Black	28.3 (22.6, 34.7)	10,000 – 14,999	34.7 (25.2, 45.7)	High School/ GED	30.8 (26.1, 35.9)
35 – 44	26.5 (21.3, 32.5)			Other	_	15,000 – 19,999	33.0 (25.3, 41.8)	Some College	33.4 (28.1, 39.2)
45 – 54	39.0 (32.5, 45.9)					20,000 – 24,999	36.6 (27.4, 40.3)	College graduate	27.7 (23.0, 32.9)
55 – 64	37.4 (31.1, 42.2)					25,000 – 34,999	33.6 (27.5, 40.3)		
65 – 74	49.2 (41.7, 56.7)					35,000 – 50,000	28.3 (22.5, 35.0)		
78 – 84	45.1 (34.5, 56.1)					>50,000	30.6 (23.9, 38.3)		
85+	44.3 (25.8, 64.5)								

* Percent of respondents who answered, “Yes” to the question: “Have you ever been told that you had high cholesterol?”

RISK FACTORS RELATED TO CHRONIC DISEASE: Obesity

- As the second leading cause of preventable death in the United States today, overweight and obesity pose a major public health challenge. An estimated 97 million adults in the United States are overweight or obese.

- Obesity or being overweight substantially raises the risk of morbidity from:
  - hypertension
  - dyslipidemia (disorders of lipoprotein production, such as elevation of the serum total cholesterol, low-density lipoprotein (LDL) cholesterol or triglyceride concentrations, or a decrease in the high-density lipoprotein (HDL) cholesterol concentration)
  - type 2 diabetes
  - coronary heart disease
  - stroke
  - gallbladder disease
  - osteoarthritis
  - sleep apnea and respiratory problems
  - endometrial, breast, prostate, and colon cancers

- Higher body weights are also associated with increases in all-cause mortality.

- Obese individuals may also suffer from social stigmatization and discrimination.

- Overweight and obesity are measured by calculating ones Body Mass Index (BMI), which is based on height and weight.

- Individuals with a BMI of 25 to 29.9 are considered overweight, while individuals with a BMI greater than or equal to 30 are considered obese.

- In 1998, nearly one third of Virginians were at risk for health problems related to being overweight.

- The prevalence of obesity in Virginia increased 43 percent from 1994 to 1998, from 15.6 percent of Virginians in 1994 to 22.3 percent in 1998.

- BRFSS data from 1998 (see table on next page) show that:
  - Among Virginians between the ages of 45 and 74, the prevalence of obesity was over 40 percent.
  - The obesity prevalence rate was very similar for males and females; but the rate among blacks was 36 percent higher than the rate among whites.
  - Obesity rates were highest among those with annual incomes between $10,000 and $19,999.
  - Obesity rates decreased as education increased.

Percent of 1998 BRFSS Respondents Who Were Obese*

Age Group		Gender		Race		Income		Education	
% (95% C.I.)		% (95% C.I.)		% (95% C.I.)		% (95% C.I.)		% (95% C.I.)	
18 - 24	21.0 (16.3, 26.7)	Male	34.1 (30.8, 37.4)	White	36.8 (34.1, 39.5)	<10,000	37.6 (28.5, 47.6)	Some High School	–
25 - 34	28.4 (23.7, 33.7)	Female	34.8 (31.6, 38.0)	Black	49.9 (44.5, 55.2)	10,000 – 14,999	41.2 (32.5, 50.3)	High School/ GED	38.0 (34.0, 42.3)
35 – 44	33.2 (29.0, 37.7)			Other	–	15,000 – 19,999	41.4 (34.4, 48.9)	Some College	36.3 (31.6, 41.2)
45 – 54	43.5 (37.7, 49.6)					20,000 – 24,999	35.7 (29.3, 42.7)	College graduate	26.5 (22.8, 30.7)
55 – 64	45.9 (39.2, 52.8)					25,000 – 34,999	39.7 (34.4, 45.2)		
65 – 74	42.1 (35.3, 49.3)					35,000 – 50,000	29.5 (24.5, 34.9)		
78 – 84	22.8 (16.3, 31.0)					>50,000	33.3 (27.6, 39.5)		
85+	17.1 (8.6, 31.2)								

* Body Mass Index (BMI) greater than or equal to 30; calculated from person's height and weight.

RISK FACTORS RELATED TO CHRONIC DISEASE:
Sedentary Lifestyle

- Nationally, one out of every four adults lives a very sedentary life. In Virginia, that ratio is nearly one out of every two persons.

- ***Sedentary*** = less than three times per week and less than 20 minutes at a time of moderate physical activity.

- ***Regular and vigorous exercise*** = three or more times per week, 20 minutes or more at a time, at 50 percent or more capacity.

- Regular physical activity improves health in the following ways:
  - Reduces the risk of dying prematurely from chronic disease.
  - Reduces the risk of developing type 2 diabetes.
  - Reduces the risk of developing high blood pressure.
  - Helps reduce blood pressure in people who already have high blood pressure.
  - Reduces the risk of developing colon cancer.
  - Reduces the risk of disability related to arthritis.
  - Reduces feelings of depression and anxiety.
  - Helps control weight.
  - Helps build and maintain healthy bones, muscles, and joints.
  - Helps older adults become stronger and better able to move about without falling.
  - Promotes psychological well-being.

- Recent fitness recommendations suggest that good physical fitness can be achieved by *accumulating* shorter bouts of moderate intensity physical activity, (e.g. 15 minutes in the morning, 15 minutes in the evening), on most days of the week.

- Twenty to thirty minutes of moderate, daily physical activity or twenty to thirty minutes of vigorous activity, three to five times per week, are both sufficient to produce significant health benefits.

- Behavioral Risk Factor Survey data from 1998 (see table on next page) reveal that:
  - 55.4 percent of Virginians lead a sedentary lifestyle.
  - For nearly every age group, over 40 percent of Virginians were sedentary. The exceptions were the two age groups over 74 years of age. The age groups with the highest percentage of Virginians who were sedentary were the 25-34 and 35-44 year olds.
  - There was very little difference between males and females regarding sedentary lifestyle, but the rate of sedentary lifestyle among whites was 38 percent higher than that of black respondents.
  - The higher the income level, the greater was the percentage of Virginians who were sedentary. The percentage among the >$50,000 group who were sedentary was nearly double that of the <$10,000 group.
  - As education level increased, so did the percentage of respondents who were sedentary.

Percent of 1998 BRFSS Respondents Who Were At Risk for Sedentary Lifestyle*

Age Group		Gender		Race		Income		Education	
% (95% C.I.)		% (95% C.I.)		% (95% C.I.)		% (95% C.I.)		% (95% C.I.)	
18 - 24	41.7 (35.1, 48.6)	Male	45.0 (41.2, 48.7)	White	48.1 (45.2, 51.0)	<10,000	27.9 (19.4, 38.3)	Some High School	–
25 - 34	48.3 (42.0, 54.7)	Female	44.1 (40.7, 47.6)	Black	34.8 (30.0, 40.0)	10,000 – 14,999	35.0 (26.5, 44.4)	High School/ GED	39.7 (35.4, 44.3)
35 – 44	49.2 (44.2, 54.2)			Other	–	15,000 – 19,999	33.3 (26.5, 40.8)	Some College	48.9 (43.7, 54.0)
45 – 54	40.2 (34.2, 46.5)					20,000 – 24,999	36.9 (30.1, 44.1)	College graduate	53.8 (48.9, 58.5)
55 – 64	42.8 (36.5, 49.4)					25,000 – 34,999	41.6 (36.0, 47.4)		
65 – 74	44.9 (37.7, 52.2)					35,000 – 50,000	47.3 (40.5, 54.2)		
78 – 84	33.2 (25.0, 42.6)					>50,000	53.8 (47.0, 60.4)		
85+	16.5 (7.0, 34.1)								

* Irregular physical activity – no physical activity or pair of activities that were done for less than 30 minutes and/or fewer than 5 times/week.

RISK FACTORS RELATED TO CHRONIC DISEASE:
Tobacco Use

- Cigarette smoking is the single-most preventable cause of death in the United States.
- Over 400,000 deaths per year are attributed to smoking, and tobacco users cost American taxpayers $100 billion per year in medical expenses and lost productivity.
- According to the Centers for Disease Control, while adult smoking has generally been decreasing from 1965 to 1995 throughout the country, these declines have now slowed or stopped.
- The number of youth who use tobacco has been increasing dramatically in 48 out of 50 states, at a rate of 3,000 new smokers every day.
- Approximately one high school student out of every three smokes, and one out of every four high school males uses smokeless tobacco.
- There has been a 50 percent increase in cigar consumption since 1993 due in large part to the increase in popularity of cigars among youth and women.
- In Virginia, tobacco is responsible for almost one of every five deaths, claiming the lives of approximately 9,500 Virginians every year.
- Over 25,000 Virginians begin smoking each year, 90 percent of which are under the age of 18. The average age of smoking initiation is 12.7 years old.
- In 1998, Virginia matched the national median on percent of current smokers with a rate of 22.8 percent, the lowest among tobacco-producing states.
- BRFSS data from 1998 (see table on next page) show that:
  - Smoking decreased with age.
  - Smoking prevalence was higher among males than females, and higher among whites than blacks.
  - The lowest smoking prevalence rates were
  - among Virginians with annual incomes of $35,000 or greater.
  - Smoking prevalence decreased significantly as education level increased, with the rate among college graduates being only one third of that among high school or GED graduates.

Percent of 1998 BRFSS Respondents Who Were Smokers*

Age Group		Gender		Race		Income		Education	
% (95% C.I.)		% (95% C.I.)		% (95% C.I.)		% (95% C.I.)		% (95% C.I.)	
18 - 24	30.0 (24.1, 36.8)	Male	25.7 (22.7, 28.9)	White	24.2 (22.0, 26.6)	<10,000	31.2 (22.7, 41.1)	Some High School	–
25 - 34	25.8 (20.9, 31.4)	Female	20.1 (17.9, 22.6)	Black	19.5 (16.0, 23.5)	10,000 – 14,999	27.8 (19.9, 37.4)	High School/ GED	31.3 (27.4, 35.6)
35 – 44	26.0 (22.2, 30.2)			Other	–	15,000 – 19,999	32.0 (25.0, 39.9)	Some College	20.6 (17.5, 24.2)
45 – 54	19.5 (16.0, 23.5)					20,000 – 24,999	38.4 (31.2, 46.2)	College graduate	10.5 (8.2, 13.3)
55 – 64	18.4 (14.4, 23.2)					25,000 – 34,999	29.5 (24.6, 35.0)		
65 – 74	16.7 (12.0, 22.7)					35,000 – 50,000	19.8 (15.9, 24.4)		
78 – 84	12.4 (6.9, 21.3)					>50,000	15.5 (11.4, 20.9)		
85+	4.0 (0.6, 23.6)								

* Percent of respondents who have ever smoked 100 cigarettes in their lifetime and reported smoking every day or some days.

RISK FACTORS RELATED TO CHRONIC DISEASE: Alcohol Use

- According to the National Institute on Alcohol Abuse and Alcoholism (NIAAA):
  - Americans consumed 2.18 gallons of alcohol, per capita, in 1997.
  - Nationally, since 1980, there has been a 27 percent decrease in per capita alcohol consumption, from 2.76 gallons per capita in 1980 to 2.18 in 1997.
  - "Per capita" includes abstainers, so the average consumption *per drinker* is one-third to two-thirds higher than the *per capita* average.
  - In 1997, 61 percent of Americans answering a Gallup poll said 'Yes' to the question: "Do you have occasion to use alcohol beverages such as liquor, wine, or beer?"
  - Among Virginians 14 years old and older, per capita alcohol consumption decreased from 2.39 gallons in 1980 to 1.92 gallons in 1997 (a 24 percent decrease).

- Alcohol consumption is a risk factor for:
  - high blood pressure
  - diabetes
  - neurologic disorders
  - certain cancers, especially oral cancer when alcohol consumption is combined with tobacco use
  - gout
  - osteoporosis

- BRFSS data from 1998 (see table on next page) show that:
  - 14.3 percent of Virginians were at risk for acute drinking (five or more alcoholic drinks on one or more occasion in the past month).
  - Overall, the risk for acute drinking decreased with age. In the 18-24 age group, more than one out of four Virginians was at risk for acute drinking.
  - The ratio of males to females who were at risk was nearly 4:1.
  - There was a greater percentage of Virginians of other races who were at risk for acute drinking than among black or white Virginians.

Percent of 1998 BRFSS Respondents Who Were At Risk for Acute Drinking*

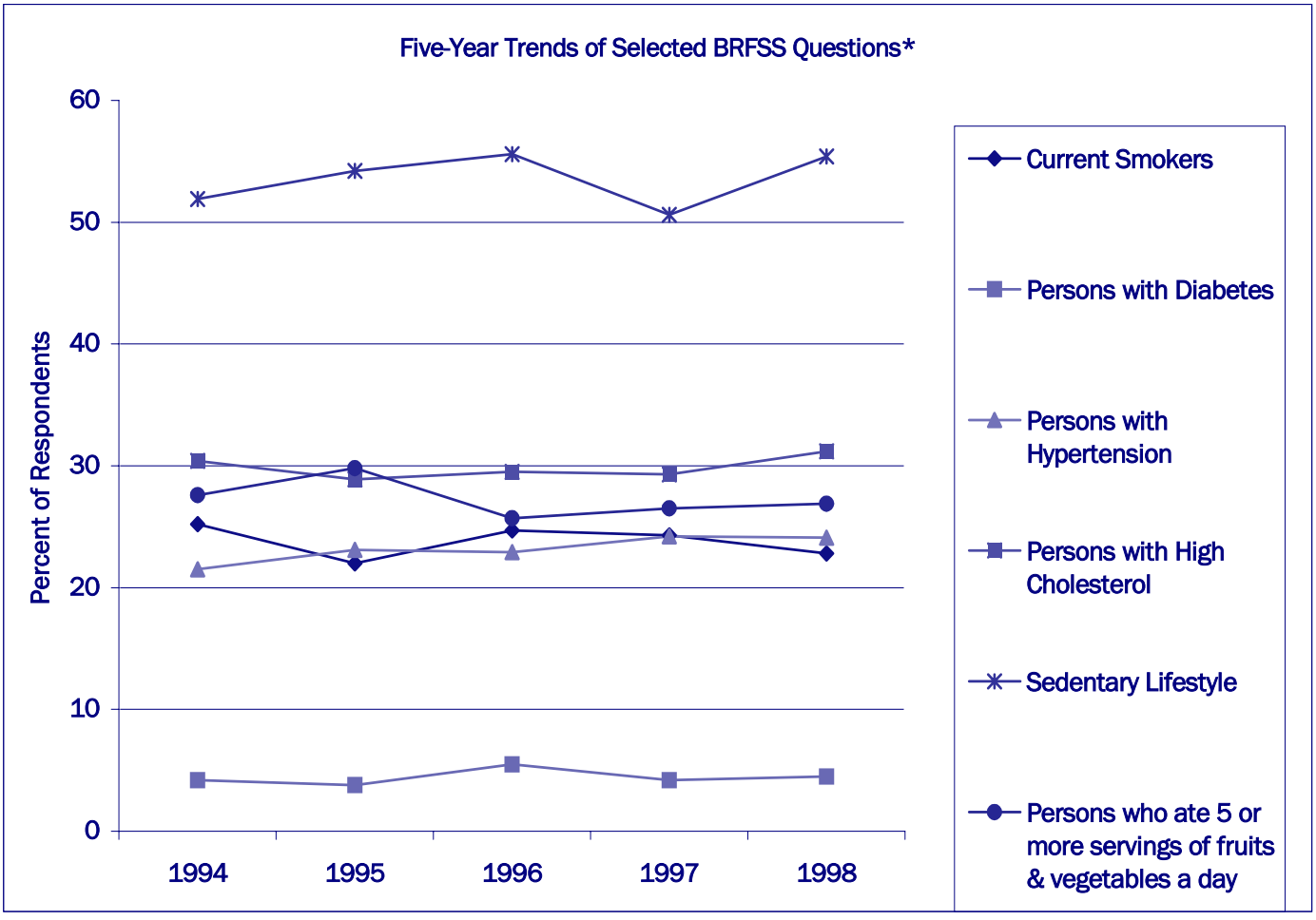
Age Group		Gender		Race		Income		Education	
% (95% C.I.)		% (95% C.I.)		% (95% C.I.)		% (95% C.I.)		% (95% C.I.)	
18 - 24	28.4 (22.2, 35.6)	Male	23.1 (19.9, 26.6)	White	14.6 (12.6, 16.9)	<10,000	16.4 (9.8, 26.3)	Some High School	10.5 (7.2, 15.1)
25 - 34	23.4 (18.7, 28.8)	Female	6.1 (4.7, 7.9)	Black	11.9 (8.2, 17.0)	10,000 – 14,999	6.2 (3.0, 12.1)	High School/ GED	15.4 (12.4, 18.9)
35 – 44	10.7 (7.9, 14.1)			Other	23.4 (11.9, 40.7)	15,000 – 19,999	13.9 (9.2, 20.5)	Some College	18.1 (14.1, 23.0)
45 – 54	12.8 (9.1, 17.7)					20,000 – 24,999	21.4 (15.9, 28.2)	College graduate	12.3 (9.5, 15.9)
55 – 64	6.8 (3.2, 13.3)					25,000 – 34,999	16.3 (11.9, 21.9)		
65 – 74	2.2 (1.0, 5.1)					35,000 – 50,000	13.7 (10.0, 18.6)		
78 – 84	.5 (.1, 2.3)					>50,000	14.8 (10.2, 20.8)		
85+									

* Percent of respondents who reported that they had alcoholic beverages in the past month and had five or more alcoholic drinks on one or more occasions in the past month.

RISK FACTORS RELATED TO CHRONIC DISEASE: BRFSS Summary

A 1994-1998 trend analysis of these selected BRFSS questions shows that:

- The prevalence rate of sedentary lifestyle was two or more times that of any of the other risk factor in this comparison.
- The prevalence of sedentary lifestyle increased seven percent.
- The prevalence of high cholesterol increased three percent.
- The prevalence of hypertension increased twelve percent.
- Smoking prevalence decreased ten percent.
- Diabetes prevalence fluctuated over time, resulting in a one-percent increase overall.
- The prevalence of people eating five servings of fruits and vegetables a day also fluctuated over this time period, with an overall decrease of less than one percent.



* Acute drinking not included because alcohol questions were asked only in 1995 and 1997.

ARTHRITIS

Definition

- Arthritis refers to more than 100 different rheumatic diseases or conditions that affect joints, the surrounding tissues, and other connective tissues.
- The diseases often cause pain, stiffness, and swelling in joints and other supporting structures of the body such as muscles, tendons, ligaments, and bones.
- Some rheumatic diseases can also affect other parts of the body, including various internal organs.

Classification

- ***Osteoarthritis (OA)*** - Also known as degenerative joint disease, osteoarthritis is the most common type of arthritis.
  - Primarily affects cartilage, which is the tissue that cushions the ends of the bones within the joint.
  - Occurs when cartilage begins to fray, wear, and decay. In extreme cases, the cartilage may wear away entirely, leaving a bone-on-bone joint.
  - May cause severe joint pain, reduced joint motion, loss of function and disability.
- ***Rheumatoid Arthritis (RA)***:
  - Is an inflammatory disease of the lining of the joint, resulting in pain, stiffness, swelling, deformity, and loss of function in the joints.
  - Most often affects joints of the hands and feet and tends to occur equally on both sides of the body. This symmetry helps distinguish rheumatoid arthritis from other types of arthritis.
- ***Juvenile Rheumatoid Arthritis (JRA)*** - is the most common form of arthritis in childhood, causing pain, stiffness, swelling, and loss of function in the joints.
- ***Fibromyalgia*** :
  - Is a chronic disorder that causes pain and stiffness throughout the tissues that support and move the bones and joints.
  - Results in pain and localized tender points in the muscles and tendons, particularly those of the neck, spine, shoulders, and hips.
- ***Lupus: Systemic Lupus Erythematosus (SLE)***:
  - Is an autoimmune disease in which the immune system harms the body's own healthy cells and tissues.
  - Can result in inflammation of and damage to the joints, skin, kidneys, heart, lungs, blood vessels, and brain.

Risk Factors

- ***Gender*** - Women aged 15 years and older account for 60 percent of arthritis cases nationwide.
- ***Age*** - Age of 65+ is associated with increased risk of arthritis.
- ***Genetic Predisposition*** - Certain genes are known to be associated with a higher risk of some types of arthritis.
- ***Excess Weight or Obesity*** - Obesity is a risk factor for osteoarthritis of the knee in women and for gout in men.
- ***Physical Inactivity*** - Physical activity maintains joint health and may reduce the risk of developing some forms of arthritis such as the most common form, osteoarthritis.
- ***Infections*** - Viral or bacterial infections may cause arthritis.
- ***Joint Injuries*** – People who incur injuries to their joints from sport participation, occupational repetitive stress injuries and other ways are at risk for developing some forms of arthritis.

ARTHRITIS

Morbidity

- Arthritis affects an estimated 42.7 million Americans including an estimated 956,000 Virginians (or 15.5 percent of Virginia's population) according to a 1990 estimate (Morbidity and Mortality Weekly Report, June 24, 1994).
- Nationally, arthritis is the leading cause of disability among Americans over 15 years of age.
- In 1990, it was estimated that almost three percent (or 181,000 persons) of Virginia's population experienced activity limitations due to arthritis.

Costs

- One way to estimate the burden of arthritis is through analysis of hospital discharge data:

1998 Hospitalization & Charges Due to Arthritis	
Hospitalizations	15,616
Average Charge	$11,739.00
Total Charges	$250,605,966.00
Average Length of Stay (days)	4.48
Total Days Hospitalized	70,680

Source: VA Hospital Discharge Dataset, 1998

CANCER

Definition & Classification

- Cancer is not just one disease but rather a *group* of diseases.
- Most types of cancer cells form *tumors* that are either *benign* (they do not grow and spread the way cancer does) or *malignant* (they grow and spread).
- Cells from the tumor can break away and travel to other parts of the body where they can continue to grow, or *metastasize*.
- When cancer spreads, it is still named after the part of the body (or anatomical site) where it started. For example, if breast cancer spreads to the lungs, it is still breast cancer, not lung cancer.

Morbidity

Incidence

- Virginia's total cancer rate in 1998 was 341.4 (per 100,000 population, adjusted to 1970 U.S. standard population).
- In 1998, 25,436 new cases of invasive cancer in Virginia were diagnosed and reported.
- The incidence rate (for all cancer sites) increased 6.8 percent from 1990 to 1998 for Whites; 8.7 percent for Blacks, and 30.2 percent for other races combined.
- Incidence rates of specific cancers varied between genders, as shown below:

Ten Most Commonly Reported Cancer Sites – Females
Number, Percentage of Cases, and Age-Adjusted Incidence Rates
Virginia, 1998*

Site	New Cases	%	Rate (per 100,000)
Breast	4,272	34.1	104.0
Colon and Rectum	1,594	12.7	36.3
Lung and Bronchus	1,534	12.3	37.6
Uterus	691	5.5	17.3
Ovary	481	3.8	11.6
Non-Hodgkin's Lymphoma	432	3.5	10.4
Melanoma of the Skin	361	2.9	8.7
Urinary Bladder	286	2.3	6.5
Cervix	283	2.3	6.7
Pancreas	224	1.8	5.2

Ten Most Commonly Reported Cancer Sites – Males
Number, Percentage of Cases, and Age-Adjusted Incidence Rates
Virginia, 1998*

Site	New Cases	%	Rate (per 100,000)
Prostate	3,710	28.7	117.7
Lung and Bronchus	2,213	17.1	69.1
Colon and Rectum	1,587	12.3	48.9
Urinary Bladder	806	6.2	25.1
Oral Cavity and Pharynx	486	3.8	14.5
Non-Hodgkin's Lymphoma	472	3.7	14.1
Melanoma of the Skin	465	3.6	13.5
Kidney and Renal Pelvis	410	3.2	12.4
Pancreas	271	2.1	8.3
Larynx	248	1.9	7.6

*(Data exclude localized basal and squamous cell cancers, and in situ carcinomas except urinary bladder) (Source: Virginia Cancer Registry, 2001)

CANCER

Cancer Screening

- Screening is currently one of the best tools available to increase one's chances of surviving cancer. Responses to the Behavioral Risk Factor Surveillance Survey (BRFSS) questions pertaining to cancer screening indicate that Virginians compare favorably with the United States overall in following the recommended screening guidelines.

Colorectal Cancer Screening (BRFSS 1998)

Percent of respondents who reported having either a sigmoidoscopy or a proctoscopy WITHIN the past 5 years*
*Recommended every five years for people 50 years and older

		40-49 Years	50-59 Years	60-64 Years	65+ Years
Virginia	% C.I.	24.1 (14.1, 34.1)	17.7 (11.6, 23.8)	21.8 (12.4, 31.2)	26.7 (18.3, 35.1)
Nationwide	Median	19.8	19.6	20.4	22.3

Percent of respondents who reported having either a sigmoidoscopy or a proctoscopy MORE than 5 years ago*
*Recommended every five years for people 50 years and older

		40-49 Years	50-59 Years	60-64 Years	65+ Years
Virginia	% C.I.	34.2 (21.9, 46.5)	33.7 (21.7, 45.7)	29.2 (17.6, 40.8)	24.8 (18.3, 31.3)
Nationwide	Median	36.4	29.4	26.4	24.9

Percent of respondents who reported using a home blood stool test kit*
* Recommended annually for people 50 years and older

		40-49 Years	50-59 Years	60-64 Years	65+ Years
Virginia	% C.I.	33.8 (23.4, 44.2)	53.3 (41.9, 64.7)	37.8 (2.56, 50.0)	52.8 (43.8, 61.8)
Nationwide	Median	38.5	48.7	47.1	49.5

CANCER

Breast Cancer Screening (BRFSS 1998)		
	Virginia % C.I.	U.S. Median
Percent of females 50 years or older who had a mammogram within the past two years*	77.8 (73.0, 81.7)	75.3
Percent of females 40 years or older who ever had a mammogram**	86.4 (83.9, 88.9)	84.8

*Recommended every 1-2 years if 50 yrs. or older

**Baseline mammogram

Cervical Cancer Screening (BRFSS 1998)		
	Virginia % C.I.	U.S. Median
Percent of females who had a Pap smear within the past three years*	84.9 (82.0, 87.8)	84.8

* Recommended every 3 years

CANCER

Stage At Diagnosis

- The Summary Stage classification system commonly used in the U.S. defines cancer stage as "the categorization of malignant tumors based on how far they have spread from the site of origin at diagnosis," [6] and defines the following stages:

  1. *In situ* – a malignant tumor that does not invade or penetrate surrounding tissue
  2. *Local* – an invasive tumor confined to the site of the origin
  3. *Regional* – a tumor that has spread by direct extension to immediately adjacent organs or tissues and/or metastasized (spread through the bloodstream) to regional lymph nodes, but appears not to have spread any further
  4. *Distant* – a tumor that has spread by direct extension beyond the immediately adjacent organs or tissues, and/or metastasized to distant lymph nodes or other distant tissues
  5. *Unknown* – insufficient information available to determine the stage of disease at diagnosis

- Cancers detected early have a greater chance of favorable treatment and cure, and are the single best predictor of survival.

Percentage+ of Stage at Cancer Diagnosis By Cancer Site and Summary Stage For Leading Cancers in Virginia, 1998

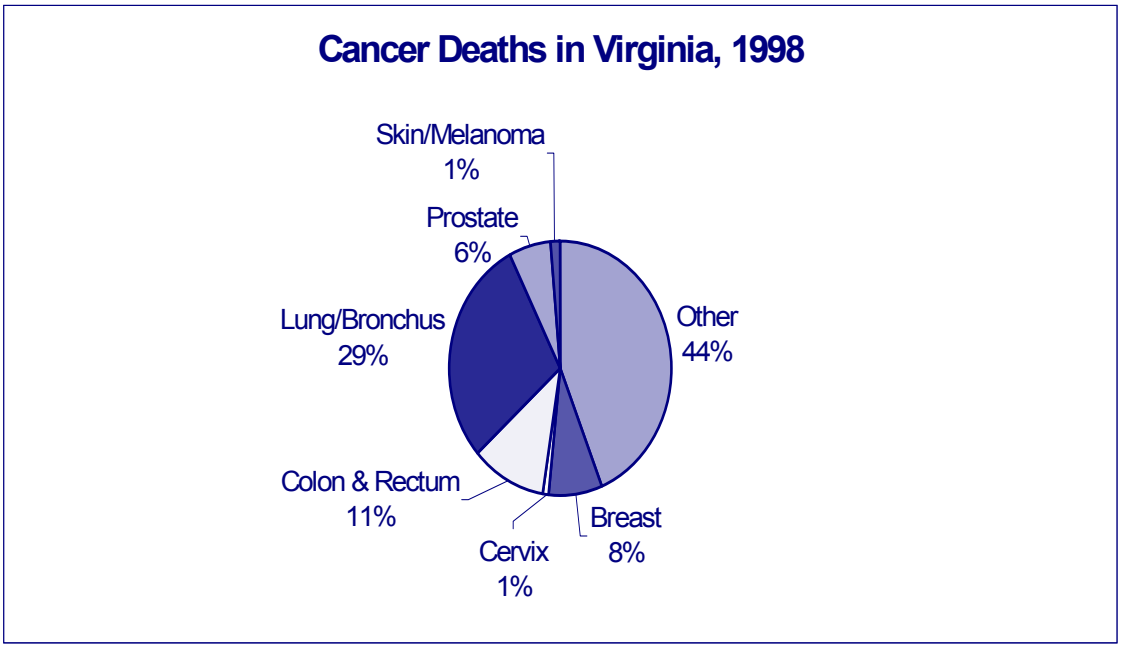
Cancer Site	In Situ (%)	Local (%)	Regional (%)	Distant (%)	Unknown (%)
All Sites Combined (N = 27,731)	9.5	41.2	22.1	17.4	9.8
Female Breast (N = 5,048)	15.4	52.7	23.9	3.7	4.3
Cervix (N = 1,019)	72.2	17.2	7.1	2.0	1.6
Colon and Rectum (N = 3,453)	7.9	29.2	40.9	16.0	6.1
Lung and Bronchus (N = 3,748)	0.0	20.5	29.2	43.2	7.1
Melanoma of the Skin* (N = 1,120)	26.3	53.6	5.4	3.9	10.9
Prostate (N = 3713)	0.1	69.1	11.0	5.1	14.8

+Percentages may not sum to 100% due to rounding.
*Data exclude localized basal and squamous cell skin cancers.
(Source: Virginia Cancer Registry, 2001)

CANCER

Mortality

- Cancer has been the second leading cause of death in Virginia since 1950, accounting for 12,719 deaths in 1998, which was 23.7 percent of total deaths statewide.



- Site-specific mortality rates by race and gender reveal that:
  1. Males have higher overall cancer mortality rates than females.
  2. Black males have a higher overall cancer mortality rate than white males, but white females have a higher rate than black females.

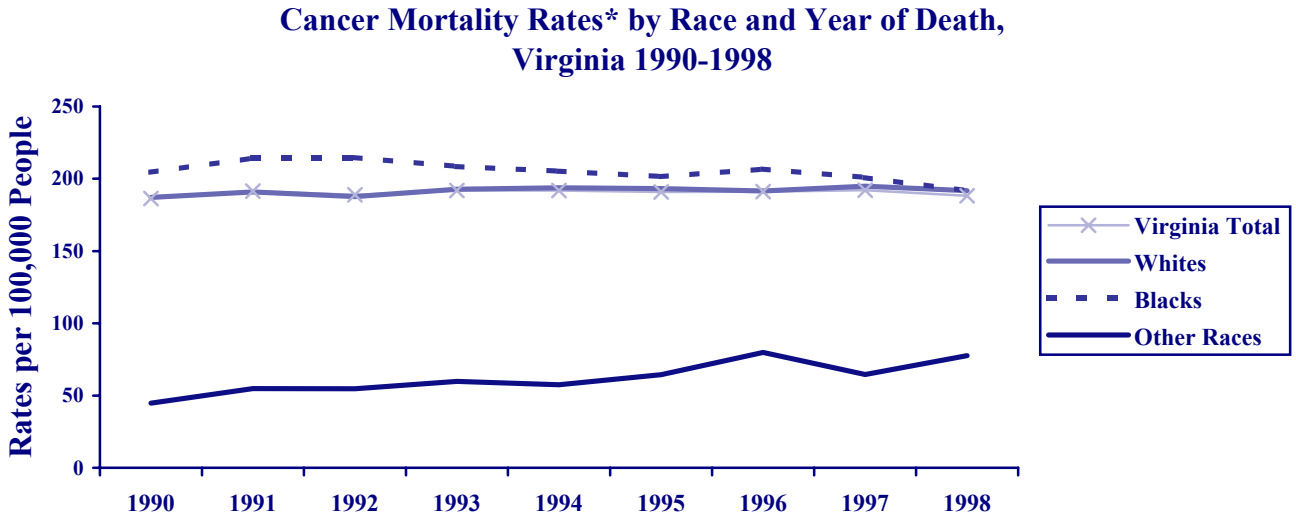
Site-Specific Cancer Mortality by Race and Gender in Virginia, 1998

Cancer Site	Total Deaths	Total Death Rate	Rates (per 100,000 population)					
			White		Black		Other	
			Male	Female	Male	Female	Male	Female
All sites	12,719	187.3	203.5	183.1	211.7	169.9	65.9	55.0
Breast	990	28.2	*	28.8	*	30.4	*	6.4
Cervix	102	2.9	*	2.5	*	4.6	*	2.1
Colon & Rectum	1386	20.4	20.5	21.9	21.6	22.0	5.6	3.6
Lung/Bronchus	3761	54.4	72.2	45.3	69.6	35.5	12.7	12.1
Prostate	764	23.0	20.6	*	36.5	*	1.6	*
Skin/Melanoma	183	3.1	4.8	2.2	*	0.3	0.8	*

Unadjusted rates
* Insufficient number of cases to compute rates
(Source: Virginia Department of Health, Center for Health Statistics, 2001)

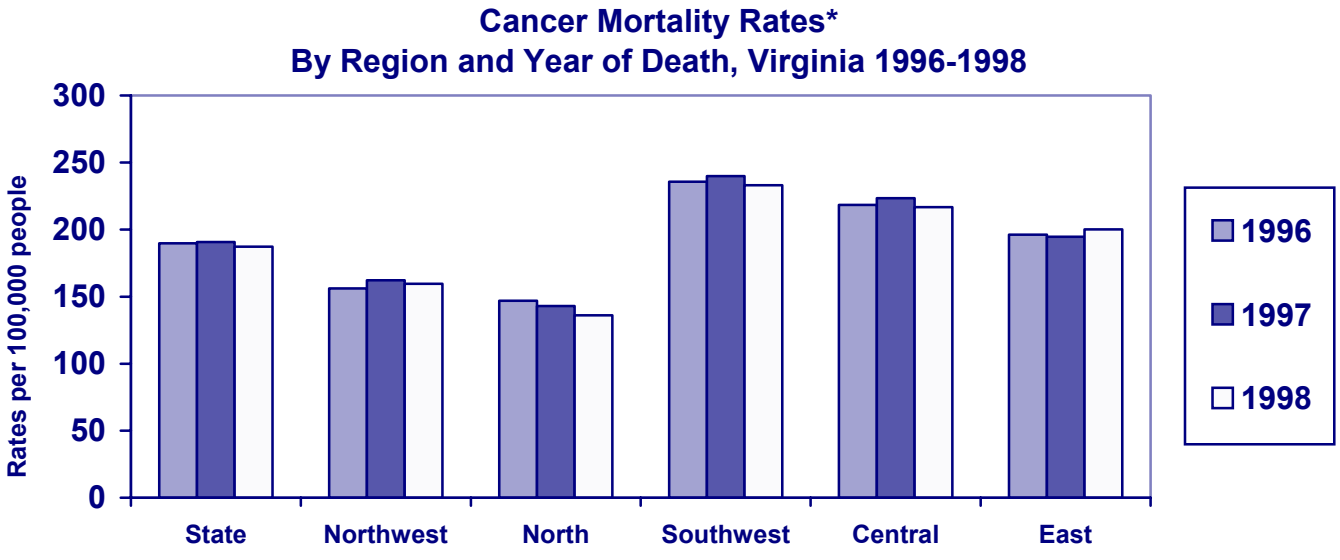
CANCER

- Blacks have had the highest cancer mortality rates from 1990 through 1998 of all races.
- Other races saw an increase in cancer mortality from 1990 through 1998, while the mortality rates for whites and blacks were relatively stable.



*Unadjusted Rates
Source: Virginia Department of Health, Center for Health Statistics, 1999

- Cancer mortality rates vary by geographic region, with the southwest region suffering the greatest mortality from cancer. The southwest region is the most medically underserved region of the state.



*Unadjusted Rates
Source: Virginia Department of Health, Center for Health Statistics,2000

CANCER

Costs

- One way to estimate the burden of cancer is through analysis of hospital discharge data:

1998 Hospitalization & Charges Due to Cancer	
Hospitalizations	27,302
Average Charge	$17,248.00
Total Charges	$469,366,811.00
Average Length of Stay (days)	7.27
Total Days Hospitalized	198,217

Source: VA Hospital Discharge Dataset, 1998

CARDIOVASCULAR DISEASE

Definition & Classification

- Cardiovascular disease (CVD) is a disorder of the heart ("cardio") and blood vessels ("vascular"). CVDs include:
  1. Diseases of the heart (including coronary heart disease)
  2. Cerebrovascular disease (stroke)
  3. Hypertensive diseases, and
  4. Atherosclerosis and other diseases of arteries, arterioles, and capillaries

Mortality

- Cardiovascular disease was the leading cause of death among Virginians in 1998, accounting for 20,744 deaths (39 percent of the 53,629 total deaths in the state).

CARDIOVASCULAR DISEASE (CVD) in VIRGINIA, 1998

Diseases of the Heart

- Leading cause of death
- 29% of all deaths
- 76% of all CVD deaths
- 57% of CVD deaths due to coronary heart disease

Cerebrovascular Disease (Stroke)

- 3rd leading cause of death
- 7% of all deaths
- 18% of all CVD deaths

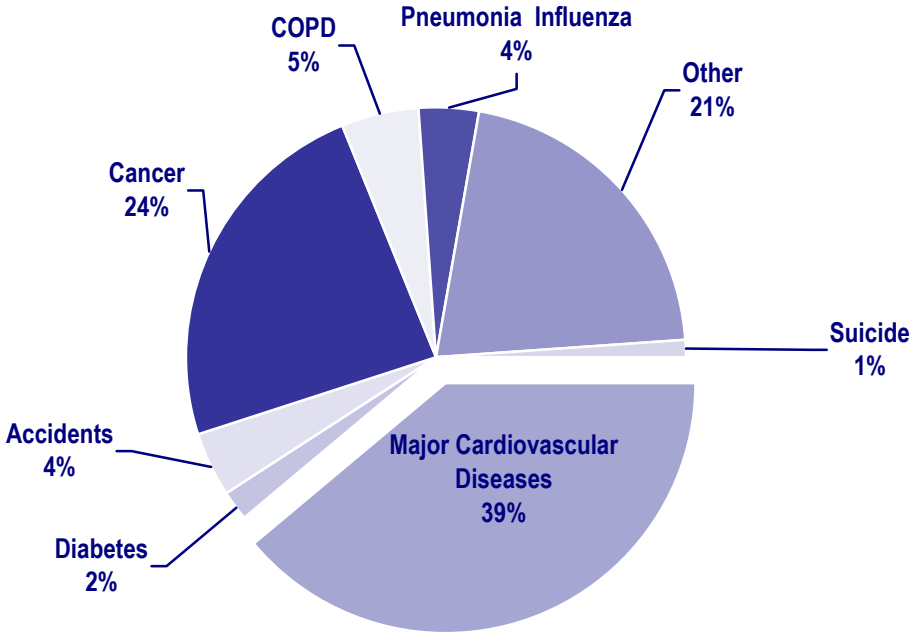
Atherosclerosis and "Other" CVDs

- 1.6% of all deaths
- 4% of all CVD deaths

Hypertension

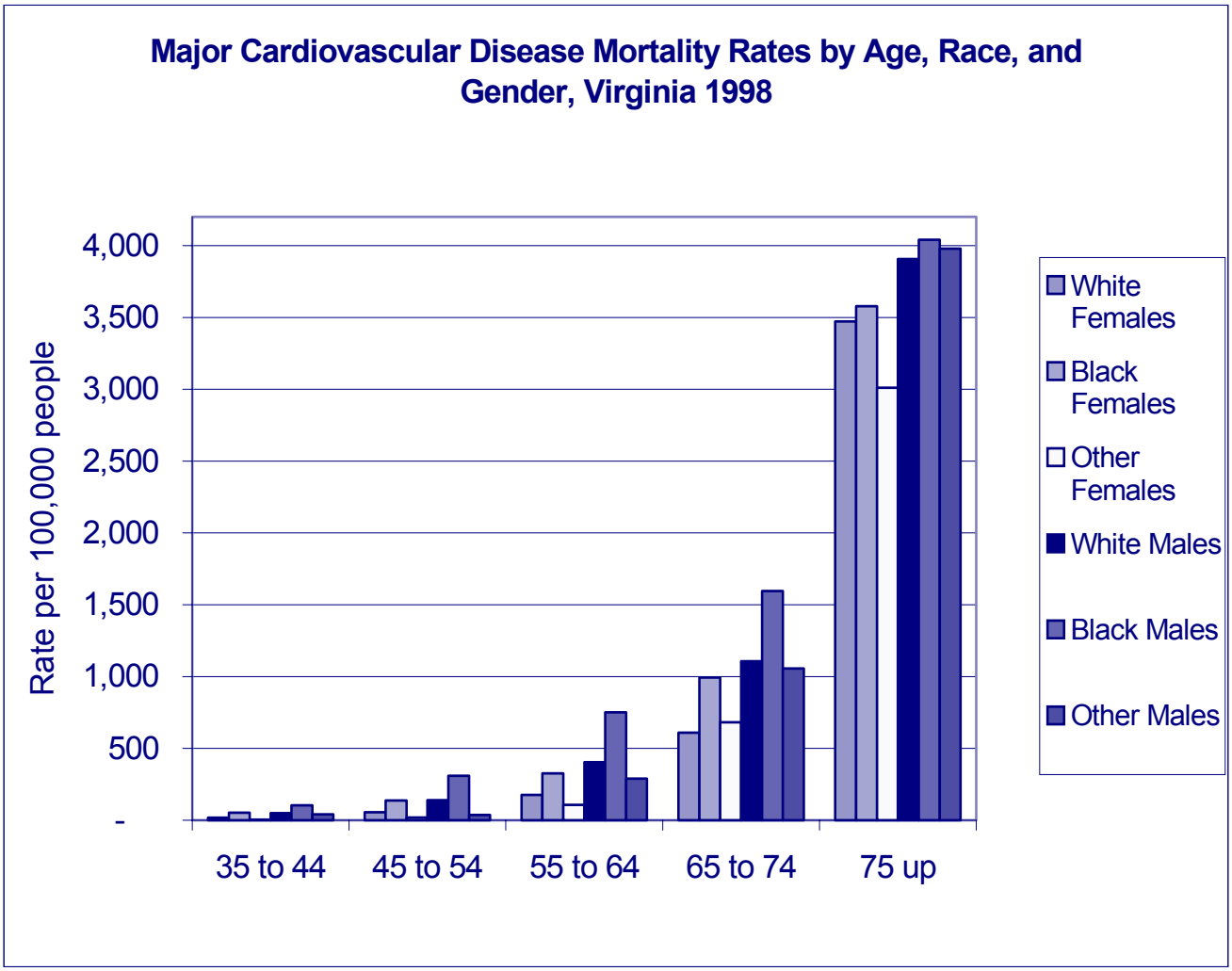
- .6% of all deaths
- 1% of all CVD deaths

Leading Causes of Deaths, 1998



CARDIOVASCULAR DISEASE

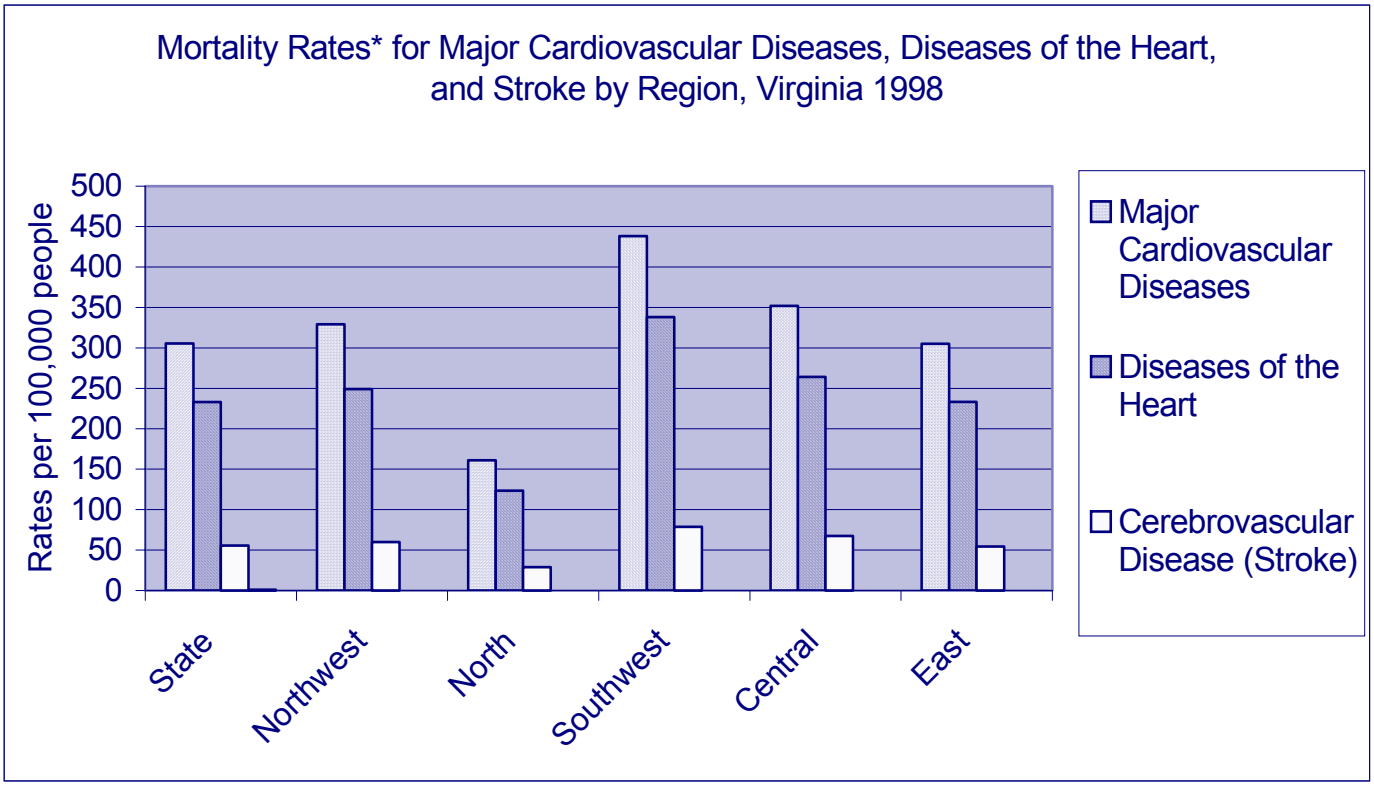
- Cardiovascular disease mortality rates increased with age, with the most dramatic increases in the 75 and older age group.
- Major cardiovascular disease (CVD) mortality rates vary by race and gender:
  - Black males have the highest mortality rates at all ages.
  - At all ages, black females have higher mortality rates than white females or females of any other race/ethnicity.
  - There is a ten-year lag in mortality rates for women when compared to men, which holds true for all race groups.



(Source: Virginia Department of Health, Center for Health Statistics, 2001)

CARDIOVASCULAR DISEASE

- The Southwest Region of Virginia has the highest mortality rates for all major cardiovascular diseases combined, as well as for diseases of the heart and cerebrovascular disease. The southwest region is the most medically underserved region of the state.

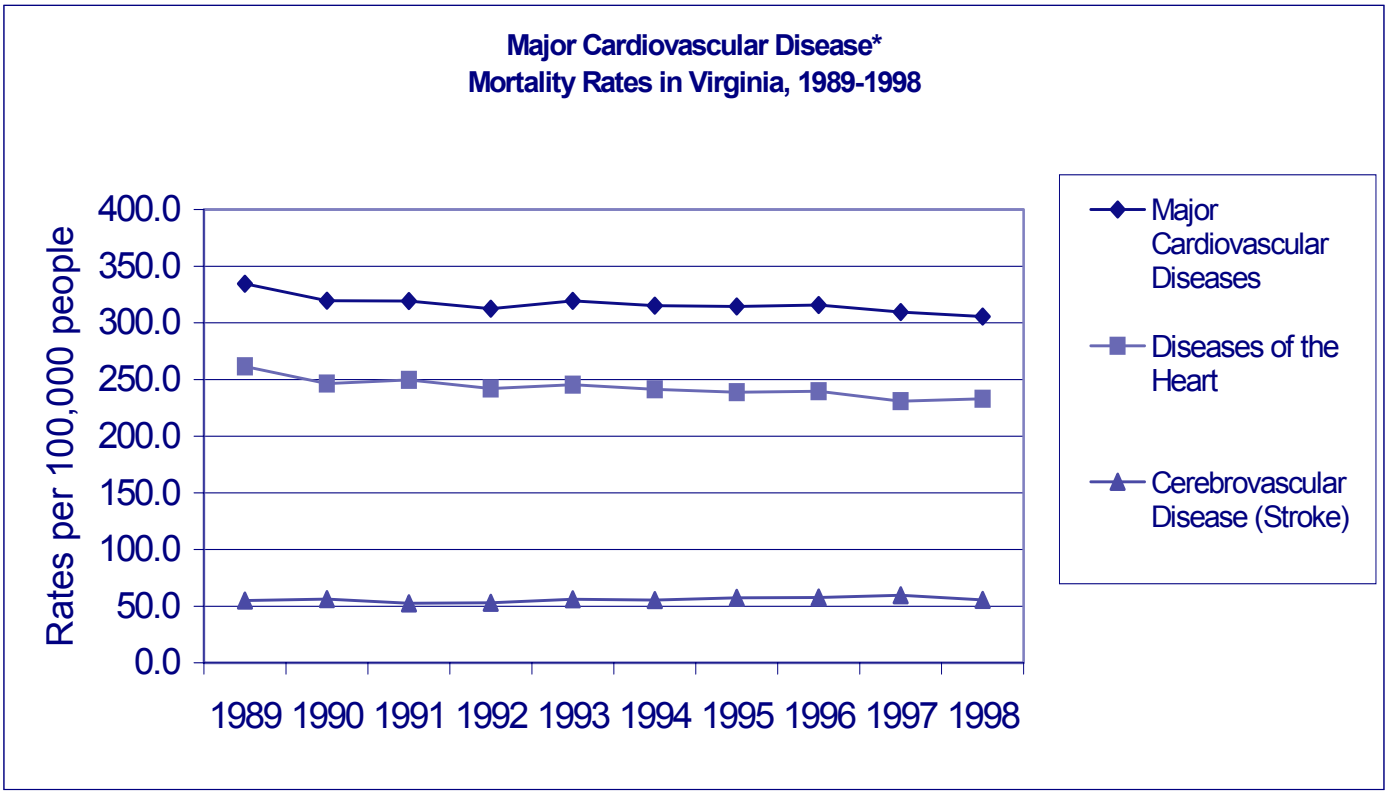


*Unadjusted Rates
(Source: Virginia Department of Health, Center for Health Statistics, 1998)

- Unadjusted mortality rates (see graph on next page) during the 1989-1998 decade:
  - Decreased 9 percent for all major cardiovascular diseases combined (from 334.4 in 1989 to 305.5 in 1998).
  - Decreased 11 percent for diseases of the heart (from 261.6 in 1989 to 233.0 in 1998).
  - Decreased 36 percent for atherosclerosis (from 6.4 in 1989 to 4.1 in 1998).
  - Increased 52 percent for hypertension (from 2.9 in 1989 to 4.4 in 1998).
  - Remained fairly steady for stroke (from 54.9 in 1989 to 55.8 in 1998).
  - Varied by race:
    - Mortality from diseases of the heart and from atherosclerosis decreased among blacks and whites, but increased among other races.
    - Mortality from stroke decreased among blacks, but increased among whites and other races.
    - Mortality from hypertension increased an all race groups.

(Source: Virginia Department of Health, Center for Health Statistics, Virginia Health Statistics 1998, vol. 2, p. VII-16)

CARDIOVASCULAR DISEASE



*Hypertension and Atherosclerosis + Other CVDs not shown due to low numbers.
(Source: Virginia Department of Health, Center for Health Statistics, 2001)

Costs

- One way to estimate the burden of cardiovascular disease is through analysis of hospital discharge data. However, the figures in the table below underestimate the cost of major cardiovascular diseases because hospitalizations for hypertension and atherosclerosis are *not* included.

1998 Hospitalization & Charges Due to Major Cardiovascular Disease		
	Diseases of the Heart	Cerebrovascular Disease
Hospitalizations	92,836	22,975
Average Charge	$15,333.00	$12,224.00
Total Charges	$1,474,731,634.00	$280,256,241.00
Average Length of Stay (days)	4.19	6.15
Total Days Hospitalized	458,427	141,442

Source: VA Hospital Discharge Dataset, 1998

DIABETES

Definition

Diabetes mellitus:

- Is a group of diseases characterized by high levels of blood glucose resulting from defects in insulin secretion, insulin action, or both.
- Can be associated with serious complications and premature death.
- Disproportionately affects certain minority groups, such as African-Americans, Native Americans, and Hispanics.
- Is a risk factor for many serious illnesses and complications, such as cardiovascular disease, lower extremity amputations, blindness, and end-stage renal disease.
    - These complications lead to increased hospitalizations and decreased productivity.
    - The incidence of diabetes-related complications has increased over the past several years.

Classification

- **Type 1,** which used to be called "juvenile-onset diabetes" or "insulin-dependent diabetes mellitus (IDDM):"
    - Usually appears suddenly and most commonly in younger people under age 30.
    - Accounts for 5 to 10 percent of cases of diabetes.
    - Is treated by daily insulin injections or use of an insulin pump; a planned diet and regular physical activity; and daily self-monitoring of blood glucose.

- **Type 2,** which used to be called "adult-onset diabetes" or "non-insulin-dependent diabetes mellitus (NIDDM):"
    - Is the condition in which the pancreas makes some insulin, but the insulin is not effective.
    - Usually develops gradually, most often in people over 40 years of age. However, it is increasing in children.
    - Accounts for 90 to 95 percent of all diabetes cases.
    - Is controlled by diet and physical activity and daily monitoring of glucose levels. Sometimes oral drugs that lower blood glucose levels or insulin injections are needed.

- **Gestational Diabetes Mellitus:**
    - Is a type of diabetes mellitus that can occur in the second half of a woman's pregnancy.
    - Results in a higher-than-normal blood glucose level.
    - Develops in up to five percent of all pregnancies but usually disappears when a pregnancy is over.
    - Occurs more frequently among African Americans, Hispanic/Latino Americans, American Indians, and people with a family history of diabetes than in other groups.
    - Poses an increased risk for later developing type 2 diabetes.

Mortality

- Diabetes has been the seventh leading cause of death in Virginia since 1990.

- Diabetes is the fifth leading cause of death among 45-64 year olds.

- Diabetes accounted for 1,313 deaths in 1998, which was 2.4% of total deaths statewide.

DIABETES

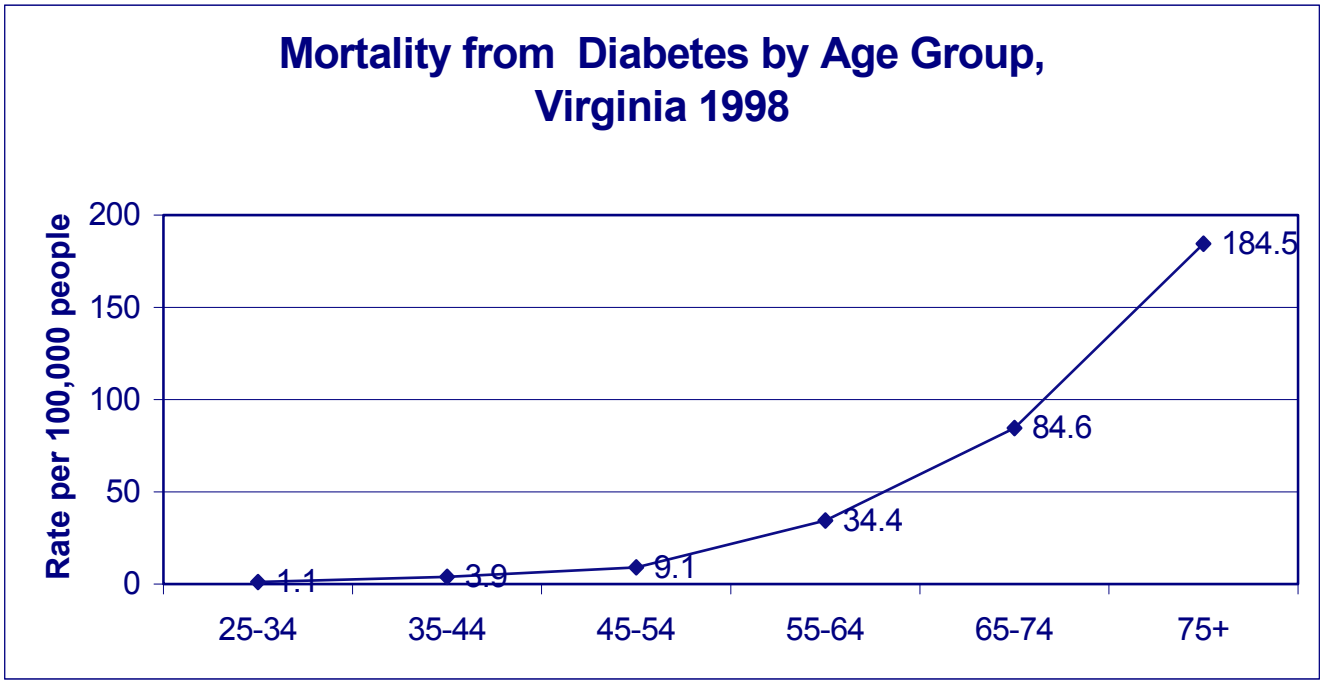
- 1998 unadjusted mortality rates by race and gender reveal that:
  - Black females had the highest mortality rate, exceeding the statewide mortality rate by 81 percent.
  - Black males had the second highest mortality rate, exceeding the statewide mortality rate by 24 percent.
  - The mortality rate for white females was slightly higher than the rate for white males, and both rates were below the statewide mortality rate.
  - Mortality rates for other races were significantly lower than among blacks and whites.

**Diabetes Mortality by Race and Gender in Virginia, 1998*
(Rates per 100,000 Population)**

Total Death Rate	White		Black		Other	
	Male	Female	Male	Female	Male	Female
19.3	16.5	18.3	24.0	34.9	4.7	3.6

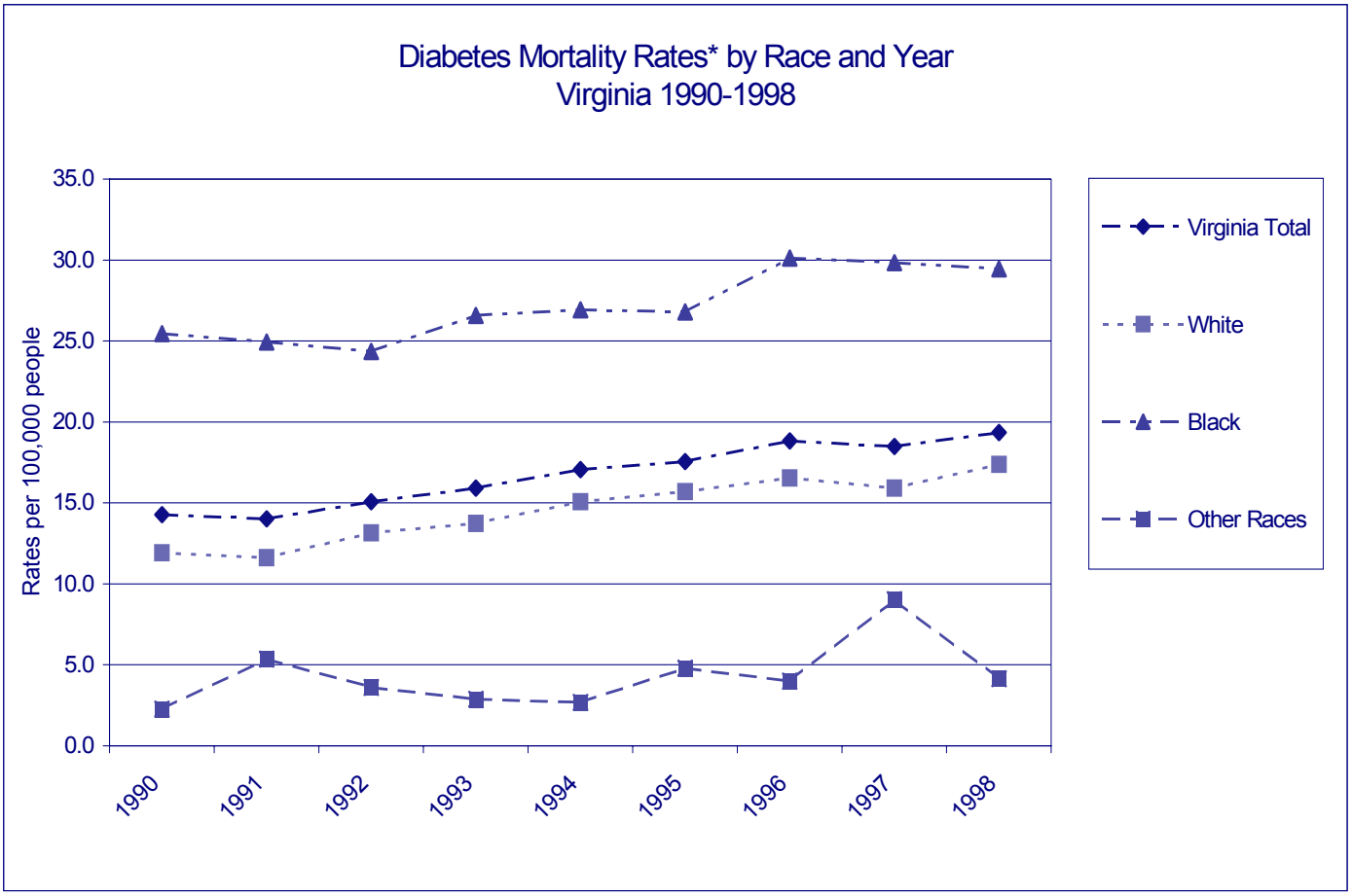
*Unadjusted rates
(Source: Virginia Department of Health, Center for Health Statistics, 2001)

- Mortality rates increased at an accelerated rate as age increased (I.e., the increase from one age group to the next occurred exponentially, not linearly.)



DIABETES

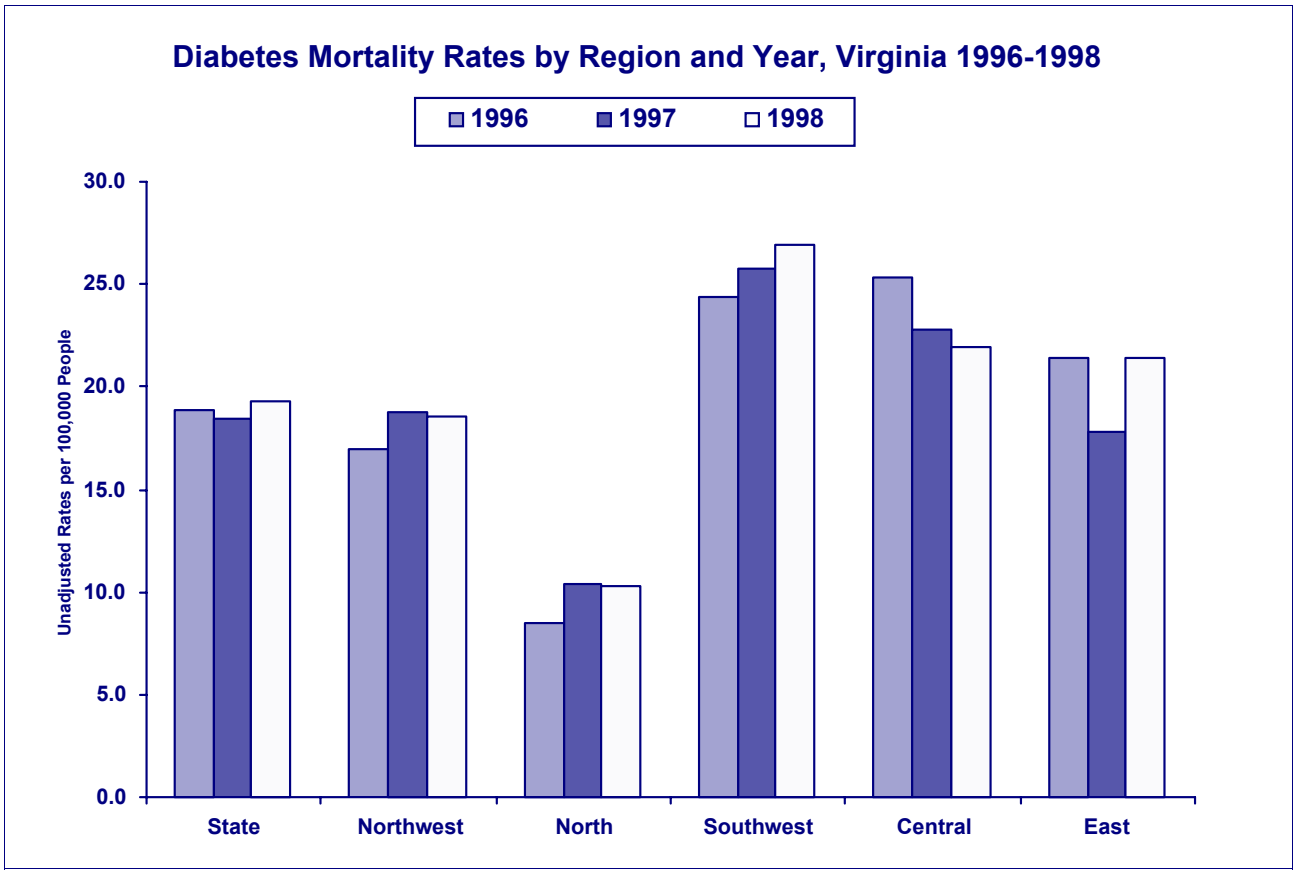
- Mortality rates over the 1990-1998 time period indicate that:
  - Blacks had the highest diabetes mortality rates from 1990 through 1998 compared to other races.
  - The mortality rate among blacks has consistently been almost **twice** the rate among whites.
  - The mortality rate among whites increased 46 percent (from 11.9 per 100,000 population to 17.4), and the mortality rate among blacks increased 16 percent (from 25.5 per 100,000 population in 1990 to 29.5 per 100,00 in 1998).
  - The mortality rate among other races increased 78 percent (from 2.3 per 100,000 population in 1990 to 4.1 per 100,000 in 1998).



*Unadjusted Rates
(Source: Virginia Department of Health, Center for Health Statistics, 2001)

DIABETES

- Diabetes mortality rates vary by geographic region, with the southwest region suffering the greatest mortality from diabetes. The southwest region is the most medically underserved region of the state.

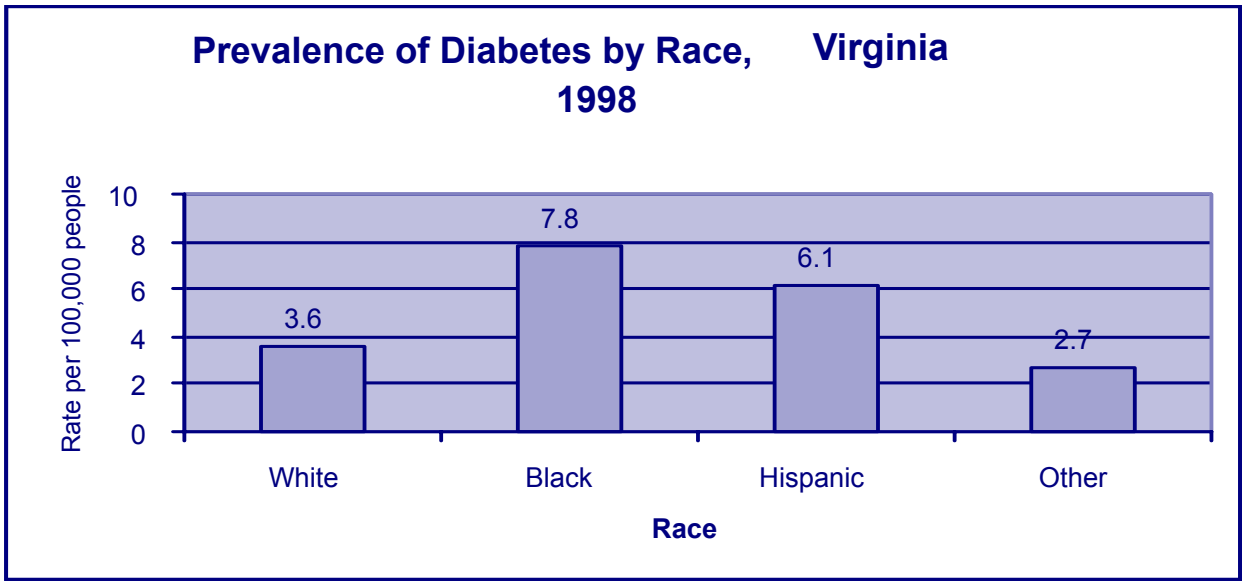


(Source: Virginia Department of Health, Center for Health Statistics, 2001)

DIABETES

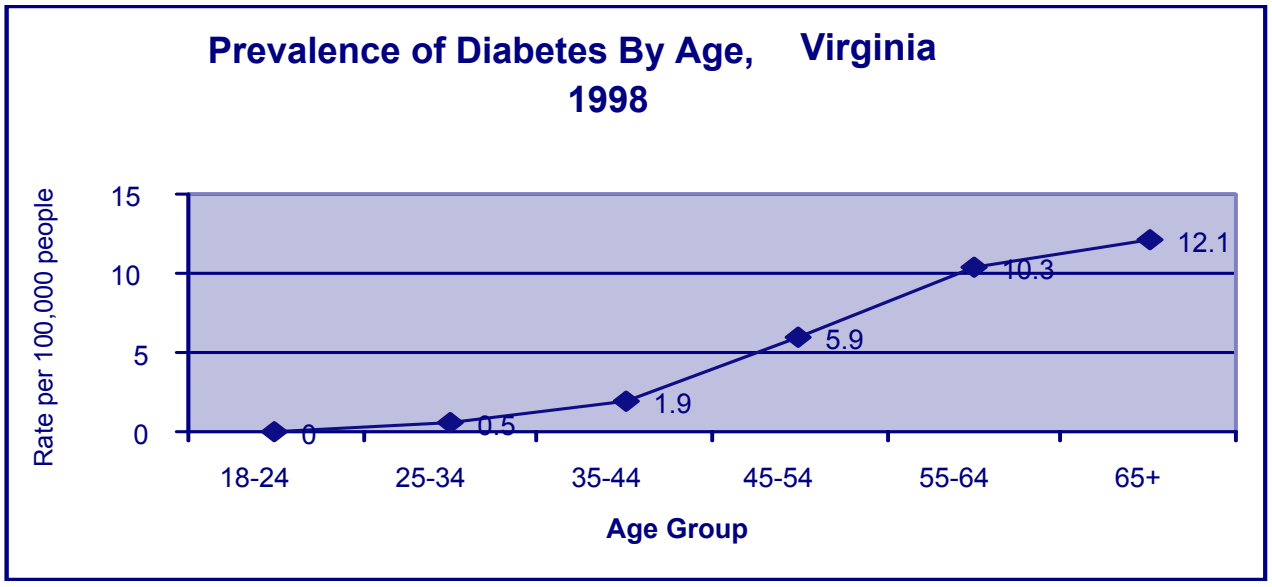
Morbidity

- Virginia's diabetes prevalence rates by age, race, and gender did not significantly differ from corresponding national rates. Prevalence rates did vary according to race, age, and gender.
- The prevalence rate of diabetes among blacks was more than twice that of whites, and more than three times the rate among other races.



(Source: Centers for Disease Control and Prevention, BRFSS 1998)

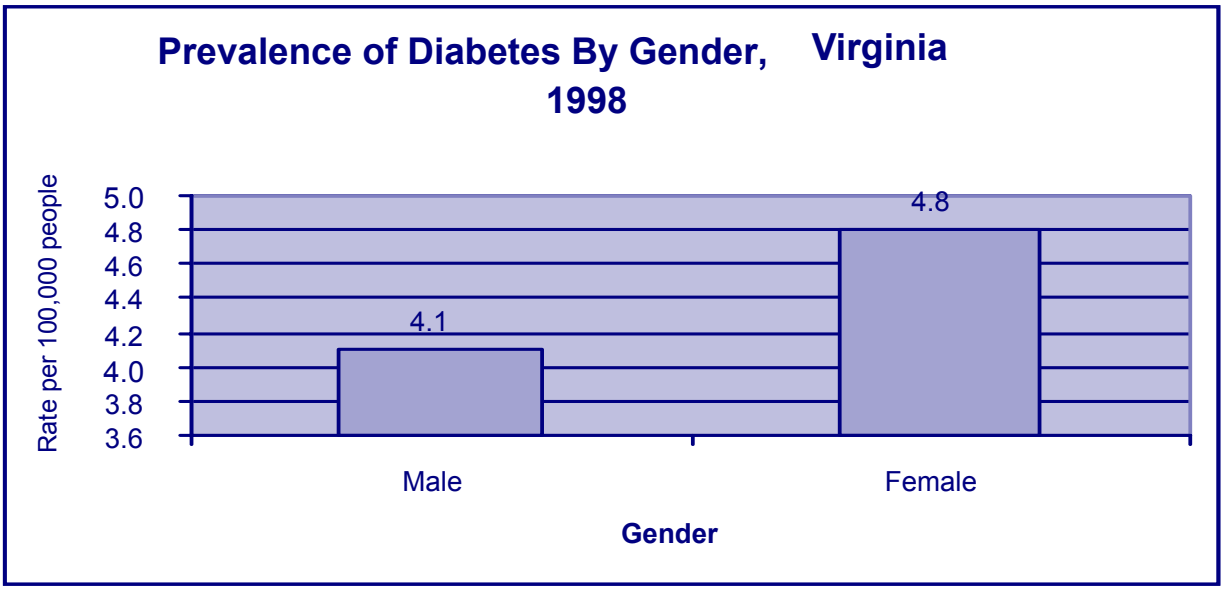
- Diabetes prevalence in Virginia increased with age.
- The most dramatic increases in prevalence rates occurred in the 45-54 and 55-64 age groups.



(Source: Centers for Disease Control and Prevention, BRFSS 1998)

DIABETES

- In Virginia, the prevalence rate among females was 17 percent higher than the rate among males.



(Source: Centers for Disease Control and Prevention, BRFSS 1998)

Costs

- One way to estimate the burden of diabetes is through analysis of hospital discharge data. However, the figures in the table below underestimate the cost of diabetes because hospitalizations for diabetes as a *secondary* cause are not included. Most hospitalizations for persons with diabetes are due to diabetes-related complications, such as cardiovascular conditions.

1998 Hospitalization & Charges Due to Diabetes (Primary Diagnosis Only)	
Hospitalizations	10,660
Average Charge	$10,208.00
Total Charges	$108,605,406.00
Average Length of Stay (days)	5.93
Total Days Hospitalized	63,332

Source: VA Hospital Discharge Dataset, 1998

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