Cancer Statistics, 2012

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Abstract

Each year, the American Cancer Society estimates the numbers of new cancer cases and deaths expected in the United States in the current year and compiles the most recent data on cancer incidence, mortality, and survival based on incidence data from the National Cancer Institute, the Centers for Disease Control and Prevention, and the North American Association of Central Cancer Registries and mortality data from the National Center for Health Statistics. A total of 1,638,910 new cancer cases and 577,190 deaths from cancer are projected to occur in the United States in 2012. During the most recent 5 years for which there are data (2004-2008), overall cancer incidence rates declined slightly in men (by 0.6% per year) and were stable in women, while cancer death rates decreased by 1.8% per year in men and by 1.6% per year in women. Over the past 10 years of available data (1999-2008), cancer death rates have declined by more than 1% per year in men and women of every racial/ethnic group with the exception of American Indians/Alaska Natives, among whom rates have remained stable. The most rapid declines in death rates occurred among African American and Hispanic men (2.4% and 2.3% per year, respectively). Death rates continue to decline for all 4 major cancer sites (lung, colorectum, breast, and prostate), with lung cancer accounting for almost 40% of the total decline in men and breast cancer accounting for 34% of the total decline in women. The reduction in overall cancer death rates since 1990 in men and 1991 in women translates to the avoidance of about 1,024,400 deaths from cancer. Further progress can be accelerated by applying existing cancer control knowledge across all segments of the population, with an emphasis on those groups in the lowest socioeconomic bracket. **CA Cancer J Clin 2012;62:10–29. © 2012 American Cancer Society.**

Introduction

Cancer is a major public health problem in the United States and many other parts of the world. One in 4 deaths in the United States is due to cancer. In this article, we provide the expected numbers of new cancer cases and deaths in 2012 nationally and by state, as well as an overview of current cancer statistics using data through 2008, including incidence, mortality, and survival rates and trends. We also estimate the total number of deaths averted as a result of the decline in cancer death rates since the early 1990s, and provide the reported number of cancer deaths in 2008 by age for the 5 leading cancer types.

Materials and Methods

Incidence and Mortality Data

Mortality data from 1930 to 2008 in the United States were obtained from the National Center for Health Statistics (NCHS).[1,2] There are several sources for cancer incidence data. The Surveillance, Epidemiology, and End Results (SEER) program of the National Cancer Institute reports long-term (beginning in 1973), high-quality, population-based incidence data covering up to 26% of the US population. Cancer incidence rates for long-term trends (1975-2008), 5-year relative survival rates (2001-2007), and estimations of the lifetime

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TABLE 1. Estimated New Cancer Cases and Deaths by Sex, United States, 2012*

	ESTIMATED NEW CASES			ESTIMATED DEATHS		
	BOTH SEXES	MALE	FEMALE	BOTH SEXES	MALE	FEMALE
All Sites	**1,638,910**	**848,170**	**790,740**	**577,190**	**301,820**	**275,370**
Oral cavity & pharynx	**40,250**	**28,540**	**11,710**	**7,850**	**5,440**	**2,410**
Tongue	12,770	9,040	3,730	2,050	1,360	690
Mouth	11,620	7,030	4,590	1,790	1,070	720
Pharynx	13,510	10,790	2,720	2,330	1,730	600
Other oral cavity	2,350	1,680	670	1,680	1,280	400
Digestive system	**284,680**	**156,760**	**127,920**	**142,510**	**80,560**	**61,950**
Esophagus	17,460	13,950	3,510	15,070	12,040	3,030
Stomach	21,320	13,020	8,300	10,540	6,190	4,350
Small intestine	8,070	4,380	3,690	1,150	610	540
Colon†	103,170	49,920	53,250	51,690	26,470	25,220
Rectum	40,290	23,500	16,790			
Anus, anal canal, & anorectum	6,230	2,250	3,980	780	300	480
Liver & intrahepatic bile duct	28,720	21,370	7,350	20,550	13,980	6,570
Gallbladder & other biliary	9,810	4,480	5,330	3,200	1,240	1,960
Pancreas	43,920	22,090	21,830	37,390	18,850	18,540
Other digestive organs	5,690	1,800	3,890	2,140	880	1,260
Respiratory system	**244,180**	**130,270**	**113,910**	**164,770**	**91,110**	**73,660**
Larynx	12,360	9,840	2,520	3,650	2,880	770
Lung & bronchus	226,160	116,470	109,690	160,340	87,750	72,590
Other respiratory organs	5,660	3,960	1,700	780	480	300
Bones & joints	**2,890**	**1,600**	**1,290**	**1,410**	**790**	**620**
Soft tissue (including heart)	**11,280**	**6,110**	**5,170**	**3,900**	**2,050**	**1,850**
Skin (excluding basal & squamous)	**81,240**	**46,890**	**34,350**	**12,190**	**8,210**	**3,980**
Melanoma-skin	76,250	44,250	32,000	9,180	6,060	3,120
Other nonepithelial skin	4,990	2,640	2,350	3,010	2,150	860
Breast	**229,060**	**2,190**	**226,870**	**39,920**	**410**	**39,510**
Genital system	**340,650**	**251,900**	**88,750**	**58,360**	**28,840**	**29,520**
Uterine cervix	12,170		12,170	4,220		4,220
Uterine corpus	47,130		47,130	8,010		8,010
Ovary	22,280		22,280	15,500		15,500
Vulva	4,490		4,490	950		950
Vagina & other genital, female	2,680		2,680	840		840
Prostate	241,740	241,740		28,170	28,170	
Testis	8,590	8,590		360	360	
Penis & other genital, male	1,570	1,570		310	310	
Urinary system	**141,140**	**97,610**	**43,530**	**29,330**	**19,670**	**9,660**
Urinary bladder	73,510	55,600	17,910	14,880	10,510	4,370
Kidney & renal pelvis	64,770	40,250	24,520	13,570	8,650	4,920
Ureter & other urinary organs	2,860	1,760	1,100	880	510	370
Eye & orbit	**2,610**	**1,310**	**1,300**	**270**	**120**	**150**
Brain & other nervous system	**22,910**	**12,630**	**10,280**	**13,700**	**7,720**	**5,980**
Endocrine system	**58,980**	**14,600**	**44,380**	**2,700**	**1,240**	**1,460**
Thyroid	56,460	13,250	43,210	1,780	780	1,000
Other endocrine	2,520	1,350	1,170	920	460	460
Lymphoma	**79,190**	**43,120**	**36,070**	**20,130**	**10,990**	**9,140**
Hodgkin lymphoma	9,060	4,960	4,100	1,190	670	520
Non-Hodgkin lymphoma	70,130	38,160	31,970	18,940	10,320	8,620
Myeloma	**21,700**	**12,190**	**9,510**	**10,710**	**6,020**	**4,690**
Leukemia	**47,150**	**26,830**	**20,320**	**23,540**	**13,500**	**10,040**
Acute lymphocytic leukemia	6,050	3,450	2,600	1,440	820	620
Chronic lymphocytic leukemia	16,060	9,490	6,570	4,580	2,730	1,850
Acute myeloid leukemia	13,780	7,350	6,430	10,200	5,790	4,410
Chronic myeloid leukemia	5,430	3,210	2,220	610	370	240
Other leukemia‡	5,830	3,330	2,500	6,710	3,790	2,920
Other & unspecified primary sites‡	31,000	15,620	15,380	45,900	25,150	20,750

*Rounded to the nearest 10; estimated new cases exclude basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. About 63,300 carcinoma in situ of the female breast and 55,560 melanoma in situ will be newly diagnosed in 2012.

†Estimated deaths for colon and rectum cancers are combined.

‡More deaths than cases may reflect lack of specificity in recording underlying cause of death on death certificates or an undercount in the case estimate.

TABLE 2. Incidence Rates for All Cancers Combined, 2004 to 2008, and Estimated New Cases* for Selected Cancers by State, United States, 2012

STATE	INCIDENCE RATE†	ALL CASES	FEMALE BREAST	UTERINE CERVIX	COLON & RECTUM	UTERINE CORPUS	LEUKEMIA	LUNG & BRONCHUS	MELANOMA OF THE SKIN	NON-HODGKIN LYMPHOMA	PROSTATE	URINARY BLADDER
Alabama	469.2	26,440	3,450	220	2,540	590	630	4,440	1,090	1,000	3,860	1,050
Alaska	481.0	3,640	470	‡	290	100	120	490	70	160	490	160
Arizona	398.3	31,990	4,470	250	2,700	820	960	3,970	1,650	1,390	4,390	1,520
Arkansas	458.4	16,120	2,150	130	1,590	370	460	2,760	570	680	2,400	690
California	444.0	165,810	25,040	1,450	14,370	4,960	5,070	18,060	9,250	7,460	23,410	6,880
Colorado	436.9	22,820	3,420	140	1,750	600	730	2,400	1,470	1,000	3,830	1,070
Connecticut	510.7	21,530	3,140	110	1,730	680	550	2,720	1,290	890	3,340	1,170
Delaware	519.0	5,340	740	‡	410	170	140	800	280	220	850	230
Dist. of Columbia	471.7	2,980	460	‡	260	80	70	370	80	100	540	90
Florida	459.0	117,580	15,540	910	10,200	2,910	3,310	17,860	5,450	4,970	17,160	5,460
Georgia	466.9	48,130	6,970	410	4,090	1,170	1,230	6,570	2,150	1,840	7,900	1,680
Hawaii	438.9	6,610	1,120	50	680	220	180	860	280	230	740	220
Idaho	463.0	7,720	1,000	50	640	210	230	920	400	320	1,320	380
Illinois	490.4	65,750	9,090	510	6,030	1,900	1,980	9,190	2,460	2,870	8,950	3,030
Indiana	468.1	35,060	4,490	250	3,200	1,070	1,020	5,460	1,450	1,500	4,320	1,690
Iowa	484.6	17,010	2,350	90	1,680	540	560	2,330	850	800	2,640	850
Kansas	468.4	14,090	1,990	90	1,330	420	440	1,910	610	630	1,890	630
Kentucky	519.2	25,160	3,160	180	2,280	630	670	4,430	1,370	1,070	3,200	1,080
Louisiana	496.7	23,480	3,320	200	2,350	520	660	3,660	810	930	4,040	930
Maine	528.4	8,990	1,170	50	750	300	240	1,340	480	390	1,320	520
Maryland	§	31,000	4,700	210	2,420	920	780	4,250	1,420	1,280	5,190	1,200
Massachusetts	509.9	38,470	5,480	190	2,990	1,250	930	4,920	2,190	1,590	6,180	2,000
Michigan	494.2	57,790	7,710	350	5,080	1,770	1,700	8,210	2,700	2,550	9,450	2,830
Minnesota	484.7	28,060	4,110	150	2,370	910	900	3,750	1,130	1,290	4,520	1,320
Mississippi	481.2	15,190	1,990	140	1,580	330	360	2,550	510	540	2,330	550
Missouri	471.2	33,440	4,440	230	3,250	1,060	1,010	5,370	1,280	1,460	4,110	1,510
Montana	458.3	5,550	740	‡	470	150	170	700	320	250	1,000	270
Nebraska	480.4	9,030	1,270	60	910	280	300	1,230	380	440	1,240	430
Nevada	464.2	13,780	1,770	120	1,260	330	390	1,930	510	530	1,850	610
New Hampshire	505.3	8,350	1,160	‡	680	280	240	1,130	470	350	1,260	460
New Jersey	509.7	50,650	6,970	390	4,630	1,670	1,460	5,990	2,340	2,160	7,550	2,480
New Mexico	412.0	9,640	1,310	70	840	260	310	1,090	560	420	1,430	380
New York	494.8	109,440	14,730	850	9,390	3,730	2,970	13,620	4,700	4,680	17,090	5,460
North Carolina	479.7	51,860	7,090	390	4,140	1,390	1,410	7,950	2,360	2,050	8,010	2,100
North Dakota	477.4	3,510	490	‡	350	110	120	460	130	160	530	170
Ohio	472.4	66,560	8,990	400	6,020	2,110	1,810	10,270	3,030	2,920	8,560	3,160
Oklahoma	483.9	19,210	2,630	170	1,780	470	600	3,370	750	850	2,560	820
Oregon	473.3	21,370	3,200	130	1,670	620	610	2,920	1,290	950	3,460	1,020
Pennsylvania	503.9	78,340	10,290	460	7,330	2,570	2,340	10,890	3,470	3,510	11,890	4,150
Rhode Island	517.9	6,310	870	‡	540	200	170	860	290	240	810	330
South Carolina	468.7	26,570	3,570	220	2,350	670	700	4,270	1,150	1,040	4,140	1,060
South Dakota	441.5	4,430	600	‡	420	140	130	620	170	200	700	220
Tennessee	466.8	35,610	4,680	270	3,240	850	920	6,140	1,640	1,440	4,900	1,490
Texas	446.9	110,470	15,050	1,080	9,700	2,600	3,530	14,810	4,020	4,750	15,730	3,940
Utah	402.5	10,620	1,480	70	780	290	370	880	780	480	1,850	420
Vermont	494.2	4,060	560	‡	330	130	110	550	220	160	580	210
Virginia	456.4	41,380	6,190	290	3,250	1,220	1,020	5,550	2,150	1,700	6,860	1,620
Washington	484.0	35,790	5,240	220	2,770	1,080	1,050	4,700	2,140	1,600	5,060	1,670
West Virginia	498.4	11,610	1,430	80	1,080	330	330	2,070	520	490	1,540	510
Wisconsin	482.4	31,920	4,270	190	2,730	1,040	1,110	4,220	1,370	1,460	4,310	1,600
Wyoming	447.5	2,650	360	‡	240	70	80	330	150	110	480	130
United States	472.6	1,638,910	226,870	12,170	143,460	47,130	47,150	226,160	76,250	70,130	241,740	73,510

*Rounded to the nearest 10; excludes basal and squamous cell skin cancers and in situ carcinomas except urinary bladder.

†Rates are per 100,000 and age adjusted to the 2000 US standard population.

‡Estimate is fewer than 50 cases.

§Rate is not available.

Note: These model-based estimates are offered as a rough guide and should be interpreted with caution. State estimates may not add to US total due to rounding and the exclusion of states with fewer than 50 cases.

Estimated New Cases*

Males				Females		
Prostate	241,740	29%		Breast	226,870	29%
Lung & bronchus	116,470	14%		Lung & bronchus	109,690	14%
Colon & rectum	73,420	9%		Colon & rectum	70,040	9%
Urinary bladder	55,600	7%		Uterine corpus	47,130	6%
Melanoma of the skin	44,250	5%		Thyroid	43,210	5%
Kidney & renal pelvis	40,250	5%		Melanoma of the skin	32,000	4%
Non-Hodgkin lymphoma	38,160	4%		Non-Hodgkin lymphoma	31,970	4%
Oral cavity & pharynx	28,540	3%		Kidney & renal pelvis	24,520	3%
Leukemia	26,830	3%		Ovary	22,280	3%
Pancreas	22,090	3%		Pancreas	21,830	3%
All Sites	**848,170**	**100%**		**All Sites**	**790,740**	**100%**

Estimated Deaths

Males				Females		
Lung & bronchus	87,750	29%		Lung & bronchus	72,590	26%
Prostate	28,170	9%		Breast	39,510	14%
Colon & rectum	26,470	9%		Colon & rectum	25,220	9%
Pancreas	18,850	6%		Pancreas	18,540	7%
Liver & intrahepatic bile duct	13,980	5%		Ovary	15,500	6%
Leukemia	13,500	4%		Leukemia	10,040	4%
Esophagus	12,040	4%		Non-Hodgkin lymphoma	8,620	3%
Urinary bladder	10,510	3%		Uterine Corpus	8,010	3%
Non-Hodgkin lymphoma	10,320	3%		Liver & intrahepatic bile duct	6,570	2%
Kidney & renal pelvis	8,650	3%		Brain & other nervous system	5,980	2%
All Sites	**301,820**	**100%**		**All Sites**	**275,370**	**100%**

FIGURE 1. Ten Leading Cancer Types for the Estimated New Cancer Cases and Deaths by Sex, United States, 2012.
*Estimates are rounded to the nearest 10 and exclude basal and squamous cell skin cancers and in situ carcinoma except urinary bladder.

probability of developing cancer (2006-2008) were obtained from SEER registries.[3-7] The North American Association of Central Cancer Registries (NAACCR) compiles and reports incidence data for 1995 onward from cancer registries that participate in the SEER program or the Centers for Disease Control and Prevention's National Program of Cancer Registries, covering up to 95% of the US population. State-specific incidence rates (2004-2008), incidence rates for trends by race/ethnicity (1999-2008), and incidence data (1995-2008) for projecting new cancer cases were obtained from NAACCR.[8,9] Cancer cases were classified according to the *International Classification of Diseases for Oncology*.[10] All incidence and death rates are age-standardized to the 2000 US standard population and expressed per 100,000 persons.

Cancer incidence rates in this report are delay-adjusted whenever possible in order to account for anticipated future corrections to registry data due to inherent delays and errors in case reporting. Delay-adjusted rates primarily affect the most recent years of data for cancers that are frequently diagnosed in outpatient settings (eg, melanoma, leukemia, and prostate) and provide a more accurate portrayal of the cancer burden in the most recent time period.[11] Delay-adjusted rates are available for SEER registry data and were obtained from the National Cancer Institute.[12]

Projected Cancer Cases and Deaths in 2012

The precise number of cancer cases diagnosed each year in the nation and in every state is unknown because cancer registration is incomplete in some states.

TABLE 3. Death Rates for All Cancers Combined, 2004 to 2008, and Estimated Deaths* for Selected Cancers by State, United States, 2012

STATE	DEATH RATE†	ALL SITES	BRAIN & OTHER NERVOUS SYSTEM	FEMALE BREAST	COLON & RECTUM	LEUKEMIA	LIVER & INTRAHEPATIC BILE DUCT	LUNG & BRONCHUS	NON-HODGKIN LYMPHOMA	OVARY	PANCREAS	PROSTATE
Alabama	199.9	10,290	230	710	980	390	320	3,240	320	300	600	560
Alaska	181.2	930	‡	70	80	‡	‡	260	‡	‡	60	‡
Arizona	156.2	11,090	300	780	1,010	460	440	2,850	400	330	720	570
Arkansas	201.7	6,570	150	420	610	260	180	2,160	170	150	370	290
California	165.1	56,620	1,540	4,110	5,140	2,430	2,880	12,830	2,000	1,680	3,860	3,110
Colorado	156.1	7,190	230	510	680	300	270	1,690	250	250	490	380
Connecticut	176.9	6,940	160	480	560	270	230	1,780	230	210	510	380
Delaware	196.6	1,930	50	120	170	70	70	580	60	50	120	90
Dist. of Columbia	198.3	1,010	‡	80	100	‡	‡	250	‡	‡	80	60
Florida	172.5	42,170	850	2,600	3,660	1,760	1,460	12,200	1,400	1,040	2,670	2,160
Georgia	183.1	15,790	350	1,140	1,470	600	480	4,650	470	450	970	860
Hawaii	149.2	2,380	‡	140	240	80	120	580	80	60	200	100
Idaho	167.8	2,640	90	170	220	130	80	660	100	70	190	160
Illinois	189.3	23,970	500	1,650	2,300	990	730	6,590	760	620	1,580	1,140
Indiana	197.2	13,240	320	850	1,160	560	350	4,140	450	340	790	560
Iowa	180.5	6,410	180	400	590	290	180	1,790	230	190	390	330
Kansas	180.7	5,400	150	370	510	250	160	1,580	200	140	340	230
Kentucky	213.6	9,890	190	570	890	350	250	3,530	310	220	530	360
Louisiana	208.4	9,150	210	660	900	330	380	2,730	270	220	570	390
Maine	196.0	3,230	80	180	260	120	90	970	110	70	200	130
Maryland	186.8	10,440	230	810	940	420	350	2,850	320	280	720	510
Massachusetts	183.0	12,930	300	800	1,060	500	480	3,570	420	370	910	600
Michigan	189.3	20,430	530	1,350	1,730	890	660	5,910	720	550	1,370	840
Minnesota	171.5	9,490	240	600	800	440	320	2,500	330	260	600	480
Mississippi	206.8	6,330	140	440	640	240	220	1,960	170	140	370	310
Missouri	194.5	12,710	300	900	1,120	550	390	3,970	390	280	800	580
Montana	175.7	2,010	60	110	170	90	50	580	70	60	130	110
Nebraska	175.4	3,450	100	210	360	150	80	900	130	90	210	190
Nevada	186.1	4,590	140	350	510	170	210	1,490	140	120	340	260
New Hampshire	184.2	2,700	70	180	220	100	80	750	80	60	200	120
New Jersey	182.6	16,650	340	1,340	1,600	650	540	4,200	550	490	1,130	720
New Mexico	160.8	3,530	90	240	350	140	170	780	110	100	240	200
New York	169.6	34,140	740	2,420	3,090	1,430	1,350	8,880	1,080	1,010	2,420	1,610
North Carolina	189.6	18,440	390	1,290	1,530	690	580	5,600	560	460	1,130	1,020
North Dakota	173.0	1,300	‡	90	130	60	‡	320	50	‡	90	70
Ohio	197.2	25,030	570	1,750	2,250	970	720	7,350	800	600	1,710	1,210
Oklahoma	195.9	7,800	200	500	720	310	240	2,440	260	180	420	430
Oregon	183.0	7,790	220	510	670	310	270	2,120	280	240	520	410
Pennsylvania	190.2	28,790	570	1,950	2,460	1,190	880	7,750	1,030	810	1,940	1,330
Rhode Island	184.9	2,190	50	130	170	100	80	620	70	60	130	90
South Carolina	191.1	9,670	220	660	830	350	300	2,970	280	220	570	440
South Dakota	172.4	1,630	‡	110	160	70	‡	450	60	50	100	80
Tennessee	202.8	13,880	340	890	1,230	510	410	4,570	430	330	790	580
Texas	174.7	36,820	900	2,650	3,400	1,490	1,830	9,780	1,180	930	2,240	1,630
Utah	131.8	2,780	110	250	240	160	90	460	110	90	210	270
Vermont	178.4	1,300	‡	80	110	50	‡	370	‡	‡	90	60
Virginia	185.6	14,610	320	1,110	1,290	570	440	4,150	450	420	990	660
Washington	178.6	12,170	400	800	990	510	500	3,270	390	390	810	670
West Virginia	207.8	4,600	100	280	440	160	110	1,460	160	120	220	160
Wisconsin	181.5	11,240	300	690	920	510	350	3,000	400	320	760	570
Wyoming	171.0	940	‡	60	90	‡	‡	250	‡	‡	70	‡
United States	**181.3**	**577,190**	**13,700**	**39,510**	**51,690**	**23,540**	**20,550**	**160,340**	**18,940**	**15,500**	**37,390**	**28,170**

*Rounded to the nearest 10.

†Rates are per 100,000 and age adjusted to the 2000 US standard population.

‡Estimate is fewer than 50 deaths.

Note: State estimates may not add to US total due to rounding and the exclusion of states with fewer than 50 deaths.

TABLE 4. Probability (%) of Developing Invasive Cancers Within Selected Age Intervals by Sex, United States, 2006 to 2008*

		BIRTH TO 39	40 TO 59	60 TO 69	70 AND OLDER	BIRTH TO DEATH
All sites†	Male	1.45 (1 in 69)	8.68 (1 in 12)	16.00 (1 in 6)	38.27 (1 in 3)	44.85 (1 in 2)
	Female	2.15 (1 in 46)	9.10 (1 in 11)	10.34 (1 in 10)	26.68 (1 in 4)	38.08 (1 in 3)
Urinary bladder‡	Male	0.02 (1 in 5,035)	0.38 (1 in 266)	0.92 (1 in 109)	3.71 (1 in 27)	3.84 (1 in 26)
	Female	0.01 (1 in 12,682)	0.12 (1 in 851)	0.25 (1 in 400)	0.98 (1 in 102)	1.15 (1 in 87)
Breast	Female	0.49 (1 in 203)	3.76 (1 in 27)	3.53 (1 in 28)	6.58 (1 in 15)	12.29 (1 in 8)
Colorectum	Male	0.08 (1 in 1,236)	0.92 (1 in 109)	1.44 (1 in 70)	4.32 (1 in 23)	5.27 (1 in 19)
	Female	0.08 (1 in 1,258)	0.73 (1 in 137)	1.01 (1 in 99)	3.95 (1 in 25)	4.91 (1 in 20)
Leukemia	Male	0.16 (1 in 614)	0.22 (1 in 445)	0.34 (1 in 291)	1.24 (1 in 81)	1.57 (1 in 64)
	Female	0.14 (1 in 737)	0.15 (1 in 665)	0.21 (1 in 482)	0.81 (1 in 123)	1.14 (1 in 88)
Lung & bronchus	Male	0.03 (1 in 3,631)	0.91 (1 in 109)	2.26 (1 in 44)	6.69 (1 in 15)	7.66 (1 in 13)
	Female	0.03 (1 in 3,285)	0.76 (1 in 132)	1.72 (1 in 58)	4.91 (1 in 20)	6.33 (1 in 16)
Melanoma of the skin§	Male	0.15 (1 in 677)	0.63 (1 in 158)	0.75 (1 in 133)	1.94 (1 in 52)	2.80 (1 in 36)
	Female	0.27 (1 in 377)	0.56 (1 in 180)	0.39 (1 in 256)	0.82 (1 in 123)	1.83 (1 in 55)
Non-Hodgkin lymphoma	Male	0.13 (1 in 775)	0.45 (1 in 223)	0.60 (1 in 167)	1.77 (1 in 57)	2.34 (1 in 43)
	Female	0.09 (1 in 1,152)	0.32 (1 in 313)	0.44 (1 in 228)	1.41 (1 in 71)	1.94 (1 in 51)
Prostate	Male	0.01 (1 in 8,499)	2.63 (1 in 38)	6.84 (1 in 15)	12.54 (1 in 8)	16.48 (1 in 6)
Uterine cervix	Female	0.15 (1 in 650)	0.27 (1 in 373)	0.13 (1 in 771)	0.18 (1 in 549)	0.68 (1 in 147)
Uterine corpus	Female	0.07 (1 in 1,373)	0.77 (1 in 130)	0.87 (1 in 114)	1.24 (1 in 81)	2.61 (1 in 38)

*For people free of cancer at beginning of age interval.

†All sites excludes basal and squamous cell skin cancers and in situ cancers except urinary bladder.

‡Includes invasive and in situ cancer cases.

§Statistics for whites only.

Furthermore, the most recent year for which incidence and mortality data are available lags 3 to 4 years behind the current year due to the time required for data collection, compilation, and dissemination. Therefore, we project the numbers of new cancer cases and deaths in the United States in 2012 in order to provide an estimate of the contemporary cancer burden. The methods for projecting both new cases and deaths in 2012 have been modified, so these estimates should not be compared with those from previous years.

We projected the numbers of new malignant cancer cases that will be diagnosed in 2012 using a 2-step process that first estimates complete incidence counts by state during years for which observed data are available, and then projects these counts 4 years ahead for the United States overall and each state individually.[13] To obtain estimated counts for each state through 2008, we used a spatiotemporal model based on incidence data from 1995 through 2008 for 47 states and the District of Columbia that met NAACCR's high-quality data standard for incidence, covering about 95% of the US population.[14] This method accounts for expected delays in case reporting and considers geographic variations in sociodemographic and lifestyle factors, medical settings, and cancer screening behaviors as predictors of incidence. A temporal projection method (the vector autoregressive model) was then applied to the estimated counts to obtain the 2012 projections. For the complete details of this methodology, please refer to Zhu et al.[13]

To estimate the numbers of new breast carcinoma in situ (female) and melanoma in situ cases in 2012, we first estimated the number of in situ cases occurring annually from 2000 through 2008 in the United States by applying the age-specific incidence rates in the 17 SEER areas to the corresponding US population estimates.[3,15] We then projected the total number of cases in 2012 based on the annual percent change from 2000 through 2008 generated by the joinpoint regression model.[16]

We estimated the number of cancer deaths expected to occur in 2012 in the United States overall and in each state using the joinpoint regression model based on the actual number of cancer deaths from 1994 through 2008 at the state and national levels as reported to the NCHS.[2,17] For the complete details of this methodology, please refer to Chen et al.[17]

Other Statistics

The estimated numbers of cancer deaths averted in men and women due to the reduction in overall cancer death rates were calculated by applying the 5-year age-specific cancer death rates in the peak year for age-standardized cancer death rates (1990 in men and 1991 in women) to the corresponding

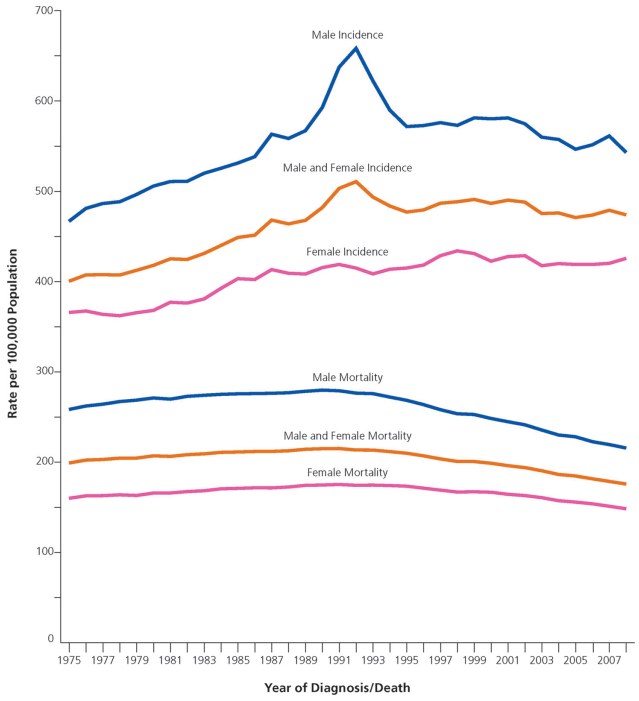

FIGURE 2. Trends in Cancer Incidence and Mortality Rates by Sex, United States, 1975 to 2008.
Rates are age adjusted to the 2000 US standard population. Incidence rates are adjusted for delays in reporting.

age-specific populations in subsequent years through 2008 to obtain the number of expected deaths in each calendar year if the death rates had not decreased. We then summed the difference between the numbers of expected and observed deaths in each age group and calendar year for men and women separately.

Selected Findings

Expected Numbers of New Cancer Cases

Table 1 presents the estimated numbers of new cases of invasive cancer expected among men and women in the United States in 2012. The overall estimate of more than 1.6 million new cases does not include carcinoma in situ of any site except the urinary bladder, nor does it include basal cell and squamous cell cancers of the skin. About 63,300 cases of breast carcinoma in situ and 55,560 cases of melanoma in situ are expected to be newly diagnosed in 2012. The estimated numbers of new cancer cases by state for selected cancers are shown in Table 2.

Figure 1 indicates the most common cancers expected to occur in men and women in 2012. Among men, cancers of the prostate, lung and bronchus, and colorectum will account for about half of all newly diagnosed cancers; prostate cancer alone will account for 29% (241,740) of incident cases. The 3 most commonly diagnosed types of cancer among women in 2012 will be breast, lung and bronchus, and colorectum, accounting for about half of the estimated cancer cases in women. Breast cancer alone is expected to account for 29% (226,870) of all new cancer cases among women.

Expected Numbers of Cancer Deaths

Table 1 also shows the expected numbers of deaths from cancer projected for 2012. It is estimated that 577,190 Americans will die from cancer this year, corresponding to more than 1,500 deaths per day. Cancers of the lung and bronchus, prostate, and colorectum in men and cancers of the lung and bronchus, breast, and colorectum in women continue to be the most common causes of cancer death. These 4 cancers account for almost half of the total cancer deaths among men and women (Fig. 1). In 2012, lung cancer is expected to account for 26% of all female cancer deaths and 29% of all male cancer deaths. Table 3 provides the estimated numbers of cancer deaths in 2012 by state for selected cancers.

Lifetime Probability of Developing Cancer

The lifetime probability of being diagnosed with an invasive cancer is higher for men (45%) than for women (38%) (Table 4). However, because of the earlier median age at diagnosis for breast cancer compared with other major cancers, women have a slightly higher probability of developing cancer before age 60 years. These estimates are based on the average experience of the general population and may over- or underestimate individual risk because of differences in exposure (eg, smoking history) and/or genetic susceptibility.

Trends in Cancer Incidence

Figures 2 to 5 depict long-term trends in cancer incidence and death rates for all cancers combined and for selected cancers by sex. Table 5 shows incidence (delay-adjusted) and mortality trends for all cancers combined and for the 4 most common cancer sites based on joinpoint regression analysis. Joinpoint is a tool used to describe and quantify trends by fitting observed rates to lines connected at "joinpoints" where trends change in direction or magnitude.[16,18]

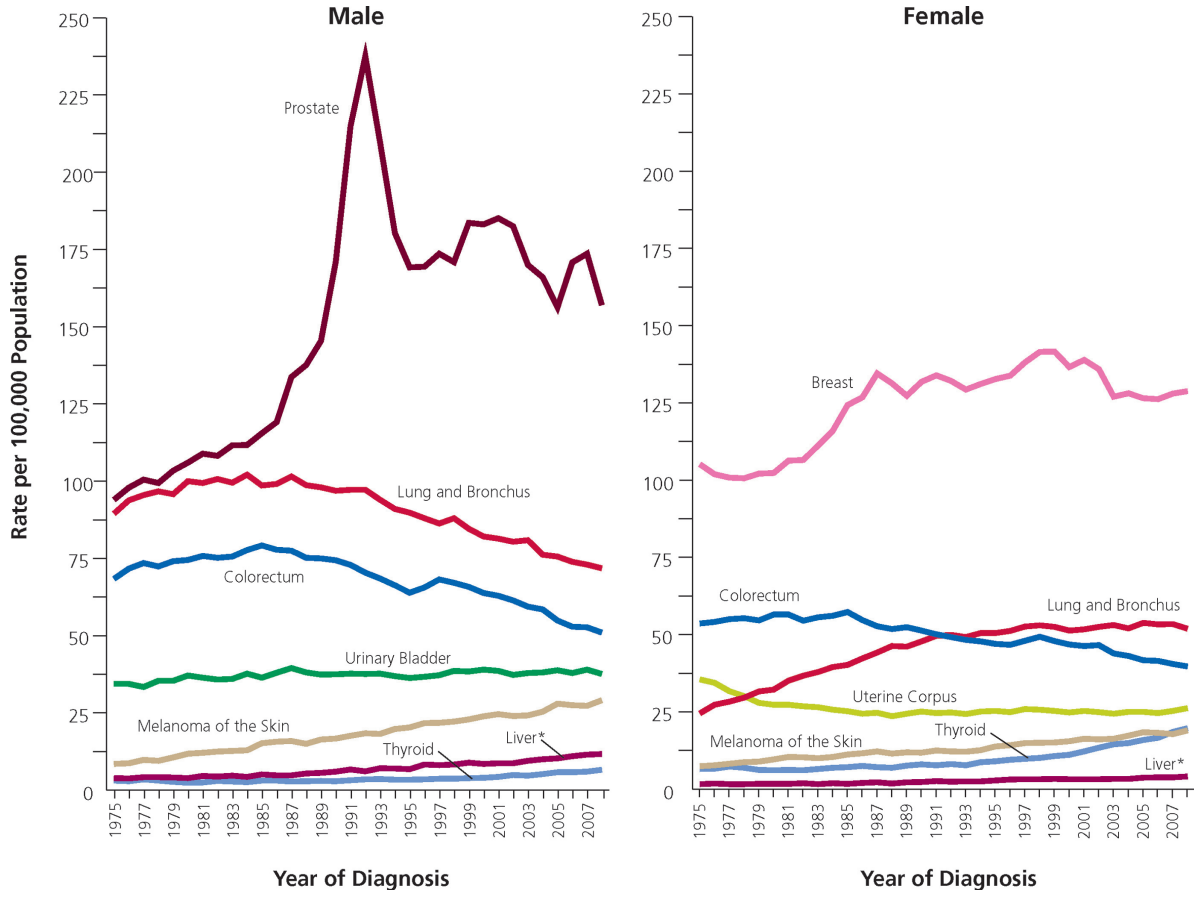

FIGURE 3. Trends in Incidence Rates for Selected Cancers by Sex, United States, 1975 to 2008.
Rates are age adjusted to the 2000 US standard population and adjusted for delays in reporting.
*Liver includes intrahepatic bile duct.

According to data from the SEER 13 cancer registries, incidence rates in the most recent 5 years (2004-2008) decreased in males by 0.6% per year and were stable in females (Table 5). Incidence rates decreased for all 4 major cancer sites except the female breast, for which rates remained relatively stable from 2005 to 2008 after decreasing by 2% per year from 1999 to 2005. Lung cancer incidence rates in women began declining in the late 1990s, more than a decade after the decline began in men.[6] Differences in lung cancer incidence patterns between men and women (Fig. 3) reflect historical differences in tobacco use; cigarette smoking prevalence peaked about 20 years later in women than in men.[19] Recent rapid declines in colorectal cancer incidence rates have largely been attributed to increases in screening that can detect and remove precancerous polyps.[20-22] Although joinpoint trend analysis shows that the incidence rate for prostate cancer declined steadily by 1.9% per year from 2000 to 2008, it is important to realize that annual rates fluctuate widely from year to year (Fig. 3), likely reflecting variation in the prevalence of prostate-specific antigen testing for the detection of prostate cancer. For example, in the SEER 13 areas, the delay-adjusted prostate cancer incidence rate increased from 152.8 (per 100,000) in 2005 to 162.8 in 2006, then dropped from 165.9 in 2007 to 151.8 in 2008.[12]

Trends in Cancer Mortality

Based on the most recent 5 years of mortality data (2004-2008), the overall cancer death rate decreased by 1.8% per year in males and by 1.6% per year in females. These declines have been consistent since 2001/2002 and are larger in magnitude than those occurring in the previous decade (Table 5). Death rates peaked in men in 1990 (279.8 per 100,000) and in women in 1991 (175.3 per 100,000). Between 1990/1991 and 2008, cancer death rates decreased 22.9% in men and 15.3% in women. Death rates continue to decrease for the 4 major cancer sites: lung and bronchus, colorectum,

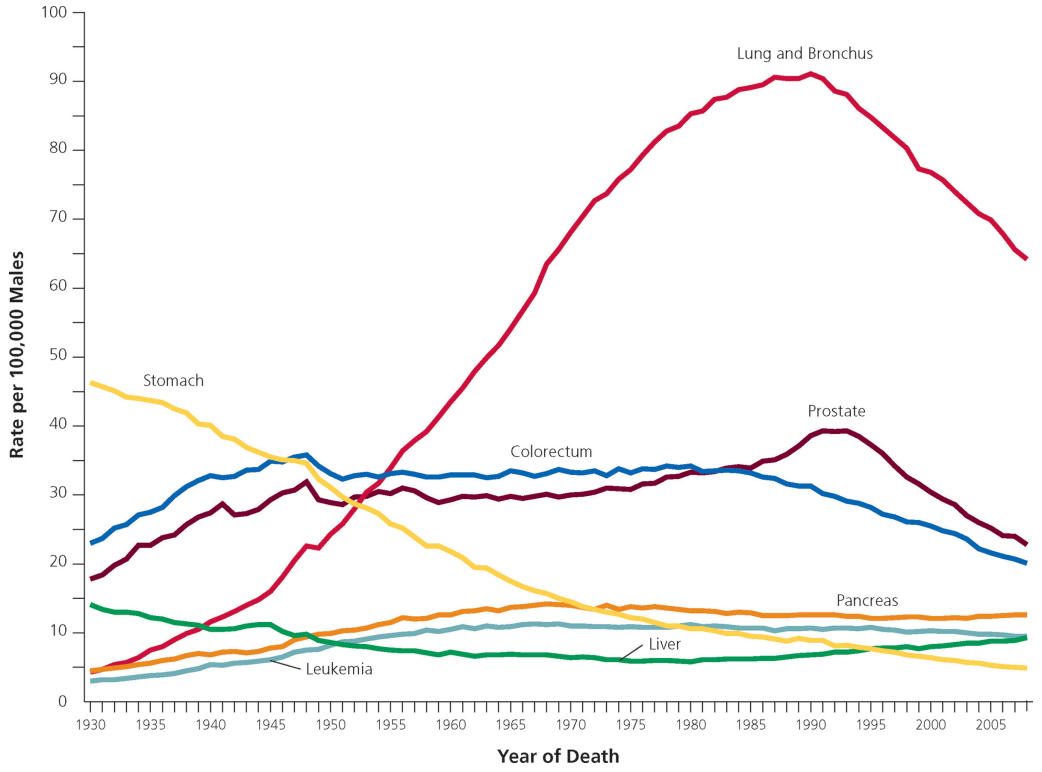

FIGURE 4. Trends in Death Rates Among Males for Selected Cancers, United States, 1930 to 2008.
Rates are age adjusted to the 2000 US standard population. Due to changes in International Classification of Diseases (ICD) coding, numerator information has changed over time. Rates for cancers of the lung and bronchus, colorectum, and liver are affected by these changes.

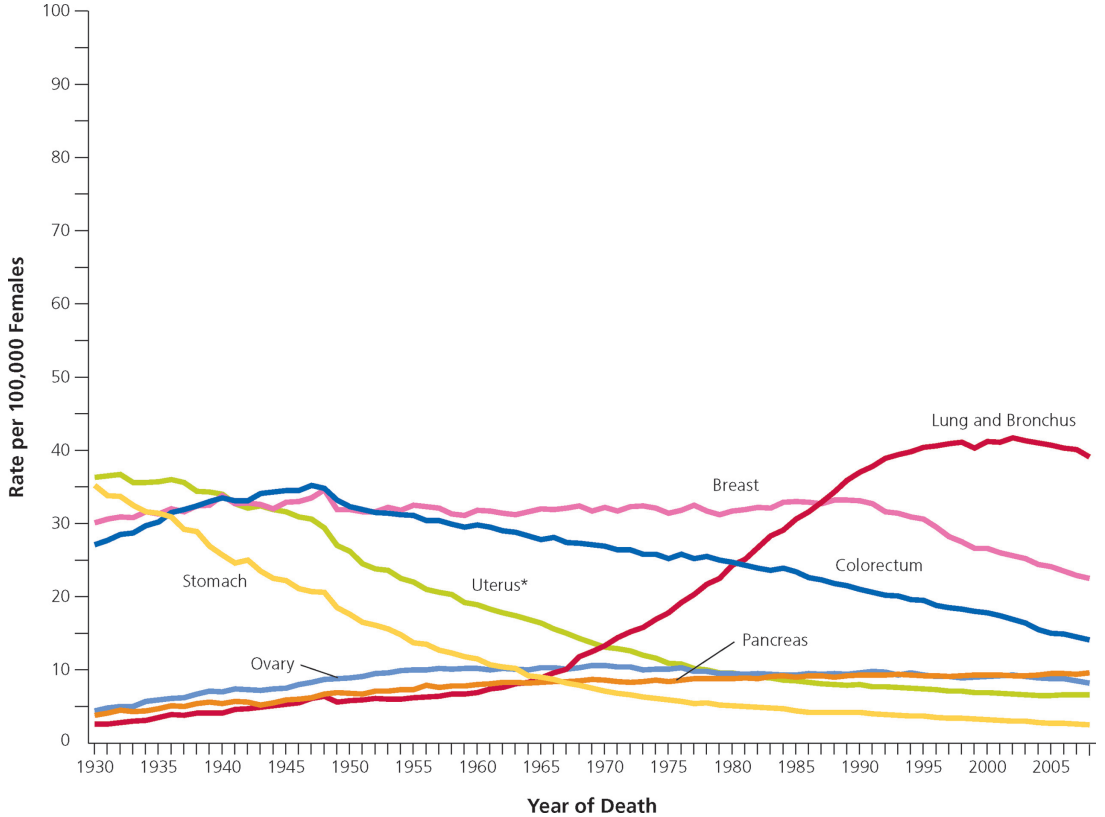

FIGURE 5. Trends in Death Rates Among Females for Selected Cancers, United States, 1930 to 2008.
Rates are age adjusted to the 2000 US standard population. Due to changes in International Classification of Diseases (ICD) coding, numerator information has changed over time. Rates for cancers of the uterus, ovary, lung and bronchus, and colorectum are affected by these changes.
*Uterus includes uterine cervix and uterine corpus.

TABLE 5. Trends in Cancer Incidence (Delay-Adjusted) and Death Rates for Selected Cancers by Sex, United States, 1992 to 2008

	TREND 1		TREND 2		TREND 3		TREND 4		
	YEARS	APC	YEARS	APC	YEARS	APC	YEARS	APC	2004-2008 AAPC
All cancers									
Incidence									
Male and female	1992-1994	−3.2*	1994-1999	0.4	1999-2005	−0.8*	2005-2008	0.1	−0.1
Male	1992-1994	−5.6*	1994-2008	−0.6*					−0.6*
Female	1992-1998	0.8*	1998-2006	−0.5*	2006-2008	1.1			0.3
Death									
Male and female	1992-2001	−1.0*	2001-2008	−1.6*					−1.6*
Male	1992-2001	−1.4*	2001-2008	−1.8*					−1.8*
Female	1992-2002	−0.7*	2002-2008	−1.6*					−1.6*
Lung & bronchus									
Incidence									
Male	1992-2008	−1.9*							−1.9*
Female	1992-1997	0.7	1997-2008	−0.3*					−0.3*
Death									
Male	1992-2005	−1.9*	2005-2008	−2.8*					−2.6*
Female	1992-2002	0.6*	2002-2008	−0.9*					−0.9*
Colorectum									
Incidence									
Male	1992-1995	−2.6*	1995-1998	1.5	1998-2008	−2.6*			−2.6*
Female	1992-1995	−1.8*	1995-1998	1.9	1998-2008	−2.0*			−2.0*
Death									
Male	1992-2002	−2.0*	2002-2005	−4.0*	2005-2008	−2.3*			−2.7*
Female	1992-2001	−1.7*	2001-2005	−3.6*	2005-2008	−2.1*			−2.5*
Female breast									
Incidence	1992-1999	1.3*	1999-2005	−2.0*	2005-2008	1.1			0.3
Death	1992-1995	−1.2*	1995-1998	−3.6*	1998-2003	−1.7*	2003-2008	−2.3*	−2.3*
Prostate									
Incidence	1992-1995	−11.1*	1995-2000	2.0	2000-2008	−1.9*			−1.9*
Death	1992-1994	−1.3	1994-2008	−3.7*					−3.7*

APC indicates annual percent change based on incidence (delay-adjusted) and mortality rates age adjusted to the 2000 US standard population; AAPC, average annual percent change.

*The APC or AAPC is significantly different from 0 ($P < .05$).

Note: Trends analyzed by the Joinpoint Regression Program, version 3.5.0, allowing up to 3 joinpoints. Incidence trends based on Surveillance, Epidemiology, and End Results (SEER) 13 areas.

breast, and prostate (Figs. 4 and 5). Among men, reductions in death rates for lung, prostate, and colorectal cancers account for 78% of the total decrease in the cancer death rate, with lung cancer alone accounting for almost 40% of the decrease. Among women, reductions in death rates for breast and colorectal cancers account for 56% of the total decrease, with breast cancer accounting for 34% of the decrease in women. The decrease in lung cancer death rates among men since 1990 is due to the reduction in tobacco use over the past 50 years,[23] while the decrease in death rates for female breast, colorectal, and prostate cancer largely reflects improvements in early detection and/or treatment.[20,24,25]

Figure 6 shows the total number of cancer deaths avoided since death rates began to decrease in 1991 in men and in 1992 in women. About 1,024,400 cancer deaths (732,900 in men and 291,500 in women) were averted from 1991/1992 through 2008 as a result of 18 years of consistent declines in cancer death rates.

Recorded Number of Deaths From Cancer in 2008

A total of 565,469 cancer deaths were recorded in the United States in 2008, the most recent year for which actual data are available. Cancer is the second leading cause of death following heart disease, accounting for 23% of all deaths. From 2007 to 2008, the age-standardized cancer death rate decreased 1.5%, from 178.4 (per 100,000) to 175.8.

Table 6 presents the numbers of deaths from all cancers combined and from the 5 most common cancer types for each 20-year age group. Leukemia is

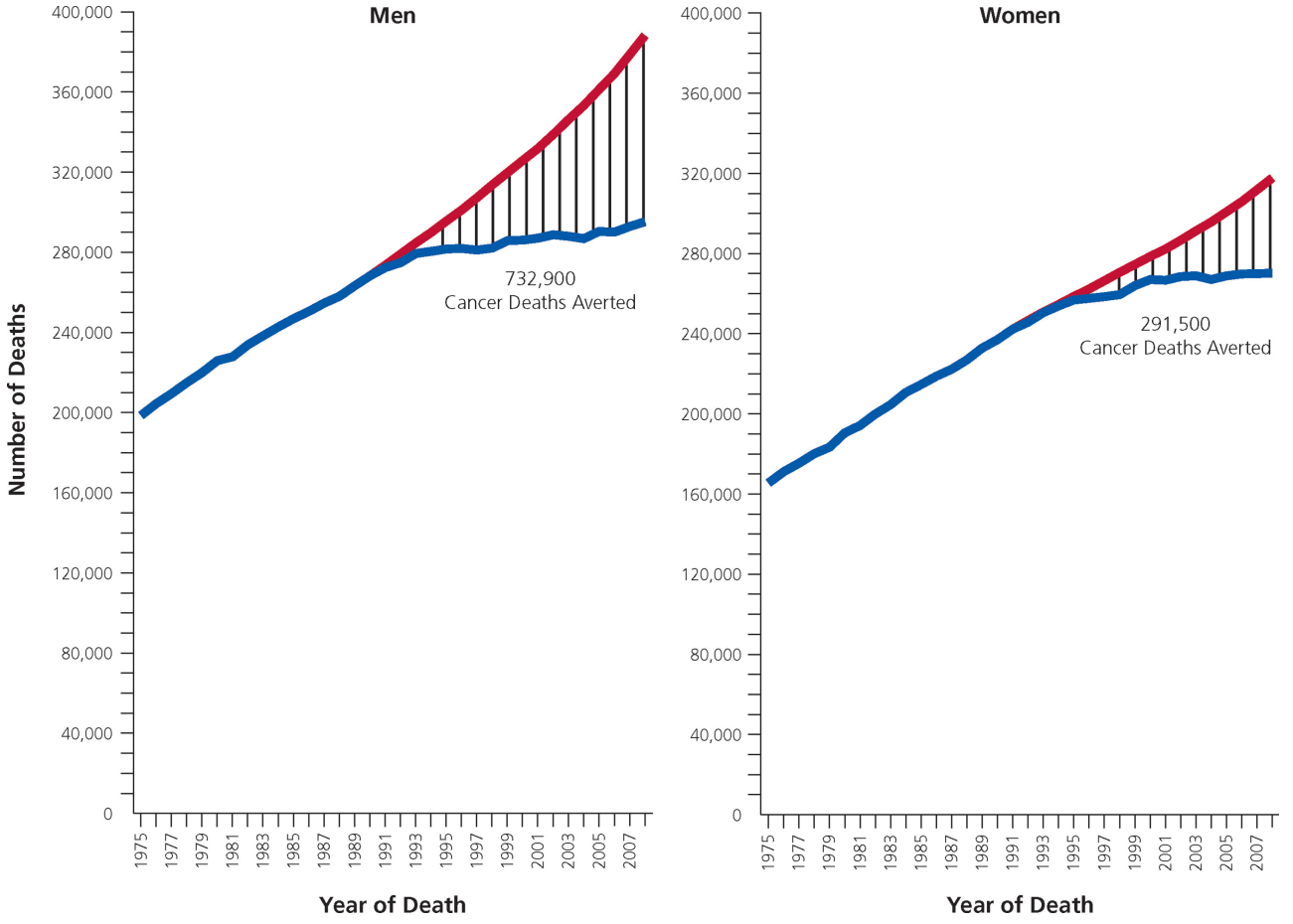

FIGURE 6. Total Number of Cancer Deaths Averted From 1991 to 2008 in Men and From 1992 to 2008 in Women.
The blue line represents the actual number of cancer deaths recorded in each year, and the red line represents the expected number of cancer deaths if cancer mortality rates had remained at their peak (1990 in men and 1991 in women).

the most common cause of cancer death among males aged younger than 40 years, while lung cancer ranks first among those aged 40 years and older. Among females, leukemia is the leading cause of cancer death among children and adolescents (those aged younger than 20 years), breast cancer ranks first among women ages 20 to 59 years, and lung cancer causes the most cancer deaths in those aged 60 years and older.

Regional Variations in Cancer Rates

Tables 7 and 8 depict cancer incidence and death rates for selected cancers by state. Lung cancer shows the largest geographic variation in cancer occurrence by far, reflecting the large historical and continuing differences in smoking prevalence among states.[23] For example, lung cancer incidence rates in Kentucky, which has highest smoking prevalence, are almost 4-fold higher than those in Utah, which has the lowest smoking prevalence. In contrast, state variations for other cancer sites are smaller in both absolute and proportionate terms. For example, the breast cancer incidence rate in Connecticut, which has the highest rate (136.2 per 100,000), is only 28% higher than that in Arizona, which has the lowest rate (106.7 per 100,000). For cancers that can be detected by screening or other testing practices, such as those of the prostate, female breast, and colorectum, state variation in incidence rates reflects differences in the use of screening tests or detection practices in addition to differences in disease occurrence.

Cancer Occurrence by Race/Ethnicity

Cancer incidence and death rates vary considerably among racial and ethnic groups (Table 9). For all cancer sites combined, African American men have a

TABLE 6. Reported Deaths for the 5 Leading Cancers by Age and Sex, United States, 2008

ALL AGES	<20	20 TO 39	40 TO 59	60 TO 79	≥80
			MALE		
ALL SITES 295,259	**ALL SITES 1,130**	**ALL SITES 4,169**	**ALL SITES 54,458**	**ALL SITES 153,631**	**ALL SITES 81,865**
Lung & bronchus 88,541	Leukemia 316	Leukemia 616	Lung & bronchus 15,212	Lung & bronchus 52,755	Lung & bronchus 20,288
Prostate 28,472	Brain & ONS 290	Brain & ONS 499	Colorectum 5,516	Colorectum 13,381	Prostate 15,214
Colorectum 26,935	Bones & joints 99	Colorectum 433	Liver & bile duct 4,244	Prostate 11,957	Colorectum 7,593
Pancreas 17,515	Soft tissue 87	Non-Hodgkin lymphoma 317	Pancreas 3,709	Pancreas 9,578	Urinary bladder 4,338
Leukemia 12,711	Other endocrine system 79	Lung & bronchus 272	Esophagus 2,586	Esophagus 6,140	Pancreas 4,131
			FEMALE		
ALL SITES 270,210	**ALL SITES 909**	**ALL SITES 4,530**	**ALL SITES 49,828**	**ALL SITES 127,190**	**ALL SITES 87,750**
Lung & bronchus 70,051	Leukemia 282	Breast 1,064	Breast 11,492	Lung & bronchus 39,770	Lung & bronchus 19,063
Breast 40,589	Brain & ONS 243	Uterine cervix 411	Lung & bronchus 10,980	Breast 17,051	Colorectum 11,167
Colorectum 25,924	Bones & joints 83	Colorectum 383	Colorectum 4,077	Colorectum 10,291	Breast 10,981
Pancreas 17,721	Other endocrine system 78	Leukemia 362	Ovary 3,125	Pancreas 8,545	Pancreas 6,648
Ovary 14,362	Soft tissue 73	Brain & ONS 305	Pancreas 2,437	Ovary 7,117	Non-Hodgkin lymphoma 4,109

ONS indicates other nervous system.

Note: Deaths within each age group do not sum to all ages combined due to the inclusion of unknown ages. "Other and unspecified malignant neoplasm" is excluded from cause of death ranking order.

15% higher incidence rate and a 33% higher death rate than white men, whereas African American women have a 6% lower incidence rate but a 16% higher death rate than white women. For the specific cancer sites listed in Table 9, incidence and death rates are consistently higher in African Americans than in whites except for cancers of the breast (incidence) and lung (incidence and mortality) among women, and kidney (mortality) among both men and women. Factors known to contribute to racial disparities in mortality vary by cancer site and include differences in exposure to underlying risk factors (eg, historical smoking prevalence for lung cancer), access to high-quality screening (breast, cervical, and colorectal cancers), and timely diagnosis and treatment for many cancers.[26] The higher breast cancer incidence rate noted among white women is thought to reflect a combination of factors that affect both diagnosis (more prevalent mammography use in white women) and underlying disease occurrence (increased prevalence of risk factors in white women, such as later age at first birth and greater use of menopausal hormone therapy).[27]

Cancer incidence and death rates are lower in other racial and ethnic groups than in whites and African Americans for all cancer sites combined and for the 4 most common cancer sites. However, incidence and death rates for cancers related to infectious agents, such as those of the uterine cervix, stomach, and liver, are generally higher in minority populations than in whites. Stomach and liver cancer incidence and death rates are twice as high in Asian Americans/Pacific Islanders as in whites, reflecting an increased prevalence of chronic infection with *Helicobacter pylori* and hepatitis B and C viruses in this population.[28] Kidney cancer incidence

TABLE 7. Incidence Rates for Selected Cancers by State, United States, 2004 to 2008

	ALL CANCERS		BREAST	COLORECTUM		LUNG & BRONCHUS		NON-HODGKIN LYMPHOMA		PROSTATE	URINARY BLADDER	
STATE	MALE	FEMALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	MALE	FEMALE
Alabama*	579.9	391.1	117.2	61.3	42.0	106.8	54.1	19.8	13.8	160.8	32.8	7.6
Alaska	531.4	441.0	130.4	55.1	45.5	85.3	64.8	22.3	18.2	141.5	39.4	8.6
Arizona	447.5	360.6	106.7	43.4	32.5	63.9	48.2	18.0	13.3	122.9	32.5	8.6
Arkansas	556.4	385.6	109.0	56.2	41.4	109.2	61.0	21.7	15.4	156.4	32.8	8.4
California	512.8	396.9	122.4	51.2	38.6	63.3	45.7	22.8	15.6	146.5	34.3	8.1
Colorado	498.2	393.5	122.3	48.4	37.0	57.6	45.0	22.0	15.8	156.3	32.1	8.3
Connecticut	590.0	458.5	136.2	57.4	42.9	80.2	60.0	26.3	17.9	162.1	47.6	12.3
Delaware	614.3	446.9	126.6	59.6	42.6	94.4	69.5	24.3	17.0	181.7	44.4	11.9
Dist. of Columbia†	573.2	398.3	126.7	54.1	43.7	80.3	45.3	22.7	12.8	187.9	24.4	7.7
Florida	531.2	402.6	113.6	51.9	39.3	85.1	59.0	21.7	15.3	137.3	35.9	9.1
Georgia	571.9	395.7	119.2	55.7	40.0	97.3	54.5	21.7	14.5	167.4	33.1	8.0
Hawaii	503.7	393.3	122.4	59.7	39.8	70.5	40.7	20.3	12.4	132.1	26.2	6.4
Idaho	532.0	408.7	116.5	46.5	37.8	66.8	49.0	22.5	17.1	162.5	36.6	9.2
Illinois	577.0	433.8	123.9	63.9	46.5	89.9	59.8	24.2	16.3	157.7	40.1	10.2
Indiana	544.0	418.6	115.1	59.5	44.2	99.8	63.6	23.0	17.0	132.7	36.7	9.2
Iowa	563.7	431.4	122.5	61.3	47.1	88.0	55.3	26.4	18.4	141.7	42.1	8.9
Kansas	556.4	420.6	124.4	57.9	41.7	85.0	53.6	23.9	17.6	158.1	37.0	9.3
Kentucky	612.1	456.4	120.5	66.7	47.4	130.1	79.5	24.7	17.3	139.8	40.1	10.1
Louisiana*	618.1	409.9	118.2	66.0	44.7	105.8	58.6	24.0	17.1	172.0	35.0	8.4
Maine	612.7	468.1	128.9	58.3	46.0	97.2	66.6	26.0	18.6	163.3	48.2	13.5
Maryland†	533.1	411.6	123.4	52.4	39.3	80.0	57.4	20.5	14.2	157.0	33.0	9.7
Massachusetts	588.6	459.2	133.4	56.8	42.0	82.4	64.1	24.6	16.6	160.8	45.6	12.7
Michigan	582.8	432.7	120.3	54.6	41.6	89.1	61.8	25.1	18.3	169.4	41.7	10.7
Minnesota	573.1	421.1	126.4	53.7	41.1	67.6	49.6	26.9	18.1	184.2	40.7	9.7
Mississippi*	608.1	392.1	112.8	64.7	45.7	117.2	56.0	21.6	14.2	174.1	31.3	7.3
Missouri	547.1	418.8	120.6	59.7	43.1	101.3	63.8	22.1	16.0	131.8	35.8	8.4
Montana	518.7	410.9	120.0	51.2	39.3	72.8	58.2	22.2	15.5	160.7	36.3	9.7
Nebraska	559.7	425.4	125.0	65.2	46.9	82.3	52.0	24.4	17.5	157.2	37.2	9.1
Nevada†	507.6	404.1	111.7	51.2	41.1	79.0	66.8	20.4	15.7	135.5	37.6	10.6
New Hampshire	576.3	455.7	132.2	54.3	41.4	82.2	62.2	23.1	17.3	154.8	46.0	13.2
New Jersey	595.1	453.8	129.7	60.6	44.4	76.7	56.7	25.6	17.7	171.0	46.7	12.2
New Mexico	467.4	369.5	110.5	46.2	35.5	54.5	39.4	18.5	14.4	137.6	25.9	7.0
New York	580.9	438.4	124.3	56.7	43.0	77.3	54.8	25.5	17.5	166.9	42.5	11.0
North Carolina	576.6	412.5	123.3	55.8	39.9	101.6	57.8	22.7	15.6	158.8	37.1	9.1
North Dakota	559.3	417.1	124.2	66.4	44.5	72.5	46.2	23.1	17.4	169.5	40.8	9.9
Ohio	551.1	421.2	119.8	58.5	43.6	94.9	60.0	23.2	16.2	146.0	39.0	9.6
Oklahoma	566.3	428.0	125.6	56.8	42.7	103.2	65.6	23.0	17.7	151.8	35.8	8.7
Oregon	531.6	431.5	130.3	50.0	38.7	76.0	59.8	24.2	16.3	149.2	38.7	10.0
Pennsylvania	586.6	449.4	124.8	61.4	46.0	88.4	57.6	24.9	17.6	155.8	45.1	11.0
Rhode Island	603.1	464.5	132.5	59.0	44.8	90.8	63.2	24.4	17.5	155.1	53.1	13.4
South Carolina	569.1	396.9	119.9	55.6	41.0	97.9	53.4	20.5	14.1	165.5	30.9	7.8
South Dakota	515.1	386.8	117.4	55.8	40.9	76.3	46.6	20.3	16.7	158.5	34.0	7.9
Tennessee	558.0	404.6	117.2	57.4	42.2	108.7	60.7	22.1	16.1	142.2	34.4	8.3
Texas*	529.9	388.5	113.7	54.4	37.8	82.3	49.9	22.3	15.8	143.3	29.4	7.0
Utah	476.2	344.7	109.5	42.2	31.2	34.1	22.3	23.4	16.0	173.7	28.7	5.8
Vermont	552.6	453.2	130.1	46.7	41.5	81.9	62.1	23.7	17.4	152.1	43.8	13.1
Virginia	542.1	396.9	124.2	52.3	39.5	88.0	54.3	21.2	14.2	159.4	34.0	8.4
Washington	552.5	434.8	129.8	49.5	37.4	73.4	58.3	26.5	17.7	157.9	39.7	9.5
West Virginia	581.9	441.2	112.6	64.7	47.4	115.0	73.2	23.9	17.3	140.4	40.0	11.1
Wisconsin	555.8	430.9	123.4	53.2	41.0	78.1	54.3	28.3	20.1	150.9	38.7	10.0
Wyoming	517.6	391.2	114.6	51.2	39.6	59.5	48.1	22.4	14.8	166.2	41.4	10.1
United States	**553.0**	**416.5**	**121.2**	**55.7**	**41.4**	**84.4**	**55.7**	**23.4**	**16.3**	**152.9**	**37.6**	**9.4**

Rates are per 100,000 and age adjusted to the 2000 US standard population.

*Due to the effect of large migrations of populations on this state as a result of Hurricane Katrina in September 2005, statistics exclude cases diagnosed from July through December in 2005.

†This state is not included in the overall US rates because its registry did not achieve high-quality data standards for one or more years during 2004 to 2008 according to the North American Association of Central Cancer Registries (NAACCR) data quality indicators.

TABLE 8. Death Rates for Selected Cancers by State, United States, 2004 to 2008

	ALL CANCERS		BREAST	COLON & RECTUM		LUNG & BRONCHUS		NON-HODGKIN LYMPHOMA		PANCREAS		PROSTATE
STATE	MALE	FEMALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE
Alabama	262.0	158.7	24.5	23.6	15.2	90.3	41.0	8.5	5.5	12.9	9.4	29.9
Alaska	212.4	157.2	21.7	21.5	13.5	62.3	46.3	7.7	5.1	11.9	10.4	22.5
Arizona	186.7	132.4	21.0	17.5	11.9	52.1	33.9	7.7	4.9	11.4	7.8	20.6
Arkansas	254.9	164.1	24.0	23.2	15.6	93.2	47.4	8.6	5.2	12.7	9.5	26.2
California	197.4	143.4	22.5	18.4	13.3	50.3	33.9	8.2	5.1	11.8	9.3	23.6
Colorado	187.3	135.7	20.5	18.3	13.3	46.1	32.3	8.2	4.7	11.2	8.8	24.3
Connecticut	216.4	152.5	23.2	18.1	13.8	58.5	39.1	8.2	5.4	14.4	10.1	25.7
Delaware	238.5	167.5	24.3	20.8	15.0	73.7	50.3	9.0	5.1	12.1	9.8	26.7
Dist. of Columbia	260.4	161.1	27.6	23.0	18.1	68.6	35.1	8.8	3.2	16.1	10.1	41.7
Florida	209.4	143.9	21.9	18.7	13.3	65.1	40.1	8.0	5.0	11.9	8.6	20.3
Georgia	237.1	149.5	23.2	20.7	14.3	78.9	38.9	8.0	4.8	12.8	8.8	28.6
Hawaii	186.2	120.7	17.8	18.8	10.7	51.8	27.4	7.2	4.4	12.9	9.4	16.8
Idaho	197.9	145.7	21.2	15.9	13.8	52.0	34.9	8.2	5.8	11.6	10.2	27.3
Illinois	233.3	162.0	24.7	23.2	16.2	69.9	42.0	9.1	5.6	13.2	10.1	26.1
Indiana	247.3	164.8	24.0	23.1	15.6	82.8	47.2	9.9	5.8	12.9	9.5	25.2
Iowa	224.7	151.7	22.1	21.3	15.5	70.0	39.3	9.2	5.6	12.1	8.8	25.1
Kansas	224.7	151.3	23.1	21.8	14.5	71.8	40.9	9.7	5.5	12.7	9.4	22.2
Kentucky	271.2	175.1	23.5	24.4	17.0	103.0	56.1	9.3	6.0	12.3	9.3	25.6
Louisiana	268.1	168.6	26.8	25.8	16.3	87.8	45.0	9.3	5.5	14.0	10.9	28.6
Maine	243.4	164.7	21.5	20.9	15.4	75.6	47.3	9.3	6.0	12.7	10.0	25.0
Maryland	229.7	159.7	25.6	22.6	15.0	67.4	42.2	8.1	5.0	12.8	10.5	27.5
Massachusetts	227.3	156.0	22.3	20.1	14.4	64.0	42.7	8.7	5.4	13.2	10.3	24.1
Michigan	231.1	162.1	24.4	20.6	15.1	71.5	43.9	9.2	6.2	13.6	9.9	23.6
Minnesota	208.8	147.6	21.6	18.2	13.0	57.0	37.3	9.5	5.4	11.8	9.3	25.1
Mississippi	276.1	161.4	25.5	25.2	16.6	98.9	43.3	8.5	4.6	13.6	9.6	31.7
Missouri	242.0	162.7	25.4	22.1	15.0	83.1	46.4	8.5	5.5	12.9	9.5	23.1
Montana	208.1	153.0	20.7	17.5	13.9	59.5	42.4	8.5	5.6	12.3	9.3	28.0
Nebraska	217.1	147.2	22.0	22.9	15.6	64.1	35.9	9.0	5.9	12.2	8.7	24.9
Nevada	214.7	163.0	23.5	21.3	16.4	62.7	50.0	6.8	4.9	12.1	10.0	24.5
New Hampshire	223.4	159.1	22.8	20.5	13.9	63.4	43.7	8.3	5.1	12.8	11.0	25.1
New Jersey	218.5	160.6	26.5	22.6	16.0	59.7	39.1	8.5	5.7	13.3	9.9	23.4
New Mexico	193.0	136.8	21.5	19.6	13.4	45.5	29.5	6.6	4.8	11.5	9.3	24.6
New York	204.6	148.0	23.1	20.2	14.5	56.6	36.4	8.0	5.1	12.6	9.8	23.0
North Carolina	241.4	155.5	24.4	20.4	14.2	81.1	41.9	8.0	5.3	12.5	9.7	27.0
North Dakota	212.8	146.0	22.3	22.2	14.3	59.3	35.4	8.0	5.1	12.4	9.5	25.9
Ohio	246.5	165.5	25.9	23.3	16.0	78.5	45.0	9.5	5.6	13.1	9.7	26.3
Oklahoma	245.4	161.5	24.1	23.3	14.9	84.0	46.8	9.2	5.7	11.8	8.7	23.9
Oregon	217.7	158.7	22.5	19.0	14.1	62.9	44.3	9.1	5.9	12.3	10.3	26.0
Pennsylvania	235.6	161.1	24.8	22.7	15.8	69.9	40.3	9.4	5.9	13.5	9.8	24.5
Rhode Island	234.4	155.0	22.2	20.6	13.5	69.0	43.4	9.1	4.8	12.3	8.7	23.8
South Carolina	245.7	153.9	24.3	20.9	14.6	81.7	39.9	7.8	5.1	12.6	9.5	28.5
South Dakota	214.2	142.7	21.8	20.5	14.3	65.4	36.3	8.7	5.3	11.2	9.2	24.4
Tennessee	261.1	164.0	24.5	22.7	15.6	93.9	47.2	9.3	5.5	12.8	9.4	26.3
Texas	217.8	145.1	22.6	20.7	13.4	65.7	36.9	8.2	5.2	11.8	8.6	22.6
Utah	158.3	112.4	22.1	14.6	10.2	29.5	16.9	7.8	5.0	9.7	7.9	25.6
Vermont	214.2	155.5	21.7	20.2	15.0	62.5	43.2	7.7	5.1	11.5	9.6	24.3
Virginia	232.7	155.5	25.1	21.0	14.4	73.0	41.3	8.3	5.1	13.1	9.9	26.3
Washington	211.9	155.7	22.4	18.2	13.1	59.7	43.2	8.9	5.7	12.1	9.8	25.2
West Virginia	257.1	174.0	23.9	24.4	16.9	89.1	50.8	9.6	6.5	11.7	7.6	21.6
Wisconsin	222.8	154.3	22.1	19.4	13.6	61.4	39.2	9.5	5.9	12.8	9.7	26.7
Wyoming	199.4	150.7	22.1	19.9	14.6	52.5	38.2	8.1	6.3	12.4	10.4	22.7
United States	**223.0**	**153.2**	**23.5**	**20.7**	**14.5**	**67.4**	**40.1**	**8.6**	**5.4**	**12.5**	**9.4**	**24.4**

Rates are per 100,000 and age adjusted to the 2000 US standard population.

and death rates are the highest among American Indians/Alaska Natives; the higher prevalence of obesity and smoking in this population may contribute to this disparity.[29]

Cancer incidence rates can only be adjusted for delayed reporting in whites and African Americans because the long-term incidence data required for delay adjustment are not available for other racial and

TABLE 9. Incidence and Death Rates by Site, Race, and Ethnicity, United States, 2004 to 2008

	WHITE	AFRICAN AMERICAN	ASIAN AMERICAN OR PACIFIC ISLANDER	AMERICAN INDIAN OR ALASKA NATIVE*	HISPANIC/LATINO†
Incidence					
All sites					
Male	545.0	626.2	332.4	427.8	423.4
Female	420.8	394.2	284.0	362.1	333.5
Breast (female)	122.3	116.1	84.9	89.2	92.3
Colorectum					
Male	54.6	66.9	42.4	51.5	48.6
Female	40.3	49.7	32.7	41.5	34.2
Kidney & renal pelvis					
Male	20.8	22.6	9.9	27.4	19.4
Female	10.9	11.7	4.9	16.8	11.2
Liver & bile duct					
Male	8.6	14.1	21.7	15.8	17.0
Female	2.9	4.0	8.2	7.6	6.4
Lung & bronchus					
Male	83.7	102.7	49.8	71.0	46.8
Female	57.2	51.4	28.1	51.7	27.0
Prostate	142.8	230.8	79.7	101.2	126.7
Stomach					
Male	8.5	16.4	16.8	13.9	13.8
Female	4.0	8.2	9.4	6.8	8.4
Uterine cervix	7.7	10.6	7.4	9.8	12.2
Mortality					
All sites					
Male	222.0	295.3	134.7	190.0	149.1
Female	152.8	177.7	94.1	138.4	101.5
Breast (female)	22.8	32.0	12.2	17.2	15.1
Colorectum					
Male	20.1	30.5	13.3	19.8	15.5
Female	14.0	20.4	9.9	14.0	10.3
Kidney & renal pelvis					
Male	6.0	6.0	2.6	8.9	5.2
Female	2.7	2.6	1.2	4.1	2.3
Liver & bile duct					
Male	7.2	11.5	14.7	11.9	11.6
Female	3.0	3.9	6.3	6.7	5.2
Lung & bronchus					
Male	66.9	85.4	36.7	50.5	31.9
Female	41.2	38.8	18.5	33.9	14.3
Prostate	22.4	54.9	10.5	20.7	18.5
Stomach					
Male	4.5	10.7	9.2	8.5	7.7
Female	2.3	5.0	5.4	3.9	4.5
Uterine cervix	2.2	4.3	2.1	3.4	3.1

Rates are per 100,000 population and age adjusted to the 2000 US standard population. Race and ethnicity categories are not mutually exclusive of Hispanic origin.

*Data based on Indian Health Service Contract Health Service Delivery Areas.

†Mortality rates exclude deaths from the District of Columbia and North Dakota due to unreliable Hispanic origin data for 1 or more years.

ethnic groups. During the past 10 years of data (1999-2008), while incidence rates (unadjusted for delayed reporting) declined by 1% or more per year among men of all racial/ethnic groups, among women only slight declines (0.4% per year) occurred in whites and Hispanics (Table 10). In contrast, cancer death rates declined by 1% or more per year among men and women of all races/ethnicities except American Indians/Alaska Natives, among whom rates remained stable. Notably, the largest declines in death rates occurred among men of African American (2.4% per year) and Hispanic (2.3% per year) heritage.

TABLE 10. Ten-Year Trends in Cancer Incidence and Mortality Rates by Race/Ethnicity, United States, 1999 to 2008

	1999-2008 AAPC			
	INCIDENCE		MORTALITY	
	MALE	FEMALE	MALE	FEMALE
All races/ethnicities	−1.0*	−0.4*	−1.8*	−1.3*
White	−1.0*	−0.4*	−1.7*	−1.3*
African American	−1.3*	−0.1	−2.4*	−1.5*
Asian American/Pacific Islander	−1.5*	0.1	−1.6*	−1.1*
American Indian/Alaska Native†	−1.1*	−0.3	−0.4	−0.4
Hispanic‡	−1.5*	−0.4*	−2.3*	−1.4*

AAPC indicates average annual percent change.

*AAPC is statistically significant ($P < .05$).

†Data based on Indian Health Service Contract Health Service Delivery Areas.

‡Excludes deaths from the District of Columbia, Minnesota, New Hampshire, and North Dakota due to unreliable Hispanic origin data for some years.

Notes: Trends analyzed by the Joinpoint Regression Program, version 3.5.0, allowing up to 2 joinpoints. Incidence trends based on the North American Association of Central Cancer Registries (NAACCR) data. Race and ethnicity categories are not mutually exclusive of Hispanic origin.

Cancer Survival

Compared with whites, African American men and women have poorer survival once cancer is diagnosed. The 5-year relative survival is lower in African Americans than in whites for every stage of diagnosis for nearly every type of cancer (Fig. 7). These disparities may result from inequalities in access to and receipt of quality health care and/or from differences in comorbidities. As shown in Figure 8, African Americans are less likely than whites to be diagnosed with cancer at a localized stage, when the disease may be more easily and successfully treated. The extent to which factors other than stage at diagnosis contribute to the overall survival differential is unclear.[30] However, some studies suggest that African Americans who receive cancer treatment and medical care similar to that of whites experience similar outcomes.[31]

There have been notable improvements since 1975 in the relative 5-year survival rates for most cancers for both whites and African Americans (Table 11). Increases in survival rates over time reflect a combination of earlier diagnosis and improvements in treatment. Cancers of the lung and pancreas have shown little improvement in survival over the past 30 years.

Relative survival rates cannot be calculated for some minority populations because accurate life expectancies are not available. However, based on cause-specific survival rates of cancer patients diagnosed from 2001 to 2007 in SEER areas of the United States, all minority male populations have a greater probability of dying from cancer within 5 years of diagnosis than whites.[6] Among women, African Americans have the lowest 5-year cancer-specific survival, followed by American Indians/Alaska Natives, Hispanics, whites, and Asian Americans/Pacific Islanders.[6] For all 4 major cancer sites (prostate, female breast, lung and bronchus, and colorectum), minority populations are generally more likely than non-Hispanic whites to be diagnosed at a distant stage of disease.[32]

Cancer in Children

Cancer is the second most common cause of death among children ages 1 to 14 years in the United States, surpassed only by accidents; 1,284 children died from cancer in 2008. Leukemia accounts for one-third of all cancers diagnosed in children (ages 0 to 14 years), 78% of which are acute lymphocytic leukemias.[6] Cancers of the brain and other nervous system are the second most common cancer type (27%), followed by soft tissue sarcomas (7%, half of which are rhabdomyosarcoma), neuroblastoma (7%), renal (Wilms) tumors (5%), and Hodgkin and non-Hodgkin lymphomas (4% each).[6] From 2004 to 2008, the overall incidence rate for cancer in children aged 14 years and younger increased slightly by 0.5% per year, a trend that has been consistent since 1975. The death rate for childhood cancer has decreased by more than half over the past 3 decades, from 4.9 (per 100,000) in 1975 to 2.2 in 2008.[2] Table 12 provides trends in survival rates for the most common childhood cancers. The 5-year relative survival rate for all cancers combined improved from 58% for children diagnosed between 1975 and 1977 to 83% for those diagnosed between 2001 and 2007.[6] The substantial progress for all of the major childhood cancers reflects both improvements in treatment and high levels of participation in clinical trials.

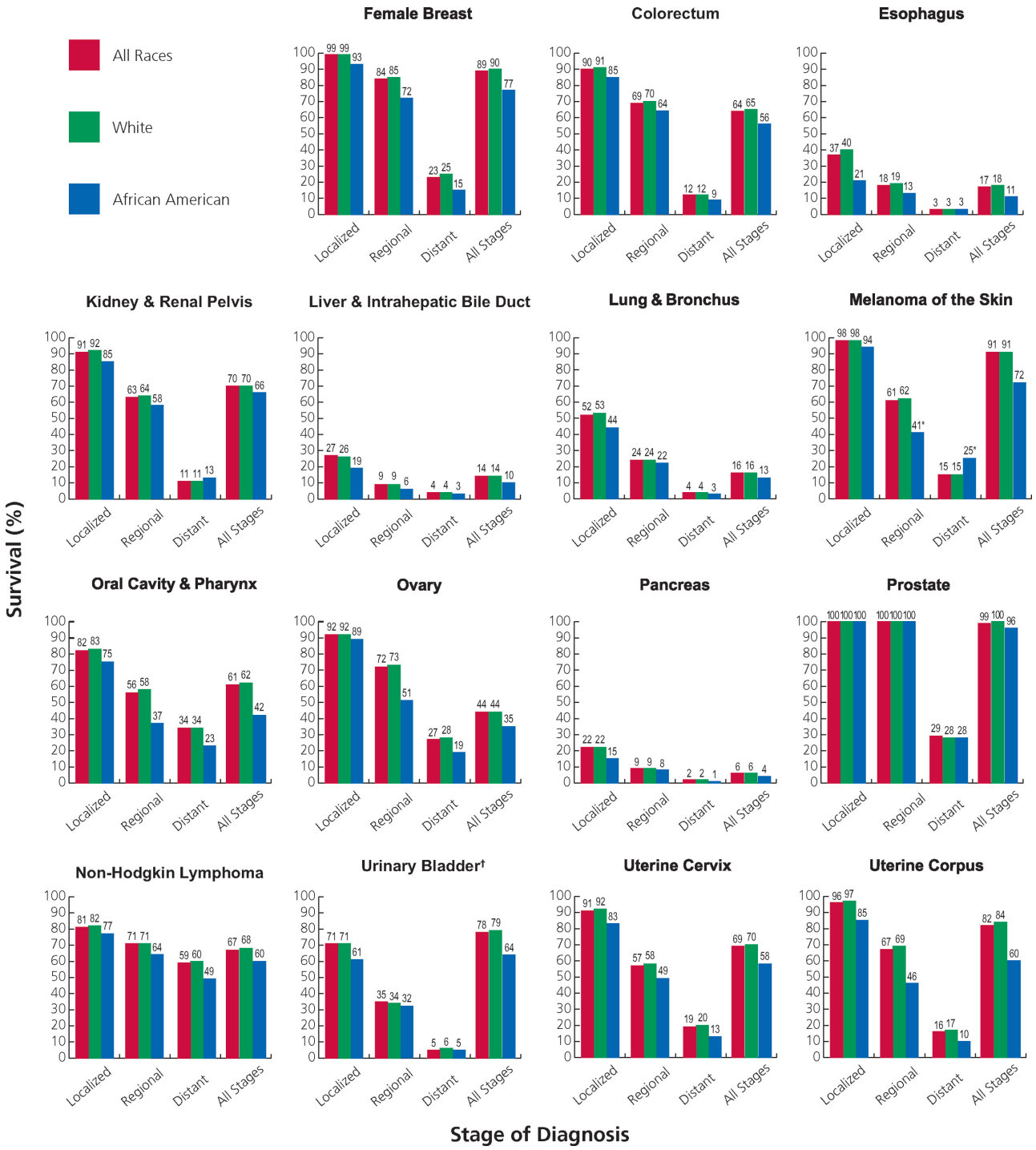

FIGURE 7. Five-Year Relative Survival Rates for Selected Cancers by Race and Stage at Diagnosis, United States, 2001 to 2007.

*The standard error of the survival rate is between 5 and 10 percentage points.

†The survival rate for carcinoma in situ of the urinary bladder is 97% for All Races and Whites and 92% for African Americans.

Limitations

The projected numbers of new cancer cases and cancer deaths should be interpreted cautiously because these estimates are model-based and may vary considerably from year to year for reasons other than changes in cancer occurrence. For instance, estimates are invariably affected by changes in method, which occur regularly as modeling techniques improve over time and cancer registration becomes more complete. Indeed, new methods were used for projecting both incident cases and deaths in 2012. In addition, not all changes in cancer trends

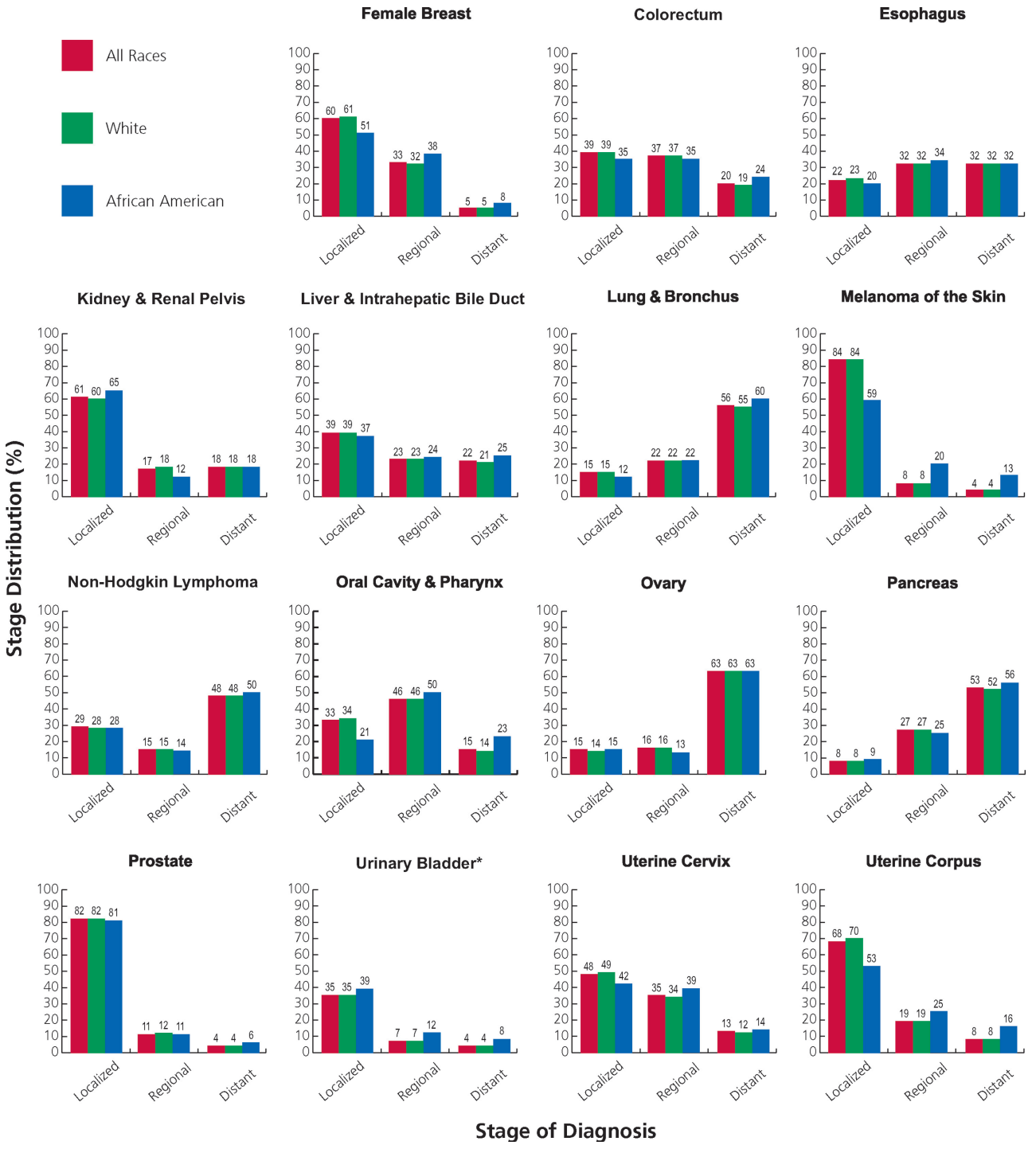

FIGURE 8. Stage Distribution of Selected Cancers by Race, United States, 2001 to 2007.
*The proportions of carcinoma in situ of the urinary bladder are 51%, 51%, and 38% in All Races, Whites, and African Americans, respectively. Stage categories do not sum to 100% because sufficient information is not available to assign a stage to all cancer cases.

can be captured by modeling techniques. For these reasons, we discourage the use of these estimates to track year-to-year changes in cancer occurrence and death. The data sources used for tracking cancer trends are age-standardized or age-specific cancer death rates from the NCHS and cancer incidence rates from SEER or NPCR. Nevertheless, the American Cancer Society projections of the numbers of new cancer cases and deaths provide a reasonably accurate estimate of the current cancer burden in the United States.

Errors in reporting race/ethnicity in medical records and on death certificates may result in underestimates of cancer incidence and mortality rates in nonwhite

and non-African American populations. It is also important to note that cancer data in the United States are primarily reported for broad racial and ethnic minority groups that are not homogenous, and thus important differences in the cancer burden within racial/ethnic subgroups are often masked. ■

TABLE 11. Trends in 5-Year Relative Survival Rates* (%) by Race and Year of Diagnosis, United States, 1975 to 2007

	ALL RACES			WHITE			AFRICAN AMERICAN		
	1975 TO 1977	1987 TO 1989	2001 TO 2007	1975 TO 1977	1987 TO 1989	2001 TO 2007	1975 TO 1977	1987 TO 1989	2001 TO 2007
All cancers combined	49	56	67†	50	57	69†	39	43	59†
Brain & other nervous system	22	29	35†	22	28	34†	25	31	40†
Breast (female)	75	84	90†	76	85	91†	62	71	77†
Colon	51	60	65†	51	61	67†	45	53	55†
Esophagus	5	10	19†	6	11	20†	3	7	13†
Hodgkin lymphoma	72	79	86†	72	80	88†	70	72	81†
Kidney & renal pelvis	50	57	71†	50	57	71†	49	55	68†
Larynx	66	66	63†	67	67	65	59	56	52
Leukemia	34	43	57†	35	44	57†	33	36	50†
Liver & bile duct	3	5	15†	3	6	15†	2	3	10†
Lung & bronchus	12	13	16†	12	13	17†	11	11	13†
Melanoma of the skin	82	88	93†	82	88	93†	58‡	79‡	73‡
Myeloma	25	28	41†	25	27	42†	30	30	41†
Non-Hodgkin lymphoma	47	51	70†	47	52	71†	48	46	62†
Oral cavity	53	54	63†	54	56	65†	36	34	45†
Ovary	36	38	44†	35	38	43†	42	34	36
Pancreas	2	4	6†	3	3	6†	2	6	4†
Prostate	68	83	100†	69	85	100†	61	72	98†
Rectum	48	58	68†	48	59	69†	45	52	61†
Stomach	15	20	27†	14	19	26†	16	19	27†
Testis	83	95	96†	83	95	97†	73‡,§	88‡	86
Thyroid	92	95	97†	92	94	98†	90	92	95
Urinary bladder	73	79	80†	74	80	81†	50	63	64†
Uterine cervix	69	70	69	70	73	70	65	57	61
Uterine corpus	87	83	83†	88	84	85†	60	57	61

*Survival rates are adjusted for normal life expectancy and are based on cases diagnosed in the Surveillance, Epidemiology, and End Results (SEER) 9 areas from 1975 to 1977, 1987 to 1989, and 2001 to 2007 and followed through 2008.

†The difference in rates between 1975 to 1977 and 2001 to 2007 is statistically significant ($P < .05$).

‡The standard error of the survival rate is between 5 and 10 percentage points.

§Survival rate is for 1978 to 1980.

TABLE 12. Trends in 5-Year Relative Survival Rates* (%) for Children Under Age 15 Years, United States, 1975 to 2007

	YEAR OF DIAGNOSIS								
	1975 TO 1977	1978 TO 1980	1981 TO 1983	1984 TO 1986	1987 TO 1989	1990 TO 1992	1993 TO 1995	1996 TO 2000	2001 TO 2007
All cancers combined	58	63	67	68	72	76	77	79	83†
Acute lymphocytic leukemia	58	66	71	73	78	83	84	87	91†
Acute myeloid leukemia	19	26	27‡	31‡	37‡	42	42‡	52	64†
Bone & joint	50‡	48	57‡	57‡	67‡	67	74	68	79†
Brain & other nervous system	57	58	56	62	64	65	71	74	75†
Hodgkin lymphoma	81	87	88	91	87	97	95	96	96†
Neuroblastoma	53	57	55	53	63	76	67	68	73†
Non-Hodgkin lymphoma	43	53	67	70	71	77	81	86	86†
Soft tissue	61	75	69	73	66	80	77	74	82†
Wilms tumor	73	79	87	91	92	92	92	93	90†

*Survival rates are adjusted for normal life expectancy and are based on follow-up of patients through 2008.

†The difference in rates between 1975 to 1977 and 2001 to 2007 is statistically significant ($P < .05$).

‡The standard error of the survival rate is between 5 and 10 percentage points.

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