

Section 28
Childhood Cancer by Site
Incidence, Survival and Mortality

The site groupings used in this section correspond to those used in the rest of the Cancer Statistics Review. While these groupings are not as appropriate for children as they are for adults, they are necessary in order to be able to compare incidence to mortality. Benign brain tumors(2004+) and myelodysplastic syndromes(2001+) are not included.

Childhood cancer is better categorized by groupings based on histologic type and site rather than primary site alone (see section 29 for Childhood Cancer by the International Classification of Childhood Cancer). For the leukemias and lymphomas, the categories are similar, but for solid tumors the categories can be quite different and the different terminology confusing. For example, in this section 'soft tissue' refers to any type of tumor that arises in connective or soft tissue in contrast to 'soft tissue sarcomas' in the other section, which refers to soft tissue sarcomas in any primary site.

Rates are presented per 100,000 children in this section. In contrast in the other childhood cancer section rates are presented per million children.

Table 28.1

Age-Adjusted SEER Cancer Incidence^a and U.S. Death^b Rates, 2012-2016

By Primary Cancer Site

All Races, Males and Females

| Site | Ages 0-14 | | | | | | Ages 0-19 | | | | | |
|-----------------------|-----------|-------|---------|-----------|-------|---------|-----------|-------|---------|-----------|-------|---------|
| | Incidence | | | Mortality | | | Incidence | | | Mortality | | |
| | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females |
| All Sites | | | | | | | | | | | | |
| All Races | 16.7 | 17.4 | 16.0 | 2.1 | 2.3 | 1.9 | 18.6 | 19.2 | 18.0 | 2.3 | 2.6 | 2.1 |
| Whites | 17.5 | 18.3 | 16.7 | 2.2 | 2.4 | 2.0 | 19.6 | 20.3 | 18.9 | 2.4 | 2.6 | 2.1 |
| Blacks | 13.0 | 13.0 | 12.9 | 2.1 | 2.1 | 2.0 | 13.9 | 14.1 | 13.8 | 2.2 | 2.4 | 2.1 |
| Bone & Joint | 0.8 | 0.9 | 0.8 | 0.1 | 0.1 | 0.1 | 1.0 | 1.1 | 0.9 | 0.2 | 0.3 | 0.2 |
| Brain & Other nervous | 3.5 | 3.7 | 3.3 | 0.7 | 0.8 | 0.6 | 3.2 | 3.4 | 3.0 | 0.7 | 0.7 | 0.6 |
| Hodgkin lymphoma | 0.6 | 0.7 | 0.5 | - | - | - | 1.2 | 1.3 | 1.2 | 0.0 | 0.0 | 0.0 |
| Kidney & Renal pelvis | 0.9 | 0.8 | 1.0 | 0.1 | 0.1 | 0.1 | 0.7 | 0.7 | 0.8 | 0.1 | 0.1 | 0.1 |
| Leukemia | 5.1 | 5.5 | 4.8 | 0.6 | 0.6 | 0.5 | 4.6 | 5.1 | 4.2 | 0.6 | 0.7 | 0.5 |
| Acute lymphocytic | 4.1 | 4.3 | 3.8 | 0.2 | 0.3 | 0.2 | 3.5 | 3.8 | 3.1 | 0.3 | 0.3 | 0.2 |
| Non-Hodgkin lymphoma | 1.2 | 1.6 | 0.7 | 0.1 | 0.1 | 0.0 | 1.4 | 1.8 | 0.9 | 0.1 | 0.1 | 0.1 |
| Soft tissue | 1.1 | 1.1 | 1.1 | 0.2 | 0.2 | 0.2 | 1.1 | 1.1 | 1.1 | 0.2 | 0.2 | 0.2 |

^a Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).
SEER 21 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, New Jersey, Georgia excluding ATL/RG, Idaho, New York and Massachusetts).

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

- Statistic could not be calculated. Rate based on less than 16 cases for the time interval.

Table 28.2

Age-Adjusted SEER Cancer Incidence Rates^a, 1975-2016

By Primary Cancer Site

All Races, Males and Females

Year of Diagnosis

| Age/Site | 1975 | 1980 | 1985 | 1990 | 1995 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| <u>Ages 0-14</u> | | | | | | | | | | | | | | | | | | | | | | |
| All Sites | | | | | | | | | | | | | | | | | | | | | | |
| All Races | 11.6 | 12.9 | 14.6 | 14.3 | 14.1 | 15.4 | 15.8 | 15.6 | 13.3 | 15.3 | 16.7 | 14.5 | 14.8 | 15.9 | 16.2 | 16.7 | 16.1 | 15.8 | 15.8 | 16.2 | 17.0 | 16.7 |
| Whites | 12.1 | 13.2 | 15.7 | 14.4 | 14.9 | 16.7 | 17.0 | 17.0 | 14.1 | 16.2 | 17.7 | 15.3 | 15.7 | 16.3 | 16.9 | 17.6 | 17.2 | 16.1 | 16.4 | 17.0 | 18.1 | 16.5 |
| Blacks | 8.6 | 11.1 | 9.9 | 12.3 | 11.8 | 12.2 | 11.1 | 11.6 | 10.3 | 13.4 | 13.0 | 11.7 | 12.0 | 15.5 | 13.2 | 13.2 | 13.2 | 15.7 | 12.3 | 12.2 | 11.7 | 13.9 |
| Bone & Joint | 0.5 | 0.7 | 0.8 | 0.7 | 0.8 | 0.6 | 0.6 | 0.7 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.9 | 0.7 | 0.7 | 0.8 | 0.7 | 0.8 | 0.8 | 0.8 |
| Brain & Other nervous | 2.3 | 2.8 | 3.0 | 3.5 | 3.4 | 3.5 | 4.0 | 3.8 | 3.1 | 3.3 | 3.4 | 3.1 | 3.4 | 3.6 | 3.8 | 4.2 | 3.5 | 3.1 | 3.6 | 3.3 | 3.8 | 2.9 |
| Hodgkin lymphoma | 0.7 | 0.5 | 0.7 | 0.7 | - | 0.6 | 0.5 | 0.5 | 0.4 | 0.5 | 0.5 | 0.6 | 0.6 | 0.7 | 0.6 | 0.5 | 0.6 | 0.7 | 0.6 | 0.5 | 0.6 | 0.4 |
| Kidney & Renal pelvis | 0.7 | 0.8 | 0.9 | 0.8 | 0.6 | 1.0 | 0.9 | 0.9 | 0.7 | 0.7 | 0.9 | 0.6 | 0.7 | 1.1 | 0.9 | 0.9 | 0.9 | 0.6 | 0.9 | 1.1 | 0.9 | 0.9 |
| Leukemia | 3.3 | 4.0 | 4.6 | 4.5 | 4.5 | 4.6 | 4.4 | 4.8 | 4.1 | 5.0 | 5.3 | 4.6 | 4.2 | 4.8 | 4.8 | 5.0 | 5.2 | 4.8 | 4.9 | 4.8 | 4.7 | 5.3 |
| Acute lymphocytic | 2.2 | 3.1 | 3.5 | 3.5 | 3.7 | 3.5 | 3.5 | 4.0 | 3.2 | 3.8 | 4.1 | 3.5 | 3.6 | 3.7 | 3.9 | 3.9 | 4.3 | 3.7 | 4.0 | 3.7 | 3.6 | 4.2 |
| Non-Hodgkin lymphoma | 1.0 | 0.7 | 0.7 | 0.8 | 0.9 | 1.0 | 1.0 | 1.0 | 0.9 | 0.8 | 1.1 | 0.9 | 1.0 | 1.1 | 1.1 | 1.3 | 0.9 | 1.4 | 1.1 | 1.3 | 1.1 | 1.3 |
| Soft tissue | 0.9 | 0.9 | 0.9 | 0.7 | 1.0 | 1.0 | 1.2 | 1.0 | 0.8 | 1.0 | 1.5 | 0.9 | 1.1 | 0.9 | 1.0 | 1.0 | 1.2 | 1.3 | 1.0 | 1.1 | 1.1 | 1.2 |
| <u>Ages 0-19</u> | | | | | | | | | | | | | | | | | | | | | | |
| All Sites | | | | | | | | | | | | | | | | | | | | | | |
| All Races | 13.0 | 14.4 | 16.0 | 15.7 | 15.8 | 16.9 | 17.1 | 17.6 | 15.8 | 16.5 | 17.9 | 15.7 | 17.0 | 17.7 | 17.9 | 17.7 | 18.4 | 17.8 | 17.6 | 18.6 | 19.3 | 18.5 |
| Whites | 13.4 | 14.9 | 17.2 | 16.0 | 16.7 | 18.3 | 18.5 | 19.5 | 16.8 | 17.8 | 19.2 | 16.7 | 18.4 | 18.5 | 19.2 | 18.6 | 20.1 | 18.6 | 18.3 | 19.7 | 20.8 | 19.0 |
| Blacks | 10.8 | 10.9 | 10.4 | 13.3 | 12.4 | 13.0 | 11.8 | 11.4 | 11.8 | 13.2 | 13.3 | 12.4 | 13.1 | 15.3 | 13.1 | 14.2 | 13.4 | 15.8 | 13.7 | 13.3 | 12.9 | 14.0 |
| Bone & Joint | 0.7 | 0.9 | 1.0 | 0.8 | 0.9 | 0.8 | 0.9 | 1.1 | 0.8 | 0.8 | 0.9 | 0.9 | 0.8 | 1.0 | 1.1 | 0.7 | 0.9 | 1.0 | 0.9 | 1.1 | 1.0 | 1.0 |
| Brain & Other nervous | 2.1 | 2.5 | 2.7 | 3.2 | 3.0 | 3.2 | 3.5 | 3.4 | 2.9 | 3.0 | 3.0 | 2.8 | 3.1 | 3.3 | 3.3 | 3.6 | 3.2 | 2.9 | 3.4 | 3.2 | 3.5 | 2.5 |
| Hodgkin lymphoma | 1.5 | 1.2 | 1.4 | 1.3 | 0.9 | 1.2 | 1.1 | 1.2 | 1.0 | 1.1 | 0.9 | 1.1 | 1.4 | 1.4 | 1.3 | 1.3 | 1.3 | 1.5 | 1.1 | 1.2 | 1.4 | 1.1 |
| Kidney & Renal pelvis | 0.5 | 0.6 | 0.7 | 0.6 | 0.5 | 0.8 | 0.7 | 0.7 | 0.6 | 0.6 | 0.8 | 0.5 | 0.6 | 0.9 | 0.7 | 0.7 | 0.8 | 0.5 | 0.7 | 0.9 | 0.8 | 0.7 |
| Leukemia | 3.0 | 3.5 | 4.0 | 3.9 | 4.0 | 4.1 | 4.0 | 4.5 | 3.8 | 4.4 | 4.7 | 4.1 | 4.0 | 4.3 | 4.1 | 4.3 | 4.6 | 4.2 | 4.3 | 4.3 | 4.3 | 4.9 |
| Acute lymphocytic | 1.9 | 2.5 | 2.9 | 2.9 | 3.1 | 3.1 | 2.9 | 3.5 | 2.9 | 3.3 | 3.4 | 3.0 | 3.2 | 3.1 | 3.1 | 3.1 | 3.7 | 3.1 | 3.3 | 3.1 | 3.1 | 3.7 |
| Non-Hodgkin lymphoma | 1.0 | 0.8 | 1.0 | 1.0 | 1.1 | 1.3 | 1.1 | 1.2 | 1.3 | 1.1 | 1.3 | 1.2 | 1.3 | 1.3 | 1.4 | 1.5 | 1.2 | 1.4 | 1.2 | 1.7 | 1.4 | 1.5 |
| Soft tissue | 0.8 | 0.9 | 0.9 | 0.8 | 1.1 | 1.2 | 1.1 | 1.0 | 0.9 | 1.0 | 1.5 | 1.0 | 1.1 | 0.9 | 1.0 | 0.9 | 1.2 | 1.2 | 1.0 | 1.2 | 1.1 | 1.3 |

^a SEER 9 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, and Atlanta).
Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

- Statistic could not be calculated. Rate based on less than 16 cases for the time interval.

Table 28.3

Age-Adjusted Cancer U.S. Death Rates^a, 1975-2016

By Primary Cancer Site

All Races, Males and Females

Year of Death

| Age/Site | 1975 | 1980 | 1985 | 1990 | 1995 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| <u>Ages 0-14</u> | | | | | | | | | | | | | | | | | | | | | | |
| All Sites | 4.9 | 4.3 | 3.6 | 3.1 | 2.7 | 2.5 | 2.5 | 2.6 | 2.5 | 2.5 | 2.4 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 | 2.1 | 2.0 | 2.1 | 2.2 |
| Bone & Joint | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Brain & Other nervous | 1.0 | 0.9 | 0.8 | 0.9 | 0.7 | 0.7 | 0.7 | 0.8 | 0.8 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.8 | 0.7 | 0.7 | 0.7 | 0.7 |
| Hodgkin lymphoma | 0.0 | 0.0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Kidney & Renal pelvis | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 |
| Leukemia | 2.1 | 1.7 | 1.4 | 1.1 | 1.0 | 0.8 | 0.8 | 0.7 | 0.8 | 0.8 | 0.7 | 0.7 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.6 | 0.6 |
| Acute lymphocytic | 1.2 | 0.9 | 0.8 | 0.5 | 0.5 | 0.4 | 0.3 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 |
| Non-Hodgkin lymphoma | 0.4 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 |
| Soft tissue | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 |
| <u>Ages 0-19</u> | | | | | | | | | | | | | | | | | | | | | | |
| All Sites | 5.1 | 4.6 | 3.8 | 3.4 | 3.0 | 2.8 | 2.8 | 2.8 | 2.7 | 2.7 | 2.7 | 2.5 | 2.5 | 2.4 | 2.3 | 2.3 | 2.3 | 2.4 | 2.3 | 2.2 | 2.3 | 2.3 |
| Bone & Joint | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Brain & Other nervous | 0.9 | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 | 0.6 | 0.7 | 0.7 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.7 | 0.7 | 0.7 | 0.6 | 0.7 |
| Hodgkin lymphoma | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | - | 0.0 | - | 0.0 | - | - | - | - | - |
| Kidney & Renal pelvis | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 |
| Leukemia | 2.0 | 1.8 | 1.4 | 1.2 | 1.0 | 0.9 | 0.9 | 0.8 | 0.8 | 0.8 | 0.8 | 0.7 | 0.8 | 0.7 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| Acute lymphocytic | 1.0 | 0.9 | 0.7 | 0.6 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.3 | 0.3 | 0.3 |
| Non-Hodgkin lymphoma | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Soft tissue | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |

^a 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).
- Statistic could not be calculated. Rate based on less than 16 cases for the time interval.

Table 28.4

Age-Adjusted Cancer U.S. Death Rates^a, 1975-2016

By Primary Cancer Site

Whites, Males and Females

Year of Death

| Age/Site | 1975 | 1980 | 1985 | 1990 | 1995 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| <u>Ages 0-14</u> | | | | | | | | | | | | | | | | | | | | | | |
| All Sites | 5.0 | 4.4 | 3.7 | 3.2 | 2.7 | 2.6 | 2.5 | 2.6 | 2.6 | 2.5 | 2.5 | 2.3 | 2.4 | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.1 | 2.2 | 2.2 |
| Bone & Joint | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 |
| Brain & Other nervous | 1.0 | 0.9 | 0.9 | 0.9 | 0.7 | 0.8 | 0.7 | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 | 0.8 | 0.8 | 0.7 | 0.7 | 0.7 | 0.8 | 0.8 | 0.7 | 0.7 | 0.7 |
| Hodgkin lymphoma | 0.0 | 0.0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Kidney & Renal pelvis | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 |
| Leukemia | 2.3 | 1.8 | 1.4 | 1.1 | 1.0 | 0.9 | 0.8 | 0.8 | 0.9 | 0.8 | 0.7 | 0.7 | 0.8 | 0.7 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.5 | 0.6 | 0.6 |
| Acute lymphocytic | 1.2 | 1.0 | 0.8 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.5 | 0.4 | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.3 |
| Non-Hodgkin lymphoma | 0.3 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 |
| Soft tissue | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 |
| <u>Ages 0-19</u> | | | | | | | | | | | | | | | | | | | | | | |
| All Sites | 5.3 | 4.7 | 3.9 | 3.5 | 2.9 | 2.9 | 2.8 | 2.8 | 2.8 | 2.8 | 2.7 | 2.5 | 2.6 | 2.5 | 2.4 | 2.3 | 2.4 | 2.5 | 2.4 | 2.3 | 2.3 | 2.4 |
| Bone & Joint | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 |
| Brain & Other nervous | 0.9 | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.6 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 |
| Hodgkin lymphoma | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | - | - | - | - | - | - | - |
| Kidney & Renal pelvis | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 |
| Leukemia | 2.1 | 1.8 | 1.4 | 1.2 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 | 0.8 | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 |
| Acute lymphocytic | 1.1 | 1.0 | 0.7 | 0.6 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.3 | 0.3 | 0.3 |
| Non-Hodgkin lymphoma | 0.4 | 0.3 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Soft tissue | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |

^a 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).
 - Statistic could not be calculated. Rate based on less than 16 cases for the time interval.

Table 28.5

Age-Adjusted Cancer U.S. Death Rates^a, 1975-2016

By Primary Cancer Site

Blacks, Males and Females

Year of Death

| Age/Site | 1975 | 1980 | 1985 | 1990 | 1995 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| <u>Ages 0-14</u> | | | | | | | | | | | | | | | | | | | | | | |
| All Sites | 4.5 | 3.8 | 3.3 | 3.0 | 2.9 | 2.3 | 2.3 | 2.6 | 2.4 | 2.4 | 2.5 | 2.2 | 2.1 | 2.2 | 2.0 | 2.0 | 2.0 | 2.2 | 1.9 | 2.1 | 1.9 | 2.3 |
| Bone & Joint | 0.3 | - | - | - | - | - | - | - | - | - | 0.2 | - | - | - | - | - | - | - | - | 0.2 | - | - |
| Brain & Other nervous | 0.9 | 0.9 | 0.6 | 0.7 | 0.8 | 0.7 | 0.5 | 0.8 | 0.7 | 0.7 | 0.7 | 0.7 | 0.5 | 0.6 | 0.6 | 0.6 | 0.7 | 0.7 | 0.6 | 0.7 | 0.7 | 0.7 |
| Hodgkin lymphoma | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Kidney & Renal pelvis | - | - | 0.2 | - | - | - | 0.2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Leukemia | 1.6 | 1.2 | 1.2 | 0.9 | 1.0 | 0.5 | 0.8 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5 | 0.4 | 0.6 | 0.5 | 0.5 | 0.4 | 0.6 |
| Acute lymphocytic | 0.8 | 0.6 | 0.7 | 0.5 | 0.4 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | - | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | - |
| Non-Hodgkin lymphoma | 0.4 | 0.2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Soft tissue | - | - | - | 0.3 | - | - | 0.2 | 0.2 | - | 0.2 | - | - | - | 0.2 | 0.2 | - | - | 0.2 | 0.2 | - | 0.2 | 0.2 |
| <u>Ages 0-19</u> | | | | | | | | | | | | | | | | | | | | | | |
| All Sites | 4.8 | 4.2 | 3.5 | 3.4 | 3.1 | 2.8 | 2.6 | 2.8 | 2.5 | 2.8 | 2.6 | 2.4 | 2.3 | 2.4 | 2.3 | 2.2 | 2.1 | 2.3 | 2.2 | 2.3 | 2.1 | 2.4 |
| Bone & Joint | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Brain & Other nervous | 0.9 | 0.8 | 0.6 | 0.7 | 0.7 | 0.7 | 0.5 | 0.8 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.7 |
| Hodgkin lymphoma | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Kidney & Renal pelvis | 0.2 | - | 0.2 | - | - | 0.1 | 0.2 | - | - | - | - | - | - | - | - | 0.1 | - | - | - | - | - | 0.2 |
| Leukemia | 1.6 | 1.4 | 1.1 | 1.0 | 1.1 | 0.8 | 0.8 | 0.7 | 0.6 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.6 |
| Acute lymphocytic | 0.7 | 0.6 | 0.6 | 0.5 | 0.5 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Non-Hodgkin lymphoma | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | - | - | 0.1 | 0.1 | - | - | - | - | 0.1 | - |
| Soft tissue | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |

^a 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).
 - Statistic could not be calculated. Rate based on less than 16 cases for the time interval.

Table 28.6

Trends in SEER Incidence^a Using the Joinpoint Regression Program,
1975-2016 With up to Five Joinpoints By Primary Cancer Site And Age At Diagnosis
Males and Females

| | JP Trend 1 | | JP Trend 2 | | JP Trend 3 | | JP Trend 4 | | JP Trend 5 | | JP Trend 6 | | AAPC ^b |
|------------------------------|------------|-------|------------|-----|------------|-----|------------|-----|------------|-----|------------|-----|-------------------|
| | Years | APC | Years | APC | Years | APC | Years | APC | Years | APC | Years | APC | 2012-16 |
| <u>Ages 0-14</u> | | | | | | | | | | | | | |
| All Sites | | | | | | | | | | | | | |
| All Races | 1975-16 | 0.6* | | | | | | | | | | | 0.6* |
| White | 1975-16 | 0.7* | | | | | | | | | | | 0.7* |
| Black | 1975-16 | 0.6* | | | | | | | | | | | 0.6* |
| Bone & Joint | 1975-16 | 0.5* | | | | | | | | | | | 0.5* |
| Brain & Other nervous system | 1975-90 | 2.1* | 1990-16 | 0.2 | | | | | | | | | 0.2 |
| Hodgkin lymphoma | 1975-16 | -0.6* | | | | | | | | | | | -0.6* |
| Kidney & Renal pelvis | 1975-16 | 0.0 | | | | | | | | | | | 0.0 |
| Leukemia | 1975-16 | 0.7* | | | | | | | | | | | 0.7* |
| Acute lymphocytic leukemia | 1975-16 | 0.7* | | | | | | | | | | | 0.7* |
| Non-Hodgkin lymphoma | 1975-16 | 1.0* | | | | | | | | | | | 1.0* |
| Soft tissue | 1975-16 | 1.1* | | | | | | | | | | | 1.1* |
| <u>Ages 0-19</u> | | | | | | | | | | | | | |
| All Sites | | | | | | | | | | | | | |
| All Races | 1975-16 | 0.7* | | | | | | | | | | | 0.7* |
| White | 1975-16 | 0.7* | | | | | | | | | | | 0.7* |
| Black | 1975-16 | 0.5* | | | | | | | | | | | 0.5* |
| Bone & Joint | 1975-16 | 0.4* | | | | | | | | | | | 0.4* |
| Brain & Other nervous system | 1975-89 | 2.0* | 1989-16 | 0.2 | | | | | | | | | 0.2 |
| Hodgkin lymphoma | 1975-16 | -0.5* | | | | | | | | | | | -0.5* |
| Kidney & Renal pelvis | 1975-16 | 0.1 | | | | | | | | | | | 0.1 |
| Leukemia | 1975-16 | 0.7* | | | | | | | | | | | 0.7* |
| Acute lymphocytic leukemia | 1975-16 | 0.8* | | | | | | | | | | | 0.8* |
| Non-Hodgkin lymphoma | 1975-16 | 1.2* | | | | | | | | | | | 1.2* |
| Soft tissue | 1975-16 | 1.0* | | | | | | | | | | | 1.0* |

Joinpoint Regression Program Version 4.7, February 2019, National Cancer Institute. (<https://surveillance.cancer.gov/joinpoint/>).

The APC is the Annual Percent Change based on rates age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

Trends are from the SEER 9 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, and Atlanta).

The AAPC is the Average Annual Percent Change and is based on the APCs calculated by Joinpoint.

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

- Joinpoint regression line analysis could not be performed on data series.

^a

^b

*

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Table 28.7

Trends in U.S. Mortality^a Using the Joinpoint Regression Program,
1975-2016 With up to Five Joinpoints By Primary Cancer Site and Age at Death
All Races, Both Sexes

| | JP Trend 1 | | JP Trend 2 | | JP Trend 3 | | JP Trend 4 | | JP Trend 5 | | JP Trend 6 | | AAPC ^b |
|------------------------------|------------|-------|------------|-------|------------|-------|------------|------|------------|-------|------------|-----|-------------------|
| | Years | APC | Years | APC | Years | APC | Years | APC | Years | APC | Years | APC | 2012-16 |
| <u>Ages 0-14</u> | | | | | | | | | | | | | |
| All Sites | 1975-96 | -2.9* | 1996-16 | -1.3* | | | | | | | | | -1.3* |
| Bone & Joint | 1975-89 | -3.7* | 1989-16 | -0.2 | | | | | | | | | -0.2 |
| Brain & Other nervous system | 1975-99 | -1.2* | 1999-16 | -0.2 | | | | | | | | | -0.2 |
| Hodgkin lymphoma | - | - | | | | | | | | | | | - |
| Kidney & Renal pelvis | 1975-16 | -2.7* | | | | | | | | | | | -2.7* |
| Leukemia | 1975-90 | -4.4* | 1990-16 | -2.8* | | | | | | | | | -2.8* |
| Acute lymphocytic leukemia | 1975-93 | -5.3* | 1993-16 | -3.1* | | | | | | | | | -3.1* |
| Non-Hodgkin lymphoma | 1975-16 | -4.9* | | | | | | | | | | | -4.9* |
| Soft tissue | 1975-79 | 10.4 | 1979-00 | -2.2* | 2000-16 | 1.3* | | | | | | | 1.3* |
| <u>Ages 0-19</u> | | | | | | | | | | | | | |
| All Sites | 1975-98 | -2.7* | 1998-03 | 0.0 | 2003-09 | -2.8* | 2009-16 | -0.4 | | | | | -0.4 |
| Bone & Joint | 1975-89 | -3.2* | 1989-16 | -0.1 | | | | | | | | | -0.1 |
| Brain & Other nervous system | 1975-08 | -1.0* | 2008-16 | 0.9 | | | | | | | | | 0.9 |
| Hodgkin lymphoma | 1975-02 | -4.5* | 2002-16 | -8.5* | | | | | | | | | -8.5* |
| Kidney & Renal pelvis | 1975-16 | -2.4* | | | | | | | | | | | -2.4* |
| Leukemia | 1975-89 | -3.9* | 1989-92 | -0.8 | 1992-98 | -4.9* | 1998-01 | 0.7 | 2001-16 | -3.0* | | | -3.0* |
| Acute lymphocytic leukemia | 1975-82 | -3.0* | 1982-88 | -6.4* | 1988-16 | -3.1* | | | | | | | -3.1* |
| Non-Hodgkin lymphoma | 1975-16 | -4.1* | | | | | | | | | | | -4.1* |
| Soft tissue | 1975-79 | 9.9* | 1979-01 | -1.3* | 2001-16 | 0.6 | | | | | | | 0.6 |

Joinpoint Regression Program Version 4.7, February 2019, National Cancer Institute. (<https://surveillance.cancer.gov/joinpoint/>).
^a The APC is the Annual Percent Change based on rates age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).
^b Trends are from US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention.
^{*} The AAPC is the Average Annual Percent Change and is based on the APCs calculated by Joinpoint over the time range of 1975-2016.
⁻ The APC/AAPC is significantly different from zero (p<.05).
 - Joinpoint regression line analysis could not be performed on data series.

Table 28.7 - continued

Trends in U.S. Mortality^a Using the Joinpoint Regression Program,
1975-2016 With up to Five Joinpoints By Primary Cancer Site and Age at Death
White, Both Sexes

| | JP Trend 1 | | JP Trend 2 | | JP Trend 3 | | JP Trend 4 | | JP Trend 5 | | JP Trend 6 | | AAPC ^b |
|------------------------------|------------|-------|------------|-------|------------|-------|------------|-----|------------|-------|------------|-----|-------------------|
| | Years | APC | Years | APC | Years | APC | Years | APC | Years | APC | Years | APC | 2012-16 |
| <u>Ages 0-14</u> | | | | | | | | | | | | | |
| All Sites | 1975-96 | -3.0* | 1996-16 | -1.2* | | | | | | | | | -1.2* |
| Bone & Joint | 1975-91 | -3.0* | 1991-16 | 0.0 | | | | | | | | | 0.0 |
| Brain & Other nervous system | 1975-99 | -1.1* | 1999-16 | -0.2 | | | | | | | | | -0.2 |
| Hodgkin lymphoma | - | - | | | | | | | | | | | - |
| Kidney & Renal pelvis | 1975-16 | -2.6* | | | | | | | | | | | -2.6* |
| Leukemia | 1975-90 | -4.5* | 1990-16 | -2.8* | | | | | | | | | -2.8* |
| Acute lymphocytic leukemia | 1975-90 | -5.6* | 1990-16 | -3.1* | | | | | | | | | -3.1* |
| Non-Hodgkin lymphoma | 1975-16 | -5.0* | | | | | | | | | | | -5.0* |
| Soft tissue | 1975-79 | 12.9* | 1979-95 | -2.9* | 1995-16 | 0.8* | | | | | | | 0.8* |
| <u>Ages 0-19</u> | | | | | | | | | | | | | |
| All Sites | 1975-96 | -2.7* | 1996-16 | -1.3* | | | | | | | | | -1.3* |
| Bone & Joint | 1975-90 | -2.7* | 1990-16 | 0.0 | | | | | | | | | 0.0 |
| Brain & Other nervous system | 1975-00 | -1.1* | 2000-16 | -0.2 | | | | | | | | | -0.2 |
| Hodgkin lymphoma | 1975-16 | -5.1* | | | | | | | | | | | -5.1* |
| Kidney & Renal pelvis | 1975-16 | -2.5* | | | | | | | | | | | -2.5* |
| Leukemia | 1975-88 | -4.1* | 1988-16 | -2.7* | | | | | | | | | -2.7* |
| Acute lymphocytic leukemia | 1975-82 | -3.2* | 1982-86 | -7.1* | 1986-99 | -3.7* | 1999-03 | 1.0 | 2003-14 | -4.7* | 2014-16 | 8.2 | 1.5 |
| Non-Hodgkin lymphoma | 1975-16 | -4.3* | | | | | | | | | | | -4.3* |
| Soft tissue | 1975-79 | 11.6* | 1979-96 | -1.6* | 1996-16 | 0.3 | | | | | | | 0.3 |

Joinpoint Regression Program Version 4.7, February 2019, National Cancer Institute. (<https://surveillance.cancer.gov/joinpoint/>).
The APC is the Annual Percent Change based on rates age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

^a Trends are from US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention.

^b The AAPC is the Average Annual Percent Change and is based on the APCs calculated by Joinpoint over the time range of 1975-2016.

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

- Joinpoint regression line analysis could not be performed on data series.

Table 28.7 - continued

Trends in U.S. Mortality^a Using the Joinpoint Regression Program,
1975-2016 With up to Five Joinpoints By Primary Cancer Site and Age at Death
Black, Both Sexes

| | JP Trend 1 | | JP Trend 2 | | JP Trend 3 | | JP Trend 4 | | JP Trend 5 | | JP Trend 6 | | AAPC ^b |
|------------------------------|------------|--------|------------|-------|------------|------|------------|-----|------------|-----|------------|-----|-------------------|
| | Years | APC | Years | APC | Years | APC | Years | APC | Years | APC | Years | APC | 2012-16 |
| <u>Ages 0-14</u> | | | | | | | | | | | | | |
| All Sites | 1975-97 | -2.6* | 1997-16 | -1.2* | | | | | | | | | -1.2* |
| Bone & Joint | 1975-81 | -10.4* | 1981-16 | -0.6 | | | | | | | | | -0.6 |
| Brain & Other nervous system | 1975-16 | -0.9* | | | | | | | | | | | -0.9* |
| Hodgkin lymphoma | - | - | | | | | | | | | | | - |
| Kidney & Renal pelvis | 1975-16 | -2.6* | | | | | | | | | | | -2.6* |
| Leukemia | 1975-16 | -3.1* | | | | | | | | | | | -3.1* |
| Acute lymphocytic leukemia | 1975-84 | -1.1 | 1984-99 | -6.8* | 1999-16 | -1.8 | | | | | | | -1.8 |
| Non-Hodgkin lymphoma | 1975-16 | -4.0* | | | | | | | | | | | -4.0* |
| Soft tissue | 1975-16 | -0.8* | | | | | | | | | | | -0.8* |
| <u>Ages 0-19</u> | | | | | | | | | | | | | |
| All Sites | 1975-11 | -2.1* | 2011-16 | 0.8 | | | | | | | | | 0.8 |
| Bone & Joint | 1975-84 | -6.7* | 1984-16 | -0.3 | | | | | | | | | -0.3 |
| Brain & Other nervous system | 1975-16 | -0.9* | | | | | | | | | | | -0.9* |
| Hodgkin lymphoma | - | - | | | | | | | | | | | - |
| Kidney & Renal pelvis | 1975-16 | -2.2* | | | | | | | | | | | -2.2* |
| Leukemia | 1975-16 | -2.8* | | | | | | | | | | | -2.8* |
| Acute lymphocytic leukemia | 1975-16 | -3.9* | | | | | | | | | | | -3.9* |
| Non-Hodgkin lymphoma | 1975-16 | -3.3* | | | | | | | | | | | -3.3* |
| Soft tissue | 1975-16 | -0.7* | | | | | | | | | | | -0.7* |

Joinpoint Regression Program Version 4.7, February 2019, National Cancer Institute. (<https://surveillance.cancer.gov/joinpoint/>).
The APC is the Annual Percent Change based on rates age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

^a Trends are from US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention.

^b The AAPC is the Average Annual Percent Change and is based on the APCs calculated by Joinpoint over the time range of 1975-2016.

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

- Joinpoint regression line analysis could not be performed on data series.

Table 28.8

5-Year Relative Survival (Percent)
By Selected Primary Cancer Site and Year of Diagnosis

All Races, Males and Females

| Site | Ages 0-14 | | | | | | | | | | | |
|----------------------------|-------------------|---------------|-------------------|-------------------|-------------------|---------------|-------------------|---------------|---------------|---------------|---------------|-------------------|
| | 1975- 1977 | 1978- 1980 | 1981- 1983 | 1984- 1986 | 1987- 1989 | 1990- 1992 | 1993- 1995 | 1996- 1998 | 1999- 2001 | 2002- 2004 | 2005- 2008 | 2009- 2015 |
| All Sites | | | | | | | | | | | | |
| All Races | 58.0 | 62.4 | 67.1 | 68.1 | 71.7 | 75.8 | 77.4 | 79.3 | 80.8 | 82.9 | 83.7 | 85.3 ^c |
| Whites | 57.9 | 63.1 | 67.8 | 69.9 | 72.5 | 76.8 | 78.3 | 80.6 | 81.8 | 84.8 | 85.1 | 86.1 ^c |
| Blacks | 57.3 | 57.7 | 62.2 | 56.6 | 65.3 | 70.8 | 73.3 | 75.6 | 74.1 | 73.5 | 78.6 | 82.3 ^c |
| Bone & Joint | 49.9 ^d | 47.8 | 56.8 ^d | 57.3 ^d | 66.8 ^d | 67.8 | 74.2 | 70.3 | 69.3 | 77.6 | 79.1 | 75.9 ^c |
| Brain & ONS | 57.2 | 57.9 | 56.9 | 61.8 | 64.4 | 64.5 | 70.7 | 75.4 | 74.3 | 75.5 | 75.2 | 75.8 ^c |
| Hodgkin lymphoma | 80.9 | 86.8 | 88.1 | 89.9 | 87.1 | 96.8 | 94.6 | 96.1 | 94.4 | 97.5 | 97.8 | 99.1 ^c |
| Leukemia | 49.7 | 58.0 | 63.0 | 63.6 | 71.0 | 75.5 | 76.0 | 80.3 | 82.8 | 86.1 | 87.0 | 88.0 ^c |
| Acute lymphocytic | 57.2 | 65.7 | 71.3 | 72.2 | 77.7 | 83.1 | 83.9 | 87.0 | 88.5 | 91.9 | 91.2 | 91.9 ^c |
| Acute myeloid | 18.8 | 25.8 | 27.8 ^d | 30.6 ^d | 37.1 ^d | 42.2 | 40.6 ^d | 48.7 | 58.6 | 61.5 | 66.1 | 68.7 ^c |
| Neuroblastoma ^a | 52.5 | 56.6 | 54.8 | 52.3 | 63.2 | 76.0 | 66.6 | 66.5 | 72.3 | 73.8 | 73.2 | 80.8 ^c |
| Non-Hodgkin lymphoma | 43.2 | 52.7 | 67.0 | 69.8 | 70.8 | 76.9 | 80.7 | 83.2 | 89.8 | 84.6 | 87.3 | 90.9 ^c |
| Soft tissue | 61.3 | 74.2 | 69.2 | 73.0 | 66.4 | 79.8 | 76.7 | 70.6 | 76.9 | 84.8 | 80.9 | 82.7 ^c |
| Wilms' tumor ^b | 73.1 | 79.0 | 86.7 | 90.7 | 92.2 | 91.9 | 91.7 | 91.6 | 93.8 | 89.4 | 90.9 | 96.4 ^c |
| Ages 0-19 | | | | | | | | | | | | |
| Site | 1975- 1977 | 1978- 1980 | 1981- 1983 | 1984- 1986 | 1987- 1989 | 1990- 1992 | 1993- 1995 | 1996- 1998 | 1999- 2001 | 2002- 2004 | 2005- 2008 | 2009- 2015 |
| All Sites | | | | | | | | | | | | |
| All Races | 61.5 | 65.3 | 68.4 | 70.6 | 73.5 | 76.3 | 77.8 | 79.8 | 80.4 | 82.6 | 84.0 | 85.7 ^c |
| Whites | 61.3 | 65.9 | 69.3 | 72.5 | 75.0 | 77.6 | 78.5 | 81.2 | 81.4 | 84.2 | 85.2 | 86.6 ^c |
| Blacks | 59.4 | 60.3 | 62.5 | 58.3 | 64.3 | 68.7 | 74.2 | 73.9 | 74.8 | 73.3 | 78.3 | 81.3 ^c |
| Bone & Joint | 50.4 | 48.1 | 51.2 | 56.1 | 64.0 | 69.0 | 69.0 | 67.0 | 66.3 | 73.5 | 74.5 | 71.9 ^c |
| Brain & ONS | 59.1 | 58.3 | 58.5 | 63.9 | 66.0 | 66.5 | 71.5 | 76.2 | 74.7 | 75.5 | 75.3 | 76.3 ^c |
| Hodgkin lymphoma | 86.2 | 88.3 | 85.5 | 90.6 | 88.7 | 94.3 | 93.9 | 95.2 | 95.1 | 96.3 | 97.7 | 97.6 ^c |
| Leukemia | 44.9 | 53.2 | 58.1 | 60.3 | 67.6 | 71.3 | 71.9 | 76.6 | 77.7 | 81.9 | 85.4 | 85.6 ^c |
| Acute lymphocytic | 53.8 | 61.9 | 67.1 | 69.9 | 75.0 | 79.8 | 81.5 | 84.4 | 84.8 | 88.1 | 90.1 | 90.3 ^c |
| Acute myeloid | 18.7 | 26.2 | 27.2 | 31.4 | 37.6 | 41.9 | 38.6 | 46.3 | 51.9 | 59.8 | 65.7 | 66.8 ^c |
| Neuroblastoma ^a | 53.1 | 56.7 | 53.7 | 52.5 | 61.8 | 75.7 | 66.6 | 66.7 | 72.1 | 73.5 | 73.3 | 79.8 ^c |
| Non-Hodgkin lymphoma | 44.6 | 53.4 | 63.7 | 67.6 | 70.4 | 72.7 | 78.0 | 81.1 | 84.3 | 84.5 | 84.7 | 90.3 ^c |
| Soft tissue | 64.8 | 68.9 | 68.2 | 72.7 | 68.0 | 69.7 | 73.8 | 72.4 | 72.5 | 77.0 | 78.8 | 79.1 ^c |
| Wilms' tumor ^b | 72.6 | 78.4 | 86.8 | 91.0 | 92.2 | 91.3 | 91.8 | 91.6 | 93.8 | 89.5 | 90.6 | 96.4 ^c |

Source: SEER 9 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, and Atlanta).

Based on follow-up of patients into 2016. [Expected survival rates](#) are derived from the U.S. Annual Life Tables.

Note: Neuroblastoma and Wilms' tumor are not mutually exclusive from the other tumors presented in table.

^a Neuroblastoma is defined as histologies 9490-9509.

^b Wilms' tumor is defined as histologies 8959-8960.

^c The difference between 1975-1977 and 2009-2015 is statistically significant ($p < .05$).

^d The standard error is between 5 and 10 percentage points.

^e The standard error is greater than 10 percentage points.

- Statistic could not be calculated due to fewer than 25 cases during the time period.

Table 28.9

Childhood Cancer
SEER Incidence Rates, U.S. Death Rates and 5-Year Relative Survival Percentages
For Top Cancer Sites^f By 5-Year Age Groups
All Races, Males and Females

| Age/Site | SEER Incidence ^a | | | | | US Mortality ^b | | | | | 5-year Relative Survival ^a | |
|------------------------------|-----------------------------|-------------------|------------------|------------------|--------------------|---------------------------|-------------------|------------------|------------------|--------------------|---------------------------------------|-------------------|
| | 2012-2016 Num Cases | 2012-2016 Rate | 1975-2016 APC | 1975-1995 APC | 1996-2016 APC | 2012-2016 Num Deaths | 2012-2016 Rate | 1975-2016 APC | 1975-1995 APC | 1996-2016 APC | 1975-1978 | 2009-2015 |
| <u>Ages 0-4</u> | | | | | | | | | | | | |
| All Sites | 8,174 | 22.2 | 0.7* | 1.0* | 0.5* [@] | 2,071 | 2.1 | -2.4* | -2.9* | -1.4* [#] | 57.2 | 85.3 ^c |
| Soft tissue | 600 | 1.6 | 1.2* | 0.4 | 1.6 | 145 | 0.1 | -1.2* | -1.6* | 0.9 [#] | 62.0 ^d | 85.5 ^c |
| Kidney and Renal pelvis | 700 | 1.9 | -0.1 | 0.3 | -0.5 | 68 | 0.1 | - | -5.3* | - | 71.9 | 95.3 ^c |
| Eye and Orbit | 507 | 1.4 | 0.2 | 1.5 | -0.3 [@] | 24 | 0.0 | - | - | - | 87.2 ^d | 95.2 |
| Brain and Other nervous | 1,545 | 4.2 | 1.0* | 2.3* | 0.6 [#] | 556 | 0.6 | -1.3* | -1.1* | -1.3* | 52.0 | 73.5 ^c |
| Other endocrine ^g | 566 | 1.5 | - | - | - | 303 | 0.3 | - | - | - | 35.7 ^d | 77.7 ^c |
| Leukemia | 2,955 | 8.0 | 0.7* | 0.8* | 0.4 | 658 | 0.7 | -2.7* | -3.6* | -1.6* [#] | 55.4 | 89.1 ^c |
| Acute lymphocytic | 2,367 | 6.4 | 0.7* | 1.0* | 0.4 | 208 | 0.2 | -3.8* | -5.7* | -2.1* [#] | 63.2 | 94.1 ^c |
| <u>Ages 5-9</u> | | | | | | | | | | | | |
| All Sites | 4,866 | 13.0 | 0.5* | 0.3 | 0.7* | 2,209 | 2.2 | -2.3* | -3.3* | -1.1* [#] | 58.4 | 85.3 ^c |
| Brain and Other nervous | 1,311 | 3.5 | 0.5* | 1.0 | 0.6 | 944 | 0.9 | -0.4* | -0.7* | 0.4 [#] | 59.1 | 72.6 ^c |
| Leukemia | 1,597 | 4.3 | 0.4* | 0.7 | 0.1 | 475 | 0.5 | -4.5* | -5.2* | -3.1* [#] | 51.0 | 90.8 ^c |
| Acute lymphocytic | 1,365 | 3.6 | 0.6* | 1.1 | 0.1 | 234 | 0.2 | -5.1* | -6.2* | -3.5* [#] | 54.8 | 91.2 ^c |
| <u>Ages 10-14</u> | | | | | | | | | | | | |
| All Sites | 5,727 | 15.2 | 0.7* | 0.9* | 0.8* | 2,195 | 2.1 | -1.9* | -2.5* | -1.3* [#] | 58.7 | 85.3 ^c |
| Bone and Joint | 581 | 1.5 | 0.3 | 1.1 | 1.1 | 283 | 0.3 | -1.1* | -2.4* | 0.2 [#] | 52.8 ^d | 71.3 ^c |
| Brain and Other nervous | 1,068 | 2.8 | 0.6* | 1.8* | -0.3 [#] | 689 | 0.7 | -0.9* | -1.7* | -0.3 [#] | 59.5 | 84.1 ^c |
| Hodgkin lymphoma | 477 | 1.3 | -0.5* | -1.2* | 0.0 | - | - | - | - | - | 79.0 | 99.4 ^c |
| Leukemia | 1,242 | 3.3 | 0.8* | 0.6 | 1.2* | 585 | 0.6 | -2.9* | -3.1* | -2.9* | 34.0 | 81.3 ^c |
| Acute lymphocytic | 856 | 2.3 | 1.0* | 1.3 | 1.1* | 284 | 0.3 | -3.3* | -3.4* | -3.0* | 43.0 ^d | 86.1 ^c |
| <u>Ages 15-19</u> | | | | | | | | | | | | |
| All Sites | 9,444 | 24.2 | 0.7* | 0.9* | 1.1* | 3,046 | 2.9 | -1.9* | -2.1* | -1.6* [#] | 67.8 | 86.4 ^c |
| Bone and Joint | 617 | 1.6 | 0.2 | 0.9 | -0.1 | 545 | 0.5 | -0.9* | -2.3* | -0.3 [#] | 51.0 ^d | 65.6 ^c |
| Melanoma of the skin | 362 | 0.9 | 0.4 | 1.7 | -1.8* [#] | 25 | 0.0 | - | - | - | 76.2 ^d | 98.0 ^c |
| Testis(males) | 763 | 3.8 | 1.1* | 1.8* | 0.7 | 33 | 0.1 | - | - | - | 66.0 ^d | 95.1 ^c |
| Brain and Other nervous | 923 | 2.4 | 0.4 | 1.1 | 0.7 | 584 | 0.6 | -1.0* | -1.1* | -0.2 [@] | 65.3 | 77.9 ^c |
| Thyroid | 1,328 | 3.4 | 2.6* | 1.1 | 4.6* [#] | - | - | - | - | - | 100.0 | 99.8 |
| Hodgkin lymphoma | 1,275 | 3.3 | -0.5* | -0.3 | 0.1 | 33 | 0.0 | - | -4.0* | - | 89.0 | 96.8 ^c |
| Non-Hodgkin lymphoma | 812 | 2.1 | 1.5* | 2.5* | 1.3 | 152 | 0.1 | -3.1* | -2.4* | -4.1* [#] | 47.7 ^d | 89.2 ^c |
| Leukemia | 1,229 | 3.1 | 0.9* | 0.7 | 1.3 | 770 | 0.7 | -2.3* | -2.0* | -2.6* [@] | 23.8 | 71.5 ^c |
| Acute lymphocytic | 691 | 1.8 | 1.2* | 1.1 | 1.6 | 321 | 0.3 | -2.4* | -1.7* | -2.8* [@] | 30.0 ^d | 75.9 ^c |

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

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

^a Incidence data used in calculating the rates are from the SEER 21 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, New Jersey, Georgia excluding ATL/RG, Idaho, New York and Massachusetts). Incidence data used in calculating the trends and survival estimates are from the 9 SEER areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, and Atlanta).

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

^c The difference between 1975-1978 and 2009-2015 is statistically significant (p<.05).

^d The standard error is between 5 and 10 percentage points.

^e The standard error is greater than 10 percentage points.

^f Sites were chosen based on more than 100 SEER incidence cases between 2012-2016.

^g APCs suppressed because of inconsistent classification across ICD: ICD-8 (1975-1978), ICD-9 (1979-1998), ICD-10 (1999-2008).

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

The APC for 1996-2016 is significantly different from the APC for 1975-1995 (p<.05).

@ The APC for 1996-2016 is significantly different from the APC for 1975-1995 (p<.10).

- Statistic not shown. Age-adjusted 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. Survival rate based on less than 25 cases for the time interval.

Table 28.10
All Cancer Sites (Invasive)
SEER^a Relative Survival (Percent)
By Year of Diagnosis

All Races, Males and Females

Ages 0-14

Year of Diagnosis

| | 1975- 1979 | 1980- 1984 | 1985- 1989 | 1990- 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---------------|---------------|---------------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Survival Time | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-year | 80.5 | 84.6 | 86.7 | 89.6 | 90.4 | 92.6 | 90.9 | 90.7 | 91.1 | 92.5 | 92.0 | 91.5 | 93.4 | 92.7 | 92.4 | 94.0 | 92.3 | 92.5 | 92.3 | 93.1 | 95.0 | 93.8 | 93.6 | 92.3 | 93.1 |
| 2-year | 70.9 | 75.5 | 78.4 | 83.0 | 84.6 | 86.4 | 84.8 | 84.4 | 85.4 | 86.0 | 86.9 | 87.3 | 89.3 | 88.3 | 87.8 | 89.3 | 87.8 | 88.1 | 86.5 | 89.8 | 91.1 | 89.2 | 89.2 | 88.3 | |
| 3-year | 65.3 | 70.7 | 74.3 | 79.7 | 81.0 | 83.6 | 82.4 | 81.6 | 82.9 | 83.3 | 84.2 | 84.0 | 86.2 | 85.4 | 84.8 | 87.9 | 86.2 | 86.1 | 84.0 | 87.2 | 89.7 | 87.6 | 87.9 | | |
| 4-year | 62.1 | 67.6 | 71.9 | 77.6 | 79.0 | 80.8 | 80.6 | 78.9 | 81.5 | 81.7 | 82.6 | 82.4 | 85.3 | 83.9 | 83.3 | 86.5 | 84.9 | 84.3 | 83.1 | 86.2 | 88.3 | 86.6 | | | |
| 5-year | 59.9 | 65.9 | 70.7 | 76.5 | 77.4 | 80.4 | 79.3 | 78.1 | 79.7 | 80.8 | 81.9 | 81.4 | 84.2 | 83.1 | 82.0 | 85.8 | 83.8 | 83.5 | 82.7 | 85.5 | 87.6 | | | | |
| 6-year | 58.2 | 64.7 | 69.7 | 75.8 | 76.4 | 79.7 | 78.5 | 76.7 | 79.2 | 79.6 | 81.1 | 80.6 | 83.8 | 82.8 | 81.1 | 85.1 | 82.4 | 83.1 | 81.9 | 85.3 | | | | | |
| 7-year | 57.2 | 63.9 | 68.8 | 75.2 | 75.9 | 79.1 | 78.1 | 76.2 | 78.5 | 79.0 | 80.1 | 80.1 | 83.3 | 82.1 | 80.7 | 84.8 | 81.9 | 83.0 | 81.5 | | | | | | |
| 8-year | 56.5 | 63.2 | 68.2 | 74.8 | 75.0 | 78.7 | 77.0 | 75.8 | 78.2 | 78.4 | 80.0 | 79.6 | 82.6 | 81.4 | 80.1 | 83.9 | 81.0 | 82.5 | | | | | | | |
| 9-year | 56.2 | 62.6 | 67.8 | 74.3 | 74.7 | 78.3 | 76.9 | 75.2 | 77.6 | 78.4 | 79.6 | 79.4 | 82.0 | 81.1 | 79.7 | 83.4 | 80.8 | | | | | | | | |
| 10-year | 55.9 | 62.1 | 67.4 | 74.2 | 74.6 | 78.0 | 76.3 | 74.9 | 77.3 | 78.1 | 79.4 | 78.9 | 81.8 | 80.9 | 79.5 | 83.2 | | | | | | | | | |
| 11-year | 55.5 | 61.8 | 67.2 | 73.8 | 74.4 | 77.9 | 76.1 | 74.5 | 76.9 | 77.9 | 79.2 | 78.2 | 81.3 | 80.8 | 79.5 | | | | | | | | | | |
| 12-year | 55.2 | 61.3 | 66.8 | 73.6 | 74.1 | 77.8 | 75.8 | 74.2 | 76.9 | 77.8 | 79.1 | 77.6 | 80.9 | 80.5 | | | | | | | | | | | |
| 13-year | 55.0 | 60.9 | 66.6 | 73.4 | 74.0 | 77.7 | 75.6 | 73.8 | 76.5 | 77.3 | 79.0 | 77.3 | 80.6 | | | | | | | | | | | | |
| 14-year | 54.7 | 60.7 | 66.2 | 73.1 | 74.0 | 77.5 | 75.5 | 73.7 | 76.5 | 77.2 | 79.0 | 77.2 | | | | | | | | | | | | | |
| 15-year | 54.4 | 60.4 | 66.1 | 72.9 | 73.9 | 77.3 | 75.4 | 73.6 | 76.5 | 77.0 | 78.9 | | | | | | | | | | | | | | |
| 16-year | 54.1 | 60.1 | 65.8 | 72.6 | 73.3 | 77.3 | 75.1 | 73.3 | 76.3 | 76.9 | | | | | | | | | | | | | | | |
| 17-year | 53.7 | 59.9 | 65.7 | 72.3 | 72.9 | 77.1 | 74.9 | 73.3 | 76.0 | | | | | | | | | | | | | | | | |
| 18-year | 53.5 | 59.6 | 65.5 | 72.1 | 72.8 | 76.9 | 74.8 | 73.3 | | | | | | | | | | | | | | | | | |
| 19-year | 53.2 | 59.4 | 65.4 | 72.0 | 72.6 | 76.8 | 74.4 | | | | | | | | | | | | | | | | | | |
| 20-year | 53.0 | 59.2 | 65.1 | 71.8 | 72.5 | 76.7 | | | | | | | | | | | | | | | | | | | |

^a

Based on the SEER 9 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, and Atlanta).
[Expected survival rates](#) are derived from the U.S. Annual Life Tables.

Table 28.11
All Cancer Sites (Invasive)
SEER^a Relative Survival (Percent)
By Year of Diagnosis

All Races, Males and Females

Ages 0-19

Year of Diagnosis

| | 1975- 1979 | 1980- 1984 | 1985- 1989 | 1990- 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---------------|---------------|---------------|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Survival Time | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-year | 82.5 | 85.7 | 88.2 | 90.2 | 90.1 | 93.0 | 91.4 | 91.7 | 91.0 | 91.3 | 92.3 | 92.3 | 93.5 | 92.4 | 92.8 | 94.1 | 93.2 | 93.8 | 93.7 | 93.1 | 95.3 | 94.8 | 94.3 | 93.5 | 93.7 |
| 2-year | 73.1 | 77.3 | 80.3 | 83.3 | 84.6 | 87.5 | 85.1 | 85.4 | 85.9 | 84.4 | 87.3 | 87.4 | 89.2 | 88.0 | 88.5 | 89.1 | 88.4 | 89.2 | 88.5 | 89.6 | 91.5 | 90.0 | 90.3 | 89.7 | |
| 3-year | 68.0 | 72.5 | 76.5 | 80.0 | 81.3 | 85.0 | 82.0 | 82.5 | 83.2 | 81.9 | 84.4 | 84.2 | 86.3 | 84.8 | 86.0 | 87.4 | 86.6 | 87.1 | 86.0 | 87.1 | 89.3 | 87.5 | 88.8 | | |
| 4-year | 64.9 | 69.6 | 74.0 | 78.0 | 79.8 | 82.3 | 80.5 | 80.0 | 81.5 | 80.4 | 82.6 | 82.3 | 85.3 | 83.6 | 84.5 | 85.9 | 85.0 | 85.2 | 85.0 | 86.1 | 88.1 | 86.3 | | | |
| 5-year | 62.8 | 67.9 | 72.9 | 76.8 | 78.4 | 81.8 | 78.9 | 78.9 | 80.0 | 79.3 | 81.9 | 81.1 | 84.2 | 82.5 | 83.3 | 85.1 | 83.7 | 83.9 | 84.5 | 85.3 | 87.1 | | | | |
| 6-year | 61.2 | 66.5 | 72.0 | 76.1 | 77.4 | 81.2 | 77.8 | 77.7 | 79.6 | 78.4 | 81.3 | 80.2 | 83.9 | 82.2 | 82.1 | 84.1 | 82.4 | 83.3 | 83.6 | 85.1 | | | | | |
| 7-year | 60.3 | 65.8 | 71.1 | 75.4 | 76.9 | 80.7 | 77.5 | 77.4 | 79.1 | 77.7 | 80.3 | 79.9 | 83.2 | 81.5 | 81.7 | 83.6 | 82.0 | 82.8 | 83.2 | | | | | | |
| 8-year | 59.6 | 65.0 | 70.5 | 75.0 | 76.0 | 80.2 | 76.8 | 77.1 | 78.9 | 77.2 | 80.1 | 79.1 | 82.6 | 80.9 | 81.0 | 82.7 | 81.1 | 82.4 | | | | | | | |
| 9-year | 59.0 | 64.4 | 70.1 | 74.5 | 75.7 | 79.8 | 76.6 | 76.6 | 78.5 | 77.1 | 79.7 | 78.8 | 82.2 | 80.5 | 80.5 | 82.4 | 80.7 | | | | | | | | |
| 10-year | 58.7 | 63.9 | 69.7 | 74.3 | 75.5 | 79.5 | 76.0 | 76.2 | 78.2 | 76.8 | 79.6 | 78.4 | 82.0 | 80.2 | 80.4 | 82.2 | | | | | | | | | |
| 11-year | 58.3 | 63.6 | 69.4 | 74.0 | 75.4 | 79.3 | 75.8 | 75.8 | 77.9 | 76.7 | 79.4 | 77.8 | 81.7 | 80.0 | 80.4 | | | | | | | | | | |
| 12-year | 58.0 | 63.2 | 69.1 | 73.8 | 75.1 | 79.2 | 75.6 | 75.4 | 77.6 | 76.4 | 79.2 | 77.4 | 81.3 | 79.8 | | | | | | | | | | | |
| 13-year | 57.8 | 62.8 | 68.8 | 73.5 | 75.0 | 79.1 | 75.4 | 75.0 | 77.4 | 76.0 | 79.0 | 77.1 | 81.0 | | | | | | | | | | | | |
| 14-year | 57.5 | 62.5 | 68.4 | 73.2 | 75.0 | 79.0 | 75.3 | 74.9 | 77.4 | 75.7 | 78.9 | 77.1 | | | | | | | | | | | | | |
| 15-year | 57.3 | 62.2 | 68.2 | 73.0 | 74.9 | 78.8 | 75.1 | 74.9 | 77.3 | 75.6 | 78.9 | | | | | | | | | | | | | | |
| 16-year | 57.0 | 61.8 | 67.8 | 72.8 | 74.3 | 78.7 | 74.7 | 74.5 | 77.2 | 75.4 | | | | | | | | | | | | | | | |
| 17-year | 56.7 | 61.6 | 67.7 | 72.5 | 74.1 | 78.4 | 74.6 | 74.5 | 77.0 | | | | | | | | | | | | | | | | |
| 18-year | 56.4 | 61.3 | 67.4 | 72.3 | 74.0 | 78.1 | 74.6 | 74.5 | | | | | | | | | | | | | | | | | |
| 19-year | 56.2 | 61.1 | 67.2 | 72.1 | 73.9 | 77.9 | 74.2 | | | | | | | | | | | | | | | | | | |
| 20-year | 55.9 | 60.8 | 66.9 | 72.0 | 73.7 | 77.8 | | | | | | | | | | | | | | | | | | | |

^a

Based on the SEER 9 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, and Atlanta).
[Expected survival rates](#) are derived from the U.S. Annual Life Tables.

Table 28.13
Age-Specific Rates^a and Counts for the Top 5 Cancer Sites^b by Single Year of Age at Diagnosis
SEER Cancer Incidence^c 2012-2016

| Age <1 | | | Age 1 | | | Age 2 | | |
|----------------------------|------|-------|----------------------------|------|-------|----------------------------|------|-------|
| | Rate | Cases | | Rate | Cases | | Rate | Cases |
| All Sites | 24.5 | 1,790 | All Sites | 21.5 | 1,581 | All Sites | 24.1 | 1,771 |
| Leukemia | 4.5 | 331 | Leukemia | 6.4 | 471 | Leukemia | 10.6 | 776 |
| Acute Lymphocytic Leukemia | 1.9 | 139 | Acute Lymphocytic Leukemia | 4.2 | 310 | Acute Lymphocytic Leukemia | 9.3 | 683 |
| Brain and ONS ^d | 3.7 | 273 | Brain and ONS ^d | 4.5 | 329 | Brain and ONS ^d | 4.8 | 353 |
| Eye and Orbit | 3.4 | 250 | Kidney and Renal Pelvis | 1.9 | 136 | Kidney and Renal Pelvis | 2.1 | 153 |
| Soft Tissue | 3.3 | 239 | Other Endocrine | 1.8 | 130 | Other Endocrine | 1.5 | 109 |
| Other Endocrine | 2.8 | 203 | Soft Tissue | 1.6 | 121 | Soft Tissue | 1.3 | 92 |
| Age 3 | | | Age 4 | | | Age 5 | | |
| | Rate | Cases | | Rate | Cases | | Rate | Cases |
| All Sites | 22.7 | 1,664 | All Sites | 18.5 | 1,368 | All Sites | 15.7 | 1,171 |
| Leukemia | 10.4 | 767 | Leukemia | 8.2 | 610 | Leukemia | 6.2 | 459 |
| Acute Lymphocytic Leukemia | 9.5 | 697 | Acute Lymphocytic Leukemia | 7.3 | 538 | Acute Lymphocytic Leukemia | 5.4 | 404 |
| Brain and ONS ^d | 4.0 | 291 | Brain and ONS ^d | 4.0 | 299 | Brain and ONS ^d | 4.2 | 310 |
| Kidney and Renal Pelvis | 2.1 | 157 | Kidney and Renal Pelvis | 1.6 | 118 | Kidney and Renal Pelvis | 1.2 | 87 |
| Non-Hodgkin Lymphoma | 1.2 | 89 | Non-Hodgkin Lymphoma | 1.1 | 83 | Non-Hodgkin Lymphoma | 1.1 | 83 |
| Soft Tissue | 1.2 | 85 | Soft Tissue | 0.9 | 63 | Soft Tissue | 0.8 | 61 |
| Age 6 | | | Age 7 | | | Age 8 | | |
| | Rate | Cases | | Rate | Cases | | Rate | Cases |
| All Sites | 14.1 | 1,052 | All Sites | 12.3 | 921 | All Sites | 11.0 | 829 |
| Leukemia | 4.8 | 355 | Leukemia | 3.7 | 278 | Leukemia | 3.4 | 255 |
| Acute Lymphocytic Leukemia | 4.1 | 308 | Acute Lymphocytic Leukemia | 3.2 | 242 | Acute Lymphocytic Leukemia | 2.8 | 213 |
| Brain and ONS ^d | 3.8 | 281 | Brain and ONS ^d | 3.5 | 262 | Brain and ONS ^d | 3.0 | 223 |
| Non-Hodgkin Lymphoma | 1.3 | 98 | Non-Hodgkin Lymphoma | 1.2 | 93 | Non-Hodgkin Lymphoma | 1.2 | 90 |
| Kidney and Renal Pelvis | 0.9 | 65 | Soft Tissue | 0.8 | 57 | Bones and Joints | 0.7 | 50 |
| Soft Tissue | 0.6 | 46 | Kidney and Renal Pelvis | 0.6 | 47 | Soft Tissue | 0.6 | 46 |
| Age 9 | | | Age 10 | | | Age 11 | | |
| | Rate | Cases | | Rate | Cases | | Rate | Cases |
| All Sites | 11.9 | 893 | All Sites | 12.9 | 968 | All Sites | 12.9 | 967 |
| Leukemia | 3.3 | 250 | Leukemia | 3.0 | 227 | Brain and ONS ^d | 2.8 | 207 |
| Acute Lymphocytic Leukemia | 2.6 | 198 | Acute Lymphocytic Leukemia | 2.3 | 174 | Leukemia | 2.7 | 203 |
| Brain and ONS ^d | 3.1 | 235 | Brain and ONS ^d | 3.0 | 224 | Acute Lymphocytic Leukemia | 1.8 | 135 |
| Non-Hodgkin Lymphoma | 1.3 | 99 | Non-Hodgkin Lymphoma | 1.4 | 108 | Bones and Joints | 1.4 | 108 |
| Bones and Joints | 1.1 | 80 | Bones and Joints | 1.2 | 91 | Non-Hodgkin Lymphoma | 1.2 | 92 |
| Soft Tissue | 0.7 | 49 | Hodgkin Lymphoma | 0.9 | 66 | Hodgkin Lymphoma | 1.0 | 77 |

^a Rates are per 100,000 per year.

^b Top 5 cancer sites were determined based on the 2012-2016 age-specific rate.

^c SEER 21 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, New Jersey, Georgia excluding ATL/RG, Idaho, New York and Massachusetts).

^d ONS = Other Nervous System. IBD = Intrahepatic Bile Duct.

^e The rates for sex-specific cancer sites are calculated using the population for both sexes combined.

- Statistic not shown. Rate based on less than 16 cases for the time interval.

Table 28.13 - continued
Age-Specific Rates^a and Counts for the Top 5 Cancer Sites^b by Single Year of Age at Diagnosis

SEER Cancer Incidence^c 2012-2016

| Age 12 | | | Age 13 | | | Age 14 | | |
|----------------------------|------|-------|----------------------------|------|-------|----------------------------|------|-------|
| | Rate | Cases | | Rate | Cases | | Rate | Cases |
| All Sites | 15.0 | 1,134 | All Sites | 16.2 | 1,230 | All Sites | 18.8 | 1,428 |
| Leukemia | 3.5 | 267 | Leukemia | 3.1 | 233 | Leukemia | 4.1 | 312 |
| Acute Lymphocytic Leukemia | 2.4 | 178 | Acute Lymphocytic Leukemia | 2.2 | 163 | Acute Lymphocytic Leukemia | 2.7 | 206 |
| Brain and ONS ^d | 2.7 | 205 | Brain and ONS ^d | 2.9 | 220 | Brain and ONS ^d | 2.8 | 212 |
| Bones and Joints | 1.6 | 122 | Bones and Joints | 1.8 | 138 | Non-Hodgkin Lymphoma | 1.9 | 142 |
| Non-Hodgkin Lymphoma | 1.4 | 105 | Non-Hodgkin Lymphoma | 1.6 | 121 | Hodgkin Lymphoma | 1.8 | 139 |
| Hodgkin Lymphoma | 1.1 | 86 | Hodgkin Lymphoma | 1.4 | 109 | Thyroid | 1.7 | 129 |
| Age 15 | | | Age 16 | | | Age 17 | | |
| | Rate | Cases | | Rate | Cases | | Rate | Cases |
| All Sites | 20.8 | 1,597 | All Sites | 21.4 | 1,655 | All Sites | 24.1 | 1,881 |
| Leukemia | 3.3 | 251 | Leukemia | 3.1 | 238 | Leukemia | 3.4 | 262 |
| Acute Lymphocytic Leukemia | 2.1 | 165 | Acute Lymphocytic Leukemia | 1.9 | 146 | Acute Lymphocytic Leukemia | 1.9 | 152 |
| Brain and ONS ^d | 2.6 | 200 | Brain and ONS ^d | 2.8 | 220 | Hodgkin Lymphoma | 3.3 | 254 |
| Hodgkin Lymphoma | 2.4 | 185 | Thyroid | 2.8 | 216 | Thyroid | 3.2 | 248 |
| Bones and Joints | 2.1 | 160 | Hodgkin Lymphoma | 2.6 | 203 | Brain and ONS ^d | 2.4 | 185 |
| Thyroid | 2.1 | 160 | Non-Hodgkin Lymphoma | 1.8 | 141 | Non-Hodgkin Lymphoma | 2.2 | 171 |
| Age 18 | | | Age 19 | | | | | |
| | Rate | Cases | | Rate | Cases | | | |
| All Sites | 26.2 | 2,081 | All Sites | 28.2 | 2,230 | | | |
| Thyroid | 4.3 | 344 | Thyroid | 4.6 | 360 | | | |
| Hodgkin Lymphoma | 3.8 | 303 | Hodgkin Lymphoma | 4.2 | 330 | | | |
| Leukemia | 3.1 | 248 | Testis ^e | 3.3 | 258 | | | |
| Acute Lymphocytic Leukemia | 1.6 | 129 | Leukemia | 2.9 | 230 | | | |
| Testis ^e | 2.8 | 225 | Acute Lymphocytic Leukemia | 1.3 | 99 | | | |
| Brain and ONS ^d | 2.0 | 161 | Non-Hodgkin Lymphoma | 2.4 | 188 | | | |

^a Rates are per 100,000 per year.

^b Top 5 cancer sites were determined based on the 2012-2016 age-specific rate.

^c SEER 21 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, New Jersey, Georgia excluding ATL/RG, Idaho, New York and Massachusetts).

^d ONS = Other Nervous System. IBD = Intrahepatic Bile Duct.

^e The rates for sex-specific cancer sites are calculated using the population for both sexes combined.

- Statistic not shown. Rate based on less than 16 cases for the time interval.

Table 28.14
Age-Specific Rates^a and Deaths for the Top 5 Cancer Sites^b by Single Year of Age at Death
U.S. Mortality^c 2012-2016

| Age <1 | | | Age 1 | | | Age 2 | | |
|----------------------------|------|--------|----------------------------|------|--------|----------------------------|------|--------|
| | Rate | Deaths | | Rate | Deaths | | Rate | Deaths |
| All Sites | 1.5 | 299 | All Sites | 2.0 | 401 | All Sites | 2.1 | 419 |
| Leukemia | 0.5 | 102 | Leukemia | 0.8 | 158 | Leukemia | 0.8 | 169 |
| Acute Lymphocytic Leukemia | 0.1 | 20 | Acute Lymphocytic Leukemia | 0.3 | 60 | Acute Lymphocytic Leukemia | 0.3 | 52 |
| Brain and ONS ^d | 0.4 | 71 | Brain and ONS ^d | 0.4 | 80 | Brain and ONS ^d | 0.4 | 87 |
| Other Endocrine | 0.1 | 28 | Other Endocrine | 0.2 | 47 | Other Endocrine | 0.3 | 63 |
| Soft Tissue | 0.1 | 26 | Liver & IBD ^d | 0.1 | 29 | Soft Tissue | 0.1 | 27 |
| Liver & IBD ^d | - | - | Soft Tissue | 0.1 | 26 | Liver & IBD ^d | 0.1 | 22 |
| Age 3 | | | Age 4 | | | Age 5 | | |
| | Rate | Deaths | | Rate | Deaths | | Rate | Deaths |
| All Sites | 2.4 | 487 | All Sites | 2.3 | 465 | All Sites | 2.4 | 490 |
| Leukemia | 0.7 | 138 | Brain and ONS ^d | 0.9 | 185 | Brain and ONS ^d | 1.1 | 219 |
| Acute Lymphocytic Leukemia | 0.2 | 45 | Leukemia | 0.5 | 91 | Leukemia | 0.5 | 97 |
| Brain and ONS ^d | 0.7 | 133 | Acute Lymphocytic Leukemia | 0.2 | 31 | Acute Lymphocytic Leukemia | 0.2 | 38 |
| Other Endocrine | 0.5 | 90 | Other Endocrine | 0.4 | 75 | Other Endocrine | 0.3 | 71 |
| Soft Tissue | 0.2 | 32 | Soft Tissue | 0.2 | 34 | Soft Tissue | 0.2 | 34 |
| Liver & IBD ^d | 0.1 | 21 | Kidney and Renal Pelvis | 0.1 | 24 | Liver & IBD ^d | 0.1 | 17 |
| Age 6 | | | Age 7 | | | Age 8 | | |
| | Rate | Deaths | | Rate | Deaths | | Rate | Deaths |
| All Sites | 2.1 | 428 | All Sites | 2.0 | 411 | All Sites | 2.1 | 433 |
| Brain and ONS ^d | 1.0 | 203 | Brain and ONS ^d | 0.9 | 182 | Brain and ONS ^d | 0.8 | 167 |
| Leukemia | 0.4 | 78 | Leukemia | 0.4 | 88 | Leukemia | 0.5 | 107 |
| Acute Lymphocytic Leukemia | 0.2 | 37 | Acute Lymphocytic Leukemia | 0.3 | 52 | Acute Lymphocytic Leukemia | 0.2 | 51 |
| Other Endocrine | 0.3 | 53 | Other Endocrine | 0.2 | 51 | Other Endocrine | 0.2 | 43 |
| Soft Tissue | 0.1 | 30 | Soft Tissue | 0.1 | 24 | Soft Tissue | 0.2 | 31 |
| Kidney and Renal Pelvis | - | - | Bones and Joints | 0.1 | 16 | Bones and Joints | 0.1 | 18 |
| Age 9 | | | Age 10 | | | Age 11 | | |
| | Rate | Deaths | | Rate | Deaths | | Rate | Deaths |
| All Sites | 2.2 | 447 | All Sites | 1.9 | 392 | All Sites | 1.9 | 386 |
| Brain and ONS ^d | 0.8 | 173 | Brain and ONS ^d | 0.7 | 153 | Brain and ONS ^d | 0.7 | 140 |
| Leukemia | 0.5 | 105 | Leukemia | 0.5 | 97 | Leukemia | 0.5 | 94 |
| Acute Lymphocytic Leukemia | 0.3 | 56 | Acute Lymphocytic Leukemia | 0.2 | 49 | Acute Lymphocytic Leukemia | 0.2 | 49 |
| Other Endocrine | 0.2 | 44 | Bones and Joints | 0.2 | 34 | Bones and Joints | 0.2 | 44 |
| Soft Tissue | 0.2 | 39 | Other Endocrine | 0.2 | 33 | Soft Tissue | 0.2 | 35 |
| Bones and Joints | 0.2 | 38 | Soft Tissue | 0.1 | 29 | Other Endocrine | 0.1 | 23 |

^a Rates are per 100,000 per year. Deaths are for the entire United States over the time period 2012-2016.

^b Top 5 cancer sites were determined based on the 2012-2016 age-specific rate.

^c US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention.

^d ONS = Other Nervous System. IBD = Intrahepatic Bile Duct.

^e The rates for sex-specific cancer sites are calculated using the population for both sexes combined.

- Statistic not shown. Rate based on less than 16 cases for the time interval.

Table 28.14 - continued
Age-Specific Rates^a and Deaths for the Top 5 Cancer Sites^b by Single Year of Age at Death

U.S. Mortality^c 2012-2016

| Age 12 | | | Age 13 | | | Age 14 | | |
|----------------------------|------|--------|----------------------------|------|--------|----------------------------|------|--------|
| | Rate | Deaths | | Rate | Deaths | | Rate | Deaths |
| All Sites | 2.1 | 435 | All Sites | 2.1 | 434 | All Sites | 2.6 | 548 |
| Brain and ONS ^d | 0.7 | 136 | Brain and ONS ^d | 0.6 | 122 | Leukemia | 0.8 | 157 |
| Leukemia | 0.6 | 122 | Leukemia | 0.6 | 115 | Acute Lymphocytic Leukemia | 0.3 | 65 |
| Acute Lymphocytic Leukemia | 0.3 | 67 | Acute Lymphocytic Leukemia | 0.3 | 54 | Brain and ONS ^d | 0.7 | 138 |
| Bones and Joints | 0.2 | 51 | Bones and Joints | 0.3 | 64 | Bones and Joints | 0.4 | 90 |
| Soft Tissue | 0.1 | 27 | Soft Tissue | 0.2 | 35 | Soft Tissue | 0.3 | 61 |
| Other Endocrine | 0.1 | 22 | Non-Hodgkin Lymphoma | 0.1 | 23 | Non-Hodgkin Lymphoma | 0.1 | 23 |
| Age 15 | | | Age 16 | | | Age 17 | | |
| | Rate | Deaths | | Rate | Deaths | | Rate | Deaths |
| All Sites | 2.5 | 533 | All Sites | 2.6 | 554 | All Sites | 2.9 | 616 |
| Leukemia | 0.7 | 146 | Leukemia | 0.6 | 135 | Leukemia | 0.8 | 159 |
| Acute Lymphocytic Leukemia | 0.3 | 69 | Acute Lymphocytic Leukemia | 0.3 | 57 | Acute Lymphocytic Leukemia | 0.3 | 68 |
| Brain and ONS ^d | 0.6 | 115 | Brain and ONS ^d | 0.6 | 123 | Brain and ONS ^d | 0.6 | 120 |
| Bones and Joints | 0.5 | 99 | Bones and Joints | 0.5 | 111 | Bones and Joints | 0.6 | 117 |
| Soft Tissue | 0.2 | 52 | Soft Tissue | 0.3 | 56 | Soft Tissue | 0.3 | 68 |
| Non-Hodgkin Lymphoma | 0.1 | 25 | Non-Hodgkin Lymphoma | 0.1 | 26 | Other Endocrine | 0.1 | 17 |
| Age 18 | | | Age 19 | | | | | |
| | Rate | Deaths | | Rate | Deaths | | | |
| All Sites | 3.1 | 660 | All Sites | 3.2 | 683 | | | |
| Leukemia | 0.8 | 166 | Leukemia | 0.8 | 164 | | | |
| Acute Lymphocytic Leukemia | 0.3 | 63 | Acute Lymphocytic Leukemia | 0.3 | 64 | | | |
| Brain and ONS ^d | 0.6 | 121 | Brain and ONS ^d | 0.5 | 105 | | | |
| Bones and Joints | 0.5 | 116 | Bones and Joints | 0.5 | 102 | | | |
| Soft Tissue | 0.4 | 84 | Soft Tissue | 0.4 | 78 | | | |
| Non-Hodgkin Lymphoma | 0.2 | 42 | Non-Hodgkin Lymphoma | 0.2 | 42 | | | |

^a Rates are per 100,000 per year. Deaths are for the entire United States over the time period 2012-2016.

^b Top 5 cancer sites were determined based on the 2012-2016 age-specific rate.

^c US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention.

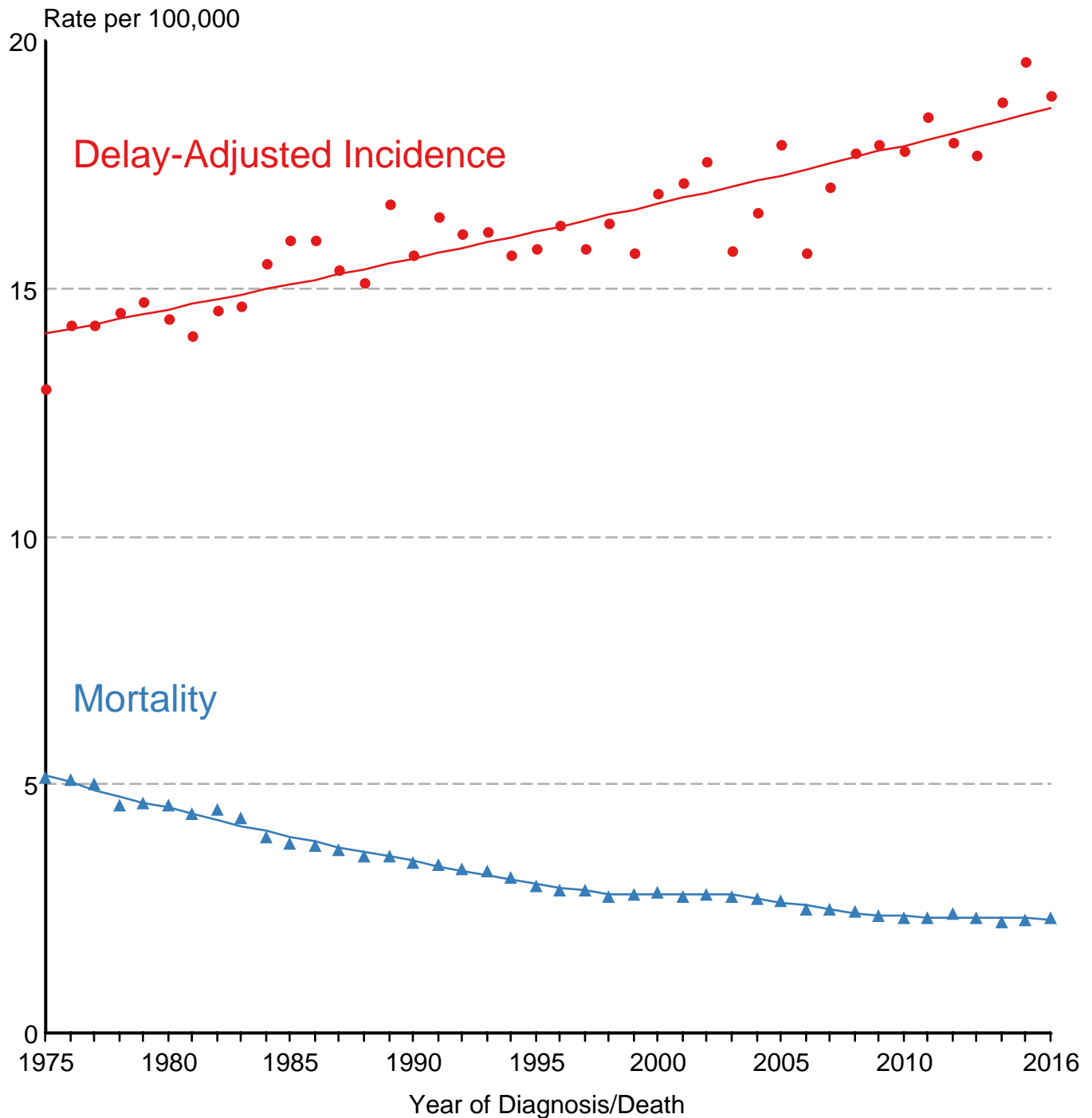
^d ONS = Other Nervous System. IBD = Intrahepatic Bile Duct.

^e The rates for sex-specific cancer sites are calculated using the population for both sexes combined.

- Statistic not shown. Rate based on less than 16 cases for the time interval.

Figure 28.1

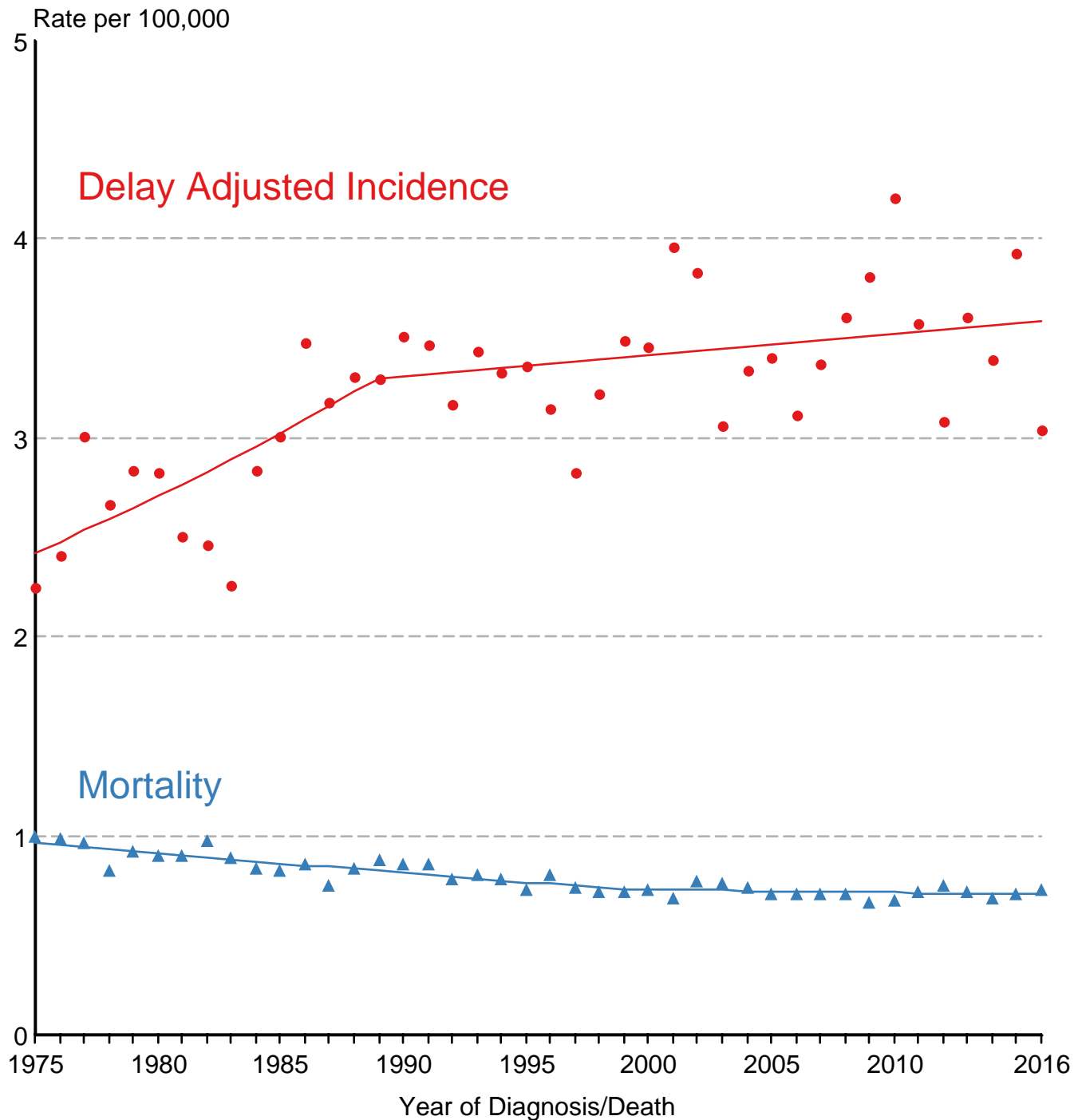
SEER Delay-Adjusted Incidence and US Mortality All Childhood Cancers, Under 20 Years of Age Both Sexes, All Races, 1975-2016



Source: SEER 9 areas and US Mortality Files (National Center for Health Statistics, CDC).
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 4.7, February 2019,
National Cancer Institute.

Figure 28.2

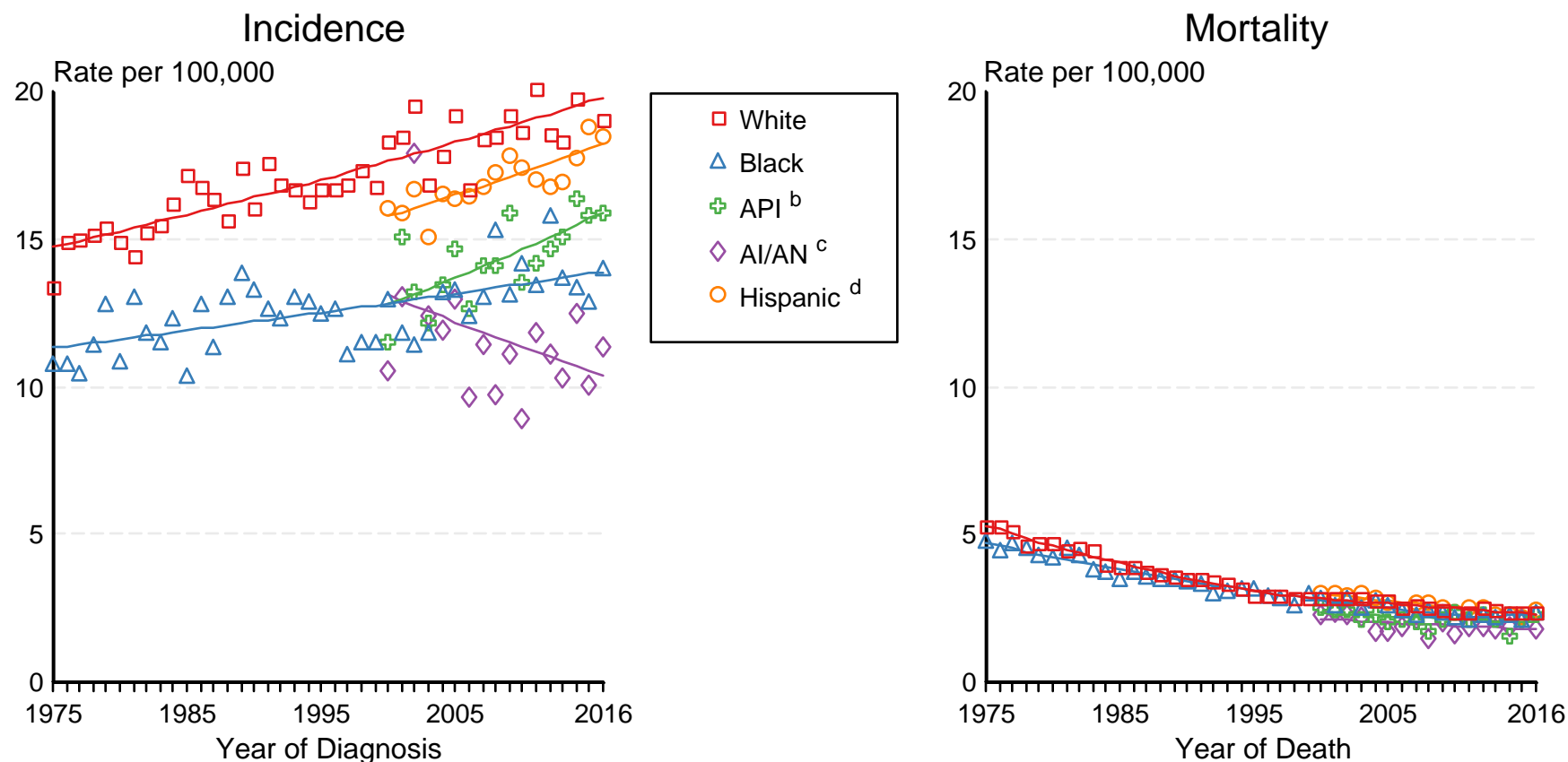
SEER Delay-Adjusted Incidence and US Mortality Brain and CNS, Under 15 Years of Age Both Sexes, All Races, 1975-2016



Source: SEER 9 areas and US Mortality Files (National Center for Health Statistics, CDC).
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 4.7, February 2019,
National Cancer Institute.

Figure 28.3

SEER Incidence and US Death Rates^a All Cancer Sites, Ages <20, Both Sexes Joinpoint Analyses for Whites and Blacks from 1975-2016 and for Asian/Pacific Islanders, American Indians/Alaska Natives and Hispanics from 2000-2016



Source: Incidence data for whites and blacks are from the SEER 9 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta). Incidence data for Asian/Pacific Islanders, American Indians/Alaska Natives and Hispanics are from the SEER 21 areas (SEER 9 areas, San Jose-Monterey, Los Angeles, Alaska Native Registry, Rural Georgia, California excluding SF/SJM/LA, Kentucky, Louisiana, New Jersey, Georgia excluding ATL/RG, Idaho, New York and Massachusetts).

Mortality data are from US Mortality Files, National Center for Health Statistics, CDC.

^a 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 4.7, February 2019, National Cancer Institute. Joinpoint analyses for Whites and Blacks during the 1975-2016 period allow a maximum of 5 joinpoints. Analyses for other ethnic groups during the period 2000-2016 allow a maximum of 3 joinpoints.

^b API = Asian/Pacific Islander.

^c AI/AN = American Indian/Alaska Native. Rates for American Indian/Alaska Native are based on the Purchased/Referred Care Delivery Area (PRCDA) counties.

^d 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.