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Illinois State Cancer Mortality Review and Update, 1986-2013

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ILLINOIS CANCER MORTALITY REVIEW AND UPDATE
1986-2013

OVERVIEW

This is the 23rd release of the annual Illinois state cancer mortality statistics. This report presents Illinois' cancer mortality for 1986 through 2013 for all races combined, whites, blacks, and Asian/other races and for 1990 through 2013 for Hispanics (any race), non-Hispanics (any race), non-Hispanic whites, and non-Hispanic blacks. All rates in this report were age-adjusted to the 2000 U.S. standard million population.

Cancer group definitions for major and minor sites are those established by the Surveillance, Epidemiology, and Ends Results (SEER) program of the National Cancer Institute (NCI) and are used by the North American Association of Central Cancer Registries (NAACCR), and the United States Cancer Statistics (USCS) of the U.S. Centers for Disease Control and Prevention (CDC). These standardized classification schemes allow direct comparisons of Illinois cancer statistics with international, national, and state publications.[1-6]

The mortality data are tabulated for each major or minor cancer site for four race groups and four ethnicity/race groups. Counts, age-adjusted rates, standard errors, and 95 percent confidence intervals for rates are displayed for the combined 1986-2013 time period (1990-2013 time period for ethnicity/race groups), as well as for individual years. For cancers occurring in both genders, separate tables were presented for both sexes, and for males and females.

MORTALITY HIGHLIGHTS

- From 1986 through 2013, 683,237 Illinois residents died from cancer. The race distribution for these deaths was 84.0 percent among whites, 14.8 percent in the black population, and the remainder occurring among the Asian/other race population group (1.2 percent).

- From 1990 through 2013, 589,606 Illinois residents died from cancer. The distribution for these deaths was 2.6 percent Hispanic (any race) and 97.4 percent non-Hispanics (any race). Among non-Hispanic deaths, 83.5 percent were non-Hispanic whites and 15.2 percent non-Hispanic blacks.

- Black males had the highest overall age-adjusted mortality rates from cancer during the 1986-2013 time period, about 44 percent higher than the rate for white males and three times the rate for males identified as Asian or other races. Similarly, Illinois' cancer mortality rates for black females exceeded those for white females by about 27 percent and were two and a half times those observed among females identified as Asian or other races in Illinois. Non-Hispanic males and females (any race) had mortality rates that were almost twice that of their Hispanic (any race) counterparts.

- Based on age-adjusted cancer mortality rates, lung cancer remains the leading cause of death from cancer for both Illinois males and females, followed by prostate cancer for males and breast cancer for females. The third leading cause of cancer death is from cancers of the colon and rectum for both males and females.

- From 1986 through 2013, among males of all races, nearly one-third of all cancer deaths were from cancer of the lung and bronchus (32.5 percent), 11.1 percent from prostate cancer, and 10.9 from cancer of the colon and rectum. These three cancers accounted for more than half of all cancer deaths (54.5 percent).

- From 1986 through 2013, 23.9 percent of all cancer deaths among females of all races were due to cancer of the lung and bronchus, 17.2 percent due to cancer of the breast, and 11.7 percent due to cancer of the colon and rectum; these three cancers made up 52.8 percent of all cancer deaths in females.

TECHNICAL NOTES

Mortality Data Sources

Underlying mortality data for 1986 to 2013 by race and for 1990 to 2013 by ethnicity/race were obtained from the National Center for Health Statistics (NCHS) of CDC, as provided to the SEER program of NCI. The data were released by NCHS in April 2016 and made available on SEER Stat in April 2016.[7]

Data Use Agreement

By using these data you signify your agreement to comply with the Illinois Health and Hazardous Substances Registry Act (410 ILCS 525/12). Data collected by the Illinois State Cancer Registry are made available to the public; however the identification or contact of individuals is prohibited.

These data are provided as a public service for the purpose of statistical reporting and analysis only. There should be no attempt to learn the identity of any person included in these data. If the identity of any person is discovered inadvertently, no disclosure or other use of the identity will be made.

Uses of these data do not constitute an endorsement of the user's opinion or conclusions by the Department and none should be inferred.

Population Estimates

The population estimates of the sex- and race-specific, as well as sex- and ethnicity/race-specific groups in five-year age categories were used as denominators in the formulation of rates. These population estimates of Illinois for all races, whites, blacks, and Asian/other races from 1986 through 2013 and for Hispanics, non-Hispanics, non-Hispanic white, and non-Hispanic black for 1990 through 2013 were obtained from the SEER program based on U.S. Census Bureau population estimates.[8] They represent a modification of both the intercensal and Vintage 2014 annual time series of July 1 county population estimates by age,

sex, race and Hispanic origin produced by the U.S. Census Bureau Population Estimates Program (http://www.census.gov/popest/index.html), in collaboration with the National Center for Health Statistics, and with support from NCI through an interagency agreement. The population estimates incorporate intercensal (for July 1, 2000-2009) and Vintage 2014 (for July 1, 2010-2013) bridged single-race estimates derived from the original multiple race categories in the 2000 Census (as specified in the 1997 Office of Management and Budget standards for the collection of data on race and ethnicity https://www.whitehouse.gov/omb/inforeg_statpolicy/). The bridged single-race estimates and a description of the methodology used to develop them appear on the National Center for Health Statistics website (http://www.cdc.gov/nchs/nvss/bridged_race.htm). The population estimates are displayed in Appendix A.

Key Measures

Cancer Site Coding for Mortality Data. Underlying cause of death was coded using the *International Classification of Diseases* (ICD-9)[9] for all deaths for years 1986 through 1998 and the *International Classification of Diseases* (ICD-10)[10] for all deaths for year 1999 and later. In the present report, the SEER mortality recode scheme based on ICD-9 and ICD-10 was used to classify cancer deaths sites (Appendix B: SEER site groups for mortality data based on ICD-9 and ICD-10).

Cancer Mortality. Because of many changes in ICD-10 as compared to ICD-9, discontinuities in trends for many causes of death, including cancer, may arise. Compared to using ICD-9 coding, overall, approximately 0.7 percent more deaths are assigned to cancer when ICD-10 is used, leading to a higher mortality rate for all cancers combined.[11] But this pattern does not hold for specific cancer sites, whose rates may be higher or lower using ICD-10. These discontinuities are relatively small, and the changes in mortality rates across the years of the ICD-9/ICD-10 boundary are still interpretable, especially for major cancer sites.[5] Cancer deaths among non-residents and deaths of unknown sex or age were omitted from all calculations.

Mortality Rates. Mortality rates were calculated using the SEER*Stat® software package,[12] developed for NCI by the Information Management Services Inc. Rates are expressed per 100,000 population. Age-adjustment of rates was calculated by the direct method adjusting to the 2000 U.S. standard million population. Rates are rounded to the nearest tenth and very small rates (e.g., 0.04) are shown as 0.0. They are presented with the lower and upper confidence intervals computed at the 95 percent level using Tiwari method.[13] Algorithms used for the calculation of standard errors and 95 percent confidence intervals are displayed in Appendix C.

Beginning with the release of the 1969-2008 mortality database (October 2011), NCHS suppressed the number of deaths if fewer than 10. This change also was made to all the previously-released mortality databases available though SEER*Stat. The suppressed cases are, however, included in counts and rates for the aggregate time periods (1986-2013 or 1990-2013), as well as counts and rates for All Cancer Sites.

Race-specific Rates. The race-specific categories in this report are all races combined, whites, blacks and Asian/other races. Cases reported as unknown race were included in the "all races" category, but not in any race-specific group.

Ethnicity/Race Rates. Hispanic ethnicity was used as defined in the database. Because there were a large number of cancer deaths with unknown Hispanic ethnicity in the mortality database, the mortality rates calculated for Hispanics may be underestimated. To be consistent with all national reports, categories are reported as Hispanic (any race), non-Hispanic (any race), non-Hispanic whites, and non-Hispanic blacks.

DATA INTERPRETATION

Observed variations and differences over years and across sex and race groups in cancer mortality may be real, reflecting changes in cancer incidence, or changes in early detection and treatment. Such changes or differences, however, may not be real, but instead may be the result of random fluctuations and other factors related to the estimation process. Any conclusions should be made only after carefully considering the following factors that influence annual mortality rates.

- Random fluctuations in annual rates are usual and may be substantial, especially for rates based on small numbers of mortality counts (i.e., less than 16).

- Population estimates used for denominators may be inaccurate or lack precision. Population data for 1990, 2000, and 2010, the years of the U.S. decennial census, are the most accurate for all age-, race-, ethnicity- and sex-specific categories and would, therefore, produce the most accurate incidence and mortality rates. Those for other years are not based on actual population counts, but rather on interpolation or extrapolation of estimates based on demographic characteristics of the population. Mortality rates based on these population estimates would be expected to be less accurate than those for 1990, 2000 or 2010.

- The 95 percent confidence intervals are included with reported rates to help put the rate in perspective and to facilitate rate comparisons over years and across sex, race and ethnicity/race groups. Observed differences may not be statistically significant. The range between the lower confidence interval and the upper confidence interval defines with 95 percent probability where the “true” rate may fall. The overlap of two sets of confidence intervals is approximately equivalent to being statistically insignificant for differences between two rates and is more conservative than the standard significance test when the null hypothesis is true.[14]

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