

Supplementary Table 1. Data sets used in analysis and population coverage*

Name	SEER 9†	SEER 13‡	NAACCR Combined 40§	NAACCR Combined 46
US Population Covered	9.5%	13.8%	83.6%	93.0%
Population Covered by race and ethnicity:				
White	9.0%	11.8%	84.7%	93.7%
Black	8.8%	11.8%	74.1%	87.6%
API	19.4%	35.0%	90.6%	95.3%
AI/AN	13.2%	21.0%	91.1%	95.2%
Hispanic	7.8%	21.8%	92.6%	95.3%
Uses	Long-term trends incidence (1975–2007), Supplementary Table 2.	Long-term trends incidence (1992–2007), Table 1.	Fixed interval incidence trends 1998–2007, Table 3.	Incidence rates 2003–2007, Table 3.
	Trends in malignant brain tumor histologies, 1980–2007, Figure 1.	Relative brain cancer survival by age 1980–2007, Supplementary Table 7.	1998-2007 AAPC, Table 3.	2003-2007 APC, Table 3.
	Relative survival for brain cancer by age, era, and histologic group, Figure 2.			Malignant and non-malignant brain tumor rates 2004–2007 Tables 5, 6, 7, 8, Supplementary Tables 3, 4, 5, 6.
	Relative brain cancer survival by age 1980–2007, Supplementary Table 7.			

* SEER = Surveillance, Epidemiology, and End Results; NAACCR = North American Association of Central Cancer Registries; AAPC = average annual percent change; APC = annual percent change; API = Asian Pacific Islander; AI/AN = American Indian and Alaskan Native

† Includes 9 SEER areas: Connecticut, Hawaii, Iowa, New Mexico, Utah; metropolitan areas of San Francisco, Detroit, Atlanta, Seattle-Puget Sound.

‡ Includes 13 SEER areas: Connecticut, Hawaii, Iowa, New Mexico, Utah, Alaska - Native Registry, Rural Georgia; Metropolitan areas of San Francisco, San Jose-Monterey, Los Angeles, Detroit, Atlanta, Seattle-Puget Sound.

§ Includes 40 states: Alabama, Alaska, Arizona, California, Colorado, Connecticut, Delaware, Florida, Hawaii, Idaho, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Massachusetts, Metropolitan Atlanta, Michigan, Minnesota, Missouri, Montana, Nebraska, New Jersey, New Mexico, New York, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Texas, Utah, Vermont, Washington, West Virginia, Wisconsin, Wyoming.

|| Includes 46 states: Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming.

Supplementary Table 2. SEER cancer incidence rate trends with joinpoint analyses (up to four joinpoints allowed) for 1975–2007 for the top 15 cancers, by sex, for all races*

Sex/cancer site or type	Joinpoint analyses (1975–2007)†										AAPC§	
	Trend 1		Trend 2		Trend 3		Trend 4		Trend 5		1998–2007	2003–2007
	Years	APC‡	Years	APC‡	Years	APC‡	Years	APC‡	Years	APC‡		
All sites												
Both sexes	1975–1989	1.2 #	1989–1992	2.8 #	1992–1995	-2.4	1995–1999	0.9	1999–2007	-0.9 #	-0.7 **	-0.9 **
Delay adjusted	1975–1989	1.2 #	1989–1992	2.8	1992–1995	-2.4	1995–1999	0.9	1999–2007	-0.7 #	-0.5 **	-0.7 **
Men	1975–1989	1.3 #	1989–1992	5.2 #	1992–1995	-4.8 #	1995–2000	0.4	2000–2007	-1.3 #	-0.9 **	-1.3 **
Delay adjusted	1975–1989	1.3 #	1989–1992	5.2 #	1992–1995	-4.8 #	1995–2000	0.4	2000–2007	-1.1 #	-0.7 **	-1.1 **
Women	1975–1979	-0.3	1979–1987	1.6 #	1987–1995	0.1	1995–1998	1.4	1998–2007	-0.7 #	-0.7 **	-0.7 **
Delay adjusted	1975–1979	-0.3	1979–1987	1.6 #	1987–1995	0.1	1995–1998	1.4	1998–2007	-0.5 #	-0.5 **	-0.5 **
Top 15 cancers for men¶												
Prostate	1975–1988	2.6 #	1988–1992	16.5 #	1992–1995	-11.6 #	1995–2000	2.1	2000–2007	-2.0 #	-1.1 **	-2.0 **
Delay adjusted	1975–1988	2.6 #	1988–1992	16.5 #	1992–1995	-11.5 #	1995–2000	2.1	2000–2007	-1.7 #	-0.9	-1.7 **
Lung and bronchus	1975–1982	1.5 #	1982–1992	-0.5 #	1992–2007	-2.0 #					-2.0 **	-2.0 **
Delay adjusted	1975–1982	1.4 #	1982–1991	-0.4	1991–2007	-1.8 #					-1.8 **	-1.8 **
Colon and rectum	1975–1985	1.1 #	1985–1991	-1.2 #	1991–1995	-3.2 #	1995–1998	2.2	1998–2007	-3.2 #	-3.2 **	-3.2 **
Delay adjusted	1975–1985	1.1 #	1985–1991	-1.2 #	1991–1995	-3.2 #	1995–1998	2.1	1998–2007	-3.1 #	-3.1 **	-3.1 **
Urinary bladder	1975–1987	1.0 #	1987–1996	-0.5	1996–1999	1.7	1999–2007	-0.6 #			-0.3	-0.6 **
Delay adjusted	1975–1986	0.9 #	1986–2007	0.0							0.0	0.0
Melanoma of the skin	1975–1996	4.2 #	1996–2007	2.0 #							2.0 **	2.0 **
Delay adjusted	1975–1986	5.6 #	1986–2007	2.9 #							2.9 **	2.9 **
Non-Hodgkin lymphoma	1975–1991	4.2 #	1991–2007	0.2							0.2	0.2
Delay adjusted	1975–1991	4.2 #	1991–2007	0.3 #							0.3 **	0.3 **
Kidney and renal pelvis	1975–2007	1.8 #									1.8 **	1.8 **
Delay adjusted	1975–2007	1.8 #									1.8 **	1.8 **
Leukemia	1975–2004	0.0	2004–2007	-3.9 #							-1.3 **	-3.0 **
Delay adjusted	1975–2007	0.2 #									0.2 **	0.2 **
Oral cavity and pharynx	1975–2007	-1.2 #									-1.2 **	-1.2 **
Delay adjusted	1975–2007	-1.2 #									-1.2 **	-1.2 **
Pancreas	1975–1995	-0.8 #	1995–2007	0.6 #							0.6 **	0.6 **
Delay adjusted	1975–1981	-1.8 #	1981–1985	1.1	1985–1990	-2.2 #	1990–2003	0.2	2003–2007	2.0 #	1.0 **	2.0 **
Stomach	1975–1988	-1.2 #	1988–2007	-2.0 #							-2.0 **	-2.0 **
Delay adjusted	1975–1988	-1.2 #	1988–2007	-2.0 #							-2.0 **	-2.0 **
Liver and intrahepatic bile duct	1975–2007	3.5 #									3.5 **	3.5 **
Delay adjusted	1975–2007	3.6 #									3.6 **	3.6 **
Esophagus	1975–2007	0.6 #									0.6 **	0.6 **
Delay adjusted	1975–2007	0.6 #									0.6 **	0.6 **
Brain and other nervous system	1975–1991	1.1 #	1991–2007	-0.7 #							-0.7 **	-0.7 **
Delay adjusted	1975–1989	1.2 #	1989–2007	-0.4 #							-0.4 **	-0.4 **
Myeloma	1975–1992	1.2 #	1992–2007	-0.1							-0.1	-0.1
Delay adjusted	1975–2007	0.7 #									0.7 **	0.7 **

Top 15 cancers for women¶

Breast	1975–1980	-0.5	1980–1987	3.9 #	1987–1995	-0.1	1995–1998	2.7	1998–2007	-1.7 #	-1.7 **	-1.7 **
Delay adjusted	1975–1980	-0.5	1980–1987	3.9 #	1987–1995	-0.1	1995–1998	2.7	1998–2007	-1.6 #	-1.6 **	-1.6 **
Lung and bronchus	1975–1982	5.5 #	1982–1990	3.5 #	1990–1998	1.0 #	1998–2007	-0.1			-0.1	-0.1
Delay adjusted	1975–1982	5.5 #	1982–1991	3.5 #	1991–2007	0.4 #					0.4 **	0.4 **
Colon and rectum	1975–1985	0.3	1985–1995	-1.9 #	1995–1998	2.0	1998–2007	-2.3 #			-2.3 **	-2.3 **
Delay adjusted	1975–1985	0.3	1985–1995	-1.9 #	1995–1998	1.9	1998–2007	-2.2 #			-2.2 **	-2.2 **
Corpus and uterus, NOS	1975–1979	-6.0 #	1979–1988	-1.7 #	1988–1997	0.7 #	1997–2007	-0.5 #			-0.5 **	-0.5 **
Delay adjusted	1975–1979	-6.0 #	1979–1988	-1.7 #	1988–1997	0.6 #	1997–2007	-0.4 #			-0.4 **	-0.4 **
Melanoma of the skin	1975–1981	5.0 #	1981–2007	2.3 #							2.3 **	2.3 **
Delay adjusted	1975–1980	5.5 #	1980–2007	2.4 #							2.4 **	2.4 **
Non-Hodgkin lymphoma	1975–1990	2.8 #	1990–2004	1.2 #	2004–2007	-1.5					0.3	-0.8
Delay adjusted	1975–1990	2.9 #	1990–2007	1.1 #							1.1 **	1.1 **
Thyroid	1975–1977	6.6	1977–1980	-5.7	1980–1996	2.5 #	1996–2007	6.4 #			6.4 **	6.4 **
Delay adjusted	1975–1977	6.6	1977–1980	-5.6	1980–1996	2.5 #	1996–2007	6.5 #			6.5 **	6.5 **
Ovary	1975–1985	0.2	1985–2001	-0.7 #	2001–2007	-2.2 #					-1.7 **	-2.2 **
Delay adjusted	1975–1985	0.1	1985–2001	-0.7 #	2001–2007	-1.9 #					-1.5 **	-1.9 **
Pancreas	1975–1984	1.3 #	1984–1999	-0.4	1999–2007	1.1 #					0.9 **	1.1 **
Delay adjusted	1975–1984	1.3 #	1984–1999	-0.4 #	1999–2007	1.4 #					1.2 **	1.4 **
Leukemia	1975–2007	0.0									0.0	0.0
Delay adjusted	1975–2007	0.4 #									0.4 **	0.4 **
Kidney and renal pelvis	1975–2007	2.3 #									2.3 **	2.3 **
Delay adjusted	1975–1993	2.7 #	1993–1999	0.8	1999–2007	3.7 #					3.4 **	3.7 **
Urinary bladder	1975–2003	0.2 #	2003–2007	-2.4 #							-1.0 **	-2.4 **
Delay adjusted	1975–2003	0.2 #	2003–2007	-2.1							-0.8	-2.1 **
Cervix uteri	1975–1981	-4.6 #	1981–1996	-1.1 #	1996–2007	-3.5 #					-3.5 **	-3.5 **
Delay adjusted	1975–1982	-4.5 #	1982–1991	-0.3	1991–2007	-2.8 #					-2.8 **	-2.8 **
Oral cavity and pharynx	1975–1980	2.6 #	1980–2007	-1.0 #							-1.0 **	-1.0 **
Delay adjusted	1975–1980	2.5 #	1980–2007	-0.9 #							-0.9 **	-0.9 **
Brain and other nervous system	1975–1987	1.6 #	1987–2007	-0.3							-0.3	-0.3
Delay adjusted	1975–1987	1.6 #	1987–2007	-0.1							-0.1	-0.1

* APC = annual percent change; AAPC = average annual percent change; NOS = not otherwise specified; SEER = Surveillance, Epidemiology, and End Results. Source: SEER 9 areas covering about 10% of the US population (Connecticut, Hawaii, Iowa, Utah, and New Mexico, and the metropolitan areas of San Francisco, Detroit, Atlanta, and Seattle-Puget Sound).

† Joinpoint analyses with up to four joinpoints yielding up to five trend segments (Trend 1 - Trend 5) are based on rates per 100 000 persons and were age standardized to the 2000 US standard population (19 age groups: under 1, 1-4, 5-9, 10-14, ..., 80-84, 85+, Census P25–1130). Joinpoint Regression Program, Version 3.4.3. April 2010, Statistical Research and Applications Branch, National Cancer Institute.

‡ APC is based on rates that were age standardized to the 2000 U.S. standard population (19 age groups: <1, 1-4, 5-9, 10-14, ..., 80-84, >85 years, Census P25–1130).

§ AAPC is a weighted average of the APCs calculated by Joinpoint.

|| All sites excludes myelodysplastic syndromes and borderline tumors; ovary excludes borderline tumors.

¶ The top 15 cancers were selected based on the sex-specific age-adjusted incidence rates for 2003–2007 for all races combined and listed in rank order.

APC is statistically significantly different from zero (two-sided t test, $P < .05$).

** AAPC is statistically significantly different from zero (two-sided Z test, $P < .05$).

Supplementary Table 3. Age-standardized and age-specific rates and counts for tumors of the brain and other nervous system (non-malignant and malignant), by histologic grouping, NAACCR combined, 2004–2007, men and women*

Histologic Group†	All ages		Age-specific rates§																	
	Age std. rate‡	Count	00–04	05–09	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	>85
Brain and ONS	18.90	213,525	5.25	4.49	4.42	5.25	5.87	8.14	10.38	12.51	15.83	19.96	25.49	32.00	38.82	49.25	56.45	63.61	69.16	65.72
Tumors of neuroepithelial tissue	6.55	73,467	4.42	3.57	3.02	2.72	2.48	3.38	3.66	4.09	4.90	6.12	7.98	10.79	13.37	16.33	18.95	20.00	18.57	11.41
Pilocytic astrocytoma	0.33	3,534	0.89	0.91	0.84	0.61	0.30	0.26	0.20	0.14	0.10	0.09	0.09	0.07	0.08	0.09	0.07	0.07	0.04	0.03
Diffuse and anaplastic astrocytoma	0.97	10,851	0.37	0.33	0.36	0.36	0.53	0.80	0.92	0.96	1.08	1.06	1.17	1.39	1.74	2.04	2.32	2.58	2.17	1.11
Glioblastoma	3.20	36,613	0.09	0.13	0.15	0.18	0.21	0.44	0.57	0.86	1.58	2.88	4.70	7.16	9.60	12.14	14.47	15.04	13.88	8.38
Oligodendroglioma and anaplastic oligodendroglioma	0.40	4,452	0.04	0.05	0.08	0.15	0.22	0.48	0.55	0.67	0.74	0.64	0.61	0.61	0.48	0.51	0.41	0.38	0.26	0.10
Mixed glioma	0.20	2,203	0.03	0.02	0.04	0.05	0.16	0.28	0.33	0.39	0.33	0.28	0.24	0.27	0.25	0.24	0.17	0.18	0.10	0.05
Glioma malignant, NOS	0.44	4,809	0.87	0.78	0.39	0.23	0.20	0.20	0.22	0.21	0.24	0.25	0.30	0.35	0.42	0.55	0.77	1.09	1.66	1.49
Embryonal/primitive/medulloblastoma	0.20	2,168	0.97	0.57	0.31	0.21	0.18	0.13	0.13	0.08	0.07	0.07	0.04	0.05	0.03	0.04		0.03	0.03	
All other tumors of neuroepithelial tissue	0.80	8,837	1.16	0.78	0.85	0.92	0.69	0.80	0.74	0.78	0.77	0.85	0.81	0.89	0.76	0.71	0.73	0.62	0.44	0.24
Tumors of cranial and spinal nerves	1.68	19,062	0.26	0.22	0.24	0.35	0.46	0.73	1.17	1.56	1.92	2.56	3.40	3.89	3.92	4.20	3.60	3.18	2.75	1.48
Nerve sheath	1.68	19,057	0.26	0.22	0.24	0.35	0.46	0.73	1.17	1.56	1.92	2.56	3.40	3.89	3.92	4.20	3.60	3.18	2.75	1.48
Acoustic neuromas	1.05	12,033	0.01	0.02	0.07	0.13	0.22	0.34	0.67	0.93	1.22	1.65	2.27	2.63	2.72	2.90	2.48	2.07	1.81	1.03
All other nerve sheath	0.62	7,024	0.24	0.20	0.17	0.23	0.24	0.39	0.50	0.63	0.70	0.91	1.13	1.26	1.19	1.30	1.12	1.11	0.94	0.44
Tumors of meninges	6.83	77,799	0.12	0.08	0.18	0.34	0.67	1.20	2.16	3.37	5.10	7.05	9.21	11.91	15.19	20.80	24.60	30.23	36.00	39.01
Meningioma	6.60	75,318	0.08	0.06	0.12	0.23	0.52	0.99	1.92	3.10	4.79	6.71	8.89	11.53	14.81	20.34	24.30	29.85	35.79	38.84
All other tumors of meninges	0.22	2,481	0.04	0.02	0.06	0.11	0.14	0.21	0.24	0.27	0.30	0.33	0.32	0.38	0.38	0.46	0.30	0.38	0.22	0.16
Germ cell tumors and cysts	0.08	915	0.11	0.11	0.28	0.26	0.14	0.10	0.05	0.04	0.02	0.02	0.02	0.01		0.03				
Tumors of sellar region	2.70	30,205	0.14	0.33	0.47	1.27	1.75	2.29	2.81	2.86	3.20	3.41	3.88	4.23	4.75	5.80	6.36	5.87	5.14	3.40
All other brain	1.06	12,077	0.21	0.18	0.22	0.31	0.37	0.44	0.54	0.60	0.70	0.79	1.00	1.17	1.58	2.09	2.93	4.31	6.70	10.43
Lymphomas and hematopoietic neoplasms of the brain and ONS	0.46	5,182	0.01	0.01	0.02	0.03	0.06	0.12	0.18	0.23	0.31	0.48	0.54	0.77	1.16	1.59	2.10	2.30	2.02	1.01

* NAACCR = North American Association of Central Cancer Registries; ONS = other nervous system; NPCER = National Program of Cancer Registries; SEER = Surveillance, Epidemiology, and End Results; CBTRUS = Central Brain Tumor Registry of the United States. Source: NAACCR Combined - NPCR and SEER areas reported by NAACCR as meeting high-quality incidence data standards for 2003–2007 (46 states): Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming. The table excludes cancer cases that were identified as having invalid site/histology combinations.

† The site grouping "Brain and ONS" includes cancer cases with primary sites C70.0–C72.9 and C75.1–C75.3. The category "Lymphomas and hematopoietic neoplasms of the brain and ONS" refers to those lymphomas and hematopoietic neoplasms with a primary site of C70.0–C72.9, C75.1–C75.3. Histologic groupings are as defined in CBTRUS (2010). CBTRUS Statistical Report: Primary Brain and Central Nervous System Tumors Diagnosed in the United States in 2004–2006.

‡ Incidence rates are per 100 000 persons and were age standardized to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, 10-14, ..., 80-84, >85 years, Census P25–1130).

§ Incidence rates are per 100 000 persons

|| Statistic not displayed because of fewer than 6 cancer cases.

Supplementary Table 4. Age-standardized and age-specific rates and counts for tumors of the brain and other nervous system (non-malignant and malignant), by histologic grouping, NAACCR combined, 2004–2007, men*

Histologic group†	All ages		Age-specific rates§																	
	Age std. rate‡	Count	00–04	05–09	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	>85
Brain and ONS	17.35	90,870	5.33	4.71	4.47	5.03	4.89	7.14	8.68	10.69	13.40	17.21	22.62	29.48	36.89	46.84	53.55	61.64	64.96	60.52
Tumors of neuroepithelial tissue	7.71	40,820	4.52	3.80	3.09	2.92	2.52	3.78	4.10	4.71	5.66	7.19	9.59	12.96	16.27	19.92	23.08	25.36	23.33	15.81
Pilocytic astrocytoma	0.34	1,834	0.89	0.95	0.82	0.66	0.32	0.26	0.16	0.14	0.09	0.10	0.11	0.08	0.08	0.10	0.08	0.09		
Diffuse and anaplastic astrocytoma	1.13	6,013	0.38	0.35	0.36	0.40	0.52	0.90	1.04	1.12	1.22	1.23	1.36	1.65	2.08	2.45	2.69	3.21	2.83	1.59
Glioblastoma	4.00	20,841	0.11	0.14	0.17	0.22	0.22	0.51	0.71	1.08	2.07	3.55	5.92	8.72	11.81	14.91	17.85	19.19	17.44	11.76
Oligodendroglioma and anaplastic oligodendroglioma	0.45	2,467	0.04	0.06	0.09	0.14	0.23	0.55	0.61	0.76	0.79	0.72	0.68	0.72	0.57	0.62	0.47	0.53	0.33	0.18
Mixed glioma	0.24	1,277	0.02	0.02	0.03	0.05	0.16	0.35	0.40	0.46	0.40	0.35	0.26	0.29	0.30	0.29	0.20	0.28	0.15	
Glioma malignant, NOS	0.47	2,462	0.79	0.76	0.37	0.25	0.20	0.23	0.23	0.22	0.24	0.29	0.37	0.46	0.53	0.65	0.91	1.25	1.94	1.82
Embryonal/primitive/medulloblastoma	0.23	1,233	1.03	0.67	0.36	0.22	0.20	0.16	0.15	0.08	0.08	0.07	0.05	0.05	0.03	0.05		0.05		
All other tumors of neuroepithelial tissue	0.86	4,693	1.27	0.84	0.88	0.97	0.66	0.82	0.81	0.84	0.77	0.89	0.84	0.99	0.87	0.86	0.86	0.75	0.54	0.29
Tumors of cranial and spinal nerves	1.68	9,170	0.27	0.22	0.22	0.37	0.42	0.73	1.17	1.51	1.90	2.48	3.31	3.89	4.09	4.44	3.74	3.32	2.90	1.56
Nerve sheath	1.68	9,168	0.27	0.22	0.22	0.37	0.42	0.73	1.17	1.51	1.90	2.48	3.31	3.89	4.09	4.44	3.74	3.32	2.90	1.56
Acoustic neuromas	1.05	5,704	0.02	0.02	0.06	0.12	0.18	0.32	0.68	0.89	1.20	1.57	2.21	2.59	2.81	3.00	2.56	2.22	1.99	1.04
All other nerve sheath	0.64	3,464	0.25	0.20	0.16	0.25	0.24	0.41	0.49	0.62	0.70	0.91	1.11	1.30	1.28	1.44	1.18	1.10	0.91	0.52
Tumors of meninges	4.18	21,177	0.10	0.08	0.17	0.34	0.57	0.89	1.28	1.84	2.49	3.60	4.72	6.67	9.18	13.04	15.57	20.30	24.72	27.60
Meningioma	3.93	19,820	0.08	0.06	0.11	0.23	0.42	0.65	1.05	1.54	2.14	3.20	4.39	6.24	8.70	12.53	15.26	19.79	24.38	27.32
All other tumors of meninges	0.25	1,357	0.02	0.02	0.05	0.11	0.15	0.24	0.23	0.30	0.35	0.40	0.33	0.43	0.48	0.51	0.31	0.51	0.34	0.28
Germ cell tumors and cysts	0.12	648	0.10	0.12	0.42	0.42	0.23	0.14	0.07	0.04	0.04	0.02	0.02							
Tumors of sellar region	2.57	13,665	0.14	0.30	0.37	0.64	0.84	1.20	1.61	2.05	2.65	3.16	3.96	4.70	5.65	7.19	8.01	8.17	6.80	4.80
All other brain	1.08	5,390	0.21	0.20	0.21	0.34	0.30	0.38	0.45	0.54	0.67	0.76	1.02	1.24	1.69	2.23	3.15	4.46	7.20	10.75
Lymphomas and hematopoietic neoplasms of the brain and ONS	0.54	2,802		0.02	0.02	0.04	0.08	0.16	0.23	0.33	0.44	0.63	0.60	0.91	1.28	1.76	2.28	2.59	2.17	1.43

* NAACCR = North American Association of Central Cancer Registries; ONS = other nervous system; NPCR = National Program of Cancer Registries; SEER = Surveillance, Epidemiology, and End Results; CBTRUS = Central Brain Tumor Registry of the United States. Source: NAACCR Combined - NPCR and SEER areas reported by NAACCR as meeting high-quality incidence data standards for 2003–2007 (46 states): Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming. The table excludes cancer cases that were identified as having invalid site/histology combinations.

† The site grouping "Brain and ONS" includes cancer cases with primary sites C70.0–C72.9 and C75.1–C75.3. The category "Lymphomas and hematopoietic neoplasms of the brain and ONS" refers to those lymphomas and hematopoietic neoplasms with a primary site of C70.0–C72.9, C75.1–C75.3. Histologic groupings are as defined in CBTRUS (2010). CBTRUS Statistical Report: Primary Brain and Central Nervous System Tumors Diagnosed in the United States in 2004–2006.

‡ Incidence rates are per 100 000 persons and were age standardized to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, 10-14, ..., 80-84, >85 years, Census P25–1130).

§ Incidence rates are per 100 000 persons.

|| Statistic not displayed because of fewer than 6 cancer cases.

Supplementary Table 5. Age-standardized and age-specific rates and counts for tumors of the brain and other nervous system (non-malignant and malignant), by histologic grouping, NAACCR combined, 2004–2007, women*

Histologic Group†	All ages		Age-specific rates‡																	
	Age std. rate‡	Count	00–04	05–09	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	>85
Brain and ONS	20.31	122 655	5.17	4.25	4.36	5.49	6.93	9.20	12.14	14.35	18.24	22.64	28.24	34.37	40.58	51.35	58.81	65.04	71.79	68.14
Tumors of neuroepithelial tissue	5.55	32 647	4.31	3.34	2.94	2.50	2.43	2.96	3.22	3.47	4.15	5.07	6.42	8.74	10.72	13.20	15.60	16.08	15.59	9.37
Pilocytic astrocytoma	0.32	1 700	0.89	0.86	0.86	0.56	0.28	0.26	0.23	0.14	0.11	0.09	0.08	0.07	0.09	0.08	0.06	0.06		
Diffuse and anaplastic astrocytoma	0.84	4 838	0.37	0.31	0.36	0.32	0.53	0.70	0.81	0.80	0.93	0.89	0.99	1.14	1.43	1.69	2.02	2.12	1.75	0.88
Glioblastoma	2.54	15 772	0.07	0.13	0.13	0.14	0.20	0.36	0.44	0.64	1.09	2.22	3.53	5.68	7.59	9.72	11.72	12.00	11.66	6.82
Oligodendroglioma and anaplastic oligodendroglioma	0.35	1 985	0.04	0.04	0.07	0.15	0.20	0.39	0.49	0.59	0.69	0.57	0.55	0.50	0.40	0.42	0.36	0.28	0.21	0.07
Mixed glioma	0.17	926	0.04	0.03	0.04	0.06	0.15	0.21	0.26	0.32	0.26	0.21	0.23	0.25	0.19	0.20	0.15	0.11	0.07	
Glioma malignant, NOS	0.41	2 347	0.96	0.79	0.41	0.21	0.20	0.18	0.20	0.19	0.25	0.22	0.23	0.25	0.32	0.46	0.66	0.97	1.48	1.34
Embryonal/primitive/medulloblastoma	0.18	935	0.89	0.45	0.25	0.20	0.16	0.10	0.12	0.07	0.06	0.08	0.03	0.04	0.03	0.03				
All other tumors of neuroepithelial tissue	0.75	4 144	1.05	0.72	0.82	0.87	0.71	0.77	0.67	0.72	0.77	0.80	0.78	0.80	0.67	0.59	0.62	0.53	0.37	0.21
Tumors of cranial and spinal nerves	1.67	9 892	0.24	0.22	0.27	0.33	0.49	0.73	1.18	1.61	1.94	2.64	3.49	3.89	3.76	3.99	3.49	3.09	2.65	1.44
Nerve sheath	1.67	9 889	0.24	0.22	0.27	0.33	0.49	0.73	1.18	1.61	1.94	2.63	3.48	3.89	3.76	3.99	3.48	3.09	2.65	1.44
Acoustic neuromas	1.06	6 329		0.02	0.08	0.13	0.26	0.37	0.66	0.98	1.23	1.74	2.32	2.67	2.64	2.82	2.41	1.96	1.70	1.03
All other nerve sheath	0.61	3 560	0.24	0.20	0.19	0.20	0.23	0.36	0.51	0.64	0.71	0.90	1.16	1.22	1.11	1.17	1.07	1.12	0.95	0.41
Tumors of meninges	9.09	56 622	0.13	0.09	0.19	0.34	0.77	1.52	3.06	4.91	7.68	10.42	13.53	16.85	20.69	27.57	31.94	37.47	43.05	44.29
Meningioma	8.90	55 498	0.08	0.07	0.13	0.23	0.63	1.35	2.81	4.68	7.42	10.15	13.22	16.53	20.40	27.16	31.65	37.18	42.92	44.17
All other tumors of meninges	0.20	1 124	0.05	0.02	0.06	0.12	0.14	0.17	0.24	0.23	0.26	0.27	0.31	0.32	0.29	0.41	0.29	0.29	0.14	0.11
Germ cell tumors and cysts	0.05	267	0.12	0.10	0.14	0.10	0.05	0.05	0.02	0.03		0.02	0.02			0.04				
Tumors of sellar region	2.89	16 540	0.15	0.36	0.59	1.94	2.73	3.43	4.03	3.67	3.74	3.66	3.80	3.78	3.93	4.58	5.01	4.20	4.10	2.75
All other brain	1.05	6 687	0.21	0.15	0.24	0.27	0.45	0.50	0.63	0.66	0.72	0.83	0.98	1.10	1.47	1.97	2.76	4.20	6.38	10.28
Lymphomas and hematopoietic neoplasms of the brain and ONS	0.39	2 380	0.02			0.02	0.04	0.08	0.12	0.13	0.18	0.34	0.49	0.64	1.05	1.44	1.95	2.09	1.93	0.82

* NAACCR = North American Association of Central Cancer Registries; ONS = other nervous system; NPCR = National Program of Cancer Registries; SEER = Surveillance, Epidemiology, and End Results; CBTRUS = Central Brain Tumor Registry of the United States. Source: NAACCR Combined - NPCR and SEER areas reported by NAACCR as meeting high-quality incidence data standards for 2003–2007 (46 states): Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming. The table excludes cancer cases that were identified as having invalid site/histology combinations.

† The site grouping "Brain and ONS" includes cancer cases with primary sites C70.0–C72.9 and C75.1–C75.3. The category "Lymphomas and hematopoietic neoplasms of the brain and ONS" refers to those lymphomas and hematopoietic neoplasms with a primary site of C70.0–C72.9, C75.1–C75.3. Histologic groupings are as defined in CBTRUS (2010). CBTRUS Statistical Report: Primary Brain and Central Nervous System Tumors Diagnosed in the United States in 2004–2006.

‡ Incidence rates are per 100 000 persons and were age standardized to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, 10-14, ..., 80-84, >85 years, Census P25–1130).

§ Incidence rates are per 100 000 persons.

|| Statistic not displayed because of fewer than 6 cancer cases.

Supplementary Table 6. Neuroepithelial brain and other nervous system cancer incidence trends, joinpoint trend analyses, 1980–2007, SEER 9, by sex, for all races*, †, ‡

	Trend 1		Trend 2		Trend 3		Trend 4		AAPC	
	Years	APC§	Years	APC§	Years	APC§	Years	APC§	1998–2007	2003–2007
Men and women										
Tumors of neuroepithelial tissue	1980–1987	1.9 ¶	1987–2007	-0.4 ¶					-0.4 ¶	-0.4 ¶
Pilocytic astrocytoma	1980–1993	12.0 ¶	1993–2002	5.3 ¶	2002–2007	-6.2			-1.2	-6.2 ¶
Diffuse and anaplastic astrocytoma	1980–1987	1.1	1987–1998	-7.5 ¶	1998–2007	-2.7 ¶			-2.7 ¶	-2.7 ¶
Glioblastoma	1980–1991	3.0 ¶	1991–2007	0.4					0.4	0.4
Oligodendroglioma and anaplastic oligodendroglioma	1980–1988	2.4	1988–1998	10.9 ¶	1998–2007	-4.9 ¶			-4.9 ¶	-4.9 ¶
Mixed glioma	1980–2007	2.0 ¶							2.0 ¶	2.0 ¶
Glioma malignant, NOS	1980–1994	-2.1 ¶	1994–2007	0.6					0.6	0.6
Embryonal/primitive/medulloblastoma	< 10 cases									
All other tumors of neuroepithelial tissue	1980–2007	2.0 ¶							2.0 ¶	2.0 ¶
Men										
Tumors of neuroepithelial tissue	1980–1991	1.0 ¶	1991–2007	-0.7 ¶					-0.7 ¶	-0.7 ¶
Pilocytic astrocytoma	1980–1994	13.2 ¶	1994–2007	1.2					1.2	1.2
Diffuse and anaplastic astrocytoma	1980–1987	0.2	1987–1997	-7.4 ¶	1997–2007	-4.0 ¶			-4.0 ¶	-4.0 ¶
Glioblastoma	1980–1991	3.2 ¶	1991–2007	0.4					0.4	0.4
Oligodendroglioma and anaplastic oligodendroglioma	1980–1987	-0.4	1987–1997	12.8 ¶	1997–2007	-5.1 ¶			-5.1 ¶	-5.1 ¶
Mixed glioma	1980–2007	1.6 ¶							1.6 ¶	1.6 ¶
Glioma malignant, NOS	1980–2007	-1.2 ¶							-1.2 ¶	-1.2 ¶
Embryonal/primitive/medulloblastoma	< 10 cases									
All other tumors of neuroepithelial tissue	1980–2007	1.5 ¶							1.5 ¶	1.5 ¶
Women										
Tumors of neuroepithelial tissue	1980–1987	2.1 ¶	1987–2007	-0.3					-0.3	-0.3
Pilocytic astrocytoma	1980–2002	8.5 ¶	2002–2007	-9.5 ¶					-1.9	-9.5 ¶
Diffuse and anaplastic astrocytoma	1980–1990	-0.1	1990–1996	-11.7 ¶	1996–2007	-1.9			-1.9	-1.9
Glioblastoma	1980–1993	2.6 ¶	1993–2007	0.2					0.2	0.2
Oligodendroglioma and anaplastic oligodendroglioma	1980–1992	3.8 ¶	1992–1999	12.4 ¶	1999–2007	-5.3 ¶			-3.5 ¶	-5.3 ¶
Mixed glioma	1980–2007	1.9 ¶							1.9 ¶	1.9 ¶
Glioma malignant, NOS	1980–1989	1.6	1989–1992	-15.5	1992–2003	4.1 ¶	2003–2007	-6.9	-0.9	-6.9
Embryonal/primitive/medulloblastoma	< 10 cases									
All other tumors of neuroepithelial tissue	1980–2007	2.8 ¶							2.8 ¶	2.8 ¶

* SEER = Surveillance, Epidemiology, and End Results; APC = annual percent change; AAPC = average annual percent change; NOS = not otherwise specified; CBTRUS = Central Brain Tumor Registry of the United States. Source: SEER 9 areas covering about 10% of the US population (Connecticut, Hawaii, Iowa, Utah, and New Mexico, and the metropolitan areas of San Francisco, Detroit, Atlanta, and Seattle-Puget Sound). The table excludes cancer cases that were identified as having invalid site/histology combinations.

‡ Joinpoint analyses with up to three joinpoints yielding up to four trend segments (Trend 1 - Trend 4) are based on rates per 100 000 persons and were age standardized to the 2000 US standard population (19 age groups: under 1, 1-4, 5-9, 10-14, ..., 80-84, 85+, Census P25–1130). Joinpoint Regression Program, Version 3.4.3. April 2010, Statistical Research and Applications Branch, National Cancer Institute.

§ APC is based on rates that were age standardized to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, 10-14, ..., 80-84, >85 years, Census P25–1130).

|| AAPC is a weighted average of the APCs calculated by Joinpoint.

¶ APC/AAPC is statistically significantly different from zero (two-sided t test, $P < .05$ for APC; two-sided Z test, $P < .05$ for AAPC).

Supplementary Table 7. Five-year relative survival rates for tumors of neuroepithelial tissue, 1980–2006, SEER 9, by age and time interval*,†,‡

Site/age	1980–1989		1990–1999		2000–2006	
	Relative survival	95% CI	Relative survival	95% CI	Relative survival	95% CI
Tumors of neuroepithelial tissue						
00–19	62.9	60.5 to 65.2	71.9	69.8 to 73.8	75.3	72.8 to 77.6
20–39	54.1	51.9 to 56.2	60.9	58.9 to 62.8	65.1	62.2 to 67.8
40–64	16.1	15.0 to 17.2	22.0	20.8 to 23.2	26.6	25.1 to 28.2
65+	2.9	2.3 to 3.6	3.4	2.8 to 4.1	4.6	3.6 to 5.8
Pilocytic astrocytoma						
00–19	90.1	84.2 to 93.9	96.9	94.7 to 98.1	96.4	93.6 to 98.0
20–39	81.9	68.7 to 89.9	92.5	85.4 to 96.2	93.3	86.5 to 96.8
40+	46.1	23.5 to 66.0	83.4	69.6 to 91.4	83.5	69.9 to 91.4
Diffuse and anaplastic astrocytoma						
00–19	73.0	69.3 to 76.3	77.1	72.8 to 80.9	69.8	61.2 to 76.9
20–39	54.8	51.9 to 57.7	59.9	56.4 to 63.2	60.2	54.0 to 65.8
40–64	22.1	20.1 to 24.2	30.3	27.5 to 33.1	31.7	27.1 to 36.3
65+	3.9	2.8 to 5.3	4.0	2.7 to 5.8	5.6	2.7 to 9.9
Glioblastoma						
00–19	19.1	11.2 to 28.5	12.5	6.4 to 20.8	20.4	10.6 to 32.5
20–39	19.6	15.6 to 24.0	16.0	12.6 to 19.8	21.3	15.8 to 27.3
40–64	2.5	1.9 to 3.3	3.0	2.4 to 3.7	5.3	4.2 to 6.6
65+	0.2	0.1 to 0.5	0.5	0.3 to 0.9	1.1	0.4 to 2.2
Oligodendroglioma and anaplastic oligodendroglioma						
00–19	70.2	55.4 to 80.9	90.2	81.8 to 94.8	90.8	78.6 to 96.2
20–39	76.5	69.2 to 82.3	81.8	77.9 to 85.1	82.0	76.4 to 86.3
40–64	52.6	44.9 to 59.7	65.4	60.8 to 69.6	70.0	64.6 to 74.7
65+	30.0	17.7 to 43.3	28.1	18.9 to 38.0	38.2	25.3 to 50.9
Mixed glioma						
00–19	74.0	58.7 to 84.4	74.6	58.7 to 85.1	79.3	53.6 to 91.7
20–39	65.5	54.1 to 74.8	70.5	62.4 to 77.2	65.1	53.2 to 74.7
40–64	49.7	39.8 to 58.9	49.7	40.8 to 57.9	56.1	45.3 to 65.5
65+	16.5	5.1 to 33.6	15.5	3.8 to 34.8	24.6	11.0 to 41.0
Glioma malignant, NOS						
00–19	43.5	36.3 to 50.5	53.2	47.1 to 59.0	61.3	55.2 to 66.9
20–39	59.3	50.5 to 67.0	60.2	51.1 to 68.1	77.6	65.8 to 85.7
40–64	23.5	18.4 to 29.0	32.3	25.6 to 39.2	42.8	34.3 to 51.1
65+	5.7	3.4 to 8.7	8.2	4.9 to 12.5	5.3	1.7 to 11.9
Embryonal/primitive/medulloblastoma						
00–19	56.0	50.2 to 61.4	60.8	55.7 to 65.6	65.3	58.4 to 71.4
20–39	57.7	46.2 to 67.6	65.4	56.7 to 72.8	72.3	57.2 to 82.9
40+	58.2	30.0 to 78.4	51.7	36.1 to 65.2	44.3	27.9 to 59.5

* SEER = Surveillance, Epidemiology, and End Results; NOS = not otherwise specified; CBTRUS = Central Brain Tumor Registry of the United States. Source: SEER 9 areas covering about 10% of the US population (Connecticut, Hawaii, Iowa, Utah, and New Mexico, and the metropolitan areas of San Francisco, Detroit, Atlanta, and Seattle-Puget Sound). The table excludes cancer cases that were identified as having invalid site/histology combinations.

† Limited to malignant tumors with primary sites C70.0–C72.9 and C75.1–C75.3. Neuroepithelial histology groupings as defined in CBTRUS (2010). CBTRUS Statistical Report: Primary Brain and Central Nervous System Tumors Diagnosed in the United States in 2004–2006.

‡ Based on cancer cases diagnosed 1980–2006 with follow-up through 2007.

Supplementary Table 8. Age-specific trends in brain cancer incidence in the United States during 1992–2007 (SEER 13) and 1995–2007 (NAACCR combined) by sex, for all races and for whites*, †

Age at diagnosis (years)	Calendar year of diagnosis	Annual percent change (95% CI) - all races combined‡						Annual percent change (95% CI) - whites‡					
		Men and women		Men		Women		Men and women		Men		Women	
		APC	95% CI	APC	95% CI	APC	95% CI	APC	95% CI	APC	95% CI	APC	95% CI
< 20	1992–2007 SEER 13	-0.26	-0.91 to 0.40	-0.51	-1.42 to 0.41	0.02	-0.91 to 0.97	-0.14	-0.95 to 0.67	-0.13	-1.30 to 1.05	-0.15	-0.99 to 0.71
	1995–2007 NAACCR Combined	0.56§	0.02 to 1.11	0.48	-0.22 to 1.19	0.67	-0.02 to 1.36	0.52	-0.14 to 1.18	0.58	-0.32 to 1.49	0.45	-0.49 to 1.39
20–29	1992–2007 SEER 13	0.65	-0.37 to 1.69	-0.04	-1.09 to 1.01	1.61	-0.15 to 3.41	1.07	-0.06 to 2.21	0.43	-0.75 to 1.63	1.96	-0.04 to 4.00
	1995–2007 NAACCR Combined	0.24	-0.40 to 0.89	0.09	-0.80 to 0.99	0.45	-0.62 to 1.53	0.07	-0.61 to 0.75	-0.04	-0.98 to 0.92	0.21	-0.99 to 1.43
30–39	1992–2007 SEER 13	-0.75	-1.77 to 0.28	-0.86	-1.96 to 0.26	-0.59	-2.20 to 1.04	-0.76	-1.79 to 0.27	-0.69	-1.73 to 0.36	-0.86	-2.49 to 0.79
	1995–2007 NAACCR Combined	-0.70§	-1.29 to -0.10	-0.93§	-1.62 to -0.24	-0.39	-1.38 to 0.60	-0.64§	-1.27 to 0.00	-0.80§	-1.54 to -0.05	-0.45	-1.56 to 0.67
40–49	1992–2007 SEER 13	-0.52	-1.14 to 0.11	-0.62	-1.59 to 0.35	-0.40	-1.20 to 0.40	-0.31	-1.04 to 0.43	-0.59	-1.68 to 0.51	0.1	-0.87 to 1.08
	1995–2007 NAACCR Combined	-0.85§	-1.21 to -0.49	-1.04§	-1.62 to -0.46	-0.61§	-1.09 to -0.14	-0.77§	-1.16 to -0.37	-0.91§	-1.50 to -0.32	-0.60§	-1.16 to -0.03
50–64	1992–2007 SEER 13	-0.64§	-1.09 to -0.20	-0.62§	-1.23 to -0.02	-0.71§	-1.34 to -0.07	-0.52§	-1.01 to -0.03	-0.43	-1.08 to 0.23	-0.71	-1.48 to 0.06
	1995–2007 NAACCR Combined	-0.41§	-0.60 to -0.23	-0.35	-0.72 to 0.02	-0.53§	-0.90 to -0.16	-0.37§	-0.62 to -0.13	-0.40	-0.86 to 0.07	-0.39§	-0.74 to -0.03
> 65	1992–2007 SEER 13	-0.28	-0.89 to 0.34	-0.43	-1.04 to 0.18	-0.27	-1.10 to 0.57	-0.07	-0.73 to 0.59	-0.27	-0.95 to 0.41	-0.05	-0.92 to 0.82
	1995–2007 NAACCR Combined	-0.10	-0.52 to 0.31	-0.02	-0.62 to 0.59	-0.34	-0.73 to 0.06	-0.01	-0.46 to 0.44	0.03	-0.59 to 0.66	-0.22	-0.64 to 0.21

* SEER = Surveillance, Epidemiology, and End Results; NAACCR = North American Association of Central Cancer Registries; CI = confidence interval; APC = annual percent change; NPCR = National Program of Cancer Registries. Source: SEER-13 areas covering about 14% of the US population (Connecticut, Hawaii, Iowa, Utah, New Mexico, the Alaska Native Tumor Registry, rural Georgia, and the metropolitan areas of San Francisco, Los Angeles, San Jose-Monterey, Detroit, Atlanta, and Seattle-Puget Sound). Source: NAACCR Combined: Includes NPCR and SEER registries that meet the NAACCR high-quality incidence data standards for 1995–2007 (27 states): Arizona, California, Colorado, Connecticut, Delaware, Florida, Atlanta, Hawaii, Idaho, Illinois, Iowa, Kentucky, Louisiana, Maine, Michigan, Minnesota, Nebraska, New Jersey, New Mexico, New York, Pennsylvania, Rhode Island, Texas, Utah, Washington, Wisconsin, Wyoming.

† Includes cancer cases with ICD-O-3 topography codes C71.0–C71.9 and malignant behavior; excludes meningiomas and lymphomas/leukemias: morphology codes 9530–9539 and 9590–9989; also excludes cancer cases with invalid site/histology combinations.

‡ Percent changes were calculated using 1 year for each end point. APCs were calculated using weighted least squares method.

§ The APC is statistically significantly different from zero (two-sided t test, $P < .05$).