Annual Report on the Status of Cancer in Illinois 1994-1998

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Executive Summary

Background: Annual reports on the status of cancer for the nation have been published since 1996. These reports have been prepared through the collaborative efforts of the American Cancer Society (ACS), the U.S. Centers for Disease Control and Prevention (CDC), the National Center for Health Statistics (NCHS), the National Cancer Institute (NCI) and the North American Association of Central Cancer Registries (NAACCR). This is the second publication on the status of cancer in Illinois designed to provide cancer information for use at the state level.

Methods: Annual cancer incidence and mortality in Illinois for the time period 1994-1998 were the focus of this report. Age-adjusted rates were calculated and average annual percentage changes for these rates were estimated using regression models. Age-specific rates also were calculated and were evaluated for trends. The evaluation included Illinoisans of all races as well as whites, blacks and Asian/other races, separately. Cancer patterns for Hispanic and non-Hispanic ethnic groups also were assessed. Comparisons were made to available national cancer incidence and mortality data, as well as the recently published Healthy People 2010 objectives. Appropriate behavioral risk factor surveillance data were included throughout the report.

Findings: Invasive cancer incidence rates for all sites combined did not significantly change for either males or females in Illinois from 1994 through 1998. In contrast, for the same time period, Illinois' cancer death rates from all sites combined significantly decreased an average of 2.2 percent per year for males and 1.2 percent per year for females (all races). The highest cancer incidence and mortality rates were observed among black males. Overall, Asian/other races had lower cancer incidence and mortality rates than their white or black counterparts for both males and females. Illinois' Hispanic population generally had lower cancer incidence and mortality rates than those observed among non-Hispanics in the state. Illinois cancer incidence and mortality were for the most part similar to national patterns and trends when compared with Surveillance, Epidemiology and End Results (SEER) program cancer incidence rates; the North American Association of Central Cancer Registries' Cancer in North America (CINA) cancer incidence and mortality rates for 1994-1998; and United States cancer mortality data from the National Center for Health Statistics.

Conclusions: Indeed, cancer incidence and mortality rates in Illinois are changing. Some of these changes are consistent with national patterns while others differ due to factors unique to the sociodemographic profile of Illinois. Future success in reducing the Illinois cancer burden and achieving the Healthy People 2010 cancer objectives will depend on a continued commitment and sustained efforts to support surveillance, prevention, screening and treatment.

Introduction

The *Annual Report on the Status of Cancer in Illinois, 1994-1998* is the second report designed to describe the status of cancer at the state level. The first report on the status of cancer in Illinois was released in March, 2000.[1] National reports with a similar aim have been published since 1996.[2-7] These reports have been prepared through the collaborative efforts of the American Cancer Society (ACS), the U.S. Centers for Disease Control and Prevention (CDC), the National Center for Health Statistics (NCHS), the National Cancer Institute (NCI) and the North American Association of Central Cancer Registries (NAACCR). Like the national efforts, the overall goal of the state-level evaluation presented in this report is to provide insight into Illinois' progress toward cancer prevention and control.

The importance of such ongoing surveillance becomes apparent when the burden that cancer imposes on the people of the state of Illinois is recognized. In 1998, 55,166 new cases of invasive cancer were diagnosed and 24,592 cancer-related deaths occurred among Illinois residents. The following table shows a breakdown of these totals by specific sites, illustrating the diverse nature and complexity of cancer.

New Cancer Cases and Cancer Deaths, Illinois, 1998

	New Cases		Deaths	
All Cancer Sites	55,166		24,592	
		%		%
Brain and Other Nervous System	715	1.3	480	2.0
Breast	8,641	15.7	2,020	8.2
Cervix	727	1.3	210	0.9
Colon and Rectum	7,147	13.0	2,731	11.1
Corpus and Uterus, NOS	1,658	3.0	353	1.4
Esophagus	640	1.2	570	2.3
Hodgkin's Disease	313	0.6	58	0.2
Kidney and Renal Pelvis	1,432	2.6	558	2.3
Larynx	550	1.0	190	0.8
Leukemias	1,296	2.3	931	3.8
Liver and Intrahepatic Bile Duct	544	1.0	582	2.4
Lung and Bronchus	8,344	15.1	6,841	27.8
Melanoma of the Skin	1,266	2.3	282	1.1
Multiple Myeloma	666	1.2	465	1.9
Non-Hodgkin's Lymphomas	2,162	3.9	970	3.9
Oral Cavity and Pharynx	1,209	2.2	346	1.4
Ovary	1,024	1.9	611	2.5
Pancreas	1,329	2.4	1,316	5.4
Prostate	7,342	13.3	1,499	6.1
Stomach	978	1.8	644	2.6
Testis	292	0.5	14	0.1
Thyroid	759	1.4	54	0.2
Urinary Bladder	2,453	4.4	514	2.1
All Other Sites	3,679	6.7	2,353	9.6

Source: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000 and Death Master File, 1998

For this report, incidence rates, mortality rates and their trends are presented over the 1994 through 1998 time period for all races in Illinois and for whites, blacks, Asian/other races as well as two ethnic groups: Hispanics and non-Hispanics. The major cancer control sites, including colon and rectum, lung and bronchus, breast (female), cervix and prostate, are evaluated more extensively. Relevant behavioral risk factor surveillance system data are included for the first time in this report. Although this report focuses primarily on cancer among Illinoisans, some comparisons are made between Illinois and national cancer profiles to convey a broader perspective on the status of cancer in the state. Finally, the status of cancer in Illinois relative to the recently released Healthy People 2010 objectives for cancer is assessed.

Methods

This report evaluates Illinois cancer incidence and mortality for the years 1994 through 1998, the most current five years of data available for the state. Average annual age-adjusted and age-specific rates, and their trends over 1994-1998 for all invasive cancers and all cancer-related deaths as well as specific cancer sites were determined and evaluated. The major cancer control sites, including colon and rectum, lung and bronchus, breast (female), cervix and prostate, were more extensively evaluated by race/ethnic groups and stage of disease at diagnosis because these five sites account for almost 60 percent of new cancer cases and 75 percent of cancer deaths. Some national comparisons were made to ascertain how Illinois fairs with respect to the national cancer profile.

Cancer Cases

Cancer incidence data were obtained from the Illinois Department of Public Health, Division of Epidemiologic Studies, Illinois State Cancer Registry (ISCR), the only source of population-based cancer incidence data for the state of Illinois. ISCR was established in response to the Illinois Health and Hazardous Substance Registry Act (410 ILCS 525/1 *et seq*.), enacted on September 10, 1984.

Newly diagnosed cancer cases among Illinois residents are reported to ISCR by health care facilities where cancer is diagnosed and treated. Briefly, information on cancer cases is obtained by ISCR through mandated reporting by 375 sources including hospitals, ambulatory surgical treatment centers, non-hospital affiliated radiation therapy treatment centers and non-hospital pathology laboratories; and through the voluntary exchange of cancer patient data with other states. For this report, the database files reflect the status of ISCR as of October 30, 2000.

The *International Classification of Diseases for Oncology* (ICD-O-2) codes were used to define cancer sites. Conversion of ICD-O-2 coding to the major and minor cancer site groups of the NCI's Surveillance, Epidemiology and End Results (SEER) program assured standardized site classification of ISCR cancer cases.[8-10]

Cancer Deaths

The Illinois Department of Public Health's death master files were the source of cancer mortality data on Illinois residents. The *International Classification of Diseases* (ICD-9) codes for underlying cause of death on Illinois death certificates were used to identify deaths attributable to cancer. The ICD-9 codes were then converted to SEER major and minor cancer site groups to define the standardized cancer sites used for reporting purposes.[9,11]

Cancer Incidence and Mortality Rates

Population estimates used as denominators for rate calculations were the 1990-1999 estimates of Illinois' resident populations of whites, blacks, Asians and Pacific Islanders, Native Americans, Hispanics and non-Hispanics from the U.S. Bureau of the Census.[12] Rates are expressed per 100,000 population and are age-adjusted by the direct method to the 1970 U.S. standard million population. The SEER*Stat software package®, developed by the Information Management Services Inc. for the NCI, was used to calculate both incidence and mortality counts as well as to provide age-adjusted rates and trend analysis for those rates over 1994 through 1998.

Annual Percentage Change

Annual percentage change (APC) for age-adjusted cancer incidence and mortality rates, 1994-1998, from all sites and specific sites was calculated using the same methods employed to evaluate the national data.[3-6] That is, the APC was estimated by fitting a regression line to the natural logarithm of the rates using calendar year as a regression variable, i.e., $y = mx + b$ where $y = \ln(\text{rate})$ and x = calendar year. The estimated APC was calculated as $100*(e^m - 1)$. The tested null hypothesis was that the APC is equal to zero, which is equivalent to testing the hypothesis that the slope of the line in the above equation is equal to zero or that the rate is neither increasing nor decreasing.[13]

Race and Ethnicity

The race-specific categories for this report include all races, whites, blacks and Asian/other races and were ascertained from the data elements on the ISCR incidence report form and the Illinois death certificate for race. Hispanic origin status is collected separately from race on both the ISCR incidence report form and the Illinois death certificate. Therefore, Hispanic classification by itself is not mutually exclusive from whites, blacks and Asian/other races. Hispanic ethnicity was defined with an algorithm developed through a special study. That algorithm uses the Hispanic origin data element on the ISCR incidence report or on the death certificate as well as birthplace and/or surname.[14-16]

Behavioral Risk Factor Surveillance System Data

Risk factor and lifestyle information relevant to cancer prevention and control was obtained from the Illinois Center for Health Statistics, Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is a state-based program that is the primary source of information on health-related risk factors among Illinois adults 18 years of age and older. The BRFSS is a collaboration between the CDC and state health departments. CDC designed this system to gather information on behaviors and conditions related to the leading causes of death at both the state and national levels. Every month, a random sample of Illinois telephone numbers is selected for interviews. The telephone interviews follow carefully controlled procedures that assure the ascertainment of quality information that meets standards of acceptability. Once all the data for a year are collected, the database is edited and weighted. Weighting allows inferences to be drawn to the entire adult population in Illinois from the sample of interview respondents. This is because weighting corrects for variations by age, race and sex in the sample versus the general population.

Sources of National Cancer Incidence and Mortality Data

National cancer incidence and mortality data for comparisons with Illinois were obtained from several sources. SEER public use data files provide comparison cancer incidence data for the geographic areas covered by the NCI SEER program.[17] The SEER program currently collects and publishes cancer incidence and survival data from 11 population-based cancer registries and three supplemental registries covering approximately 14 percent of the U.S. population. The population covered by SEER is comparable to the general U.S. population with regard to measures of poverty and education. The SEER population tends to be somewhat more urban and has a higher proportion of foreign-born persons than the general U.S. population.[17]

Cancer in North America (CINA), 1994-1998, compiled by NAACCR afforded the opportunity to compare Illinois with another national source. Cancer incidence and mortality data from 25 states and five metropolitan areas covering, more than 50 percent of the total U.S. population were included in the most recent CINA monographs.[18,19]

It also was possible to compare Illinois cancer mortality with the entire United States excluding Illinois. Mortality data available from the National Center for Health Statistics public use data files for 1994 through 1998 made these comparisons possible.

Healthy People 2010 objectives were established for eight cancer sites including all cancer sites, colon and rectum, lung and bronchus, melanoma of the skin, and oral cavity for all races and both sexes; breast and cervix for all races, females; and prostate for all races, males.[20] The objectives and 2010 targets were based on annual mortality rates that are age-adjusted to the year 2000 standard population. The year 2000 standard population will be used as the standard for all calculations of age-adjusted rates beginning with 1999 health events as directed by the secretary of the U.S. Department of Health and Human Services in August 1998.[21,22] In addition, the oral cavity and pharynx cancer site has an objective related to increasing the percentage of cancer cases diagnosed at the early stage. Illinois data were compared with each Healthy People 2010 target as well as the U.S. baseline data for each objective.

All cancer incidence and mortality statistics for Illinois presented in this report are available at the following Internet address: <http://www.idph.state.il.us/about/epi/index.htm>. In addition, the national statistics may be found at the following Internet address: <http://www.seer-nci.nih.gov.htm>

Findings

Illinois Cancer Incidence

Figures 1 and 2 present average annual age-adjusted cancer incidence rates and trends over 1994-1998 from all sites combined and specific cancer sites listed alphabetically for Illinois males and females, respectively. Although trend analyses for all cancer sites combined showed a decrease for males of 1.0 percent per year and an increase for females 0.1 percent per year, the APCs were not significantly different from zero. However, statistically significant decreases in cancer incidence for leukemias, lung and bronchus and pancreas were apparent among Illinois males and significant declines in cancer of the esophagus and leukemias were seen for females. The only significant cancer incidence rate increases for males involved malignant melanoma of the skin and thyroid cancer incidence rates; only thyroid cancer incidence rates significantly increased for females.

Figure 3 displays age-specific cancer incidence rates and trends by sex for all invasive cancers during 1994 through 1998. As expected, changes in cancer incidence rates varied from one age group to another, reflecting a mixture of birth cohort and age effects. Despite the variation, cancer incidence increases dramatically with advancing age for both males and females. However, a statistically significant decline in cancer incidence rates was observed only for Illinois males of all races, 85 years and older. No significant changes were detected for any other age group of Illinois males or females.

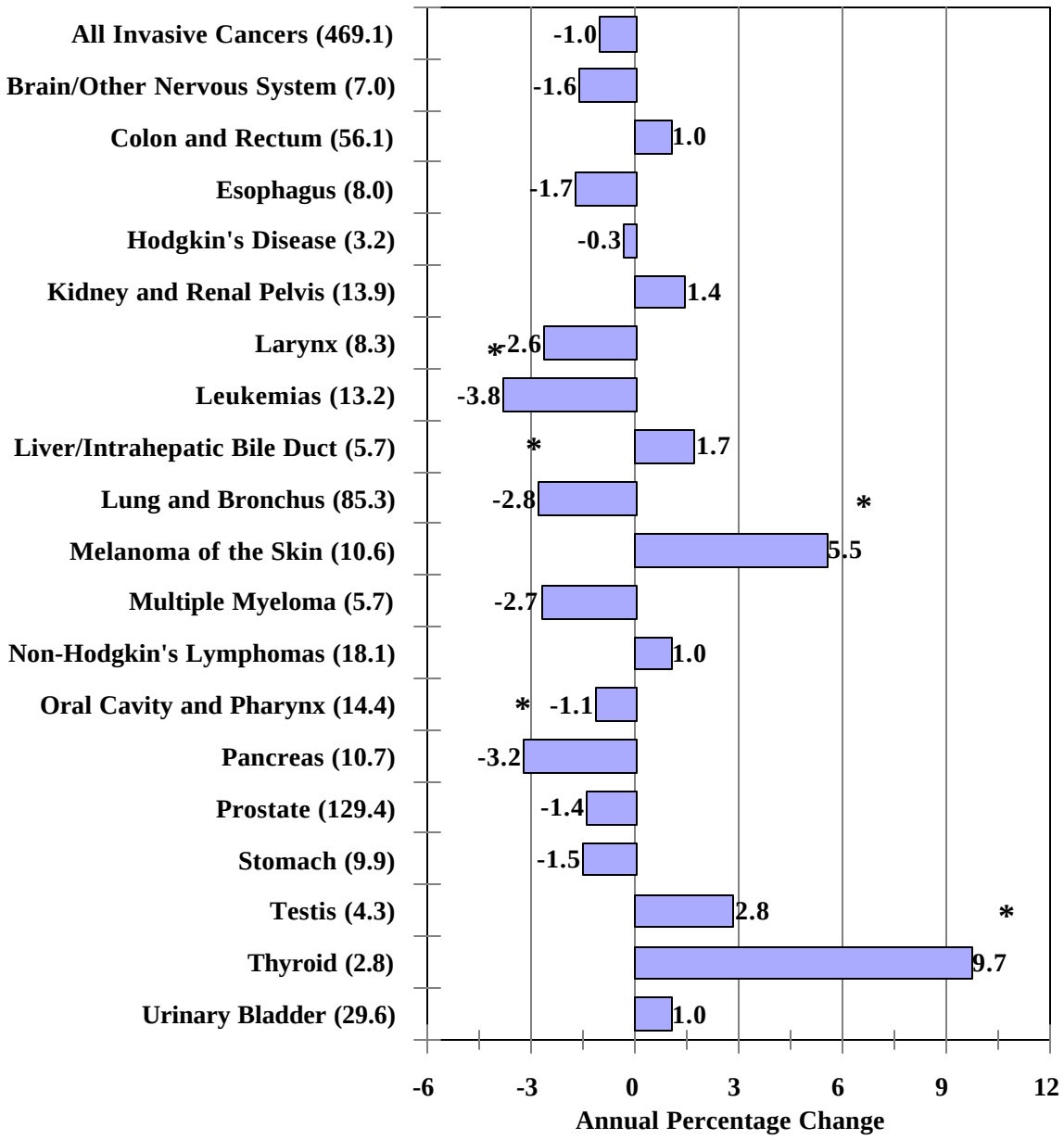
Tables 1 and 2 include statistics for the top 15 cancer sites ranked in descending order by the average annual age-adjusted rate for all races, whites, blacks and Asian/other races as well as Hispanics and non-Hispanics for males and females, respectively. Overall, males had higher cancer incidence rates than females in every race/ethnic group. Black males had the highest cancer incidence rates among all race/ethnic sex groups. Asian/other races and Hispanics of both sexes had lower cancer incidence rates for all sites combined as well as for most selected sites than their respective counterparts.

In Table 1, the highest average annual age-adjusted cancer incidence rates for Illinois males were observed for prostate cancer, followed by lung and bronchus, then colon and rectum in every race and ethnic group during 1994-1998. Statistically significant drops were observed for lung and bronchus and leukemias for white males; and, oral cavity and pharynx, stomach, pancreas and multiple myeloma for black males. Lung and bronchus, leukemias and pancreas were cancer sites where incidence rates were observed to significantly decline for non-Hispanic males. Significant increases were only observed for liver and intrahepatic bile duct and brain and other nervous system in Hispanic males; and melanoma of the skin in non-Hispanic males.

In Table 2, for every race/ethnic group of Illinois females, average annual age-adjusted cancer incidence rates were highest for invasive breast during 1994-1998. Lung and bronchus, and colon and rectum were the cancer sites with the next highest rates. Statistically significant declines were noted only for leukemias in white, Hispanic and non-Hispanic females. Cancer incidence rate increases were statistically significant for all sites combined, invasive breast, corpus and uterus, NOS, and kidney and renal pelvis for black females.

Figure 1.
Annual Percentage Change for Average Annual Age-adjusted Cancer Incidence Rates
All Invasive Cancer Sites and the Major Sites, All Races, Males
Illinois, 1994-1998

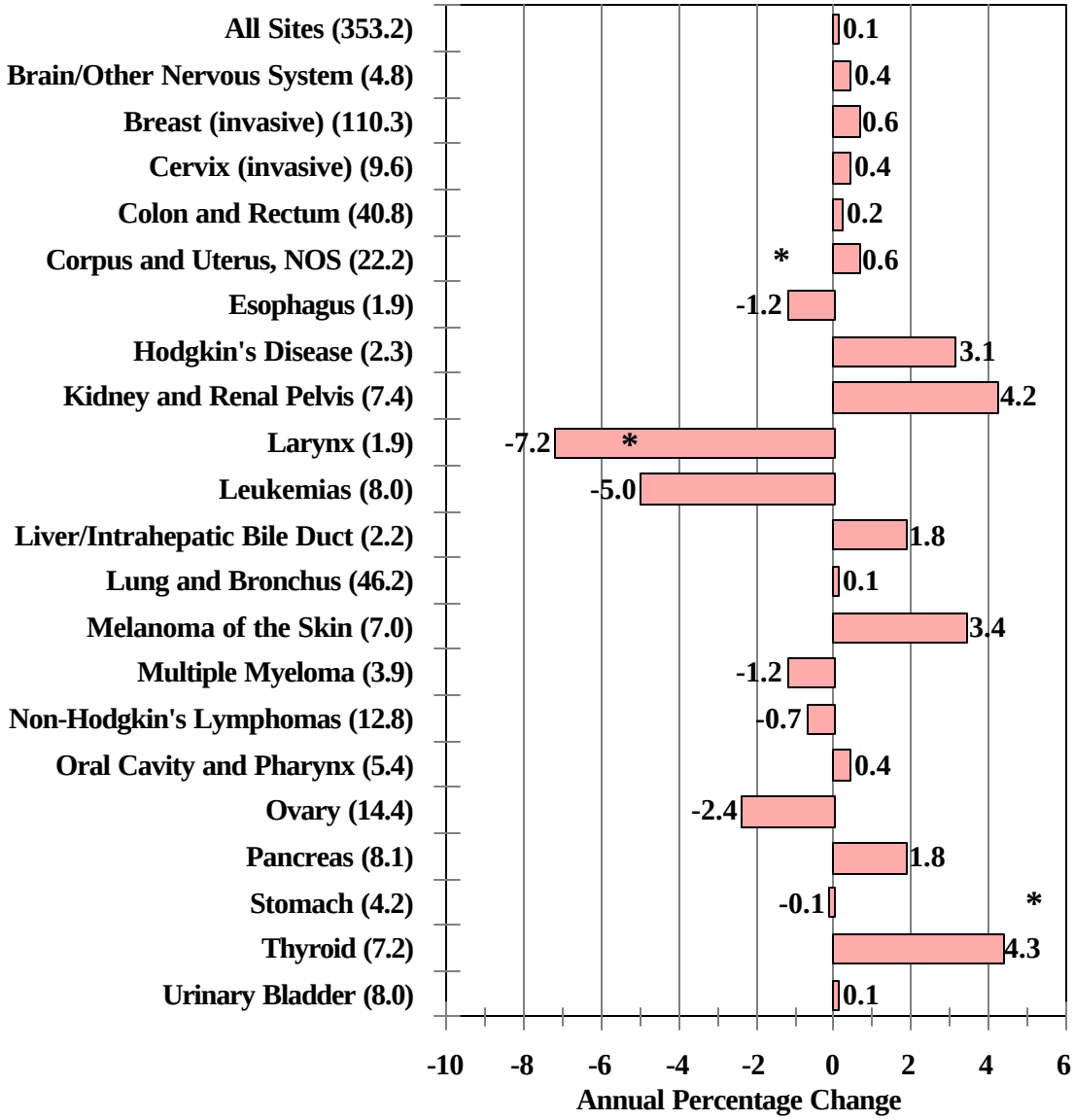
Site (Average annual incidence rates per 100,000 for 1994-1998 and age-adjusted to the 1970 U.S. standard million population)



*Annual percentage change is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

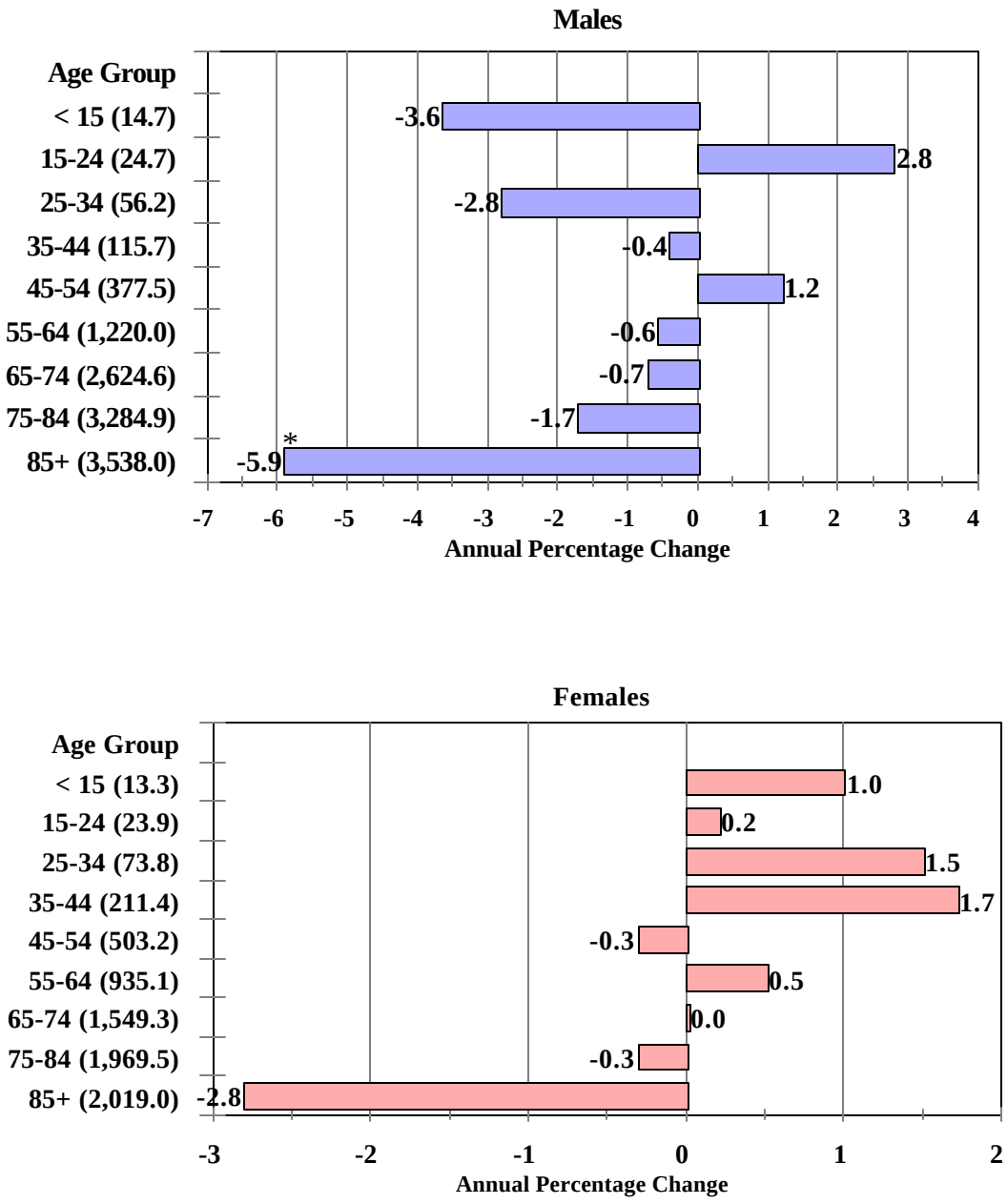
Figure 2.
Annual Percentage Change for Average Annual Age-adjusted Cancer Incidence Rates
All Invasive Cancers and the Major Sites, All Races, Females
Illinois, 1994-1998



Site (Average annual incidence rates per 100,000 for 1994-1998 and age-adjusted to the 1970 U.S. standard million population)
*Annual percentage change is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

Figure 3.
Annual Percentage Change for Age-specific Incidence Rates
All Cancer Sites by Sex, All Races
Illinois, 1994-1998



Age Group (Average annual age-specific rates per 100,000 for 1994-1998 and age-adjusted to the 1970 U.S. standard million population)
*Annual percentage change is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

Table 1. Invasive Cancer Incidence Rates and Trends by Race/Ethnicity, Illinois, 1994-1998 **INCIDENCE**

All Sites and Top 15 Cancer Sites for Males

Average Annual Age-adjusted Rate (AAR) and Annual Percentage Change (APC)

All Races	**Rate**	**APC**	**Whites**	**Rate**	**APC**	**Blacks**	**Rate**	**APC**
All Sites	469.1	-1.0	All Sites	449.8	-1.4	All Sites	593.7	-2.3
Prostate	129.4	-1.4	Prostate	119.1	-2.3	Prostate	198.7	-3.0
Lung and Bronchus	85.3	-2.8*	Lung and Bronchus	81.0	-3.1*	Lung and Bronchus	121.4	-2.5
Colon and Rectum	56.1	1.0	Colon and Rectum	55.0	0.5	Colon and Rectum	62.6	3.0
Urinary Bladder	29.6	1.0	Urinary Bladder	31.1	0.3	Oral Cavity and Pharynx	22.7	-1.9*
Non-Hodgkin's Lymphomas	18.1	1.0	Non-Hodgkin's Lymphomas	18.4	0.4	Stomach	17.8	-4.0*
Oral Cavity and Pharynx	14.4	-1.1	Kidney and Renal Pelvis	13.9	1.1	Esophagus	15.9	-8.0
Kidney and Renal Pelvis	13.9	1.4	Leukemias	13.4	-4.0*	Pancreas	14.7	-8.8*
Leukemias	13.2	-3.8*	Oral Cavity and Pharynx	13.2	-1.3	Larynx	14.4	0.5
Pancreas	10.7	-3.2*	Melanomas of the Skin	11.6	4.4	Non-Hodgkin's Lymphomas	14.2	1.2
Melanomas of the Skin	10.6	5.4*	Pancreas	10.2	-2.4	Kidney and Renal Pelvis	14.1	1.4
Stomach	9.9	-1.5	Stomach	8.8	-1.4	Urinary Bladder	13.6	2.8
Larynx	8.3	-2.6	Larynx	7.5	-3.5	Multiple Myeloma	12.1	-7.2*
Esophagus	8.0	-1.7	Brain and Other Nervous System	7.4	-2.9	Leukemias	10.9	-1.7
Brain and Other Nervous System	7.0	-1.6	Esophagus	7.1	-0.1	Liver and Intrahepatic Bile Duct	9.9	-1.9
Multiple Myeloma	5.7	-2.7	Liver and Intrahepatic Bile Duct	4.9	2.2	Brain and Other Nervous System	4.2	-2.8
Asian/Other Races	**Rate**	**APC**	**Hispanics#**	**Rate**	**APC**	**Non-Hispanics#**	**Rate**	**APC**
All Sites	271.6	2.0	All Sites	295.9	-1.7	All Sites	477.3	-0.9
Prostate	59.6	-3.0	Prostate	90.7	-5.1	Prostate	131.2	-1.2
Lung and Bronchus	45.4	8.0	Lung and Bronchus	37.2	-3.1	Lung and Bronchus	87.6	-2.6*
Colon and Rectum	36.8	-1.7	Colon and Rectum	30.5	-0.2	Colon and Rectum	57.2	1.2
Stomach	14.4	10.1	Non-Hodgkin's Lymphomas	15.3	-2.1	Urinary Bladder	30.4	1.1
Liver and Intrahepatic Bile Duct	13.6	-2.2	Urinary Bladder	12.8	2.9	Non-Hodgkin's Lymphomas	18.2	1.4
Non-Hodgkin's Lymphomas	11.2	-0.2	Kidney and Renal Pelvis	12.5	1.7	Oral Cavity and Pharynx	14.8	-1.3
Urinary Bladder	11.2	2.1	Stomach	12.1	-6.2	Kidney and Renal Pelvis	14.0	1.3
Oral Cavity and Pharynx	10.8	5.5	Oral Cavity and Pharynx	9.4	11.2	Leukemias	13.2	-3.9*
Pancreas	8.7	-8.0	Leukemias	8.9	1.4	Melanomas of the Skin	11.2	5.6*
Leukemias	7.9	9.1	Liver and Intrahepatic Bile Duct	7.8	25.9*	Pancreas	10.9	-3.0*
Kidney and Renal Pelvis	7.4	1.9	Pancreas	7.1	-3.6	Stomach	9.8	-1.3
Brain and Other Nervous System	5.3	43.3	Esophagus	5.3	-11.3	Larynx	8.5	-2.3
Multiple Myeloma	5.2	-13.5	Larynx	5.0	-5.6	Esophagus	8.2	-1.5
Esophagus	4.2	2.3	Brain and Other Nervous System	4.3	8.8*	Brain and Other Nervous System	7.1	-2.2
Thyroid	3.4	21.5	Multiple Myeloma	3.6	-8.0	Multiple Myeloma	5.8	-2.5

Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population. ~ Statistic could not be calculated.

* The APC is significantly different from zero ($p<0.05$). # Hispanics/non-Hispanics are not mutually exclusive from whites, blacks and Asian/other races.

SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

Table 2. Invasive Cancer Incidence Rates and Trends by Race/Ethnicity, Illinois, 1994-1998 **INCIDENCE**

All Sites and Top 15 Cancer Sites for Females

Average Annual Age-adjusted Rate (AAR) and Annual Percentage Change (APC)

All Races	**Rate**	**APC**	**Whites**	**Rate**	**APC**	**Blacks**	**Rate**	**APC**
All Sites	353.2	0.1	All Sites	351.2	-0.3	All Sites	359.1	0.9*
Breast	110.3	0.6	Breast	110.9	-0.1	Breast	102.3	3.2*
Lung and Bronchus	46.2	-0.1	Lung and Bronchus	45.4	0.0	Lung and Bronchus	53.9	-1.0
Colon and Rectum	40.8	0.2	Colon and Rectum	39.6	-0.1	Colon and Rectum	48.1	2.1
Corpus and Uterus, NOS	22.2	0.6	Corpus and Uterus, NOS	23.3	-0.0	Invasive Cervix	16.3	-6.1
Ovary	14.4	-2.4	Ovary	15.0	-2.4	Corpus and Uterus, NOS	15.8	6.2*
Non-Hodgkin's Lymphomas	12.8	-0.7	Non-Hodgkin's Lymphomas	13.2	-0.9	Pancreas	11.2	1.6
Invasive Cervix	9.6	0.4	Invasive Cervix	8.5	2.7	Ovary	10.8	-4.2
Pancreas	8.1	1.8	Urinary Bladder	8.2	0.0	Non-Hodgkin's Lymphomas	8.4	0.6
Urinary Bladder	8.0	-0.1	Leukemias	8.1	-6.1*	Multiple Myeloma	8.3	2.6
Leukemias	8.0	-5.0*	Melanomas of the Skin	7.8	2.2	Stomach	7.9	6.0
Kidney and Renal Pelvis	7.4	4.2	Pancreas	7.7	2.0	Kidney and Renal Pelvis	7.8	5.7*
Thyroid	7.2	4.3*	Thyroid	7.5	3.6	Leukemias	6.5	0.8
Melanomas of the Skin	7.0	3.4	Kidney and Renal Pelvis	7.4	3.4	Urinary Bladder	6.4	-3.5
Oral Cavity and Pharynx	5.4	0.4	Brain and Other Nervous System	5.1	1.7	Oral Cavity and Pharynx	6.1	-3.8
Brain and Other Nervous System	4.8	0.4	Oral Cavity and Pharynx	5.1	1.1	Esophagus	4.7	-1.4
Asian/Other Races	**Rate**	**APC**	**Hispanics#**	**Rate**	**APC**	**Non-Hispanics#**	**Rate**	**APC**
All Sites	215.3	1.3	All Sites	255.6	-1.7	All Sites	357.4	0.2
Breast	62.4	6.7	Breast	71.5	-0.3	Breast	112.1	0.7
Colon and Rectum	26.0	-0.9	Colon and Rectum	26.3	-8.0	Lung and Bronchus	47.3	0.0
Lung and Bronchus	17.4	0.0	Lung and Bronchus	22.7	-0.4	Colon and Rectum	41.3	0.5
Corpus and Uterus, NOS	10.5	-5.7	Invasive Cervix	16.9	-1.3	Corpus and Uterus, NOS	22.6	0.6
Invasive Cervix	10.3	-12.2	Corpus and Uterus, NOS	13.3	5.2	Ovary	14.5	-1.9
Stomach	9.7	-5.4	Ovary	11.3	-6.3	Non-Hodgkin's Lymphomas	12.9	-0.5
Thyroid	9.4	0.9	Non-Hodgkin's Lymphomas	10.1	-6.8	Invasive Cervix	9.2	0.4
Non-Hodgkin's Lymphomas	9.0	-15.3	Leukemias	7.6	-8.7*	Urinary Bladder	8.2	-0.1
Ovary	8.8	-3.0	Thyroid	7.1	7.4	Pancreas	8.2	1.9
Leukemias	6.0	-7.0	Kidney and Renal Pelvis	6.5	-3.0	Leukemias	7.9	-4.8*
Pancreas	5.3	-13.8	Stomach	6.1	-2.6	Kidney and Renal Pelvis	7.5	4.7
Oral Cavity and Pharynx	4.5	9.7	Pancreas	6.0	-5.2	Melanomas of the Skin	7.3	3.8
Urinary Bladder	3.7	-11.9	Urinary Bladder	5.1	0.2	Thyroid	7.2	3.8
Kidney and Renal Pelvis	3.6	22.4	Multiple Myeloma	4.6	5.5	Oral Cavity and Pharynx	5.5	0.2
Liver and Intrahepatic Bile Duct	3.6	7.1	Liver and Intrahepatic Bile Duct	4.3	-3.7	Brain and Other Nervous System	4.9	0.8

Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population. ~ Statistic could not be calculated.

* The APC is significantly different from zero ($p<0.05$). # Hispanics/non-Hispanics are not mutually exclusive from whites, blacks and Asian/other races.

SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

Illinois Cancer Mortality

Figures 4 and 5 present average annual age-adjusted rates and trends expressed as APC from 1994 through 1998 for cancer mortality from all cancer sites and specific sites by alphabetical listing for Illinois' males and females, respectively. Trend analyses showed statistically significant declines in Illinois cancer mortality rates from all sites combined for males of 2.2 percent per year and for females of 1.2 percent per year. Site-specific, age-adjusted cancer death rates were observed to significantly decline among males for lung and bronchus, non-Hodgkin's lymphomas and prostate (Figure 4). Among Illinois females (Figure 5), significant decreases were observed for annual age-adjusted mortality rates for breast, and colon and rectum. No statistically significant, site-specific age-adjusted cancer mortality rate increases were evident among Illinois males or females of all races from 1994 through 1998.

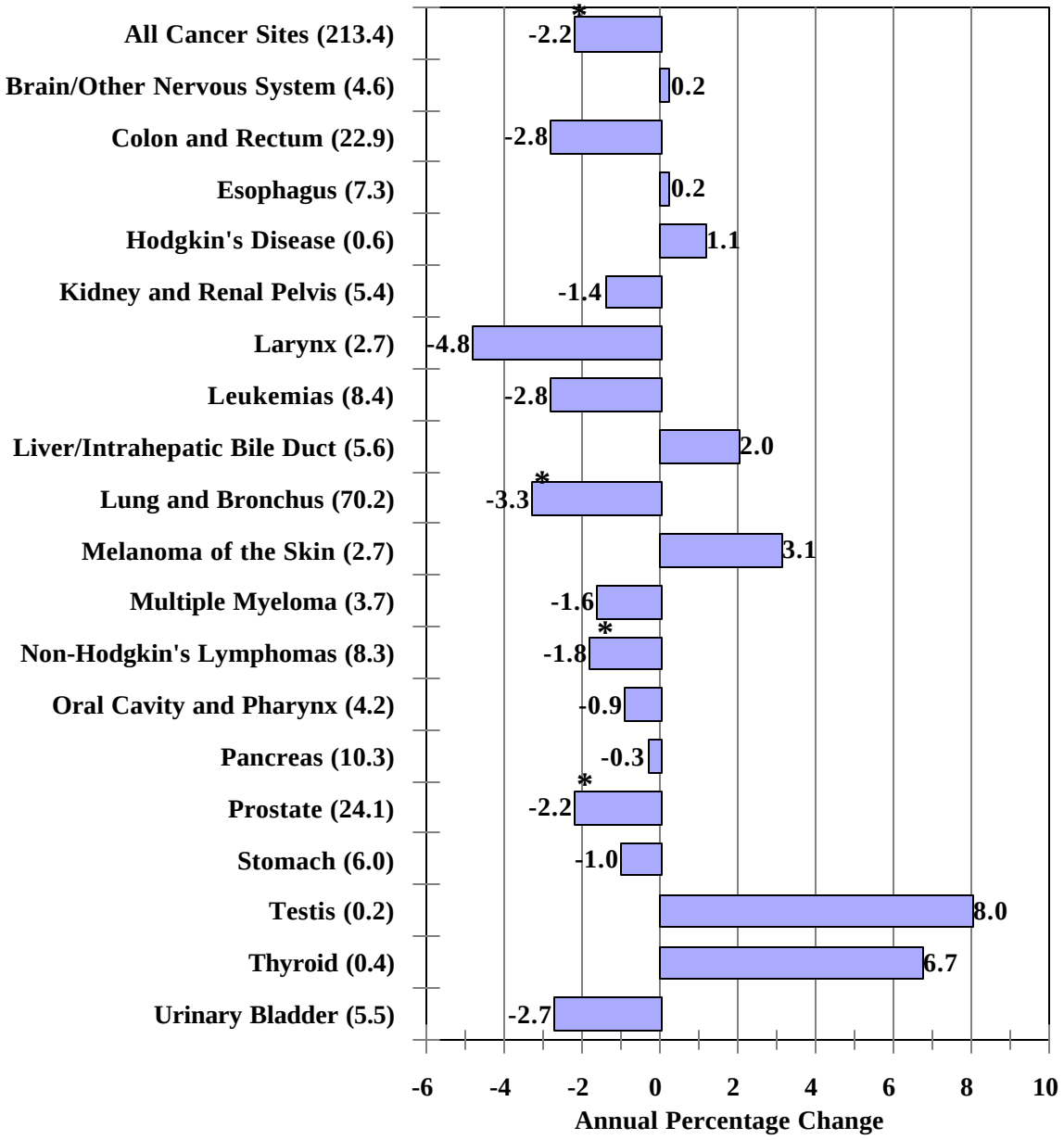
Figure 6 presents average annual age-specific cancer mortality rates for all cancer sites and APCs from 1994 through 1998 for Illinois males and females of all races. As shown, average annual age-specific rates for all cancer deaths progressively increased from the youngest to the oldest age groups for both gender groups. For Illinois males, APCs for age-specific cancer mortality rates from all sites were observed to decline for all selected age groups with the exception of age group 15-24. However, the trends were only statistically significant for age groups 25-34, 55-64, 65-74 and 75-84. For Illinois females, although a statistically significant decline in annual cancer mortality rates from all cancer was observed from 1994 through 1998, only a significant APC decrease was seen for females in age group 75-84. Significant increases were seen in two younger age groups, 15-24 and 25-34.

Tables 3 and 4 present statistics for all cancer deaths and the top 15 cancer mortality sites ranked in descending order by average annual age-adjusted rates, 1994-1998, in all races, whites, blacks and Asian/other races as well as Hispanics and non-Hispanics for males and females, respectively. As shown, higher average annual age-adjusted cancer mortality rates were observed for males than females in every race/ethnic group. Black males and black females had the highest cancer mortality rates from all sites combined compared with their respective race counterparts. In contrast, Asian/other races, both males and females, had the lowest cancer mortality rates among race groups. Hispanic males and females had lower cancer mortality rates than their non-Hispanic counterparts in Illinois.

As shown in Table 3, the No. 1 cause of cancer death was from cancers of the lung and bronchus for all five race/ethnic groups of Illinois males during 1994-1998. The next highest cancer death rates were from prostate, and colon and rectum for all race/ethnic groups with the exception of Asian/other races. Interestingly, for this race group of Illinois males, liver and intrahepatic bile duct cancer deaths were No. 2 followed by deaths from cancers of the colon and rectum. Significant cancer mortality rate decreases were observed in all sites, lung and bronchus, colon and rectum, prostate and non-Hodgkin's lymphomas for white males; and, esophagus for black males. For cancer mortality rates in non-Hispanic males, all sites, lung and bronchus, prostate and non-Hodgkin's lymphomas declined significantly. Cancer mortality rates significantly increased for liver and intrahepatic bile duct, and brain and other nervous system only for Hispanic males.

For Illinois females, the No. 1 cancer-related death rate for 1994-1998 was lung and bronchus for whites, blacks and Asian/other race females as well as non-Hispanic females, followed by breast and then colon and rectum (Table 4). Only the breast cancer mortality rate ranked higher than lung and bronchus for Illinois' Hispanic female population. Cancer death rate declines were observed in all sites and breast for white females; in esophageal cancer for black females; and, all sites combined, breast, and colon and rectum for non-Hispanic females. Statistically significant age-adjusted mortality rates increases were observed in cancer of the liver and intrahepatic bile duct for white females and in leukemias for black females.

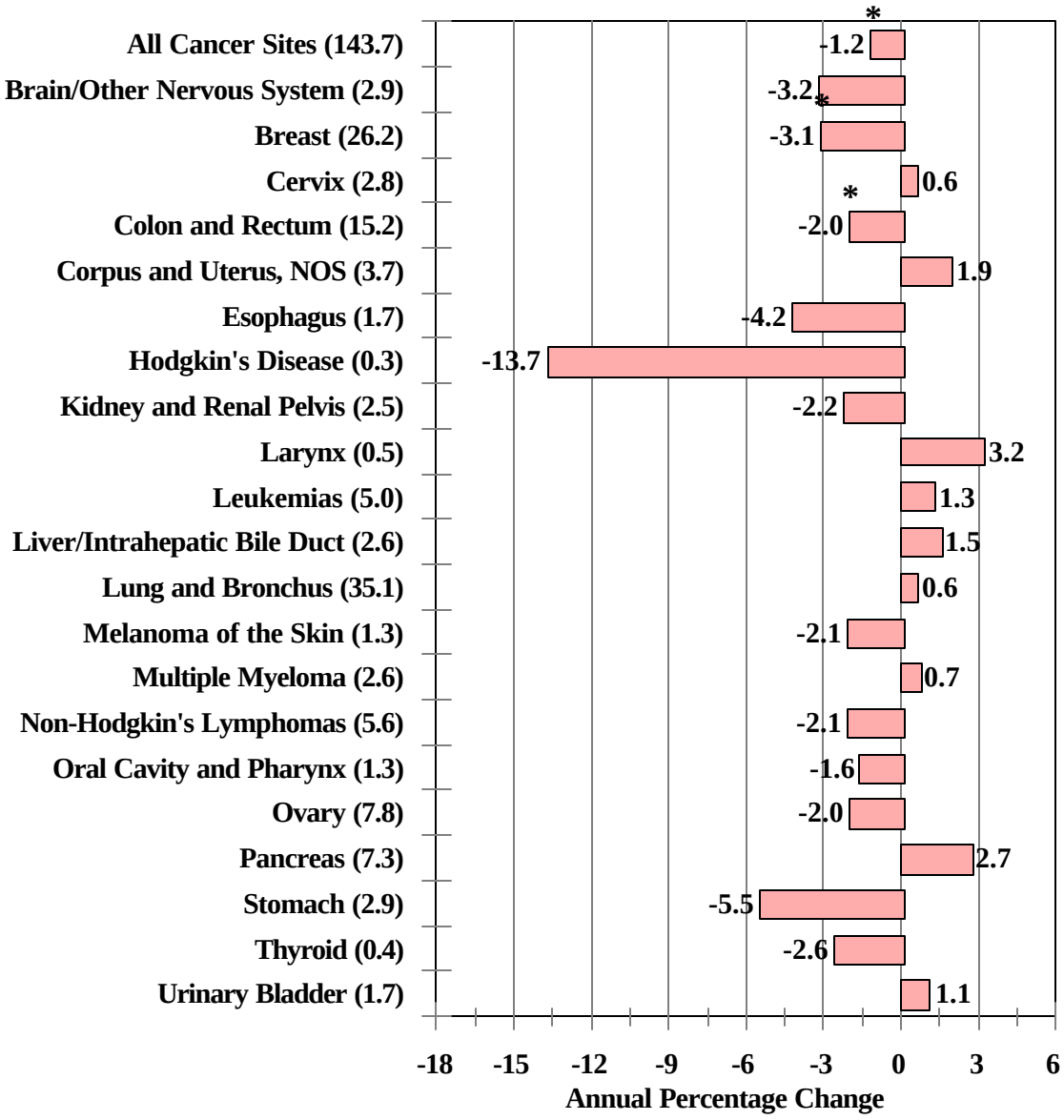
Figure 4.
Annual Percentage Change for Average Annual Age-adjusted Cancer Mortality Rates
All Invasive Cancer Sites and the Major Sites, All Races, Males
Illinois, 1994-1998



Site (Average annual mortality rates per 100,000 for 1994-1998 and age-adjusted to the 1970 U.S. standard million population)
*Annual percentage change is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Death Master Files, 1994-1998

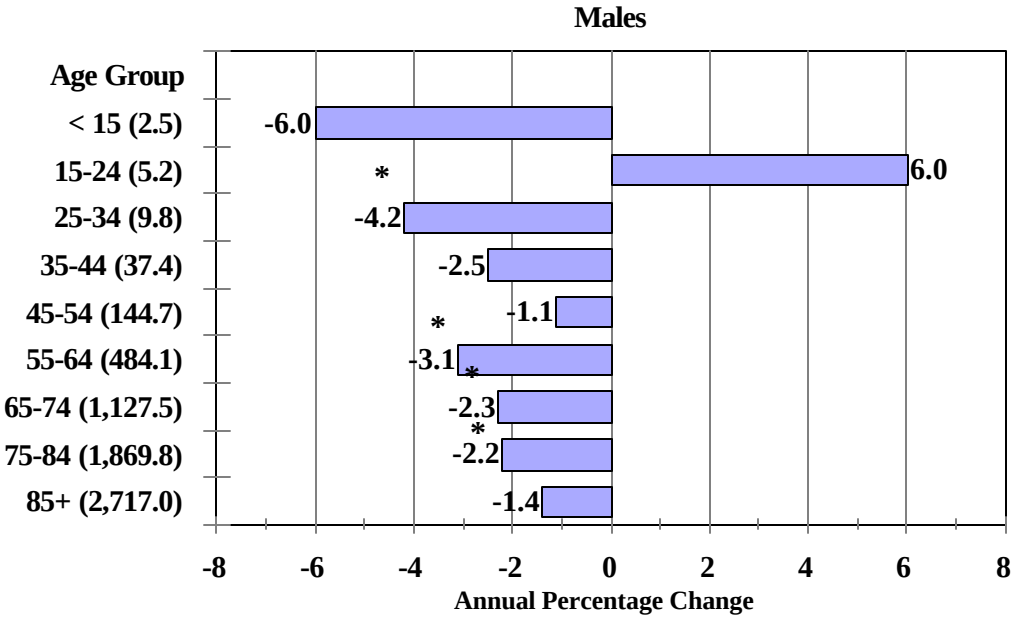
Figure 5.
Annual Percentage Change for Average Annual Age-adjusted Cancer Mortality Rates
All Invasive Cancers and the Major Sites, All Races, Females
Illinois, 1994-1998

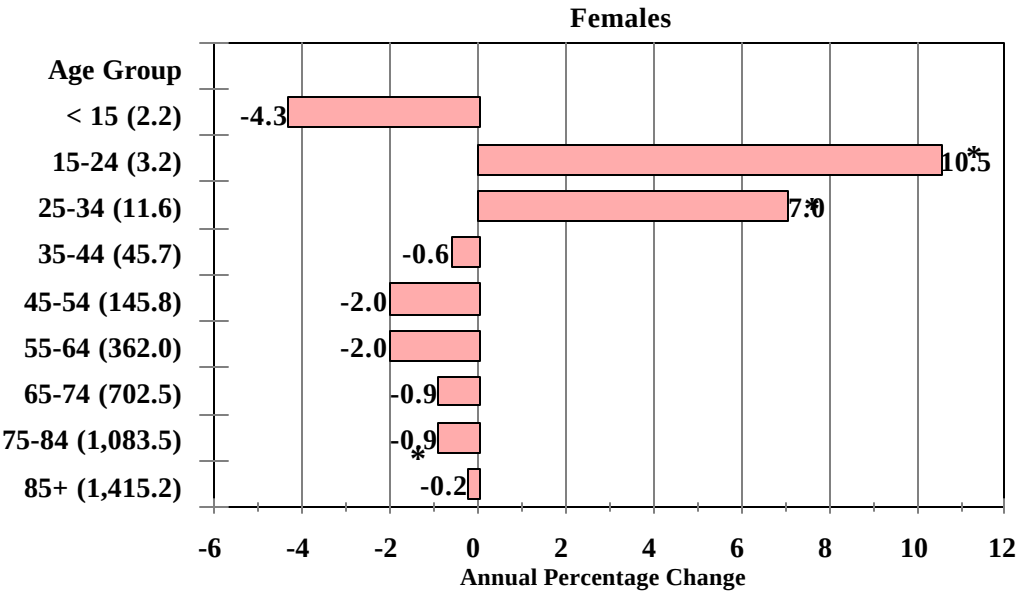


Site (Average annual mortality rates per 100,000 for 1994-1998 and age-adjusted to the 1970 U.S. standard million population)
*Annual percentage change is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Death Master Files, 1994-1998

Figure 6.
Annual Percentage Change (APC) for Age-specific Mortality Rates
All Cancer Sites by Sex, All Races
Illinois, 1994-1998





Age Group (Average annual age-specific rates per 100,000 for 1994-1998 and age-adjusted to the 1970 U.S. standard million population)
*APC is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Death Master Files, 1994-1998

Table 3. Cancer Mortality Rates and Trends by Race/Ethnicity, Illinois, 1994-1998 **MORTALITY**

All Sites and Top 15 Cancer Sites for Males

Average Annual Age-adjusted Rate (AAR) and Annual Percentage Change (APC)

All Races	**AAR**	**APC**	**Whites**	**AAR**	**APC**	**Blacks**	**AAR**	**APC**
All Sites	213.4	-2.2*	All Sites	202.8	-2.3*	All Sites	319.7	-1.9
Lung and Bronchus	70.2	-3.3*	Lung and Bronchus	66.6	-3.5*	Lung and Bronchus	107.3	-2.8
Prostate	24.1	-2.2*	Colon and Rectum	22.2	-3.6*	Prostate	51.4	-2.1
Colon and Rectum	22.9	-2.8	Prostate	21.5	-2.4*	Colon and Rectum	30.9	1.8
Pancreas	10.3	-0.3	Pancreas	9.9	0.2	Pancreas	14.6	-3.1
Leukemias	8.4	-2.8	Non-Hodgkin's Lymphomas	8.5	-1.8*	Esophagus	13.2	-5.9*
Non-Hodgkin's Lymphomas	8.3	-1.8*	Leukemias	8.5	-3.0	Stomach	12.0	4.5
Esophagus	7.3	0.2	Esophagus	6.6	2.1	Liver and Intrahepatic Bile Duct	10.0	1.8
Stomach	6.0	-1.0	Urinary Bladder	5.8	-2.8	Oral Cavity and Pharynx	8.4	-5.9
Liver and Intrahepatic Bile Duct	5.6	2.0	Kidney and Renal Pelvis	5.3	-1.0	Leukemias	8.1	-3.2
Urinary Bladder	5.5	-2.7	Stomach	5.2	-1.9	Multiple Myeloma	8.1	4.0
Kidney and Renal Pelvis	5.4	-1.4	Brain and Other Nervous System	5.0	1.0	Non-Hodgkin's Lymphomas	6.7	-2.3
Brain and Other Nervous System	4.6	0.2	Liver and Intrahepatic Bile Duct	4.9	2.4	Larynx	6.5	-5.2
Oral Cavity and Pharynx	4.2	-0.9	Oral Cavity and Pharynx	3.6	0.4	Kidney and Renal Pelvis	6.4	-4.4
Multiple Myeloma	3.7	-1.6	Multiple Myeloma	3.2	-3.3	Urinary Bladder	4.1	0.5
Melanomas of the Skin	2.7	3.1	Melanomas of the Skin	3.1	3.1	Brain and Other Nervous System	2.6	-7.2
Asian/Other Races	**AAR**	**APC**	**Hispanics#**	**AAR**	**APC**	**Non-Hispanics#**	**AAR**	**APC**
All Sites	90.4	-0.2	All Sites	102.2	-1.7	All Sites	218.1	-2.1*
Lung and Bronchus	22.1	0.4	Lung and Bronchus	23.8	-0.8	Lung and Bronchus	72.3	-3.2*
Liver and Intrahepatic Bile Duct	9.8	-7.7	Prostate	11.3	-3.0	Prostate	24.5	-2.1*
Colon and Rectum	9.1	6.4	Colon and Rectum	9.7	-0.7	Colon and Rectum	23.4	-2.7
Stomach	8.1	-13.4	Liver and Intrahepatic Bile Duct	6.9	16.8*	Pancreas	10.5	-0.1
Pancreas	6.2	-6.5	Stomach	6.0	-12.2	Leukemias	8.6	-2.7
Prostate	6.0	17.8	Non-Hodgkin's Lymphomas	5.2	-7.9	Non-Hodgkin's Lymphomas	8.4	-1.4*
Non-Hodgkin's Lymphomas	4.4	9.2	Pancreas	5.1	-6.4	Esophagus	7.4	0.2
Leukemias	3.3	6.6	Leukemias	4.2	-7.1	Stomach	6.0	-0.6
Multiple Myeloma	2.4	10.3	Kidney and Renal Pelvis	4.2	-1.2	Urinary Bladder	5.7	-2.2
Esophagus	2.4	~	Esophagus	3.5	6.9	Liver and Intrahepatic Bile Duct	5.5	1.1
Kidney and Renal Pelvis	2.3	-8.3	Multiple Myeloma	2.5	-0.5	Kidney and Renal Pelvis	5.5	-1.4
Oral Cavity and Pharynx	2.3	-1.8	Brain and Other Nervous System	2.0	29.5*	Brain and Other Nervous System	4.8	-0.2
Brain and Other Nervous System	1.7	6.2	Oral Cavity and Pharynx	2.0	2.0	Oral Cavity and Pharynx	4.3	-0.8
Larynx	1.1	~	Larynx	1.8	-1.4	Multiple Myeloma	3.8	-1.5
Hodgkin's Disease	0.7	~	Urinary Bladder	1.5	-27.2	Melanomas of the Skin	2.8	3.2

AARs are per 100,000 and are age-adjusted to the 1970 U.S. standard million population. ~ Statistic could not be calculated.

Hispanics/non-Hispanics are not mutually exclusive from whites, blacks and Asian/other races. * The APC is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Death Master Files, 1994-1998

Table 4. Cancer Mortality Rates and Trends by Race/Ethnicity, Illinois, 1994-1998 **MORTALITY**
All Sites and Top 15 Cancer Sites for Females
Average Annual Age-adjusted Rate (AAR) and Annual Percentage Change (APC)

All Races	**AAR**	**APC**	**Whites**	**AAR**	**APC**	**Blacks**	**AAR**	**APC**
All Sites	143.7	-1.2*	All Sites	139.5	-1.3*	All Sites	185.4	0.0
Lung and Bronchus	35.1	0.6	Lung and Bronchus	34.3	0.5	Lung and Bronchus	44.4	1.2
Breast	26.2	-3.1*	Breast	25.4	-3.3*	Breast	33.9	-2.1
Colon and Rectum	15.2	-2.0*	Colon and Rectum	14.4	-2.0	Colon and Rectum	22.0	-0.1
Ovary	7.8	-2.0	Ovary	8.1	-2.6	Pancreas	9.8	5.0
Pancreas	7.3	2.7	Pancreas	7.1	2.2	Ovary	6.3	5.0
Non-Hodgkin's Lymphomas	5.6	-2.1	Non-Hodgkin's Lymphomas	5.9	-1.8	Cervix	6.3	-6.3
Leukemias	5.0	1.3	Leukemias	5.0	-0.0	Corpus and Uterus, NOS	6.0	-0.2
Corpus and Uterus, NOS	3.7	1.9	Corpus and Uterus, NOS	3.5	2.0	Stomach	5.4	0.2
Brain and Other Nervous System	2.9	-3.2	Brain and Other Nervous System	3.2	-2.7	Multiple Myeloma	5.3	3.7
Stomach	2.9	-5.5	Kidney and Renal Pelvis	2.5	-2.1	Leukemias	5.2	12.4*
Cervix	2.8	0.6	Stomach	2.5	-7.9	Liver and Intrahepatic Bile Duct	4.0	-1.8
Multiple Myeloma	2.6	0.7	Liver and Intrahepatic Bile Duct	2.4	2.7*	Esophagus	4.0	-12.9*
Liver and Intrahepatic Bile Duct	2.6	1.5	Cervix	2.3	2.6	Non-Hodgkin's Lymphomas	3.8	-2.0
Kidney and Renal Pelvis	2.5	-2.2	Multiple Myeloma	2.3	0.0	Kidney and Renal Pelvis	2.8	-6.0
Urinary Bladder	1.7	1.1	Urinary Bladder	1.6	1.5	Urinary Bladder	2.8	-3.2
Asian/Other Races	**AAR**	**APC**	**Hispanics#**	**AAR**	**APC**	**Non-Hispanics**	**AAR**	**APC**
All Sites	61.9	-1.6	All Sites	73.4	-4.7	All Sites	146.6	-1.0*
Lung and Bronchus	10.6	-4.3	Breast	13.5	-7.0	Lung and Bronchus	36.2	0.8
Breast	9.2	-4.7	Lung and Bronchus	9.2	-9.8	Breast	26.8	-2.9*
Colon and Rectum	7.3	-6.8	Colon and Rectum	6.4	-4.5	Colon and Rectum	15.5	-1.8*
Stomach	5.1	-4.1	Ovary	4.2	-1.4	Ovary	7.9	-1.8
Pancreas	4.0	-5.0	Leukemias	4.1	-2.2	Pancreas	7.4	2.8
Liver and Intrahepatic Bile Duct	3.7	-2.8	Pancreas	4.0	-4.3	Non-Hodgkin's Lymphomas	5.6	-1.9
Ovary	2.8	-5.9	Cervix	3.4	7.4	Leukemias	5.0	1.6
Leukemias	2.3	4.5	Liver and Intrahepatic Bile Duct	3.4	7.0	Corpus and Uterus, NOS	3.8	2.1
Non-Hodgkin's Lymphomas	1.7	-29.2	Non-Hodgkin's Lymphomas	3.4	-7.7	Brain and Other Nervous System	3.0	-2.5
Cervix	1.7	~	Stomach	2.8	9.9	Stomach	2.8	-6.2
Corpus and Uterus, NOS	1.5	~	Multiple Myeloma	1.9	10.0	Cervix	2.8	-0.1
Kidney and Renal Pelvis	1.1	~	Corpus and Uterus, NOS	1.7	2.8	Multiple Myeloma	2.6	0.9
Multiple Myeloma	0.9	~	Kidney and Renal Pelvis	1.6	-22.4	Liver and Intrahepatic Bile Duct	2.6	1.0
Oral Cavity and Pharynx	0.9	~	Brain and Other Nervous System	1.5	-6.8	Kidney and Renal Pelvis	2.5	-1.7
Urinary Bladder	0.9	~	Esophagus	1.0	-28.1	Urinary Bladder	1.8	0.9

AARs are per 100,000 and are age-adjusted to the 1970 U.S. standard million population. ~ Statistic could not be calculated.
Hispanics/non-Hispanics are not mutually exclusive from whites, blacks and Asian/other races. * The APC is significantly different from zero ($p<0.05$).
SOURCE: Illinois Department of Public Health, Death Master Files, 1994-1998

Cancer Control Site-specific Evaluations

Colon and Rectum

Figures 7 through 17 display detailed information on colorectal cancer among Illinoisans for years 1994-1998. Figures 7 and 8 present average annual age-adjusted colorectal cancer incidence rates and APCs by race and Hispanic ethnicity for males and females, respectively. On average, colorectal cancer incidence rates were approximately 25 percent higher for males than females. As shown, black males and females had the highest average annual age-adjusted colorectal cancer incidence rates followed by their white counterparts. Males and females of Asian/other races had the lowest colorectal cancer incidence rates. With respect to ethnicity, the rates for Hispanics were approximately half those observed for non-Hispanics. None of the APCs shown in Figures 7 and 8 were statistically significant from zero for any race or ethnic group.

The gradual increase in colorectal cancer incidence rates with age is apparent for both males and females in Figures 9 and 10 . Lower average annual age-specific rates were apparent for females compared with males in every age strata. APCs, 1994-1998, were not significantly different from zero for any age group of males or females.

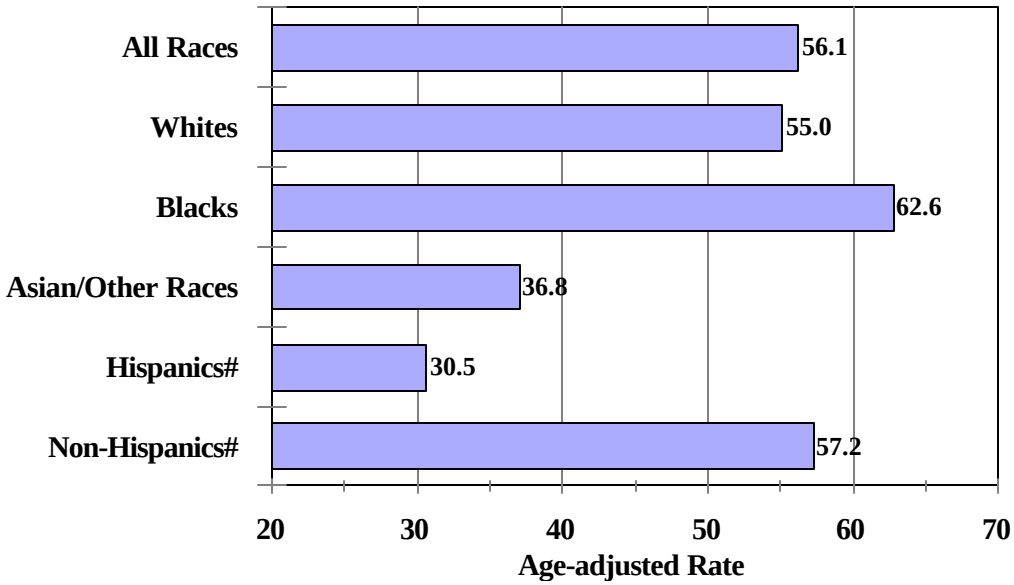
Figures 11 and 12 display the percentage distribution by stage of colorectal cancer at diagnosis, 1994-1998, for males and females, respectively. About one-third of cases were diagnosed in the localized or early stage, which carries a more favorable prognosis. Black and Asian/other race males were diagnosed less frequently in the localized stage than white males (Figure 11). Among females, blacks had proportionately fewer cases diagnosed in the localized stage than their white or Asian/other races counterparts (Figure 12). Both black males and females were diagnosed more frequently at the distant or late stage of diagnosis than either of the other two race groups. There was little difference in the percentage distribution by stage at diagnosis of colorectal cancer between Hispanics and non-Hispanics, male and females.

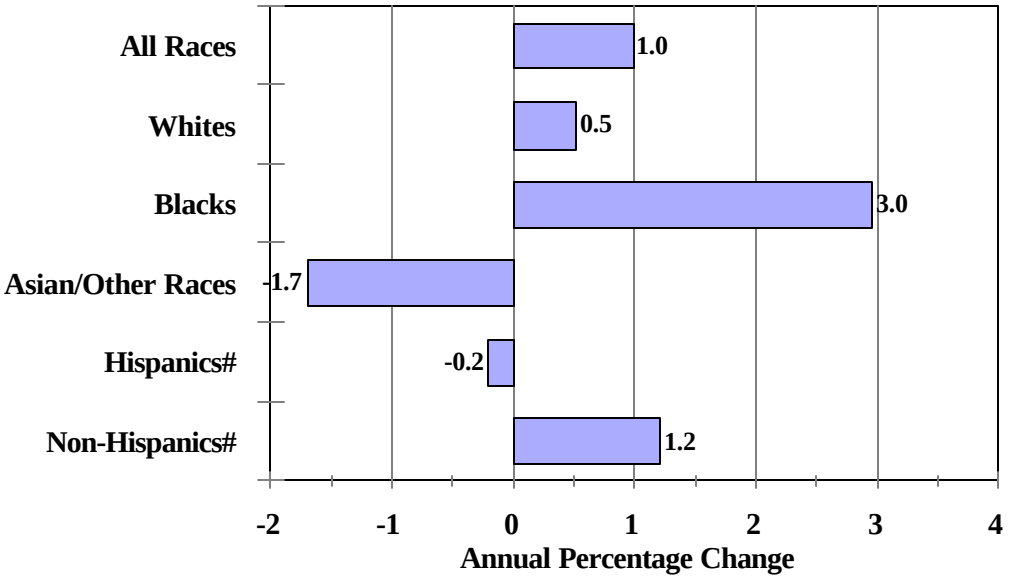
The patterns for colorectal cancer mortality, 1994-1998, by sex and race/ethnicity presented in Figures 13 and 14 were similar to those observed for colorectal cancer incidence. That is, males had higher average annual age-adjusted rates of colorectal cancer mortality than did females for every race/ethnicity group. Blacks had the highest and Asian/other races had the lowest average annual age-adjusted mortality rates within race-sex comparisons. Colorectal cancer mortality rates were lower for Hispanics than non-Hispanics, both males and females. In Figure 13, a statistically significant decline in colorectal cancer mortality of 3.6 percent per year was evident for white males. The colorectal cancer mortality rate APCs were in the negative direction for every race/ethnicity group of Illinois females but were only statistically significant for analyses including females of all races and non-Hispanics (Figure 14).

Colorectal cancer mortality rates increase with age as demonstrated for both males and females in Figures 15 and 16, respectively. Lower colorectal cancer mortality rates were observed for females than males in every age group. No significant APCs were apparent in any age-group for either sex.

Figure 17 presents BRFSS data on the use of home blood stool tests obtained by interviewing Illinois residents during 1999. More females reported using the screening method than did males. Whites reported the use of the home blood stool test kits more often than blacks. Usage appeared to progressively increase until age 65 when it dropped slightly. No remarkable differences were evident among income or education strata in the survey responses for 1999.

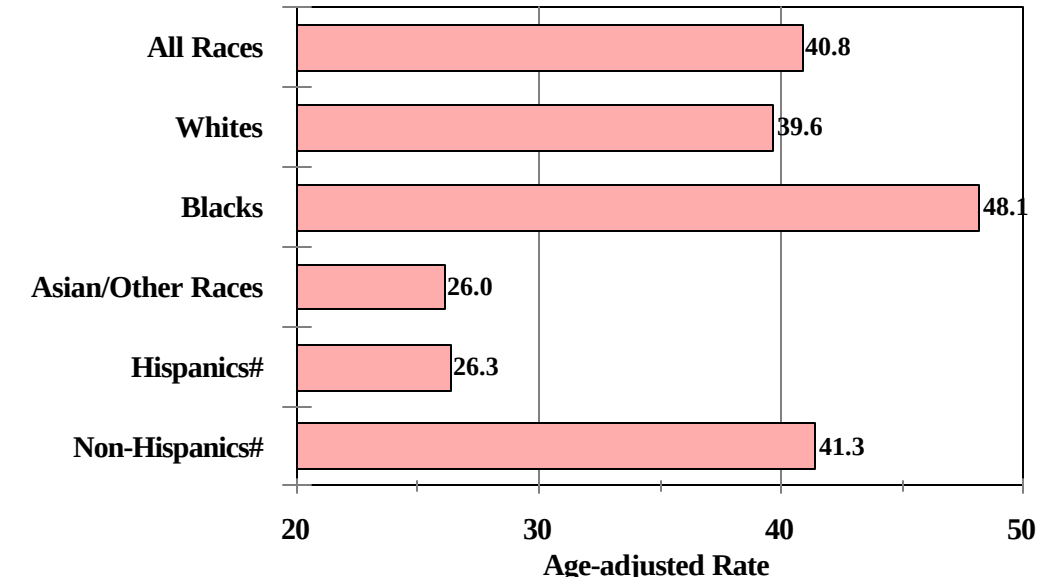
Figure 7.
Average Annual Age-adjusted Cancer Incidence Rates and Annual Percentage Changes
Colon and Rectum, Males, by Race/Ethnicity
Illinois, 1994-1998

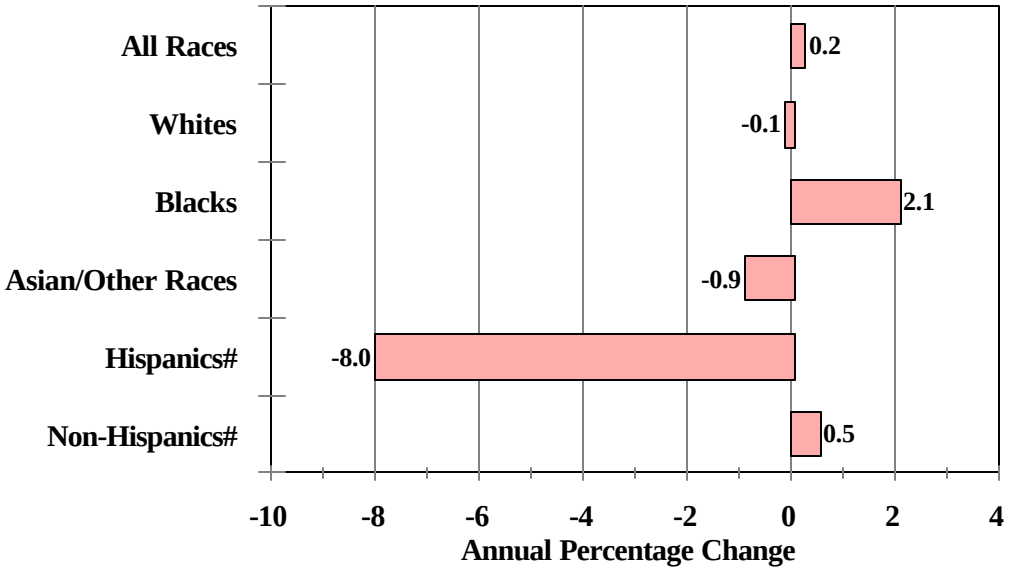




Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).
#Hispanics/non-Hispanics are not mutually exclusive from all races, whites, blacks and Asian/other races.
SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

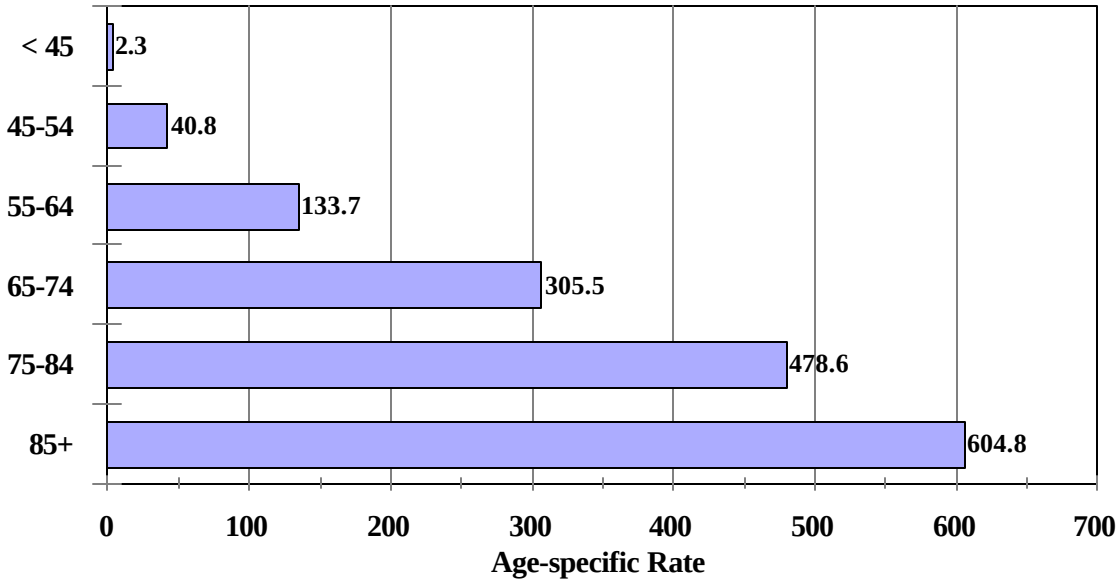
Figure 8.
Average Annual Age-adjusted Cancer Incidence Rates and Annual Percentage Changes
Colon and Rectum, Females, by Race/Ethnicity
Illinois, 1994-1998

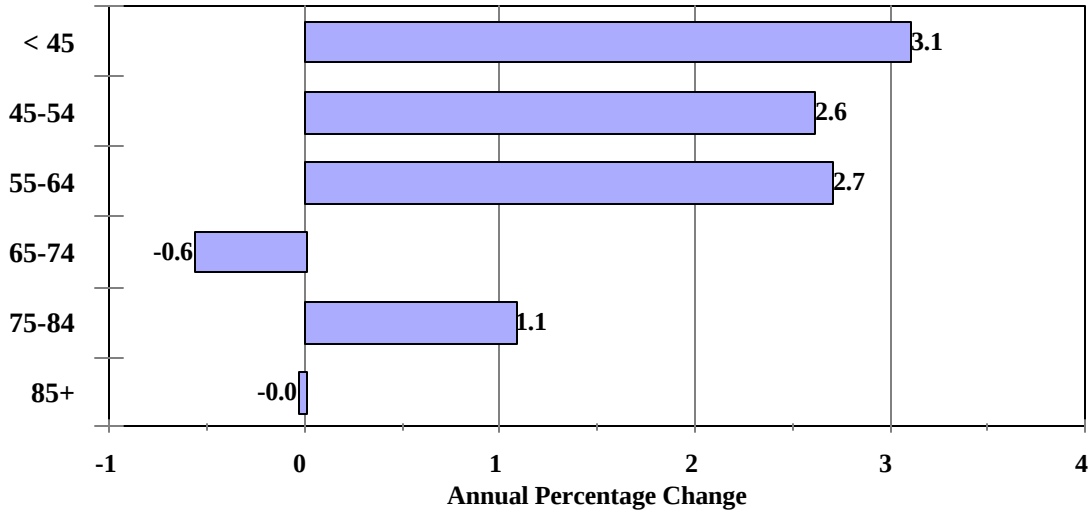




Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).
#Hispanics/non-Hispanics are not mutually exclusive from all races, whites, blacks and Asian/other races.
SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

Figure 9.
Average Annual Age-specific Cancer Incidence Rates and Annual Percentage Changes
Colon and Rectum, Males, All Races
Illinois, 1994-1998

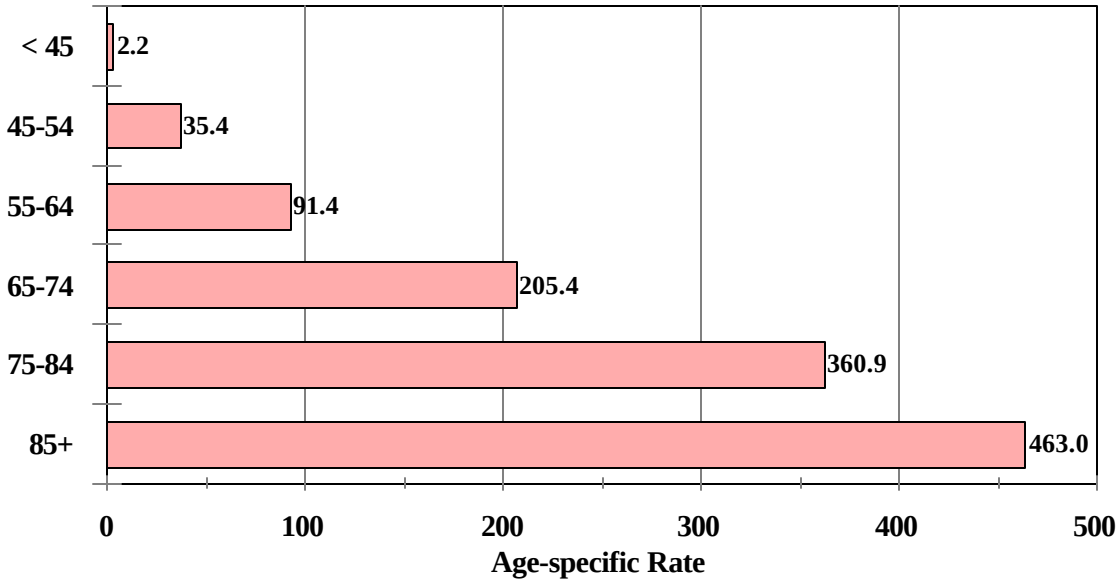


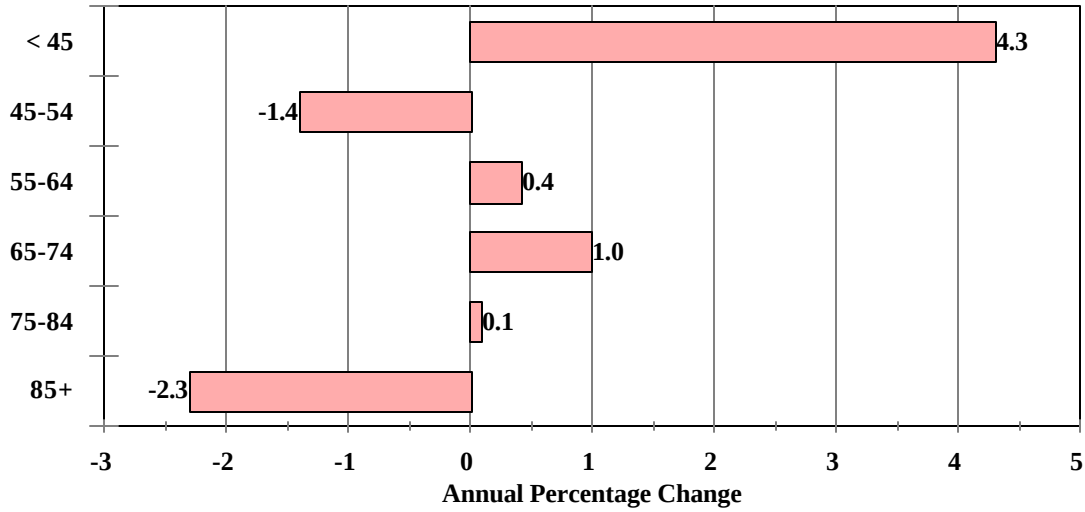


Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

Figure 10.
Average Annual Age-specific Cancer Incidence Rates and Annual Percentage Changes
Colon and Rectum, Females, All Races
Illinois, 1994-1998

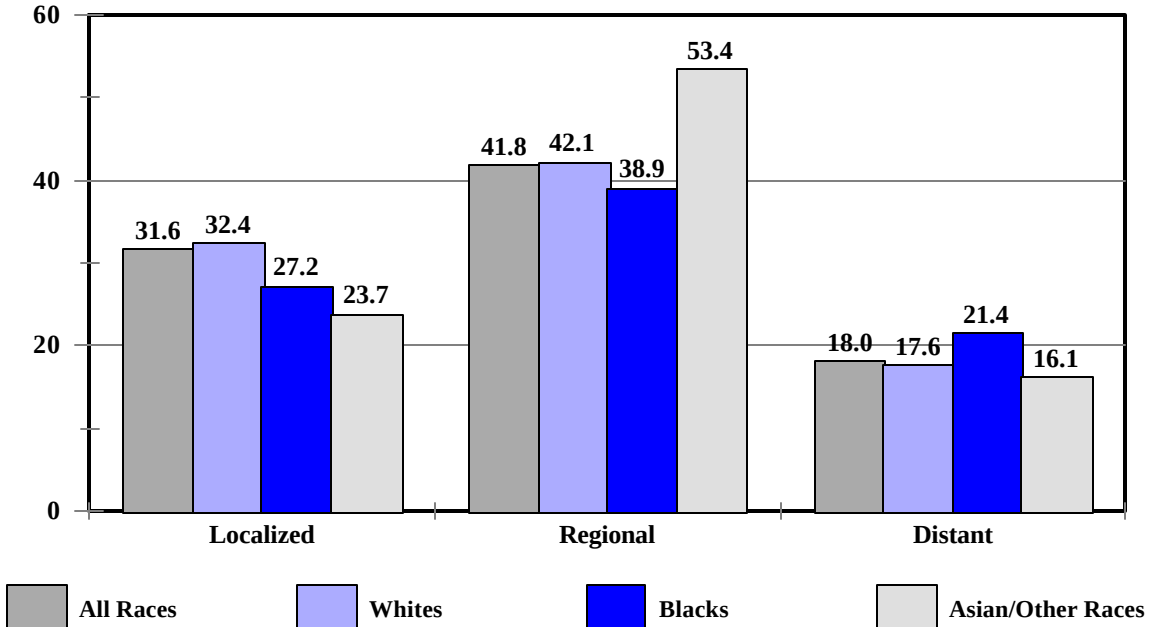


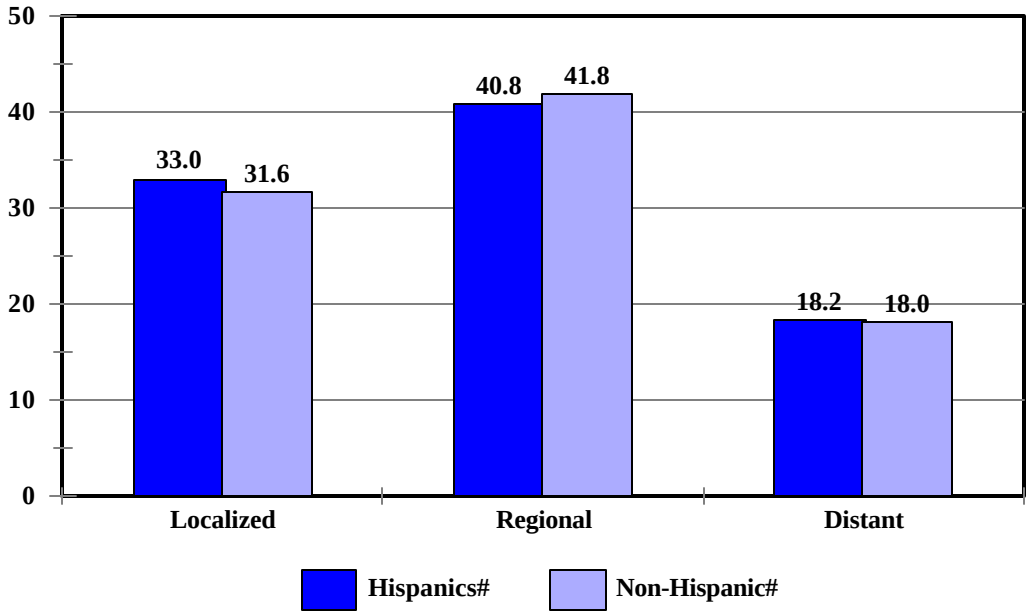


Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

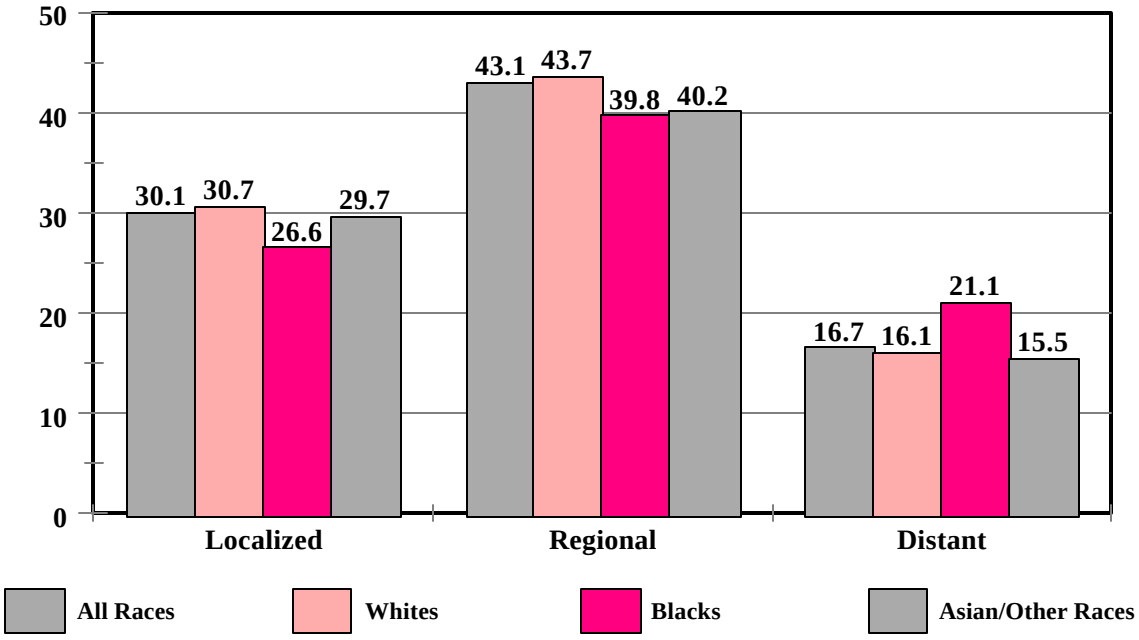
Figure 11.
Percentage Distribution by Stage at Cancer Diagnosis
Colon and Rectum, Males, by Race/Ethnicity, Illinois, 1994-1998

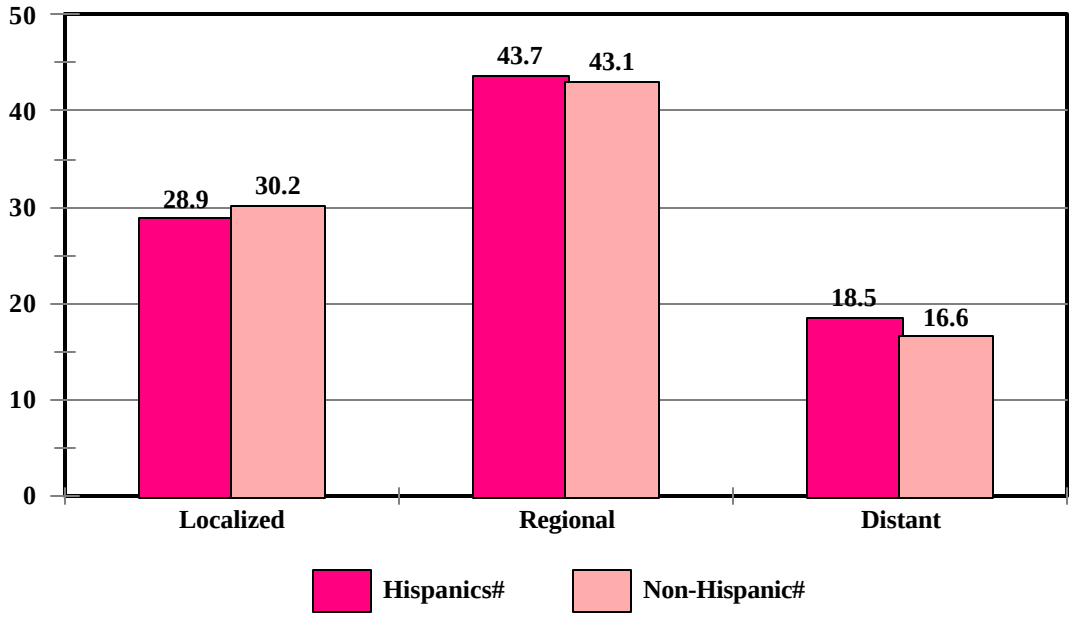




#Hispanics/non-Hispanics are not mutually exclusive from all races, whites, blacks and Asian/other races.
Source: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

Figure 12.
Percentage Distribution by Stage at Cancer Diagnosis
Colon and Rectum, Females, by Race/Ethnicity, Illinois, 1994-1998

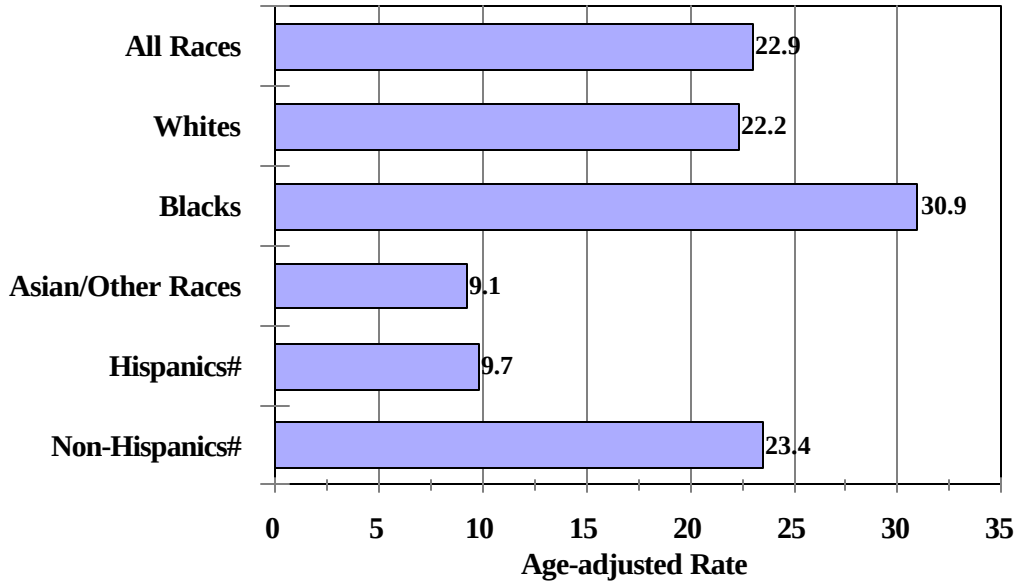


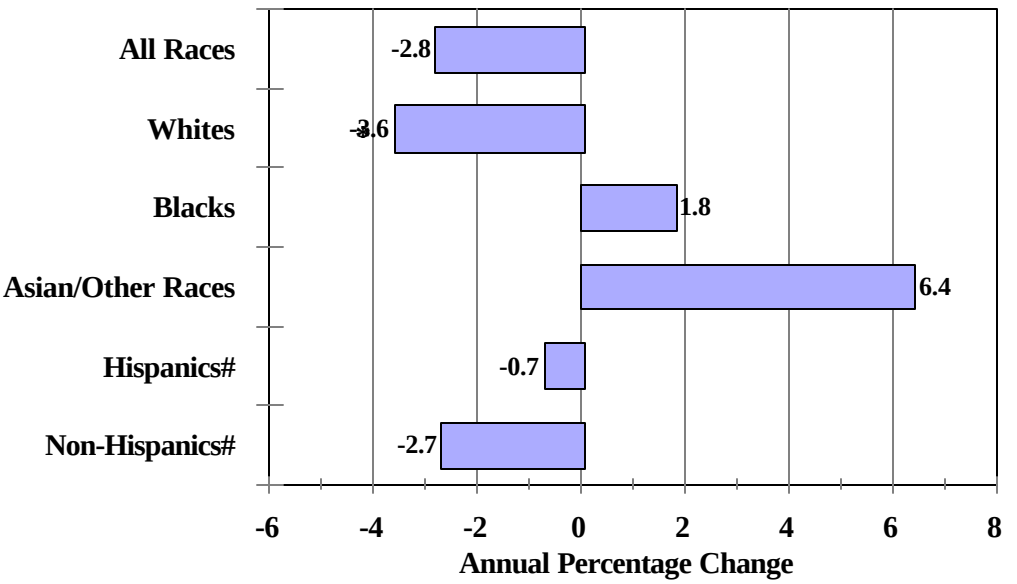


#Hispanics/non-Hispanics are not mutually exclusive from all races, whites, blacks and Asian/other races.

Source: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

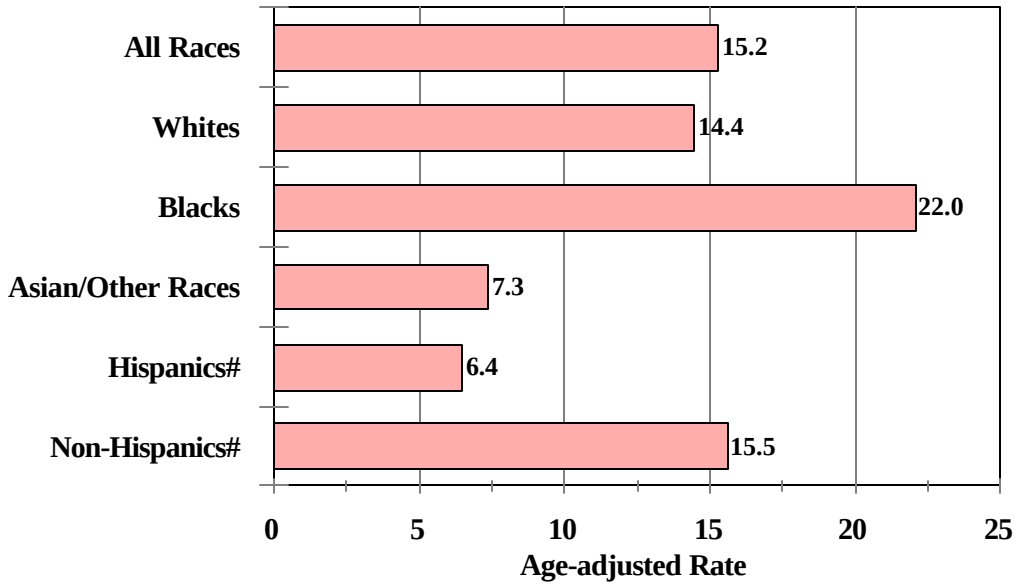
Figure 13.
Average Annual Age-adjusted Cancer Mortality Rates and Annual Percentage Changes
Colon and Rectum, Males, by Race/Ethnicity
Illinois, 1994-1998

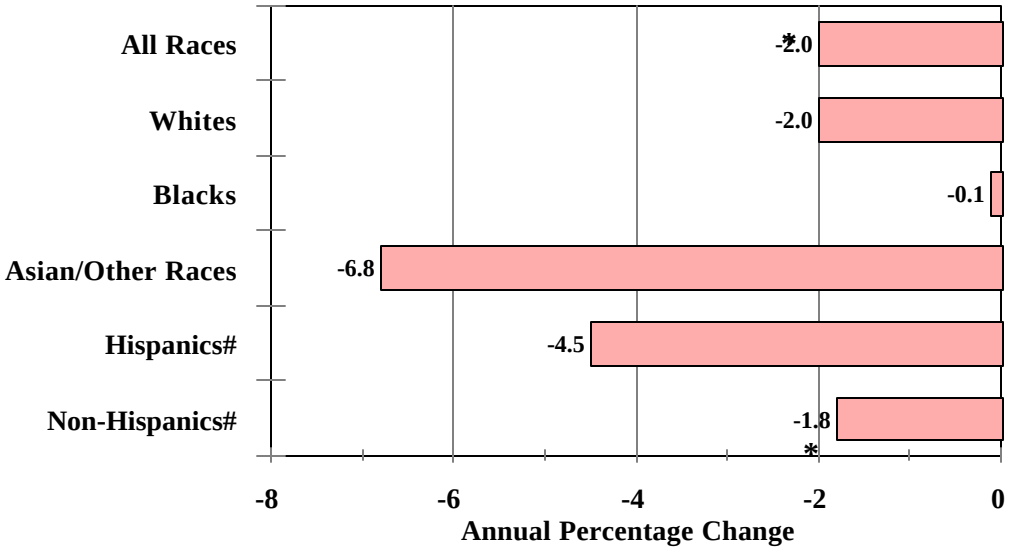




Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).
#Hispanics/non-Hispanics are not mutually exclusive from all races, whites, blacks and Asian/other races.
SOURCE: Illinois Department of Public Health, Death Master Files, 1994-1998

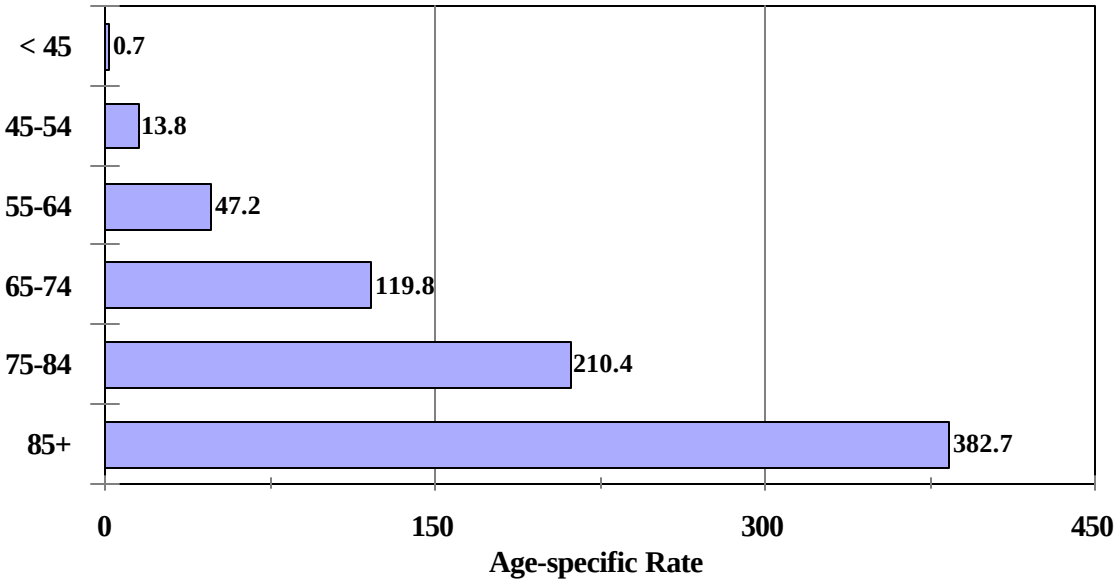
Figure 14.
Average Annual Age-adjusted Cancer Mortality Rates and Annual Percentage Changes
Colon and Rectum, Females, by Race/Ethnicity
Illinois, 1994-1998

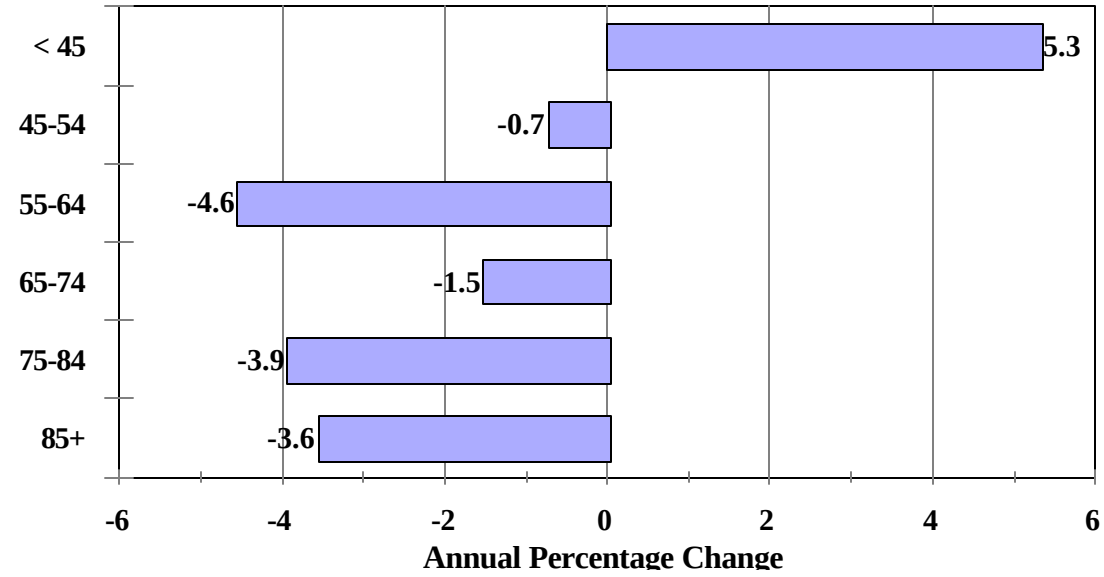




Rates per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).
#Hispanics/non-Hispanics are not mutually exclusive from all races, whites, blacks and Asian/other races.
SOURCE: Illinois Department of Public Health, Death Master Files, 1994-1998

Figure 15.
Average Annual Age-specific Cancer Mortality Rates and Annual Percentage Changes
Colon and Rectum, Males, All Races
Illinois, 1994-1998

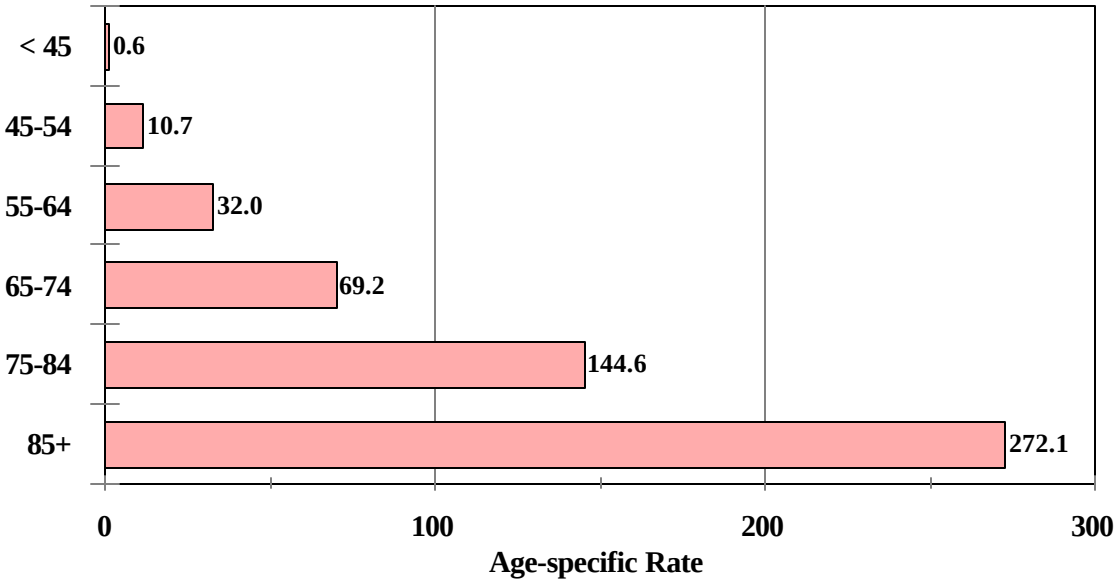


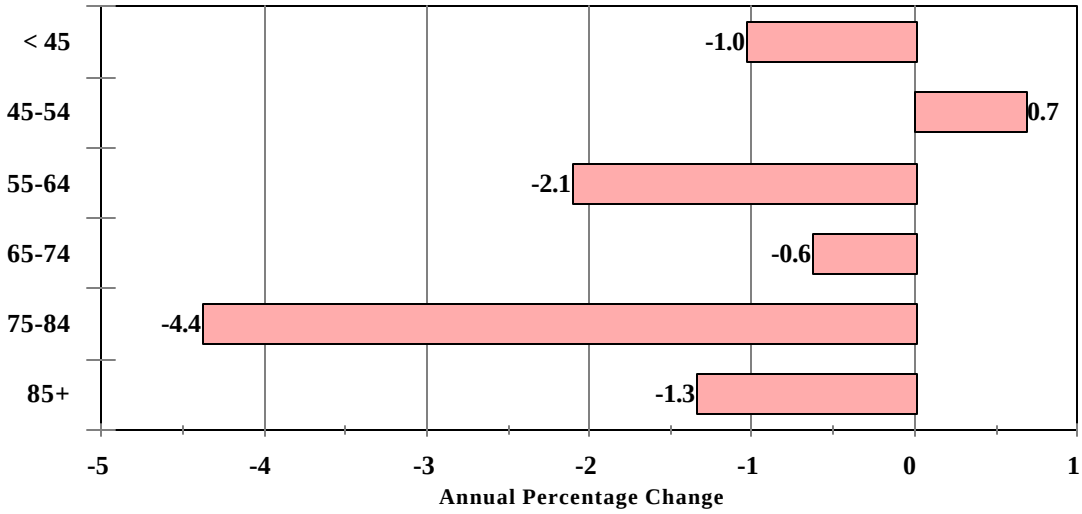


Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Death Master Files, 1994-1998

Figure 16.
Average Annual Age-specific Cancer Mortality Rates and Annual Percentage Changes
Colon and Rectum, Females, All Races
Illinois, 1994-1998

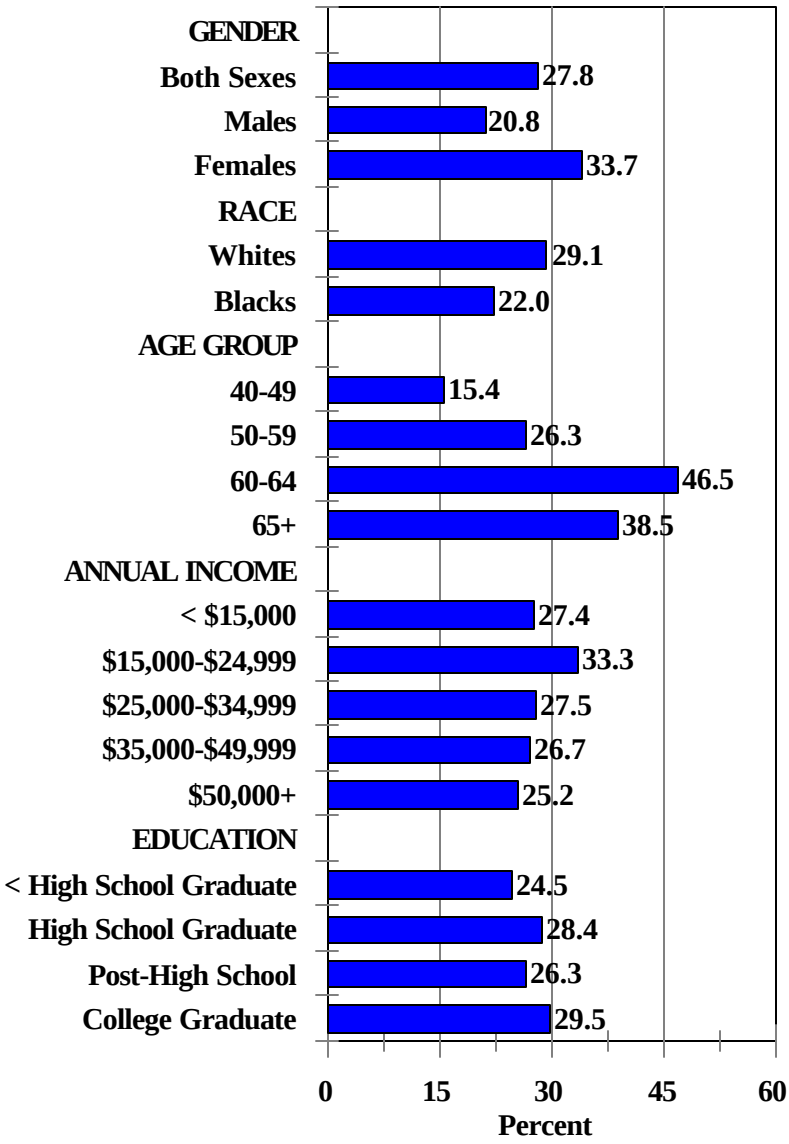




Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Death Master Files, 1994-1998

Figure 17.
Percent Ever Used Home Blood Stool Test Kit by Demographic Category
Illinois, 1999



Source: Illinois Department of Public Health, Center for Health Statistics, July 2001

Lung and Bronchus

Figures 18 through 26 present data related to cancers of the lung and bronchus for Illinoisans over 1994 through 1998. Race/ethnicity-specific cancer incidence rates are shown in Figures 18 and 19 for males and females, respectively. Average annual age-adjusted rates for males were about twice those observed for females in every race/ethnic group. Illinois blacks had the highest incidence rates followed by whites and then Asian/other races in each sex group. Black males had by far the highest rate, about one-third higher than their white counterparts. Male and female non-Hispanic rates were slightly over twice those observed for Hispanics. Statistically significant annual age-adjusted rate declines in the neighborhood of 3 percent were noted in males of all races, whites and non-Hispanics. No other significant trends for lung cancer incidence were detected over 1994-1998.

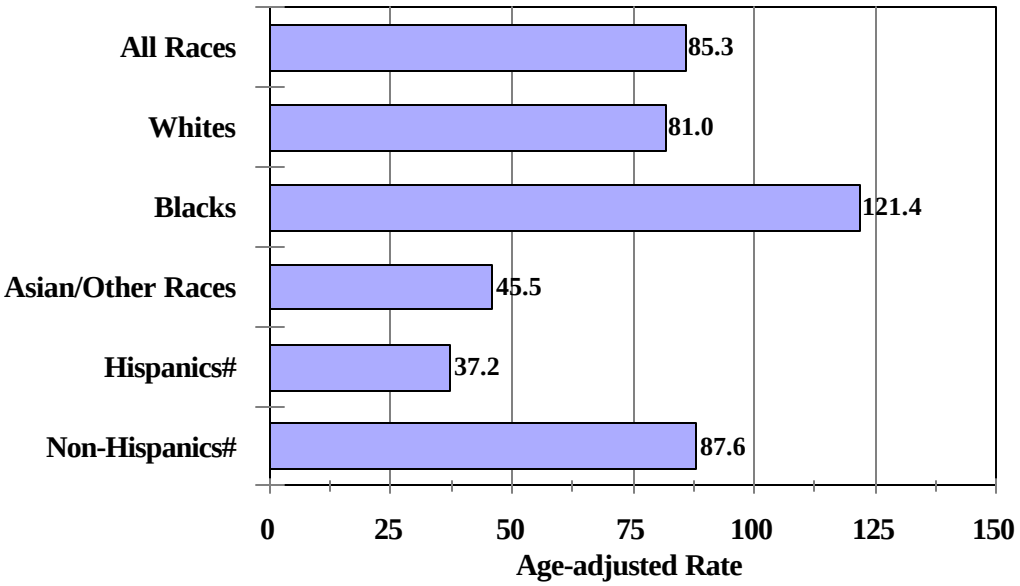
Age-specific lung and bronchus cancer incidence rates, 1994-1998, are displayed in Figures 20 and 21 for males and females, respectively. For both males and females, incidence rates increased through all age groups up to 75-84 and then declined. As would be expected, age-specific rates among males were consistently higher than those observed for females in each respective age group. Statistically significant APC declines in the annual incidence rates for cancers of the lung and bronchus were observed only among Illinois males ages 55-64 and 65-74. No significant lung and bronchus cancer incidence rate changes were observed in any age group of Illinois females.

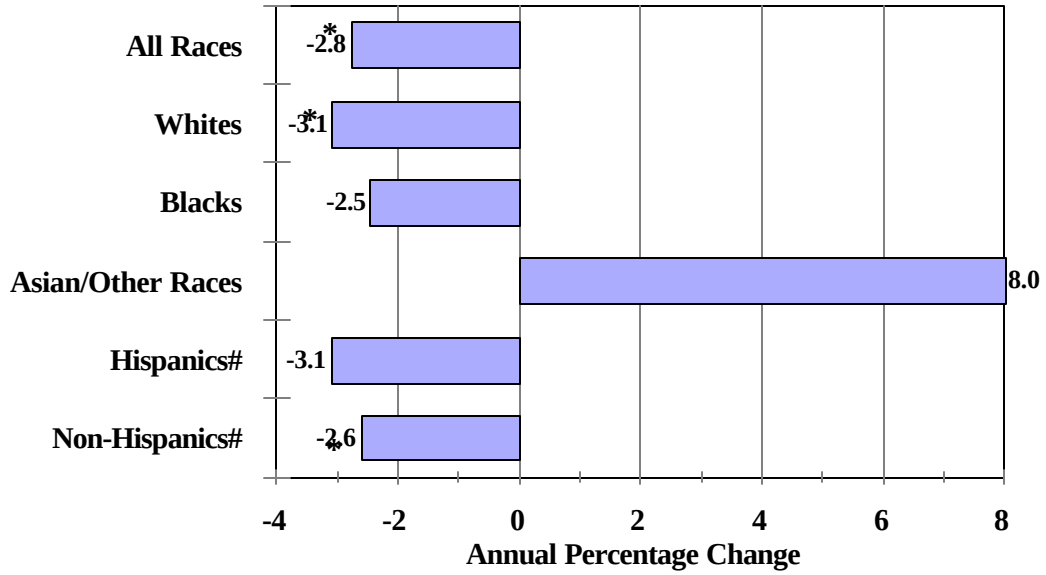
Race/ethnic and sex-specific patterns for average annual age-adjusted lung and bronchus cancer mortality, 1994-1998, were very similar to those just described. This would be expected given the high case fatality rate for this cancer site (Figures 22 and 23). That is, higher rates were observed for males than females in every race/ethnic group. Blacks had the highest mortality rates within each sex group comparison. Black males had the highest rates of mortality from cancers of the lung and bronchus of any race/ethnic, sex-specific group. Statistically significant decreases in age-adjusted mortality rates were observed for males in the all races, whites and non-Hispanic groups but not for any race/ethnic group of females.

Average annual age-specific cancer mortality rate patterns for lung and bronchus presented in Figures 24 and 25 also were similar to those observed for age-specific cancer incidence rates over the same time period for both Illinois males and females. Cancer mortality rates increased with age until 85 years of age when a decrease was observed. Annual percentage changes for annual age-specific rates showed significant decreases for males in age groups 55-64, 65-74 and 75-84 (Figure 24). Annual mortality from cancers of the lung and bronchus significantly decreased for females, 45-54 years of age, but significantly increased for those 75-84 years.

Figure 26 shows 1999 prevalence data for current smoking in Illinois. Overall, current smoking was reported by about 26 percent of adult males compared with 21 percent of adult females. Current smoking was highest in the youngest adult age group, 18-24, then slightly lower for age groups, 25-34 and 35-44, with further reduction in reported smoking among Illinoisan age groups 45-54 and 55-64. The lowest reported smoking rate, 13 percent, was observed for age group 65 and older. Higher current smoking rates were apparent among those Illinoisans with lower incomes and less education.

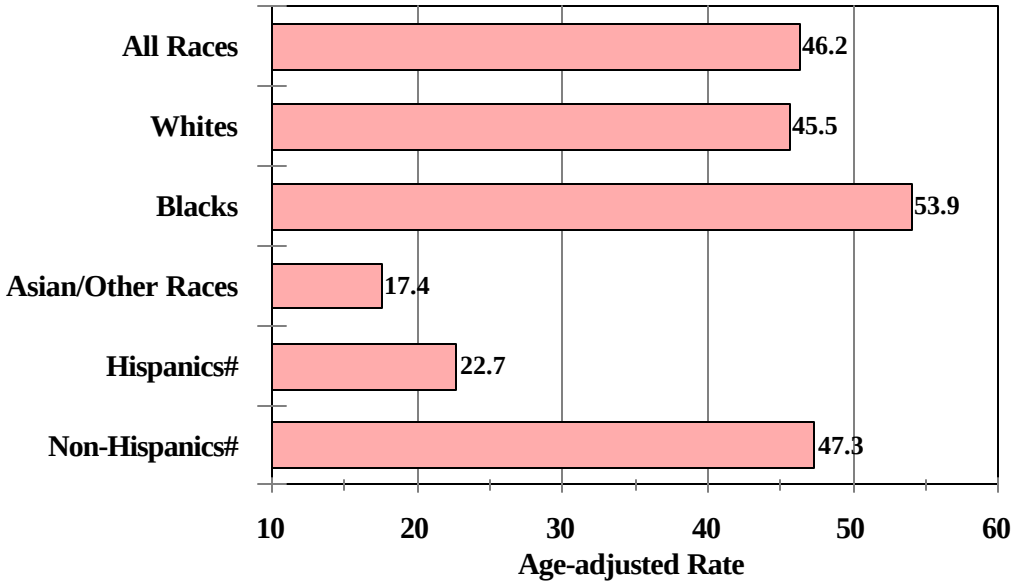
Figure 18.
Average Annual Age-adjusted Cancer Incidence Rates and Annual Percentage Changes
Lung and Bronchus, Males, by Race/Ethnicity
Illinois, 1994-1998

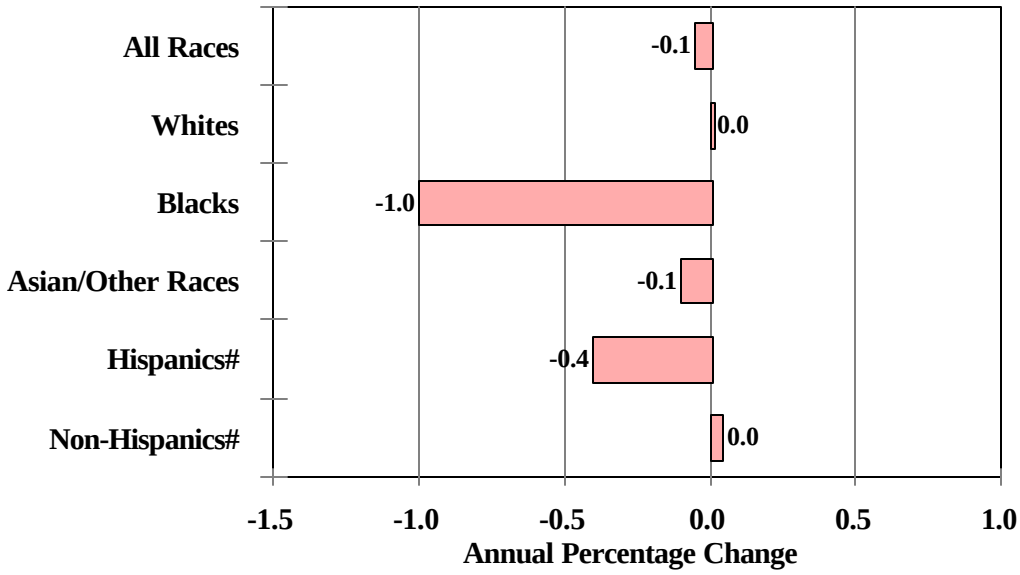




Rates per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).
#Hispanics/non-Hispanics are not mutually exclusive from all races, whites, blacks and Asian/other races.
SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

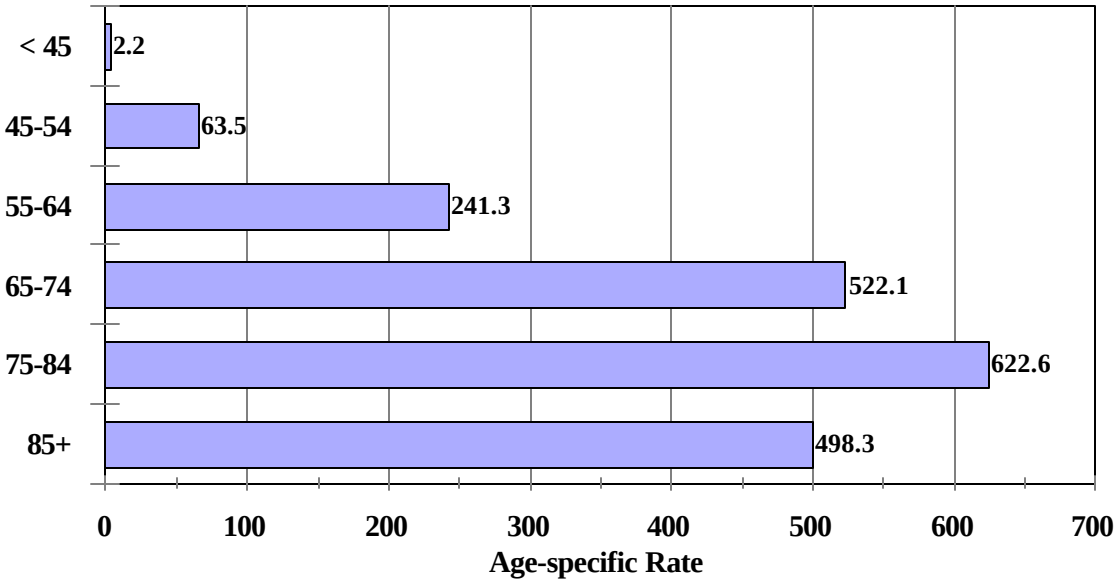
Figure 19.
Average Annual Age-adjusted Cancer Incidence Rates and Annual Percentage Changes
Lung and Bronchus, Females, by Race/Ethnicity
Illinois, 1994-1998

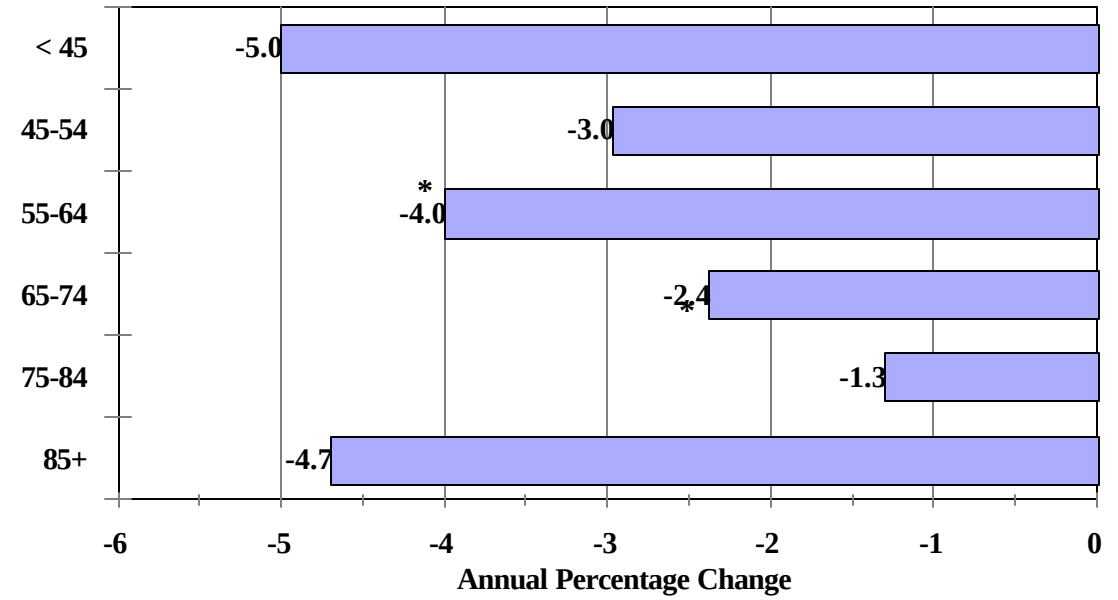




Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).
#Hispanics/non-Hispanics are not mutually exclusive from all races, whites, blacks and Asian/other races.
SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

Figure 20.
Average Annual Age-specific Cancer Incidence Rates and Annual Percentage Changes
Lung and Bronchus, Males, All Races
Illinois, 1994-1998

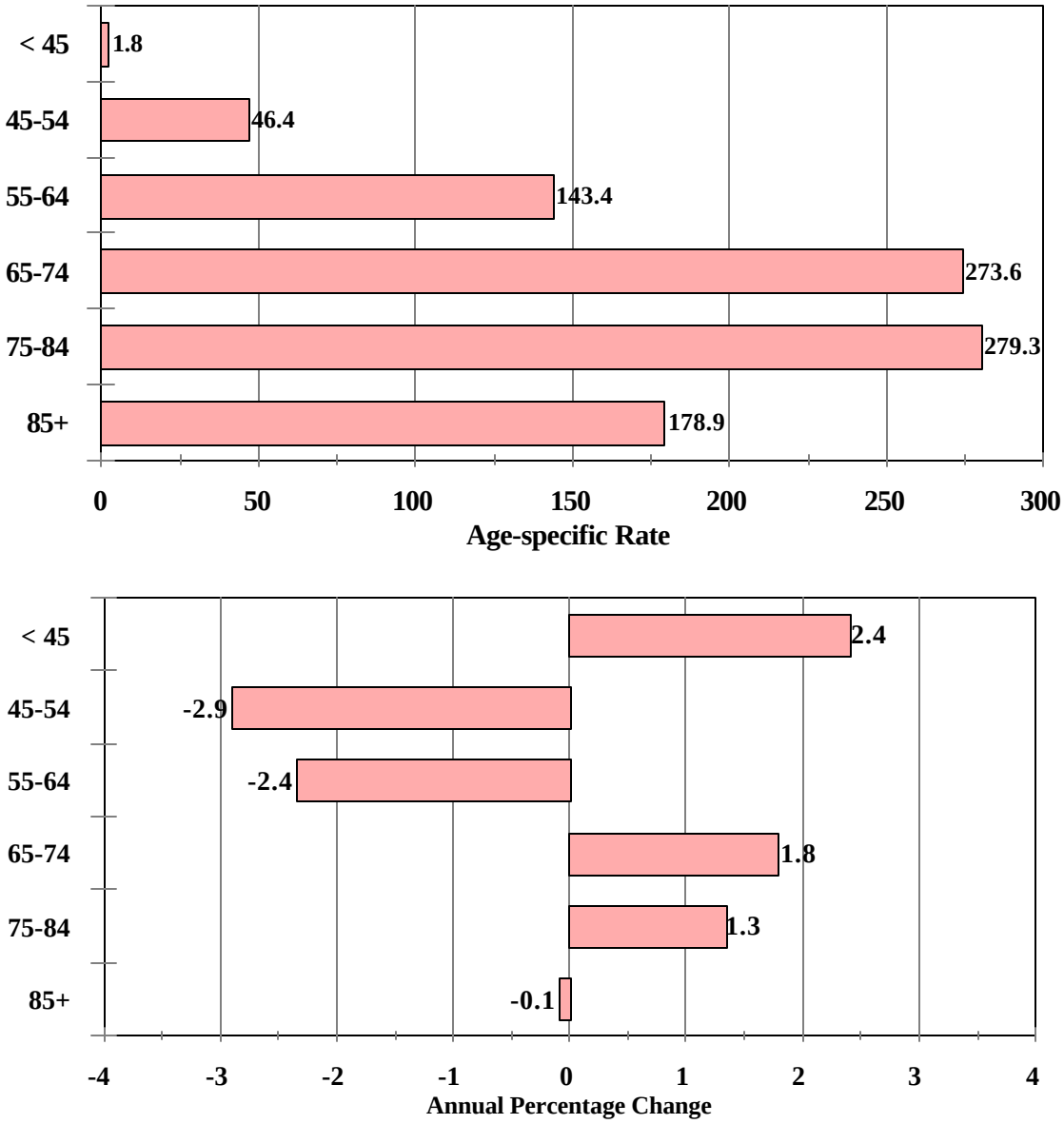




Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

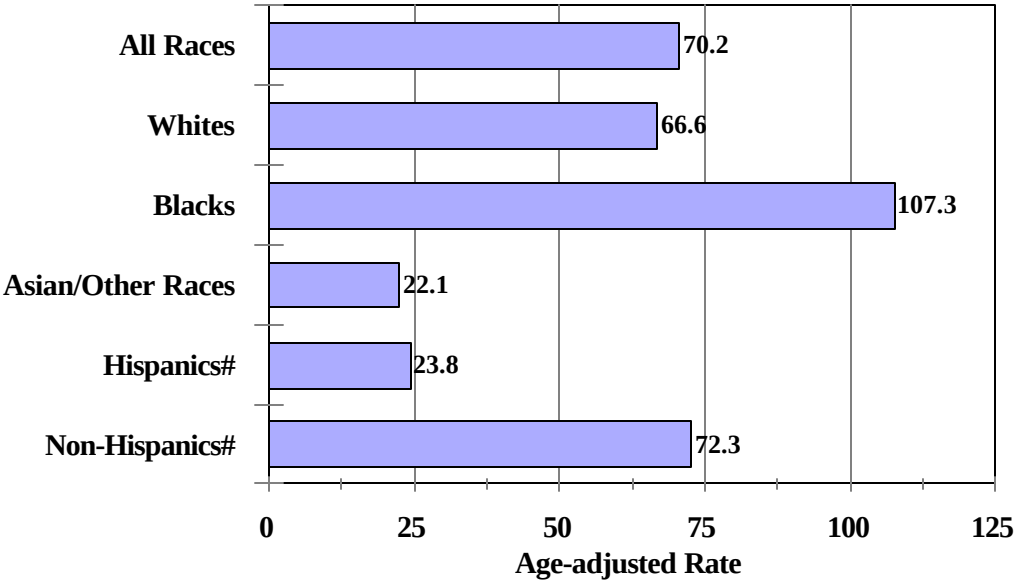
Figure 21.
Average Annual Age-specific Cancer Incidence Rates and Annual Percentage Changes
Lung and Bronchus, Females, All Races
Illinois, 1994-1998

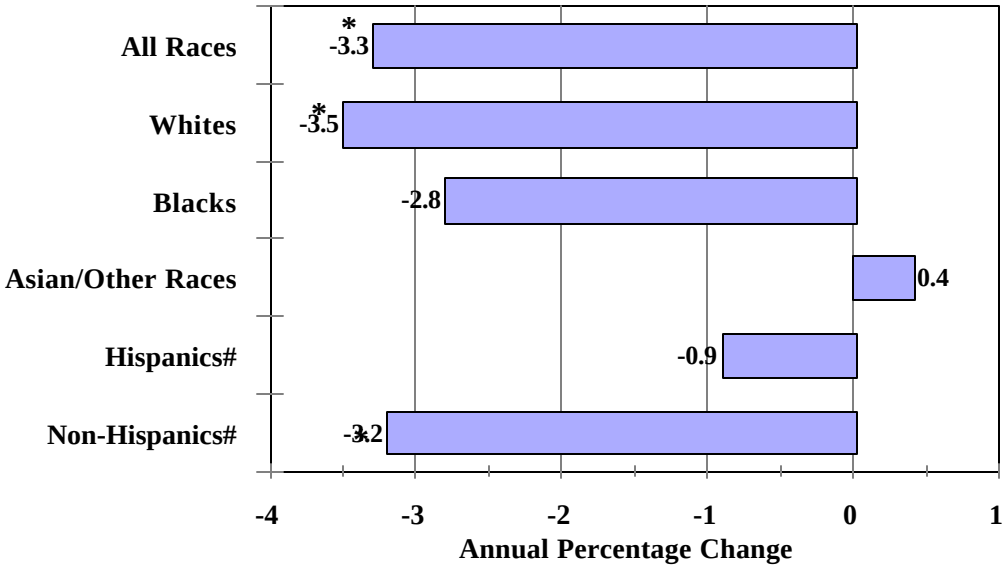


Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

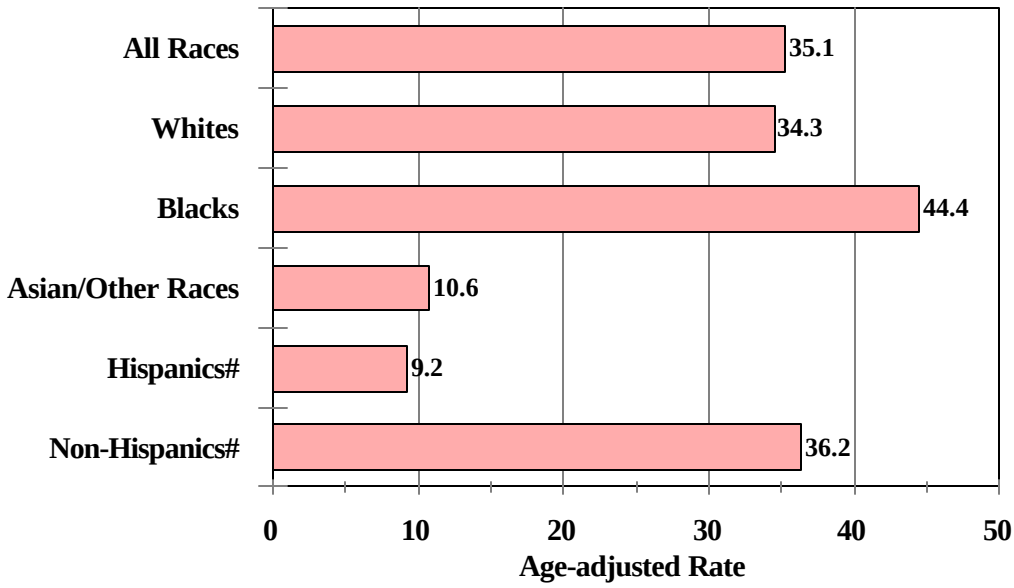
Figure 22.
Average Annual Age-adjusted Cancer Mortality Rates and Annual Percentage Changes
Lung and Bronchus, Males, by Race/Ethnicity
Illinois, 1994-1998

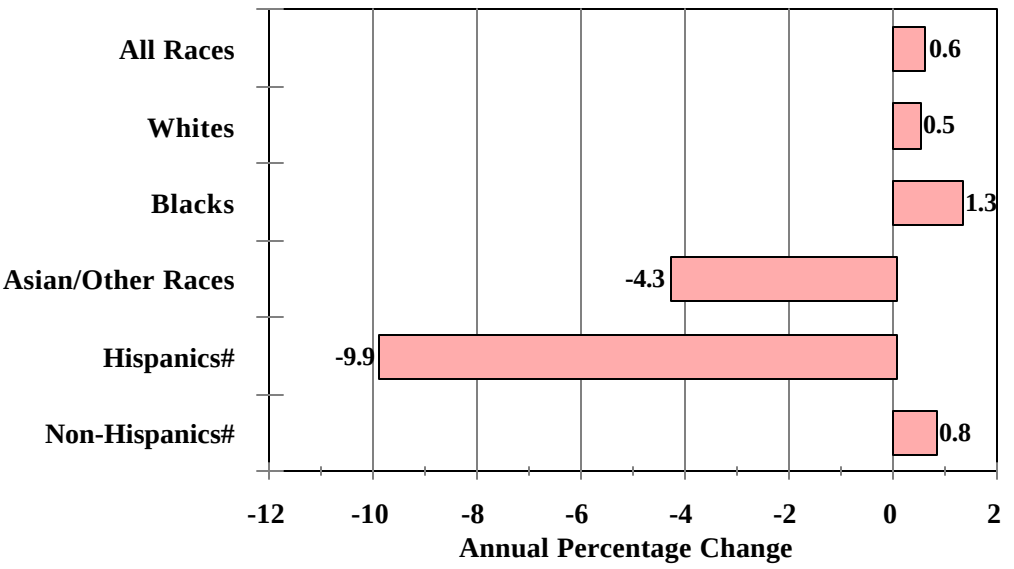




Rates per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).
#Hispanics/non-Hispanics are not mutually exclusive from all races, whites, blacks and Asian/other races.
SOURCE: Illinois Department of Public Health, Death Master Files, 1994-1998

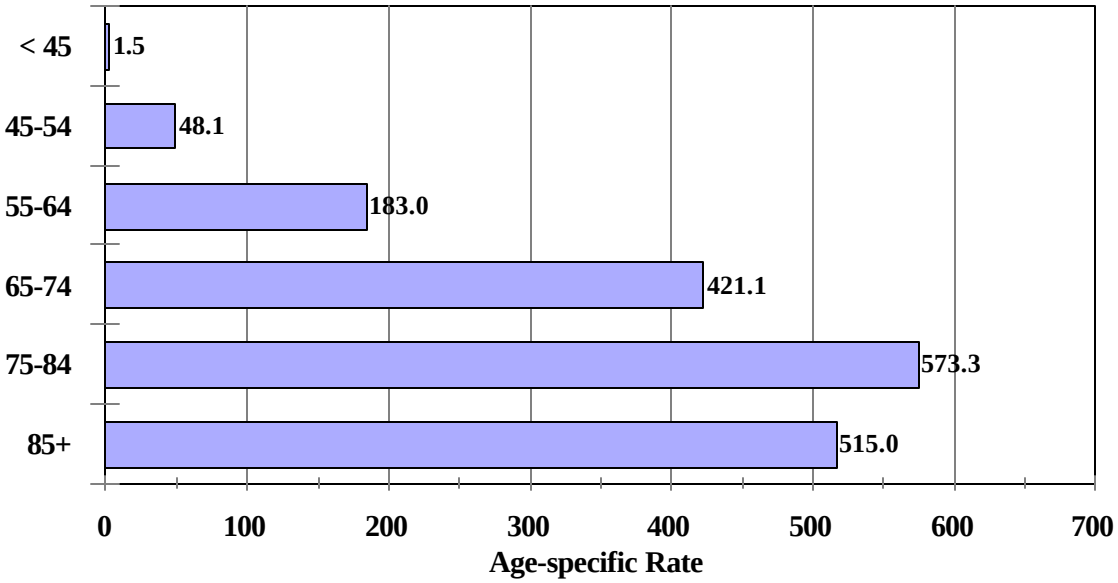
Figure 23.
Average Annual Age-adjusted Cancer Mortality Rates and Annual Percentage Changes
Lung and Bronchus, Females, by Race/Ethnicity
Illinois, 1994-1998

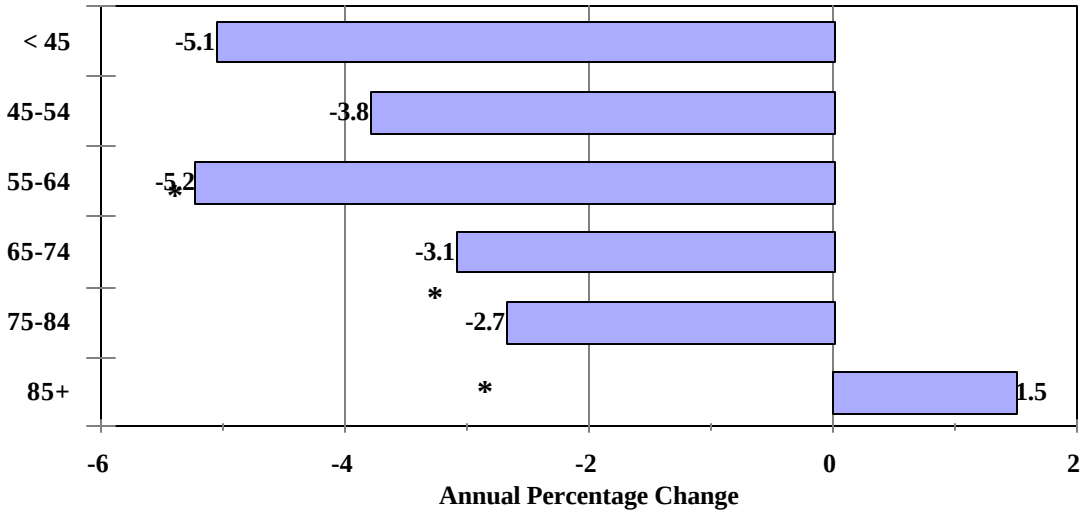




Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).
#Hispanics/non-Hispanics are not mutually exclusive from all races, whites, blacks and Asian/other races.
SOURCE: Illinois Department of Public Health, Death Master Files, 1994-1998

Figure 24.
Average Annual Age-specific Cancer Mortality Rates and Annual Percentage Changes
Lung and Bronchus, Males, All Races
Illinois, 1994-1998

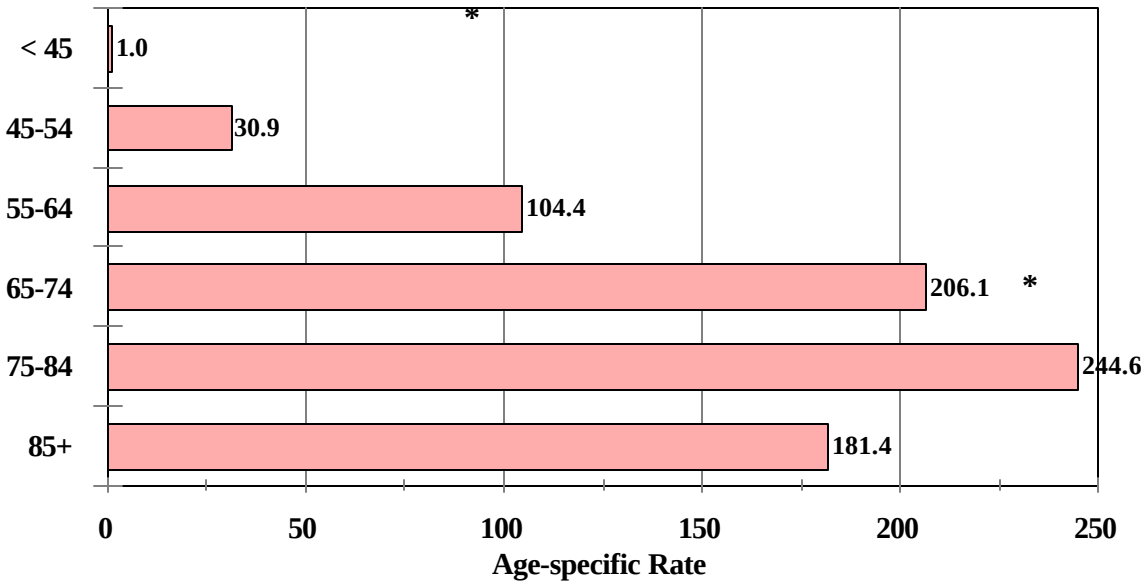


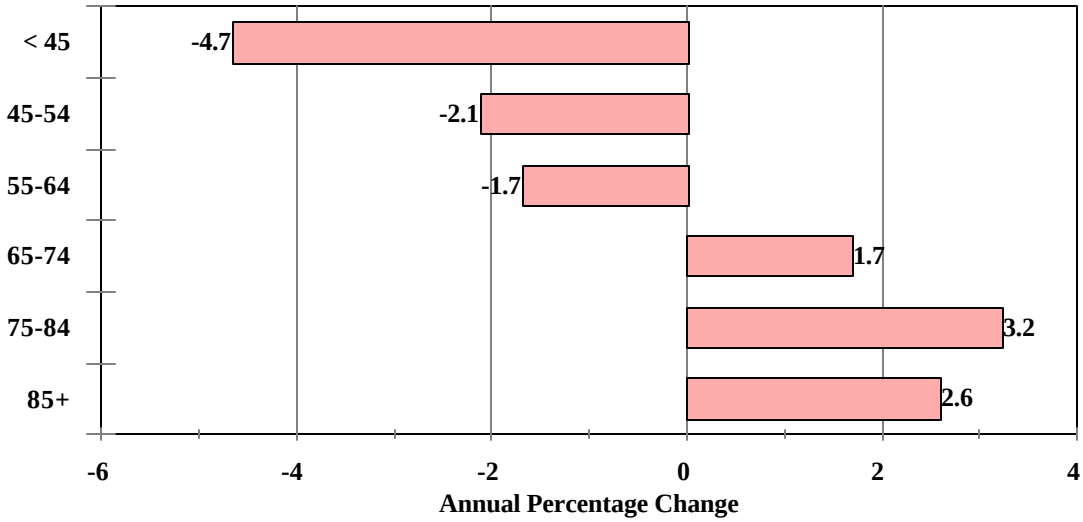


Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Death Master Files, 1994-1998

Figure 25.
Average Annual Age-specific Cancer Mortality Rates and Annual Percentage Changes
Lung and Bronchus, Females, All Races
Illinois, 1994-1998

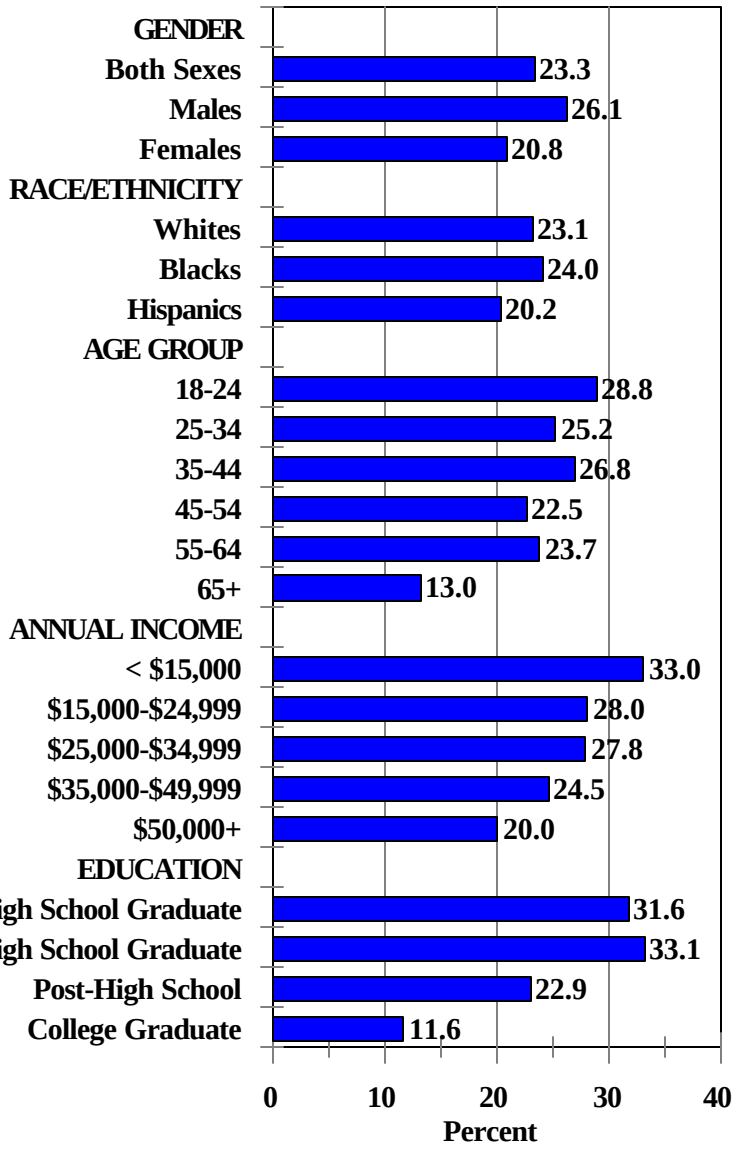




Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Death Master Files, 1994-1998

Figure 26.
Percent Current Smokers by Demographic Category, Illinois, 1999



Source: Illinois Department of Public Health, Center for Health Statistics, July 2001

Female Breast

Figures 27 through 32 contain breast cancer- related data for Illinois females across 1994 through 1998. Figure 27 shows that the highest average annual age-adjusted breast cancer incidence rates by race were among white females followed by black females. Rates among Illinois females of Asian/other races were slightly more than half of the rates observed for their white or black counterparts. Average annual age-adjusted breast cancer incidence rates for non-Hispanic females were about one-third higher than those observed in Hispanic females in Illinois. A statistically significant APC increase for breast cancer incidence rates during the time period 1994-1998 was apparent only for black females.

Figure 28 shows that Illinois female breast cancer incidence rates increase dramatically with each advancing age group. From 1994 through 1998, no significant changes in the annual breast cancer incidence rates were observed in any age group of Illinois females.

Information on stage at diagnosis of female breast cancer by race/ethnicity for cases diagnosed during the time period, 1994-1998, is shown in Figure 29. About two-thirds of female breast cancer cases were diagnosed in the *in situ* or localized stage when more favorable prognostic outcomes may be expected. Although the distribution pattern is similar for the stage at diagnosis among all race groups, there appeared to be less breast cancer diagnosed in the early stages (*in situ* and localized) and more in the later stages (regional and distant) for Illinois' black female population compared with their white or Asian/other races counterparts. Likewise, Hispanic females presented with less early stage breast cancer diagnoses than non-Hispanic females in Illinois.

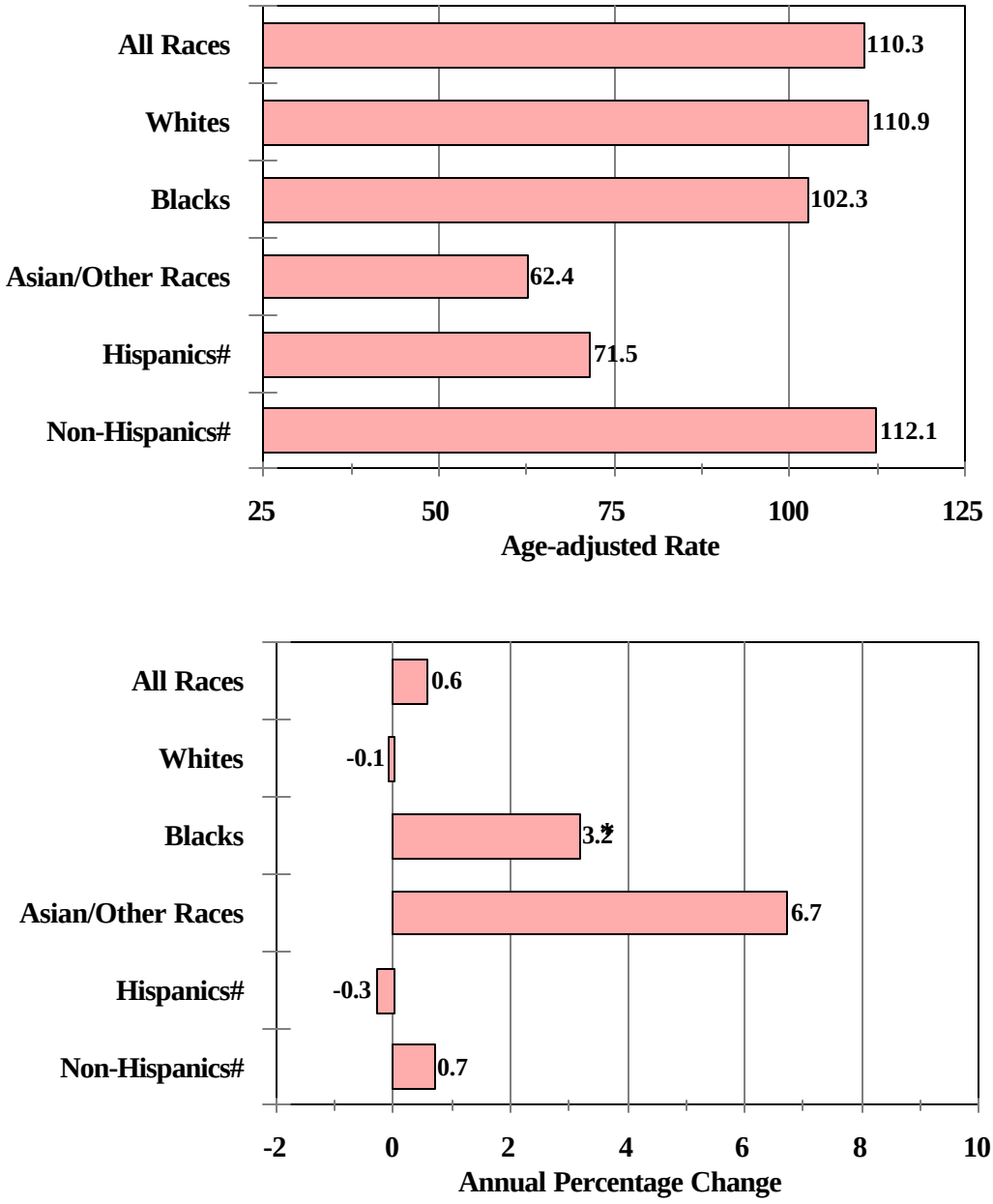
Average annual age-adjusted *in situ* breast cancer incidence rates and APCs for 1994-1998 are shown in Figure 30. For race, the highest rates were observed for white females followed by blacks and then Asian/other races. Non-Hispanics had higher *in situ* breast cancer rates than Hispanics. These rates significantly increased by more than 10 percent per year from 1994 through 1998 for every race/ethnic group with the exception of Illinois' Hispanic females.

Shown in Figure 31 are the average annual age-adjusted mortality rates and findings from trend analyses of female breast cancer by race/ethnicity in Illinois over 1994-1998. Black females had the highest mortality rates. Rates for white females were about one-third less than those for blacks. Illinois females of Asian/other races had considerably lower breast cancer mortality rates than the other two race groups. Breast cancer mortality rates for non-Hispanic females were about twice those observed for their Hispanic counterparts over 1994-1998. The direction of the APCs for breast cancer mortality suggested declines for every race/ethnic group of Illinois females. However, the APCs reached statistical significance for just females of all races, whites and non-Hispanics.

Evaluation of age-specific mortality rates for female breast cancer in Illinois showed mortality to increase progressively with age (Figure 32). Statistically significant APC declines in breast cancer mortality were observed for Illinois females in the 60-69 and 70-79 age groups.

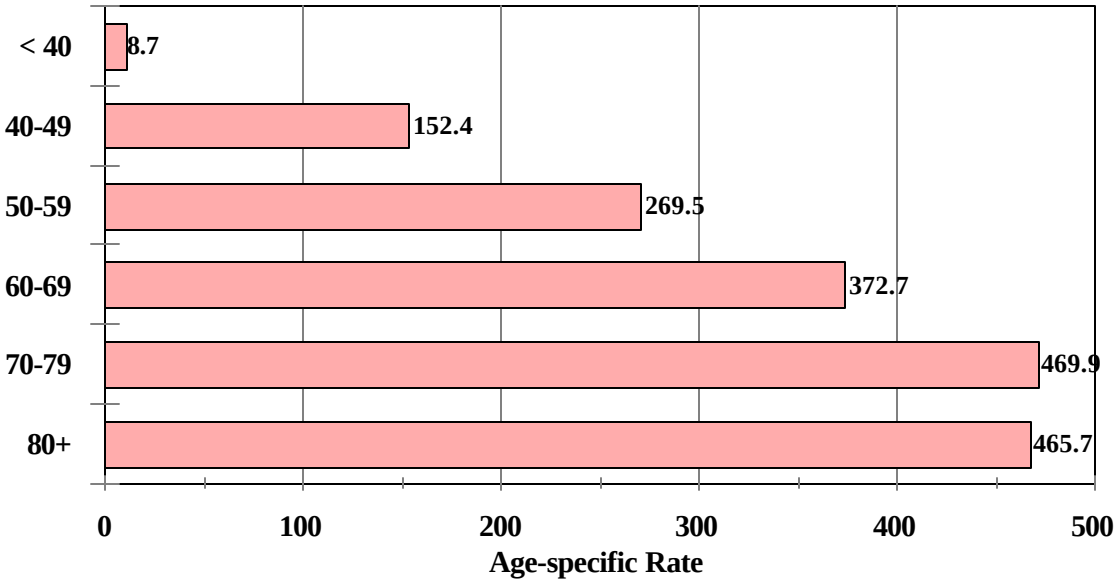
Prevalence data collected during 1999 for mammography usage during the past two years by Illinois women 50 years of age and older is shown in Figure 33. Overall, about three-fourths of Illinois females reported having had a mammogram within the past two years. Slightly more black and Hispanic than white females reported the experience. Usage declined with increasing age. Women 50 years and older reporting the lowest annual income (< $15,000/year) and educational attainment (< high school graduate) were least likely to have had a mammogram within the past two years.

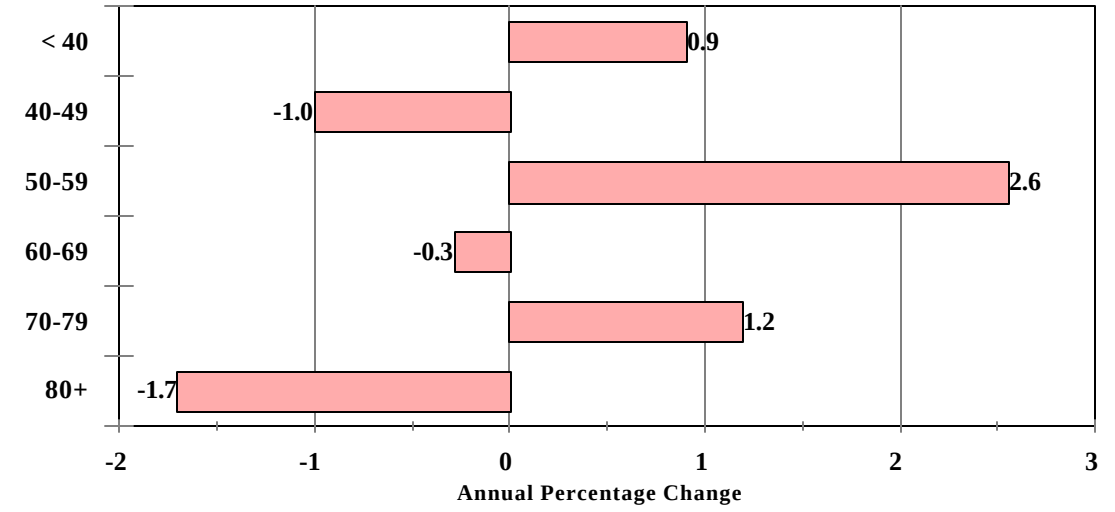
Figure 27.
Average Annual Age-adjusted Cancer Incidence Rates and Annual Percentage Changes
Breast, Females, by Race/Ethnicity
Illinois, 1994-1998



Rates per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).
#Hispanics/non-Hispanics are not mutually exclusive from all races, whites, blacks and Asian/other races.
SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

Figure 28.
Average Annual Age-specific Cancer Incidence Rates and Annual Percentage Changes
Breast, Females, All Races
Illinois, 1994-1998

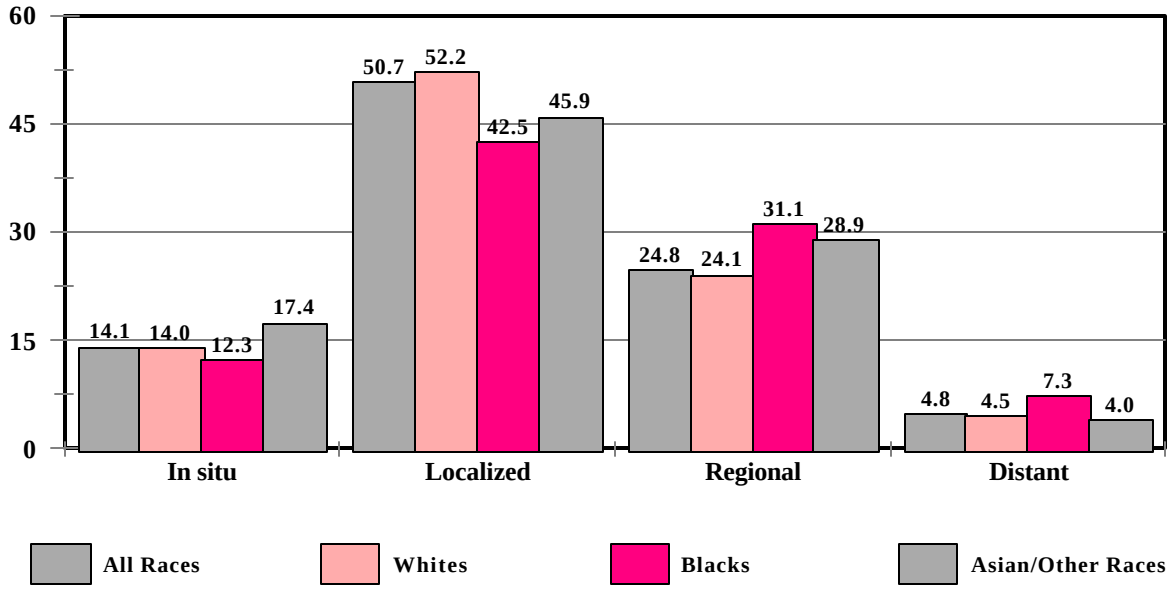


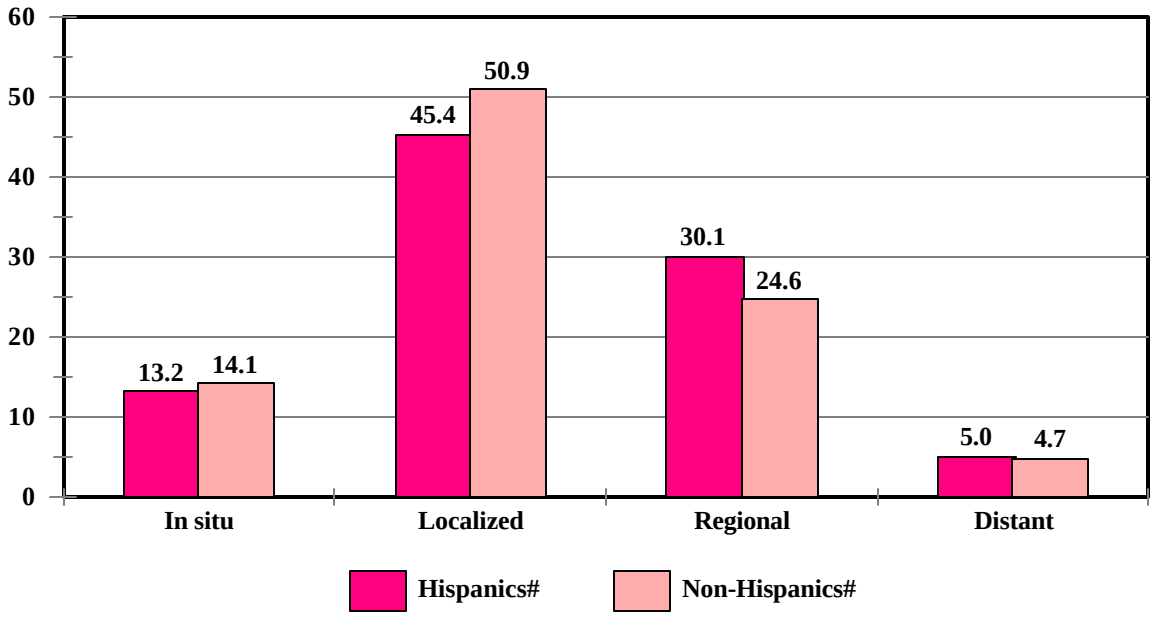


Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

Figure 29.
Percentage Distribution by Stage at Diagnosis
Breast, Females, by Race/Ethnicity
Illinois, 1994-1998

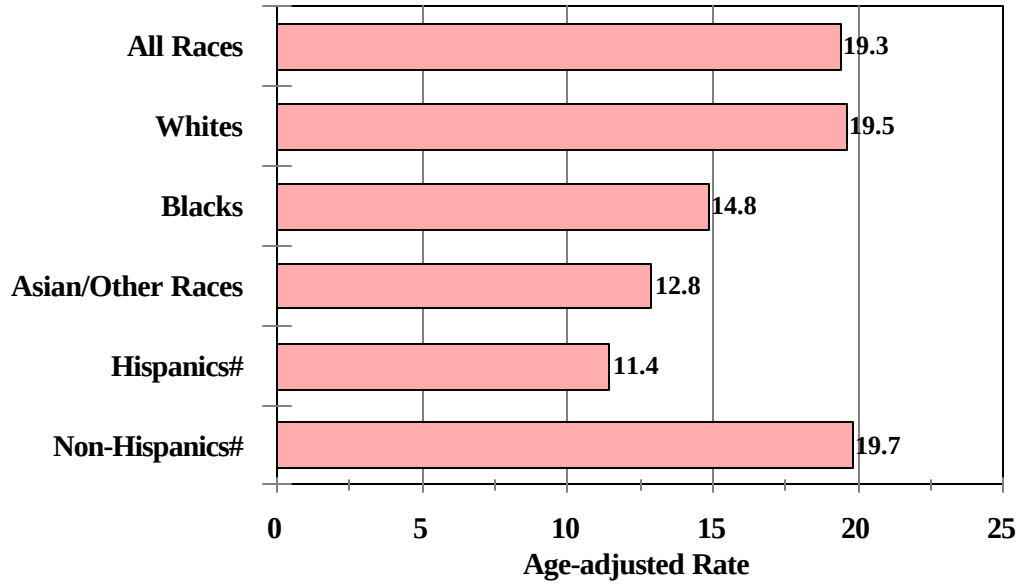


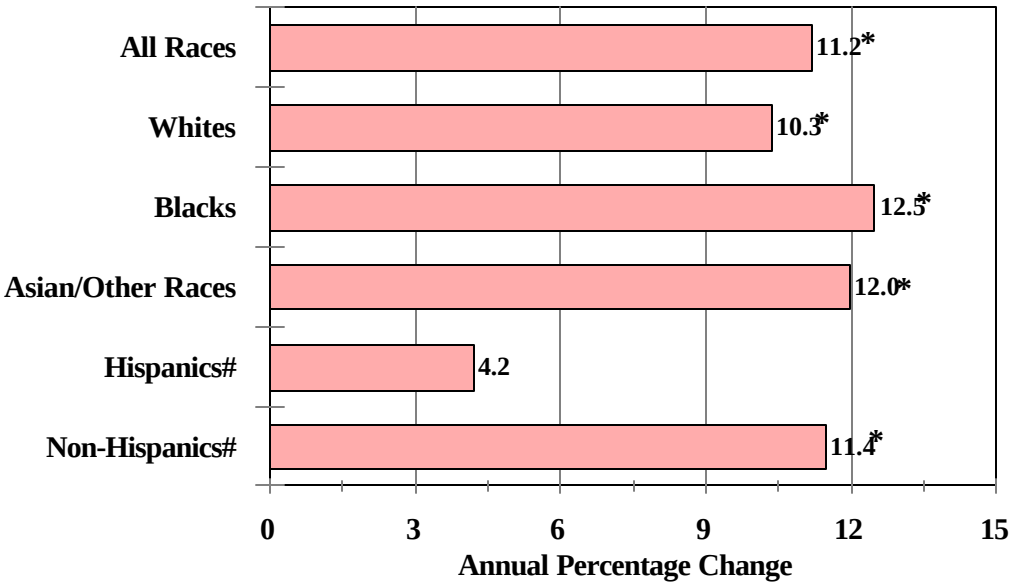


#Hispanics/non-Hispanics are not mutually exclusive from all races, whites, blacks and Asian/other races.

Source: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

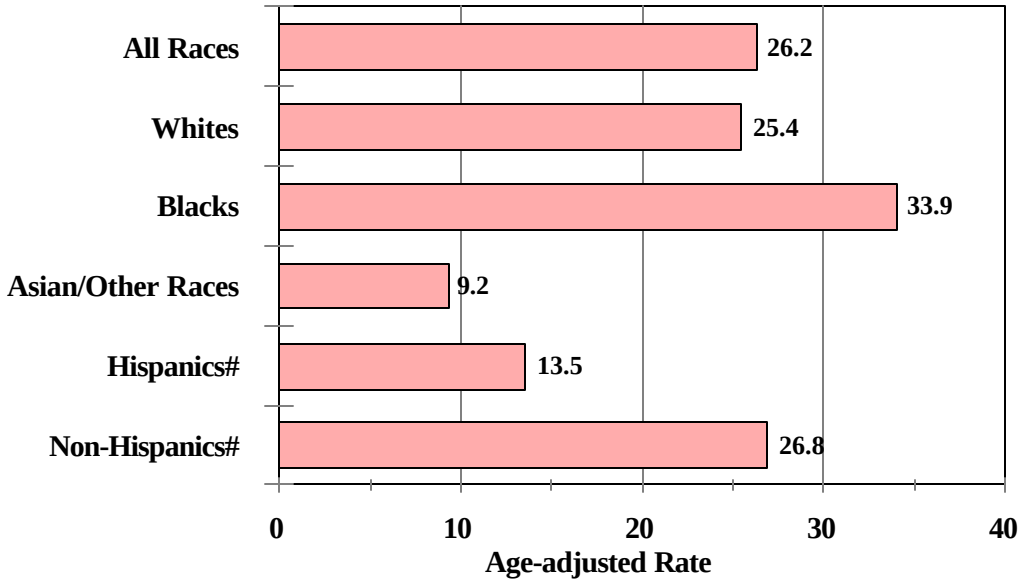
Figure 30.
Average Annual Age-adjusted Cancer Incidence Rates and Annual Percentage Changes
Breast *in situ* Females, by Race/Ethnicity
Illinois, 1994-1998

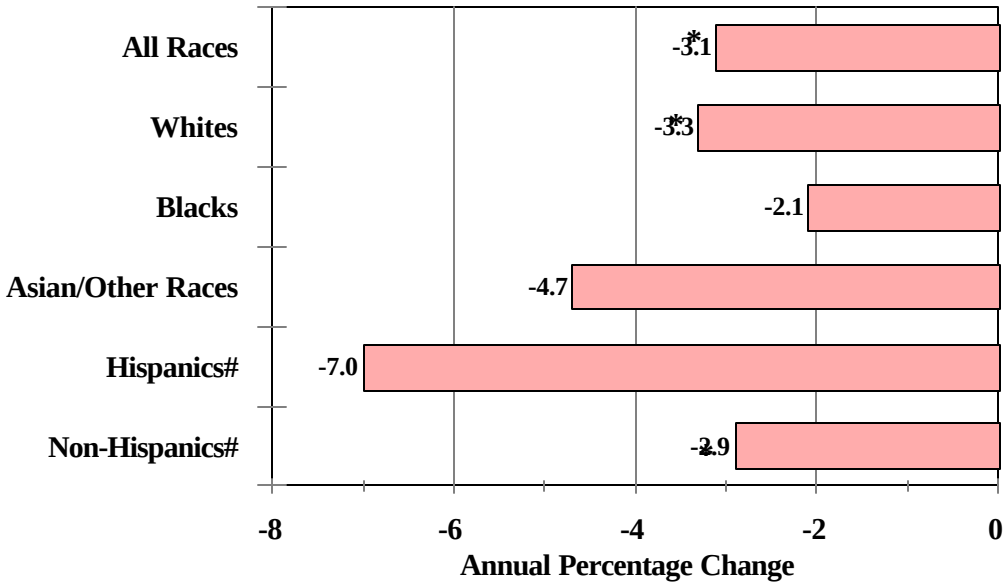




Rates per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).
#Hispanics/non-Hispanics are not mutually exclusive from all races, whites, blacks and Asian/other races.
SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

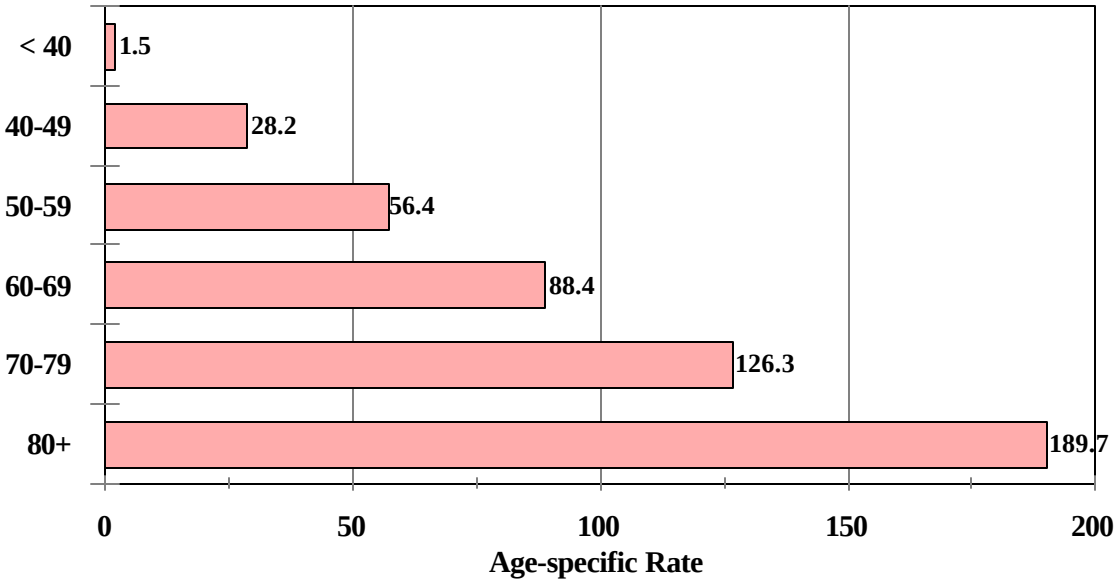
Figure 31.
Average Annual Age-adjusted Cancer Mortality Rates and Annual Percentage Changes
Breast, Females, by Race/Ethnicity
Illinois, 1994-1998

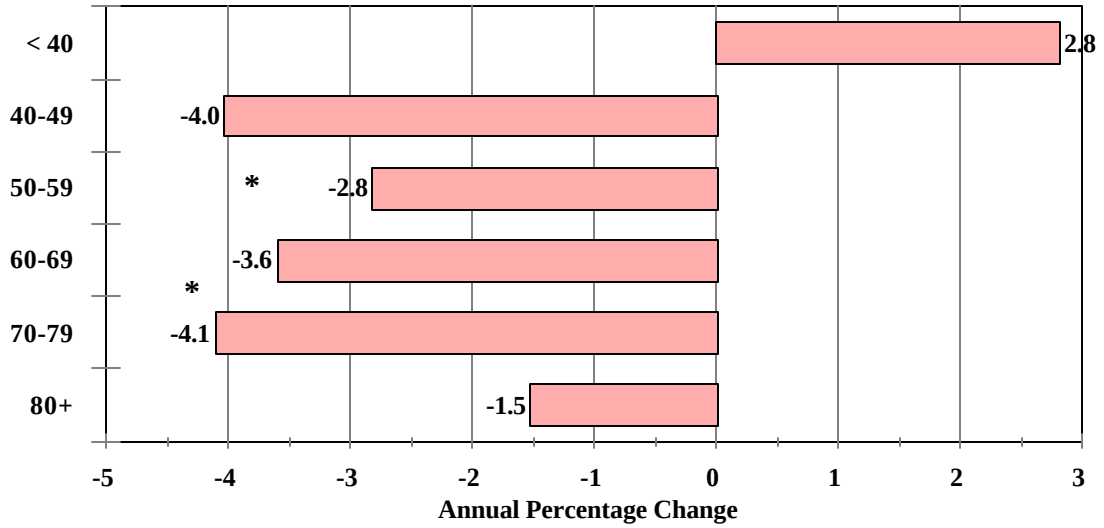




Rates per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).
#Hispanics/non-Hispanics are not mutually exclusive from all races, whites, blacks and Asian/other races.
SOURCE: Illinois Department of Public Health, Death Master Files, 1994-1998

Figure 32.
Average Annual Age-specific Cancer Mortality Rates and Annual Percentage Changes
Breast, Females, All Races
Illinois, 1994-1998

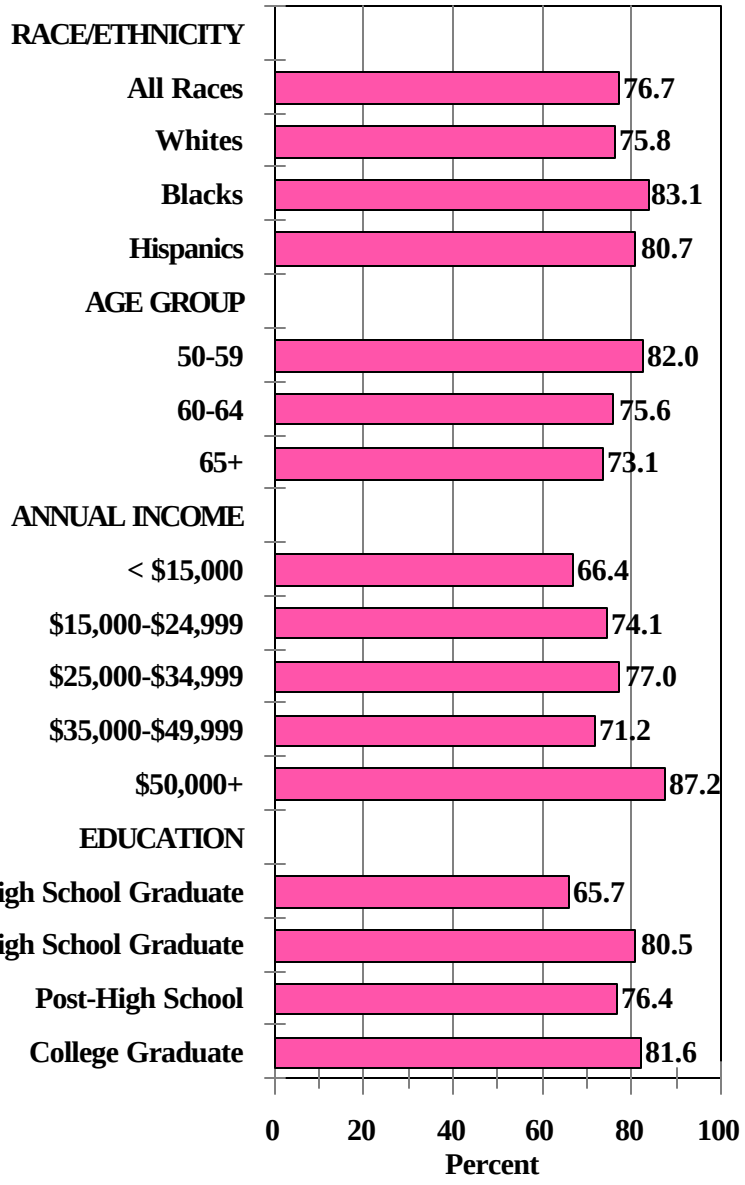




Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Death Master Files, 1994-1998

Figure 33.
Percent Females 50 Years or Older Who Have Had a Mammogram Within the Past Two Years by Demographic Category, Illinois, 1999



Source: Illinois Department of Public Health, Center for Health Statistics, July 2001

Cervix

Figures 34 through 39 display 1994-1998 data related to cervical cancer among Illinois females. Figure 34 shows that black and Hispanic females had higher average annual age-adjusted invasive cervical cancer incidence rates than their white and Asian/other race or non-Hispanic ethnic counterparts. Trend analyses indicated no significant APCs over 1994-1998 for any race or ethnic group of Illinois females.

The age-specific invasive cervical cancer incidence rates for all Illinois females are presented in Figure 35. Unlike most other cancer sites, where incidence increases with age, age-specific invasive cervical cancer incidence rates were similar for all age groups from age 35 onward. No significant changes in APCs were observed for any age group of females over 1994-1998.

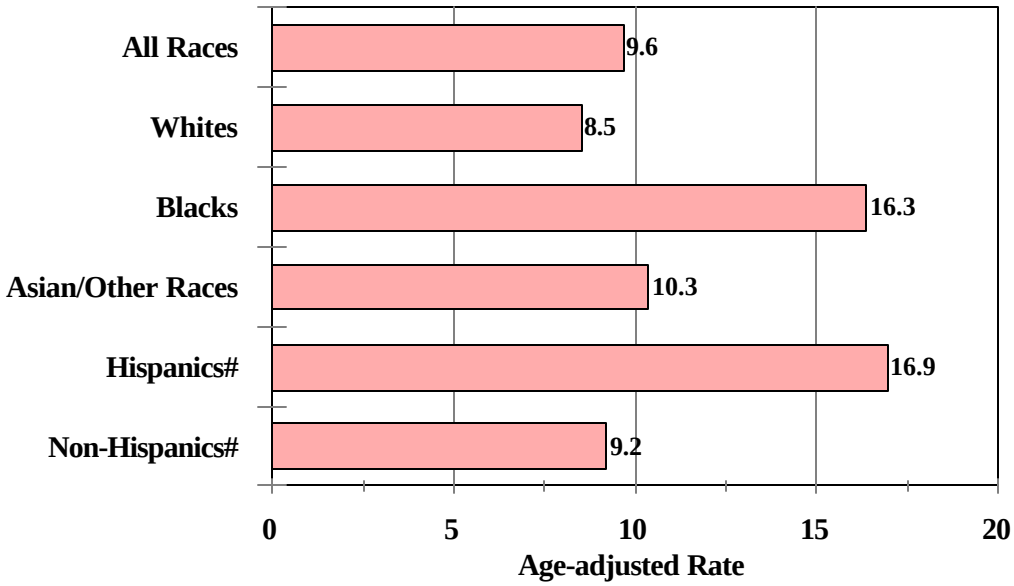
Approximately half of invasive cancer of the cervix diagnosed during 1994-1998 was in the early, localized stage, for every race/ethnic group of Illinois females (Figure 36). Black females had the lowest percentage of localized and the highest percentage of distant stage cervical cancer. Hispanic females had more cervical cancer diagnosed in the localized stage than non-Hispanic females.

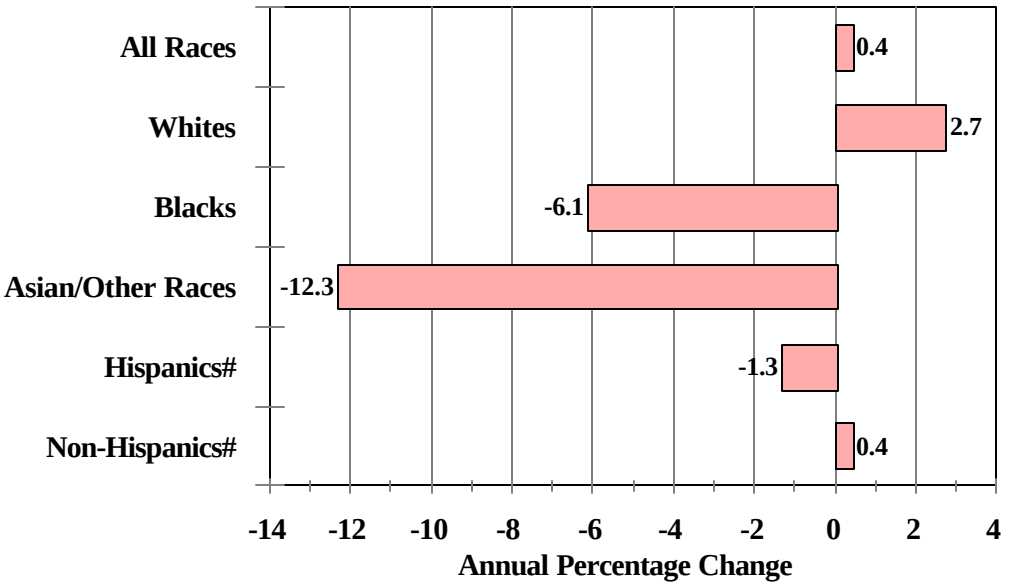
Average annual age-adjusted cervical cancer mortality rates were by far the highest among Illinois' black females (Figure 37). Hispanic females had slightly higher mortality rates than non-Hispanic females. As with invasive cervical cancer incidence, trend analyses showed no significant APCs in cervical cancer mortality for any race/ethnic group over 1994-1998.

As shown in Figure 38, age-specific cervical cancer mortality rates increased until age group 55-64; a plateau then occurred until age group 75-84, when rates accelerated. No APCs for age-specific groups were significant over the respective time period for any race/ethnic group of Illinois females.

Figure 39 displays 1999 BRFSS prevalence data for Illinois females reporting Pap test usage within the past three years. More than 80 percent of each race/ethnic group of Illinois females reported usage with the past three years, the highest percentage being reported by black females. Overall, Pap test usage was lower among Illinois females who were 65 years of age and older. Likewise, females reporting that their annual income was less than $25,000 per year and/or their education level was less than a high school graduate were less likely to have had a Pap test within the past three years than females reporting higher incomes and/or more education.

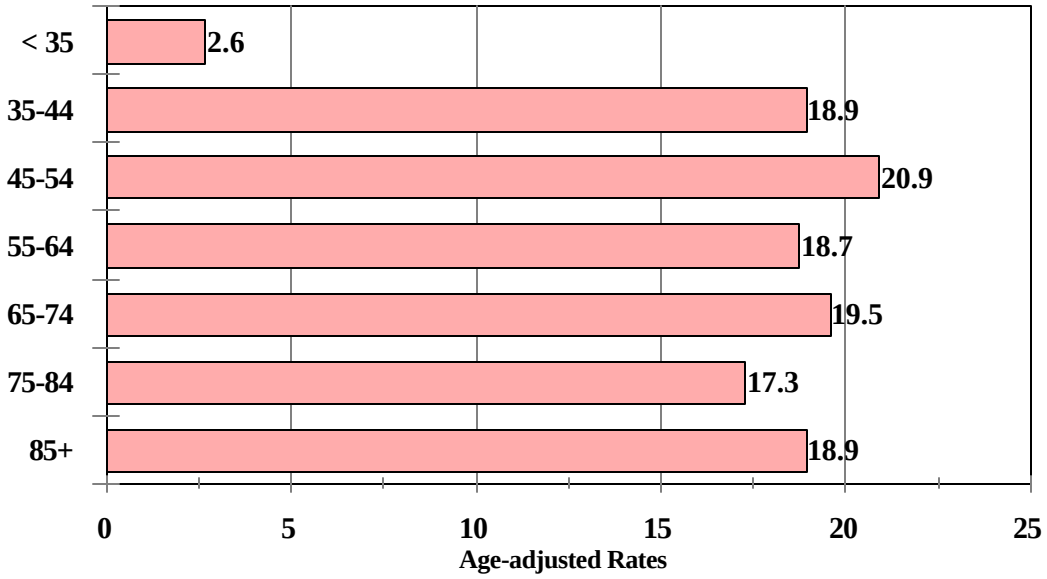
Figure 34.
Average Annual Age-adjusted Incidence Rates and Annual Percentage Changes
Invasive Cervical Cancer by Race/Ethnicity
Illinois, 1994-1998

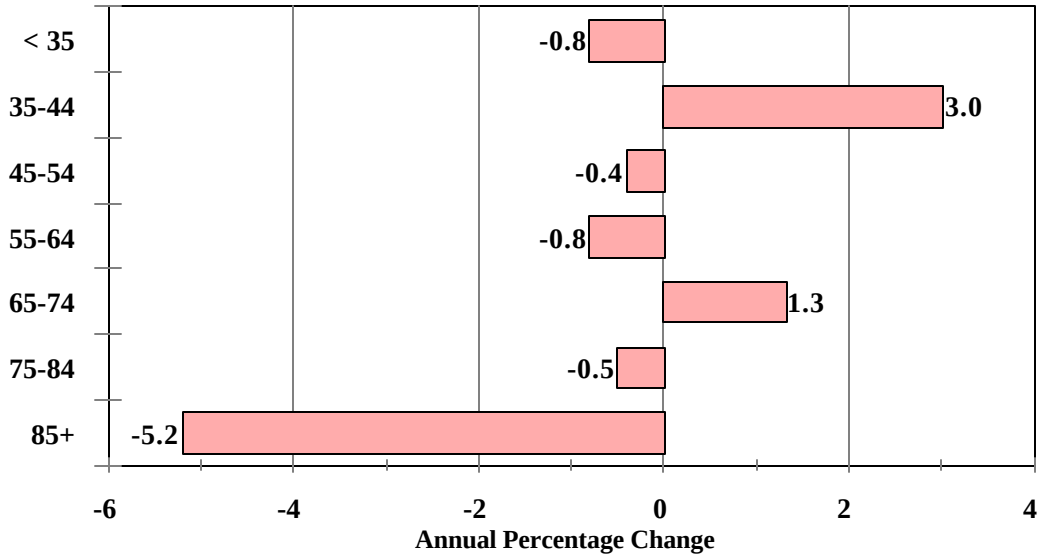




Rates per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).
#Hispanics/non-Hispanics are not mutually exclusive from all races, whites, blacks and Asian/other races.
SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

Figure 35.
Average Annual Age-specific Incidence Rates and Annual Percentage Changes
Invasive Cervical Cancer, All Races
Illinois, 1994-1998

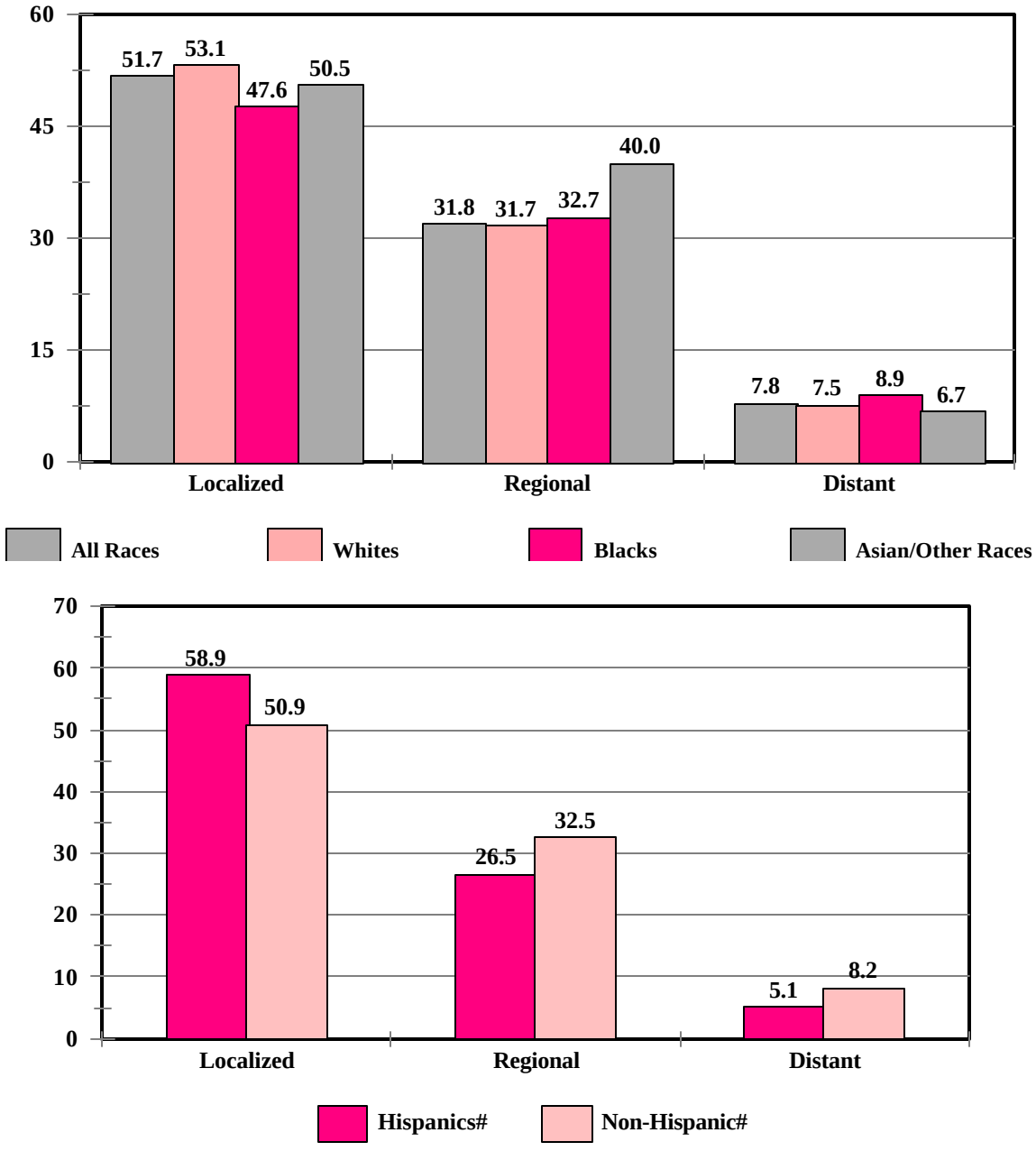




Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

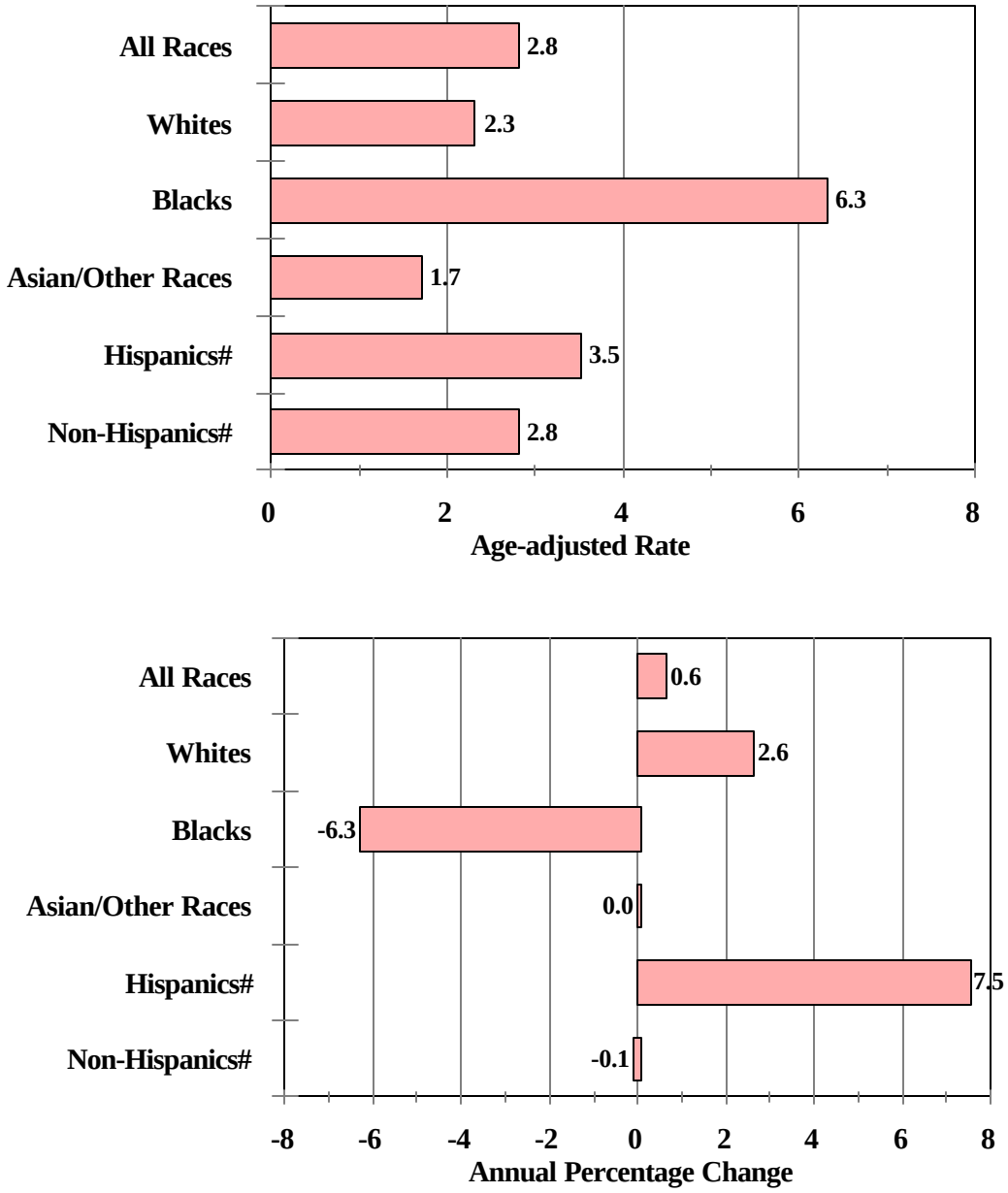
Figure 36.
Percentage Distribution by Stage at Cancer Diagnosis by Race/Ethnicity
Invasive Cervix, Illinois, 1994-1998



#Hispanics/non-Hispanics are not mutually exclusive from all races, whites, blacks and Asian/other races.

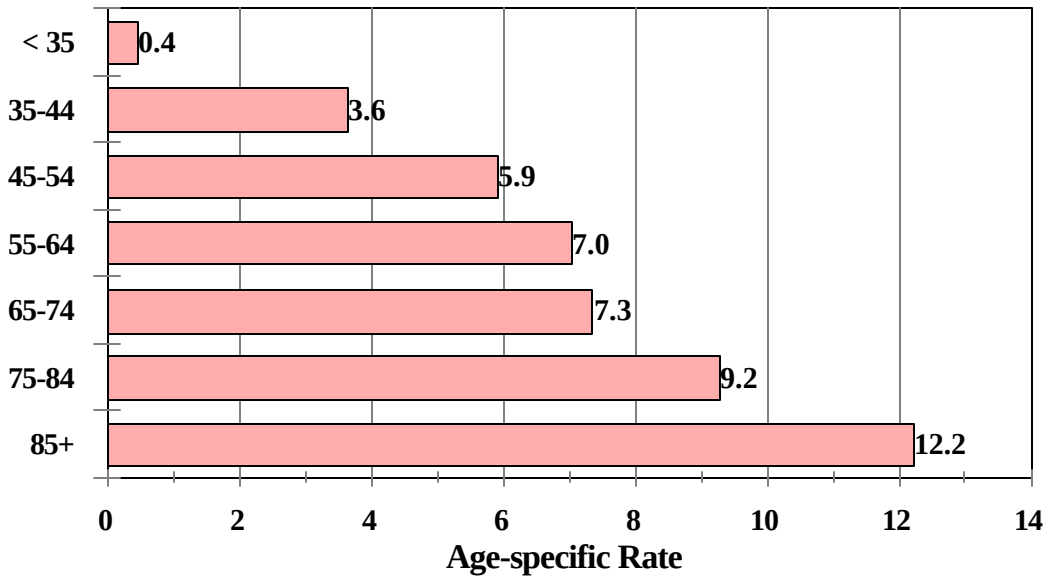
Source: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

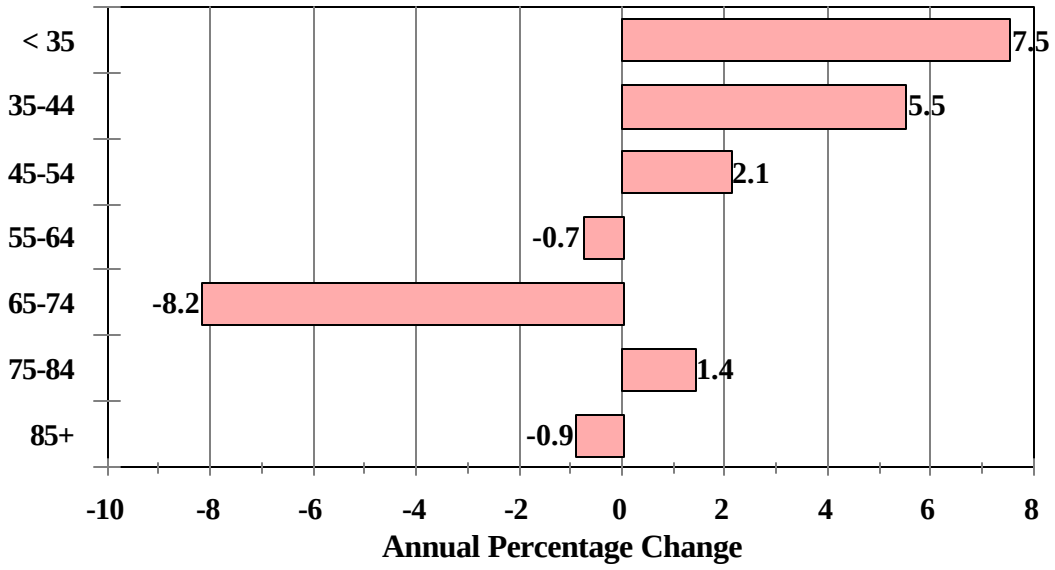
Figure 37.
Average Annual Age-adjusted Mortality Rates and Annual Percentage Changes
Cervical Cancer by Race/Ethnicity
Illinois, 1994-1998



Rates per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).
#Hispanics/non-Hispanics are not mutually exclusive fromall races, whites, blacks and Asian/other races.
SOURCE: Illinois Department of Public Health, Death Master Files, 1994-1998

Figure 38.
Average Annual Age-specific Mortality Rates and Annual Percentage Changes
Cervical Cancer, All Races
Illinois, 1994-1998

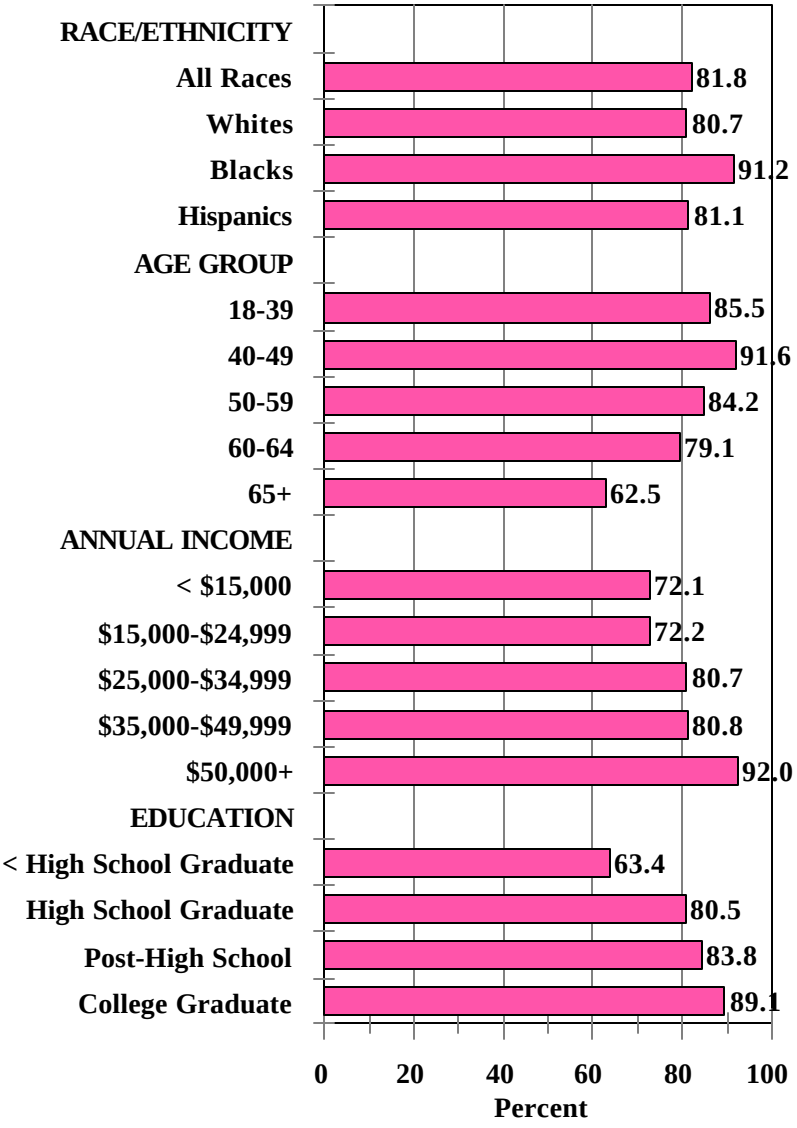




Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Death Master Files, 1994-1998

Figure 39.
Percent Females 18 Years and Older Who Have Had a Pap Smear Within the Past 3 Years by Demographic Category, Illinois, 1999



Source: Illinois Department of Public Health, Center for Health Statistics, July 2001

Prostate

Figures 40 through 45 contain information on prostate cancer for Illinois males during the time period, 1994-1998. Average annual age-adjusted incidence rate comparisons showed black males to have had the highest rate, about 70 percent greater than white males (Figure 40). Illinois males of Asian/other races had the lowest rate; about half of whites and one-third the rate for blacks. Likewise, Illinois' Hispanic males had lower average annual age-adjusted prostate cancer incidence rates than their non-Hispanic counterparts. Although APCs for every race/ethnic group were in the negative direction, none demonstrated statistical significance over 1994-1998.

Figure 41 presents Illinois' age-specific prostate cancer incidence rates and APCs from 1994-1998. As shown, age-specific rates dramatically increased up to age group 65-74, at which time a more gradual increase was apparent. Trend analyses for 1994-1998 showed a significant APC increase of more than 11 percent for those younger than 55 years of age. In contrast, prostate cancer incidence rates significantly declined for Illinois males ages 75-84 and 85 and older.

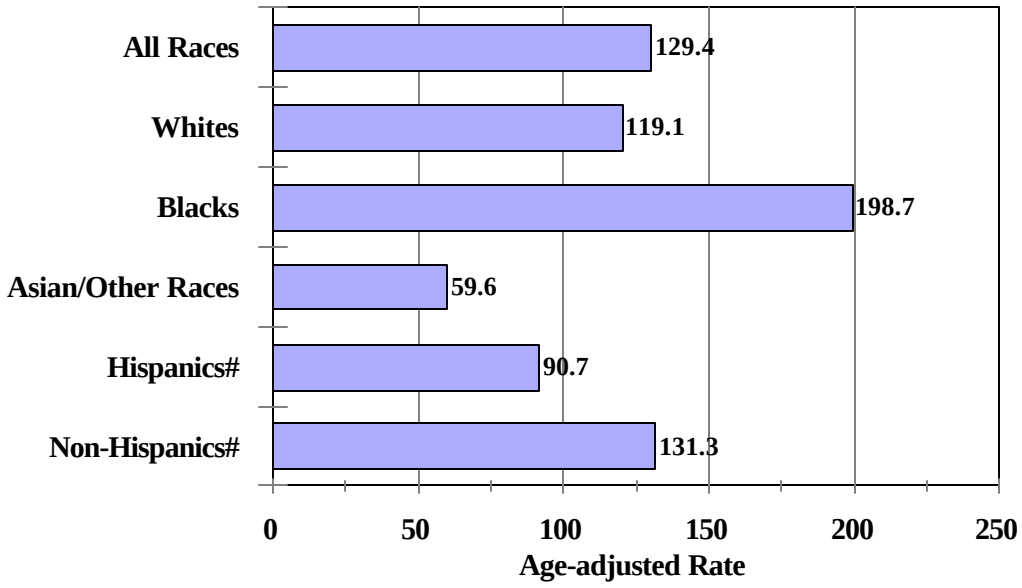
About two-thirds of prostate cancer diagnosed among Illinois males is detected in the localized stage of the disease (Figure 42). Black males had the lowest percentage of localized stage prostate cancer and the greatest percentage of distant stage disease. The stage profile for Hispanic males diagnosed with prostate cancer was slightly less favorable than that for non-Hispanics.

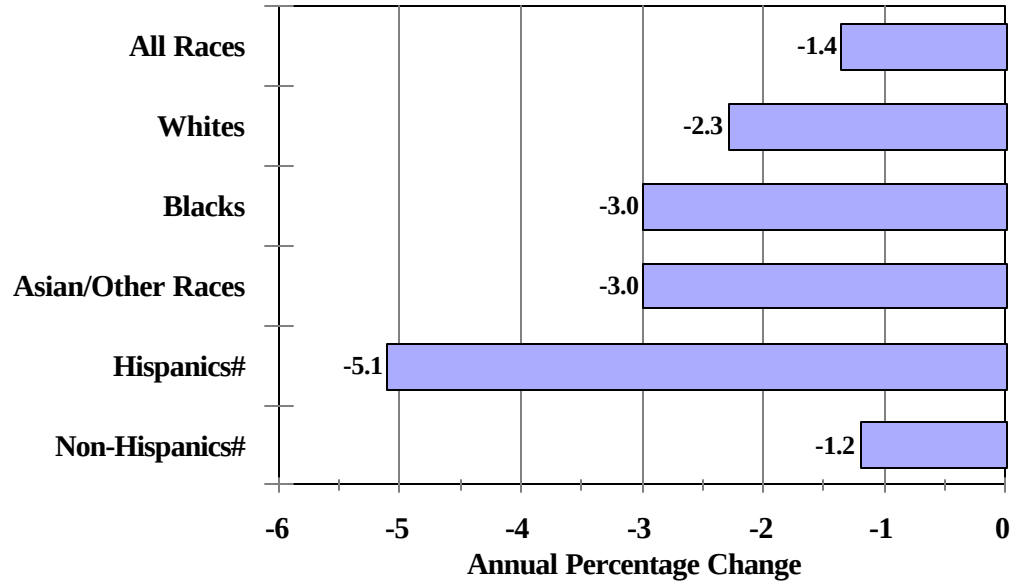
As shown in Figure 43, the general race/ethnic patterns for prostate cancer mortality are similar to those observed for incidence. That is, black males had the highest mortality rates, more than twice those for white males in Illinois. Asian/other races males had very low prostate cancer mortality rates. Hispanic rates were lower than those for non-Hispanics. Statistically significant decreases in prostate cancer mortality rates were apparent only for males of all races, whites and non-Hispanics over 1994-1998.

Figure 44 shows that prostate cancer mortality rates dramatically increase with each advancing age group. However, statistically significant annual age-specific prostate cancer mortality rate declines over 1994-1998 were observed for Illinois males in age groups 65-74 and 85 years and older.

BRFSS 1996 prevalence data for males 50 years of age or older reporting ever having had a digital rectal exam are presented in Figure 45. Black males reported digital rectal examination considerably less often than did white males. Males in older age groups (60-64 and 65+) were more likely to have had the exam than males 50-59 years of age. The digital rectal exam data by annual income and education showed no clear patterns among Illinois males during 1996.

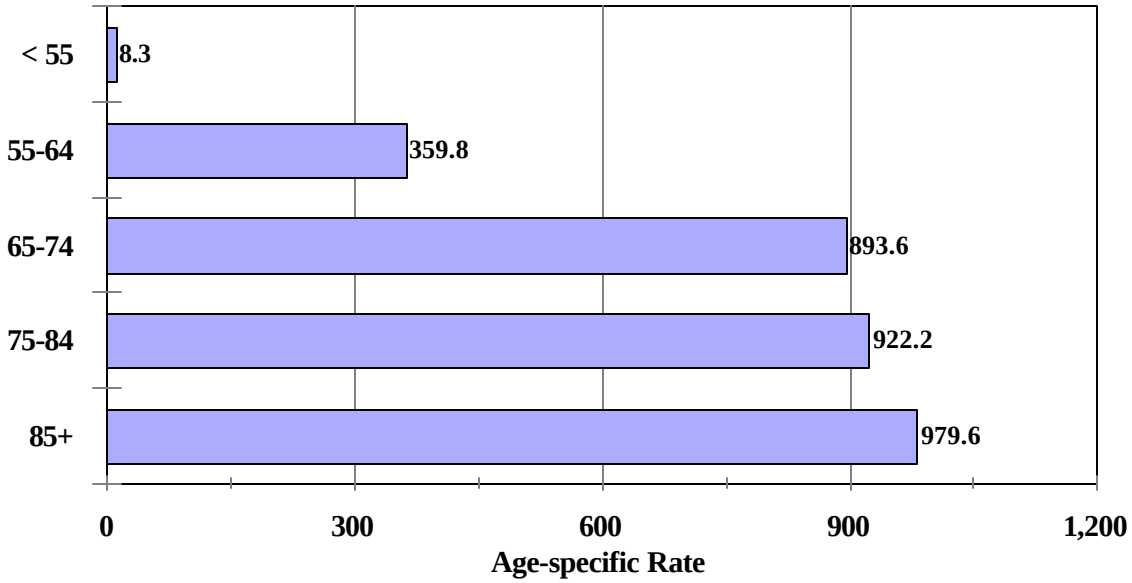
Figure 40.
Average Annual Age-adjusted Incidence Rates and Annual Percentage Changes
Prostate Cancer by Race/Ethnicity
Illinois, 1994-1998

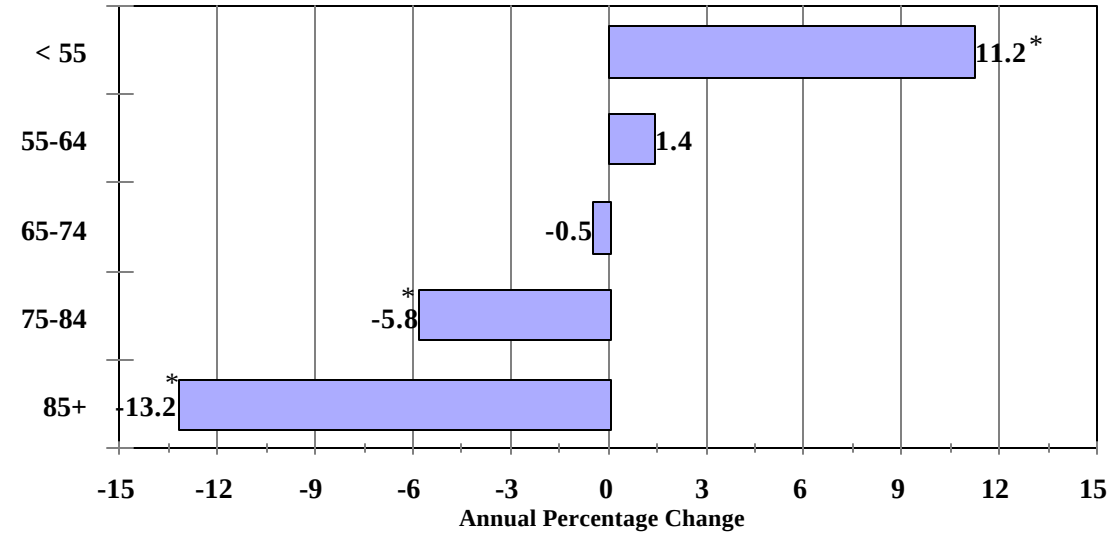




Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).
#Hispanics/non-Hispanics are not mutually exclusive from all races, whites, blacks and Asian/other races.
SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

Figure 41.
Average Annual Age-specific Incidence Rates and Annual Percentage Changes
Prostate Cancer, All Races
Illinois, 1994-1998

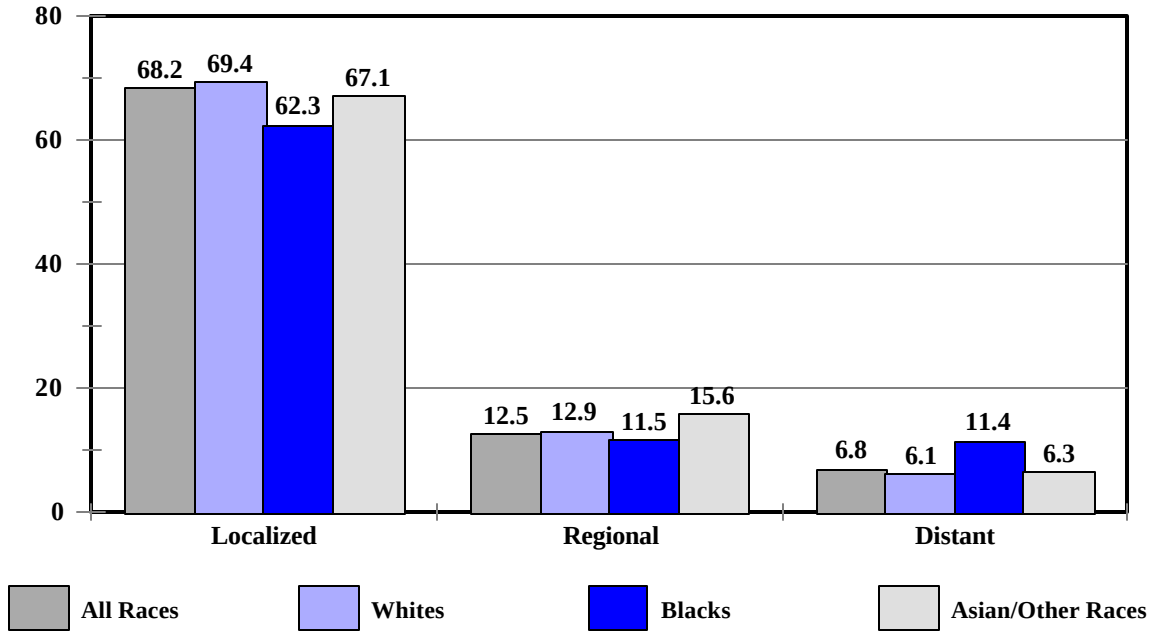


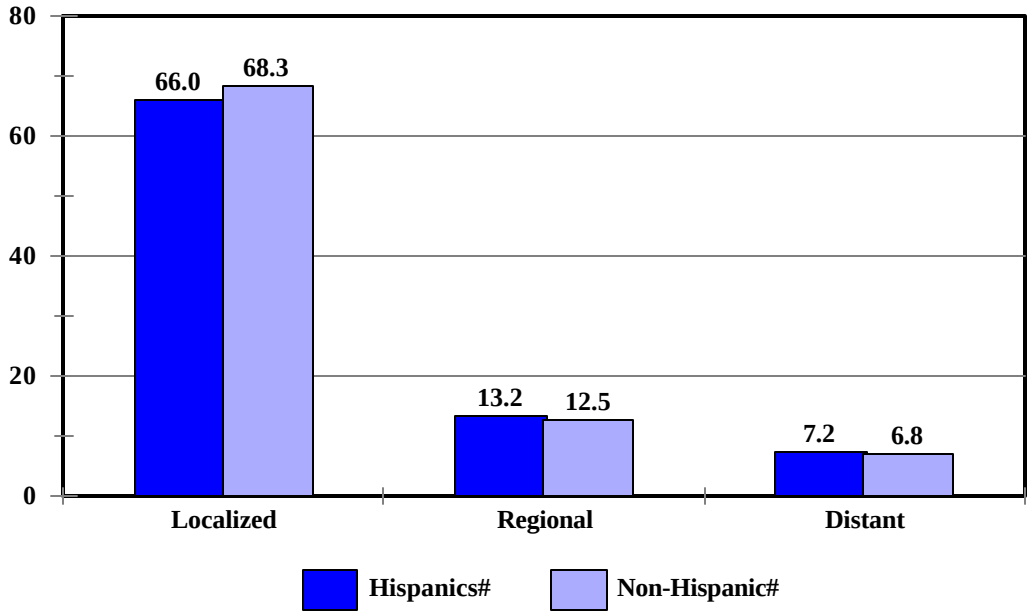


Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

Figure 42.
Percentage Distribution by Stage of Cancer at Diagnosis by Race/Ethnicity
Prostate, Illinois, 1994-1998

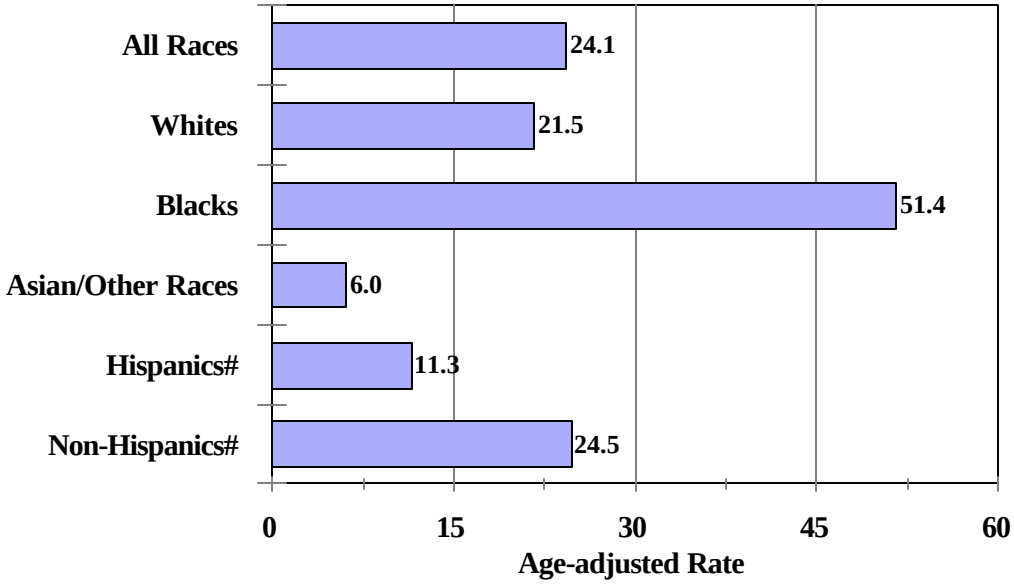


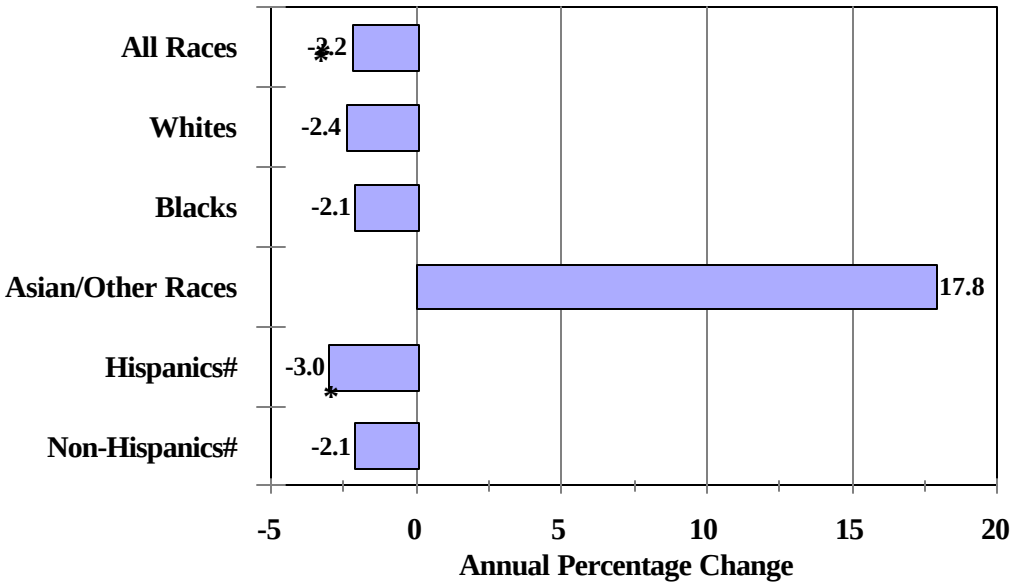


#Hispanics/non-Hispanics are not mutually exclusive from all races, whites, blacks and Asian/other races.

Source: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000

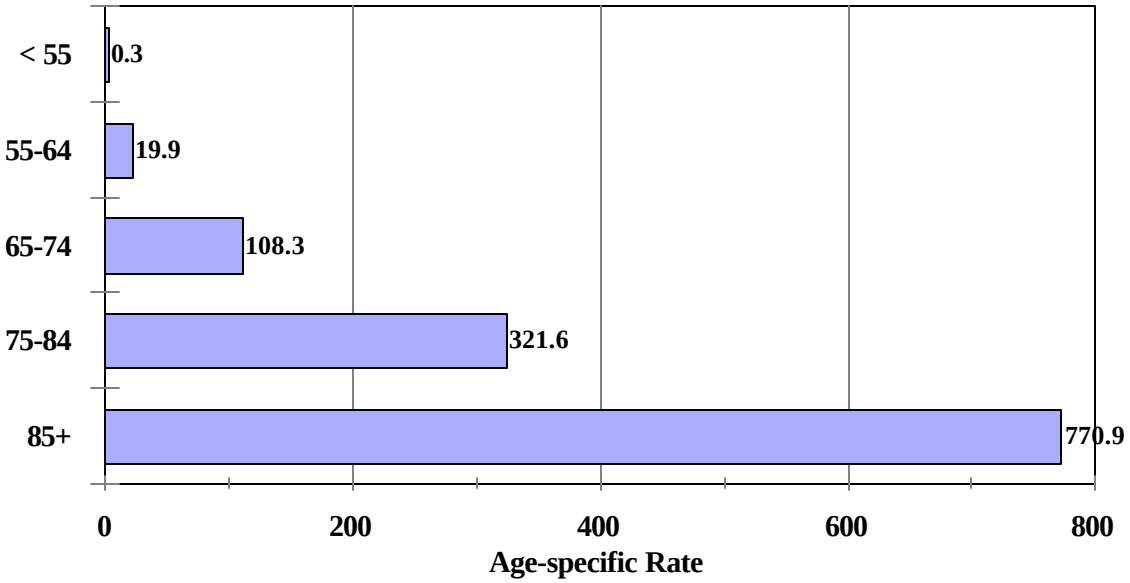
Figure 43.
Average Annual Age-adjusted Mortality Rates and Annual Percentage Changes
Prostate Cancer by Race/Ethnicity
Illinois, 1994-1998

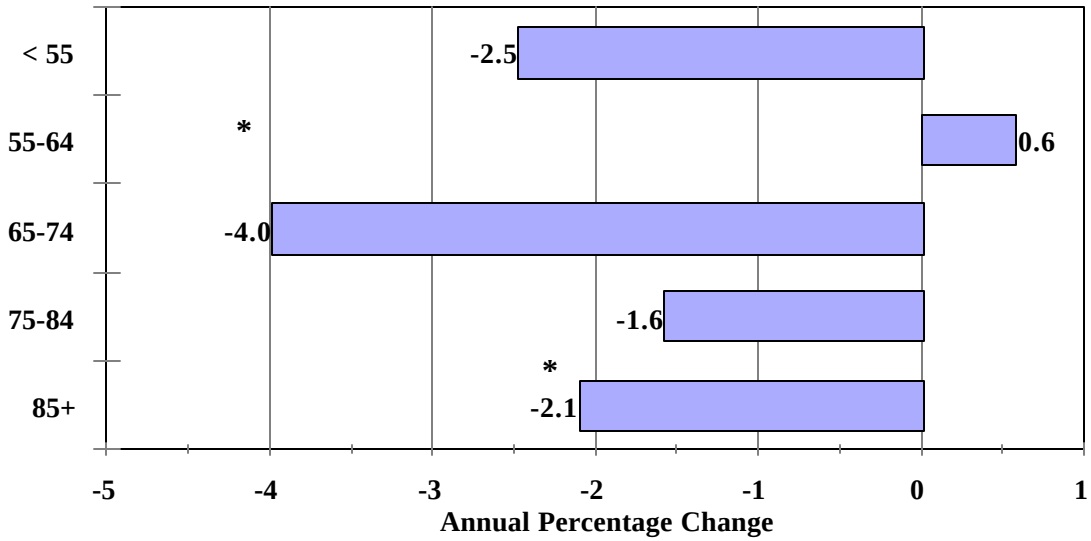




Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).
#Hispanics/non-Hispanics are not mutually exclusive from all races, whites, blacks and Asian/other races.
SOURCE: Illinois Department of Public Health, Death Master Files, 1994-1998

Figure 44.
Average Annual Age-specific Mortality Rates and Annual Percentage Changes
Prostate Cancer, All Races
Illinois, 1994-1998

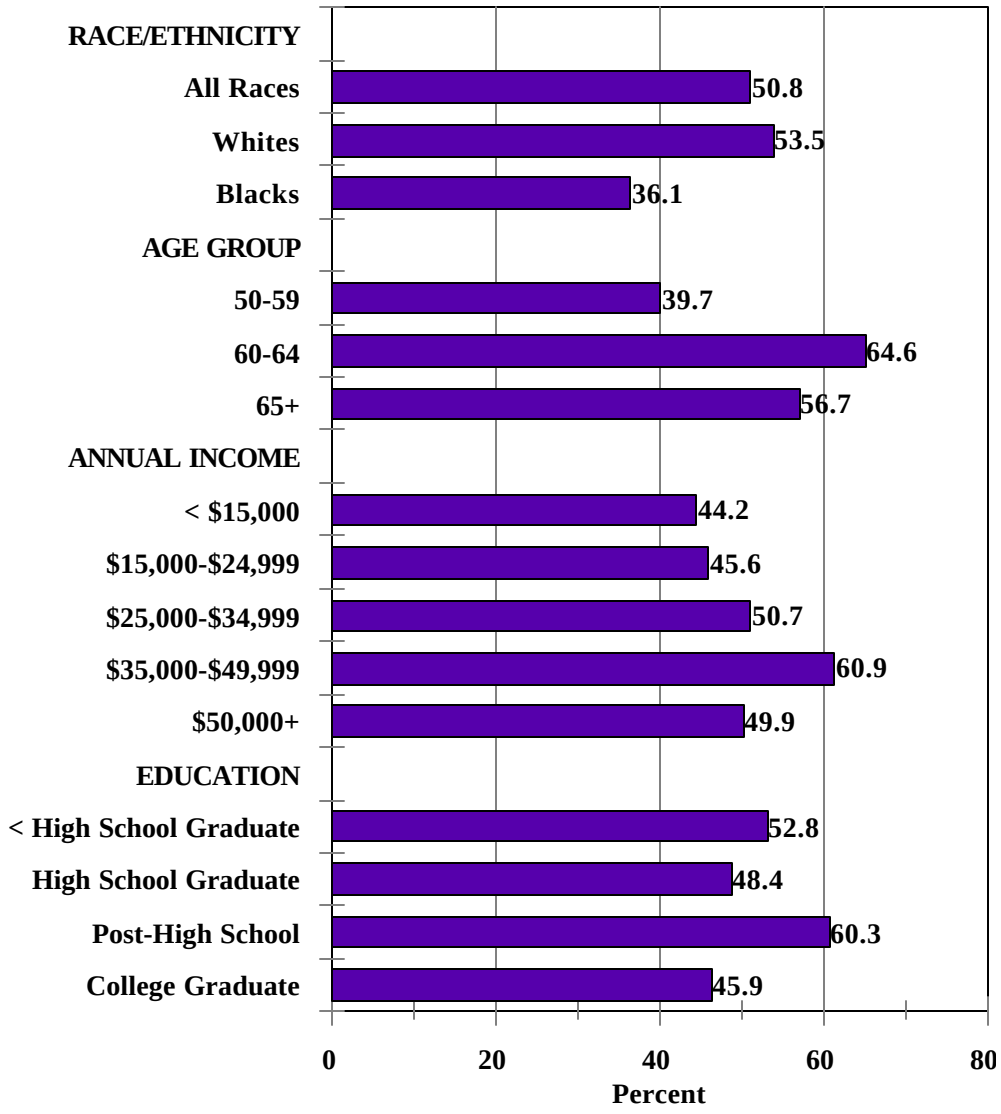




Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
*Annual percentage change is significantly different from zero ($p<0.05$).

SOURCE: Illinois Department of Public Health, Death Master Files, 1994-1998

Figure 45.
Percent Males 50 Years or Older Who Ever Had a Digital Rectal Exam by Demographic Category, Illinois, 1996



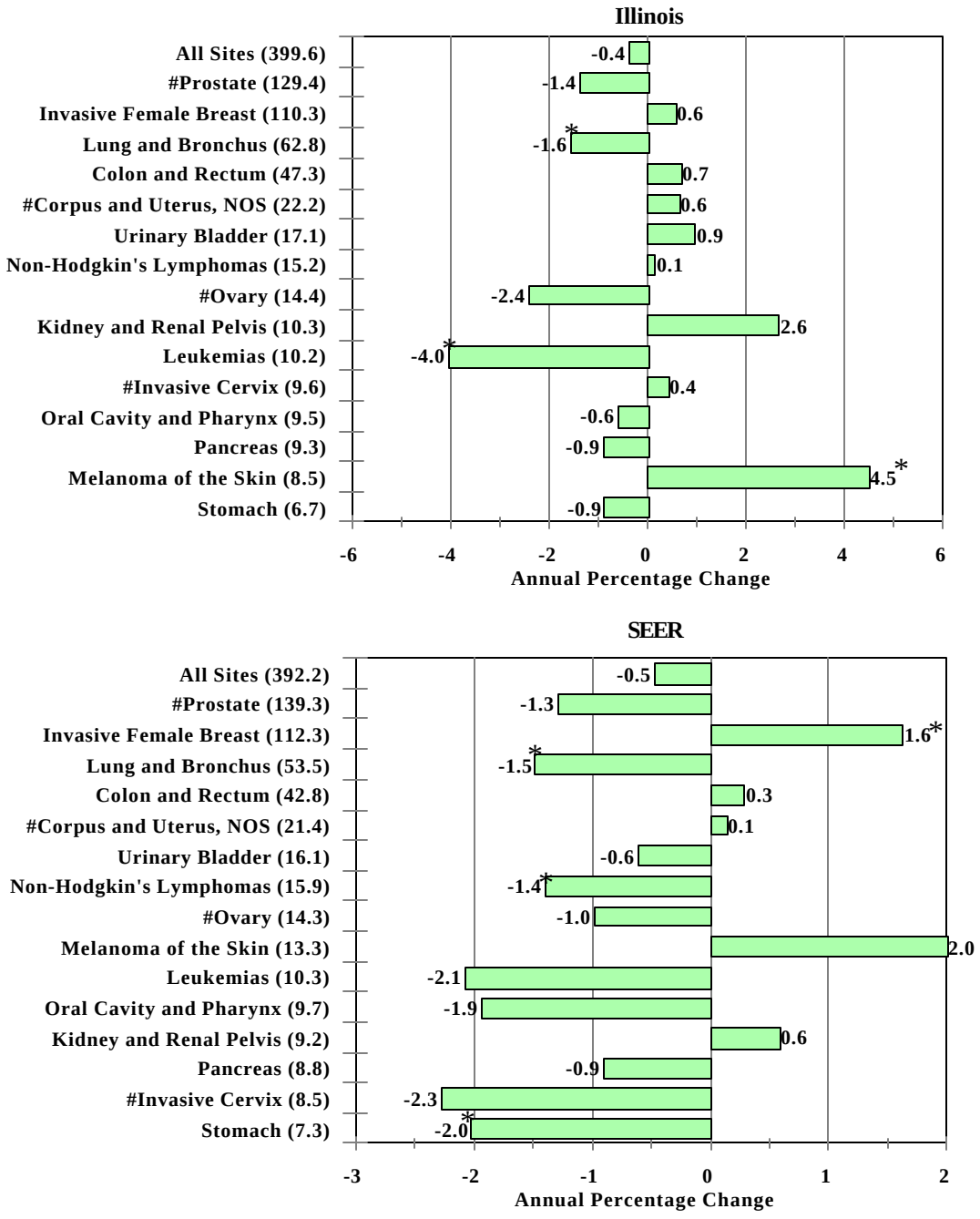
Source: Illinois Department of Public Health, Center for Health Statistics, July 2001

National Comparisons, Top 15 Cancer Sites by Rank, 1994-1998

Incidence: Illinois vs. SEER, 1994-1998. Figure 46 shows the average annual age-adjusted rates and APCs over 1994-1998 for all invasive cancer sites and the top 15 sites among all races for Illinois and SEER. The same 15 cancer sites appeared for both Illinois and SEER although rank differed in some instances. Prostate, female breast, lung and bronchus, and colon and rectum were the cancer sites with the highest average annual age-adjusted incidence rates for both Illinois and SEER. All sites cancer incidence for Illinois appeared to decrease by 0.4 percent per year, whereas nationally a decline of 0.5 percent per year was reported. Neither national nor Illinois decreases were statistically significant. Statistically significant lung cancer incidence rate declines were observed for both Illinois and SEER. Significant APCs were observed with a decline in leukemias and an increase in melanoma of the skin in Illinois. For SEER, a significant increase was observed for invasive female breast cancer incidence rates as well as statistically significant declines in age-adjusted rates for non-Hodgkin's lymphomas and stomach cancer.

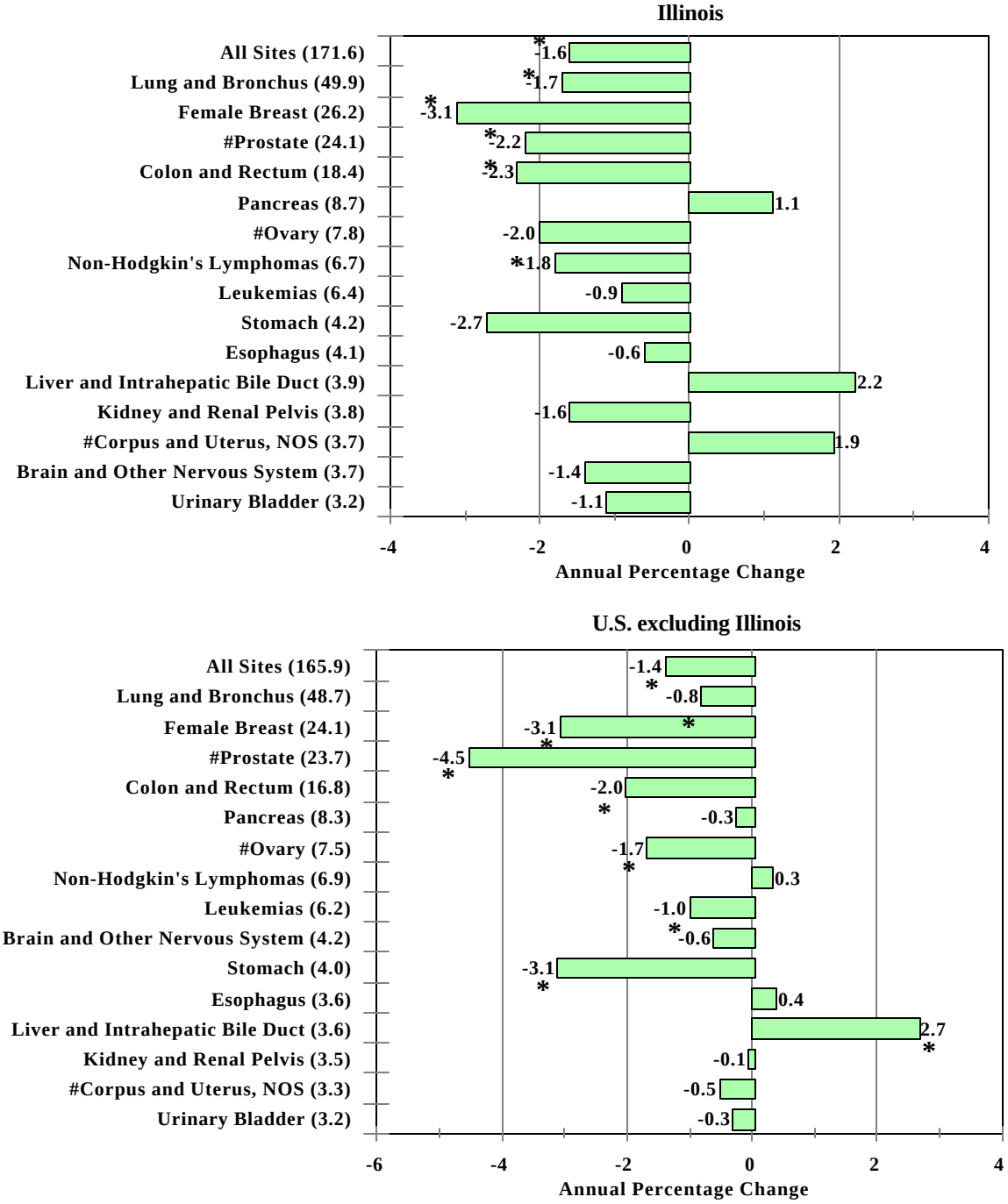
Mortality: Illinois vs. U.S. excluding Illinois, 1994-1998. Figure 47 presents graphs with average annual age-adjusted cancer mortality rates, 1994-1998, for all sites combined and the top 15 cancer death sites in Illinois and the U.S. excluding Illinois. The same 15 sites appeared for both Illinois and U.S. cancer death rates with slight differences in rank. The most common cancer deaths were from lung and bronchus, female breast, prostate, and colon and rectum for both Illinois and nationally. Statistically significant declines in annual age-adjusted mortality rates for all cancer sites combined were observed for Illinois (1.6 percent per year) and for the U.S. excluding Illinois (1.4 percent per year). In addition, age-adjusted cancer mortality rates for breast (female), colon and rectum, lung and bronchus, ovary and prostate demonstrated statistically significant declines for Illinois as well as for the rest of the nation. Significant decreases in death rates from leukemias and stomach cancer and an increase in kidney and renal pelvis cancer mortality were evident at the national level but not for Illinois.

Figure 46.
Comparison of Illinois with the Surveillance, Epidemiology and End Results Program (SEER), 1994-1998
Annual Percentage Change for Age-adjusted Cancer Incidence Rates, All Races, Both Sexes
All Cancer Sites and the Top 15 Cancer Sites



Site (Average annual incidence rates per 100,000 for 1994-1998 and age-adjusted to the 1970 U.S. standard million population)
*Annual percentage change is significantly different from zero ($p<0.05$).
#Rates and APCs are for the respective sex.
SOURCE: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000 and
SEER Cancer Incidence Public-Use Database, 1973-1998, August 2000 Submission

Figure 47.
Comparison of Illinois with U.S. excluding Illinois, 1994-1998
Annual Percentage Change (APC) for Age-adjusted Cancer Mortality Rates
All Cancer Sites and the Top 15 Cancer Sites, All Races, Both Sexes



Site (Average annual mortality rates per 100,000 for 1994-1998 and age-adjusted to the 1970 U.S. standard million population)
*APC is significantly different from zero ($p<0.05$). #Rates and APCs are those for the respective sex.
SOURCE: Illinois Department of Public Health, Death Master Files, 1994-1998, NCHS Public Use Multiple Cause of Death Files, 1994-1998

Site-specific National Comparisons, Incidence and Mortality, 1994-1998

Figures 48 through 56 present site category-specific cancer incidence and mortality data that allow comparisons of Illinois with national sources. Cancer incidence age-adjusted rates, 1994-1998, are presented for all races, whites and blacks for Illinois, SEER and CINA.[17, 18] Comparisons of average annual age-adjusted cancer mortality rates, 1994-1998, are made between Illinois and the U.S. as published in CINA.[19] Sex-specific data are presented in separate figures for all cancer sites, colon and rectum, and lung and bronchus. The remaining figures contain cancer data on breast (female), cervix and prostate.

All Cancer Sites. Figures 48 and 49 show all sites combined cancer data comparisons for males and females, respectively. Among males, blacks had the highest incidence and mortality rates within each comparison group and Illinois' black males had by far the highest rates for every comparison both within and between groups. Cancer incidence rates for Illinois' white males were slightly lower than SEER or CINA but their cancer mortality rates were slightly higher than the rates observed nationally. As shown in Figure 49, these same patterns were evident for females but females had considerably lower cancer incidence and cancer mortality rates than those observed for males.

Colon and Rectum. As shown in figures 50 and 51, Illinois males and females had higher average annual age-adjusted incidence and mortality rates for cancers of the colon and rectum than their national counterparts in every between race-group comparison. Moreover, blacks in Illinois had the highest colorectal cancer incidence and mortality rates within the respective sex group for every comparison both within and between groups.

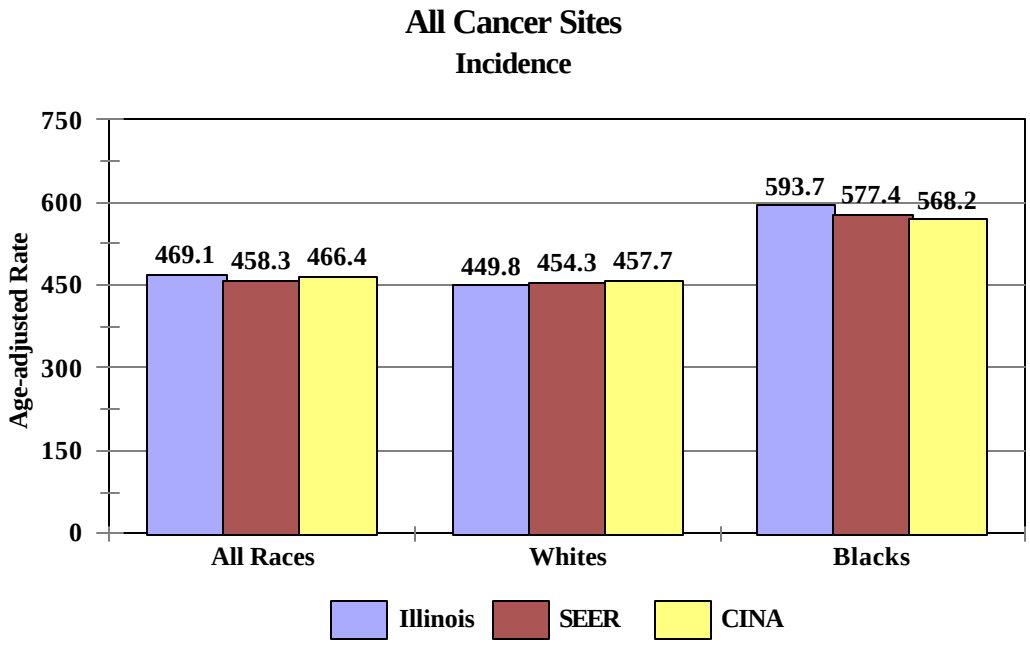
Lung and Bronchus. Figures 52 and 53 show cancer of the lung and bronchus average annual age-adjusted incidence and mortality rate comparisons for males and females, respectively. Again, it should be noted that black males, especially those in Illinois, had substantially higher rates than whites in all comparisons both within and between groups. In addition, Illinois black female incidence and mortality rates were substantially higher than those observed for SEER or CINA incidence rates and CINA, U.S. mortality rates.

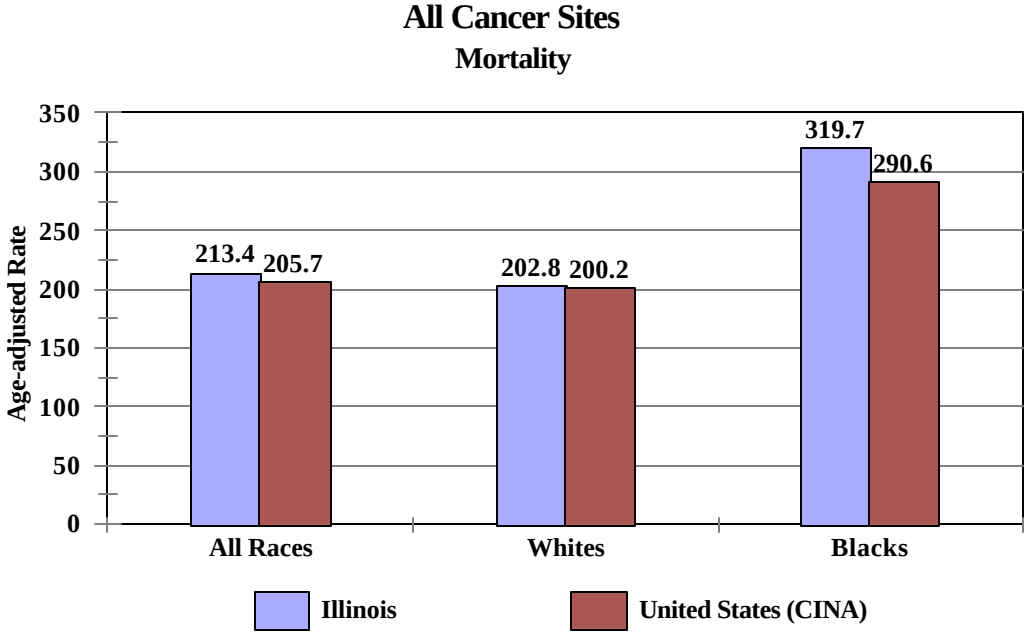
Female Breast. Figure 54 displays the female breast cancer incidence and mortality comparisons for Illinois with the national data sources. The invasive breast cancer incidence rates were similar for within-race comparisons. Between race groups, white females had higher incidence rates than black females but breast cancer mortality rates were consistently higher among black than white females. Illinois had the highest breast cancer mortality rate for every within-race group comparison.

Cervix. Figure 55 compares average annual age-adjusted cervical cancer rates for Illinois with those from national data sources. Illinois females had higher invasive cervical cancer incidence rates than those reported by SEER or CINA within every race group category. The invasive cervical cancer incidence rate for Illinois' black females was considerably higher than the SEER or CINA rates for black females. Consistently, the Illinois black cervical cancer mortality rate was observed to be higher than the national rate for black females.

Prostate. The Illinois-to-national comparisons for prostate cancer incidence and mortality are shown in Figure 56. Prostate cancer incidence rates for Illinois were lower than those observed for SEER or CINA in every within-race comparison. The SEER prostate cancer incidence rate for black males was the highest in all comparisons both within and between groups. Prostate cancer mortality rates were similar for Illinois males and their national counterparts within each race group comparison.

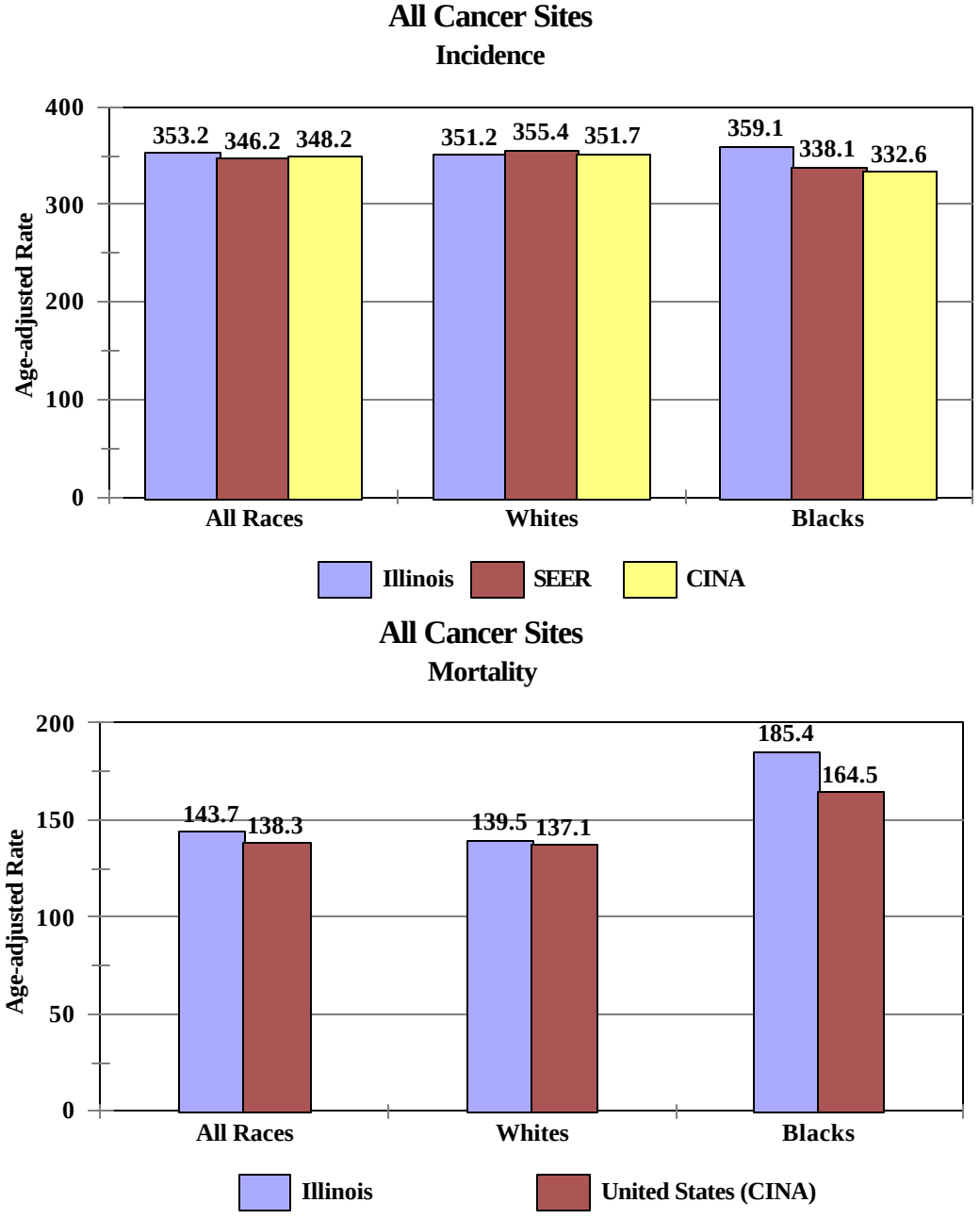
Figure 48.
Comparison of Illinois Cancer Incidence and Mortality with National Data
Males, by Race, 1994-1998





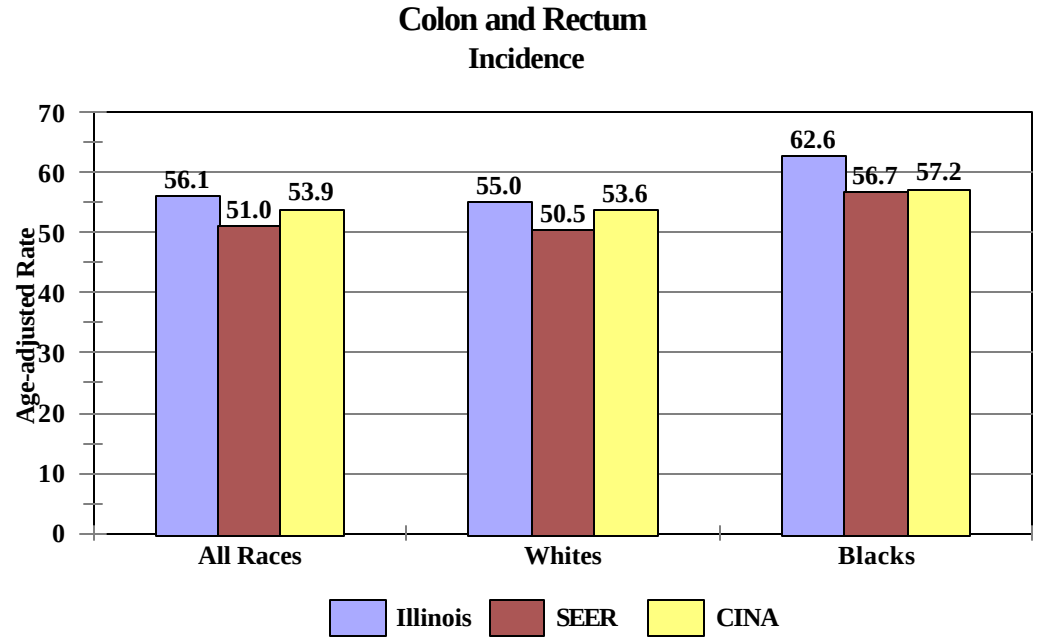
Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
Source: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000 and Death Master Files, 1994-1998; Surveillance Epidemiology End Results Program (SEER) Cancer Incidence Public Use Database, 1973-1998, August 2000 Submission; Cancer Incidence in North America (CINA); and NCHS Public Use Multiple Cause of Death Files, 1994-1998

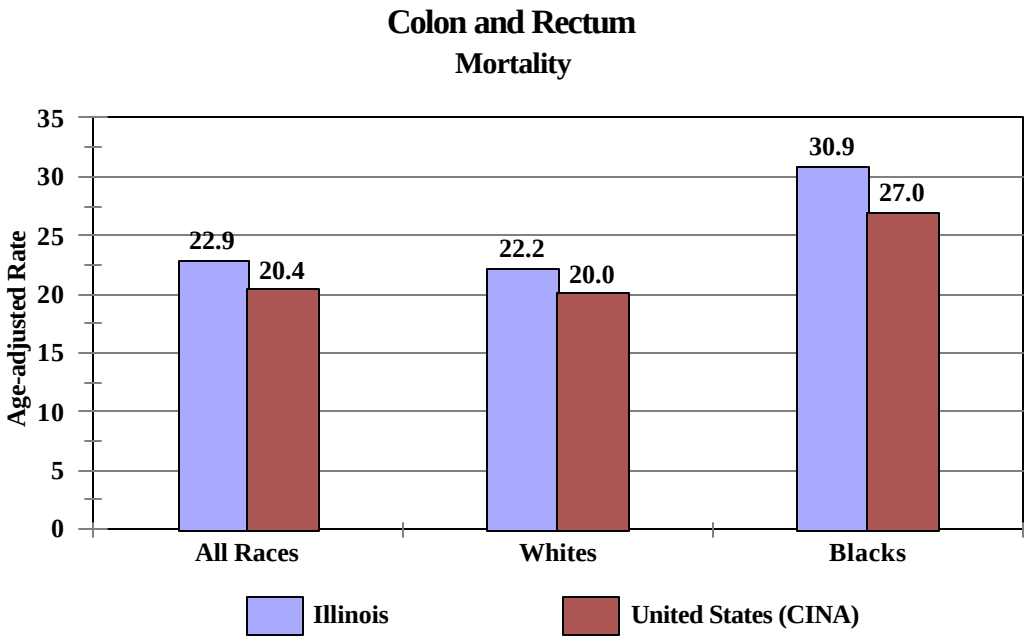
Figure 49.
Comparison of Illinois Cancer Incidence and Mortality with National Data
Females, by Race, 1994-1998



Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
Source: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000 and Death Master Files, 1994-1998; Surveillance Epidemiology End Results Program (SEER) Cancer Incidence Public Use Database, 1973-1998, August 2000 Submission; Cancer Incidence in North America (CINA); and NCHS Public Use Multiple Cause of Death Files, 1994-1998

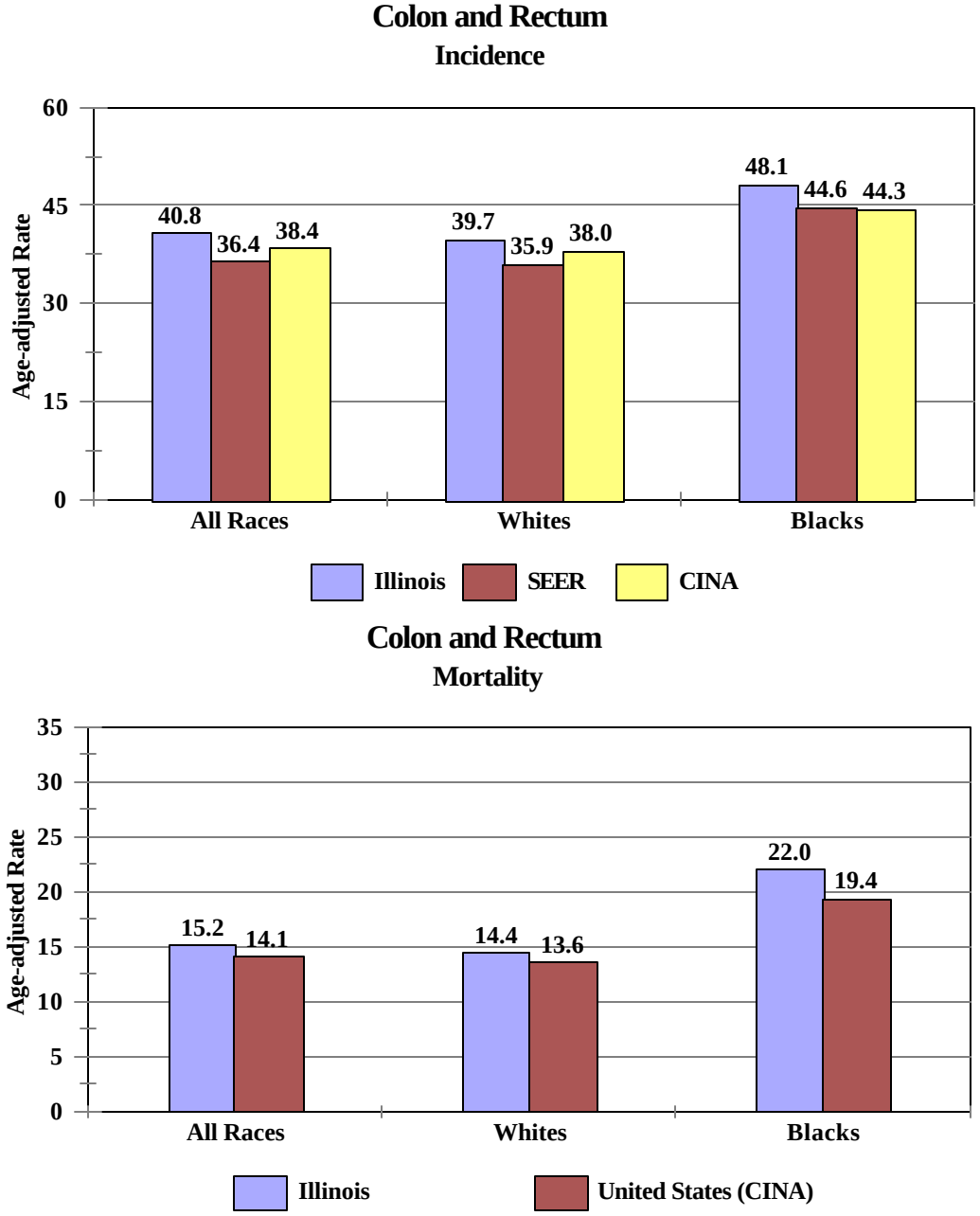
Figure 50.
Comparison of Illinois Cancer Incidence and Mortality with National Data
Males, by Race, 1994-1998





Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
Source: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000 and Death Master Files, 1994-1998; Surveillance Epidemiology End Results Program (SEER) Cancer Incidence Public Use Database, 1973-1998, August 2000 Submission; Cancer Incidence in North America (CINA); and NCHS Public Use Multiple Cause of Death Files, 1994-1998

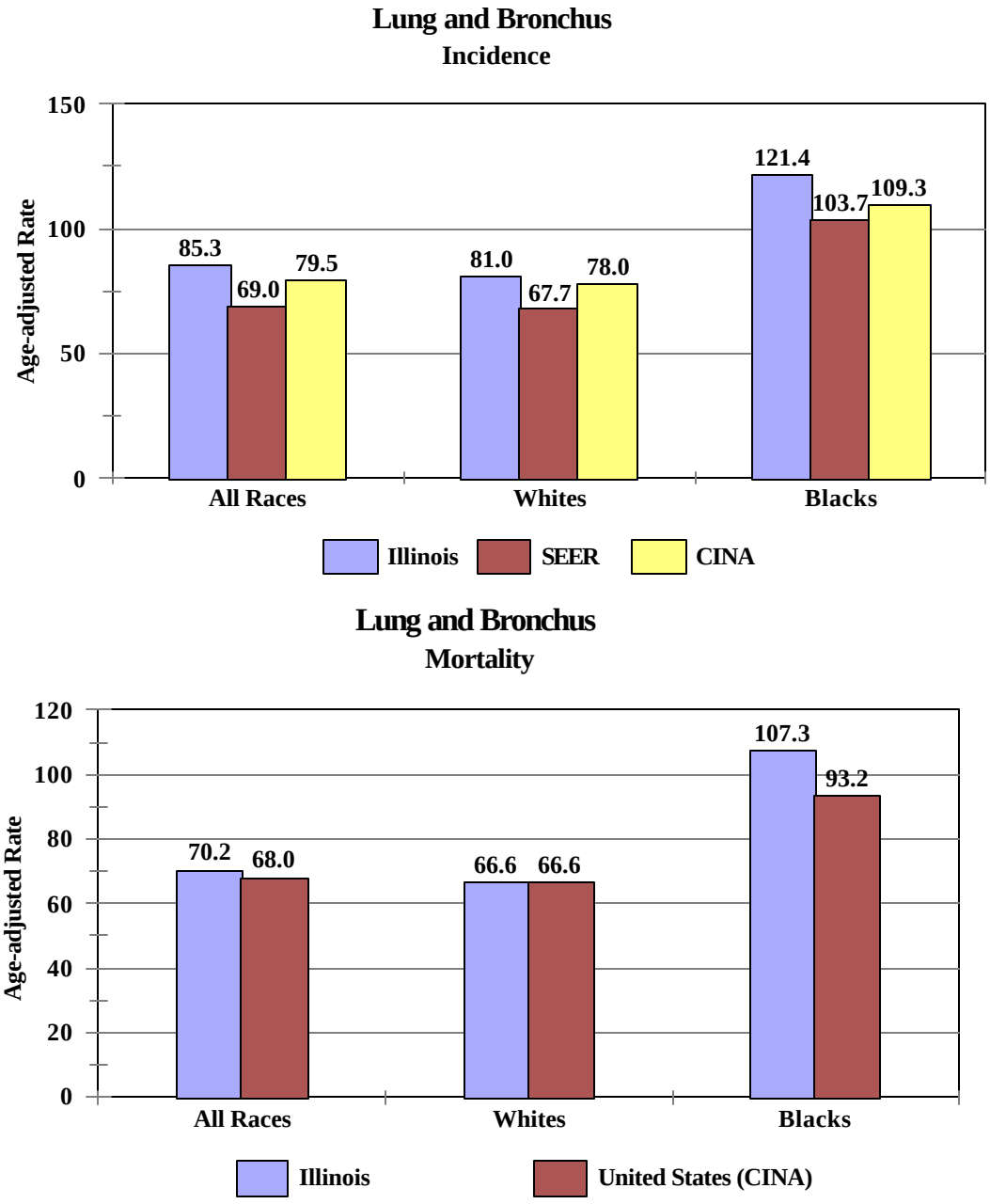
Figure 51.
Comparison of Illinois Cancer Incidence and Mortality with National Data
Females, by Race, 1994-1998



Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.

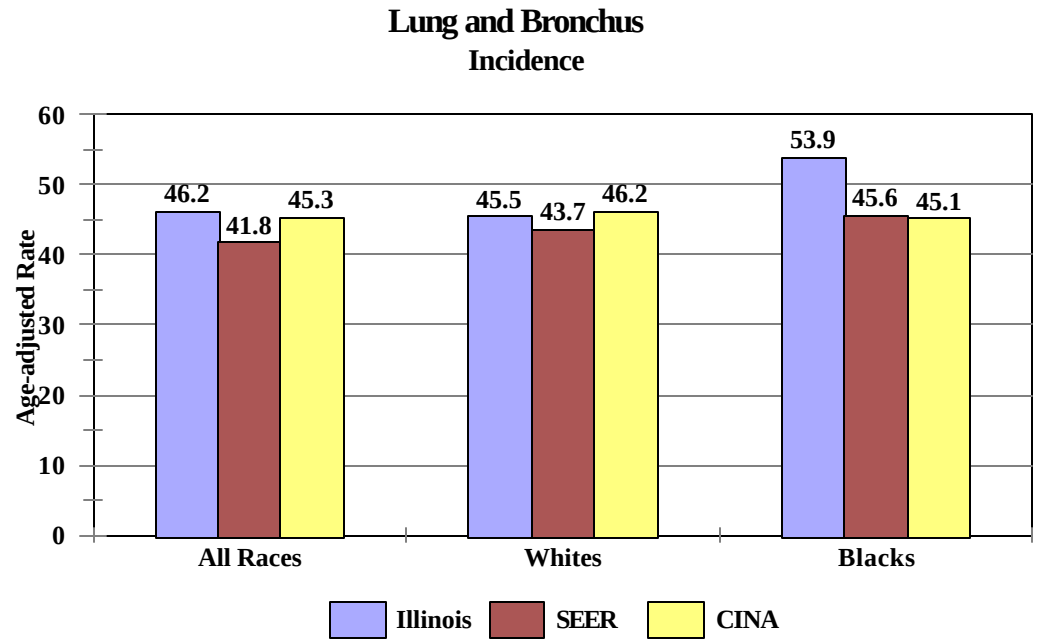
Source: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000 and Death Master Files, 1994-1998; Surveillance Epidemiology End Results Program (SEER) Cancer Incidence Public Use Database, 1973-1998, August 2000 Submission; Cancer Incidence in North America (CINA); and NCHS Public Use Multiple Cause of Death Files, 1994-1998

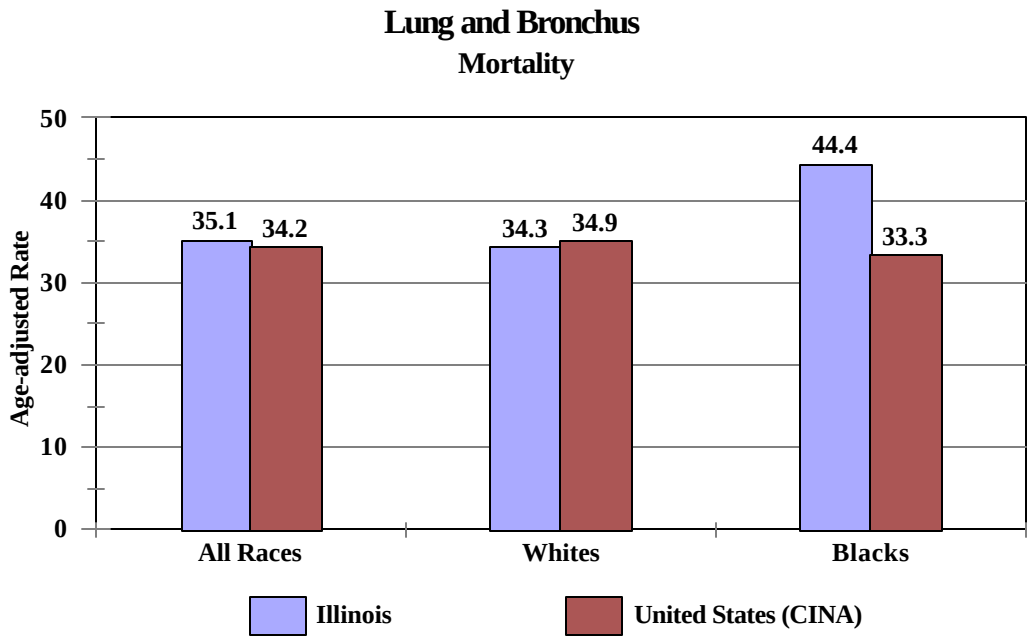
Figure 52.
Comparison of Illinois Cancer Incidence and Mortality with National Data
Males, by Race, 1994-1998



Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.
Source: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000 and Death Master Files, 1994-1998; Surveillance Epidemiology End Results Program (SEER) Cancer Incidence Public Use Database, 1973-1998, August 2000 Submission; Cancer Incidence in North America (CINA); and NCHS Public Use Multiple Cause of Death Files, 1994-1998

Figure 53.
Comparison of Illinois Cancer Incidence and Mortality with National Data
Females, by Race, 1994-1998

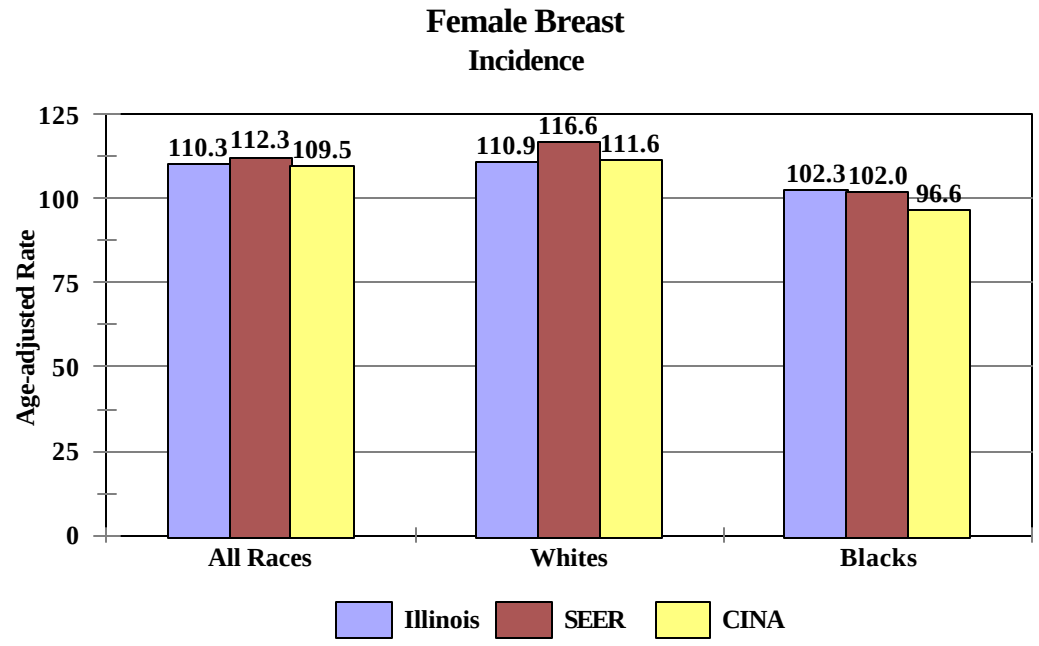


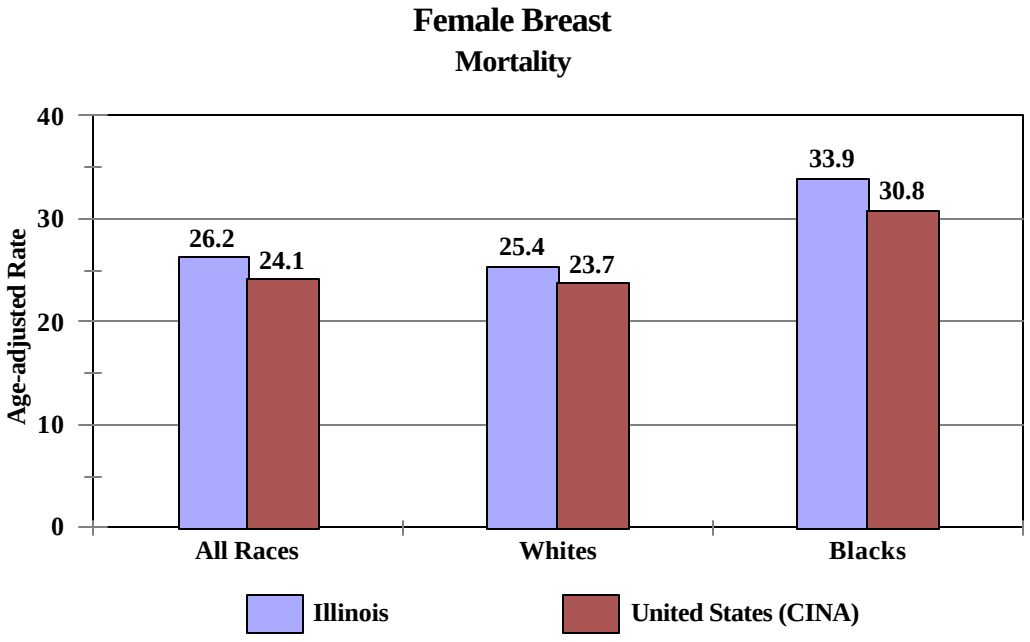


Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.

Source: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000 and Death Master Files, 1994-1998; Surveillance Epidemiology End Results Program (SEER) Cancer Incidence Public Use Database, 1973-1998, August 2000 Submission; Cancer Incidence in North America (CINA); and NCHS Public Use Multiple Cause of Death Files, 1994-1998

Figure 54.
Comparison of Illinois Cancer Incidence and Mortality with National Data, by Race
1994-1998

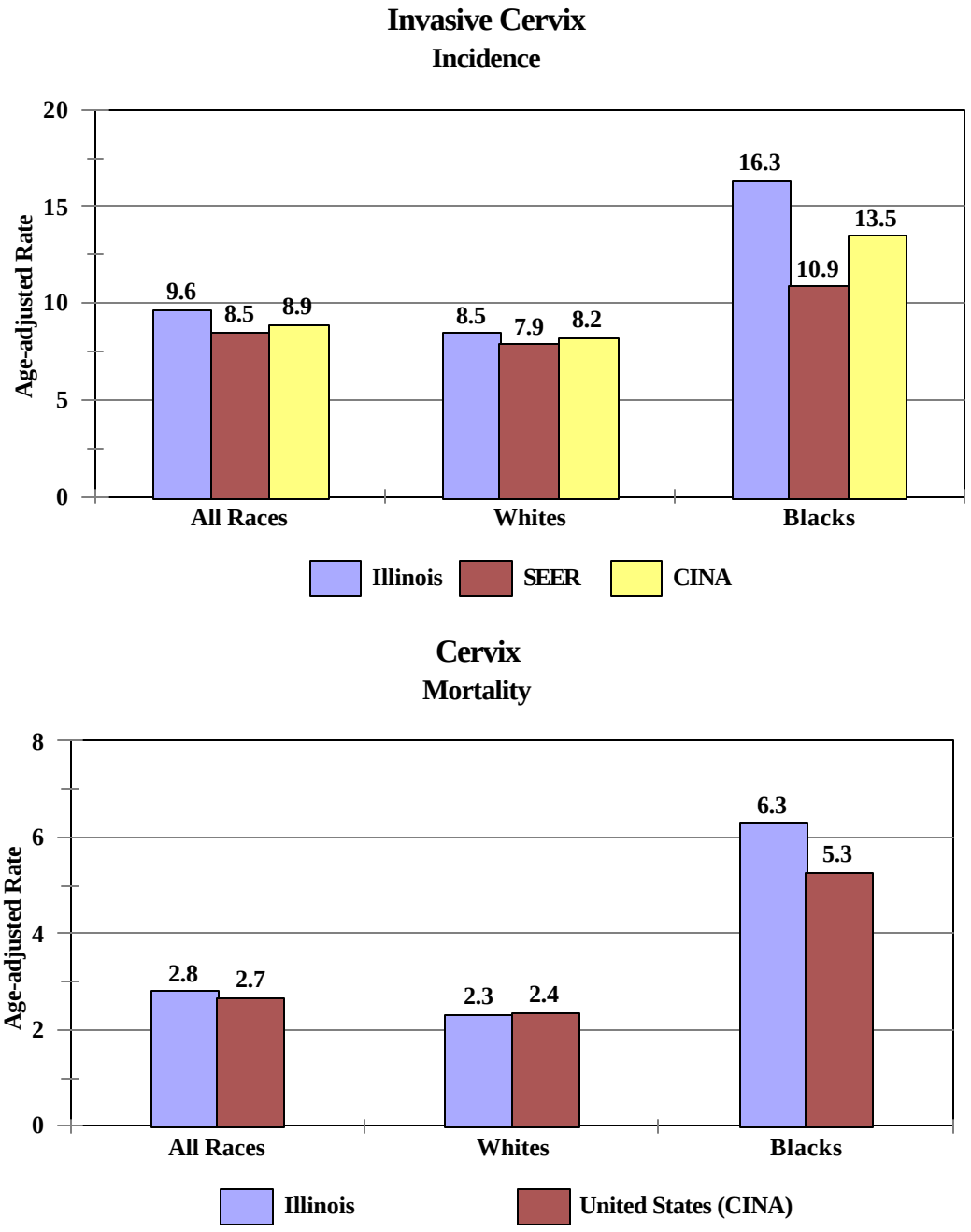




Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.

Source: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000 and Death Master Files, 1994-1998; Surveillance Epidemiology End Results Program (SEER) Cancer Incidence Public Use Database, 1973-1998, August 2000 Submission; Cancer Incidence in North America (CINA); and NCHS Public Use Multiple Cause of Death Files, 1994-1998

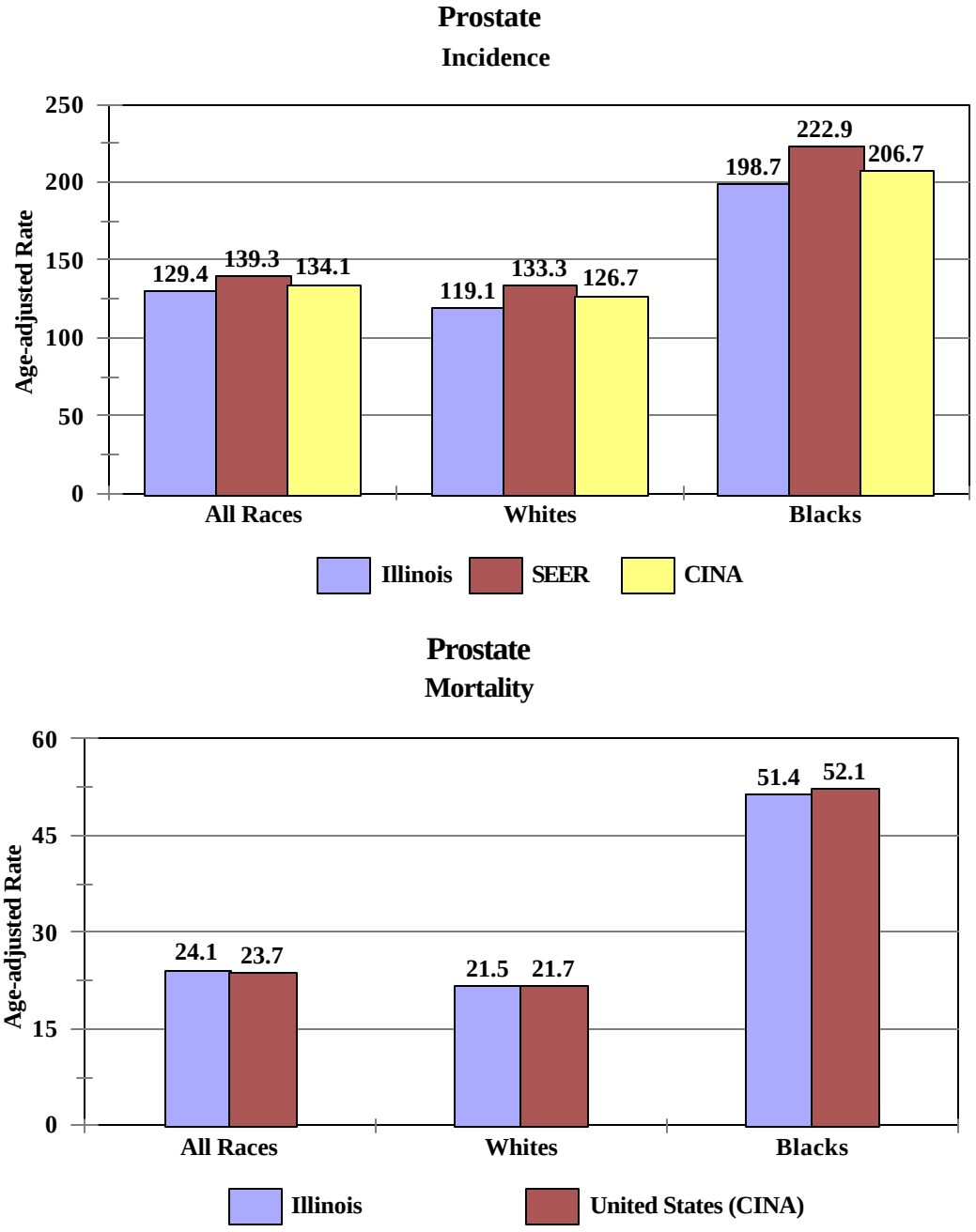
Figure 55.
Comparison of Illinois Cancer Incidence and Mortality with National Data, by Race
1994-1998



Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.

Source: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000 and Death Master Files, 1994-1998; Surveillance Epidemiology End Results Program (SEER) Cancer Incidence Public Use Database, 1973-1998, August 2000 Submission; Cancer Incidence in North America (CINA); and NCHS Public Use Multiple Cause of Death Files, 1994-1998

Figure 56.
Comparison of Illinois Cancer Incidence and Mortality with National Data, by Race
1994-1998



Rates are per 100,000 and are age-adjusted to the 1970 U.S. standard million population.

Source: Illinois Department of Public Health, Illinois State Cancer Registry, October 30, 2000 and Death Master Files, 1994-1998; Surveillance Epidemiology End Results Program (SEER) Cancer Incidence Public Use Database, 1973-1998, August 2000 Submission; Cancer Incidence in North America (CINA); and NCHS Public Use Multiple Cause of Death Files, 1994-1998

Healthy People 2010 Comparisons

Comparisons of Illinois data with U.S. baseline data and Healthy People 2010 target goals for cancer-related objectives are displayed in Figure 57. Illinois exceeds the Healthy People 2010 target in eight of the nine graphs presented in Figure 57. Only the melanoma of the skin cancer mortality rate for Illinois was slightly less than the 2010 target rate. In addition, Illinois exceeds the U.S. baseline for all but two objectives. The exceptions include the age-adjusted mortality rate objectives for the two cancer sites: melanoma of the skin, and oral cavity and pharynx.

Figure 57.
Cancer Mortality Comparisons for Illinois with the United States (U.S.) Baseline and the Healthy People 2010 Target Objectives

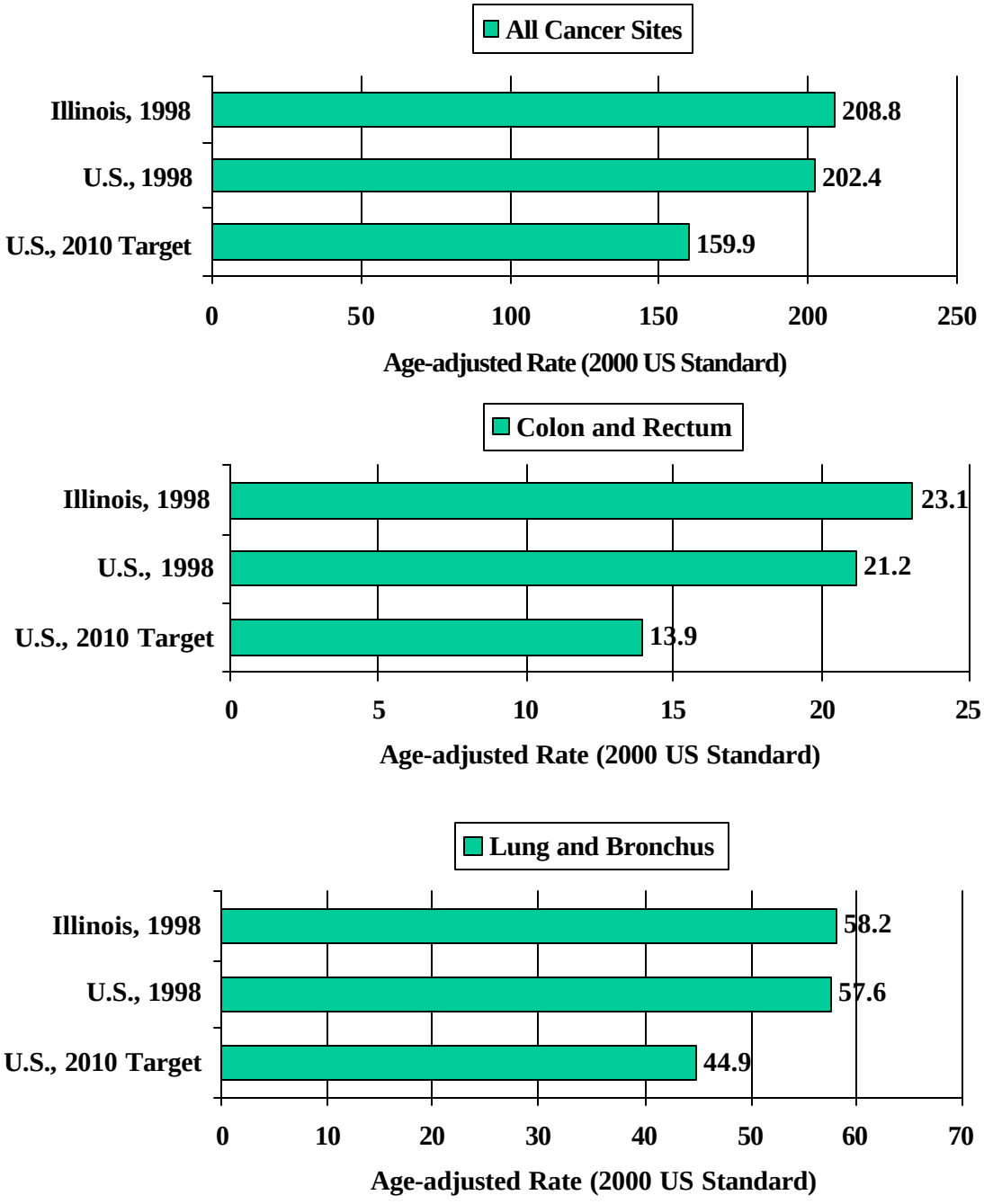
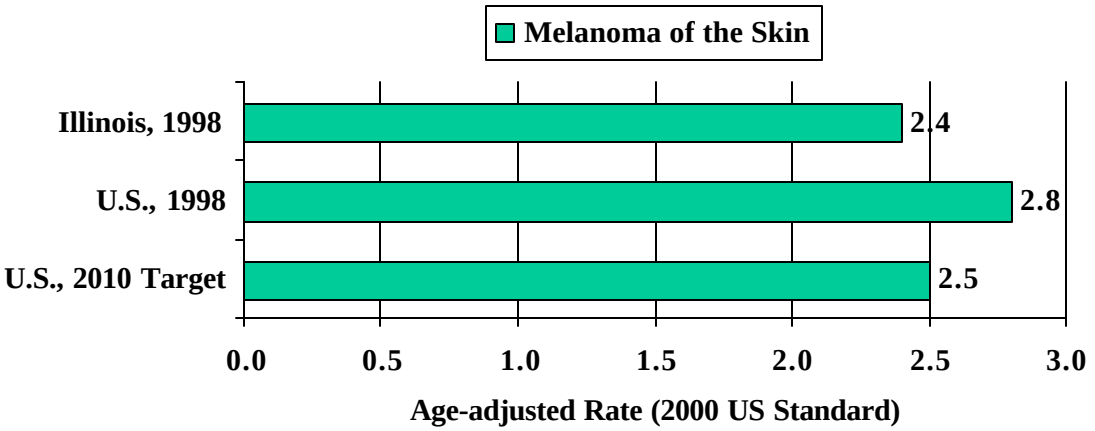
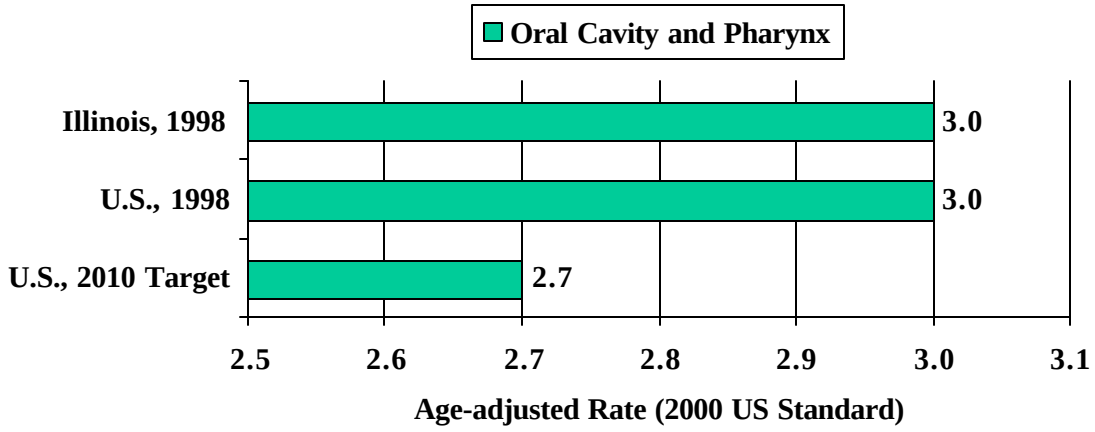


Figure 57. (continued)
Cancer Mortality Comparisons for Illinois with the United States (U.S.) Baseline and the 2010 Healthy People Target Objectives





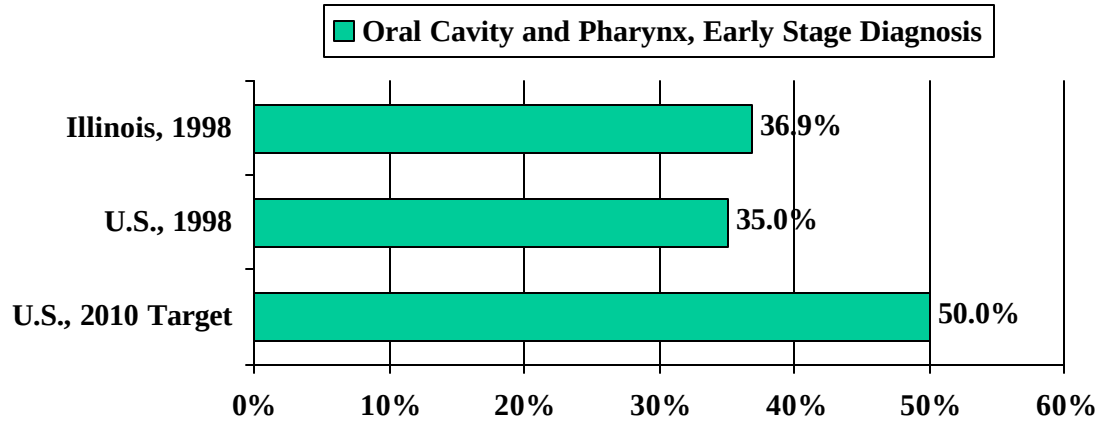
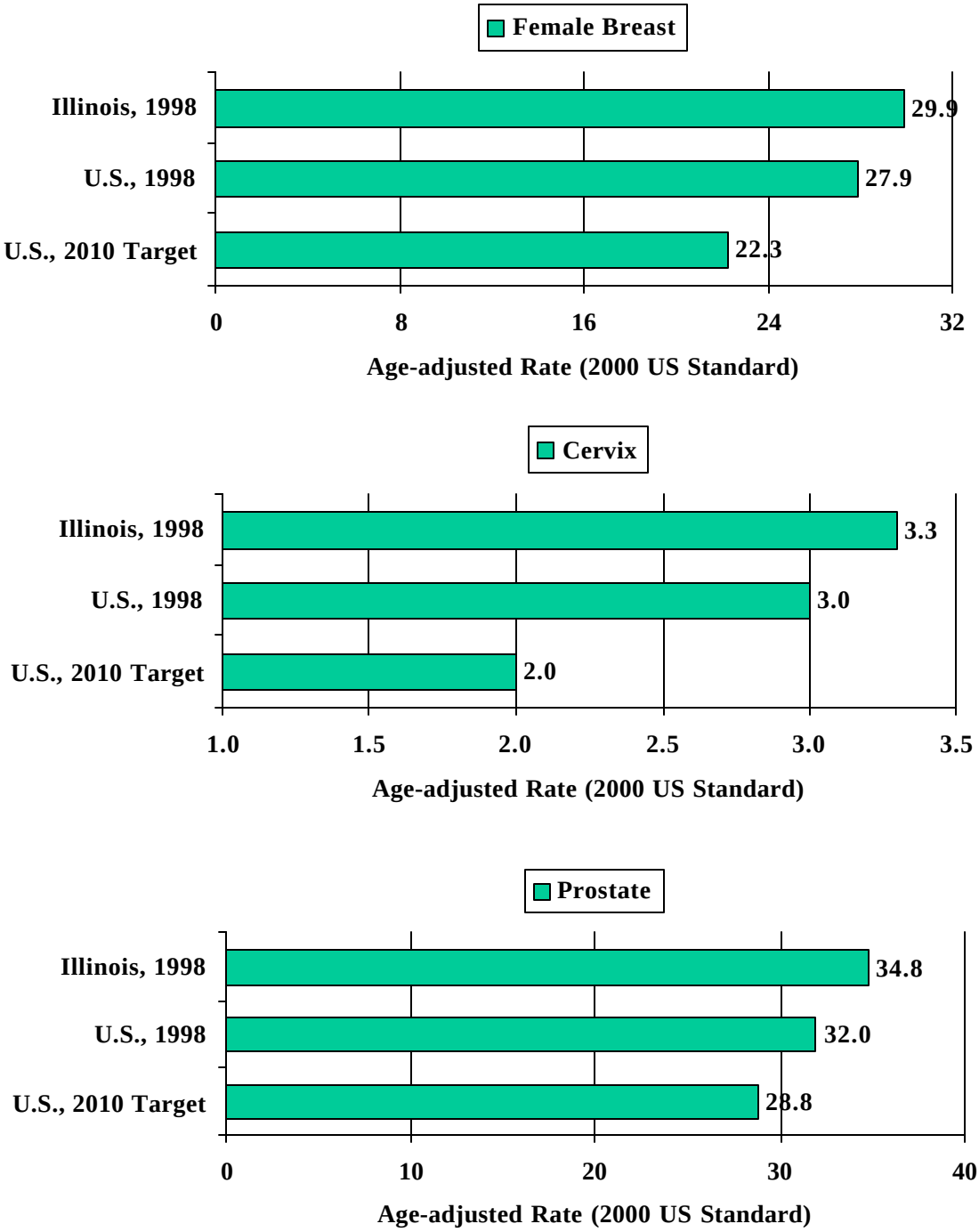


Figure 57. (continued)
Cancer Mortality Comparisons for Illinois with the United States (U.S.)
Baseline and the 2010 Healthy People Target Objectives



Source: Illinois Department of Public Health, Death Master Files, 1998,
Illinois State Cancer Registry, October 30, 2000,
National Center for Health Statistics, Multiple Cause of Death Tape, 1998, and Healthy People 2010

Discussion

Overall Cancer Incidence and Mortality. Although short-term trends for age-adjusted incidence rates of all invasive cancers in Illinois were not statistically significant over 1994-1998, the observed changes suggest that rates for Illinois' males have begun to decline but those for females in Illinois remain at a plateau or may even be slightly on the increase. In contrast, statistically significant decreases in age-adjusted cancer mortality rates for all sites combined were observed for both Illinois males and females during the same time period. These overall patterns reflect the cumulative trend effects of numerous site-specific cancers occurring throughout the demographically diverse Illinois population. Comparisons of these findings to those recently published using national data indicate that the Illinois cancer incidence and mortality short-term trends closely parallel those observed nationally.[7]

Colon and Rectum. Short-term trend analyses of Illinois' colorectal cancer incidence rates, 1994-1998, showed rates to stabilize after a decline beginning from the initiation of the ISCR database in 1986.[23] Colorectal cancer mortality rates in Illinois, shown to decline from the early 1980s,[23] continued to demonstrate statistically significant declines only for white males, and also for females of all races or non-Hispanic ethnicity over 1994-1998. Although favorable changes in colorectal cancer incidence and mortality have been observed in Illinois, these positive health outcomes are not shared by every race or ethnic group. A recent comprehensive evaluation of black/white differences in colorectal cancer showed that the declines were apparent only in the Illinois white population with essentially no change for Illinois' black population, resulting in an increasing disparity between the two race groups.[23] Definitive explanations for the long-term declines in colorectal cancer incidence and mortality remain unclear. Screening and adenomatous polyp removal, more successful treatment protocols, aspirin consumption, estrogen replacement therapy and dietary pattern changes factor in as some possible explanations.[24-28] Despite these favorable trends, colorectal cancer remains a major contributor to the total cancer burden and, given that only about one-third of new cases are diagnosed in the localized stage, it would seem that considerably more progress remains possible with the implementation of effective screening programs. Illinois and national BRFSS data indicate substantial underutilization of screening methods for colorectal cancer.[29] Only about 28 percent of adult Illinoisans during 1999 had ever used a fecal occult blood test. Recently, screening protocols for colorectal cancer have been under discussion by the leading authoritative cancer agencies. Systematic increases in the use of available colorectal cancer screening methods, including fecal occult blood tests, flexible sigmoidoscopy, colonoscopy and double-contrast barium enema, would enhance the reduction of colorectal cancer incidence and mortality in Illinois.

Lung and Bronchus. It has been estimated that as much as 90 percent of lung cancer may be attributed to tobacco smoking.[30] Reported national trends for lung cancer incidence and mortality have shown declines for males whereas females have experienced an increase in both incidence and mortality over the past decade. Illinois trends were consistent with those observed nationally for males where statistically significant decreases were evident for both incidence and mortality rates among all races, whites as well as non-Hispanics over 1994-1998. Moreover, significant declining lung and bronchus cancer incidence rate trends were apparent for age groups 55-64 and 65-74, and in mortality rates for age groups 55-64, 65-74 and 75-84 among Illinois males. For Illinois females, age-adjusted incidence rate and mortality trends were not statistically significant for any race/ethnic group. However, age-specific mortality rates for females in age group 75-84 significantly increased by 3.2 percent per year over 1994-1998. Conversely, death rates for females in the age group 45-54 decreased by 2.1 percent per year for the same time period. These observed changes in lung and bronchus cancer incidence and mortality are consistent with age- and gender-specific time trends for tobacco smoking discussed in the national reports.[31,32] That is, tobacco smoking significantly decreased among males beginning in the 1960s but females lagged considerably, offering some explanation for different patterns of lung cancer incidence and mortality between Illinois' males and females.[33]

Breast (female). The overall demographic profile of female breast cancer incidence in Illinois is consistent with national observations showing the highest rates for white females followed by black females. Females of Asian/other races have the lowest breast cancer incidence rates. Hispanic females have substantially lower breast cancer incidence rates than their non-Hispanic counterparts. Aggressive implementation of mammography screening activities to achieve early detection, diagnosis and treatment of breast cancer throughout the state appears to have had widespread benefits for Illinois women. Annual age-adjusted incidence rates for breast cancer in the *in situ* or earliest stage of disease have substantially increased for every race/ethnic group of Illinois females over 1994-1998. The diagnosis of breast cancer in the *in situ* stage is known to be highly correlated with mammography usage, thereby verifying extensive usage of the screening method by Illinois women. About two-thirds of female breast cancer cases diagnosed during the 1994-1998 time period were either in one of the two early stages, *in situ* or localized. It should be noted that black and Hispanic females in Illinois were less often diagnosed in the early stages than white, Asian/other race or non-Hispanic females. However, a significant increase in breast cancer incidence rates over 1994-1998 was observed among Illinois' black females, which most likely indicates greater mammography screening participation rather than a true disease increase, a fact that is encouraging. Breast cancer mortality rates have shown declines across the race/ethnic, age-specific spectrum for Illinois women. The decreases may be explained by improvements in screening programs and effective treatments. It has been estimated that regular mammography usage, which detects breast cancer in the earliest stages, results in the reduction of mortality by approximately 16 percent for women 40-49 years of age, and 25 percent to 30 percent for women 50-69 years of age.[34] Substantial advances that fine-tune chemotherapeutic approaches and employ innovative treatment strategies most likely have resulted in an improved prognosis and survival for Illinois women diagnosed with breast cancer.[35-39] Although death from breast cancer shows a downward trend, black females still present with the highest rates among racial groups of Illinois women. In addition, BRFSS data suggest that women in the lowest income group and those not completing high school are not participating in breast cancer control programs as much as others in the state. Also, the fact that Illinois women in the older age groups less frequently report recent mammogram usage than younger women requires programmatic attention given the reality of the direct association between aging and the onset of breast cancer.

Cervix. Although remarkable strides have been made with respect to prevention and control of cervical cancer through the introduction of the Papanicolaou (Pap) smear nationwide as well as in Illinois, invasive cancer cases and subsequent deaths from this cancer still occur among Illinois women. The average annual age-adjusted invasive cervical cancer incidence and cervical cancer mortality rates for 1994-1998 were highest among Illinois' black females. White females had the lowest incidence rates and females of Asian/other races had the lowest mortality rates. Hispanic females had substantially higher incidence and mortality rates than their non-Hispanic counterparts. It also should be emphasized that Illinois' age-specific cervical cancer mortality rates progressively increase with advancing age. Virtually no significant changes in race-specific or age-specific incidence or mortality were evident in the Illinois cervical cancer statistics over 1994-1998. Black females had the worst stage profile among race groups with lower percentages of localized stage and higher percentages of distant stage diagnoses than females of white or Asian/other races groups. In contrast, Illinois' Hispanic females were diagnosed more often with localized stage of cervical cancer than non-Hispanic females in Illinois. Clearly, favorable changes were not evident in the status of cervical cancer during the 1994-1998 time frame in Illinois. National Health Interview Survey trends for Pap test usage indicated very little change from 1987 through 1992 and lower usage for low-income and less educated survey participants.[40] Illinois' BRFSS Pap smear history for Illinois women 18 years of age and older also showed a direct relationship between income or education and Pap test usage but an inverse relationship between age and screening within the past three years. A screening history and outcome evaluation of approximately 500 cases of invasive cervical cancer diagnosed in Connecticut during a five-year period might well provide insight into reasons for the diagnosis of invasive cervical cancer in Illinois.[41] This study indicated that about 30 percent had never been

screened and those who were never screened were, on average, 18 years older than the remainder of cases; approximately one-fourth reported having their last Pap test five or more years before their diagnosis of invasive cancer; about 10 percent were not followed up properly after abnormal test results; approximately 7 percent had their last Pap smear misread as normal; and only about 25 percent developed cervical cancer within three years of their last Pap test.[41] In addition, a study of differences in cervical screening and biopsy results by race or ethnicity from women in the National Breast and Cervical Cancer Early Detection Program (NBCCEDP), in which Illinois participates, showed that black women with a high-grade Pap test were less likely to get a proper work-up.[42] Public health programs and private health care providers in Illinois need to ensure that woman have timely and accurate cervical cancer screening with proper follow-up and to make increased efforts to reach older women, blacks and the less economically advantaged in the state.

Prostate. The magnitude of differences in prostate cancer incidence and mortality among race/ethnic groups is very great. Average annual age-adjusted prostate cancer incidence rates for 1994-1998 were approximately 70 percent higher for blacks than whites and over three times higher for blacks than for Asian/other races. Death rates were almost two and a half times greater for blacks than whites and over eight times higher for blacks than Asian/other races. Non-Hispanic males had higher prostate cancer incidence and mortality rates than Hispanic males for the same time period. The observed downward trends in prostate cancer incidence for all race and ethnic groups of men in Illinois over 1994-1998 are most likely attributable to multiple factors reflecting both real and artificial effects. First, the prostate specific antigen (PSA) screening introduced during the late 1980s and peaking around 1992 served to identify undetected prevalent cases as well as incident cases resulting in an inflated incidence rate estimate that would be in decline over the 1994-1998 time period.[44] The statistically significant increase in prostate cancer incidence for Illinois males less than 55 years of age may indicate more screening participation by younger men and earlier detection rather than a true incidence increase. Implementation of new treatment approaches undoubtedly has influenced prostate cancer mortality rates favorably.[45-48] Yet, it would appear that black males have benefitted least from these advancements given their high prostate cancer mortality rates. Although BRFSS data are not yet available for PSA screening, information on ever having a digital rectal exam gives some insight into prostate screening activities. Indeed, black males reported considerably less experience with the digital rectal exam compared with white males in Illinois during 1996.

Comparisons of Illinois with National Cancer Statistics. Overall, cancer incidence and mortality patterns and trends were similar between Illinois and national data. The top 15 cancer sites were essentially the same for both Illinois and SEER with respect to cancer incidence. As well, the 15 most common cancer death sites were identical for Illinois compared with the remainder of the U.S. However, with only a few exceptions, Illinois' cancer mortality rates, especially for blacks, were higher than those observed nationally. This suggests a need to focus on the development and implementation of effective cancer prevention and control programs that are targeted to meet the needs of the many diverse populations within the state.

References

1. Dolecek TA, Shen T, Snodgrass JL Report on the Status of Cancer in Illinois: Incidence 1990-1997 Mortality 1990-1998. *Epidemiologic Report Series* 00:1. Springfield, Ill.: Illinois Department of Public Health, March 2000.

2. Cole P, Rodu B. Declining cancer mortality in the United States. *Cancer* 1996:78:2045-2048.

3. Hoeksema MJ, Law C. Cancer mortality rates fall: a turning point for the nation (news). *J Natl Cancer Inst* 1996;88:1706-1707.

4. Wingo PA, Ries LAG, Rosenberg HM, Miller DS, Edwards BK. Cancer incidence and mortality. 1973-1995: a report card for the U.S. *Cancer* 1998;82: 1197-1207.

5. Wingo PA, Ries LAG, Giovino GA, Miller DS, Rosenberg HM, Shopland DR, Thun MJ, Edwards BK. Annual report to the nation on the status of cancer 1973-1996, with a special section on lung cancer and tobacco smoking. *J Natl Cancer Inst* 1999;91:675-690.

6. Ries, LAG, Wingo, PA, Miller, DS, Howe HL, Weir HK, Rosenberg HM, Vernon SW, Cronin K, Edwards BK. The annual report to the nation on the status of cancer, 1973-1997, with a special section on colorectal cancer. *Cancer* 2000;88:2398-424.

7. Howe HL, Wingo PA, Thun MJ, Ries LAG, Rosenberg HM, Feigal EG, Edwards BK. Annual report to the nation on the status of cancer (1973 through 1998), featuring cancers with recent increasing trends. *J Natl Cancer Inst* 2001;93:824-42.

8. Seiffert JE (ed). *Standards for Cancer Registries, Vol II, Data Standards and Data Dictionary*. Sacramento, Calif.: North American Association of Central Cancer Registries, March 1997.

9. Seiffert JE (ed). *Standards for Cancer Registries, Vol III, Standards for Completeness, Quality, Analysis and Management of Data*. Sacramento, Calif.: North American Association of Central Cancer Registries, February 1994.

10. Percy C, Van Holten V, Muir C (eds). *International classification of diseases for oncology*. 2nd edition. Geneva: World Health Organization, 1990.

11. World Health Organization. *Manual of the International Statistical Classification of Diseases, Injuries and Causes of Death*, based on the recommendations of the Ninth Revision Conference, 1975. Geneva: World Health Organization, 1977.

12. United States Bureau of the Census: *U.S. Population Estimates by County, Age, Sex, Race and Hispanic Origin: July 1 Estimates for 1990 to 1999*. Washington, D.C. Unpublished data available August 2000 accessed via the Internet at the follow Web site: (http://www.census.gov/population/estimates/county/casrh.txt)

13. Kleinbaum DG, Kupper LL, Muller KE. *Applied regression analysis and other multivariable methods*. Boston: PWS-KENT Publishing Company, 1988.

14. Dolecek TA, Lawhun G, Vann S, Snodgrass JL, Stewart SL. Hispanic identification in the Illinois State Cancer Registry. *J Registry Management* 2000:27:43-50.

15. Dolecek TA, Howe HL. Hispanic Identification in the Illinois State Cancer Registry. *Epidemiologic Report Series* 98*:2*. Springfield, Ill.: Illinois Department of Public Health, June 1998.

16. Dolecek TA, Howe HL. Hispanic Identification on Illinois Death Certificates. *Epidemiologic Report Series* 98*:3*. Springfield, Ill.: Illinois Department of Public Health, August 1998.

17. The National Cancer Institute, Surveillance, Epidemiology and End Results Program (SEER) Cancer Incidence Public-Use Database, 1973-1998, August 2000 Submission, released April 2001. <http://www.seer-nci.nih.gov.htm>.

18. Howe HL, Chen VW, Hotes JL, Wu XC, Correa CN, Fulton JP (eds). *Cancer in North America, 1994-1998. Volume One: Incidence*. Springfield, Ill.: North American Association of Central Cancer Registries, April 2001.

19. Howe HL, Chen VW, Hotes JL, Wu XC, Correa CN, Fulton JP (eds). *Cancer in North America, 1994-1998. Volume Two: Mortality*. Springfield, Ill.: North American Association of Central Cancer Registries, April 2001.

20. U.S. Department of Health and Human Services. *Healthy People 2010*. 2nd ed. With Understanding and Improving Health and Objectives for improving Health. 2 vols. Washington, D.C.: U.S. Government Printing Office, November 2000.

21. Shalala DE. HHS policy for changing the population standard for age adjusting death rates. Memorandum from the Secretary. August 26, 1998.

22. Klein RJ, Schoenborn, CA. Age Adjustment Using the 2000 Projected U.S. Population Healthy People Statistical Notes, Number 20. Hyattsville, Md: National Center for Health Statistics. January 2001.

23. Dolecek TA, Shen T. Cancers of the Colon and Rectum, Evidence of Disparities between Blacks and Whites in Illinois. *Epidemiologic Report Series* 00:8. Springfield, Ill.: Illinois Department of Public Health, December 2000.

24. Mandel JS, Church TR, Bond JH, Ederer F, Geisser MS, Mongin SJ, Snover DC, Schuman LM. The effect of fecal occult-blood screening on the incidence of colorectal cancer. *N Engl J Med* 2000 343:1603-1607.

25. O'Connell MJ, Mailliard JA, Kahn MJ, Macdonald JS, Haller DG, Mayer RJ, et al. Controlled trial of fluorouracil and low-dose leucovorin given for 6 months as postoperative adjuvant therapy for colon cancer. *J Clin Oncol* 1997;15:246--50.

26. Chambers S, Evans L, Krishnan A. Colorectal cancer among users of aspirin and non-steroidal antiinflammatory drugs. *Epidemiology* 2001;4:471-472.

27. Calle EE, Miracle-McMahill HL, Thun MJ, Heath CW. Estrogen replacement therapy and risk of fatal colon cancer in a prospective cohort of postmenopausal women. *J Natl Cancer Inst* 1995;87:517-525.

28. Popkin BM, Siega-Riz AM, Haines PS. A comparison of dietary trends among racial and socioeconomic groups in the United States. *N Engl J Med* 1996;335:716-720.

29. Trends in screening for colorectal cancer--United States, 1997 and 1999. *MMWR Morb Mortal Wkly Rep* 2001;50:162-166.

30. US Department of Health and Human Services. Reducing the health consequences of smoking: 25 years of progress. A report of the Surgeon General. Rockville (Md.): U.S. Department of Health and Human Services. Public Health Service. Centers for Disease Control. Center for Chronic Disease Prevention and Health Promotion. Office on Smoking and Health: DHHS Publ No. (CDC) 89-8411:1989.

31. Shopland DR. Tobacco use and its contribution to early cancer mortality with a special emphasis on cigarette smoking. *Environ Health Perspect* 1995;103(Suppl 8):131--42

32. Tolley HD, Crane L, Shipley N. Smoking prevalence and lung cancer death rates. In: Strategies to control tobacco use in the United States-- a blueprint for public health action in the 1990s. Smoking and tobacco control monograph No. 1. Rockville (Md.): U.S. Department of Health and Human Services (DHHS), Public Health Service, National Institutes of Health, National Cancer Institute; 1992: NIH Publ No. 92--3316.

33. Burns DM, Lee L, Shen LZ, Gilpin E, Tolley HD, Vaughn J, et al. Cigarette smoking behavior in the United States. In: Changes in cigarette-related disease risks and their implication for prevention and control. Smoking and tobacco control monograph No. 8. Bethesda (Md.): U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health, National Cancer Institute; 1997: NIH Publ No. 97-4213.

34. Kerlikowske K. Efficacy of screening mammography among women aged 40 to 49 years and 50 to 69 years: comparison of relative and absolute benefit. *J Natl Cancer Inst* Monogr 1997;22:79

35. Early Breast Cancer Trialists' Collaborative Group. Tamoxifen for early breast cancer: an overview of the randomised trials. *Lancet* 1998;351:1451--67.

36. Early Breast Cancer Trialists' Collaborative Group. Favourable and unfavourable effects on long-term survival of radiotherapy for early breast cancer: an overview of the randomised trials. *Lancet* 2000;355:1757--70.

37. Ragaz J, Jackson SM, Le N, Plenderleith IH, Spinelli JJ, Basco VE, et al. Adjuvant radiotherapy and chemotherapy in node- positive premenopausal women with breast cancer. *N Engl J Med* 1997;337:956--62.

38. Overgaard M, Hansen PS, Overgaard J, Rose C, Anderson M, Bach F, et al. Postoperative radiotherapy in high-risk premenopausal women with breast cancer who receive adjuvant chemotherapy. Danish Breast Cancer Cooperative Group 82b Trial. *N Engl J Med* 1997;337:949--55.

39. Fowble B, Gray R, Gilchrist K, Goodman RL, Taylor S, Tormey DC. Identification of a subgroup of patients with breast cancer and histologically positive axillary nodes receiving adjuvant chemotherapy who may benefit from postoperative radiotherapy. *J Clin Oncol* 1988;6:1107.

40. Anderson, IM, May DS. Has the use of cervical, breast, and colorectal cancer screening increased in the United States? *Am J Public Health* 1995 85: 840-842

41. Janerich DT, Hadjimichael O, Schwartz PE, Lowell DM, Meigs JW, Merino MJ, Flannery JT, Polednak AP. The screening histories of women with invasive cervical cancer, Connecticut. *Am J Public Health*, 1995;85:791-794.

42. Benar VB, Lee NC, Piper M, Richardson L. Race-specific results of Papanicolaou testing and the rate of cervical neoplasia in the National Breast and Cervical Cancer Early Detection Program, 1991-1998 (United States). *Cancer Causes Control* 2001:12:61-68.

43. Holmquist ND. Revisiting the effect of the Pap test on cervical cancer. *Am J Public Health* 2000;90:620-623.

44. Howe HL, Alo CJ, Qualls RY, Lumpkin JR. Increased prostate cancer in Illinois: a screening effect or improved casefinding? Epidemiologic Report Series 96:4. Springfield, Ill.: Illinois Department of Public Health, May 1996.

45. Pilepich MV, Caplan R, Byhardt RW, Lawton CA, Gallagher MJ, Mesic JB, et al. Phase III trial of androgen suppression using goserelin in unfavorable-prognosis carcinoma of the prostate treated with definitive radiotherapy: report of Radiation Therapy Oncology Group Protocol 85--31. *J Clin Oncol* 1997;15:1013-1021.

46. Bolla M, Gonzalez D, Warde P, Dubois JB, Mirimanoff RO, Storme G, et al. Improved survival in patients with locally advanced prostate cancer treated with radiotherapy and goserelin. *N Engl J Med* 1997;337:295-300.

47. Zagars GK, Johnson DE, von Eschenbach AC, Hussey DH. Adjuvant estrogen following radiation therapy for stage C adenocarcinoma of the prostate: long-term results of a prospective randomized study. *Int J Radiat Oncol Biol Phys* 1988;14:1085-1091.

48. Granfors T, Modig H, Damber JE, Tomic R. Combined orchiectomy and external radiotherapy versus radiotherapy alone for nonmetastatic prostate cancer with or without pelvic lymph node involvement: a prospective randomized study. *J Urol* 1998;159:2030-2034.

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