

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									
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	0.1	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	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	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	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	0.2	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	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	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	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	0.2	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	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	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	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	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	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	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).

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

^b 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.

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/>).
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 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 2012-16
	Years	APC	Years	APC	Years	APC	Years	APC	Years	APC	Years	APC	
<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
Ages 0-4												
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
Ages 5-9												
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
Ages 10-14												
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
Ages 15-19												
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 DeathU.S. Mortality^c 2012-2016

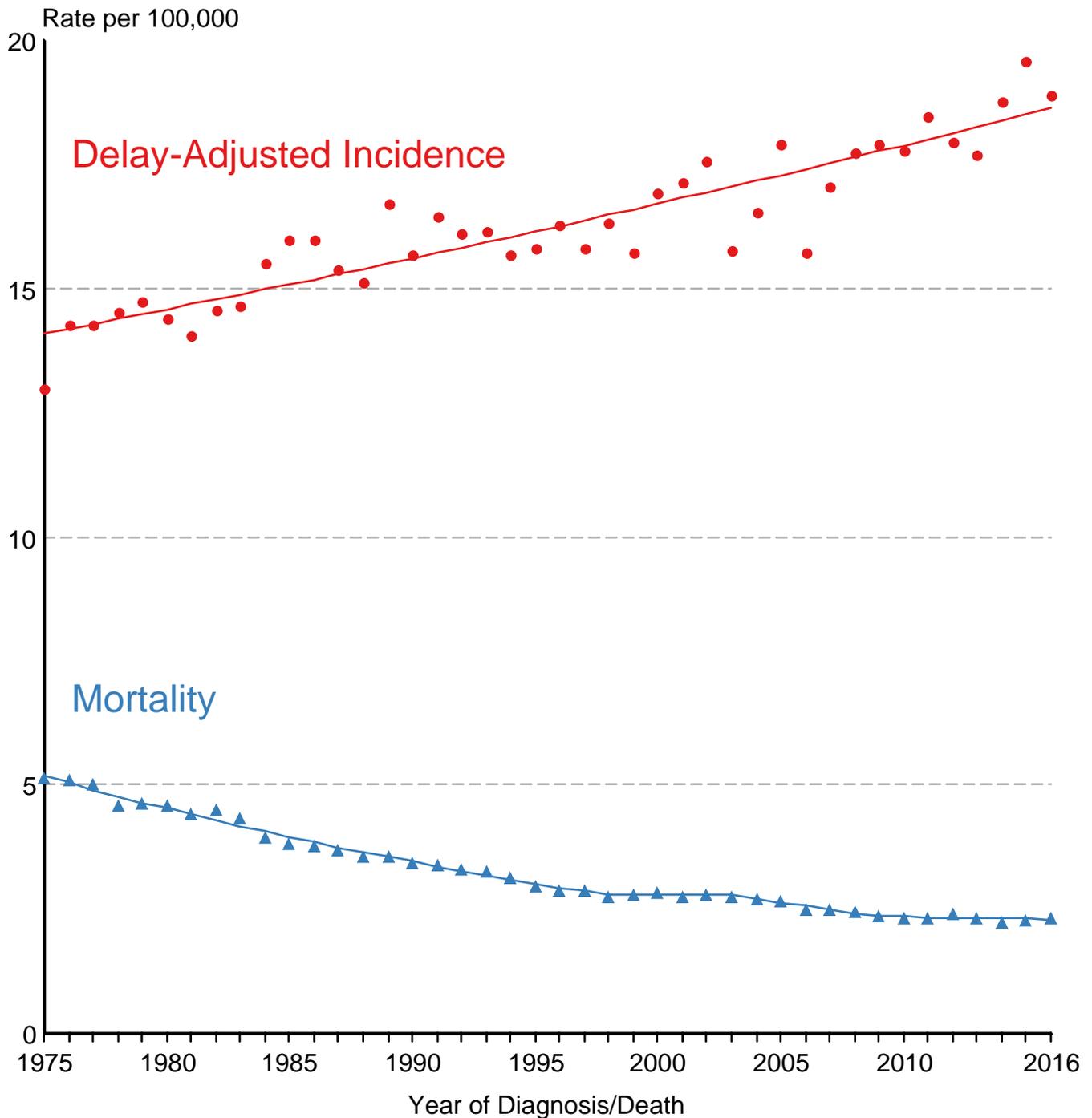
Age 12			Age 13			Age 14		
	Rate	Deaths		Rate	Deaths		Rate	Deaths
All Sites	2.1	435	All Sites	2.1	434	All Sites	2.6	548
Brain and ONS ^d	0.7	136	Brain and ONS ^d	0.6	122	Leukemia	0.8	157
Leukemia	0.6	122	Leukemia	0.6	115	Acute Lymphocytic Leukemia	0.3	65
Acute Lymphocytic Leukemia	0.3	67	Acute Lymphocytic 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

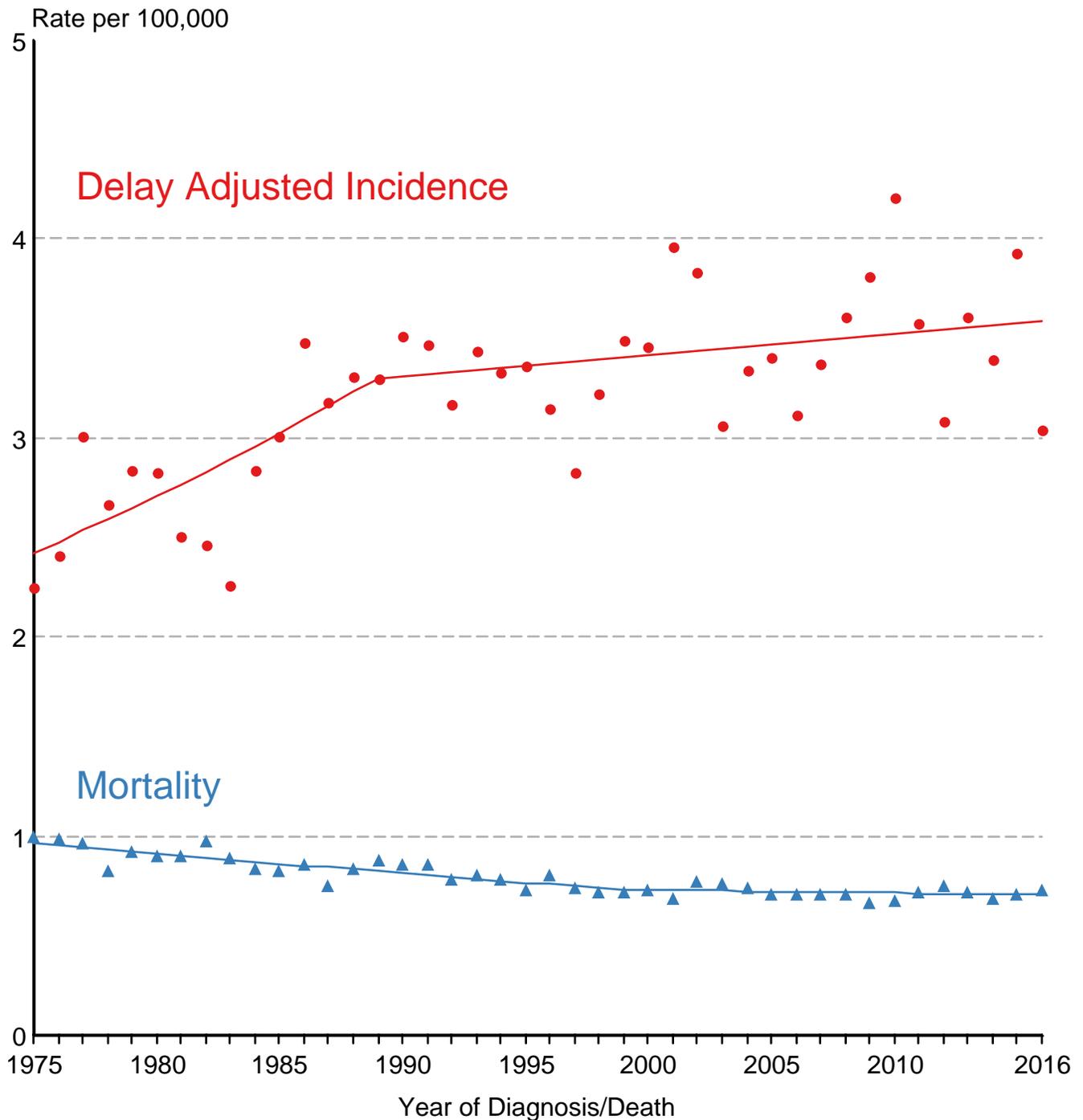
SEER Delay-Adjusted Incidence and US Mortality All Childhood Cancers, Under 20 Years of Age Both Sexes, All Races, 1975-2016



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



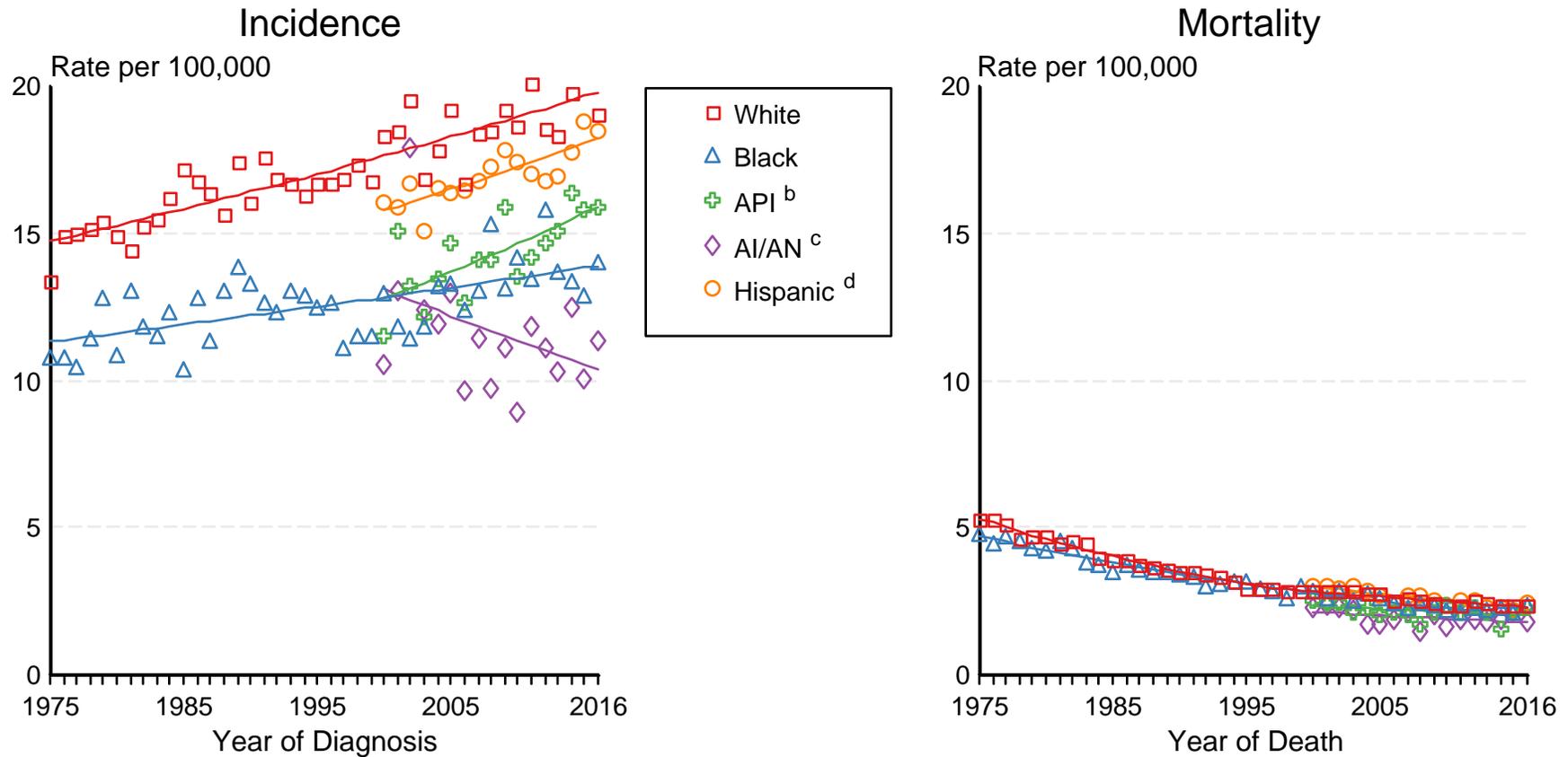
Source: SEER 9 areas and US Mortality Files (National Center for Health Statistics, CDC). Rates are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1103). Regression lines are calculated using the Joinpoint Regression Program Version 4.7, February 2019, National Cancer Institute.

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.