INTRODUCTION

The Advisory Committee of the Virginia Tumor Registry voted to change the name of the Registry to the Virginia Cancer Registry in order to describe the major function of the Registry more precisely, i.e., the function of registering all cancer cases in the Commonwealth of Virginia.

The Registry was established in 1970 and became operational with only five hospitals reporting their cancer cases. This was the first step in the development of a monitoring system for malignant neoplasms in Virginia.

Over the years, reporting has steadily increased (Table 11), so that by 1990 all Virginia hospitals, clinics, and independent pathology laboratories were reporting as mandated by the Code of Virginia.

The purposes of the statewide cancer registry as stated in the Code of Virginia include the following:

1. Determining means of improving the diagnosis and treatment of cancer patients.

2. Determining the need for and means of providing better long-term, follow-up care of cancer patients.

3. Conducting epidemiological analyses of the incidence, prevalence, survival, and risk factors associated with the occurrence of cancer in Virginia.

4. Collecting data to evaluate the possible carcinogenic effects of environmental hazards.

5. Improving rehabilitative programs for cancer patients.

6. Assisting in the training of hospital personnel.

7. Determining other needs of cancer patients and health personnel.

The most current year for which cancer data are available is 1990, given the lag time in reporting information on persons with cancer to the Virginia Cancer Registry (VCR). Below, the first section will include a brief description of all cancer cases reported to the VCR from 1970 through 1990. The second section will provide more detail on cases diagnosed in 1990. These will be followed by a brief summary of the findings of two site studies conducted by the VCR on oral and colorectal cancers.

CANCER CASES DIAGNOSED 1970 - 1990

The total number of cases reported to the VCR from 1970 through 1990 was 218,983. Slightly more females than males have been reported with cancer (112,106 females (51.2%), 106,799 males (48.8%)). Eighty percent of the cases have been white

Table 11. Number of Hospitals Reporting to the Virginia Cancer Registry and Number of Virginia Cases Reported by Year, 1970-1990

Year	Number of Hosps/Labs Reporting	Number of Cases Reported
1970	5	2,583
1971	7	2,975
1972	8	3,500
1973	12	4,381
1974	12	4,932
1975	12	5,204
1976	14	5,630
1977	16	6,221
1978	17	7,069
1979	21	9,220
1980	27	10,479
1981	32	12,048
1982	37	13,235
1983	41	13,782
1984	42	14,533
1985	42	15,107
1986	43	15,517
1987	44	16,203
1988	47	16,664
1989	50	17,839
1990	102 + 14 labs	21,861

Note: All non-analytic cases plus persons reported to the VCR with residence out-of-state or unknown have been excluded.

(175,492 cases), 19% black (41,970 cases) and less than 1% (1,443 cases) other race.

The age distribution of the cancer cases has followed the recognized trend of increased numbers of cases in the latter decades of life, with 80% of the cases occurring at age 50 and beyond. Younger age groups are also affected by cancer, however, with 1.3% of reported cancer patients less than twenty years of age, 3.3% in their twenties, 5.7% in their thirties, and 9.7% in their forties.

The distribution of body sites affected by cancer in males and females is presented in Table 12. Fifty-two percent of male cancers occurred in the following four sites: lung (25.0%), colon/rectum (11.8%), prostate (9.2%), and urinary bladder (5.9%). Sixty-two percent of cancers in females were located in these four sites: breast (28.2%), colon/rectum (12.0%), cervix uteri (11.7%), and lung (10.1%).

CANCER CASES DIAGNOSED IN 1990

As mentioned, in 1990 cancer case reporting was enhanced by a legislative mandate requiring all Virginia hospitals and independent pathology laboratories (fourteen in number) to report to the Registry. Although 1990 figures represent the first year of data that approach complete reporting of the cancer cases in Virginia, they are expected to remain a slight underestimate of the problem of cancer in Virginia because Virginia residents seeking diagnosis and treatment outside of the Commonwealth are generally not included at this time. The lack of data on persons seeking medical care for cancer outside Virginia is assumed to affect residents of the northern health planning region more than other areas of the Commonwealth, as reflected by consistently lower cancer rates in Northern Virginia.

Because reporting was as complete as currently possible for cases diagnosed in 1990, much of the data in this section will be reported as rates per 100,000 population. Incidence rates provide information that is more meaningful for making comparisons.

The most frequently reported primary sites for cancer cases diagnosed in 1990 are listed in Table 13 for the total population and separately for males and females. These data indicate that in 1990 breast cancer surpassed lung cancer as the most common site of cancer in Virginia. National cancer data also reflect this trend, which is most likely due to the increased use of mammography for the early detection of breast cancer.

Numbers of cases by major body site/type are depicted on separate graphs for males and females on pages that follow. In 1990, cancer of the prostate was responsible for the most cases in males. Cancer of the lung and bronchus was the second most common in males, but was the third most common site in females, following cancer of the breast and colon/rectum.

Table 12. Number and Percent of Cancer Cases in Virginia Residents as Reported to the Virginia Cancer Registry, by Sex, 1970-1990

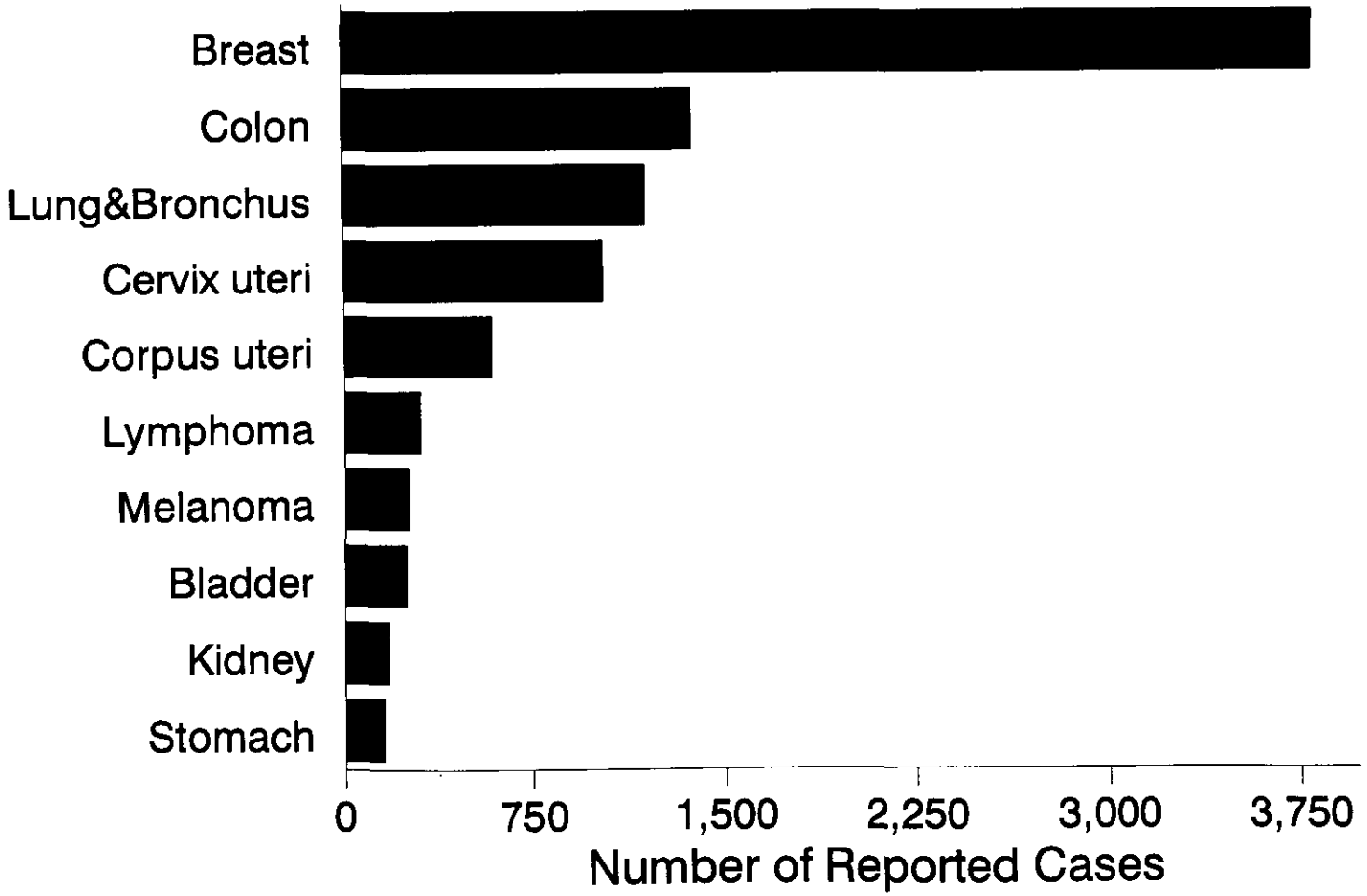
Cancer Site	Total	Male		Female		Unknown
		Number	Percent	Number	Percent	
TOTAL	218,983	106,799	48.77	112,106	51.19	78
Lung and Bronchus	37,848	26,490	69.99	11,349	29.99	9
Breast	31,861	223	0.70	31,637	99.30	1
Colon and Rectum	26,137	12,649	48.39	13,484	51.59	4
Prostate	9,787	9,778	99.91	0	0.00	9
Cervix Uteri	13,156	0	0.00	13,152	99.97	4
Bladder	8,725	6,291	72.10	2,433	27.89	1
Corpus Uteri	6,539	0	0.00	6,538	99.98	1
Lymphoma	5,605	2,963	52.86	2,637	47.05	5
Leukemia	4,428	2,483	56.07	1,943	43.88	2
Larynx	4,126	3,390	82.16	734	17.79	2
Melanoma	4,347	2,221	51.09	2,120	48.77	6
Kidney	4,165	2,601	62.45	1,563	37.53	1
Stomach	3,791	2,324	61.30	1,466	38.67	1
All Others	58,468	35,386	60.52	23,050	39.42	32

Table 13. Number and Percent of Cancer Cases in Virginia Residents as Reported to the Virginia Cancer Registry, by Sex, 1990

Cancer Site	Total	Male		Female		Unknown
		Number	Percent	Number	Percent	
TOTAL	21,861	10,452	47.81	11,402	52.16	7
Breast	3,821	14	0.37	3,807	99.63	0
Lung and Bronchus	3,370	2,174	64.51	1,196	35.49	0
Colon and Rectum	2,694	1,315	48.81	1,379	51.19	0
Prostate	2,409	2,408	99.96	0	0.00	1
Cervix Uteri	1,034	0	0.00	1,032	99.81	2
Bladder	968	717	74.07	250	25.83	1
Lymphoma	607	301	49.59	306	50.41	0
Corpus Uteri	590	0	0.00	590	100.00	0
Melanoma	575	318	55.30	256	44.52	1
Kidney	459	283	61.66	176	38.34	0
Stomach	371	214	57.68	157	42.32	0
Larynx	350	270	77.14	80	22.86	0
Leukemia	324	191	58.95	132	40.74	1
All Others	4,289	2,247	52.39	2,041	47.59	1

Cases of Cancer by Major Body Site/Type

Females, 1990



Cases of Cancer by Major Body Site/Type

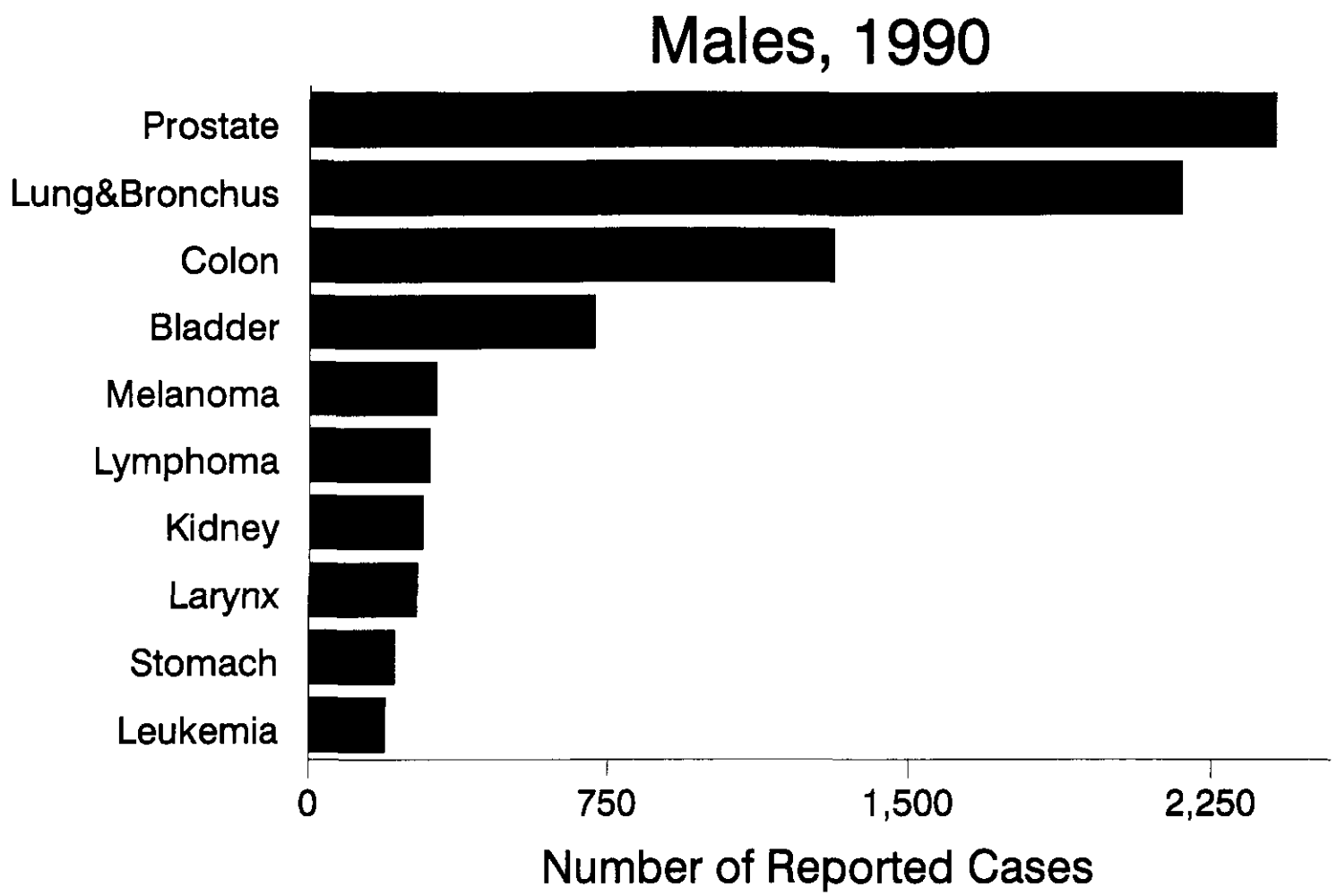


Table 14. Number of Cases and Rate per 100,000 Population of Selected Body Sites of Cancer, Virginia, 1990.

Category	Population	Total Cancer		Breast Cancer		Lung Cancer		Colorectal Ca.		Cervix Cancer		Prostate Cancer	
		Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
										(females only)		(males only)	
REGION:													
Northwest	835408	3178	380.41	574	68.71	446	53.39	362	43.33	140	32.97	377	91.77
North	1466409	3926	267.73	811	55.31	463	31.57	477	32.53	222	30.09	356	48.86
Southwest	1244783	4788	384.65	801	64.35	786	63.14	644	51.74	236	36.54	522	87.15
Central	1062355	4231	398.27	734	69.09	697	65.61	523	49.23	159	28.67	519	102.20
East	1578403	5702	361.25	900	57.02	977	61.90	687	43.53	264	33.39	635	80.61
AGE GROUP:													
00-09	867516	73	8.41	0	0.00	0	0.00	0	0.00	1	0.24	0	0.00
10-19	837087	118	14.10	2	0.24	0	0.00	0	0.00	15	3.68	0	0.00
20-29	1094107	568	51.91	34	3.11	2	0.18	10	0.91	244	45.72	0	0.00
30-39	1084705	1239	114.22	282	26.00	39	3.60	43	3.96	356	64.99	2	0.37
40-49	845495	2175	257.25	726	85.87	209	24.72	169	19.99	170	39.77	19	4.44
50-59	548542	3339	608.70	730	133.08	598	109.02	357	65.08	87	31.02	157	55.99
60-69	474166	6133	1293.43	941	198.45	1270	267.84	762	160.70	88	34.11	826	320.14
70+	435740	8209	1883.92	1105	253.59	1251	287.10	1352	310.28	72	26.25	1403	511.57
RACE:													
white	4791739	17989	375.42	3258	67.99	2712	56.60	2228	46.50	849	34.94	1890	80.02
nonwhite	1395619	3865	276.94	563	40.34	658	47.15	466	33.39	183	25.29	518	77.08
SEX:													
male	3033974	10452	344.50	14	0.46	2174	71.66	1315	43.34	----	----	2409	79.40
female	3153384	11402	361.58	2742	86.95	1196	37.93	1379	43.73	1034	32.79	----	----
TOTAL	6187358	21861	353.32	3821	61.75	3370	54.47	2694	43.54				

Number of cases and rate per 100,000 population for total cancer and the five major body sites are shown in Table 14. The data from this table are summarized below and presented in graphic form in the remainder of this part of the Office of Epidemiology's annual report.

Total Cancer: A total of 21,861 cases of cancer diagnosed in 1990 in Virginia residents were reported to the Virginia Cancer Registry. Slightly more females (11,402 cases, 361.6 per 100,000) were reported with cancer than males (10,452 cases, 344.5 per 100,000). Whites were more likely to be diagnosed with cancer in 1990 than nonwhites (375.4 per 100,000 vs. 276.9, respectively).

The rate of cancer increased with advancing age, as was noted in the 1970-1990 data. In spite of the association between age and cancer, 191 children were diagnosed with cancer in 1990. Of these, 73 were age 1 to 9 while 118 were age 10 to 19.

The central health planning region experienced the highest rate of cancer (4,231 cases, 398.3 per 100,000) followed by the southwest region (4,788 cases, 384.6 per 100,000), northwest region (3,178 cases, 380.4 per 100,000), the eastern region (5,702 cases, 361.2 per 100,000), and the northern region (3,926 cases, 267.7 per 100,000). Specific locality was not reported for 36 (0.2%) Virginia residents. Rates are affected by the age distribution of the populations in each region and by residents seeking care out of state.

Breast Cancer: For every 100,000 Virginians, 62 were diagnosed with breast cancer in 1990. Eighty-seven of every 100,000 females in Virginia received this diagnosis in 1990. The incidence rate was higher in whites (68.0 per 100,000) than in nonwhites (40.3 per 100,000). As expected, breast cancer incidence rates increased with advancing age.

The incidence rate of breast cancer was highest in the central and the northwest health planning regions and lowest in the eastern and northern regions.

Lung Cancer: Males were almost twice as likely as females to be diagnosed with lung cancer in 1990 (71.7 per 100,000 vs. 37.9). Whites were at higher risk than nonwhites. Risk of lung cancer increased with age. Persons in their sixties were twice as likely to be diagnosed with this disease in 1990 as persons in their fifties (267.8 vs. 109.0 per 100,000, respectively).

Lung cancer incidence rates were similar for the southwest, central, and eastern health planning regions, slightly lower for the northwest region, and lowest in the northern area.

Colorectal Cancer: Males and females were equally likely to be reported with colorectal cancer (43 cases per 100,000). As with other sites, whites had a higher rate of diagnosis and reporting than nonwhites (46.5 vs. 33.4 per 100,000).

Risk of colorectal cancer increased with age up to a rate of 310.3 per 100,000 in persons age 70 and older.

Southwestern Virginians experienced the highest rate of reported colorectal cancer (51.7 per 100,000). The rate was lowest in the northern health planning region (32.5 per 100,000).

Cancer of the Cervix Uteri: White females experienced a slightly higher rate of cervical cancer than nonwhites (34.9 vs. 25.3 per 100,000). More younger persons were affected by this cancer than the other major body sites included in Table 14. Sixty percent of persons diagnosed with cervical cancer in 1990 were under age 40. Rates by health planning region ranged from 28.7 per 100,000 in central Virginia to 36.5 per 100,000 in the southwest.

Prostate Cancer: Seventy-nine of every 100,000 males in Virginia were diagnosed with prostate cancer in 1990. The difference in rates between the two race groups was less than seen with the other body sites (80.0 per 100,000 in whites and 77.1 per 100,000 in nonwhites). Persons age 60 and older were much more likely to be diagnosed with this disease than younger men.

The central health planning region experienced the highest incidence rate of prostate cancer (102.2 per 100,000), followed by the northwest region (91.8 per 100,000), the southwest region (87.1 per 100,000), the eastern region (80.6 per 100,000), and the northern region (48.9 per 100,000).

VCR SITE STUDIES

CARCINOMA OF THE ORAL CAVITY

Malignant tumors of the oral cavity represent one of the smaller groups of cancers in the Virginia Cancer Registry, accounting for 2.3% of all cases. These cancers were more common in males (3.5% of male cancers) than in females (1.4% of female cancers). Almost 90% of the cases were age 50 or older.

The most common histologic type was squamous cell carcinoma, which was identified in 94% of the cases of oral cancer. The remaining statistics apply to cases with this histology only.

The stage distribution showed almost one-half of the cases to be local, the percentages being in-situ 2.5%, local 46.8%, regional 39.5%, and distant 10.7%. The five year survival rate was 51%. The expected poorer survival with advancing stage was demonstrated with five year survival rates as follows: local stage had 72% survival, regional stage 36%, and distant stage 19% survival. A lower survival rate was noted for blacks compared to whites. No improvement in survival rate was noted when comparing the 1970s to the 1980s.

Three sites together accounted for almost three-fourths of the cases, namely tongue, floor of mouth, and lip. Lip had the highest percentage of cases in the local stage (90%) and the highest five year survival rate (91%).

Surgery and radiation therapy were the principal treatment modalities used either together or separately. The percentages of patients treated with these modalities in the 1980s were: surgery alone 42%, radiation alone 22%, surgery and radiation 22%.

CARCINOMA OF THE COLON/RECTUM

This is the third most common site of cancer in the Virginia Cancer Registry, accounting for 11.5% of the cases. The male to female ratio was 1 : 1.1. One-half of the cases were age 60-79 at diagnosis.

The distribution of stage at diagnosis was in-situ 61%, local 24.7%, regional 46.5% and distant 21.2%. A slight trend was noted toward earlier diagnosis in the 1980s compared to the 1970s.

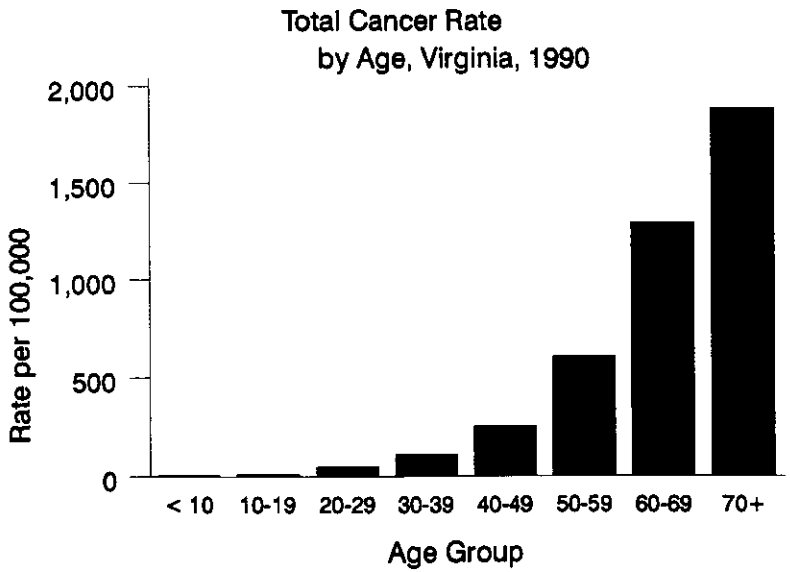
The five year survival rate for carcinoma of the colon and rectum was 58%, while the ten year survival rate was 54%. The importance of early diagnosis was demonstrated by poorer survival statistics observed with increasing stage at diagnosis. Five year survival rates for Duke's A were 87%, Duke's B 74%, and Duke's C 50%. Cases in the distant stage at diagnosis had a five year survival rate of only 7%.

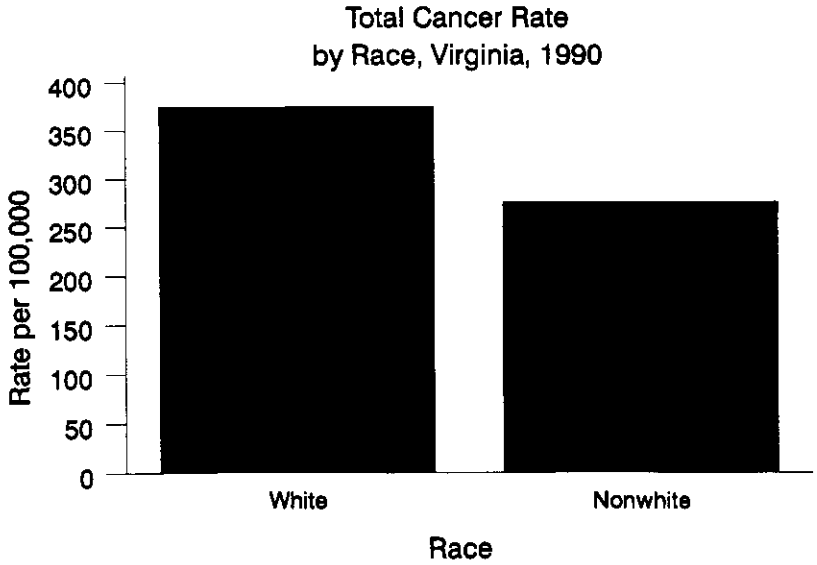
Survival rates improved slightly in the 1980s compared to the 1970s. Persons of black race experienced a poorer survival rate than did the white race group, even though the stage of cancer at diagnosis was similar for blacks and whites.

Surgery was the overwhelming primary modality of treatment, with radiation and chemotherapy playing a role in a relatively small number of cases.

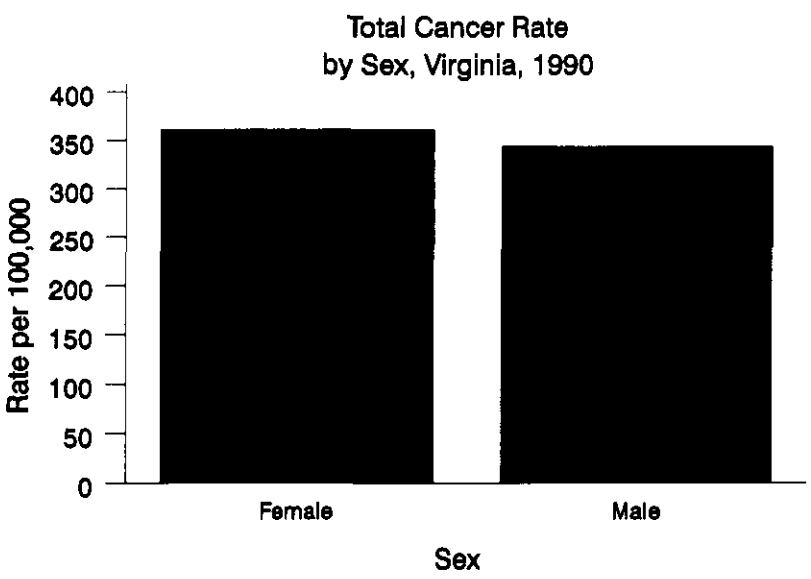
- *Anyone interested in more information about these site studies or other cancer data should contact the Virginia Cancer Registry at P.O. Box 2448, Room 114, Richmond, Virginia 23218.*

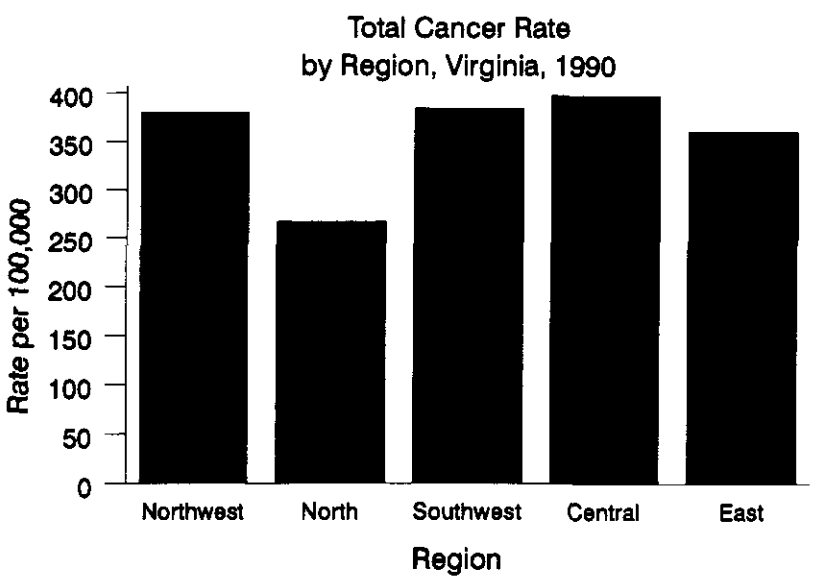
Total Cancer, Virginia, 1990



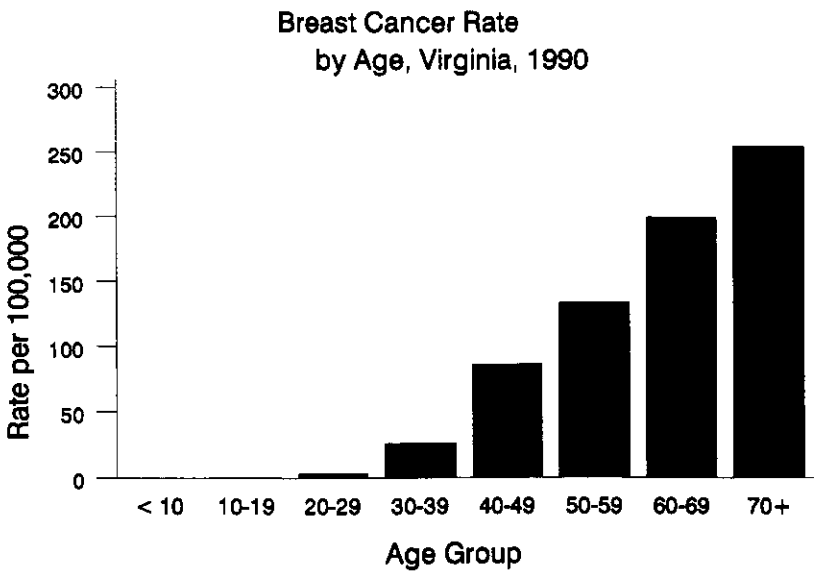


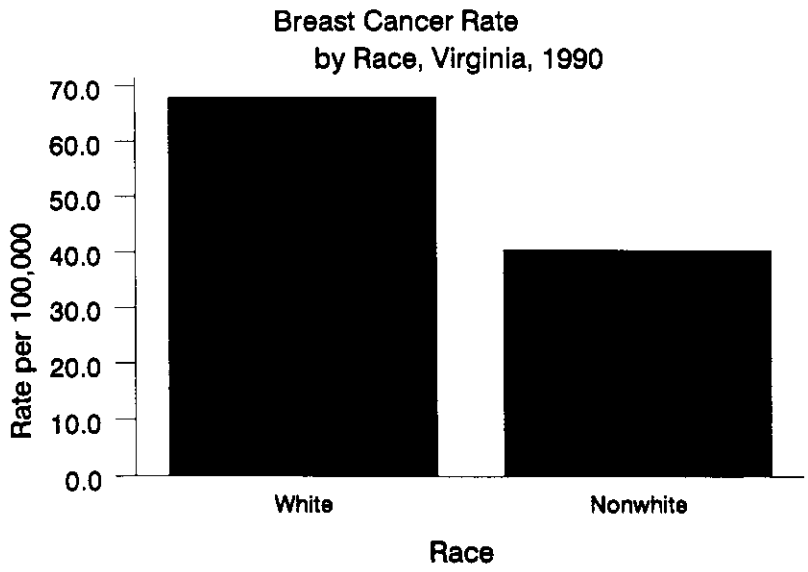
Total Cancer, Virginia, 1990



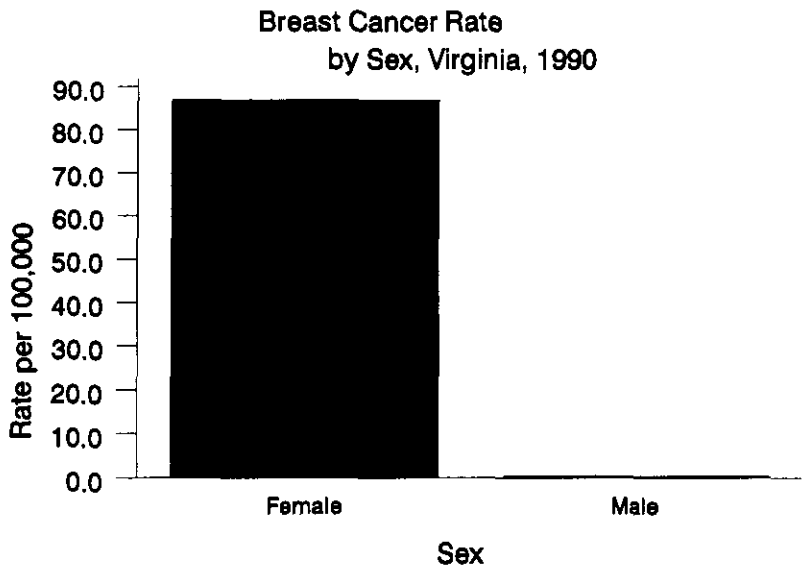


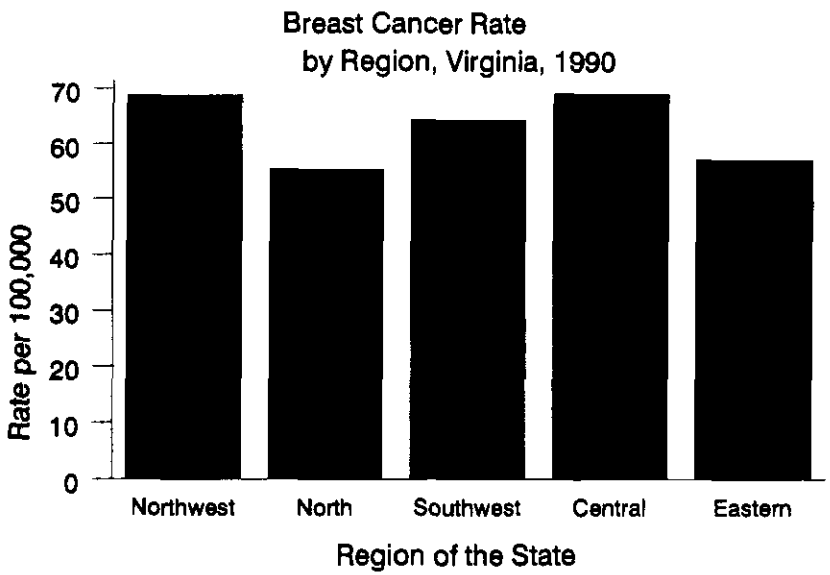
Breast Cancer, Virginia, 1990



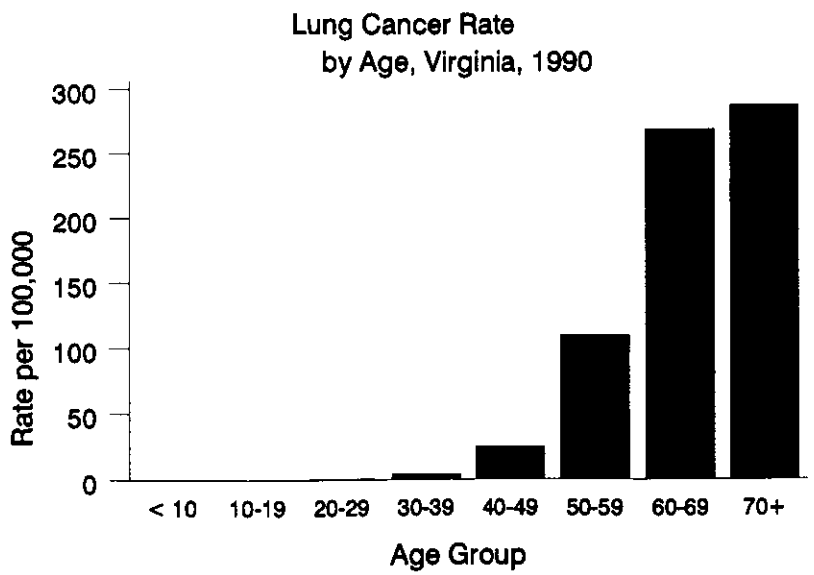


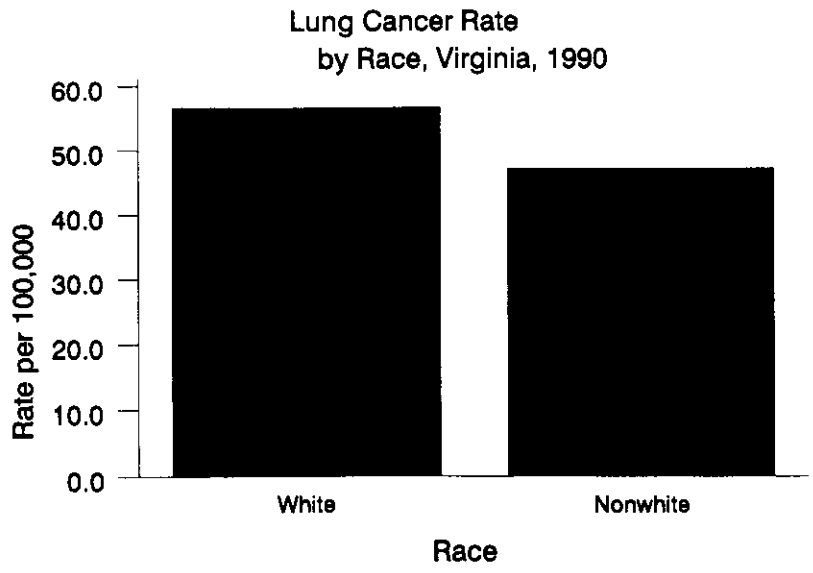
Breast Cancer, Virginia, 1990



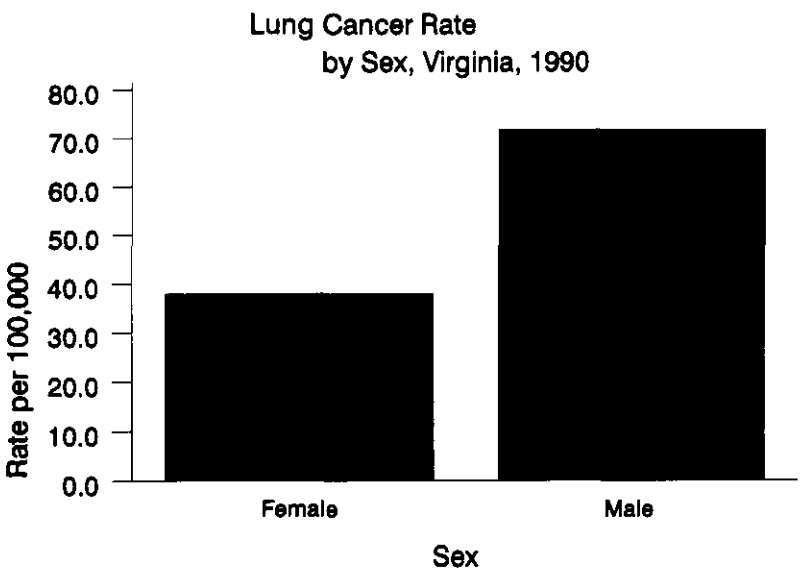


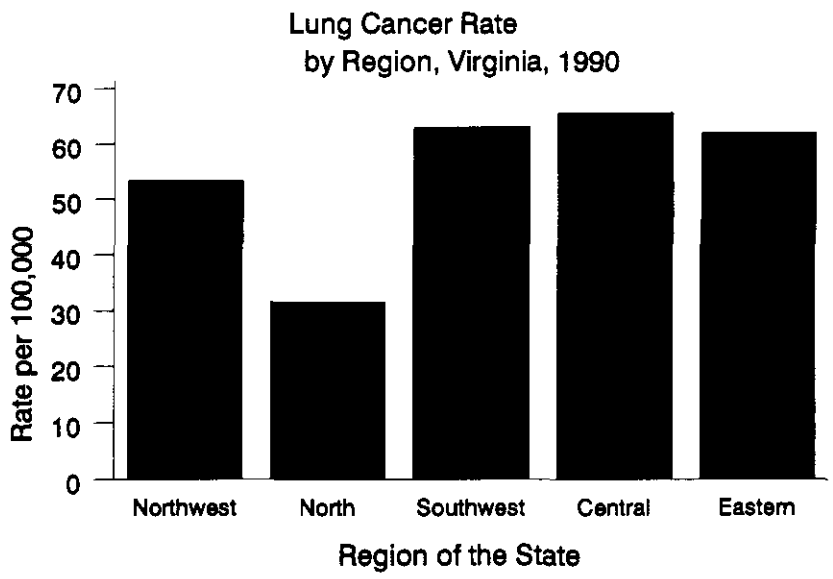
Lung Cancer, Virginia, 1990



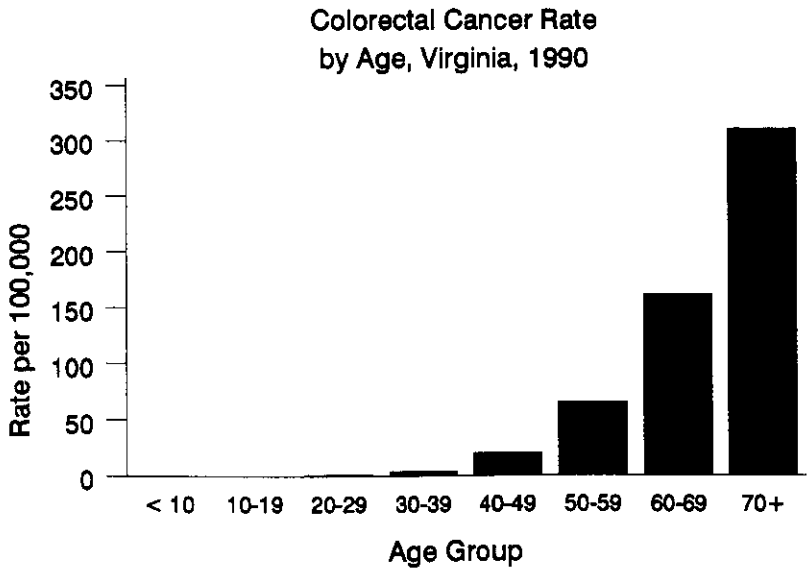


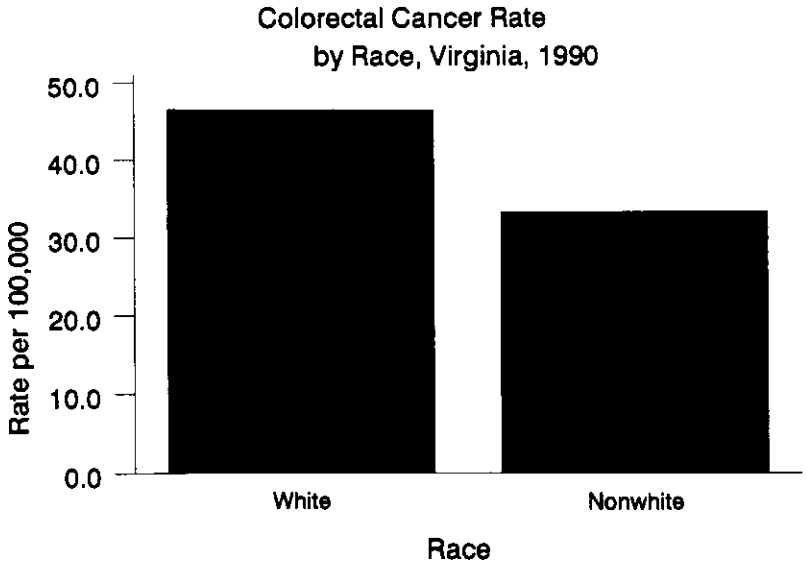
Lung Cancer, Virginia, 1990



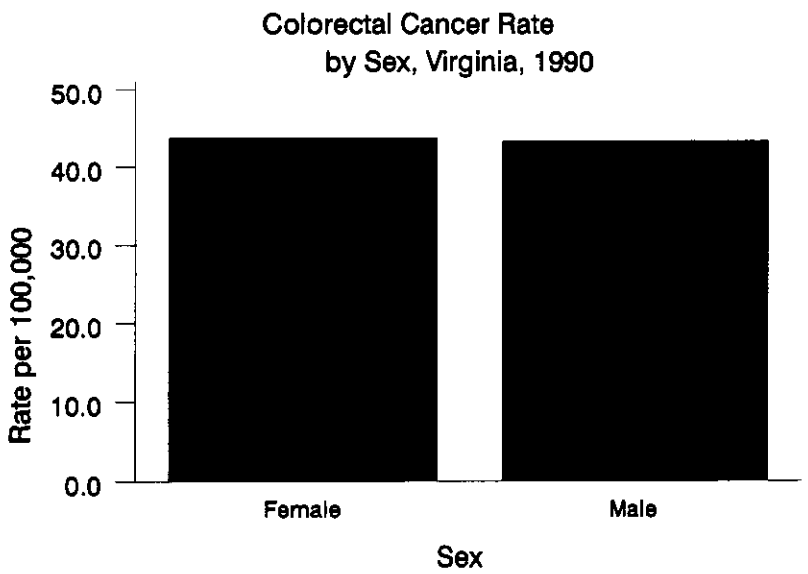


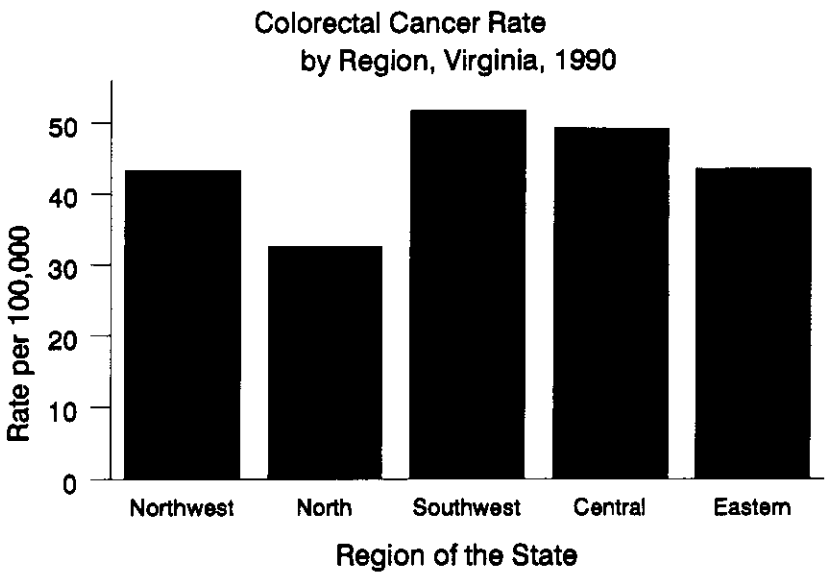
Colorectal Cancer, Virginia, 1990



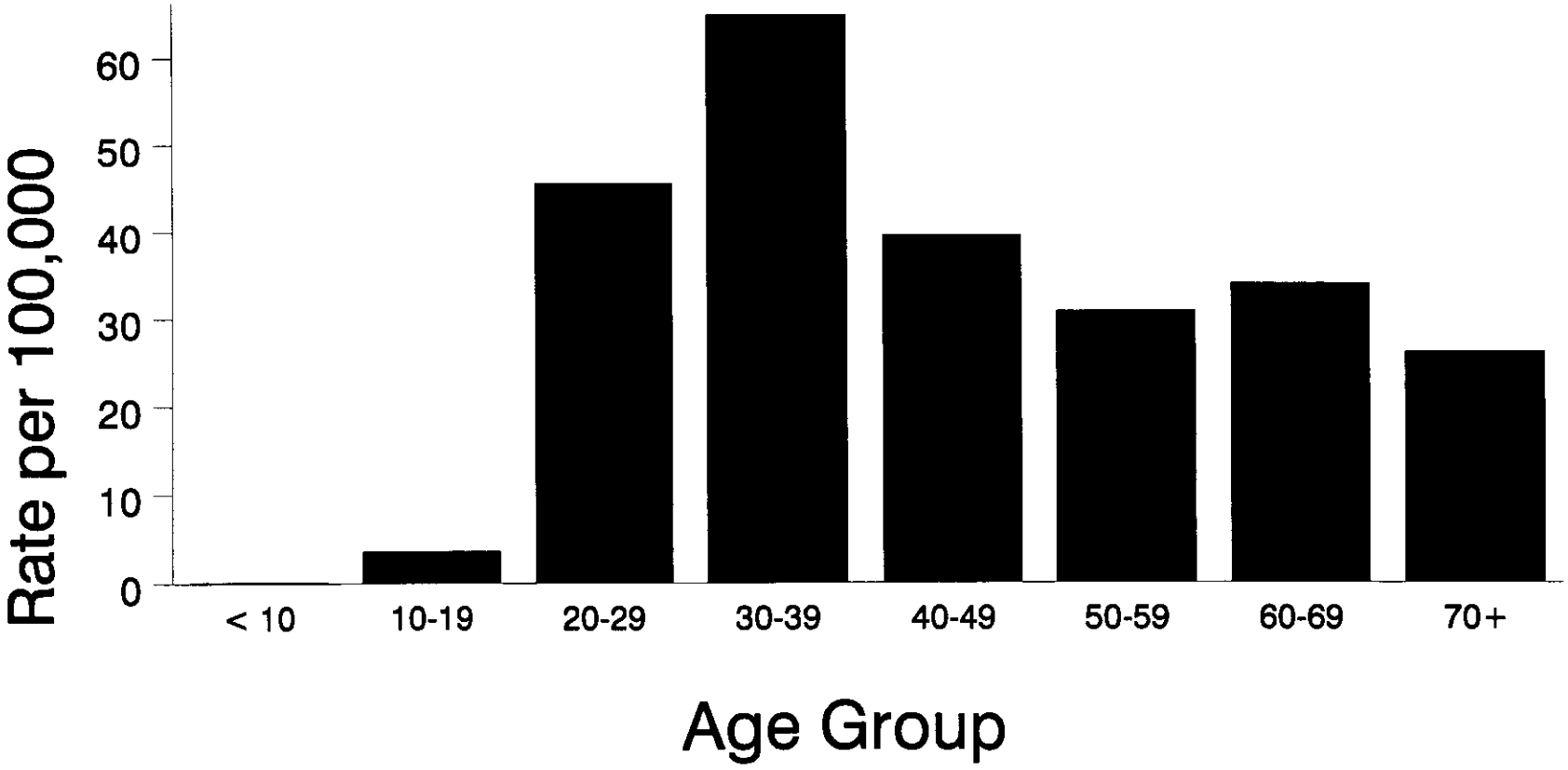


Colorectal Cancer, Virginia, 1990

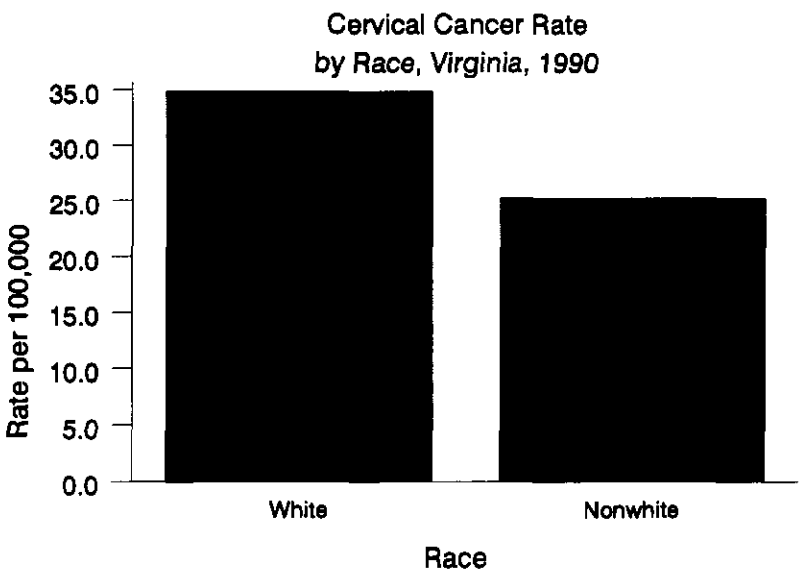


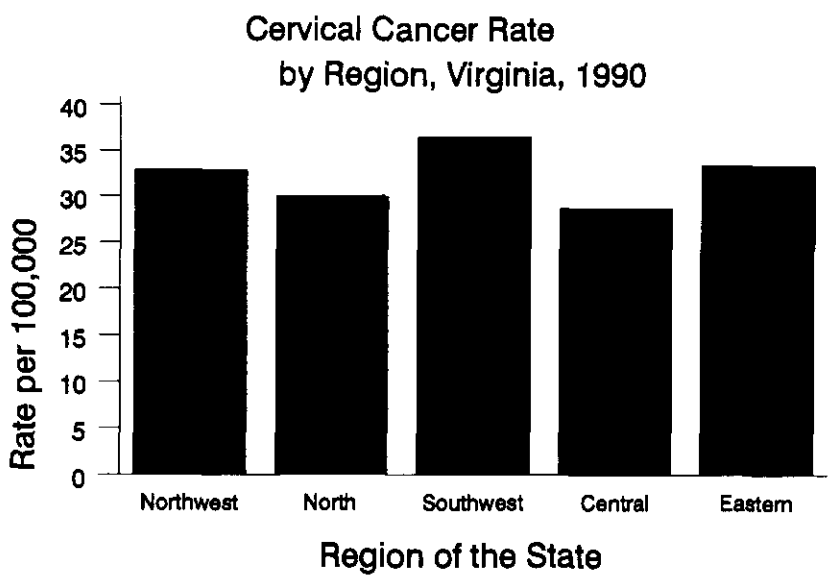


Cervical Cancer Rate by Age, Virginia, 1990

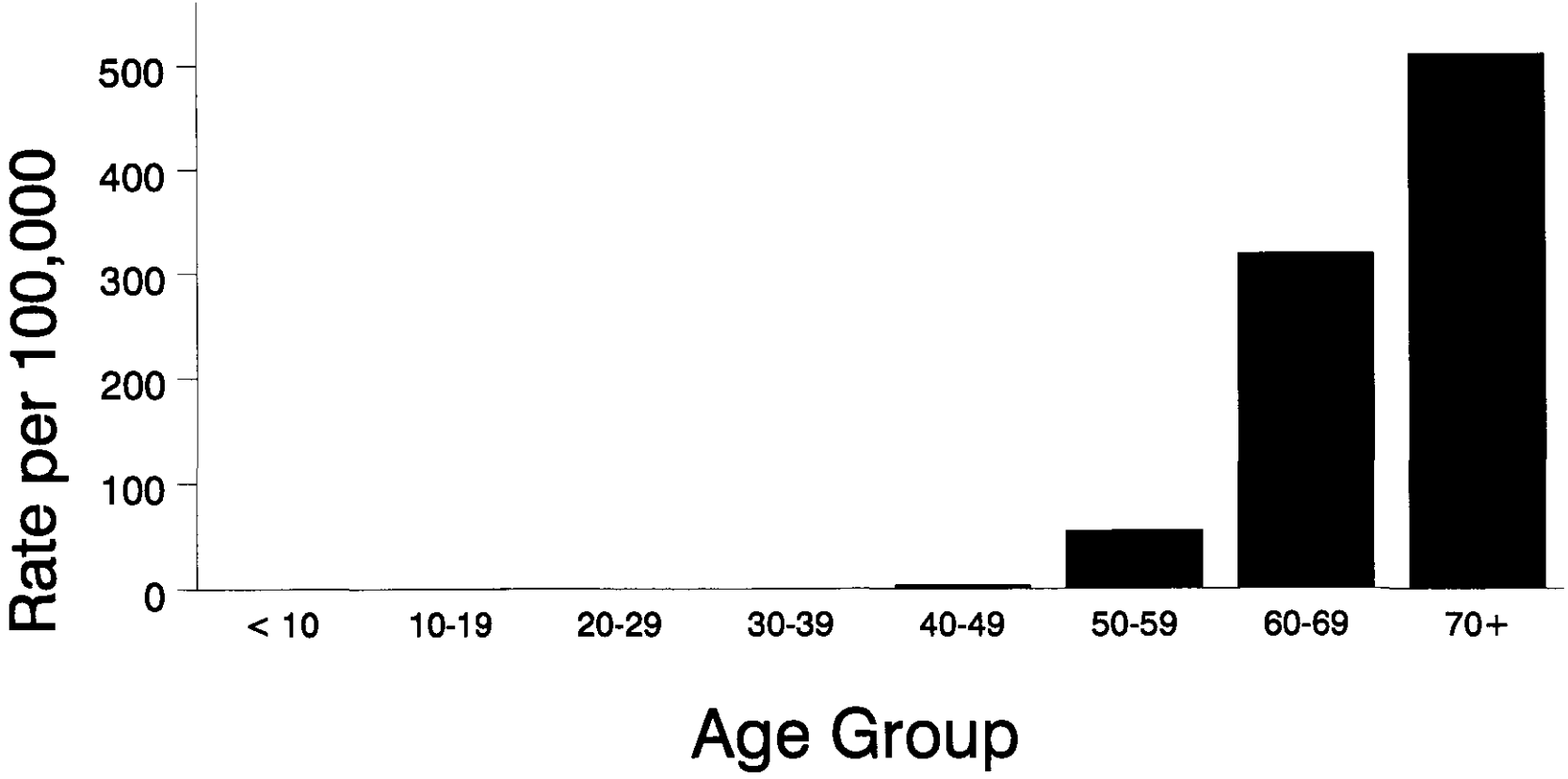


Cervical Cancer, Virginia, 1990





Prostate Cancer Rate by Age, Virginia, 1990



Prostate Cancer, Virginia, 1990