

DEFINITIONS

County of Residence

In this report, the geographical variable is the county of residence at diagnosis. For the purpose of brevity and clarity in section, figure and table titles, the county of residence at diagnosis is referred to as “county” throughout.

Deaths-to-Cases Ratios

The deaths-to-cases ratios in the mortality section are calculated by dividing the number of deaths with a particular cancer as the underlying cause in a given year by the number of new cancers of that type diagnosed in the same year. The deaths-to-cases ratio provides a simplified indication of the prognosis for patients with different types of cancer. A lower ratio indicates fewer deaths relative to the number of cases and suggests a better prognosis. A ratio approaching 1.0 indicates a poor prognosis. Ratios greater than 1.0 are possible when deaths due to cancers diagnosed in previous years cause the number of deaths to exceed the number of new cancers diagnosed in a particular year.

Diagnosis

Primary diagnosis is the condition chiefly responsible for the admission of the patient to the hospital for care.

Secondary diagnosis is the condition that affects patient management and/or consumes hospital resources.

Incidence

Incidence is defined as the number of new cancers diagnosed in the population at risk in the reference year. The population considered at risk for cancer in this report is the entire resident population of Florida in the reference year. Specifying other population characteristics such as sex, race, age, or county of residence further subdivides the population at risk of developing cancer.

Median

The median is the middle value of an ordered set of numbers: half the values are greater than the median and half are less than the median. The median is less sensitive to extreme values than the mean, and a better measure of central tendency for data with skewed distributions.

Mortality

Mortality is defined as the number of deaths from cancer in the population at risk in for the reference year. A cancer death is defined as a death for which cancer is determined to be the underlying cause of death based on the death certificate. The population considered at risk in this report is the entire resident population of Florida in the reference year. Mortality is examined based on sex, race, age, and county of residence.

Prevalence

Current cigarette use and cancer screening prevalence data from the Florida BRFSS are presented in this report. Prevalence is defined as the percentage of people who have received cancer screening or who currently smoke cigarettes in Florida's population at the time of survey. The prevalence data are weighted to represent the entire adult population of the state. Data weighting is a statistical procedure that incorporates factors such as the probability of the interviewee being selected for the survey, and the sex, race, and age distribution of the population. Since the Florida BRFSS survey is a random survey, sampling errors are inherent and a 95% confidence interval is calculated for each prevalence estimate.

Race

The FCDS collects information on the racial background of each person diagnosed with cancer in Florida. In this report, comparisons are made between two racial groups, black and white. Both black and white races include people of various ethnic origins. The remaining racial groups account for 2.7% of the population and 1.6% of cancer cases diagnosed in Florida this year. Cancers in people of "Other" races are included in Florida total rates and counts, as well as in the totals by sex.

Rates

Crude Rates

The crude rate is the total number of new cancer cases diagnosed, or cancer deaths, in a given period divided by the total population at risk in that period. Crude rates are expressed per 100,000 population per year. The calculation of the crude rate (**M**) can be written as:

$$M = N/P \times 100,000$$

where **N** is the total number of new cases or deaths in a period, and **P** is the population at risk in the same period.

Age-Specific Rates

The age-specific rate is the number of new cancer cases or deaths occurring in people in a given age group divided by the population in that age group in a given period expressed per 100,000 population. For the rate calculations in this report, age groups are defined by each five-year interval of age: 0 to 4, 5 to 9, 10 to 14, 85+. The age-specific rate (λ_i) is calculated as:

$$\lambda_i = n_i/p_i \times 100,000$$

where i is the age group, n_i is the number of new cancer cases or deaths in the age group in a given period, and p_i is the population at risk in the age group in the same period.

Age-Adjusted Rates

Age is an important factor in cancer incidence and mortality. Since cancer occurs more often in the elderly, populations with a high proportion of older people will have more cancer cases and deaths than populations with a high proportion of younger people. Because age distributions differ greatly among Florida counties and races, the impact of age is standardized in this report in order to make valid comparisons of incidence and mortality. Age-adjustment is a process to correct for the differences in cancer cases and death counts caused by differing age composition among different populations and counties. The direct method of age-adjustment is used to calculate age-adjusted incidence and mortality rates in this report. The standard population used in this report is the 2000 U.S. standard population, in accordance with the 1998 U.S. Department of Health and Human Services recommendation. The age-adjusted rate (Λ) is defined as:

$$\Lambda = \sum(\lambda_i w_i)$$

where i is the age group, λ_i is the age-specific rate for an age group, and w_i is the proportion of individuals in the 2000 U.S. standard population in that age group.

Confidence Intervals

Confidence intervals (CIs) provide a measure of the stability of a calculated incidence rate, mortality rate, or prevalence. The report uses a 95% CI for all rates and prevalence calculations. A 95% confidence interval is the range within which the true rate or prevalence will be found 95% of the time. A narrower CI indicates greater accuracy of the rate. Calculation of the 95% CI follows the methods published in *Technical Appendix from Vital Statistics of United States: Mortality, National Center for Health Statistics, 1995*.

Comparison of Rates

Age-adjusted incidence and mortality rates are compared for differences between sub-populations. In this report, one rate is significantly higher or lower than another when the 95% CI of the two rates do not overlap. This comparison is not a statistical test. See *Overlapping confidence intervals are not a statistical test* by Daniel Smith (2005) (<http://www.amstat.org/chapters/sacramento/Smithpresentation.pdf>) for the consequences of "significance" derived by the CI method.

Union County Rates

In the county tables shown in this report Union County often has "the highest" age-adjusted incidence or mortality rate for all cancers combined or for many specific cancers. The Florida Department of Corrections (DOC) maintains a hospital at the correctional facility Reception and Medical Center (RMC) in Union County. That hospital provides inpatient medical care for the inmates of DOC facilities in the 51 counties comprising three of the four state prison systems. Inmates diagnosed with cancer at this hospital have an address in Union County and are counted as Union County cases. However, the total inmate population of the DOC facilities in those 51 counties is not included in the population at risk (e.g., current Union County population). Therefore, both incidence and mortality in Union County are inflated.

Smoking-Attributable Cancer Deaths

Smoking-attributable cancer deaths were calculated using the methodology developed by the CDC. The methods involve calculation of smoking-attributable fractions (SAFs) of deaths for smoking-related cancers using sex-specific smoking prevalence and relative risk (RR) of death data for current and former smokers age 35 and older. SAFs for each disease and sex are derived from the following formula:

$$\text{SAF} = [(p_0 + p_1(\text{RR}_1) + p_2(\text{RR}_2)) - 1] / [p_0 + p_1(\text{RR}_1) + p_2(\text{RR}_2)]$$

where p_0 is the percentage of adults who never smoked, p_1 is the percentage of adult current smokers, p_2 is the percentage of adult former smokers, RR_1 is the relative risk of death for adult current smokers relative to adults who never smoked, and RR_2 is the relative risk of death for adult former smokers relative to adults who never smoked.

The smoking-attributable deaths (SAD) are then calculated by multiplying the age- and sex-specific SAFs and the number of deaths for each smoking-related cancer:

$$\text{SAD} = \text{Number of deaths} \times \text{SAF}$$

Summing across age categories provides the sex-specific estimate of SAD for each disease. Total SAD is the sum of the sex-specific SAD estimates.

The SAD estimates for each age category, stratified by sex and grouped by underlying disease category, are multiplied by the remaining life expectancy of people at the midpoint of each age range. The resulting numbers for all age categories are summed to obtain YPLL attributable to smoking. The total YPLL is the sum of the male and female YPLL within each disease category.

The details of the methodology, including the relative risks by sex and age group, can be found at the CDC web site: <http://apps.nccd.cdc.gov/sammec/methodology.asp>.

Stage of Cancer

Advanced-stage cancer is categorized in this report as regional stage cancer or distant stage cancer. Regional stage cancer is defined as cancer that has spread beyond the primary (original) site to nearby lymph nodes, organs, or tissues. Distant stage cancer refers to cancer that has spread from the primary site to distant organs or distant lymph nodes. Hematopoietic diseases, such as leukemia and multiple myeloma, are considered distant stage cancers.

In situ cancers are tumors that fulfill all the microscopic criteria for malignancy except invasion through the basement membrane. *In situ* cancers are early cancers that have not spread to neighboring tissue. Classification of these tumors is not uniform across pathologists (Schottenfeld and Fraumeni, 1996, page 159), yielding less reliable reporting of *in situ* cancers than of later stage cancers. Therefore, cancer incidence figures reported here exclude *in situ* cancers, except for bladder cancer. For all other cancer sites, local, regional, distant, and cancers of unknown stage are included in the counts and the incidence rates.

Suppression of Data

In the tables and maps, counts in cells with fewer than ten cases or deaths, and rates calculated from fewer than ten cases or deaths, are suppressed. When the number of cases or deaths is very small, the rates calculated are not stable. In addition, suppressing small numbers prevents possible identification of individuals, ensuring patient confidentiality.

Trend Interpretation (Incidence)

To maintain consistency between this and the previous annual report, the incidence data used to prepare this report does not include the new cases for any diagnosis year that were received after final closing for each year. After the final closing for any year, more than 3,500 new unduplicated cancer incidence cases are submitted to FCDS. The effect of excluding the cases diagnosed in previous diagnosis years but reported after final closing may be to suppress an increase of nearly 3% in incidence rate for all cancer combined in Florida residents. This increase may alter the slope and possibly the direction of the trends. Therefore, all incidence trends should be carefully examined and the conclusions of any analyses critically evaluated from this perspective.

Years of Potential Life Lost

Counts or rates of incidence and mortality represent part of the burden of cancer. There are indirect costs to society due to cancer, such as diminished quality of life and years of potential life lost (YPLL). YPLL is a measurement of life lost due to premature death from cancer. DOH publications, such as *Vital Statistics and Data Analysis*, use age 75 as the average life expectancy in the YPLL calculations. That standard is used in this report. For each Florida resident who died at age 74 or younger, YPLL is calculated by subtracting age at death from 75. The individual YPLL numbers are then summed to generate the total YPLL.

CLASSIFICATION

The cancer sites for which incidence data are presented are classified according to the *International Classification of Diseases for Oncology, Third Edition (ICD-O-3)*. The *International Classification of Diseases, Tenth Revision (ICD-10)*, is used to code cancer deaths, and the *International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)*, is used for classification of diagnoses in hospitals.

Rules for coding multiple tumors in one individual as a single cancer or as multiple primary cancers are specified in the *Multiple Primary and Histology Coding Rules, Surveillance, Epidemiology and End Results (SEER) Program*, National Institutes of Health, 2007. The site of origin, diagnosis dates, histology, and laterality are the major factors employed to determine if a group of tumors should be coded as single or multiple tumors. Special rules are used to define multiple primaries of the lymphatic and hematopoietic systems.

REPORTED CANCER SITES

Selected Sites

In this report, analysis is limited to the eight cancer sites with the highest number of incident cases, as well as cervical and ovarian cancer. The eight highest ranked sites – lung and bronchus, prostate, female breast, colorectal, bladder, head and neck, non-Hodgkin lymphoma, and melanoma – account for 68% of the incident cancers in Florida. Cervical cancer was included as the ninth site because of the availability of a screening test and the potential to reduce advanced-stage occurrence and early deaths from this cancer. Cancer of the cervix has the highest average years of potential life lost of the ten reported cancers. Ovarian cancer is one of the cancers addressed statewide by the Florida Comprehensive Cancer Control Program.

Cancer of the uterus is one of the highest ranked cancers in females age 40 and older. However, it is not among the sites with the highest overall incidence and has been excluded from the selected cancer sites on that basis. Uterine cancer data appear in

Tables 29 and 30, and in Figures 1, 13, 23, 24, and 25, in which comprehensive sets of cancers are displayed by age group as percentage of new cases and deaths.

Cancer of the pancreas is one of eight highest ranked cancers in terms of mortality, but not incidence. To maintain the consistency of the tables and figures, pancreatic cancer data is not presented individually in this report, except in Figures 1 and 13.

Data on melanoma in blacks are included only in Figures 1, 13, 23, 24, and 25, and as part of total counts and rates for Florida.

Other Sites

The “All Other” cancer site category used in Figures 1 and 13 includes the following types of cancer: small intestine, anus, intrahepatic bile duct, gallbladder, other biliary, retroperitoneum, peritoneum, omentum, mesentery, other digestive organs, bones and joints, soft tissue and heart, nasal cavity, accessory sinuses, pleura, trachea, mediastinum and other respiratory organs, uterus not otherwise specified (NOS), vagina, vulva, other female genital organs, testis, penis and other male genital organs, ureter and other urinary organs, eye and orbit, thymus and other endocrine glands, Hodgkin disease, mesothelioma, Kaposi’s sarcoma, and ill-defined and unspecified sites. The ICD-O-3 codes and ICD-10 codes for these and other sites used in the report are shown in Appendix D.

Tobacco-Related Cancers

The 2004 Surgeon General's Report, *Health Consequences of Smoking: A Report of the Surgeon General* at: http://www.cdc.gov/tobacco/data_statistics/sgr/2004/index.htm, presents strong scientific evidence that many cancers are associated with tobacco use. These cancers are acute myeloid leukemia, cancers of the lip, pancreas, trachea, lung and bronchus, larynx, esophagus, cervix, bladder, kidney, stomach, oral cavity, and pharynx.