CANCER STATISTICS REVIEW 1975-2008: INTRODUCTION

The annual *SEER Cancer Statistics Review* (***CSR***) contains incidence, mortality, prevalence, and survival statistics from 1975 through the most recent year for which data are available. This report is published by the Surveillance Research Program of the National Cancer Institute, which manages the Surveillance, Epidemiology, and End Results (SEER) Program. The scope and purpose of the ***CSR*** follow a report to the Senate Appropriations Committee (Breslow, 1988), which recommended that a broad profile of cancer be presented regularly to the American public.

The SEER program is an authoritative source of information on cancer incidence and survival in the United States. SEER collects and publishes these statistics from population-based registries covering 26% of the US population. The 17 SEER registries routinely collect data on patient demographics, primary tumor site, tumor morphology, extent of disease, first course of treatment, and active follow-up for vital status. Detailed information describing these fields can be found at http://seer.cancer.gov/resources/.

This report presents statistics on 29 primary sites and subsites, organized into site-specific chapters. Detailed statistics on cancer incidence, mortality, survival, and prevalence are reported by sex, race and ethnicity, age, stage at diagnosis, and geographic area. Information on tumor morphology is also presented. In addition, the ***CSR*** features a chapter on adolescent and young adult cancers and a chapter on childhood cancers. Information on some rare cancers can be found in the summary tables of section I. For a detailed list of primary sites, the summary tables provide incidence and death rates for the most recent 5-year period, trends from 1975 to the most recent year, median age at diagnosis, median age at death, and survival rates.

Delay-adjusted cancer incidence rates are a distinctive feature of the ***CSR***. Delay-adjustment corrects the current case count to account for underreporting and corrections to the data. The final delay-adjusted rates are valuable in more precisely estimating trends.

New features recently added to the ***CSR*** include detailed histology breakdowns for lymphomas and for cancers of the oral cavity and pharynx, soft tissue, and pancreas; cause-specific survival by expanded race and ethnic groups; SEER 13 delay-adjustment; adjustments for Veterans' Administration (VA) underreporting, and a chapter focusing on cancer rates among Arizona Indians.Starting with patients diagnosed in 2007, the new multiple primary and histology coding rules may impact their incidence data for some cancer sites (e.g. female breast). However, the impact of the new rule on observed incidence is negligible for majority of the cancer sites. To learn more about the multiple primary rules, visit:
http://seer.cancer.gov/tools/mphrules/index.html.

The ***CSR*** files are provided in both PDF and HTML formats. The HTML format is provided as an alternative and accessible version of the *SEER Cancer Statistics Review*. The current edition of

the ***CSR*** is available on the web at http://seer.cancer.gov/csr/. Statistics from SEER may also be obtained via ***FastStats*** (http://seer.cancer.gov/faststats) or ***Cancer Query Systems*** (http://seer.cancer.gov/canques), which allow the user to access over 10,000,000 cancer statistics. The SEER Research Data file (http://seer.cancer.gov/data/) may be accessed by the public, either through ***SEER*Stat*** software or in an ASCII text format that can be analyzed with standard statistical software.

While most of the rates in this publication have been age-adjusted to the 2000 US standard population, some previous SEER publications have used the 1970 US standard million population. Therefore, rates given in this publication cannot be compared to rates given in those publications. This change conforms to a federal policy for reporting disease rates; it allows for the age-adjusted rate to more accurately reflect the current age distribution and burden of cancer.

INTERPRETATION OF CANCER STATISTICS

A number of factors may affect the interpretation of cancer incidence, mortality, and survival statistics provided in this report.

Survival rates for all cancers combined: The mix of cancers changes over time as the incidence of some cancers increases and the incidence of others decreases. The overall cancer survival rate can fluctuate even when the survival rates for site-specific cancers remain unchanged. (While it is possible to adjust the survival rate for all cancers combined on the basis of the relative frequencies of the component cancers, rates adjusted in this manner differ by only a small amount from unadjusted rates. In the future, such an adjustment may become more important if there are substantial changes in the incidence of various cancers.)

Early detection/screening: The improved earlier detection and diagnosis of cancers—caused by new screening procedures--may produce an *increase* in both incidence rates and survival rates. These increases can occur as a result of the introduction of a new procedure to screen subgroups of the population for a specific cancer; they need not be related to whether use of the screening test results in a decrease in mortality from that cancer. As the proportion of cancers detected at screening increases, presumably as a result of increased screening of the population, patient survival rates will *increase*, because they are based on survival time *after diagnosis*. The interval between the time a cancer is diagnosed by a screening procedure and the time when the cancer would have been diagnosed in the absence of screening is called **lead-time** (Zelen, 1976). (Screening for breast cancer has been demonstrated to result in increased survival over and above that resulting from lead-time alone and to reduce breast cancer mortality. The benefit of screening is being studied for some other cancers.)

If a new screening procedure consistently detects cancer in a *preinvasive* phase, it may result in a *decrease* in survival rates for *invasive* cancer. In this case, **length-biased sampling** (Zelen,

1976) may be operating. Length-biased sampling would result in the preferential detection—in a preinvasive phase—of those cancers that would have had a relatively good prognosis had they progressed to invasive disease; these potentially invasive cancers would be systematically eliminated. If this occurs, the mix of cancers that are not detected at screening and then progress to invasive behavior may become less prognostically favorable, resulting in a *decrease* in survival rates for patients with invasive cancers. (Length-biased sampling may at least partially explain survival trends for cervical cancer. Other cancers possibly affected include breast, colon, rectum, and prostate.)

Changes in diagnostic criteria: Early detection of cancer--resulting from either screening or earlier response to symptoms--may result in the increasing diagnosis of small tumors that are not yet life-threatening. This may have the effect of raising the incidence rates and survival estimates without changing the mortality rates. Breast, colon, prostate, cervix uteri, bladder, and skin (melanoma) are the cancer sites most likely to be affected.

Technological advances in diagnostic procedures: In this report, trends in survival by stage at diagnosis for specific cancers are not presented; trends in stage distributions are presented rarely. However, it is possible to compare survival by stage.

The assignment of a given stage to a particular cancer may change over time due to advances in diagnostic technology. Introduction of new technology can give rise to a phenomenon known as **stage migration**. Stage migration occurs when diagnostic procedures change over time, resulting in an *increase* in the probability that a given cancer will be diagnosed in a *more advanced* stage. For example, certain distant metastases that would have been undetectable a few years ago can now be diagnosed by a computer tomography (CT) scan or by magnetic resonance imaging (MRI). Therefore, some patients who would have been diagnosed previously as having cancer in a *localized* or *regional* stage are now diagnosed as having cancer in a *distant* stage. The likely result would be to remove the worst survivors—those with previously undetected distant metastases—from the localized and regional categories and put them into the distant category. As a result, the stage-at-diagnosis distribution for a cancer may become less favorable over time, but the survival for each stage may improve: the early stage will *lose* cases that will survive *shorter* than those remaining in that category, while the advanced stage will *gain* cases that will survive *longer* than those already in that category. However, *overall survival would not change* (Feinstein et al., 1985). Stage migration is an important concept to understand when examining temporal trends in survival by stage at diagnosis as well as temporal trends in stage distributions; it could affect the analysis of virtually all solid tumors.

Evolution of stage classifications: Every few years, the American Joint Committee on Cancer produces a new cancer-staging manual; the seventh edition is the most recent (Edge et al., 2010). The evolution of such classifications reflects the identification of new prognostic factors that may influence choice of treatment. Historically, the SEER Program has only collected data on **extent of disease** (**EOD**), rather than stage. EOD is *more specific* than stage

and usually determines stage, even when stage definitions change. Thus, SEER easily adapts to changes in stage definitions; moreover, trends in a newly redefined stage can usually be calculated. Recently the SEER Program has begun collecting **Collaborative Stage**. Collaborative Stage has the advantage of being a consolidated data collection system of three main staging systems (TNM, EOD, and Summary Stage) and allows combined pathological and clinical stage to be captured. For those cancers for which new prognostic variables are introduced into staging, so that previously collected EOD data cannot determine new stage categories, there can be problems in assessing trends in stage of disease. Only by reviewing the evolution of staging for a given cancer is it possible to determine what effects changes in stage definitions have had on stage-specific survival and on stage-at-diagnosis distributions. Stage migration (mentioned above) and EOD migration need also be taken into account. For some sites, the historic stage (*localized*, *regional*, or *distant*) is not shown, either because of inconsistencies in its definition over time or because stage isn't appropriate (such as for leukemias, which are all considered to be distant at diagnosis).

Interpreting relative survival: The relative survival estimate is the ratio of observed survival to expected survival for a given patient cohort. Expected survival is based on mortality rates for the entire population, taking into account, as appropriate, the age, sex, race, and year of diagnosis of the patients. Assuming that the presence of cancer is the only factor that distinguishes the cancer patient cohort from the general population, the relative survival estimate approximates the probability that a patient will *not* die of the diagnosed cancer within the given time interval. This is the same as the probability that the patient will either survive the interval or die of a different cause.

A factor related to the risk of a cancer may also be related to the risk of dying from causes unrelated to the cancer. An example of such a factor is smoking. Smoking is a major risk factor for lung cancer; therefore, a cohort of lung cancer patients will contain a much higher proportion of smokers than does the general population. However, smoking is also a risk factor for other diseases, resulting in smokers having a shorter life expectancy than nonsmokers. For this reason, expected survival estimates for lung cancer patients that are based on the life tables for the general population will be unrealistically high; since relative survival = observed / expected, this will result in relative-survival estimates that are *lower* than they would be if the population consisted only of smokers. The problem cannot be easily corrected because separate life tables for smokers and nonsmokers are not available. Moreover, amount of smoking (usually measured in pack-years) is clearly an important variable and can't be easily quantified. The possibility that expected survival may not be appropriate for a given patient cohort should also be considered when examining relative survival for patients with cancers of the cervix uteri or breast, because the risk of these cancers has been associated with socioeconomic status (Baquet et al., 1991), which may be related to life expectancy.

Previous to the *CSR* for 1973–1996, the expected survival tables used were for 1970 and 1980; there were separate tables for whites, blacks, American Indians, Chinese, Japanese, Filipinos, white Hispanics, and Hawaiians. In updating the tables for 1990, several problems emerged.

The US life tables are based on age, race, and sex information from death certificates. The information on race on the death certificate may not be accurate (Rosenberg et al., 1999). One reason is that funeral directors may inaccurately report race on a death certificate. Also, reported age at death, especially for those older than 85, may not be accurate because birth certificates were not issued with as much regularity in the early 1900s as they are today. Although race misclassification and age-at-death misreporting exist across all races, they may be more problematic for races other than white or black because of those races' smaller population sizes. Therefore, life tables were generated for 1970, 1980, 1990, and 2000 only for white, black, and other; these life tables were used to produce the relative survival estimates in this book. There may be small variations among survival estimates calculated in this *CSR* and those in *CSR*s prior to 1973–1996.

Comparison with other databases: The SEER data are obtained from population-based cancer registries covering about 26 percent of the US population. It is sometimes of interest to compare cancer statistics for SEER areas with those from other registries both in the US and worldwide. In making such comparisons, one must carefully consider the factors considered above for both data sources. In addition, one should assess all of the following: (1) completeness of case ascertainment, (2) rules used to determine multiple primaries, (3) follow-up, (4) rules used in assigning and coding cause of death, and (5) the sources and procedures used in obtaining population estimates. Depending on the rates being compared, there could be other confounding factors which should be considered. The same standard or standard million population should be used for the age-adjustment of each group being compared; most statistics from outside the US are based on the 2000 world standard million population. Examples of other databases are US Cancer Statistics (http://apps.nccd.cdc.gov/uscs) and CINA+ Online (http://www.cancer-rates.info/naaccr/).

It is sometimes interesting to compare survival for cancer patients in SEER areas with data from clinical trials. *This must be done with great caution.* Survival data from clinical trials may have been obtained from a patient population that differs from that of SEER patients in prognostic factors for the given cancer; any survival comparisons would have to adjust for such differences. Also, it is necessary to verify that the methodology used in computing survival is the same for both data sources. Furthermore, clinical-trials patients may differ from SEER patients in characteristics that may be related to survival but are not recorded in either database. If this were true for a given cancer, it would not be possible to make valid comparisons of this type.

Errors in data collection: In the process of registering cancer patients, errors may be made in abstracting and coding the data, which include demographic information, cancer site, histology, extent of disease, treatment, and patient survival. Quality control studies are periodically carried out to detect and correct this type of error, but no attempt is made to incorporate this source of error into the variance estimates of cancer rates reported here.

Comparison of this report with previous reports: The cancer registries that participate in the SEER Program submit data on all cancers diagnosed in their coverage areas to the NCI each year. Because of the dynamic nature of the registries' databases, *the reported number of new cancer cases in a particular race, sex, age, cancer category in a given calendar year may change from that which has been reported in a previous publication.* For a given diagnosis year, additional cancer cases that were previously overlooked may have been found and reported to the central registry. There may have been follow-back of cancers diagnosed by death certificate only; successful efforts to establish the dates of diagnosis for such patients will change the number of patients reported for a given diagnosis year. Code changes may occur when a patient dies; for example, information on race is generally available on the death certificate and may be used to update a previously unknown value. There may have been elimination of duplicate records for the same patient, often due to name changes or misspellings.

Thus, a recent report may have a different number of cases for a given diagnosis year than an earlier report, with resulting effects on incidence and possibly survival. Population estimates may also change from one report to another for some calendar years. This occurs because the NCI receives population estimates that are regularly revised and updated by the Bureau of the Census (**BOC**). Such changes may result in some differences between incidence and mortality rates for a given calendar period as published in different reports. See our website for the most current information about the population estimates (http://seer.cancer.gov/popdata/).

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TECHNICAL NOTES

There are four measures that are commonly used to assess the impact of a cancer in the general population. The **incidence rate** is the number of new cases per year per 100,000 persons. The **death** (or **mortality**) **rate** is the number of deaths per year per 100,000 persons. The survival estimate is the proportion of patients alive at some point subsequent to the diagnosis of their cancer. The **prevalence count** is the number of people alive that have ever been diagnosed with a cancer. All four measures are employed in this report. The Surveillance, Epidemiology, and End Results (**SEER**) Program (*http://seer.cancer.gov*) (based within the Surveillance Research Program (**SRP**) at the National Cancer Institute (**NCI**) collects incidence and survival data for all areas that participate in the Program. The National Center for Health Statistics (**NCHS**) provides mortality data for the entire United States (**US**). All incidence and mortality rates in this report are age-adjusted (see below) to the 2000 US standard population (see Appendix) unless otherwise specified. Age-adjustment minimizes the effect of a difference in age distributions when comparing rates.

THE SEER PROGRAM

The National Cancer Act of 1971 mandated the collection, analysis, and dissemination of data useful in the prevention, diagnosis, and treatment of cancer. This mandate led to the establishment of the SEER Program. The population-based cancer registries participating in NCI's SEER Program routinely collect data on all cancers occurring in residents of the participating areas. Trends in cancer incidence and patient survival in the US are derived from this database. See the SEER Research Data (*http://seer.cancer.gov/data/*) for more information.

The SEER Program is a sequel to two earlier NCI programs—the End Results Program and the Third National Cancer Survey. The initial SEER reporting areas were the States of **Connecticut**, **Iowa**, **New Mexico**, **Utah**, and **Hawaii**; the metropolitan areas of **Detroit**, Michigan, and **San Francisco-Oakland**, California; and the Commonwealth of Puerto Rico. Case ascertainment began with January 1, 1973, diagnoses.

In 1974-1975, the program was expanded to include the metropolitan area of New Orleans, Louisiana, the thirteen-county **Seattle-Puget Sound** area in the State of Washington, and the metropolitan area of **Atlanta**, Georgia. New Orleans participated in the program only through the 1977 data collection year. In 1978, ten predominantly African-American counties in **rural Georgia** were added. **American Indian residents of Arizona** were added in 1980. In 1983, four counties in New Jersey were added with coverage retrospective to 1979. New Jersey and Puerto Rico participated in the program until the end of the 1989 reporting year. The National Cancer Institute also began funding a cancer registry that, with technical assistance from SEER, collects information on cancer cases among **Alaska Native** populations residing in Alaska. In 1992, the SEER Program was expanded to increase coverage of minority populations, especially Hispanics, by adding **Los Angeles County** and four counties in the **San Jose-**

Monterey area south of San Francisco. In 2001, the SEER Program expanded coverage to include **Kentucky, Greater California** (the counties of California that were not already covered by SEER), **New Jersey,** and **Louisiana**.

The long-term incidence trends and survival data for this report are from five states (Connecticut, Hawaii, Iowa, New Mexico, and Utah) and four metropolitan areas (Detroit, Atlanta, San Francisco-Oakland, and Seattle-Puget Sound) (Fig. I-1); this set of registries is called the **SEER 9**. Additional tables show more recent incidence trends for the **SEER 13** areas (the 9 areas above plus Los Angeles, San Jose-Monterey, Alaska Native Registry, and rural Georgia) since 1992 and additional information on race and ethnicity. Other tables give statistics for the **SEER 17** areas; these are the SEER 13 plus Kentucky, Greater California, New Jersey, and Louisiana.

The participating regions were selected principally for their ability to operate and maintain a population-based cancer reporting system and for their epidemiologically significant population subgroups. With respect to selected demographic and epidemiologic factors, they are when combined a reasonably representative subset of the US population. Data from the 9, 13, or 17 SEER geographic areas are used in this report; the given areas contain, respectively, approximately 9, 14, or 26 percent of the US population. By the end of the 2006 diagnosis year, the database of 13 SEER and 4 expansion registries (plus Arizona Indians) contained information on over 7 million cases diagnosed since 1973. New cases added in the most recent data year numbered over 385,000.

The goals of the SEER Program are:

1) to assemble and report, on a periodic basis, estimates of cancer incidence, mortality, survival, and prevalence in the US;
2) to monitor annual cancer incidence trends to identify unusual changes in specific forms of cancer occurring in population subgroups defined by geographic and demographic characteristics;
3) to provide continuing information on trends over time in the extent of disease at diagnosis, trends in therapy, and associated changes in patient survival; and
4) to promote studies designed to identify factors amenable to cancer control interventions, such as: (a) environmental, occupational, socioeconomic, dietary, and health-related exposures; (b) screening practices, early detection and treatment; and (c) determinants of the length and quality of patient survival.

DATA SOURCES

INCIDENCE AND SURVIVAL DATA

The SEER Program contracts with nonprofit, medically-oriented organizations having statutory responsibility for registering diagnoses of cancer among residents of their respective geographic coverage areas. Each SEER contractor:

1) maintains a cancer information reporting system;

2) abstracts records for *resident* cancer patients seen in every hospital both inside and outside the coverage area;
3) abstracts all death certificates of *residents* (dying both inside and outside the coverage area) on which cancer is listed as a cause of death;
4) strives for complete ascertainment of cases by searching records of private laboratories, radiotherapy units, nursing homes, and other health services units that provide diagnostic service;
5) registers all in situ and malignant neoplasms (with the exceptions of certain histologies for cancer of the skin and—beginning in 1996—in situ neoplasms of the cervix uteri);
6) records data on all newly diagnosed cancers, including selected patient demographics, primary site, morphology, diagnostic confirmation, extent of disease, and first course of cancer-directed therapy;
7) provides active follow-up on all living patients (except for those with in situ cancer of the cervix uteri);
8) maintains confidentiality of patient records;
9) at least annually submits electronically to NCI data on all reportable diagnoses of cancer made in residents of the coverage area.

For 1992 to 2000 diagnoses, the SEER program codes site and histology by the *International Classification of Diseases for Oncology*, second edition (**ICD-O-2**) (Percy et al., 1990). All cases before 1992 were machine-converted to ICD-O-2. Beginning with 2001 diagnoses, cases have been coded according to the third edition (**ICD-O-3**) (Fritz et al., 2000). The primary site groupings used for incidence are found in the Appendix. Changes were made to the site recode for ICD-O-2 for comparability with cases coded to ICD-O-3. Follow-up rates are also in the Appendix.

Underreporting Adjustment for Veterans Affairs Cases: A recent policy change of the Department of Veterans Affairs (VA) regarding sharing of VA cancer data has resulted in incomplete reporting of VA hospital cases in some central cancer registries. The issue began to affect reporting in the 3rd quarter of 2004 diagnosis year and continues to be a concern through the 2008 diagnosis year. The section on VA reporting quantifies the missing number of VA patients in the SEER registries and provides adjustments of new case counts for 2005 through 2008 based on prior years' information. These VA adjustment factors may be used to correct for underreporting of age-specific incidence rates or age-adjusted incidence rates for SEER 9 and SEER 17 regions. Underreporting appears more extensive for some population subgroups (e.g, adult black males and males age 50+) and cancer sites (e.g., pancreas and liver and intrahepatic bile duct) (Howlader et al., 2009).

Excluded cancers: Some cancers were excluded from most of the analyses. Myelodysplastic syndrome (MDS), for example, was reclassified in ICD-O-3 (effective diagnosis year 2001) from nonmalignant to malignant; other cancers so reclassified include endometrial stromal sarcoma (low grade), papillary ependymoma, papillary meningioma, polycythemia vera, chronic myeloproliferative disease (NOS), myelosclerosis with myeloid metaplasia, essential thrombocythemia, refractory anemia, refractory anemia with sideroblasts, refractory

anemia with excess blasts, and refractory anemia with excess blasts in transformation. In contrast, borderline tumors of the ovary were reclassified from malignant to nonmalignant at the same time. In addition, benign brain/CNS tumors were collected beginning for 2004 diagnoses. All of these cancers were excluded from most of the analyses, especially time trends. Pilocytic astrocytoma, although reclassified in ICD-O-3, was not excluded. Separate tables for MDS and benign brain/CNS are shown.

MORTALITY DATA

The SEER Program annually obtains from the National Center for Health Statistics (NCHS) a file containing information on all deaths occurring in the US by calendar year. Information on each death includes age at death, sex, geographic area of residence, and underlying and contributing causes of death. For this publication, only the underlying cause of death is used in the calculation of death rates. Cause of death for 1969-1978 was coded according to ICD-8; for 1979-1998, ICD-9 was used; beginning with deaths in 1999, ICD-10 was used. Mortality rates for the SEER geographic areas, for each state, and for the entire US are obtained from these data. A list of the mortality site groupings used in this publication is in the Appendix and reflects updates made in 2004.

POPULATION DATA

The population estimates used in the SEER*Stat software to calculate cancer incidence and mortality rates for this report are a modified version of the annual time series of July 1 county population estimates by age, sex, race, and Hispanic origin that are produced by the Population Estimates Program of the US Census Bureau (http://www.census.gov/popest/estimates.php) with support from the NCI through an interagency agreement. Descriptions of the methodologies employed by the Census Bureau for various sets of estimates may be found on the same website. County population estimates for 2000 and later years must be bridged from 31 race categories used in Census 2000 to the four race categories specified under earlier OMB standards in order to report long-term cancer trends. The bridging methodology was developed by the National Center for Health Statistics and is described in a report (Ingram et al., 2003) and on their website http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm.

Modifications made by the NCI to the population estimates are documented in “Population Estimates Used in NCI’s SEER*Stat Software” (http://seer.cancer.gov/popdata/methods.html) and the population data files are available for download (see “Download US Population Data” from http://seer.cancer.gov/popdata/download.html). Several of the modifications pertaining to the grouping of specific counties needed to assure the compatibility of all incidence, mortality and population datasets. Another modification affects only population estimates for the State of Hawaii. The Epidemiology Program of the Hawaii Cancer Research Center has developed its own set of population estimates, based on sample survey data collected by the Hawaii Department of Health. This effort grew out of a concern that the native Hawaiian population has

been vastly undercounted in previous censuses. The "Hawaii-adjustment" to the Census Bureau's estimates has the net result of reducing the estimated white population and increasing the estimated Asian and Pacific Islander population for the state. The estimates for the total population, black population, and American Indian and Alaska Native populations in Hawaii are not modified.

The cancer incidence and mortality rates for American Indians and Alaska Natives (AI/AN) are based on the geographic areas (counties) included in the Indian Health Service's Contract Health Service Delivery Area (CHSDA). This reflects a concern that previously reported AI/AN rates were underestimated due to racial/ethnic misclassification of American Indian cases in geographic areas outside of CHSDA. This change has the net effect of higher, and more accurate, incidence and mortality rates for this population.

Usually the use of a population estimate for July 1 of a particular year reflects the average population of that area for the year. Both Hurricane Katrina and Hurricane Rita struck the Gulf Coast area of the United States in 2005. This had the effect of displacing large populations. Since there weren't any population estimates by age, race, sex, and county for time periods just after the hurricanes, it is very difficult to estimate the actual population at risk for certain areas along the Gulf Coast for 2005. For Louisiana, only the first six months of incidence data for 2005 coupled with ½ of the population estimate for July 1, 2005, were used to calculate cancer incidence. For death rate calculations, no adjustments were made to the total US population, but for the Gulf area, an adjustment for displaced populations was made for 2005 state rates. For more details, see http://seer.cancer.gov/popdata/methods.html .

2000 US STANDARD POPULATION

Starting with the November 2004 SEER submission of data (diagnoses through 2002), the SEER Program age-adjusts using the 2000 US standard population based on single years of age from the Census P25-1130 series estimates of the 2000 US population (Day, 1996). For the *CSR*, 19 age groupings were used for age-adjustment: <1, 1–4, 5–9, … , 80–84, 85+.

STATISTICAL METHODS

ESTIMATED CANCER CASES AND DEATHS IN 2010

The American Cancer Society (**ACS**) projects the numbers of new cancer cases and cancer deaths in the US in 2010 (American Cancer Society, 2010). The ACS projects incidence in 2010 based on incidence rates for 1995-2006 from 41 states, representing about 85% of the US population. These high-quality incidence data were submitted to the North American Association of Central Cancer Registries (NAACCR) by 41 states belonging to the SEER Program and/or the National Program of Cancer Registries (NPCR). For additional details please refer to http://www.cancer.org/docroot/STT/STT_0.asp

LONG-TERM TRENDS, 1950-2008

Trends in cancer mortality from 1950 to 2008 are summarized by age both for all cancers combined and for lung cancer (Table I-2). These cancer mortality trends are based on the mortality experience in the entire US. Summaries of long-term trends back to 1950 in cancer survival are also shown for whites.

Use caution when interpreting these statistics. Evaluating trends over a long period of time may hide recent changes in the trends.

YEARS OF LIFE LOST DUE TO PREMATURE DEATH FROM VARIOUS CAUSES

Death rates alone give an incomplete picture of the burden that deaths impose on the population. Another measure, which adds a different dimension, is the years of life lost due to premature death. This shows the extent to which life is cut short by a particular cause or disease.

This measure is estimated by linking life table data to each death of a person of a given age and sex. The life table permits a determination of the number of additional years an average person of that age, race, and sex would be expected to live. In this report, the age groups used in the calculation were 1-year intervals. These remaining years of life left are summed over all deaths due to a particular cause, yielding the estimate of the number of person-years of life lost (**PYLL**). The average years of life lost (**AYLL**) is obtained by dividing the PYLL by the number of deaths. Both of these measures can be calculated for any cause of death.

RELATIVE SURVIVAL

Relative survival (Ederer, 1961) was developed to provide an objective measure of the probability of survival of cancer in the absence of other causes of death. It is a measure that is not influenced by changes in mortality from other causes and, therefore, provides a useful measure for both tracking survival across time and comparisons between racial/ethnic groups or between registries. For most cancer registries, cause-of-death information obtained from death certificates is either unavailable or unreliable due to misclassification error. Therefore, instead of calculating the probability of surviving cancer in the usual (cause-specific) way, considering deaths from other causes as censoring events, relative survival compares the observed survival proportion of a group of cancer patients with the survival of a “similar” theoretical cancer-free group. Relative survival is formally defined as the ratio of the observed survival (all causes of death) of a cohort of cancer patients to the expected survival of a comparable set of cancer-free individuals. Since a cohort of cancer-free individuals is difficult to obtain, life tables representing survival of the general population are used instead. The underlying assumption is that the cancer deaths are a negligible proportion of all deaths. To learn more on this topic, visit: http://surveillance.cancer.gov/survival/measures.html.

Expected survival can be calculated using different methods which vary with respect to the

definition of the matching group. The three most common methods are: Ederer I (Ederer, et al., 1961), Ederer II (Ederer and Heise, 1959) and Hakulinen (Hakulinen, 1982). In previous versions of SEER*Stat, relative survival has been calculated using Ederer I and Hakulinen methods, Ederer I being the default for calculations in the Cancer Statistics Review. In the Ederer I and Hakulinen methods, theoretical individuals are matched to each patient and are considered to be at risk for the entire follow-up. Hakulinen adjusts for potential follow-up times. Relative survival using expected rates derived via these two methods are very similar. However, recent research on relative survival has resuscitated the initial method to estimate expected rate: the Ederer II method. Although none of the three methods can be considered a gold standard, the Ederer II method has be shown to be in better alignment with the concept of net cancer survival. For that reason, as of 2011, we have switched to Ederer II as our default choice for calculating expected rate in SEER*Stat and the CSR. For more detail regarding this topic, read Technical Report 2011-01 by Cho et al. at: http://surveillance.cancer.gov/reports/.

CAUSE-SPECIFIC SURVIVAL

Cause-specific survival is a net-survival measure representing survival of a specified cause of death in the (theoretical) absence of other causes of death. Estimates are calculated by specifying the cause of death. Individuals who die of causes other than the specified cause are censored. This requires a cause-of-death variable that accurately captures all causes related to the specific cause. Cancer registries use algorithms to process causes of death from death certificates in order to identify a single, disease-specific, underlying cause of death. In some cases, attribution of a single cause of death may be difficult and misattribution may occur. For example, a death may be attributed to the site of metastasis instead of the primary site (Percy et al, 1981).

To capture deaths related to the specific cancer but not coded as such, the SEER cause-specific death classification variable is defined by taking into account causes of deaths in conjunction with tumor sequence (i.e., only one tumor or the first of subsequent tumors), site of the original cancer diagnosis, comorbidities (e.g., AIDS and/or site-related diseases). To learn more on this topic, please read the recent article published at the Journal of National Cancer Institute (Howlader et al., 2010) or visit: http://seer.cancer.gov/causespecific/.

CANCER PREVALENCE

Methods: In this report prevalence is calculated at 1/1/2008. Limited-duration prevalence is calculated using the counting method implemented in the SEER*Stat software. This method calculates the number or proportion of people alive at the prevalence date who had a diagnosis of the disease within the past *x* years (e.g., *x* = 5, 10, 20, or the full history of the registry). Because SEER has available information for the various racial/ethnic groups for different numbers of years, different years and registries were used to estimate limited duration prevalence. Prevalence estimates for all races combined, for whites, and for blacks use cases

from 1975 through 2007 from the SEER 9 registries; prevalence estimates for Asian Pacific Islanders and Hispanics use cases diagnosed from 1990 through 2007 from the SEER 11 areas and rural Georgia.

The limited duration prevalence method includes a correction for people lost to follow-up. For each individual lost to follow-up, a probability of being alive at the prevalence date is estimated from an appropriate survival function stratified by age at diagnosis (0–59, 60–69, 70+), sex, cancer site, year of diagnosis, and race, conditional on being alive at the time of loss to follow-up. Year of diagnosis is stratified into 5-year groups from the prevalence date, with the least recent interval being of varying length (4-8 years), depending on the length of years used to calculate prevalence. Race is stratified into white, black, other (American Indian/Alaska Native, Asian/Pacific Islander), and unknown/other-unspecified. When we use the SEER 11 registries, the same stratification as before is used, with American Indian/Alaska Native separated from Asian/Pacific Islander. Prevalence calculations for Hispanics use race stratified into: white, non-white, and unknown.

Different methods can be used to determine which tumors are to be included for people diagnosed with multiple tumors. Unless otherwise specified, prevalence calculations included only the *first malignant tumor per person*; that is, in situ cancers and second-or-later primary cancers were not included. Thus, if a woman had a melanoma prior to a breast cancer diagnosis, her melanoma would contribute to the prevalence of melanoma and to the prevalence of all sites, but the breast cancer would not contribute to the prevalence of breast cancer. Counting only one cancer per individual avoids some ambiguity in prevalence counts, and allows the counts for individual sites to sum to the all sites total. Prevalence using different selection criteria is compared in a table in the overview chapter. For more information on tumor selection criteria refer to http://surveillance.cancer.gov/prevalence/methods.html.

Complete prevalence is an estimate of the number of persons (or the proportion of population) alive on a specified date who had been diagnosed with the given cancer, no matter how long ago that diagnosis was. It was estimated for all races, whites, and blacks by applying the *completeness index method* (Capocaccia & De Angelis, 1997; Merrill et al., 2000; Mariotto et al., 2002) to limited-duration prevalence. The completeness index method is implemented in the COMPREV software which can be found at http://surveillance.cancer.gov/comprev/. Validation of the completeness index for all races and for whites was made by using data from the Connecticut Tumor Registry (CTR) beginning with 1940; for blacks, SEER 9 data beginning with 1975 were used. Identification of blacks is not possible in the CTR data prior to 1970. To validate the completeness index for blacks, we have compared the performance of the method to obtain 24-year prevalence from 10-year limited-duration prevalence. For all races combined and for whites, in cases where the validation indicated some lack of fit of the model, an approximation to the completeness index was derived from the CTR data. If there was a lack of fit for blacks, no estimate of complete prevalence was reported. Complete prevalence for Asian/Pacific Islanders and Hispanics is not available at this time. Complete prevalence by age for all races combined was validated by comparing estimated 10-year complete prevalence with

observed prevalence from the CTR data. Prevalence by age is reported for the sites that validated well.

The US cancer prevalence counts at 1/1/2008 *were estimated* by multiplying the SEER age- and race-specific prevalence proportions by the corresponding US population estimates based on the average of 2007 and 2008 population estimates from the US Census Bureau. US cancer prevalence counts for all races were estimated by summing the US estimated counts for whites/unknown, blacks, and other races. For Hispanics, the estimates for Hispanics of white or unknown race and for Hispanics of other races were summed.

Complete prevalence estimates of the number of individuals in the US diagnosed with cancer as children (ages 0-19), including those surviving for more than 33 years, is introduced this year using a statistical method that estimates the number of childhood survivors diagnosed before 1975 (Simonetti et al., 2008; Mariotto et al., 2009). Limited-duration prevalence proportions by age at prevalence are not shown for childhood cancers (age at diagnosis 0-19) since many of these estimates are not informative. For example, the number of people diagnosed with childhood cancers in the last 25 years and who are currently age 50-59 is zero by definition. For more details on available prevalence estimates, see http://surveillance.cancer.gov/prevalence/index.html.

The overview chapter contains two prevalence tables. The first table reports US complete prevalence counts by age at prevalence and sex for some main cancer sites. The second table reports US prevalence counts for people diagnosed in the 5 years and 33 years prior to the prevalence date using different tumor inclusion criteria. Each site-specific chapter contains a prevalence table that reports limited-duration US prevalence counts by time since diagnosis for different racial/ethnic groups. US complete prevalence estimates are also reported when available. The second part of the site-specific tables displays the percent of the population in the SEER 11 areas diagnosed in the previous 18 years with the specific cancer by 10-year age groups for the different racial/ethnic groups.

PROBABILITY OF BEING DIAGNOSED WITH OR DYING FROM CANCER

Lifetime and interval risks of being diagnosed with cancer: The probability of being diagnosed with cancer is computed by applying cross-sectional age-specific 2006-2008 incidence rates from the SEER 17 areas and death rates from those same areas to a hypothetical cohort of 10,000,000 live births. This cohort is considered to be at risk for two mutually exclusive events: (1) developing the specified cancer, and (2) dying of other causes without developing the specified cancer. Using these two types of events, a standard **multiple decrement life table** (with 20 age groups from 0-4 to 90-94 and 95+) is derived. For each age interval, the number alive and free of the specified cancer at the beginning of the interval is decremented by the number who develop the specified cancer and the number who die of other causes. The lifetime risk of being diagnosed with the specified cancer is derived by summing all cancer

cases from age 0-4 through age 95+ and dividing by 10,000,000. This calculation does not assume that an individual lives to any particular age; rather, it is the sum over all age intervals of the probability of living to the beginning of that interval without developing the given cancer times the probability of developing the cancer in that interval. The probability of developing cancer during any time period (e.g., between age 50 and age 60) is calculated by adding up all the cancers in the life table over the specified age range and dividing by the number of individuals alive and free of the specified cancer at the beginning of the period. The methodology is described in detail in Fay (2003, 2004). To improve the precision of the calculations, rates were calculated beyond the usual last open ended age interval (i.e. 85+) for the age groups 85-89, 90-94, and 95+.

Lifetime risk of dying from cancer: The lifetime risk of dying from a specified cancer is derived using a standard multiple decrement life table (Elandt-Johnson & Johnson, 1980). For each age, the risks of dying of the specified cancer and of all other causes are calculated, based on mortality data from the entire United States.

Detailed methodology and software: The estimates of developing and dying from cancer are implemented in DevCan (Probablity of DEVeloping or dying from CANcer software). More details on the software, various databases, and the methodology can be found at http://surveillance.cancer.gov/devcan/.

US CANCER DEATH RATES BY STATE

Each cancer-site-specific section presents the death rate for the given cancer for each state and the District of Columbia, specifying the five highest and the five lowest death rates by state for the most recent 5-year period for all persons, males only, and females only. The rates are per 100,000 persons; they are age-adjusted to the 2000 US standard population. (In some previous editions of the CSR, the 1970 US standard million population was used; *death rates standardized to the 2000 US standard million population cannot be compared to death rates standardized to the 1970 US standard million population.*)

The **percent difference (PD)** between a state rate and the rate for the total US is given by the formula:

PD = [(State Rate – Total US Rate)/Total US Rate] * 100

The **standard error** for each age-adjusted state death rate is calculated, based on the assumptions that (1) for each age-specific rate, the number of deaths is a Poisson random variable (Keyfitz, 1966) and (2) the variance of the age-adjusted rate is a linear combination of the variances of the age-specific rates (Snedecor & Cochran, 1980; pp. 188-9).

The **standard error of the difference (*SE_d*)** between a state rate and the total US rate is given by the formula

$$\mathbf{SE_d = \text{Square Root of } [SE_S^2 + SE_U^2 - 2 * Cov_{S,U}]}$$

where SE_S and SE_U are the standard errors of a state rate and of the total US rate, respectively, and $Cov_{S,U}$ is the covariance between the two rates. The variance of each rate (i.e., the square of the standard error) and the covariance between the two rates are based on the Poisson assumption. The standard error does not represent the total error that may be present in the age-adjusted rate; it is merely the square root of the variance associated with the rates. In addition to this variance, there also exist potential biases and errors in the measurement of the rate that are difficult to assess accurately and probably impact differently on the error calculations for different states.

The difference between each age-adjusted state rate and the age-adjusted US rate is tested for statistical significance (see below) by calculating a ***Z*** (standard normal) statistic from the formula:

$$\mathbf{Z = (State\ rate - Total\ US\ rate) / SE_d}$$

Although the rates being compared are not independent because each state is part of the US, the statistical test may not be substantially affected if the state represents a small proportion of the total US. There is also an adjustment for multiple comparisons; see below under *Statistical Significance*.

JOINPOINT REGRESSION ANALYSIS OF CANCER TRENDS

An advance in the presentation of cancer trends is the use of joinpoint models (Kim et al., 2000). In some past issues of the *Cancer Statistics Review*, certain time intervals (e.g., 1973–1996) were specified and the annual percent changes (APC) were computed over those intervals. The choices of where to start and where to end an interval were arbitrary and sometimes did not give an accurate picture of the trend for a given cancer site. For example, the rates might be increasing and decreasing in different parts of the same interval. For some sites, increases occurred in the earlier years, followed by declines in more recent years.

To achieve greater descriptive accuracy, a statistical algorithm finds the optimal number and location of places where a trend changes. The point (in time) where a trend changes is called a **joinpoint**. Trends may change in different ways at a joinpoint: from up to down, from down to up, from up to up at a different rate, or from down to down at a different rate. A **joinpoint regression model** describes the trends by a continuous, piecewise-exponential function. Adjacent segments are connected at a joinpoint. The segments are connected because we assume that rates generally change smoothly, rather than "jump" abruptly. In each segment, the rates are assumed to grow or decay exponentially ($y = e^{mx+b}$), i.e., to change by a constant percentage each year. Thus the "slope" *m* in each segment can be associated with a fixed annual percent change (**APC**) by $APC = 100(e^m - 1)$.

Joinpoint analysis first assumes no joinpoints are needed to describe the data accurately, i.e., the trend over the entire interval 1975-2008 does not change. Joinpoints are added in turn if they are statistically significant. Thus, in the final model, each joinpoint represents a significant change in trend. Smoother polynomial models may provide a good fit overall, but are less sensitive to what is occurring at the ends of the data.

In running the Joinpoint program, we set the program parameters as follows:

(1) Joinpoints occur only at exact years; the joinpoint is not necessarily the same as the data point for that year;
(2) The minimum time interval between consecutive joinpoints is three years;
(3) The first joinpoint is not earlier than two years after the first year of data;
(4) The last joinpoint is not later than two years before the last year of data;
(5) The maximum number of joinpoints is five for 1975-2008 (SEER 9) data and three for 1992-2008 (SEER 13) data.

These restrictions provide some added stability to the resultant models. Different values for these parameters may yield a different joinpoint model. Since the test statistic to determine if additional joinpoints are necessary cannot be compared against any known standard distribution to determine significance, (e.g., the normal, t, or f) a permutation test is used which simulates the distribution of the test statistic under the null hypothesis. Thus an element of randomness is introduced by the random number stream used. However, for greater consistency in the p-values obtained if one were to change the random seed for each run, we run the program for 4499 permutations.

A Windows-based program, *Joinpoint*, is freely available at http://surveillance.cancer.gov/joinpoint/; it accepts data from the *SEER*Stat* program, as well as user defined data. Further details on joinpoint regression may be found at the web site. Starting with the 2011 edition of CSR, we are generating all our cancer trend statistics using a Linux-based *Joinpoint* program as opposed to the downloadable Windows-based program. As a result of using a different platform, in rare instances the results (e.g. # of join points) may differ.

Average Annual Percent Change (AAPC) is a summary measure of a trend over a pre-specified fixed interval based on an underlying joinpoint model. It allows us to use a single number to describe the average trend over a period of multiple years. It can be estimated even if the joinpoint model indicates that there were changes in trends during those years, since it is estimated as a geometric weighted average of the joinpoint APCs, with the weights equal to the lengths of each segment over the pre-specified fixed interval. In this report, we have included AAPCs as an addendum to the underlying joinpoint trends, and as a summary measure to compare fixed interval trends by race/ethnicity. For more information on how the AAPC is calculated and the advantages of reporting an AAPC over APCs, see http://surveillance.cancer.gov/joinpoint/aapc.html.

REPORTING DELAY

Timely and accurate calculation of cancer incidence rates is hampered by **reporting delay**, the time lapse before a diagnosed cancer case is reported to the NCI or the delay in receiving updated information for an existing case. Currently, the NCI allows a standard delay of 22 months between the end of the diagnosis year and the time the cancers are reported to the NCI in November, almost two years later. The data are released to the public in the spring of the following year. For example, cases diagnosed in 2008 were first reported to the NCI in November 2010 and released to the public in April 2011. However, in each subsequent release of the SEER data, *records from all prior diagnosis years* (e.g., diagnosis years 2007 and earlier in the 2010 submission to the NCI) *are updated* as either new cases are found or new information is received about previously submitted cases.

The submissions for the most recent diagnosis year are, in general, about two percent below the total number of cancers that will eventually be submitted for that year, although this varies by cancer site and other factors.

The idea behind modeling reporting delay is *to adjust the recent rates to anticipate future corrections (additions, changes, and deletions) to the data*. These adjusted rates and the associated delay model are valuable in more precisely determining current cancer trends, as well as in monitoring the timeliness of data collection—an important aspect of quality control (Clegg et al., 2002). Reporting delay models have been previously used in the reporting of AIDS cases (Brookmeyer & Damiano, 1989; Pagano et al., 1994; Harris, 1990).

In this report, we show SEER age-adjusted incidence rates and trends, along with their calculated delay adjustments for SEER 9 and SEER 13 areas. The adjusted rates, factors, and trends are available for all cancers combined (malignant only except for urinary bladder), for female breast in situ, for urinary bladder (in situ and malignant), and for 22 malignant cancer sites: melanoma (for all races combined and whites only), lung/bronchus, colon/rectum, prostate, female breast, liver and intrahepatic bile duct, pancreas, cervix uteri, corpus and uterus, ovary, testis, kidney and renal pelvis, brain and other nervous system, Hodgkin lymphoma, non-Hodgkin lymphoma, all leukemias, esophagus, larynx, myeloma, oral cavity and pharynx, thyroid, and stomach.

For more information on cancer incidence rates adjusted for reporting delay, see http://surveillance.cancer.gov/delay/. Estimates of observed incidence rates, delay-adjusted incidence rates, and delay-adjustments factors may be found in the Cancer Query Systems at http://seer.cancer.gov/canques/.

Adjustment for VA Case Backlog, Submission Year 2010

A policy change of the Department of Veterans Affairs (VA) regarding data sharing on VA

cancer cases resulted in underreporting on VA hospital cases for submission years 2007-2010. Section 33 of this report provides factors to adjust for the lack of reporting of VA cases, available at http://seer.cancer.gov/csr/1975_2008/results_merged/sect_33_VA_adjustment.pdf .

In addition to the adjustments made in Section 33, some special adjustments to case counts are necessary to fit the delay adjustment model. Beginning with the 2009 submission of SEER data, some SEER registries began accounting for the backlog of VA cases that would have been reported in 2006-2008. This upsurge in cases could cause perturbation in the delay model if fit in the usual manner.

As with the 2009 submission, to take account of the effect of the VA backlog in the 2010 submission on the delay adjustment model, the counts are adjusted by re-distributing VA cases to previous submission years according to the expected counts from the delay distribution conditional on the current submission. Specifically, for each of the diagnosis years 2004-2007, given the total cancer count in submission year 2010, the proportion of cumulative cancer count in each subsequent submission year is calculated based on the estimated parameters from previous year's reporting delay model. The VA cases in the 2010 submission are re-distributed to each of the prior submission years according to this proportion. The adjusted total cancer count in that submission year was then calculated by combining the non-VA cases and the re-distributed VA counts. Overall, the VA-related delay-adjustment is modest for the November 2010 submission. It was integrated into SEER 9 and SEER 13 delay models presented throughout the CSR. More details can be found at http://surveillance.cancer.gov/delay/vabacklog.html.

Delay-adjusted incidence rates and trends are reported for all cancers combined (malignant only except for urinary bladder), for female breast in situ, for urinary bladder (in situ and malignant), and for 22 malignant cancer sites: melanoma (for all races combined and whites only), lung/bronchus, colon/rectum, prostate, female breast, liver and intrahepatic bile duct, pancreas, cervix uteri, corpus and uterus, ovary, testis, kidney and renal pelvis, brain and other nervous system, Hodgkin lymphoma, non-Hodgkin lymphoma, all leukemias, esophagus, larynx, myeloma, oral cavity and pharynx, thyroid, and stomach.

STATISTICAL SIGNIFICANCE

Errors may be made in the estimation of a given statistic. In order to test whether two groups (such as the populations of a state and the entire US) have the same or different *actual* rates, the *observed* rates for the groups are compared. Statisticians consider that a difference in observed rates can be explained by one of two hypotheses: (H_0) The actual rates are really the same, but the observed rates are different because of some combination of error-causing factors, or (H_1) the actual rates of the groups are really different. H_0 is called the **null hypothesis** (because it says there is *no* real difference); H_1 is called the **alternate hypothesis**. Typically, H_0 is rejected only if there is strong evidence in favor of H_1. (Thus, if the observed rates are equal, we cannot reject H_0.)

Using statistical theory, one can determine the distribution of the rate difference under the assumption that H_0 is true. Then values of the rate difference that are very unlikely to occur if H_0 is true are identified. More specifically, a small positive number, called **alpha** (α), is chosen; usually, α is 0.05 or 0.01. (Alpha is called the **significance level** of the hypothesis test.) One can then identify limits for the difference in rates such that, if H_0 is true, the probability of the difference being outside of those limits is α. If the observed difference is *outside* of these limits, then the observed result is *very unlikely* to happen if H_0 is true, so H_0 is rejected.

Another way of looking at the same process is to calculate, assuming H_0 is true, the probability that the observed difference or any greater difference would occur; this number is called the ***P*-value** of the observed result. If the *P*-value of a comparison is less than α (that is, the observed difference is *very unlikely* to happen if the null hypothesis is true), H_0 will be rejected. If the *P*-value of a test is greater than the significance level α, H_0 will not be rejected. When a difference in rates is sufficiently large to cause the null hypothesis to be rejected for a given value of α (usually 0.05), it is called a **statistically significant** difference.

When a null hypothesis is rejected, there remains a small chance that a wrong decision has been made. If many statistical comparisons are done, even with α = 0.01, the chance of making at least one wrong decision becomes a concern. In testing the differences between the total US rate and the rate for each state (or for the District of Columbia) for a given cancer, 51 statistical comparisons of the type described above are performed. Based on one of Bonferroni's inequalities (if there are n events and p_i is the probability of success in event i, then P(at least 1 success) < $p_1 + ... + p_n$) (Snedecor & Cochran,1980; p. 115-117), the significance level α for each individual comparison was set equal to 0.01/51 ≈ 0.0002. Thus, only individual-state-to-total-US comparisons with an associated *P*-value less than 0.0002 are considered to be statistically significant. That is, a *very small* significance level α (0.0002) is used in order to minimize the total risk (0.01) of falsely deciding that some pair of equal rates are unequal.

Use caution in assessing statistically significant differences. Population size has an important role in any calculation of statistical significance. Some states may have estimated rates that are very close to the estimated total US rate, but because of their large population, the difference between their estimated rate and the estimated total US rate is found to be statistically significant. In this case, the true state rate and the true US rate are almost certainly different, because the observed difference, though small, is nearly impossible if the null hypothesis (equal rates) is true. A small difference in rates, however, may have no practical importance. On the other hand, some smaller states may have estimated rates that differ substantially from the estimated total US rate, but because of their relatively small population, the differences are found to be statistically nonsignificant. When this happens, if the true state rate and the true US rate were equal, the probability of obtaining a difference at least as large as what has been observed is greater than α ≈ 0.0002. Therefore, *because the evidence against it isn't strong enough, the null hypothesis (equal rates) is not rejected.*

If the percent difference (PD) between the two rates is small, there may be some question about the importance of the difference. It is difficult to specify a minimally significant absolute PD, below which the difference would always be unimportant, because the observed PD will depend on the populations of the areas involved. It may be of value to consider the size of the PD between a state rate and the US rate in assessing the importance of a statistically significant difference.

Comparing individual state rates with the US rate and assessing statistical significance is not an appropriate procedure for assessing geographic clustering of state rates. Identification of states which may represent regional clusters of high or low rates would require additional statistical and graphical analyses.

For a number of cancers, the District of Columbia has the highest death rates. *Use caution when comparing cancer rates for the District with those from the 50 states.* The District is an entirely urban area, whereas a state includes urban, suburban, and rural areas. Mortality rates for many cancers are higher in urban areas. Also, the District has a higher percentage of blacks —54% of the total population in 2009 (US Census Bureau, 2010)—than any state. In addition, their higher mortality rates for several types of cancer elevate the overall rate for the District.

STANDARD ERRORS OF RATES

Survival rates: In the tables presenting survival estimates, the magnitude of the standard error is given as a measure of the reliability of a given rate: the greater the standard error, the more uncertainty associated with the estimated rate. In addition, if there were fewer than 25 diagnoses in the first interval of the life table constructed to calculate survival, or if all cases became lost to follow-up within an interval, a valid survival estimate could not be calculated, as is noted in the table footnotes.

The **standard error** (**SE**) of a relative survival estimate is obtained as follows (Ederer et al., 1961):

$$\mathbf{SE(CR_t) = CR_t \ * \text{ square root of } [q_1/(e_1\text{-}d_1) + q_2/(e_2\text{-}d_2) + \ldots + q_t/(e_t\text{-}d_t)]}$$

where CR_t is the t-year relative survival estimate, and for i = 1, ... , t,
q_i is the probability of dying in year i after diagnosis,
e_i is the effective number of patients at risk in year i after diagnosis, and
d_i is the number of deaths in year i after diagnosis.

Incidence and mortality rates: The standard errors of age-adjusted incidence and mortality rates are often not specified. However, the reader can approximate the SE of a particular incidence or mortality rate by the SE of a crude incidence or mortality rate (Keyfitz, 1966), that is, the SE can be approximated by the rate divided by the square root of the number of cancer cases (or the number of deaths).

Appendix tables provide numbers of cancer diagnoses within SEER areas and numbers of deaths in the entire US, respectively, by race and sex for the most recent 5-year period. These can be used to obtain approximations of the standard errors for associated age-adjusted rates for the same time period using the above formula. To approximate the standard error of a rate for a single year, use the formula but replace the number of cancer cases or deaths with the number of cancer cases or deaths divided by 5.

DEFINITIONS

Several technical terms are used in presenting the data in this report. Their definitions are presented here to clarify them for the reader.

Incidence rate: The cancer incidence rate is the number of new cancers of a specific site/type occurring in a specified population during a year, usually expressed as the number of cancers per 100,000 persons at risk. That is,

Incidence rate = (New cancers / Population) * 100,000.

The *numerator* of the incidence rate is the number of new cancers; the *denominator* of the incidence rate is the size of the population. The number of new cancers may include multiple primary cancers occurring in one patient. The primary site reported is the site of origin and not the metastatic site. In general, the incidence rate would not include recurrences. *The population used depends on the rate to be calculated.* For cancer sites that occur in only one sex, the sex-specific population (e.g., females for cervical cancer) is used.

The incidence rate can be computed for a given type of cancer or for all cancers combined. Except for 5-year age-specific rates, all incidence rates in this report are *age-adjusted* (see below) to the 2000 US standard population (or, where appropriate, to the world standard million population). (In some previous editions of the *CSR*, the 1970 US standard million population was used; therefore, *incidence rates in this edition cannot be compared to rates published in those editions.*) Incidence rates are for *invasive cancer only*, unless otherwise specified. (Exceptions are the incidence rate for cancer of the urinary bladder (where both in situ and invasive cancers are counted) and breast cancer in situ, which is shown separately.)

Death rate: The cancer death (or mortality) rate is the number of deaths with cancer given as the underlying cause of death occurring in a specified population during a year, usually expressed as the number of deaths due to cancer per 100,000 persons. That is,

Death Rate = (Cancer Deaths / Population) ∗ 100,000.

The *numerator* of the death rate is the number of deaths; the *denominator* of the death rate is the size of the population. As with the incidence rate, *the population used depends on the rate to be calculated.* The death rate can be computed for a given cancer site or for all cancers combined. Except for 5-year age-specific rates, all death rates in this report are *age-adjusted*

(see below) to the 2000 US standard population (or, where appropriate, to the world standard million population). (In some previous editions of the *CSR*, the 1970 US standard million population was used; therefore, *death rates in this edition cannot be compared to rates published in those editions.*)

Age distribution: A table showing a partition of the entire lifespan into disjoint age intervals, along with the proportion of the population in each interval.

Median age: The age at which half of a population is younger and half is older.

Standard population: A **standard population** for a geographic area, such as the US or the world, is a table giving the proportions of the population falling into the age groups 0, 1-4, 5-9, ..., 80-84, and 85+. A **standard million population** for a geographic area is a table giving the number of persons in each age group 0, 1-4, ... , 85+ out of a theoretical cohort of 1,000,000 persons that is distributed by age in the same proportions as the standard population. Table A-7 shows the US 2000 standard population and the world standard million population. (Some World Health Organization mortality publications use a different world standard million population.)

Age-adjusted rate: An age-adjusted incidence or mortality rate is a weighted average of the age-specific incidence or mortality rates, where the weights are the counts of persons in the corresponding age groups of a standard population. The potential confounding effect of age is reduced when comparing age-adjusted rates based on the same standard population. For this report, the 2000 US standard population (or, where appropriate, the world standard million population) is used in computing age-adjusted rates, unless otherwise noted.

Percent change: The percent change (**PC**) in a statistic over a given time interval is

Percent change = (Final value – Initial value) / Initial value * 100.

A positive PC corresponds to an increasing trend, a negative PC to a decreasing trend.

Annual percent change: The annual percent change (**APC**) is calculated by first fitting a regression line to the natural logarithms of the rates (*r*) using calendar year (*x*) as a regressor variable. In this report the method of *weighted least squares* is used to calculate the regression equation. If **ln(r) = mx + b** is the resulting regression equation (with slope *m*), then **APC = 100 * (e^m – 1)**. A positive APC corresponds to an increasing trend, a negative APC to a decreasing trend.

Because the methods used in their calculation are mathematically different, *the signs of the PC and the APC for a given statistic and time interval may differ*, as occurs in a few of the tables presented. That is, one of these statistics may show an increasing trend, the other a decreasing trend.

Testing the hypothesis that the actual mean annual percent change is 0 is equivalent to testing the hypothesis that the theoretical slope estimated by the slope *m* of the line representing the

equation **ln(r) = mx + b** is 0. The latter hypothesis is tested using the *t* distribution of m / SE_m with $n - 2$ degrees of freedom. The standard error of *m*, called SE_m, is obtained from the fit of the regression (Kleinbaum et al., 1988). (This calculation assumes that the rates increased or decreased at a constant rate over the entire calendar year interval; the validity of this assumption was not assessed.) In those few instances where at least one of the rates was 0, the linear regression was not calculated.

Average Annual Percent Change: The average annual percent change (**AAPC**) is a summary measure of a trend over a pre-specified fixed interval based on an underlying joinpoint model. It allows us to use a single number to describe the average trend over a period of multiple years. It can be estimated even if the joinpoint model indicates that there were changes in trends during those years, since it is estimated as a weighted average of the joinpoint APCs, with the weights equal to the lengths of each subinterval over the pre-specified fixed interval.

Life table: A table for a given population listing, for each sex and each age from 0 to 120, how many members die at that age and how many survive one more year.

Observed survival: The observed survival estimate represents the proportion of cancer patients surviving for a specified time interval after diagnosis. Note that some of those not surviving died of the given cancer and some died of other causes.

Relative percent: The relative survival estimate is calculated using a procedure (Ederer et al., 1961; Ederer and Heise, 1959) whereby the observed survival estimate is adjusted for expected mortality. The relative survival estimate approximates the likelihood that a patient cohort will not die from causes associated specifically with the given cancer before some specified time after diagnosis. It is always larger than the observed survival estimate for the same group of patients.

Standard error: The standard error of a rate is a measure of the sampling variability of the rate.

Person-years of life lost: The person-years of life lost (**PYLL**) is calculated as follows: For each individual who dies of the cancer of interest, the number of years of expected additional life for an average person of that age, race, and sex is obtained from life tables for the US population (available from the NCHS). The PYLL in the general population associated with a particular cancer for a given year is simply the sum of this expectation over all those individuals who died of that cancer in that year.

Average years of life lost: The average years of life lost (**AYLL**) associated with a particular cancer for a given year is the PYLL associated with that cancer in the general population divided by the number of deaths from that cancer in the general population in that year.

Prevalence: Prevalence is defined as the number or percent of people alive on a certain date in a population who previously had a diagnosis of the disease. It includes new (incident) and pre-existing cases and is a function of past incidence, past survival, and the size and age structure

of the population**.** *Limited-Duration Prevalence* represents the proportion of people alive on a certain day who had a diagnosis of the disease within the past *x* years (e.g. *x* = 5, 10, or 20 years). *Complete prevalence* is an estimate of the number of persons (or the proportion of the population) alive on a specified date who had been diagnosed with the given disease, no matter how long ago that diagnosis was. For more details on cancer prevalence definitions and methods, refer to *http://surveillance.cancer.gov/prevalence/*.

Stage of disease at diagnosis: Extent-of-disease information determines stage of disease at diagnosis. The **SEER summary stage** presented has four levels. An invasive neoplasm confined entirely to the organ of origin is said to be **localized**. A neoplasm that has extended beyond the limits of the organ of origin, either directly into surrounding organs or tissues or into regional lymph nodes, is said to be **regional**. A neoplasm that has spread to parts of the body remote from the primary tumor, either by direct extension or by discontinuous metastasis, is said to be **distant**. When information is not sufficient to assign a stage, a neoplasm is said to be **unstaged**. In situ tumors (except those of the cervix uteri) are also collected by SEER but generally are not published in this series. For some cancers and diagnosis years, the extent of disease information can also be converted to Stages 0-IV as defined by the American Joint Committee on Cancer (Greene et al, 2002; Edge et al., 2010).

SOFTWARE USED TO GENERATE THE SEER CANCER STATISTICS REVIEW

The SEER Cancer Statistics Review includes statistics generated by a variety of statistical software including:

- SEER*Stat, statistical software for the analysis of SEER and other cancer databases, was used to generate incidence, mortality, prevalence, and survival statistics presented in the CSR.
- Analysis generated by the Joinpoint Regression Program are presented to better describe trends that are not constant over time.
- The DevCan system generated the probability of developing cancer from twelve SEER areas and the probability of dying from cancer from the total United States.
- The ComPrev software was used to calculate complete prevalence estimates.

Additional statistics can be obtained via SEER's Cancer Query Systems. These data retrieval applications provide access to pre-calculated cancer statistics stored in online databases.

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Table 1.3

Summary of Changes in Cancer Mortality, 1950-2008 and
5-Year Relative Survival (Percent), 1950-2007
Males and Females, By Primary Cancer Site

	All Races		Whites			
			U.S. Mortality Percent Change 1950-2008[b]		5-Year Relative Survival (Percent)[c]	
Primary Site	Estimated Cancer Cases in 2008[a]	Actual Cancer Deaths in 2008[b]	Total	APC	1950-1954	2001-2007
Oral cavity and pharynx	35,310				46	65.1
Esophagus	16,470				4	19.6
Stomach	21,500				12	26.1
Colon and rectum	148,810				37	67.1
Colon	108,070				41	66.5
Rectum	40,740				40	68.7
Liver and intrahepatic bile duct	21,370				1	14.6
Pancreas	37,680				1	5.9
Larynx	12,250				52	64.9
Lung and bronchus	215,020				6	16.7
Males	114,690				5	14.5
Females	100,330				9	19.2
Melanoma of the skin	62,480				49	93.0
Breast(females)	182,460				60	91.4
Cervix uteri	11,070				59	70.3
Corpus and uterus, NOS	40,100				72	85.4
Ovary	21,650				30	43.3
Prostate	186,320				43	99.9
Testis	8,090				57	97.0
Urinary bladder	68,810				53	81.1
Kidney and renal pelvis	54,390				34	71.0
Brain and nervous system	21,810				21	33.7
Thyroid	37,340				80	97.6
Hodgkin lymphoma	8,220				30	87.5
Non-Hodgkin lymphoma	66,120				33	70.7
Myeloma	19,920				6	41.5
Leukemia	44,270				10	57.1
Childhood (Ages 0-14)	10,730				20	83.8
All Sites	1,437,180				35	68.6

The APC is the Annual Percent Change over the time interval. Rates used in the calculation of the APC are age-adjusted to the 2000 U.S. standard population (18 age groups - Census P25-1130).

a Facts and Figures, 2008. American Cancer Society, Atlanta, Georgia, 2008.

b U.S. Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention.
Due to coding changes throughout the years: Colon excludes other digestive tract; Rectum includes anal canal;
Liver & intrahepatic bile duct includes gallbladder & biliary tract, NOS; Lung & bronchus includes trachea & pleura;
Ovary includes fallopian tube; Urinary bladder includes other urinary organs; Kidney & Renal pelvis includes ureter;
NHL and myeloma each include a small number of leukemias; NHL includes a small number of ill-defined sites.

c Survival estimates for 1950-54 are from NCI Survival Report 5 with the exception of All Sites, Oral cavity & pharynx,
Colon & rectum, Non-Hodgkin lymphoma and Childhood cancers which come from historical Connecticut data.
Survival estimates for 2001-2007 are from the SEER 9 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa,
New Mexico, Seattle, Utah, and Atlanta). Rates are based on follow-up of patients into 2008.

* The APC is significantly different from zero (p<.05).

Table 1.4
Age-Adjusted SEER Incidence and U.S. Death Rates and 5-Year Relative Survival (Percent)
By Primary Cancer Site, Sex and Time Period

All Races

Site	Incidence[a] (2004-2008) Total	Males	Females	US Mortality[b] (2004-2008) Total	Males	Females	Survival[c] (%) (2001-2007) Total	Males	Females
All Sites	464.4	541.0	411.6				65.3	66.0	64.7
Oral Cavity & Pharynx:	10.6	15.7	6.2				60.8	59.8	62.9
Lip	0.7	1.2	0.3				90.5	90.8	89.8
Tongue	3.0	4.5	1.7				59.4	59.5	59.1
Salivary gland	1.3	1.7	1.0				71.3	64.7	79.8
Floor of mouth	0.6	0.9	0.3				51.2	48.7	57.4
Gum & other oral cavity	1.5	1.8	1.2				58.1	55.1	61.7
Nasopharynx	0.7	1.0	0.4				58.3	57.7	59.5
Tonsil	1.6	2.7	0.6				67.8	68.5	64.5
Oropharynx	0.4	0.6	0.2				38.0	39.3	34.1
Hypopharynx	0.7	1.1	0.2				30.2	30.2	30.8
Other oral cavity & pharynx	0.2	0.3	0.1				35.8	39.3	26.5
Digestive System:	86.9	106.4	71.3				44.4	42.7	46.3
Esophagus	4.5	7.8	1.9				16.8	16.8	16.8
Stomach	7.7	10.8	5.4				26.3	24.5	29.0
Small intestine	2.0	2.4	1.6				63.2	63.8	62.4
Colon & Rectum:	47.2	55.0	41.0				64.3	64.6	64.0
Colon	33.9	38.3	30.6				63.6	64.0	63.2
Rectum	13.2	16.7	10.4				66.0	65.8	66.2
Anus, anal canal & anorectum	1.6	1.4	1.8				64.9	59.8	68.2
Liver & intrahep. bile duct:	7.3	11.2	3.9				14.4	14.4	14.4
Liver	6.7	10.6	3.3				15.2	14.9	15.7
Intrahepatic bile duct	0.6	0.7	0.6				5.4	4.9	6.0
Gallbladder	1.2	0.8	1.5				16.5	14.2	17.4
Other biliary	1.8	2.3	1.5				15.5	16.4	14.5
Pancreas	12.0	13.6	10.7				5.5	5.1	5.8
Retroperitoneum	0.4	0.4	0.4				50.2	47.8	52.5
Peritoneum, omentum & mesentery	0.7	0.1	1.2				28.6	39.7	27.9
Other digestive system	0.5	0.6	0.5				10.5	10.3	10.8
Respiratory System:	66.3	82.5	54.3				18.7	18.1	19.5
Nose, nasal cavity & middle ear	0.7	0.9	0.5				56.2	56.0	56.5
Larynx	3.4	6.0	1.3				60.8	61.8	56.7
Lung & bronchus	62.0	75.2	52.3				15.6	13.5	18.0
Pleura[d]	0.0	0.0	0.0				24.8	21.0	31.5
Trachea & other respiratory organs	0.2	0.3	0.1				49.8	53.2	40.6
Bones & joints	0.9	1.0	0.8				66.3	63.7	69.5
Soft tissue (including heart)	3.3	3.9	2.8				66.1	65.6	66.7
Skin (excl. basal & squamous):	22.7	29.4	18.1				90.8	88.7	93.4
Melanoma of the skin	20.8	26.7	16.7				91.2	89.2	93.7
Other non-epithelial skin	1.9	2.6	1.5				85.9	83.0	89.4
Breast	67.0	1.2	124.0				89.1	85.7	89.1
Breast (*in situ*)	16.4	0.2	30.9				100.0	100.0	100.0

Note: Incidence and death rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

[a] SEER 17 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry, Rural Georgia, California excluding SF/SJM/LA, Kentucky, Louisiana and New Jersey).

[b] US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention.

[c] SEER 17 areas. Based on follow-up of patients into 2008.

[d] Mesotheliomas of the Pleura are included in the separate group Mesothelioma for incidence but are included in the Pleura grouping for mortality.

\- Statistic could not be calculated due to less than 16 cases in the time interval.

Table 1.4 - continued
Age-Adjusted SEER Incidence and U.S. Death Rates and 5-Year Relative Survival (Percent)
By Primary Cancer Site, Sex and Time Period

All Races

Site	Incidence[a] (2004-2008) Total	Incidence[a] (2004-2008) Males	Incidence[a] (2004-2008) Females	US Mortality[b] (2004-2008) Total	US Mortality[b] (2004-2008) Males	US Mortality[b] (2004-2008) Females	Survival[c] (%) (2001-2007) Total	Survival[c] (%) (2001-2007) Males	Survival[c] (%) (2001-2007) Females
Female Genital System:	26.0	-	48.6				68.1	-	68.1
Cervix uteri	4.2	-	8.1				68.6	-	68.6
Corpus uteri	12.5	-	23.4				83.1	-	83.1
Uterus, NOS	0.3	-	0.6				25.9	-	25.9
Ovary[d]	6.9	-	12.8				43.8	-	43.8
Vagina	0.4	-	0.7				50.2	-	50.2
Vulva	1.3	-	2.3				72.7	-	72.7
Other female genital system	0.4	-	0.8				61.1	-	61.1
Male Genital System:	72.9	162.6	-				99.1	99.1	-
Prostate	69.7	156.0	-				99.4	99.4	-
Testis	2.8	5.5	-				95.3	95.3	-
Penis	0.4	0.8	-				64.1	64.1	-
Other male genital system	0.1	0.2	-				88.7	88.7	-
Urinary System:	36.6	58.8	20.0				74.1	75.8	70.5
Urinary bladder	21.1	37.5	9.2				78.1	79.9	72.6
Kidney & renal pelvis	14.6	20.0	10.2				69.5	69.5	69.4
Ureter	0.6	0.8	0.4				51.0	53.5	47.6
Other urinary system	0.3	0.5	0.2				51.7	54.9	46.7
Eye & Orbit	0.8	1.0	0.7				82.4	81.0	83.9
Brain & Nervous System:[e]	6.5	7.7	5.4				33.4	31.8	35.4
Brain	6.1	7.3	5.0				30.2	29.1	31.4
Cranial nerves & other nervous system	0.4	0.4	0.4				79.6	75.6	83.0
Endocrine System:	11.7	6.4	17.0				94.8	89.7	96.6
Thyroid	11.0	5.6	16.3				97.2	94.2	98.1
Other endocrine & thymus	0.7	0.9	0.6				62.9	64.0	61.4
Lymphoma:	22.7	27.1	19.1				69.7	68.2	71.3
Hodgkin lymphoma	2.8	3.1	2.6				83.9	82.8	85.2
Non-Hodgkin lymphoma	19.8	24.0	16.5				67.3	65.7	69.0
Myeloma	5.7	7.2	4.6				39.7	40.6	38.6
Leukemia:	12.5	16.1	9.7				53.9	54.2	53.5
Lymphocytic:	6.3	8.4	4.6				74.1	73.7	74.8
Acute lymphocytic	1.7	1.9	1.4				64.4	64.1	64.9
Chronic lymphocytic	4.2	5.8	3.0				78.0	76.6	80.2
Other lymphocytic	0.4	0.7	0.2				80.4	85.9	66.2
Myeloid & Monocytic:	5.5	6.9	4.5				32.8	32.2	33.6
Acute myeloid	3.5	4.3	3.0				22.6	21.2	24.2
Chronic myeloid	1.6	2.0	1.2				57.2	56.8	57.6
Acute monocytic	0.3	0.3	0.2				24.0	23.4	24.5
Other myeloid & monocytic	0.2	0.2	0.1				30.8	29.4	32.4
Other leukemia:	0.7	0.8	0.6				26.1	25.8	26.5
Other acute leukemia	0.3	0.3	0.2				15.6	16.6	14.4
Aleukemic, subleukemic & NOS	0.4	0.5	0.3				34.3	33.1	35.7
Kaposi Sarcoma[f]	0.6	1.2	0.1				67.6	67.4	68.2
Mesothelioma[f]	1.1	1.9	0.4				7.7	5.9	13.6
Ill-defined & unspecified	9.5	10.9	8.5				16.2	19.9	12.7

Note: Incidence and death rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

[a] SEER 17 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry, Rural Georgia, California excluding SF/SJM/LA, Kentucky, Louisiana and New Jersey).

[b] US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention.

[c] SEER 17 areas. Based on follow-up of patients into 2008.

[d] Ovary excludes borderline cases or histologies 8442, 8451, 8462, 8472, and 8473.

[e] Due to coding changes, Brain & Nervous System mortality are no longer shown separately.

[f] Rate not shown for mortality. Category did not exist in mortality coding until 1999.

\- Statistic could not be calculated due to less than 16 cases in the time interval.

Table 1.5
Age-Adjusted SEER Incidence and U.S. Death Rates and 5-Year Relative Survival (Percent)
By Primary Cancer Site, Sex and Time Period

Whites

Site	Incidence[a] (2004-2008) Total	Males	Females	US Mortality[b] (2004-2008) Total	Males	Females	Survival[c] (%) (2001-2007) Total	Males	Females
All Sites	471.8	543.6	423.0				66.0	66.5	65.6
Oral Cavity & Pharynx:	10.8	16.1	6.2				62.4	62.0	63.2
Lip	0.8	1.4	0.4				90.5	90.7	89.7
Tongue	3.2	4.7	1.8				61.4	61.8	60.3
Salivary gland	1.3	1.8	1.0				69.8	63.3	78.9
Floor of mouth	0.6	0.9	0.3				52.6	50.3	58.0
Gum & other oral cavity	1.5	1.8	1.2				59.0	56.7	61.6
Nasopharynx	0.4	0.6	0.3				52.2	53.3	49.4
Tonsil	1.7	2.9	0.6				70.3	71.2	66.2
Oropharynx	0.4	0.6	0.2				42.3	43.8	37.6
Hypopharynx	0.6	1.1	0.3				32.5	32.7	32.1
Other oral cavity & pharynx	0.2	0.3	0.1				38.4	42.5	27.5
Digestive System:	84.2	103.1	69.0				45.3	43.8	47.0
Esophagus	4.7	8.1	1.8				17.7	17.8	17.4
Stomach	6.8	9.5	4.6				24.8	23.2	27.5
Small intestine	1.9	2.4	1.6				64.6	65.8	63.1
Colon & Rectum:	46.5	54.4	40.2				65.0	65.5	64.5
Colon	33.5	38.0	30.0				64.5	65.1	64.0
Rectum	13.0	16.4	10.2				66.3	66.3	66.3
Anus, anal canal & anorectum	1.8	1.5	2.0				66.0	61.0	69.2
Liver & Intrahep. bile duct:	6.2	9.6	3.3				13.9	14.1	13.5
Liver	5.6	8.9	2.7				14.8	14.8	15.0
Intrahepatic bile duct	0.6	0.6	0.5				5.3	5.3	5.4
Gallbladder	1.1	0.8	1.4				16.4	13.6	17.6
Other biliary	1.8	2.2	1.5				15.5	17.0	14.0
Pancreas	11.9	13.5	10.5				5.5	5.2	5.7
Retroperitoneum	0.4	0.5	0.4				50.2	47.6	52.9
Peritoneum, omentum & mesentery	0.7	0.1	1.3				28.6	35.7	28.2
Other digestive system	0.5	0.6	0.5				9.8	9.6	10.0
Respiratory System:	67.7	82.5	56.6				18.9	18.3	19.7
Nose, nasal cavity & middle ear	0.7	0.9	0.6				55.6	55.5	55.7
Larynx	3.4	6.0	1.3				61.8	62.8	58.0
Lung & bronchus	63.3	75.3	54.6				15.9	13.7	18.3
Pleura[d]	0.0	0.1	0.0				23.9	19.3	33.2
Trachea & other respiratory organs	0.2	0.3	0.1				49.6	54.1	37.4
Bones & joints	1.0	1.1	0.8				66.1	62.7	70.5
Soft tissue (including heart)	3.3	4.0	2.8				66.6	66.0	67.4
Skin (excl. basal & squamous):	26.3	33.7	21.2				90.5	88.3	93.1
Melanoma of the skin	24.3	30.9	19.7				90.9	88.9	93.5
Other non-epithelial skin	2.0	2.8	1.4				84.3	81.2	88.3
Breast	68.2	1.2	127.3				90.3	86.5	90.4
Breast (*in situ*)	16.5	0.1	31.4				100.0	100.0	100.0

Note: Incidence and death rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

[a] SEER 17 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry, Rural Georgia, California excluding SF/SJM/LA, Kentucky, Louisiana and New Jersey).

[b] US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention.

[c] SEER 17 areas. Based on follow-up of patients into 2008.

[d] Mesotheliomas of the Pleura are included in the separate group Mesothelioma for incidence but are included in the Pleura grouping for mortality.

\- Statistic could not be calculated due to less than 16 cases in the time interval.

Table 1.5 - continued
Age-Adjusted SEER Incidence and U.S. Death Rates and 5-Year Relative Survival (Percent)
By Primary Cancer Site, Sex and Time Period

Whites

Site	Incidence[a] (2004-2008) Total	Incidence[a] (2004-2008) Males	Incidence[a] (2004-2008) Females	US Mortality[b] (2004-2008) Total	US Mortality[b] (2004-2008) Males	US Mortality[b] (2004-2008) Females	Survival[c] (%) (2001-2007) Total	Survival[c] (%) (2001-2007) Males	Survival[c] (%) (2001-2007) Females
Female Genital System:	26.6	-	50.2				69.2	-	69.2
Cervix uteri	4.0	-	8.0				70.0	-	70.0
Corpus uteri	12.9	-	24.3				84.9	-	84.9
Uterus, NOS	0.3	-	0.5				25.5	-	25.5
Ovary[d]	7.2	-	13.5				43.7	-	43.7
Vagina	0.4	-	0.7				50.9	-	50.9
Vulva	1.3	-	2.4				72.8	-	72.8
Other female genital system	0.4	-	0.8				61.1	-	61.1
Male Genital System:	71.2	157.0	-				99.4	99.4	-
Prostate	67.4	149.5	-				99.7	99.7	-
Testis	3.3	6.5	-				95.7	95.7	-
Penis	0.4	0.8	-				63.2	63.2	-
Other male genital system	0.1	0.2	-				91.9	91.9	-
Urinary System:	38.9	62.5	20.9				74.7	76.1	71.3
Urinary bladder	22.9	40.6	9.8				78.5	80.1	73.8
Kidney & renal pelvis	15.1	20.5	10.5				69.7	69.7	69.8
Ureter	0.6	0.9	0.4				50.8	54.0	46.4
Other urinary system	0.3	0.5	0.2				53.0	55.0	49.5
Eye & Orbit	0.9	1.1	0.8				82.4	80.8	84.0
Brain & Nervous System:[e]	7.1	8.4	5.9				32.5	31.2	34.2
Brain	6.7	8.0	5.5				29.3	28.6	30.3
Cranial nerves & other nervous system	0.4	0.4	0.4				80.8	76.7	84.3
Endocrine System:	12.2	6.7	17.8				95.2	90.3	96.9
Thyroid	11.5	5.9	17.2				97.5	94.4	98.3
Other endocrine & thymus	0.7	0.8	0.6				62.6	64.6	60.2
Lymphoma:	23.7	28.3	20.0				70.3	69.1	71.6
Hodgkin lymphoma	3.0	3.3	2.8				84.3	83.3	85.4
Non-Hodgkin lymphoma	20.7	25.0	17.3				67.9	66.7	69.3
Myeloma	5.3	6.8	4.1				39.5	40.8	37.9
Leukemia:	13.1	16.8	10.2				54.0	54.2	53.8
Lymphocytic:	6.8	8.9	5.0				74.3	73.8	75.1
Acute lymphocytic	1.8	2.0	1.6				64.3	63.9	64.7
Chronic lymphocytic	4.5	6.2	3.2				78.1	76.5	80.5
Other lymphocytic	0.5	0.7	0.2				80.8	86.4	66.3
Myeloid & Monocytic:	5.7	7.1	4.6				31.8	31.1	32.7
Acute myeloid	3.6	4.5	3.0				21.9	20.6	23.5
Chronic myeloid	1.6	2.0	1.2				55.7	55.1	56.4
Acute monocytic	0.3	0.4	0.3				24.4	22.8	26.0
Other myeloid & monocytic	0.2	0.2	0.1				29.2	28.8	29.7
Other leukemia:	0.7	0.8	0.5				24.8	24.2	25.6
Other acute leukemia	0.3	0.3	0.2				14.0	14.5	13.4
Aleukemic, subleukemic & NOS	0.4	0.5	0.3				33.6	32.5	34.8
Kaposi Sarcoma[f]	0.5	1.0	0.1				72.2	71.6	77.4
Mesothelioma[f]	1.2	2.1	0.5				7.1	5.4	13.0
Ill-defined & unspecified	9.6	11.0	8.6				16.7	21.0	12.8

Note: Incidence and death rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).
[a] SEER 17 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry, Rural Georgia, California excluding SF/SJM/LA, Kentucky, Louisiana and New Jersey).
[b] US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention.
[c] SEER 17 areas. Based on follow-up of patients into 2008.
[d] Ovary excludes borderline cases or histologies 8442, 8451, 8462, 8472, and 8473.
[e] Due to coding changes, Brain & Nervous System mortality are no longer shown separately.
[f] Rate not shown for mortality. Category did not exist in mortality coding until 1999.
\- Statistic could not be calculated due to less than 16 cases in the time interval.

Table 1.6
Age-Adjusted SEER Incidence and U.S. Death Rates and 5-Year Relative Survival (Percent)
By Primary Cancer Site, Sex and Time Period

Blacks

Site	Incidence[a] (2004-2008) Total	Males	Females	US Mortality[b] (2004-2008) Total	Males	Females	Survival[c] (%) (2001-2007) Total	Males	Females
All Sites	491.2	626.1	400.9				57.8	61.1	54.0
Oral Cavity & Pharynx:	9.9	15.6	5.6				42.1	37.3	52.6
Lip	0.1	0.1	-				85.5	79.3	89.5
Tongue	2.3	3.7	1.2				33.0	30.5	38.1
Salivary gland	1.0	1.0	1.0				72.9	66.7	78.1
Floor of mouth	0.6	1.0	0.3				39.5	36.0	51.3
Gum & other oral cavity	1.5	1.9	1.3				51.2	41.4	64.1
Nasopharynx	0.7	1.2	0.3				53.7	50.0	62.3
Tonsil	1.7	3.0	0.6				45.3	44.2	49.4
Oropharynx	0.6	1.2	0.3				17.8	18.3	14.5
Hypopharynx	1.1	2.1	0.3				19.7	19.2	21.8
Other oral cavity & pharynx	0.3	0.5	0.2				21.4	23.1	15.3
Digestive System:	109.4	135.4	90.9				38.1	34.9	41.4
Esophagus	5.1	8.6	2.7				11.2	10.5	12.9
Stomach	11.9	17.2	8.5				25.5	22.5	29.4
Small intestine	3.1	3.5	2.7				57.8	54.6	60.6
Colon & Rectum:	57.8	67.7	51.2				56.0	55.0	56.9
Colon	43.9	50.1	39.7				55.2	54.4	55.8
Rectum	14.0	17.5	11.5				58.5	56.4	60.4
Anus, anal canal & anorectum	1.8	1.9	1.7				55.0	49.8	60.1
Liver & Intrahep. bile duct:	9.2	15.1	4.6				9.9	8.3	14.2
Liver	8.6	14.6	4.0				10.1	8.5	14.7
Intrahepatic bile duct	0.5	0.5	0.6				6.1	0.0	9.1
Gallbladder	1.5	1.1	1.8				14.2	18.9	12.5
Other biliary	1.7	2.0	1.5				12.2	10.5	14.3
Pancreas	15.9	17.1	14.8				4.4	3.8	5.0
Retroperitoneum	0.4	0.3	0.4				46.5	37.0	51.3
Peritoneum, omentum & mesentery	0.4	0.1	0.5				30.5	66.1	23.3
Other digestive system	0.7	0.8	0.6				14.8	13.9	15.0
Respiratory System:	78.8	110.9	57.3				16.5	16.6	16.3
Nose, nasal cavity & middle ear	0.7	1.0	0.5				54.0	52.0	57.3
Larynx	5.2	9.8	1.9				53.2	54.7	47.1
Lung & bronchus	72.7	99.8	54.7				12.9	11.6	14.5
Pleura[d]	-	-	-				-	-	-
Trachea & other respiratory organs	0.2	0.2	0.1				50.7	47.3	54.8
Bones & joints	0.7	0.8	0.7				64.1	65.0	62.9
Soft tissue (including heart)	3.3	3.6	3.1				61.7	61.1	62.3
Skin (excl. basal & squamous):	2.2	2.2	2.2				85.2	82.6	87.0
Melanoma of the skin	1.0	1.2	0.9				72.4	65.2	77.4
Other non-epithelial skin	1.2	1.1	1.2				94.3	94.4	94.0
Breast	68.8	1.6	119.9				77.0	76.8	77.0
Breast (*in situ*)	16.4	0.2	28.8				100.0	98.7	100.0

Note: Incidence and death rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

[a] SEER 17 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry, Rural Georgia, California excluding SF/SJM/LA, Kentucky, Louisiana and New Jersey).

[b] US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention.

[c] SEER 17 areas. Based on follow-up of patients into 2008.

[d] Mesotheliomas of the Pleura are included in the separate group Mesothelioma for incidence but are included in the Pleura grouping for mortality.

\- Statistic could not be calculated due to less than 16 cases in the time interval.

Table 1.6 - continued
Age-Adjusted SEER Incidence and U.S. Death Rates and 5-Year Relative Survival (Percent)
By Primary Cancer Site, Sex and Time Period

Blacks

Site	Incidence[a] (2004-2008) Total	Incidence[a] (2004-2008) Males	Incidence[a] (2004-2008) Females	US Mortality[b] (2004-2008) Total	US Mortality[b] (2004-2008) Males	US Mortality[b] (2004-2008) Females	Survival[c] (%) (2001-2007) Total	Survival[c] (%) (2001-2007) Males	Survival[c] (%) (2001-2007) Females
Female Genital System:	25.3	-	44.4				54.0	-	54.0
Cervix uteri	5.6	-	10.0				58.4	-	58.4
Corpus uteri	11.3	-	19.7				61.9	-	61.9
Uterus, NOS	0.7	-	1.2				27.6	-	27.6
Ovary[d]	5.8	-	10.0				34.9	-	34.9
Vagina	0.6	-	1.0				46.2	-	46.2
Vulva	1.0	-	1.8				66.7	-	66.7
Other female genital system	0.4	-	0.7				55.6	-	55.6
Male Genital System:	98.5	236.4	-				96.0	96.0	-
Prostate	97.4	233.8	-				96.2	96.2	-
Testis	0.6	1.3	-				86.5	86.5	-
Penis	0.4	1.0	-				61.7	61.7	-
Other male genital system	0.1	0.2	-				70.3	70.3	-
Urinary System:	30.3	45.9	19.7				64.9	67.8	60.5
Urinary bladder	13.1	21.6	7.6				64.4	70.3	54.0
Kidney & renal pelvis	16.5	23.3	11.6				66.2	66.6	65.6
Ureter	0.3	0.4	0.3				42.3	38.7	46.9
Other urinary system	0.4	0.6	0.3				35.2	36.9	33.8
Eye & Orbit	0.2	0.3	0.2				73.7	74.2	72.9
Brain & Nervous System:[e]	3.9	4.6	3.5				38.0	33.8	42.4
Brain	3.6	4.2	3.1				33.7	30.0	37.8
Cranial nerves & other nervous system	0.4	0.4	0.4				72.7	69.5	75.3
Endocrine System:	7.4	4.1	10.3				90.9	83.5	93.0
Thyroid	6.5	3.2	9.3				94.9	90.9	95.7
Other endocrine & thymus	0.9	0.9	0.9				62.4	63.3	61.1
Lymphoma:	17.6	21.1	14.7				63.8	59.8	68.5
Hodgkin lymphoma	2.8	3.2	2.4				80.4	77.2	83.7
Non-Hodgkin lymphoma	14.8	17.9	12.3				59.9	55.8	64.8
Myeloma	11.9	14.5	10.2				39.1	38.3	39.9
Leukemia:	9.8	12.9	7.8				47.5	48.1	46.7
Lymphocytic:	4.2	6.1	2.9				64.2	63.1	65.9
Acute lymphocytic	1.0	1.2	0.8				62.0	60.5	64.1
Chronic lymphocytic	3.0	4.6	2.0				65.2	63.5	67.5
Other lymphocytic	0.2	0.4	0.1				62.2	68.0	48.7
Myeloid & Monocytic:	4.8	5.8	4.3				35.7	35.9	35.4
Acute myeloid	3.1	3.4	2.8				24.4	24.3	24.4
Chronic myeloid	1.5	1.9	1.2				58.3	58.3	58.0
Acute monocytic	0.2	0.2	0.1				17.7	20.8	0.0
Other myeloid & monocytic	0.2	0.2	0.1				40.8	32.2	46.9
Other leukemia:	0.8	1.0	0.6				26.2	27.4	24.6
Other acute leukemia	0.2	0.3	0.2				22.5	26.3	17.7
Aleukemic, subleukemic & NOS	0.5	0.7	0.4				28.3	27.8	28.5
Kaposi Sarcoma[f]	1.2	2.4	0.2				50.4	51.1	40.3
Mesothelioma[f]	0.7	1.2	0.3				12.8	11.8	15.3
Ill-defined & unspecified	11.1	12.6	10.0				11.3	12.1	10.4

Note: Incidence and death rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

[a] SEER 17 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry, Rural Georgia, California excluding SF/SJM/LA, Kentucky, Louisiana and New Jersey).

[b] US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention.

[c] SEER 17 areas. Based on follow-up of patients into 2008.

[d] Ovary excludes borderline cases or histologies 8442, 8451, 8462, 8472, and 8473.

[e] Due to coding changes, Brain & Nervous System mortality are no longer shown separately.

[f] Rate not shown for mortality. Category did not exist in mortality coding until 1999.

\- Statistic could not be calculated due to less than 16 cases in the time interval.

Table 1.7
SEER Incidence and U.S. Mortality Trends by Primary Cancer Site and Sex
All Races, 1999-2008

	Incidence[a]			US Mortality[b]		
Site	Total APC	Males APC	Females APC	Total APC	Males APC	Females APC
All Sites	-0.7*	-1.0*	-0.4*			
Oral Cavity & Pharynx:	-0.4	-0.4	-0.6			
Lip	-6.3*	-6.8*	-4.6*			
Tongue	1.7*	2.1*	1.0			
Salivary gland	0.7	0.6	0.6			
Floor of mouth	-4.2*	-4.6*	-3.7*			
Gum & other oral cavity	-1.9*	-2.3*	-1.4			
Nasopharynx	0.5	0.3	0.7			
Tonsil	2.6*	3.0*	0.6			
Oropharynx	2.0	2.2	0.8			
Hypopharynx	-3.4*	-3.0*	-4.5*			
Other oral cavity & pharynx	-5.3*	-5.0*	-5.9*			
Digestive System:	-1.0*	-1.1*	-1.0*			
Esophagus	-1.0	-0.8	-1.7			
Stomach	-1.6*	-1.8*	-1.5*			
Small intestine	1.4*	2.3*	0.3			
Colon & Rectum:	-2.4*	-2.7*	-2.1*			
Colon	-2.4*	-2.8*	-2.1*			
Rectum	-2.2*	-2.4*	-2.1*			
Anus, anal canal & anorectum	2.2*	2.0*	2.4*			
Liver & intrahep. bile duct:	3.0*	3.2*	2.0*			
Liver	3.6*	3.9*	2.3*			
Intrahepatic bile duct	-2.1	-4.2*	0.2			
Gallbladder	-0.7	0.8	-1.3*			
Other biliary	2.2*	2.3	2.0*			
Pancreas	1.1*	1.1*	1.2*			
Retroperitoneum	-0.5	-1.7	0.7			
Peritoneum, omentum & mesentery	1.9	2.7	1.9			
Other digestive system	3.4*	4.0*	2.7			
Respiratory System:	-1.4*	-2.2*	-0.5*			
Nose, nasal cavity & middle ear	0.3	0.4	-0.1			
Larynx	-3.0*	-2.8*	-4.1*			
Lung & bronchus	-1.3*	-2.1*	-0.4			
Pleura	-	-	-			
Trachea & other respiratory organs	-0.9	-1.9	1.1			
Bones & joints	1.1*	0.8	1.3			
Soft tissue (including heart)	1.6*	0.8	2.5*			
Skin (excl. basal & squamous):	1.9*	2.0*	1.8*			
Melanoma of the skin	1.9*	2.0*	1.8*			
Other non-epithelial skin	1.6*	1.5	1.8*			
Breast	-1.4*	-0.1	-1.2*			
Breast (*in situ*)	0.6	2.5	0.8			

The APC is the Annual Percent Change over the time interval.

[a] SEER 13 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry and Rural Georgia). Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

[b] US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention. Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

* The APC is significantly different from zero (p<.05).

\- Statistic could not be calculated. Trend based on less than 10 cases for at least one year within the time interval.

Table 1.7 - continued
SEER Incidence and U.S. Mortality Trends by Primary Cancer Site and Sex
All Races, 1999-2008

Site	Incidence[a] Total APC	Incidence[a] Males APC	Incidence[a] Females APC	US Mortality[b] Total APC	US Mortality[b] Males APC	US Mortality[b] Females APC
Female Genital System:	-0.9*	-	-0.7*			
Cervix uteri	-2.7*	-	-2.6*			
Corpus uteri	-0.1	-	0.2			
Uterus, NOS	1.6	-	1.9			
Ovary[c]	-1.7*	-	-1.5*			
Vagina	-0.7	-	-0.5			
Vulva	-0.5	-	-0.3			
Other female genital system	2.3	-	2.4*			
Male Genital System:	-1.5*	-1.9*	-			
Prostate	-1.6*	-2.0*	-			
Testis	1.2*	1.1*	-			
Penis	0.9	0.8	-			
Other male genital system	-3.1*	-3.3*	-			
Urinary System:	0.9*	0.6*	1.2*			
Urinary bladder	-0.4*	-0.4	-0.9*			
Kidney & renal pelvis	3.0*	2.8*	3.1*			
Ureter	1.9	1.8	2.3			
Other urinary system	0.4	-0.7	2.7			
Eye & Orbit	-0.5	-1.3	0.8			
Brain & Nervous System:[d]	-0.5*	-0.6*	-0.4			
Brain	-0.5	-0.7*	-0.2			
Cranial nerves & other nervous system	-0.9	-0.3	-1.8			
Endocrine System:	6.0*	5.0*	6.4*			
Thyroid	6.2*	5.3*	6.6*			
Other endocrine & thymus	3.0*	3.3*	2.8*			
Lymphoma:	0.2	0.2	0.3			
Hodgkin lymphoma	0.7	0.6	0.7			
Non-Hodgkin lymphoma	0.2	0.1	0.2			
Myeloma	-0.3	-0.2	-0.4			
Leukemia:	-0.4	-0.8*	0.0			
Lymphocytic:	0.7	0.4	1.1			
Acute lymphocytic	1.6*	2.1*	0.9			
Chronic lymphocytic	0.8	0.2	1.7			
Other lymphocytic	-3.1*	-2.1*	-5.7*			
Myeloid & Monocytic:	-1.1*	-1.5*	-0.7			
Acute myeloid	-1.2	-1.7*	-0.6			
Chronic myeloid	-1.0	-1.2	-0.8			
Acute monocytic	-0.9	-2.9	1.7			
Other myeloid & monocytic	-1.7	0.5	-4.1*			
Other leukemia:	-5.1*	-6.3*	-4.2*			
Other acute leukemia	-7.7*	-7.5*	-8.1*			
Aleukemic, subleukemic & NOS	-3.1*	-5.4*	-1.3			
Kaposi Sarcoma[e]	-3.6*	-3.3*	-7.8*			
Mesothelioma[e]	-1.6*	-2.3*	0.9			
Ill-defined & unspecified	-3.2*	-3.3*	-3.1*			

The APC is the Annual Percent Change over the time interval.

[a] SEER 13 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry and Rural Georgia). Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

[b] US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention. Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

[c] Ovary excludes borderline cases or histologies 8442, 8451, 8462, 8472, and 8473.

[d] Due to coding changes, Brain & Nervous System mortality are no longer shown separately.

[e] Trend not shown for mortality. Category did not exist in mortality coding until 1999.

* The APC is significantly different from zero (p<.05).

\- Statistic could not be calculated. Trend based on less than 10 cases for at least one year within the time interval.

Table 1.8
SEER Incidence and U.S. Mortality Trends by Primary Cancer Site and Sex
Whites, 1999-2008

Site	Incidence[a] Total APC	Incidence[a] Males APC	Incidence[a] Females APC	US Mortality[b] Total APC	US Mortality[b] Males APC	US Mortality[b] Females APC
All Sites	-0.7*	-1.0*	-0.5*			
Oral Cavity & Pharynx:	-0.1	-0.1	-0.5			
Lip	-6.0*	-6.6*	-4.2*			
Tongue	2.3*	2.4*	2.0*			
Salivary gland	0.5	0.6	0.0			
Floor of mouth	-3.6*	-4.1*	-3.3*			
Gum & other oral cavity	-1.9*	-2.0*	-1.8*			
Nasopharynx	1.1	0.6	2.0			
Tonsil	3.2*	3.6*	0.9			
Oropharynx	2.4	2.6	0.8			
Hypopharynx	-3.0*	-2.8*	-4.0			
Other oral cavity & pharynx	-5.6*	-4.6*	-			
Digestive System:	-1.1*	-1.2*	-1.1*			
Esophagus	-0.4	-0.4	-1.2			
Stomach	-1.6*	-1.9*	-1.6*			
Small intestine	2.0*	3.0*	0.6			
Colon & Rectum:	-2.6*	-2.9*	-2.2*			
Colon	-2.5*	-2.9*	-2.2*			
Rectum	-2.7*	-3.0*	-2.4*			
Anus, anal canal & anorectum	2.4*	2.0*	2.7*			
Liver & intrahep. bile duct:	3.4*	3.7*	1.9*			
Liver	4.2*	4.5*	2.5*			
Intrahepatic bile duct	-2.6	-4.1	-1.0			
Gallbladder	-0.8	1.2	-1.6*			
Other biliary	1.9*	2.0	1.7*			
Pancreas	1.1*	1.1*	1.2*			
Retroperitoneum	-0.5	-2.0*	1.5			
Peritoneum, omentum & mesentery	1.6	-	1.6			
Other digestive system	3.3*	3.6*	2.9			
Respiratory System:	-1.3*	-2.1*	-0.4*			
Nose, nasal cavity & middle ear	0.1	-0.5	0.7			
Larynx	-2.7*	-2.5*	-3.9*			
Lung & bronchus	-1.2*	-2.1*	-0.4			
Pleura	-	-	-			
Trachea & other respiratory organs	-1.1	-1.4	-1.1			
Bones & joints	1.1	1.1	0.8			
Soft tissue (including heart)	1.7*	1.3*	2.2*			
Skin (excl. basal & squamous):	2.2*	2.3*	2.1*			
Melanoma of the skin	2.3*	2.3*	2.2*			
Other non-epithelial skin	1.7*	1.9*	1.4			
Breast	-1.8*	0.2	-1.6*			
Breast (*in situ*)	0.2	1.2	0.4			

The APC is the Annual Percent Change over the time interval.

[a] SEER 13 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry and Rural Georgia). Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

[b] US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention. Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

* The APC is significantly different from zero (p<.05).

\- Statistic could not be calculated. Trend based on less than 10 cases for at least one year within the time interval.

Table 1.8 - continued
SEER Incidence and U.S. Mortality Trends by Primary Cancer Site and Sex
Whites, 1999-2008

Site	Incidence[a] Total APC	Incidence[a] Males APC	Incidence[a] Females APC	US Mortality[b] Total APC	US Mortality[b] Males APC	US Mortality[b] Females APC
Female Genital System:	-1.1*	-	-0.9*			
Cervix uteri	-2.7*	-	-2.5*			
Corpus uteri	-0.5	-	-0.1			
Uterus, NOS	1.3	-	1.7			
Ovary[c]	-1.8*	-	-1.7*			
Vagina	0.0	-	0.1			
Vulva	-0.9	-	-0.7			
Other female genital system	2.3*	-	2.5*			
Male Genital System:	-1.6*	-2.0*	-			
Prostate	-1.7*	-2.2*	-			
Testis	1.3*	1.2*	-			
Penis	0.6	0.5	-			
Other male genital system	-3.5	-3.5	-			
Urinary System:	0.8*	0.5*	1.1*			
Urinary bladder	-0.4	-0.4	-0.9*			
Kidney & renal pelvis	2.8*	2.5*	3.1*			
Ureter	1.9	2.2*	1.5			
Other urinary system	0.9	-0.7	5.1			
Eye & Orbit	-0.6	-1.3	0.6			
Brain & Nervous System:[d]	-0.5	-0.6	-0.4			
Brain	-0.4	-0.6	-0.3			
Cranial nerves & other nervous system	-1.3	-0.2	-2.5			
Endocrine System:	6.1*	5.0*	6.6*			
Thyroid	6.4*	5.5*	6.8*			
Other endocrine & thymus	2.0	2.3	1.7			
Lymphoma:	0.2	0.2	0.2			
Hodgkin lymphoma	0.5	0.4	0.4			
Non-Hodgkin lymphoma	0.2	0.2	0.2			
Myeloma	-0.4	-0.2	-0.7			
Leukemia:	-0.4	-0.8	-0.2			
Lymphocytic:	0.7	0.3	1.2			
Acute lymphocytic	1.5*	1.8*	0.9			
Chronic lymphocytic	0.7	0.0	1.7			
Other lymphocytic	-2.7*	-1.7	-5.0			
Myeloid & Monocytic:	-1.1*	-1.4*	-1.0			
Acute myeloid	-1.2*	-1.5*	-1.0			
Chronic myeloid	-1.0	-1.1	-0.9			
Acute monocytic	-0.8	-2.6	1.2			
Other myeloid & monocytic	-0.9	0.6	-2.6			
Other leukemia:	-5.9*	-6.6*	-5.4*			
Other acute leukemia	-8.5*	-7.7*	-9.3*			
Aleukemic, subleukemic & NOS	-3.9*	-5.6*	-2.3			
Kaposi Sarcoma[e]	-3.3*	-3.1*	-			
Mesothelioma[e]	-1.3*	-2.1*	1.2			
Ill-defined & unspecified	-3.2*	-3.1*	-3.3*			

The APC is the Annual Percent Change over the time interval.

[a] SEER 13 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry and Rural Georgia). Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

[b] US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention. Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

[c] Ovary excludes borderline cases or histologies 8442, 8451, 8462, 8472, and 8473.

[d] Due to coding changes, Brain & Nervous System mortality are no longer shown separately.

[e] Trend not shown for mortality. Category did not exist in mortality coding until 1999.

* The APC is significantly different from zero (p<.05).

\- Statistic could not be calculated. Trend based on less than 10 cases for at least one year within the time interval.

Table 1.9
SEER Incidence and U.S. Mortality Trends by Primary Cancer Site and Sex
Blacks, 1999-2008

	Incidence[a]			US Mortality[b]		
Site	Total APC	Males APC	Females APC	Total APC	Males APC	Females APC
All Sites	-1.0*	-1.8*	-0.2			
Oral Cavity & Pharynx:	-2.8*	-3.3*	-1.4			
Lip	-	-	-			
Tongue	-3.0*	-2.9*	-2.8			
Salivary gland	-0.7	-4.3*	2.3			
Floor of mouth	-8.7*	-10.3*	-			
Gum & other oral cavity	-4.1	-6.7*	-0.7			
Nasopharynx	-1.6	-1.8	-			
Tonsil	0.3	0.2	-			
Oropharynx	-0.1	0.1	-			
Hypopharynx	-2.5	-1.5	-			
Other oral cavity & pharynx	-	-	-			
Digestive System:	-0.8*	-0.6	-1.1*			
Esophagus	-4.7*	-4.1*	-5.8*			
Stomach	-1.6*	-0.7	-2.3*			
Small intestine	-0.7	-1.1	-0.4			
Colon & Rectum:	-1.8*	-1.8*	-1.9*			
Colon	-2.2*	-2.4*	-2.1*			
Rectum	-0.4	0.3	-1.2			
Anus, anal canal & anorectum	1.8	2.7	1.2			
Liver & intrahep. bile duct:	3.6*	3.8*	2.9			
Liver	3.8*	4.4*	2.2			
Intrahepatic bile duct	0.9	-	-			
Gallbladder	2.4	-	1.7			
Other biliary	4.1*	4.1	3.8*			
Pancreas	0.9	0.5	1.4			
Retroperitoneum	-2.2	-	-			
Peritoneum, omentum & mesentery	-	-	-			
Other digestive system	4.2	-	-			
Respiratory System:	-2.0*	-2.9*	-0.7			
Nose, nasal cavity & middle ear	0.7	-	-			
Larynx	-4.0*	-3.9*	-4.3			
Lung & bronchus	-1.8*	-2.8*	-0.6			
Pleura	-	-	-			
Trachea & other respiratory organs	-	-	-			
Bones & joints	1.9	-0.3	4.2			
Soft tissue (including heart)	-0.1	-2.6	1.9			
Skin (excl. basal & squamous):	0.2	-1.7	1.8			
Melanoma of the skin	1.0	-2.0	-			
Other non-epithelial skin	-0.4	-1.6	1.1			
Breast	0.1	-3.7	0.1			
Breast (*in situ*)	2.4*	-	2.3*			

The APC is the Annual Percent Change over the time interval.

[a] SEER 13 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry and Rural Georgia). Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

[b] US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention. Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

* The APC is significantly different from zero (p<.05).

\- Statistic could not be calculated. Trend based on less than 10 cases for at least one year within the time interval.

Table 1.9 - continued
SEER Incidence and U.S. Mortality Trends by Primary Cancer Site and Sex
Blacks, 1999-2008

	Incidence[a]			US Mortality[b]		
Site	Total APC	Males APC	Females APC	Total APC	Males APC	Females APC
Female Genital System:	0.0	-	0.0			
Cervix uteri	-4.3*	-	-4.1*			
Corpus uteri	2.1*	-	2.2*			
Uterus, NOS	4.3	-	4.3			
Ovary[c]	-0.3	-	-0.2			
Vagina	-4.2	-	-3.9			
Vulva	0.5	-	0.7			
Other female genital system	3.3	-	2.7			
Male Genital System:	-2.4*	-2.6*	-			
Prostate	-2.5*	-2.7*	-			
Testis	-1.0	-1.1	-			
Penis	-	-	-			
Other male genital system	-	-	-			
Urinary System:	1.3*	1.6*	0.8			
Urinary bladder	-0.3	0.4	-1.4			
Kidney & renal pelvis	2.9*	3.0*	2.7*			
Ureter	-	-	-			
Other urinary system	-	-	-			
Eye & Orbit	-	-	-			
Brain & Nervous System:[d]	-0.7	-1.3	0.2			
Brain	-0.5	-1.3	0.7			
Cranial nerves & other nervous system	-	-	-			
Endocrine System:	6.1*	5.6*	6.5*			
Thyroid	6.1*	5.9*	6.3*			
Other endocrine & thymus	6.4*	4.6	-			
Lymphoma:	0.8	0.2	1.3*			
Hodgkin lymphoma	1.9*	1.1	2.6			
Non-Hodgkin lymphoma	0.6	0.0	1.1			
Myeloma	0.4	0.5	0.5			
Leukemia:	-1.1	-0.5	-1.6			
Lymphocytic:	-0.5	0.4	-1.8			
Acute lymphocytic	3.8	8.1*	-0.8			
Chronic lymphocytic	-1.2	-0.7	-1.7			
Other lymphocytic	-	-	-			
Myeloid & Monocytic:	-1.7	-1.6	-1.4			
Acute myeloid	-1.9	-2.5	-0.8			
Chronic myeloid	-0.7	0.2	-1.0			
Acute monocytic	-	-	-			
Other myeloid & monocytic	-	-	-			
Other leukemia:	-1.0	-	-			
Other acute leukemia	-	-	-			
Aleukemic, subleukemic & NOS	4.6	-	-			
Kaposi Sarcoma[e]	-4.5*	-4.4*	-			
Mesothelioma[e]	-	-	-			
Ill-defined & unspecified	-3.5*	-5.2*	-2.3			

The APC is the Annual Percent Change over the time interval.

[a] SEER 13 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry and Rural Georgia). Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

[b] US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention. Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

[c] Ovary excludes borderline cases or histologies 8442, 8451, 8462, 8472, and 8473.

[d] Due to coding changes, Brain & Nervous System mortality are no longer shown separately.

[e] Trend not shown for mortality. Category did not exist in mortality coding until 1999.

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Table 1.10

Age Distribution (%) of Incidence Cases by Site, 2004-2008

All Races, Both Sexes

Site	Age at Diagnosis <20	20-34	35-44	45-54	55-64	65-74	75-84	85+	All Ages	Cases
All Sites	1.1	2.7	5.6	14.1	22.7	24.7	21.4	7.8	100.0%	1,751,864
Oral Cavity & Pharynx:	0.6	2.3	6.3	20.5	27.5	21.2	15.6	6.0	100.0%	40,659
Lip	0.1	1.4	6.1	14.4	17.5	23.2	25.8	11.6	100.0%	2,665
Tongue	0.2	2.0	6.0	20.8	31.0	21.9	13.5	4.6	100.0%	11,650
Salivary gland	2.0	6.7	7.6	15.1	18.7	18.8	20.6	10.5	100.0%	4,865
Floor of mouth	0.1	0.2	4.0	21.1	30.2	24.5	15.7	4.2	100.0%	2,245
Gum & other oral cavity	0.8	2.1	4.8	14.4	22.2	22.9	22.0	10.9	100.0%	5,589
Nasopharynx	3.4	6.4	13.9	24.8	23.7	16.1	8.7	2.9	100.0%	2,554
Tonsil	0.0	0.5	7.4	32.2	34.9	16.5	7.1	1.4	100.0%	6,393
Oropharynx	0.0	0.2	4.0	20.5	32.6	23.3	14.4	5.0	100.0%	1,431
Hypopharynx	0.0	0.2	1.7	16.8	29.9	28.5	18.7	4.2	100.0%	2,498
Other oral cavity & pharynx	0.4	0.9	3.1	15.6	30.3	24.7	18.3	6.6	100.0%	769
Digestive System:	0.2	1.0	3.7	12.9	20.8	24.3	25.6	11.4	100.0%	326,516
Esophagus	0.0	0.3	2.2	11.9	24.8	27.6	25.0	8.1	100.0%	16,975
Stomach	0.1	1.6	4.7	12.1	18.5	24.2	26.6	12.2	100.0%	28,959
Small intestine	0.1	1.5	5.8	15.0	23.3	24.5	21.8	8.0	100.0%	7,401
Colon & Rectum:	0.1	1.1	3.9	12.8	19.6	24.1	26.2	12.2	100.0%	176,815
Colon	0.1	0.9	3.3	10.8	18.2	24.5	28.4	13.9	100.0%	126,629
Rectum	0.0	1.5	5.6	17.9	23.0	23.3	20.6	8.1	100.0%	50,186
Colon & Rectum (Male)	0.1	1.1	4.0	13.7	22.0	26.1	24.4	8.6	100.0%	90,265
Colon & Rectum (Female)	0.1	1.1	3.8	11.8	17.0	22.1	28.0	16.0	100.0%	86,550
Anus, anal canal & anorectum	0.0	1.1	9.4	24.7	25.0	18.0	15.2	6.6	100.0%	6,361
Liver & intrahep. bile duct:	1.1	0.9	3.2	19.2	28.4	22.5	18.9	5.9	100.0%	27,949
Liver	1.2	0.9	3.2	19.8	29.1	22.2	18.3	5.4	100.0%	25,644
Intrahepatic bile duct	0.0	1.1	3.6	12.0	20.2	25.7	25.9	11.5	100.0%	2,305
Gallbladder	0.0	0.5	2.6	8.7	17.8	25.3	30.6	14.5	100.0%	4,384
Other biliary	0.1	0.5	2.8	8.7	17.6	25.4	29.7	15.3	100.0%	6,810
Pancreas	0.0	0.4	2.2	9.7	20.3	25.4	28.6	13.3	100.0%	44,804
Retroperitoneum	9.1	4.9	9.5	15.6	20.9	19.1	15.5	5.5	100.0%	1,496
Peritoneum, omentum & mesentery	0.5	1.3	3.4	10.3	24.8	30.4	23.7	5.6	100.0%	2,574
Other digestive system	0.1	1.1	3.5	10.4	18.6	22.0	29.3	15.0	100.0%	1,988
Respiratory System:	0.1	0.4	1.7	9.2	21.3	30.8	28.3	8.2	100.0%	245,440
Nose, nasal cavity & middle ear	2.2	4.9	7.8	15.6	20.6	21.4	18.7	8.8	100.0%	2,702
Larynx	0.1	0.4	2.8	15.7	29.2	28.9	18.1	4.9	100.0%	12,903
Lung & bronchus	0.0	0.2	1.6	8.8	20.9	31.1	29.0	8.3	100.0%	228,955
Lung & bronchus (Male)	0.0	0.2	1.5	8.7	21.9	31.8	28.6	7.4	100.0%	121,024
Lung & bronchus (Female)	0.0	0.3	1.7	8.9	19.8	30.4	29.6	9.4	100.0%	107,931
Pleura	4.0	1.6	4.0	4.8	20.0	17.6	35.2	12.8	100.0%	125
Trachea & other respiratory organs	17.7	21.7	9.1	13.0	12.1	11.3	9.4	5.7	100.0%	755
Bones & joints	29.0	15.4	10.5	13.0	11.4	8.3	9.1	3.5	100.0%	3,457
Soft tissue (including heart)	9.2	9.5	10.7	15.0	16.3	15.6	16.5	7.2	100.0%	12,467
Skin (excl. basal & squamous):	0.8	7.0	10.9	17.9	20.4	18.1	17.7	7.1	100.0%	86,430
Melanoma of the skin	0.7	7.1	11.2	18.6	20.9	18.1	16.9	6.4	100.0%	79,221
Other non-epithelial skin	1.5	6.0	7.6	10.7	14.5	17.9	27.0	14.7	100.0%	7,209
Breast (Female)	0.0	1.9	10.2	22.6	24.4	19.7	15.5	5.6	100.0%	254,683
Breast (Female -*in situ*)	0.0	0.7	11.1	28.9	26.3	18.8	11.9	2.3	100.0%	63,173

Source: SEER 17 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry, Rural Georgia, California excluding SF/SJM/LA, Kentucky, Louisiana and New Jersey).
Percents may not sum to 100 due to rounding.

Table 1.10 - continued

Age Distribution (%) of Incidence Cases by Site, 2004-2008

All Races, Both Sexes

Site	Age at Diagnosis <20	20-34	35-44	45-54	55-64	65-74	75-84	85+	All Ages	Cases
Female Genital System:	0.4	4.2	9.6	19.7	26.1	19.4	14.7	5.9	100.0%	100,068
Cervix uteri	0.2	14.3	25.8	23.9	16.4	10.6	6.4	2.5	100.0%	15,953
Corpus uteri	0.0	1.6	6.1	19.3	32.1	22.2	14.1	4.5	100.0%	48,508
Uterus, NOS	0.3	2.1	5.2	15.1	21.0	19.0	20.2	17.0	100.0%	1,215
Ovary[a]	1.2	3.5	7.3	19.1	23.1	19.7	18.2	8.0	100.0%	26,550
Vagina	0.9	0.9	5.5	14.5	21.5	22.2	21.4	13.1	100.0%	1,485
Vulva	0.1	2.0	7.3	15.9	18.3	17.5	24.3	14.6	100.0%	4,737
Other female genital system	0.9	6.9	8.6	14.9	24.1	20.9	16.8	6.9	100.0%	1,620
Male Genital System:	0.2	1.9	1.7	9.3	29.6	33.9	19.1	4.3	100.0%	274,701
Prostate	0.0	0.0	0.6	9.1	30.7	35.3	19.9	4.4	100.0%	262,238
Testis	6.1	47.6	26.6	13.8	4.0	1.2	0.6	0.2	100.0%	10,726
Penis	0.1	2.1	6.8	11.8	20.2	23.8	23.7	11.5	100.0%	1,327
Other male genital system	2.4	2.4	7.1	13.2	21.2	21.7	22.9	9.0	100.0%	410
Urinary System:	0.6	0.9	3.5	10.9	20.9	26.1	26.9	10.3	100.0%	136,851
Urinary bladder	0.1	0.4	1.7	7.4	18.0	27.2	32.0	13.2	100.0%	78,104
Kidney & renal pelvis	1.3	1.7	6.0	16.3	25.2	24.5	19.2	5.9	100.0%	55,465
Ureter	0.0	0.1	0.9	4.2	14.2	29.0	37.1	14.6	100.0%	2,167
Other urinary system	0.2	0.5	2.2	7.9	16.6	24.6	30.4	17.6	100.0%	1,115
Eye & Orbit	13.7	3.4	7.2	14.2	20.1	19.3	16.3	5.9	100.0%	3,101
Brain & Nervous System:	12.9	8.9	9.6	15.2	18.6	16.3	13.9	4.5	100.0%	24,633
Brain	12.3	8.8	9.4	15.2	18.8	16.7	14.2	4.6	100.0%	23,107
Cranial nerves & other nervous system	22.6	10.6	11.7	15.9	15.7	10.4	9.6	3.7	100.0%	1,526
Endocrine System:	3.0	15.5	20.1	23.6	18.3	11.7	6.4	1.5	100.0%	45,237
Thyroid	1.7	16.0	20.8	24.2	18.3	11.4	6.1	1.4	100.0%	42,389
Other endocrine & thymus	21.6	7.1	9.1	15.1	18.4	15.7	10.4	2.6	100.0%	2,848
Lymphoma:	3.0	7.3	7.9	13.5	18.5	20.4	21.1	8.2	100.0%	85,449
Hodgkin lymphoma	12.3	31.5	15.8	12.5	9.7	8.5	7.2	2.3	100.0%	10,880
Non-Hodgkin lymphoma	1.7	3.8	6.8	13.7	19.7	22.1	23.2	9.0	100.0%	74,569
Myeloma	0.0	0.5	3.3	12.0	21.6	26.5	26.4	9.8	100.0%	21,504
Leukemia:	10.8	4.8	5.3	10.3	15.7	19.7	22.5	10.8	100.0%	46,877
Lymphocytic:	16.3	3.1	3.4	9.0	16.5	20.2	21.5	10.1	100.0%	23,694
Acute lymphocytic	60.3	10.3	5.9	6.7	6.1	5.0	4.0	1.7	100.0%	6,373
Chronic lymphocytic	0.1	0.2	1.5	8.8	20.3	26.6	28.9	13.6	100.0%	15,761
Other lymphocytic	0.3	2.4	11.7	20.3	20.8	17.5	18.2	8.8	100.0%	1,560
Myeloid & Monocytic:	5.2	6.9	7.6	12.1	15.3	19.4	23.2	10.2	100.0%	20,728
Acute myeloid	6.1	6.6	6.6	11.4	15.1	20.0	24.2	10.1	100.0%	13,240
Chronic myeloid	2.6	7.7	9.9	13.9	15.6	19.1	21.3	10.0	100.0%	5,833
Acute monocytic	10.4	6.7	7.9	13.4	18.1	15.1	18.9	9.4	100.0%	1,057
Other myeloid & monocytic	3.7	7.2	8.7	8.7	12.9	19.2	25.4	14.2	100.0%	598
Other leukemia:	4.6	4.2	4.4	7.5	11.4	17.1	27.4	23.4	100.0%	2,455
Other acute leukemia	8.0	4.5	3.8	6.2	9.7	15.9	29.0	23.0	100.0%	952
Aleukemic, subleukemic & NOS	2.5	4.0	4.7	8.3	12.6	17.9	26.3	23.6	100.0%	1,503
Kaposi Sarcoma	0.1	17.6	34.2	20.2	7.8	6.5	8.2	5.5	100.0%	2,293
Mesothelioma	0.1	0.7	2.2	6.4	16.5	26.9	35.0	12.3	100.0%	3,913
Ill-defined & unspecified	0.5	0.9	2.7	9.6	17.5	22.3	28.9	17.7	100.0%	35,604

Source: SEER 17 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry, Rural Georgia, California excluding SF/SJM/LA, Kentucky, Louisiana and New Jersey).
Percents may not sum to 100 due to rounding.

[a] Ovary excludes borderline cases or histologies 8442, 8451, 8462, 8472, and 8473.

Table 1.11
Median Age of Cancer Patients at Diagnosis[a], 2004-2008
By Primary Cancer Site, Race and Sex

Site	All Races			Whites			Blacks		
	Total	Males	Females	Total	Males	Females	Total	Males	Females
All Sites	66.0	67.0	65.0	67.0	67.0	66.0	63.0	63.0	62.0
Oral Cavity & Pharynx:	62.0	61.0	65.0	62.0	61.0	66.0	58.0	58.0	57.0
Lip	69.0	68.0	74.0	70.0	68.0	75.0	59.5	60.0	-
Tongue	61.0	60.0	64.0	61.0	60.0	64.0	59.0	60.0	57.0
Salivary gland	64.0	67.0	61.0	67.0	68.0	63.0	54.0	56.0	51.0
Floor of mouth	63.0	61.0	68.0	63.0	61.0	69.0	58.0	57.0	60.0
Gum & other oral cavity	67.0	64.0	71.0	68.0	65.0	72.0	59.0	58.0	60.5
Nasopharynx	55.0	55.0	56.0	58.0	57.0	61.0	50.0	51.0	50.0
Tonsil	57.0	56.0	60.0	57.0	56.0	60.0	56.0	56.0	55.0
Oropharynx	62.0	61.0	65.0	63.0	61.0	67.0	59.0	59.0	61.0
Hypopharynx	65.0	65.0	66.0	65.0	65.0	67.0	62.0	62.0	59.5
Other oral cavity & pharynx	64.0	63.0	68.0	65.0	63.0	70.0	61.0	60.0	63.5
Digestive System:	69.0	67.0	72.0	70.0	68.0	73.0	65.0	63.0	67.0
Esophagus	68.0	67.0	73.0	69.0	67.0	74.0	64.0	63.0	66.0
Stomach	70.0	69.0	72.0	71.0	69.0	73.0	68.0	67.0	70.0
Small intestine	66.0	65.0	68.0	67.0	66.0	68.0	63.0	63.0	64.0
Colon & Rectum:	70.0	68.0	72.0	71.0	69.0	73.0	65.0	64.0	66.0
Colon	72.0	70.0	74.0	73.0	71.0	75.0	67.0	65.0	68.0
Rectum	65.0	64.0	67.0	66.0	65.0	68.0	61.0	61.0	62.0
Anus, anal canal & anorectum	60.0	57.0	61.0	61.0	59.0	62.0	54.0	50.0	58.0
Liver & intrahep. bile duct:	63.0	61.0	70.0	64.0	61.0	71.0	59.0	58.0	63.0
Liver	63.0	61.0	70.0	63.0	61.0	70.0	59.0	58.0	62.0
Intrahepatic bile duct	70.0	68.0	72.0	71.0	68.0	73.0	66.0	64.0	67.0
Gallbladder	73.0	72.0	73.0	74.0	73.0	74.0	68.0	69.0	67.0
Other biliary	73.0	72.0	74.0	73.0	72.0	75.0	67.0	65.0	68.0
Pancreas	72.0	69.0	74.0	72.0	70.0	75.0	68.0	64.0	71.0
Retroperitoneum	59.0	59.0	60.0	60.0	60.0	61.0	56.0	56.0	57.0
Peritoneum, omentum & mesentery	68.0	63.0	68.0	68.0	64.5	68.0	66.0	55.0	67.0
Other digestive system	72.0	70.0	74.0	73.0	71.0	76.0	65.5	64.0	67.0
Respiratory System:	70.0	70.0	71.0	71.0	70.0	71.0	66.0	65.0	67.0
Nose, nasal cavity & middle ear	64.0	62.0	67.0	65.0	63.5	67.0	58.0	57.0	61.0
Larynx	65.0	65.0	65.0	66.0	66.0	65.0	62.0	62.0	61.0
Lung & bronchus	71.0	70.0	71.0	71.0	71.0	72.0	66.0	66.0	67.0
Pleura	73.0	74.0	72.5	75.0	73.5	76.5	-	-	-
Trachea & other respiratory organs	47.0	38.0	57.0	48.0	37.0	62.0	43.0	44.0	41.0
Bones & joints	40.0	39.0	42.0	42.0	40.0	43.0	37.0	36.0	38.5
Soft tissue (including heart)	58.0	58.0	58.0	59.0	60.0	59.0	49.0	46.0	53.0
Skin (excl. basal & squamous):	61.0	64.0	56.0	61.0	64.0	57.0	54.0	56.0	51.5
Melanoma of the skin	60.0	63.0	56.0	61.0	63.0	56.0	63.0	65.0	61.0
Other non-epithelial skin	70.0	71.0	69.0	72.0	73.0	71.0	47.0	48.0	46.0
Breast	61.0	68.0	61.0	62.0	69.0	61.0	57.0	63.0	57.0
Breast (*in situ*)	58.0	64.0	58.0	58.0	62.0	58.0	58.0	68.0	58.0

[a] SEER 17 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry, Rural Georgia, California excluding SF/SJM/LA, Kentucky, Louisiana and New Jersey).

\- Statistic could not be calculated. Less than 16 cases were diagnosed during the time interval.

Table 1.11 - continued
Median Age of Cancer Patients at Diagnosis[a], 2004-2008
By Primary Cancer Site, Race and Sex

Site	All Races			Whites			Blacks		
	Total	Males	Females	Total	Males	Females	Total	Males	Females
Female Genital System:	60.0	-	60.0	61.0	-	61.0	60.0	-	60.0
Cervix uteri	48.0	-	48.0	48.0	-	48.0	50.0	-	50.0
Corpus uteri	61.0	-	61.0	62.0	-	62.0	63.0	-	63.0
Uterus, NOS	67.0	-	67.0	69.0	-	69.0	65.0	-	65.0
Ovary[b]	63.0	-	63.0	63.0	-	63.0	61.0	-	61.0
Vagina	68.0	-	68.0	69.5	-	69.5	61.0	-	61.0
Vulva	68.0	-	68.0	70.0	-	70.0	55.0	-	55.0
Other female genital system	62.0	-	62.0	63.0	-	63.0	57.0	-	57.0
Male Genital System:	66.0	66.0	-	67.0	67.0	-	64.0	64.0	-
Prostate	67.0	67.0	-	67.0	67.0	-	64.0	64.0	-
Testis	33.0	33.0	-	33.0	33.0	-	34.0	34.0	-
Penis	68.0	68.0	-	68.0	68.0	-	66.0	66.0	-
Other male genital system	66.0	66.0	-	67.0	67.0	-	54.0	54.0	-
Urinary System:	70.0	70.0	70.0	70.0	70.0	71.0	65.0	64.0	67.0
Urinary bladder	73.0	73.0	74.0	73.0	73.0	74.0	70.0	68.0	73.0
Kidney & renal pelvis	64.0	64.0	66.0	65.0	64.0	66.0	61.0	60.0	63.0
Ureter	75.0	74.0	76.0	75.0	74.0	77.0	71.0	70.0	71.0
Other urinary system	74.0	74.0	73.0	75.0	75.0	74.0	67.0	68.0	66.0
Eye & Orbit	60.0	60.0	60.0	61.0	61.0	61.0	3.0	6.0	2.0
Brain & Nervous System:	56.0	56.0	58.0	57.0	56.0	59.0	51.0	51.0	50.0
Brain	57.0	56.0	58.0	58.0	57.0	59.0	51.0	51.0	50.0
Cranial nerves & other nervous system	47.0	45.0	49.0	47.0	45.0	50.0	49.0	52.0	48.5
Endocrine System:	49.0	53.0	48.0	49.0	54.0	48.0	51.0	54.0	50.0
Thyroid	49.0	54.0	48.0	49.0	54.0	48.0	50.0	55.0	49.0
Other endocrine & thymus	53.0	51.0	55.0	53.0	52.0	56.0	51.0	49.0	52.5
Lymphoma:	64.0	63.0	66.0	65.0	64.0	67.0	54.0	52.0	56.0
Hodgkin lymphoma	38.0	40.0	36.0	39.0	41.0	37.0	35.0	37.0	34.0
Non-Hodgkin lymphoma	66.0	65.0	69.0	67.0	66.0	70.0	57.0	55.0	59.0
Myeloma	69.0	69.0	70.0	70.0	69.0	71.0	66.0	65.0	67.0
Leukemia:	66.0	65.0	67.0	67.0	66.0	69.0	60.0	59.0	61.0
Lymphocytic:	65.0	64.0	67.0	66.0	65.0	68.0	62.0	60.0	65.0
Acute lymphocytic	13.0	13.0	13.0	14.0	14.0	13.0	13.5	11.5	16.5
Chronic lymphocytic	72.0	70.0	74.0	72.0	71.0	74.0	69.0	67.0	71.0
Other lymphocytic	61.0	60.0	66.0	62.0	60.0	66.0	63.0	64.0	57.0
Myeloid & Monocytic:	66.0	66.0	66.0	67.0	67.0	68.0	58.0	57.5	58.0
Acute myeloid	67.0	67.0	67.0	68.0	68.0	68.0	59.0	58.0	60.0
Chronic myeloid	65.0	64.0	66.0	66.0	65.0	68.0	56.0	56.0	55.0
Acute monocytic	61.0	63.0	60.0	62.0	63.0	61.0	51.0	55.5	49.5
Other myeloid & monocytic	70.0	69.0	70.0	70.0	70.0	71.0	60.0	59.5	61.0
Other leukemia:	75.0	73.0	77.0	77.0	75.0	79.0	64.0	61.0	67.0
Other acute leukemia	76.0	73.0	78.0	77.0	75.0	79.0	65.0	58.5	71.0
Aleukemic, subleukemic & NOS	74.0	72.0	77.0	77.0	75.0	79.0	64.0	61.0	67.0
Kaposi Sarcoma	44.0	43.0	75.0	46.0	44.0	81.0	40.0	39.0	47.5
Mesothelioma	74.0	74.0	71.0	74.0	74.0	72.0	70.0	70.0	64.0
Ill-defined & unspecified	73.0	70.0	76.0	74.0	71.0	77.0	67.0	64.0	70.0

[a] SEER 17 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry, Rural Georgia, California excluding SF/SJM/LA, Kentucky, Louisiana and New Jersey).

[b] Ovary excludes borderline cases or histologies 8442, 8451, 8462, 8472, and 8473.

\- Statistic could not be calculated. Less than 16 cases were diagnosed during the time interval.

Table 1.21
U.S. Prevalence Counts, Invasive Cancers Only, January 1, 2008[a]
Using Different Tumor Inclusion Criteria[b]

		5-Year Limited Duration			33-year Limited Duration	
Site	Sex	1st Invasive Tumor Ever[c]	1st Per Site in Previous 33 Years[d]	1st Per Site in Previous 5 Years[e]	1st Invasive Tumor Ever[c]	1st Per Site in Previous 33 Years[d]
All Sites	Both Sexes	4,249,706	4,331,842	4,734,286	11,688,972	11,892,768
	Male	2,188,126	2,219,768	2,413,895	5,506,074	5,570,768
	Female	2,061,580	2,112,074	2,320,391	6,182,898	6,322,000
Oral Cavity & Pharynx	Both Sexes	94,344	107,847	111,563	245,098	269,441
	Male	65,141	73,776	76,117	159,807	174,074
	Female	29,203	34,071	35,446	85,291	95,367
Esophagus	Both Sexes	19,829	23,939	23,951	30,597	35,817
	Male	15,229	18,405	18,417	23,362	27,236
	Female	4,600	5,534	5,534	7,235	8,581
Stomach	Both Sexes	33,089	39,300	39,521	65,498	74,863
	Male	19,927	23,973	24,073	37,436	43,123
	Female	13,162	15,327	15,448	28,062	31,740
Colon & Rectum	Both Sexes	407,014	469,977	478,669	1,098,089	1,223,141
	Male	205,716	237,703	241,917	540,332	598,652
	Female	201,298	232,274	236,752	557,757	624,489
Liver & Intrahepatic Bile Duct	Both Sexes	23,568	26,629	26,633	31,341	34,942
	Male	17,221	19,339	19,343	21,890	24,282
	Female	6,347	7,290	7,290	9,451	10,660
Pancreas	Both Sexes	26,137	31,728	31,739	34,955	41,506
	Male	12,950	15,750	15,761	16,972	20,161
	Female	13,187	15,978	15,978	17,983	21,345
Larynx	Both Sexes	30,287	36,587	36,906	87,991	98,455
	Male	24,152	29,051	29,312	70,449	78,408
	Female	6,135	7,536	7,594	17,542	20,047
Lung & Bronchus	Both Sexes	220,060	276,893	283,557	371,171	450,808
	Male	103,405	130,714	133,454	171,338	207,978
	Female	116,655	146,179	150,103	199,833	242,830
Melanoma of the Skin	Both Sexes	252,206	283,584	294,513	796,296	855,750
	Male	133,991	153,602	160,698	394,107	428,125
	Female	118,215	129,982	133,815	402,189	427,625
Breast	Female	805,515	868,236	918,683	2,606,497	2,763,127
Cervix	Female	38,294	40,160	40,257	200,357	206,078
Corpus & Uterus, NOS	Female	154,529	174,300	174,371	541,737	589,947
Ovary[f]	Female	54,970	63,837	63,889	161,711	181,687

[a] U.S. 2008 cancer prevalence counts are based on 2008 cancer prevalence proportions from the SEER 9 registries and 1/1/2008 U.S. population estimates based on the average of 2007 and 2008 population estimates from the U.S. Bureau of the Census.

[b] Prevalence estimates are ambiguous for those with multiple cancers, unless the tumor inclusion criteria are understood. Depending on the application, different inclusion criteria may be appropriate. This table provides three different methods of tumor inclusion:
[c] (c) First invasive tumor ever
[d] (d) First invasive tumor for each cancer site diagnosed during the previous 33 years (1975-2007)
[e] (e) First invasive tumor for each cancer site diagnosed during the previous 5 years (2003-2007)
For definitions (d) and (e) all sites is treated as a separate cancer "site".

Consider a woman who had three invasive cancers: Melanoma in 1981; Breast cancer in 2003; Melanoma in 2004.
In method (c) the melanoma is the woman's first cancer, and is counted for the melanoma and all sites 33-year limited duration prevalence. For 5-year limited duration prevalence, the woman is not counted at all since her first cancer occurred more than 5 years prior to 1/1/2008.
In method (d) the 1981 melanoma is counted for the melanoma and all sites 33-year limited duration prevalence. The 2003 breast cancer is counted for the breast 5-year and 33-year limited duration prevalence.
In method (e) the 2003 breast cancer is counted for the breast cancer and all sites 5-year limited duration prevalence. The 2004 melanoma is counted for 5-year limited duration prevalence for melanoma.

[f] Ovary excludes borderline cases or histologies 8442, 8451, 8462, 8472, and 8473.

Table 1.21 - continued
U.S. Prevalence Counts, Invasive Cancers Only, January 1, 2008[a]
Using Different Tumor Inclusion Criteria[b]

		5-Year Limited Duration			33-year Limited Duration	
Site	Sex	1st Invasive Tumor Ever[c]	1st Per Site in Previous 33 Years[d]	1st Per Site in Previous 5 Years[e]	1st Invasive Tumor Ever[c]	1st Per Site in Previous 33 Years[d]
Prostate	Male	970,359	1,048,069	1,048,105	2,396,871	2,555,936
Testis	Male	40,125	40,828	41,397	187,670	190,120
Urinary Bladder	Both Sexes	194,097	239,746	244,623	531,166	614,655
	Male	146,585	181,724	185,560	395,025	456,695
	Female	47,512	58,022	59,063	136,141	157,960
Kidney & Renal Pelvis	Both Sexes	128,486	155,791	157,332	290,688	337,899
	Male	77,495	95,049	96,135	171,540	201,021
	Female	50,991	60,742	61,197	119,148	136,878
Brain & Nervous System	Both Sexes	40,898	43,394	43,831	116,955	120,623
	Male	22,693	24,140	24,351	62,642	64,690
	Female	18,205	19,254	19,480	54,313	55,933
Thyroid	Both Sexes	139,961	153,689	154,081	425,181	450,805
	Male	31,088	35,530	35,602	93,227	100,569
	Female	108,873	118,159	118,479	331,954	350,236
Hodgkin Lymphoma	Both Sexes	36,835	39,099	39,099	155,837	159,846
	Male	19,688	20,808	20,808	80,709	82,717
	Female	17,147	18,291	18,291	75,128	77,129
Non-Hodgkin Lymphoma	Both Sexes	189,410	220,661	222,116	452,242	502,943
	Male	98,768	116,412	117,193	234,240	260,923
	Female	90,642	104,249	104,923	218,002	242,020
Myeloma	Both Sexes	42,726	49,682	49,741	65,682	74,814
	Male	23,046	27,105	27,164	36,054	41,454
	Female	19,680	22,577	22,577	29,628	33,360
Leukemia	Both Sexes	103,646	117,597	117,772	252,119	274,930
	Male	59,538	68,094	68,189	142,621	155,942
	Female	44,108	49,503	49,583	109,498	118,988
Acute Lymphocytic Leukemia	Both Sexes	15,402	15,740	15,740	59,985	60,486
	Male	8,796	8,940	8,940	33,127	33,297
	Female	6,606	6,800	6,800	26,858	27,189
Childhood (Ages 0-19)	Both Sexes	59,739	59,851	60,342	277,294	277,798
	Male	31,980	32,036	32,261	142,787	143,010
	Female	27,759	27,815	28,081	134,507	134,788
Kaposi Sarcoma	Both Sexes	6,661	7,109	7,109	22,566	23,720
	Male	6,221	6,561	6,561	21,226	22,190
	Female	440	548	548	1,340	1,530
Mesothelioma	Both Sexes	3,148	3,988	3,988	4,609	5,619
	Male	2,120	2,735	2,735	2,681	3,419
	Female	1,028	1,253	1,253	1,928	2,200

a U.S. 2008 cancer prevalence counts are based on 2008 cancer prevalence proportions from the SEER 9 registries and 1/1/2008 U.S. population estimates based on the average of 2007 and 2008 population estimates from the U.S. Bureau of the Census.

b Prevalence estimates are ambiguous for those with multiple cancers, unless the tumor inclusion criteria are understood. Depending on the application, different inclusion criteria may be appropriate. This table provides three different methods of tumor inclusion:
c (c) First invasive tumor ever
d (d) First invasive tumor for each cancer site diagnosed during the previous 33 years (1975-2007)
e (e) First invasive tumor for each cancer site diagnosed during the previous 5 years (2003-2007)
For definitions (d) and (e) all sites is treated as a separate cancer "site".

Consider a woman who had three invasive cancers: Melanoma in 1981; Breast cancer in 2003; Melanoma in 2004.
In method (c) the melanoma is the woman's first cancer, and is counted for the melanoma and all sites 33-year limited duration prevalence. For 5-year limited duration prevalence, the woman is not counted at all since her first cancer occurred more than 5 years prior to 1/1/2008.
In method (d) the 1981 melanoma is counted for the melanoma and all sites 33-year limited duration prevalence. The 2003 breast cancer is counted for the breast 5-year and 33-year limited duration prevalence.
In method (e) the 2003 breast cancer is counted for the breast cancer and all sites 5-year limited duration prevalence. The 2004 melanoma is counted for 5-year limited duration prevalence for melanoma.

Table 1.22
U.S. Complete Prevalence Counts, Invasive Cancers Only, January 1, 2008[a]
By Age at Prevalence

Site/Sex	Age at Prevalence								
	All Ages[c]	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+
All Sites									
Males	5,505,862	17,369	39,603	76,578	144,636	338,114	771,402	1,362,003	2,756,156
Females	6,451,737	14,868	33,960	79,574	212,422	605,640	1,175,930	1,493,293	2,836,051
Oral Cavity & Pharynx									
Males	164,159	55	433	1,463	3,321	14,386	39,210	45,877	59,413
Females	89,006	126	505	1,305	3,672	8,101	16,557	20,190	38,550
Esophagus									
Males	23,026	0	0	14	129	1,213	4,278	7,743	9,649
Females	7,178	0	0	0	49	289	930	1,818	4,092
Stomach									
Males	37,739	0	5	76	609	2,419	6,015	9,360	19,256
Females	28,271	4	11	140	619	1,985	4,077	4,970	16,465
Colon & Rectum									
Males	542,127	11	23	1,058	5,201	23,913	72,884	124,471	314,566
Females	567,950	0	102	1,290	4,857	21,841	61,776	101,891	376,192
Liver & Intrahep									
Males	21,567	413	537	414	426	1,632	7,439	5,891	4,815
Females	9,608	441	402	368	362	742	2,030	2,163	3,101
Pancreas									
Males	16,811	0	11	78	320	1,324	3,510	5,094	6,474
Females	17,846	0	58	117	413	1,288	3,104	4,215	8,651
Larynx									
Males	71,273	0	0	44	196	2,385	10,173	20,066	38,410
Females	17,668	0	0	41	140	1,042	3,056	4,519	8,870
Lung & Bronchus									
Males	173,428	44	70	377	1,119	5,823	23,597	51,308	91,089
Females	200,061	22	31	382	1,355	7,904	25,460	55,404	109,504
Melanoma of the Skin									
Males	400,706	92	701	4,870	16,596	46,265	87,532	102,829	141,819
Females	422,064	71	1,048	10,567	32,200	70,227	99,340	89,638	118,973

[a] U.S. 2008 cancer prevalence counts are based on 2008 cancer prevalence proportions from the SEER 9 registries (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, and Atlanta) and 1/1/2008 U.S. population estimates based on the average of 2007 and 2008 population estimates from the U.S. Bureau of the Census. Prevalence was calculated using the First Malignant Primary Only for a person.

[b] Cases diagnosed more than 33 years ago were estimated using the completeness index method (Capocaccia et. al. 1997, Merrill et. al. 2000).

[c] Due to rounding, the sum of the age specific estimates may not equal the all ages estimate.

Table 1.22 - continued
U.S. Complete Prevalence Counts, Invasive Cancers Only, January 1, 2008[a]
By Age at Prevalence

Site/Sex	Age at Prevalence								
	All Ages[c]	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+
Breast									
Males	13,616	0	0	16	81	576	1,940	3,622	7,381
Females	2,632,005	0	84	2,326	34,635	207,154	507,534	689,283	1,190,989
Cervix									
Females	243,884	0	56	2,010	16,779	42,631	57,933	50,513	73,961
Corpus & Uterus, NOS									
Females	573,300	0	54	399	5,192	23,450	79,633	138,800	325,772
Ovary[d]									
Females	177,578	82	863	3,458	6,583	19,450	38,659	42,317	66,166
Prostate									
Males	2,355,464	50	68	77	361	18,125	205,191	635,592	1,496,001
Urinary Bladder									
Males	398,329	22	119	672	2,397	12,099	41,421	91,664	249,934
Females	139,099	44	44	236	1,063	4,381	12,953	28,380	91,998
Kidney & Renal Pelvis									
Males	174,350	1,412	2,368	2,440	4,392	15,279	34,772	48,233	65,453
Females	121,724	1,339	2,604	2,584	4,202	11,129	20,525	28,201	51,141
Hodgkin Lymphoma									
Males	86,218	192	2,181	8,725	15,958	22,961	19,083	10,919	6,197
Females	80,558	99	1,575	9,569	16,034	22,130	16,962	8,071	6,118
Non-Hodgkin Lymphoma									
Males	235,433	723	3,328	6,821	11,902	27,303	46,564	57,135	81,657
Females	218,945	407	1,726	3,835	7,914	18,988	38,082	49,684	98,310
Myeloma									
Males	35,445	0	5	60	526	2,371	7,193	11,144	14,146
Females	29,170	0	0	32	210	1,855	5,358	8,290	13,424
Leukemia									
Males	142,702	6,224	11,976	10,886	9,714	11,892	19,280	27,233	45,497
Females	110,648	5,101	9,898	9,739	8,174	8,819	13,008	17,422	38,488
Acute Lymphocytic Leuk									
Males	34,306	5,184	10,430	8,380	5,501	2,691	1,104	643	374
Females	27,887	4,358	8,254	7,158	4,534	2,031	736	520	296

[a] U.S. 2008 cancer prevalence counts are based on 2008 cancer prevalence proportions from the SEER 9 registries (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, and Atlanta) and 1/1/2008 U.S. population estimates based on the average of 2007 and 2008 population estimates from the U.S. Bureau of the Census. Prevalence was calculated using the First Malignant Primary Only for a person.

[b] Cases diagnosed more than 33 years ago were estimated using the completeness index method (Capocaccia et. al. 1997, Merrill et. al. 2000).

[c] Due to rounding, the sum of the age specific estimates may not equal the all ages estimate.

Table 1.23
Age-Adjusted SEER Incidence Rates and Trends for the Top 15 Cancer Sites[a] by Race/Ethnicity

Both Sexes

All Races

	Rate[b] 2004-2008	APC[c] 1999-2008
All Sites	464.4	-0.7*
Prostate[f]	69.7	-1.6*
Breast	67.0	-1.4*
Lung and Bronchus	62.0	-1.3*
Colon and Rectum	47.2	-2.4*
Urinary Bladder	21.1	-0.4*
Melanoma of the Skin	20.8	1.9*
Non-Hodgkin Lymphoma	19.8	0.2
Kidney and Renal Pelvis	14.6	3.0*
Corpus and Uterus, NOS[f]	12.8	-0.1
Leukemia	12.5	-0.4
Pancreas	12.0	1.1*
Thyroid	11.0	6.2*
Oral Cavity and Pharynx	10.6	-0.4
Stomach	7.7	-1.6*
Liver & IBD[g]	7.3	3.0*

White

	Rate[b] 2004-2008	APC[c] 1999-2008
All Sites	471.8	-0.7*
Breast	68.2	-1.8*
Prostate[f]	67.4	-1.7*
Lung and Bronchus	63.3	-1.2*
Colon and Rectum	46.5	-2.6*
Melanoma of the Skin	24.3	2.3*
Urinary Bladder	22.9	-0.4
Non-Hodgkin Lymphoma	20.7	0.2
Kidney and Renal Pelvis	15.1	2.8*
Corpus and Uterus, NOS[f]	13.2	-0.4
Leukemia	13.1	-0.4
Pancreas	11.9	1.1*
Thyroid	11.5	6.4*
Oral Cavity and Pharynx	10.8	-0.1
Ovary[fh]	7.2	-1.8*
Brain and ONS[g]	7.1	-0.5

Black

	Rate[b] 2004-2008	APC[c] 1999-2008
All Sites	491.2	-1.0*
Prostate[f]	97.4	-2.5*
Lung and Bronchus	72.7	-1.8*
Breast	68.8	0.1
Colon and Rectum	57.8	-1.8*
Kidney and Renal Pelvis	16.5	2.9*
Pancreas	15.9	0.9
Non-Hodgkin Lymphoma	14.8	0.6
Urinary Bladder	13.1	-0.3
Corpus and Uterus, NOS[f]	12.0	2.2*
Stomach	11.9	-1.6*
Myeloma	11.9	0.4
Oral Cavity and Pharynx	9.9	-2.8*
Leukemia	9.8	-1.1
Liver & IBD[g]	9.2	3.6*
Thyroid	6.5	6.1*

Asian/Pacific Islander

	Rate[b] 2004-2008	APC[c] 1999-2008
All Sites	315.9	-0.4*
Breast	51.2	0.5
Colon and Rectum	39.4	-1.9*
Lung and Bronchus	39.0	-0.9*
Prostate[f]	38.4	-2.0*
Liver & IBD[g]	14.6	0.5
Non-Hodgkin Lymphoma	13.3	-0.5
Stomach	13.0	-3.1*
Thyroid	10.9	5.0*
Corpus and Uterus, NOS[f]	9.9	1.8*
Pancreas	9.5	1.2*
Urinary Bladder	9.3	0.4
Oral Cavity and Pharynx	7.9	-0.5
Kidney and Renal Pelvis	7.7	4.9*
Leukemia	7.3	-0.6
Ovary[fh]	5.4	-0.3

American Indian/Alaska Native[d]

	Rate[b] 2004-2008	APC[c] 1999-2008
All Sites	319.9	-0.6
Lung and Bronchus	44.5	0.4
Breast	42.3	0.1
Colon and Rectum	41.4	-2.3
Prostate[f]	33.0	-1.9
Kidney and Renal Pelvis	17.6	3.3*
Liver & IBD[g]	12.2	3.4
Non-Hodgkin Lymphoma	11.5	-1.4
Pancreas	10.6	1.6
Stomach	10.6	-5.0
Corpus and Uterus, NOS[f]	9.0	0.8
Urinary Bladder	8.3	-
Leukemia	7.6	1.5
Oral Cavity and Pharynx	7.0	-4.0
Thyroid	6.3	0.8
Ovary[fh]	5.8	-4.0

Hispanic[e]

	Rate[b] 2004-2008	APC[c] 1999-2008
All Sites	315.4	-1.4*
Prostate[f]	47.2	-2.8*
Breast	41.6	-1.2*
Colon and Rectum	33.4	-1.9*
Lung and Bronchus	30.8	-2.1*
Non-Hodgkin Lymphoma	15.4	0.0
Kidney and Renal Pelvis	12.5	2.0*
Stomach	11.0	-2.3*
Liver & IBD[g]	10.7	1.5
Pancreas	10.5	0.2
Urinary Bladder	9.9	-2.3*
Leukemia	9.0	-0.3
Corpus and Uterus, NOS[f]	8.5	0.9
Thyroid	8.0	4.7*
Ovary[fh]	5.7	-1.8
Cervix Uteri[f]	5.6	-5.3*

[a] Top 15 cancer sites selected based on 2004-2008 age-adjusted rates for the race/ethnic group.
[b] Incidence data used in calculating the rates are from the 17 SEER areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry, Rural Georgia, California excluding SF/SJM/LA, Kentucky, Louisiana and New Jersey).
Rates are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).
[c] The APC is the Annual Percent Change over the time interval. Incidence data used in calculating the trends are from the 13 SEER areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry and Rural Georgia).
Trends are based on rates age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).
[d] Rates for American Indian/Alaska Native are based on the CHSDA(Contract Health Service Delivery Area) counties.
[e] Hispanic is not mutually exclusive from whites, blacks, Asian/Pacific Islanders, and American Indians/Alaska Natives.
Incidence data for Hispanics are based on NHIA and exclude cases from the Alaska Native Registry.
[f] The rates for sex-specific cancer sites are calculated using the population for both sexes combined.
[g] IBD = Intrahepatic Bile Duct. ONS = Other Nervous System.
[h] Ovary excludes borderline cases or histologies 8442, 8451, 8462, 8472, and 8473.
* The APC is significantly different from zero (p<.05).
\- Statistic not shown. Rate based on less than 16 cases for the time interval. Trend based on less than 10 cases for at least one year within the time interval.

Table 1.24
Age-Adjusted SEER Incidence Rates and Trends for the Top 15 Cancer Sites[a] by Race/Ethnicity

Males

All Races

	Rate[b] 2004-2008	APC[c] 1999-2008
All Sites	541.0	-1.0*
Prostate	156.0	-2.0*
Lung and Bronchus	75.2	-2.1*
Colon and Rectum	55.0	-2.7*
Urinary Bladder	37.5	-0.4
Melanoma of the Skin	26.7	2.0*
Non-Hodgkin Lymphoma	24.0	0.1
Kidney and Renal Pelvis	20.0	2.8*
Leukemia	16.1	-0.8*
Oral Cavity and Pharynx	15.7	-0.4
Pancreas	13.6	1.1*
Liver & IBD[f]	11.2	3.2*
Stomach	10.8	-1.8*
Esophagus	7.8	-0.8
Brain and ONS[f]	7.7	-0.6*
Myeloma	7.2	-0.2

White

	Rate[b] 2004-2008	APC[c] 1999-2008
All Sites	543.6	-1.0*
Prostate	149.5	-2.2*
Lung and Bronchus	75.3	-2.1*
Colon and Rectum	54.4	-2.9*
Urinary Bladder	40.6	-0.4
Melanoma of the Skin	30.9	2.3*
Non-Hodgkin Lymphoma	25.0	0.2
Kidney and Renal Pelvis	20.5	2.5*
Leukemia	16.8	-0.8
Oral Cavity and Pharynx	16.1	-0.1
Pancreas	13.5	1.1*
Liver & IBD[f]	9.6	3.7*
Stomach	9.5	-1.9*
Brain and ONS[f]	8.4	-0.6
Esophagus	8.1	-0.4
Myeloma	6.8	-0.2

Black

	Rate[b] 2004-2008	APC[c] 1999-2008
All Sites	626.1	-1.8*
Prostate	233.8	-2.7*
Lung and Bronchus	99.8	-2.8*
Colon and Rectum	67.7	-1.8*
Kidney and Renal Pelvis	23.3	3.0*
Urinary Bladder	21.6	0.4
Non-Hodgkin Lymphoma	17.9	0.0
Stomach	17.2	-0.7
Pancreas	17.1	0.5
Oral Cavity and Pharynx	15.6	-3.3*
Liver & IBD[f]	15.1	3.8*
Myeloma	14.5	0.5
Leukemia	12.9	-0.5
Larynx	9.8	-3.9*
Esophagus	8.6	-4.1*
Brain and ONS[f]	4.6	-1.3

Asian/Pacific Islander

	Rate[b] 2004-2008	APC[c] 1999-2008
All Sites	347.7	-1.1*
Prostate	88.3	-2.0*
Lung and Bronchus	53.2	-1.3*
Colon and Rectum	45.4	-2.2*
Liver & IBD[f]	22.1	0.6
Stomach	17.2	-3.1*
Non-Hodgkin Lymphoma	16.3	-0.4
Urinary Bladder	16.3	0.4
Oral Cavity and Pharynx	10.9	0.1
Kidney and Renal Pelvis	10.6	5.0*
Pancreas	10.6	2.1*
Leukemia	8.9	-1.8*
Thyroid	4.9	3.1*
Esophagus	4.2	-1.4
Myeloma	4.1	-0.3
Brain and ONS[f]	4.0	-0.2

American Indian/Alaska Native[d]

	Rate[b] 2004-2008	APC[c] 1999-2008
All Sites	338.0	-1.3
Prostate	75.3	-1.7
Lung and Bronchus	51.2	0.0
Colon and Rectum	42.7	-3.7
Kidney and Renal Pelvis	22.1	3.1
Liver & IBD[f]	17.4	2.5
Stomach	14.7	-3.9
Urinary Bladder	14.0	-
Non-Hodgkin Lymphoma	13.0	-
Pancreas	11.4	-
Leukemia	9.1	-
Oral Cavity and Pharynx	9.1	-
Esophagus	5.9	-
Myeloma	4.9	-
Melanoma of the Skin	3.9	-
Brain and ONS[f]	3.8	-

Hispanic[e]

	Rate[b] 2004-2008	APC[c] 1999-2008
All Sites	360.2	-2.1*
Prostate	107.4	-3.4*
Colon and Rectum	39.9	-2.5*
Lung and Bronchus	39.6	-2.9*
Non-Hodgkin Lymphoma	17.6	0.0
Urinary Bladder	16.9	-3.1*
Kidney and Renal Pelvis	16.5	1.8*
Liver & IBD[f]	15.8	1.6
Stomach	14.2	-2.5*
Pancreas	11.0	0.8
Leukemia	10.8	-1.1
Oral Cavity and Pharynx	8.2	-1.3
Myeloma	5.9	-2.2
Brain and ONS[f]	5.7	-1.8
Esophagus	5.0	-4.8*
Larynx	4.2	-2.7*

[a] Top 15 cancer sites selected based on 2004-2008 age-adjusted rates for the race/ethnic group.
[b] Incidence data used in calculating the rates are from the 17 SEER areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry, Rural Georgia, California excluding SF/SJM/LA, Kentucky, Louisiana and New Jersey).
Rates are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).
[c] The APC is the Annual Percent Change over the time interval. Incidence data used in calculating the trends are from the 13 SEER areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry and Rural Georgia).
Trends are based on rates age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).
[d] Rates for American Indian/Alaska Native are based on the CHSDA(Contract Health Service Delivery Area) counties.
[e] Hispanic is not mutually exclusive from whites, blacks, Asian/Pacific Islanders, and American Indians/Alaska Natives.
Incidence data for Hispanics are based on NHIA and exclude cases from the Alaska Native Registry.
[f] IBD = Intrahepatic Bile Duct. ONS = Other Nervous System.
* The APC is significantly different from zero (p<.05).
\- Statistic not shown. Rate based on less than 16 cases for the time interval. Trend based on less than 10 cases for at least one year within the time interval.

Table 1.25
Age-Adjusted SEER Incidence Rates and Trends for the Top 15 Cancer Sites[a] by Race/Ethnicity

Females

All Races

	Rate[b] 2004-2008	APC[c] 1999-2008
All Sites	411.6	-0.4*
Breast	124.0	-1.2*
Lung and Bronchus	52.3	-0.4
Colon and Rectum	41.0	-2.1*
Corpus and Uterus, NOS	23.9	0.2
Melanoma of the Skin	16.7	1.8*
Non-Hodgkin Lymphoma	16.5	0.2
Thyroid	16.3	6.6*
Ovary[g]	12.8	-1.5*
Pancreas	10.7	1.2*
Kidney and Renal Pelvis	10.2	3.1*
Leukemia	9.7	0.0
Urinary Bladder	9.2	-0.9*
Cervix Uteri	8.1	-2.6*
Oral Cavity and Pharynx	6.2	-0.6
Stomach	5.4	-1.5*

White

	Rate[b] 2004-2008	APC[c] 1999-2008
All Sites	423.0	-0.5*
Breast	127.3	-1.6*
Lung and Bronchus	54.6	-0.4
Colon and Rectum	40.2	-2.2*
Corpus and Uterus, NOS	24.8	-0.1
Melanoma of the Skin	19.7	2.2*
Non-Hodgkin Lymphoma	17.3	0.2
Thyroid	17.2	6.8*
Ovary[g]	13.5	-1.7*
Kidney and Renal Pelvis	10.5	3.1*
Pancreas	10.5	1.2*
Leukemia	10.2	-0.2
Urinary Bladder	9.8	-0.9*
Cervix Uteri	8.0	-2.5*
Oral Cavity and Pharynx	6.2	-0.5
Brain and ONS[f]	5.9	-0.4

Black

	Rate[b] 2004-2008	APC[c] 1999-2008
All Sites	400.9	-0.2
Breast	119.9	0.1
Lung and Bronchus	54.7	-0.6
Colon and Rectum	51.2	-1.9*
Corpus and Uterus, NOS	20.9	2.3*
Pancreas	14.8	1.4
Non-Hodgkin Lymphoma	12.3	1.1
Kidney and Renal Pelvis	11.6	2.7*
Myeloma	10.2	0.5
Ovary[g]	10.0	-0.2
Cervix Uteri	10.0	-4.1*
Thyroid	9.3	6.3*
Stomach	8.5	-2.3*
Leukemia	7.8	-1.6
Urinary Bladder	7.6	-1.4
Oral Cavity and Pharynx	5.6	-1.4

Asian/Pacific Islander

	Rate[b] 2004-2008	APC[c] 1999-2008
All Sites	297.0	0.2
Breast	93.7	0.5
Colon and Rectum	34.6	-1.6*
Lung and Bronchus	28.5	-0.1
Corpus and Uterus, NOS	18.2	1.8*
Thyroid	16.4	5.5*
Non-Hodgkin Lymphoma	10.9	-0.5
Stomach	9.9	-3.0*
Ovary[g]	9.9	-0.4
Pancreas	8.6	0.2
Liver & IBD[f]	8.4	0.3
Cervix Uteri	7.3	-3.0*
Leukemia	6.1	0.9
Kidney and Renal Pelvis	5.4	4.7*
Oral Cavity and Pharynx	5.3	-1.4
Urinary Bladder	4.0	0.8

American Indian/Alaska Native[d]

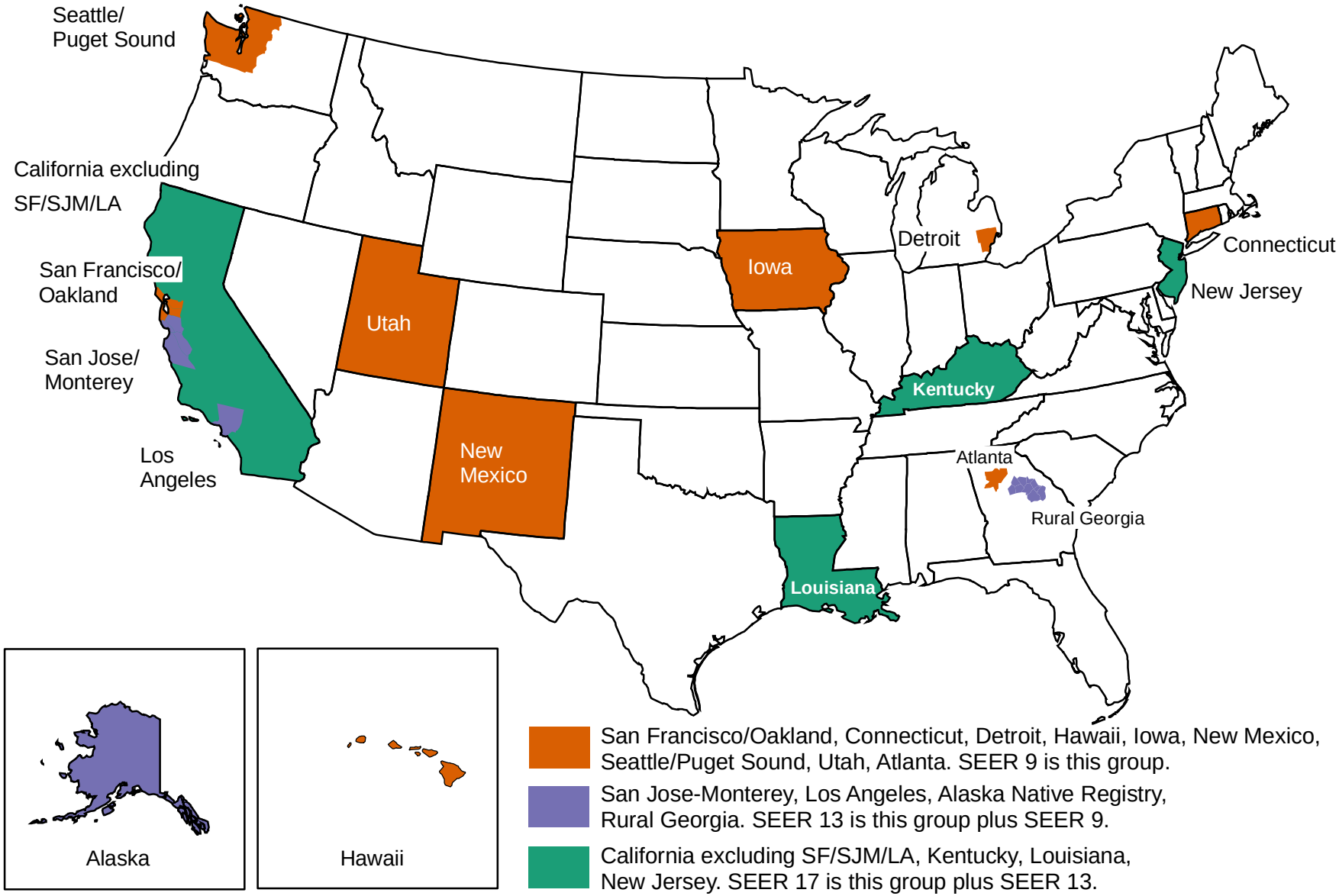
	Rate[b] 2004-2008	APC[c] 1999-2008
All Sites	309.0	0.1
Breast	77.9	0.0
Colon and Rectum	40.0	-1.1
Lung and Bronchus	39.5	1.0
Corpus and Uterus, NOS	16.7	1.0
Kidney and Renal Pelvis	13.9	4.0
Ovary[g]	10.6	-4.2
Non-Hodgkin Lymphoma	10.3	-
Pancreas	10.0	-
Thyroid	9.4	0.5
Liver & IBD[f]	7.8	-
Cervix Uteri	7.8	0.4
Stomach	7.4	-
Leukemia	6.5	-
Oral Cavity and Pharynx	5.1	-
Myeloma	4.3	-

Hispanic[e]

	Rate[b] 2004-2008	APC[c] 1999-2008
All Sites	287.5	-0.7*
Breast	78.1	-0.8*
Colon and Rectum	28.4	-1.5*
Lung and Bronchus	24.5	-1.3*
Corpus and Uterus, NOS	15.9	1.3*
Non-Hodgkin Lymphoma	13.6	0.1
Thyroid	12.7	5.5*
Cervix Uteri	11.1	-5.0*
Ovary[g]	10.6	-1.4
Pancreas	10.1	-0.3
Kidney and Renal Pelvis	9.2	2.0*
Stomach	8.5	-2.2*
Leukemia	7.6	0.4
Liver & IBD[f]	6.2	0.3
Urinary Bladder	4.8	-1.2
Myeloma	4.4	-2.9

[a] Top 15 cancer sites selected based on 2004-2008 age-adjusted rates for the race/ethnic group.
[b] Incidence data used in calculating the rates are from the 17 SEER areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry, Rural Georgia, California excluding SF/SJM/LA, Kentucky, Louisiana and New Jersey).
Rates are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).
[c] The APC is the Annual Percent Change over the time interval. Incidence data used in calculating the trends are from the 13 SEER areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry and Rural Georgia).
Trends are based on rates age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).
[d] Rates for American Indian/Alaska Native are based on the CHSDA(Contract Health Service Delivery Area) counties.
[e] Hispanic is not mutually exclusive from whites, blacks, Asian/Pacific Islanders, and American Indians/Alaska Natives.
Incidence data for Hispanics are based on NHIA and exclude cases from the Alaska Native Registry.
[f] IBD = Intrahepatic Bile Duct. ONS = Other Nervous System.
[g] Ovary excludes borderline cases or histologies 8442, 8451, 8462, 8472, and 8473.
* The APC is significantly different from zero (p<.05).
- Statistic not shown. Rate based on less than 16 cases for the time interval. Trend based on less than 10 cases for at least one year within the time interval.

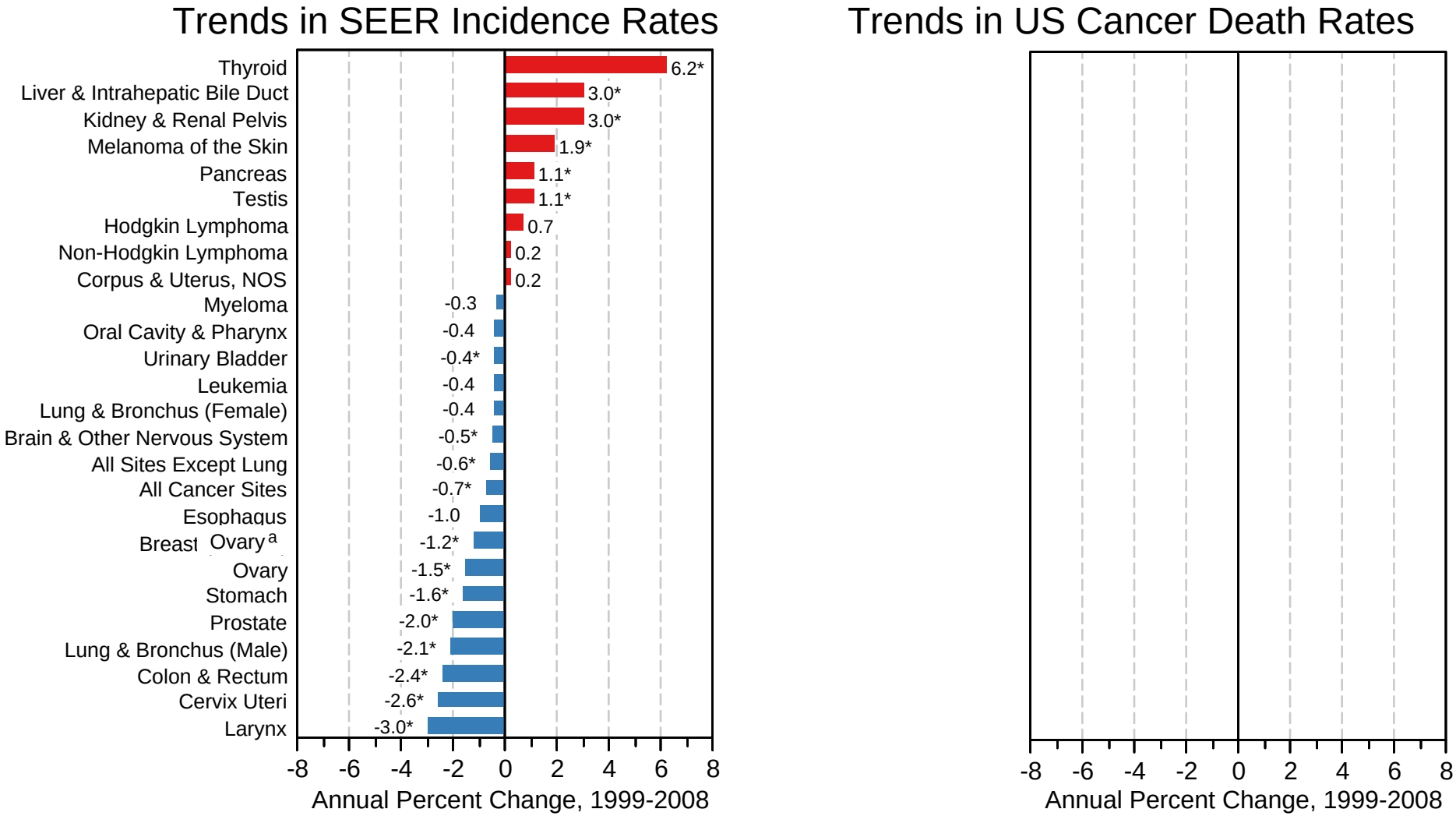
Surveillance, Epidemiology, and End Results (SEER) Program: SEER 9, 13, & 17 Geographic Areas National Cancer Institute, USA



http://seer.cancer.gov

Figure 1.1

Trends in SEER Incidence & US Death Rates by Primary Cancer Site 1999-2008



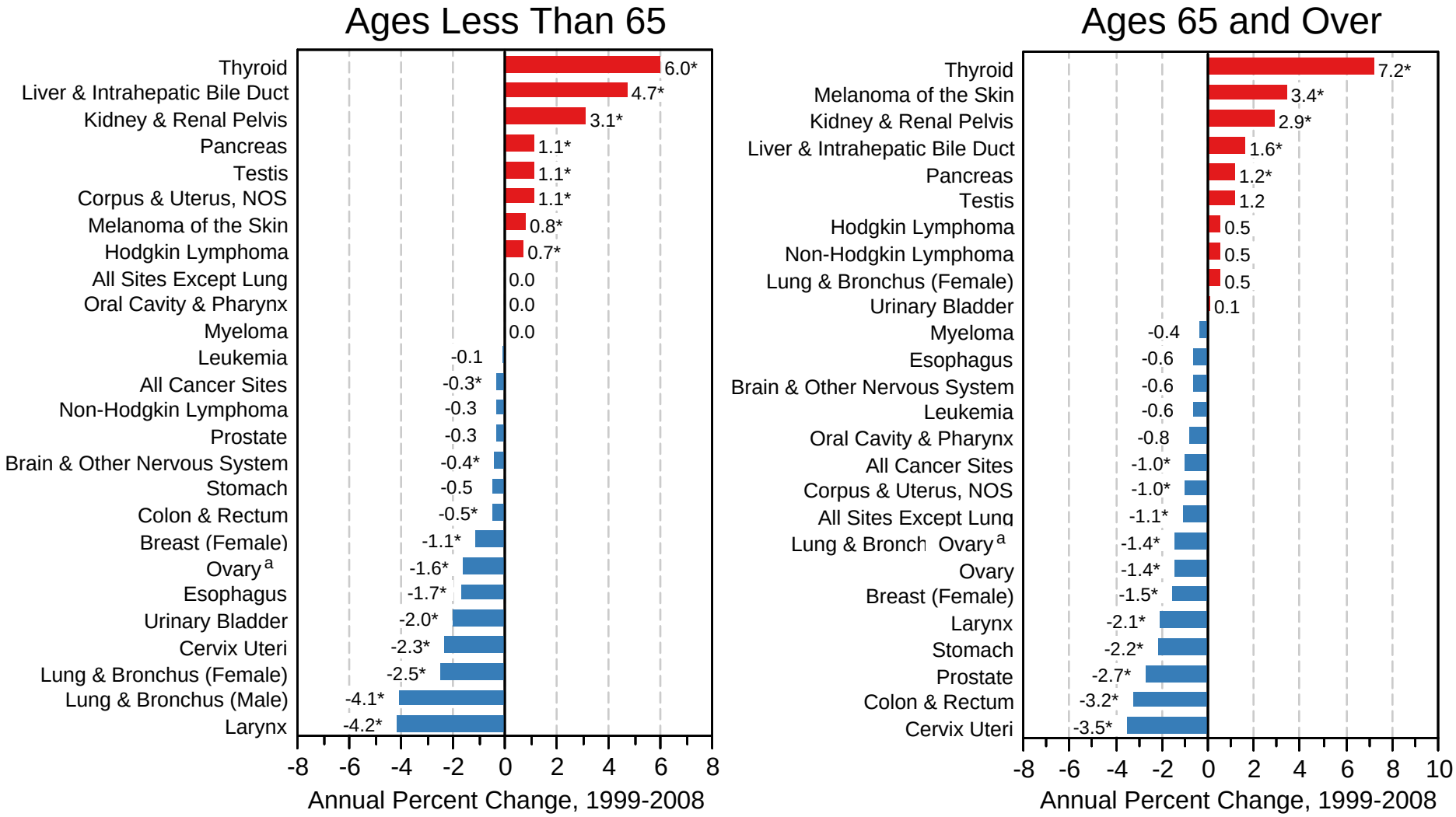
Source: SEER 13 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry and Rural Georgia) and US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention.
Underlying rates are per 100,000 and age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1103).
For sex-specific cancer sites, the population was limited to the population of the appropriate sex.

* The APC is significantly different from zero (p<.05).

[a] Ovary excludes borderline cases or histologies 8442, 8451, 8462, 8472, and 8473.

Figure 1.4

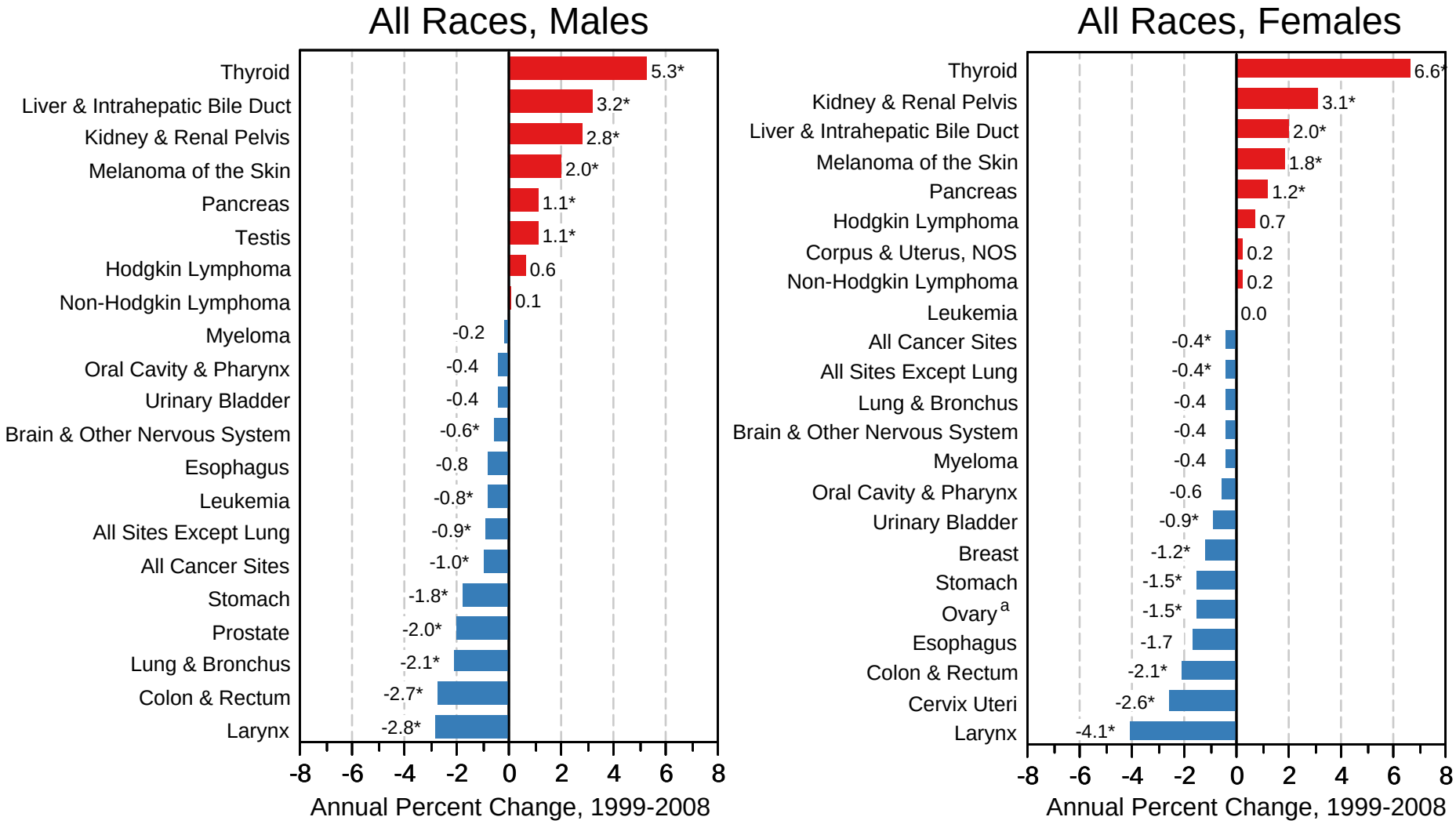
Trends in SEER Incidence Rates by Age Group and Primary Cancer Site 1999-2008



Source: SEER 13 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry and Rural Georgia).
Underlying rates are per 100,000 and age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1103).
For sex-specific cancer sites, the population was limited to the population of the appropriate sex.
* The APC is significantly different from zero (p<.05).
[a] Ovary excludes borderline cases or histologies 8442, 8451, 8462, 8472, and 8473.

Figure 1.5

Trends in SEER Incidence Rates by Sex and Primary Cancer Site 1999-2008



Source: SEER 13 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry and Rural Georgia).
Underlying rates are per 100,000 and age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1103).
For sex-specific cancer sites, the population was limited to the population of the appropriate sex.
* The APC is significantly different from zero (p<.05).
[a] Ovary excludes borderline cases or histologies 8442, 8451, 8462, 8472, and 8473.

Figure 1.7

SEER Incidence[a] and US Death Rates,[b] 2004-2008
5-Year Relative Survival,[c] 2001-2007
All Cancer Combined, by Race and Sex

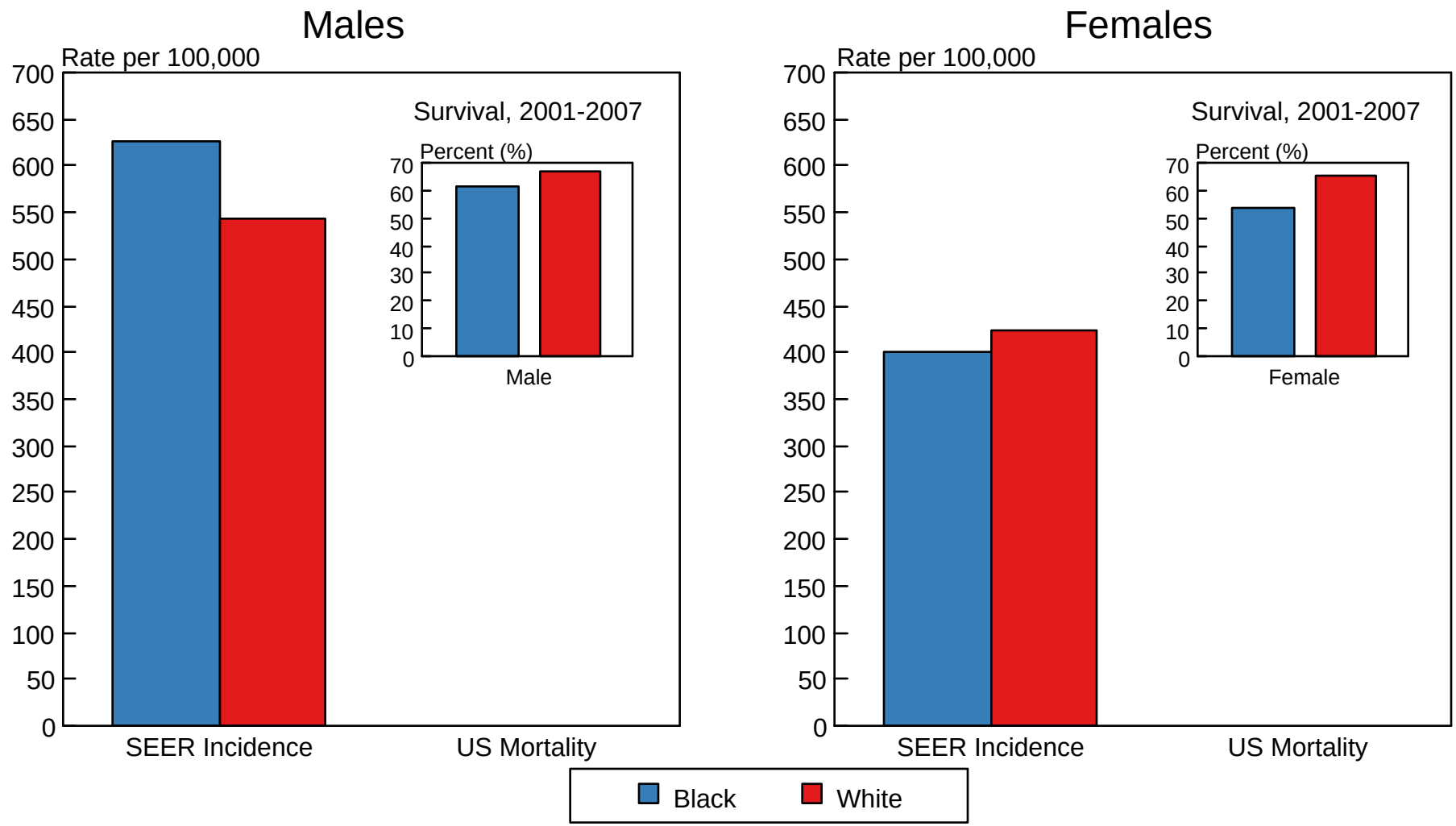


Figure 1.9

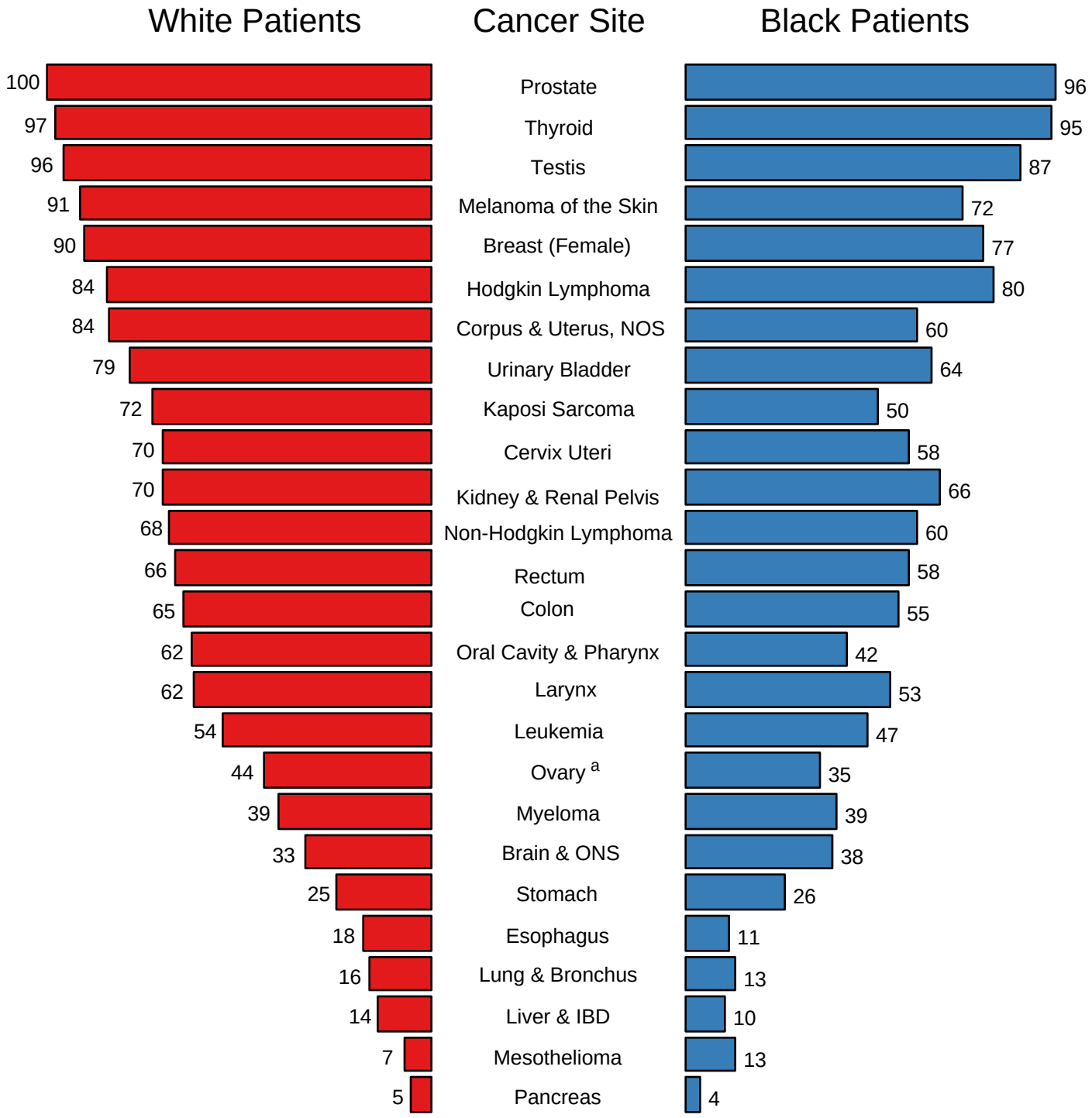
[a] Incidence rates are from the SEER 17 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry,Rural Georgia,California excluding SF/SJM/LA, Kentucky, Louisiana, and New Jersey) and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1103).

[b] Death rates are from the US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1103).

[c] Survival rates are from the SEER 17 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry, Rural Georgia, California excluding SF/SJM/LA, Kentucky, Louisiana, and New Jersey).

Figure 1.11

5-Year Relative Survival (%)
SEER Program, 2001-2007
Both Sexes, by Race and Cancer Site

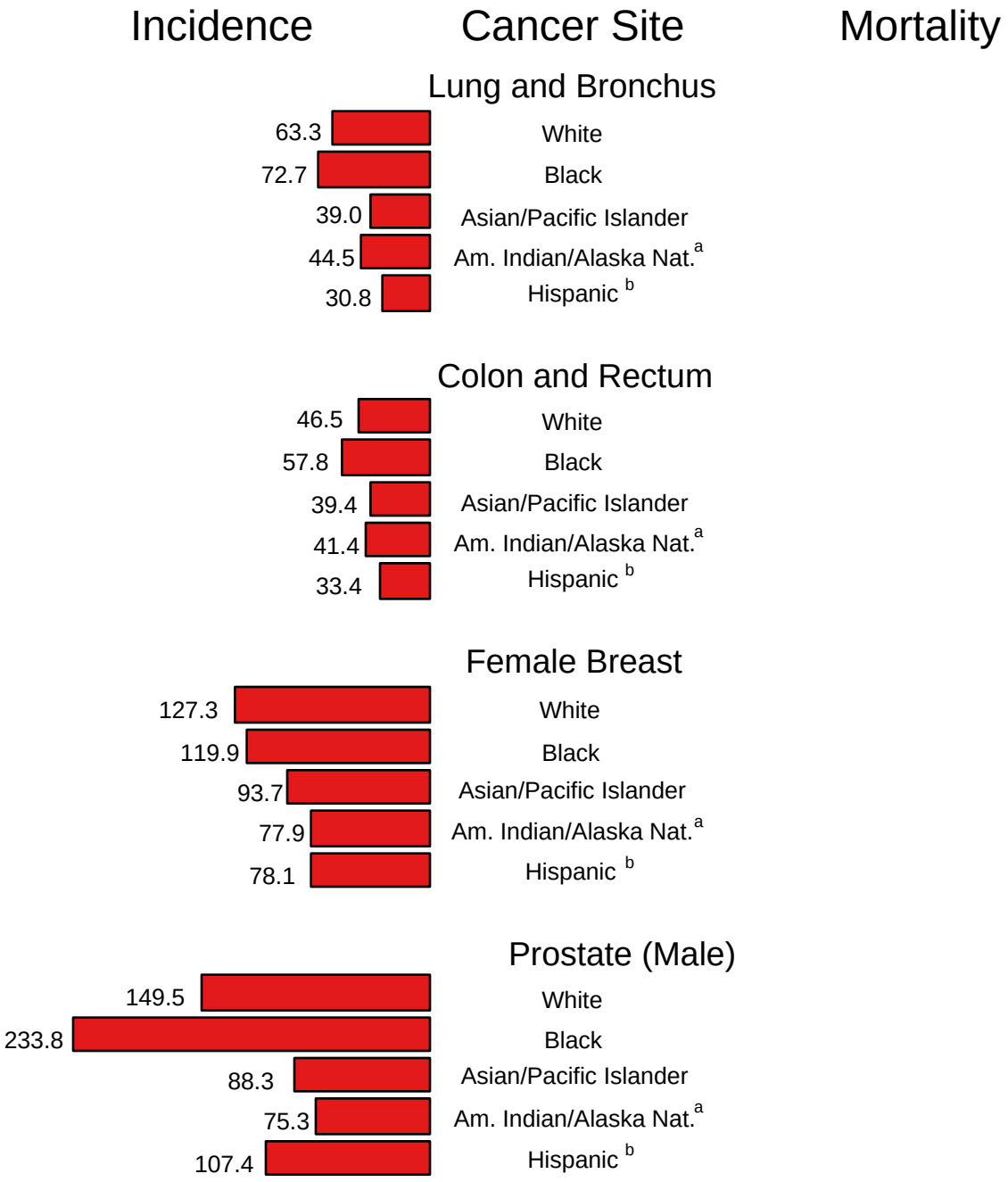


Source: SEER 17 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry, Rural Georgia, California excluding SF/SJM/LA, Kentucky, Louisiana, and New Jersey).

[a] Ovary excludes borderline cases or histologies 8442, 8451, 8462, 8472, and 8473.

Figure 1.12

SEER Cancer Incidence and US Death Rates, 2004-2008 By Cancer Site and Race/Ethnicity

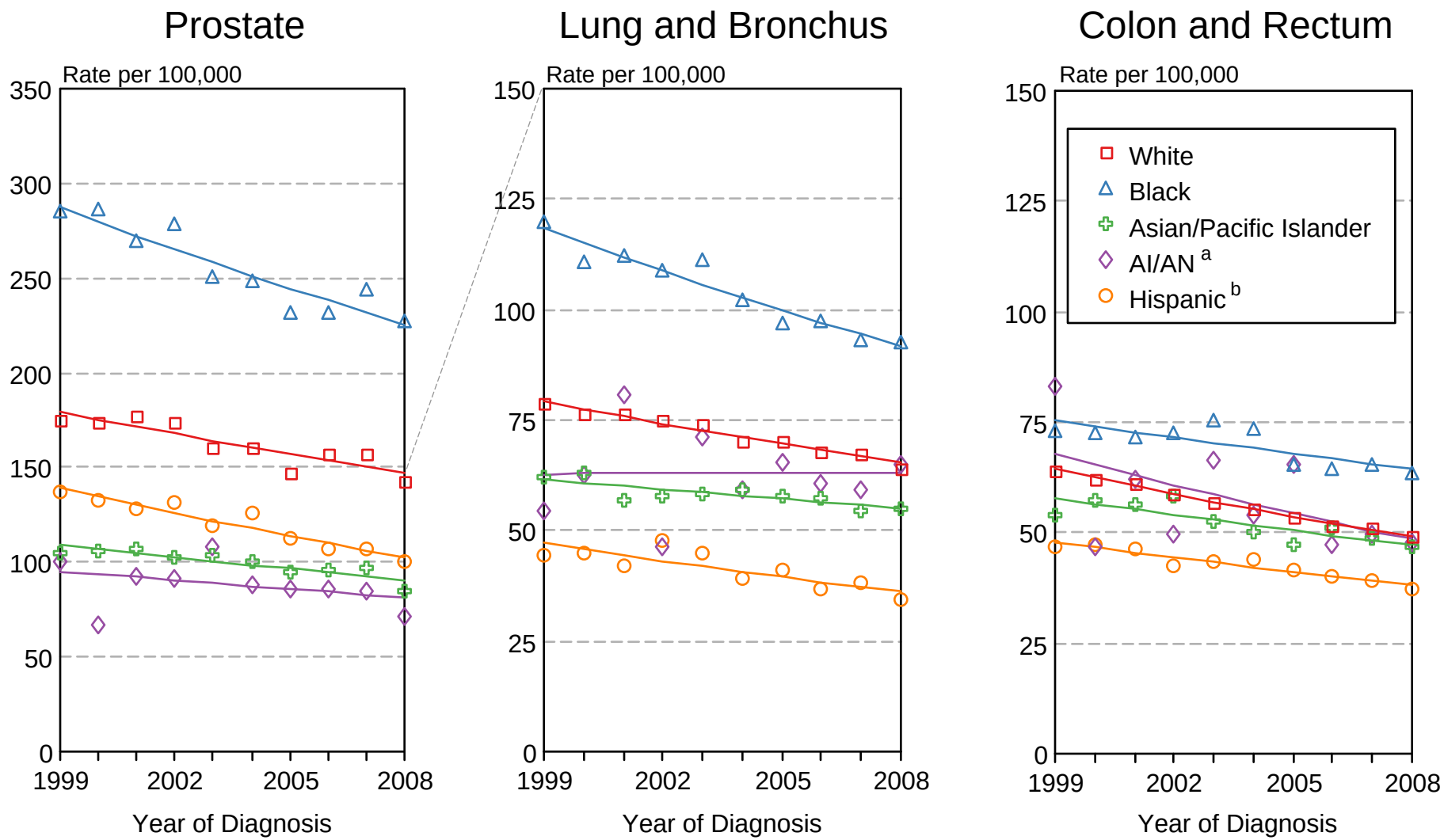


Source: SEER 17 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry, Rural Georgia, California excluding SF/SJM/LA, Kentucky, Louisiana, and New Jersey) and US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention.

[a] Rates for American Indian/Alaska Native are based on the CHSDA (Contract Health Service Delivery Area) counties.

[b] Hispanic is not mutually exclusive from whites, blacks, Asian/Pacific Islanders, and American Indians/Alaska Natives. Incidence data for Hispanics are based on NHIA and exclude cases from the Alaska Native Registry. Mortality data for Hispanics exclude cases from the District of Columbia, New Hampshire, and North Dakota.

SEER Incidence 1999-2008
Males by Race/Ethnicity



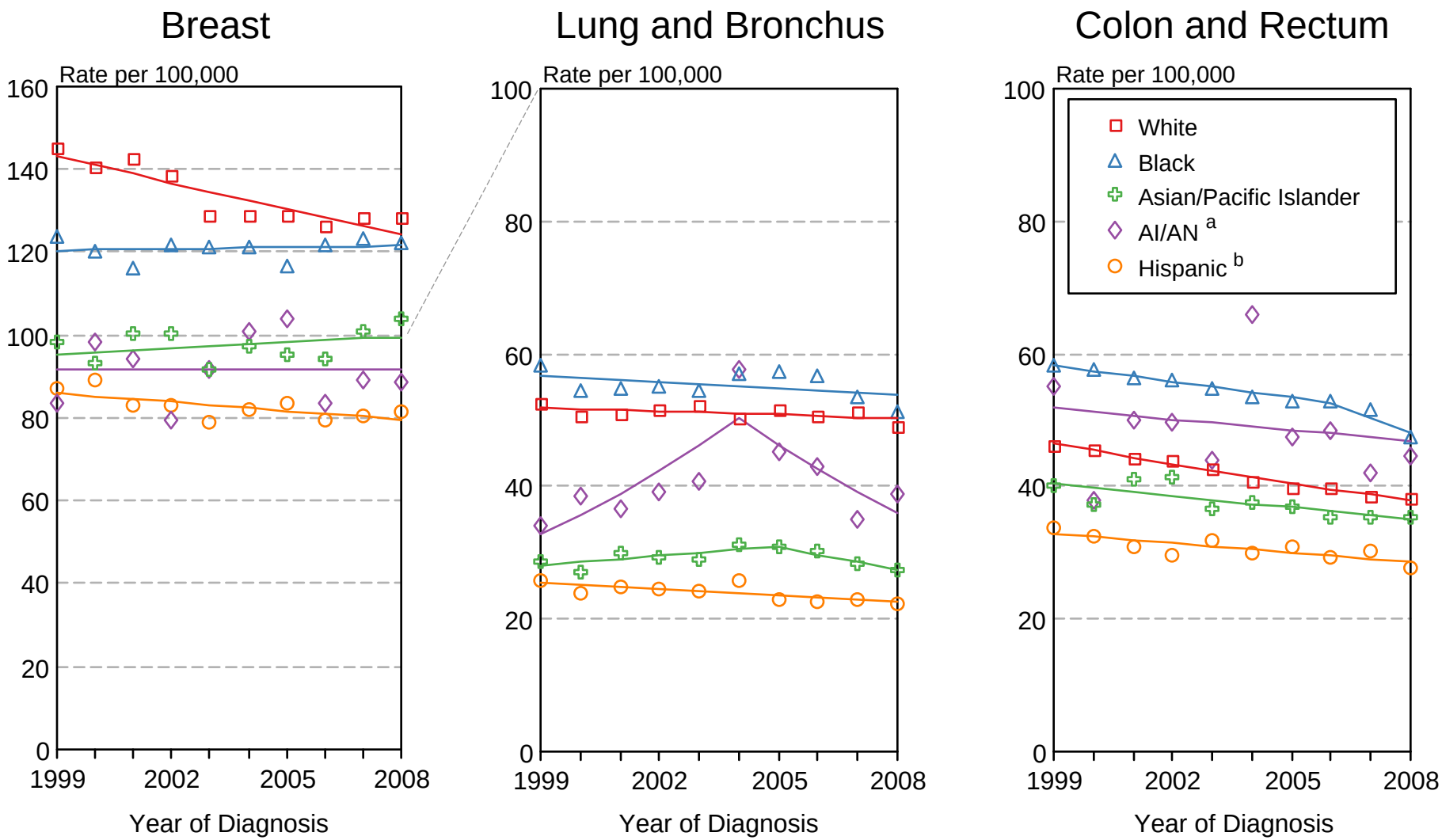
Source: SEER 13 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry and Rural Georgia). Rates are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1103). Regression lines are calculated using the Joinpoint Regression Program Version 3.5, April 2011, National Cancer Institute.

[a] Incidence rates for American Indian/Alaska Native (AI/AN) are based on the CHSDA(Contract Health Service Delivery Area) counties.

[b] Hispanic is not mutually exclusive from whites, blacks, Asian/Pacific Islanders, and American Indians/Alaska Natives. Incidence data for Hispanics are based on NHIA and exclude cases from the Alaska Native Registry.

Figure 1.13

SEER Incidence 1999-2008
Females by Race/Ethnicity



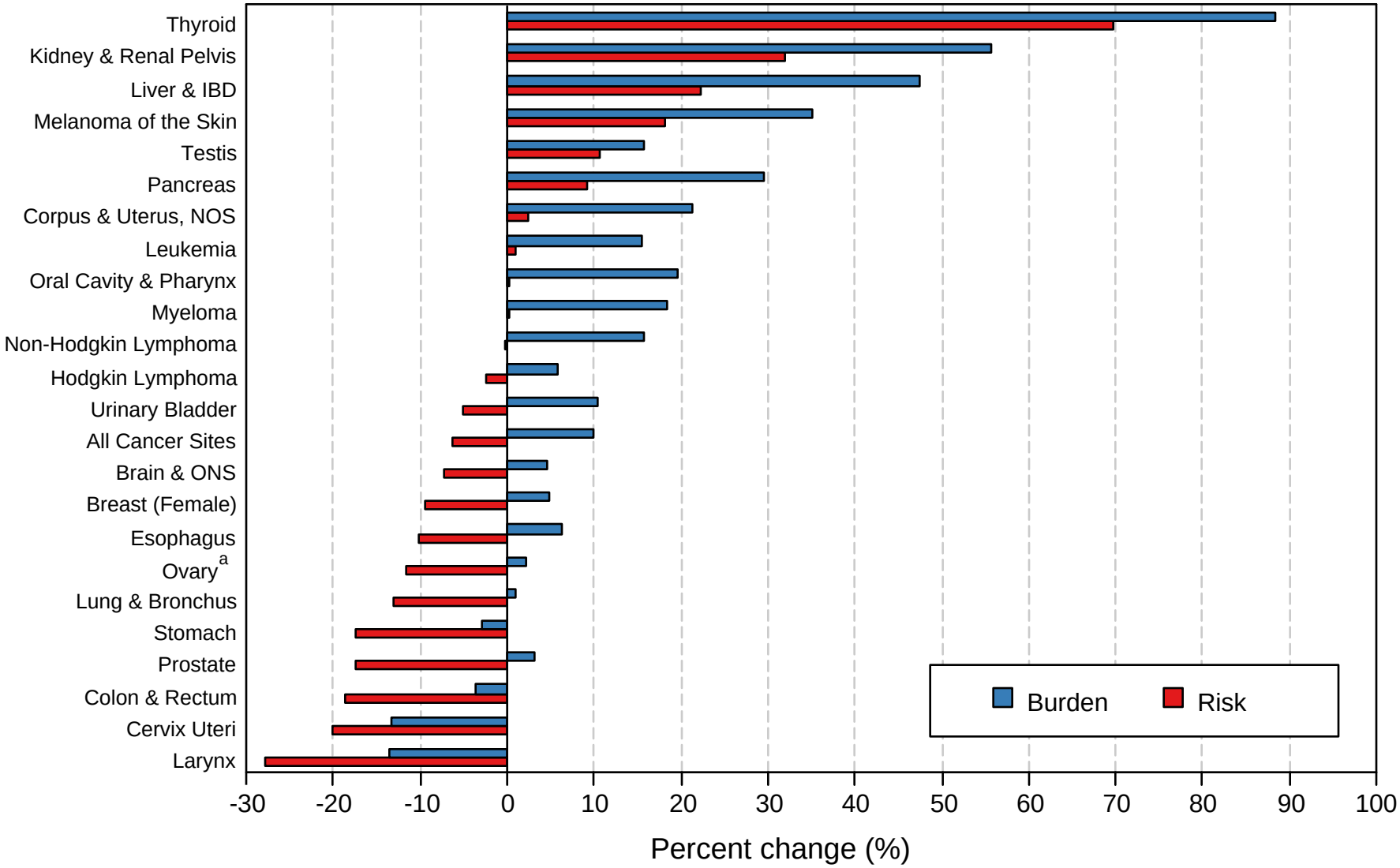
Source: SEER 13 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry and Rural Georgia). Rates are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1103). Regression lines are calculated using the Joinpoint Regression Program Version 3.5, April 2011, National Cancer Institute.

[a] Incidence rates for American Indian/Alaska Native (AI/AN) are based on the CHSDA(Contract Health Service Delivery Area) counties.

[b] Hispanic is not mutually exclusive from whites, blacks, Asian/Pacific Islanders, and American Indians/Alaska Natives. Incidence data for Hispanics are based on NHIA and exclude cases from the Alaska Native Registry.

Figure 1.14

Incidence Percent Change between 1999 and 2008
Numbers (burden) vs Rates (risk)
All Races, All Ages, Both Sexes



US Incidence estimates based on SEER age-specific rates applied to US population.
Burden is the change in the number of incidence cases between 1999 and 2008
Risk is the change in the cancer incidence rates between 1999 and 2008
[a] Ovary excludes borderline cases or histologies 8442, 8451, 8462, 8472, and 8473.

Figure 1.17

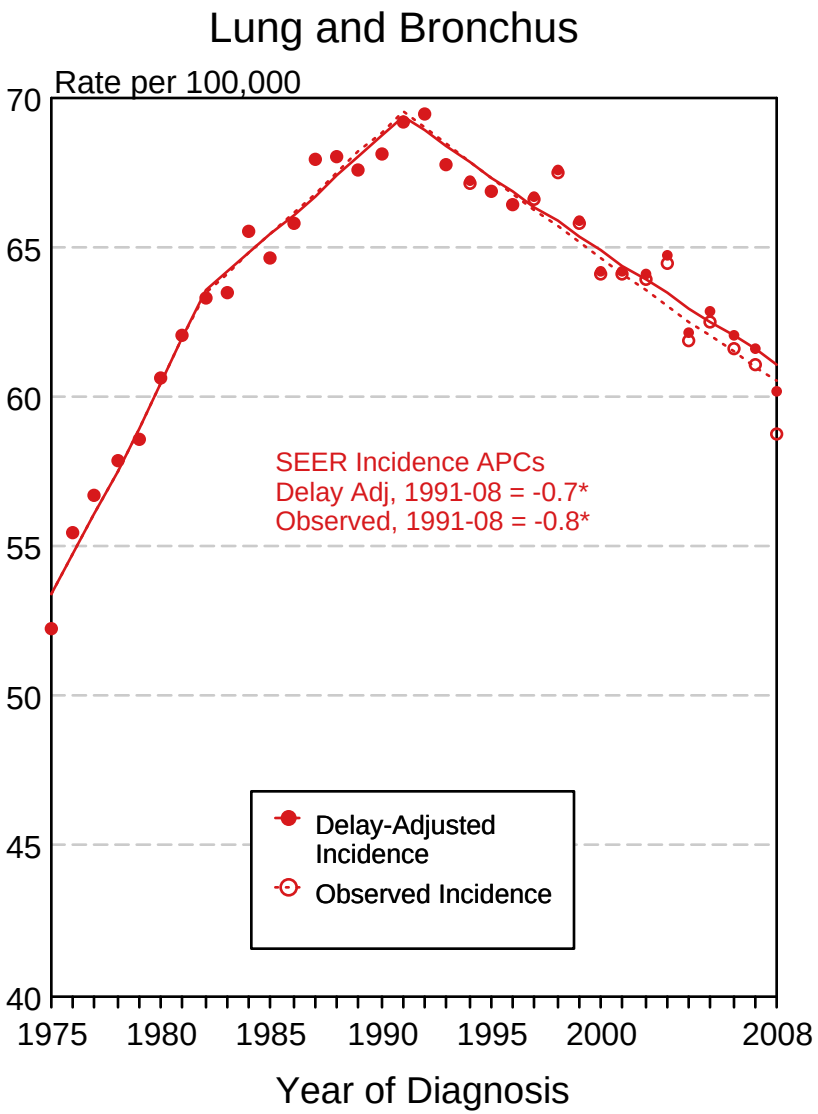
SEER Observed Incidence and Delay Adjusted Incidence Rates[a]
All Cancer Sites, By Sex

[a] Source: SEER 9 areas. Rates are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1103).
Regression lines and APCs are calculated using the Joinpoint Regression Program Version 3.5, April 2011, National Cancer Institute.
The APC is the Annual Percent Change for the regression line segments. The APC shown on the graph is for the most recent trend.

* The APC is significantly different from zero ($p < 0.05$).

Figure 1.21

SEER Observed Incidence and Delay Adjusted Incidence Rates [a]
Both Sexes



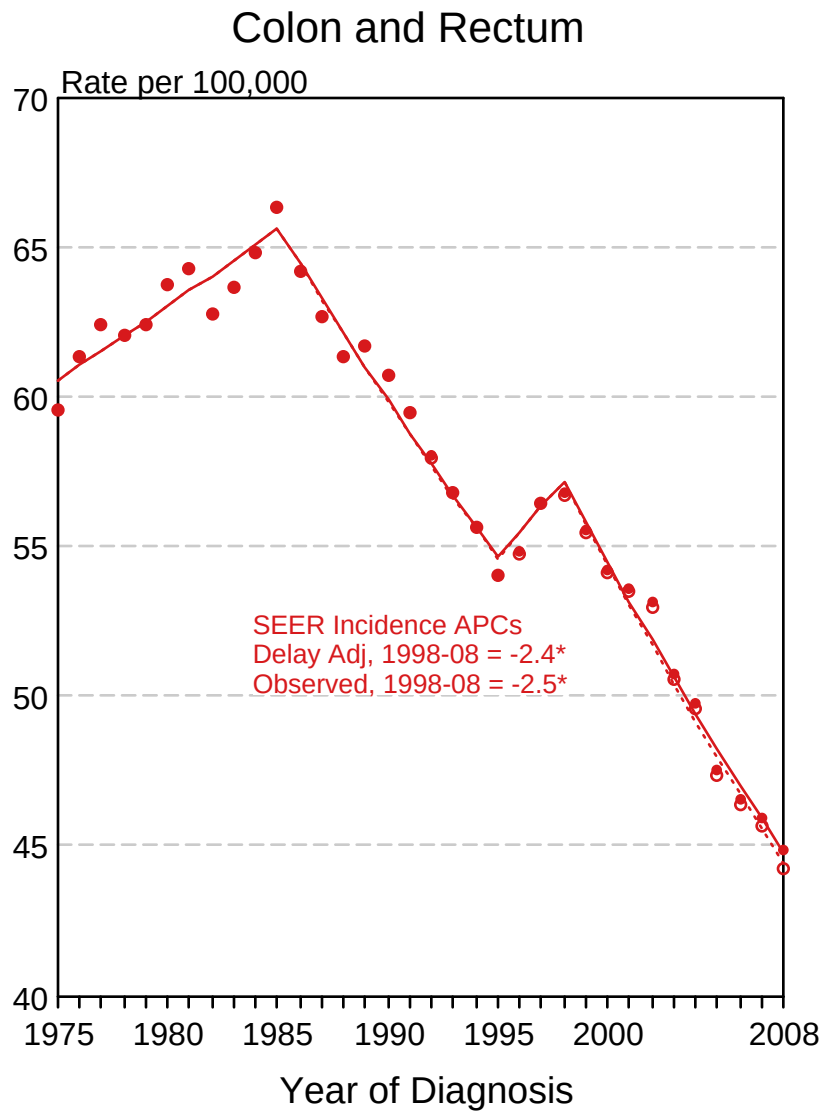
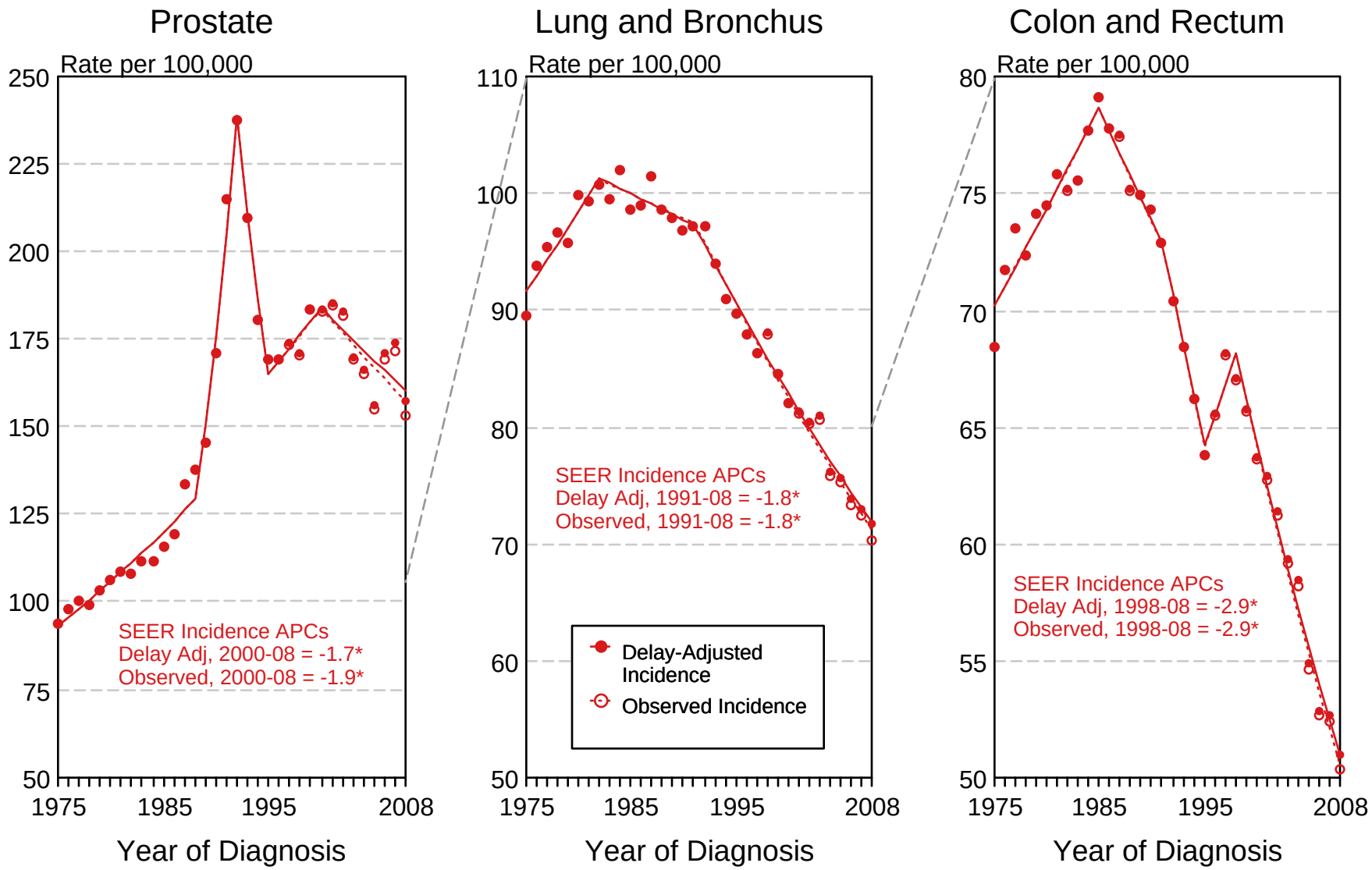


Figure 1.22

[a] Source: SEER 9 areas. Rates are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1103).
Regression lines and APCs are calculated using the Joinpoint Regression Program Version 3.5, April 2011, National Cancer Institute.
The APC is the Annual Percent Change for the regression line segments. The APC shown on the graph is for the most recent trend.

* The APC is significantly different from zero ($p < 0.05$).

SEER Observed Incidence and Delay Adjusted Incidence Rates[a]
Males

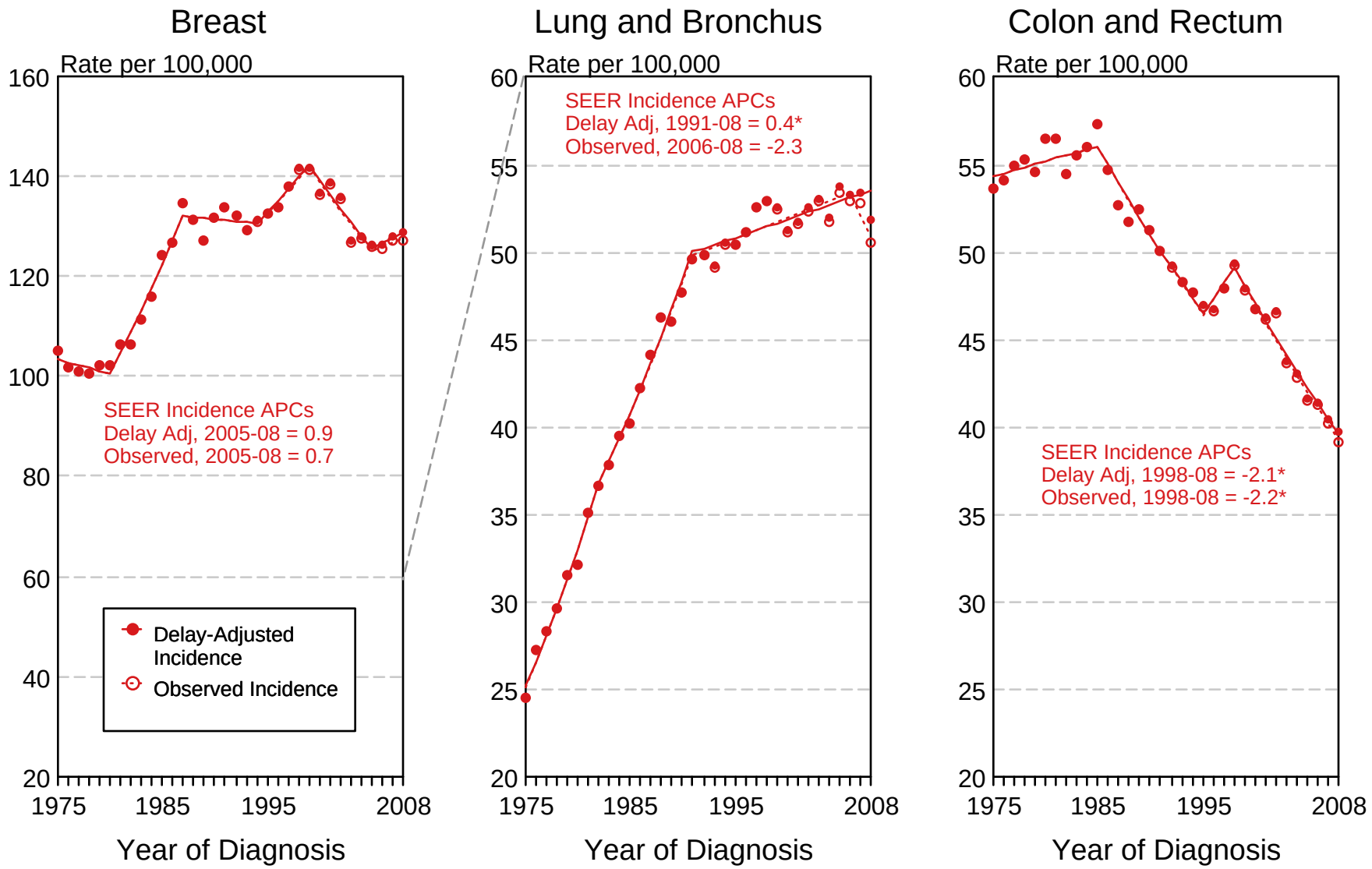


[a] Source: SEER 9 areas. Rates are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1103).
Regression lines and APCs are calculated using the Joinpoint Regression Program Version 3.5, April 2011, National Cancer Institute.
The APC is the Annual Percent Change for the regression line segments. The APC shown on the graph is for the most recent trend.

* The APC is significantly different from zero ($p < 0.05$).

Figure 1.23

SEER Observed Incidence and Delay Adjusted Incidence Rates[a]
Females



[a] Source: SEER 9 areas. Rates are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1103).
Regression lines and APCs are calculated using the Joinpoint Regression Program Version 3.5, April 2011, National Cancer Institute.
The APC is the Annual Percent Change for the regression line segments. The APC shown on the graph is for the most recent trend.

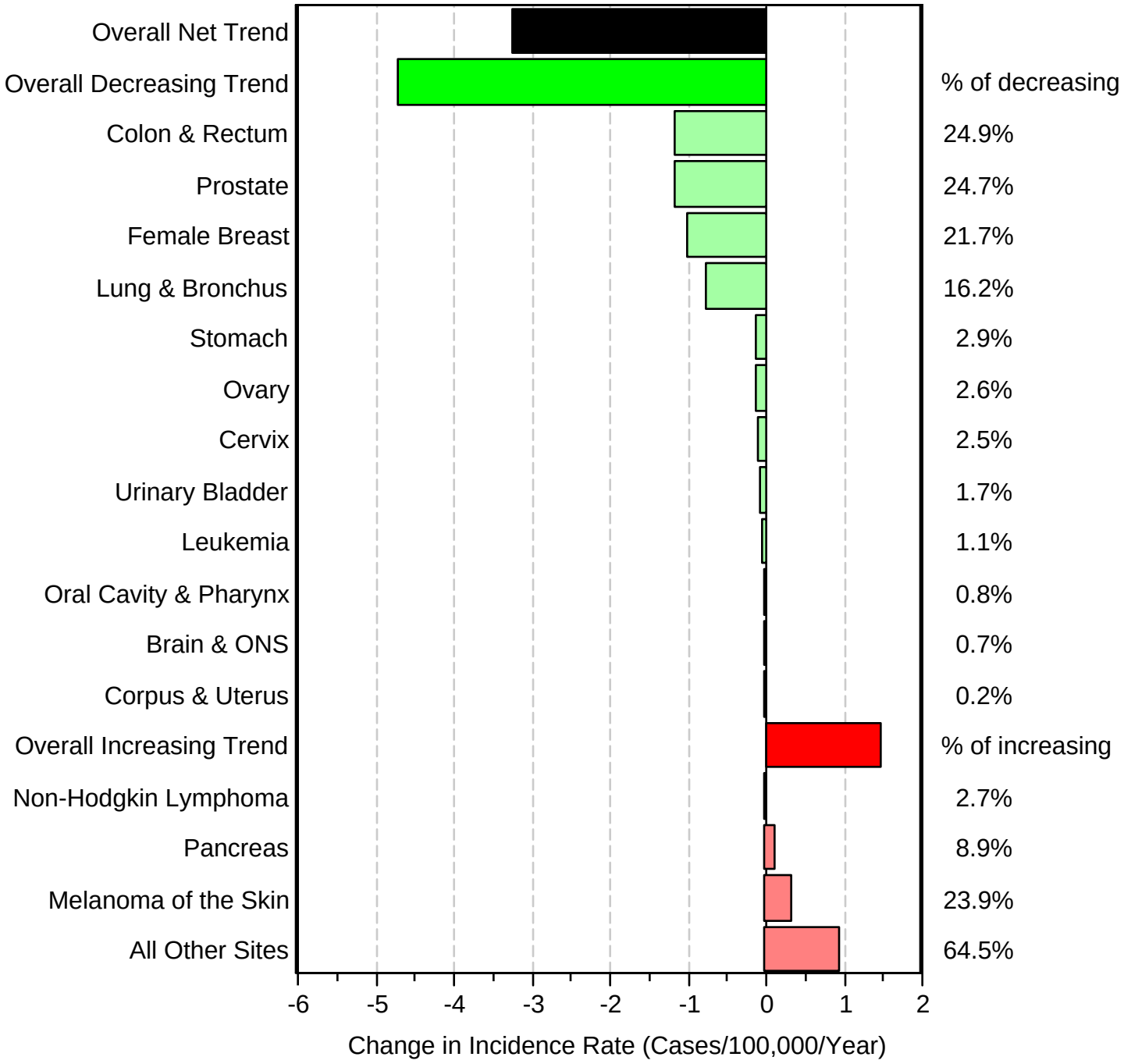
* The APC is significantly different from zero ($p < 0.05$).

Figure 1.24

Figure 1.25

Partition of Trends in Incidence Rates For the Time Period 1999-2008 All Races, Both Sexes

Overall Decreasing Regression Coefficient : -3.25

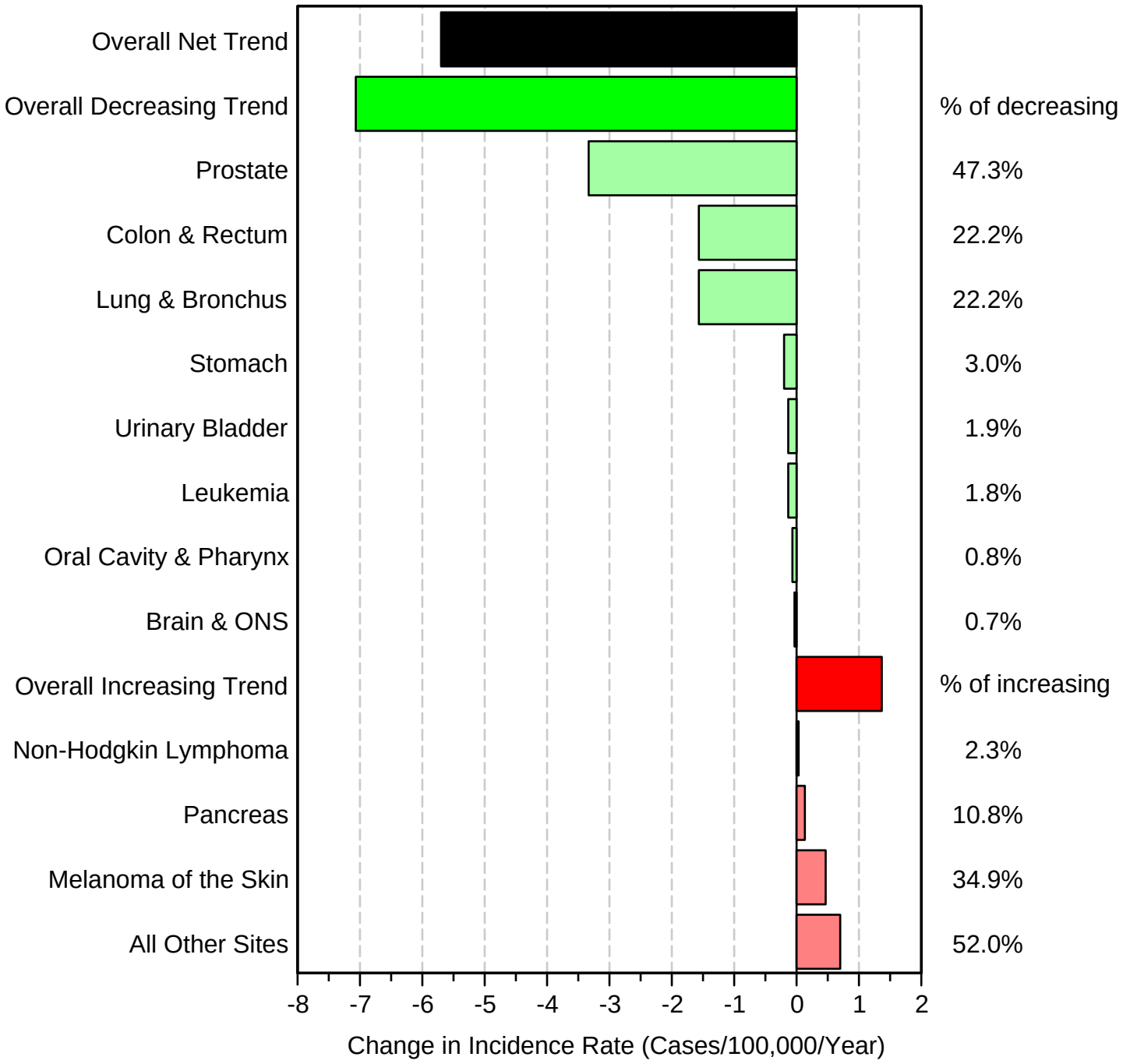


Source: SEER 13 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry and Rural Georgia).
Percents may not add to 100 due to rounding.
* Ovary excludes borderline cases or histologies 8442, 8451, 8462, 8472, and 8473.

Figure 1.26

Partition of Trends in Incidence Rates For the Time Period 1999-2008 All Races, Males

Overall Decreasing Regression Coefficient : -5.71

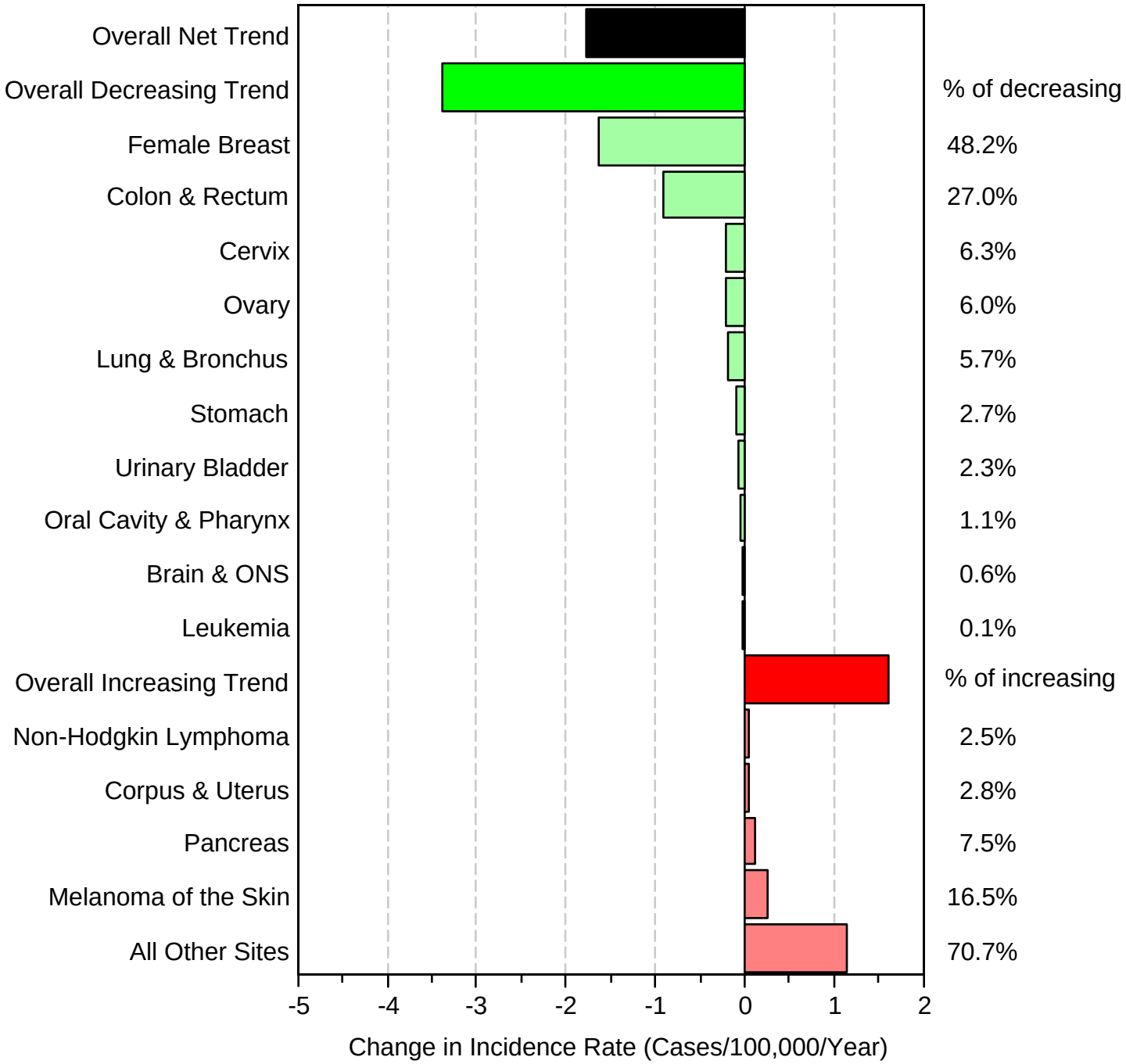


Source: SEER 13 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry and Rural Georgia).
Ovary excludes borderline cases or histologies 8442, 8451, 8462, 8472, and 8473.

Figure 1.27

Partition of Trends in Incidence Rates For the Time Period 1999-2008 All Races, Females

Overall Decreasing Regression Coefficient : -1.77



Source: SEER 13 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, Los Angeles, Alaska Native Registry and Rural Georgia).
Percents may not add to 100 due to rounding.
* Ovary excludes borderline cases or histologies 8442, 8451, 8462, 8472, and 8473.