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ARTICLE

Cancer statistics, 2025

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ABSTRACT

Each year, the American Cancer Society estimates the numbers of new cancer cases and deaths in the United States and compiles the most recent data on population-based cancer occurrence and outcomes using incidence data collected by central cancer registries (through 2021) and mortality data collected by the National Center for Health Statistics (through 2022). In 2025, 2,041,910 new cancer cases and 618,120 cancer deaths are projected to occur in the United States. The cancer mortality rate continued to decline through 2022, averting nearly 4.5 million deaths since 1991 because of smoking reductions, earlier detection for some cancers, and improved treatment. Yet alarming disparities persist; Native American people bear the highest cancer mortality, including rates that are two to three times those in White people for kidney, liver, stomach, and cervical cancers. Similarly, Black people have two-fold higher mortality than White people for prostate, stomach, and uterine corpus cancers. Overall cancer incidence has generally declined in men but has risen in women, narrowing the male-to-female rate ratio (RR) from a peak of 1.6 (95% confidence interval, 1.57–1.61) in 1992 to 1.1 (95% confidence interval, 1.12–1.12) in 2021. However, rates in women aged 50–64 years have already surpassed those in men (832.5 vs. 830.6 per 100,000), and younger women (younger than 50 years) have an 82% higher incidence rate than their male counterparts (141.1 vs. 77.4 per 100,000), up from 51% in 2002. Notably, lung cancer incidence in women surpassed that in men among people younger than 65 years in 2021 (15.7 vs. 15.4 per 100,000; RR, 0.98, $p = 0.03$). In summary, cancer mortality continues to decline, but future gains are threatened by rampant racial inequalities and a growing burden of disease in middle-aged and young adults, especially women. Continued progress will require investment in cancer prevention and access to equitable treatment, especially for Native American and Black individuals.

KEYWORDS
cancer cases, cancer statistics, death rates, incidence, mortality

INTRODUCTION

Cancer is the second leading cause of death in the United States overall and the leading cause among people younger than 85 years. The coronavirus disease 2019 (COVID-19) pandemic caused delays in the diagnosis and treatment of cancer in 2020 because of health care setting closures, loss of employment and health insurance, and fear of COVID-19 exposure.[1,2] The extent to which these delays lead to increased diagnosis of advanced-stage disease and higher cancer mortality will be revealed gradually over many years. A recent modeling study estimated 4000 to 7000 excess deaths from colorectal cancer (CRC) by 2040, depending on the speed of screening recovery.[3] What is already established is the disproportionate direct and indirect impact of the pandemic on communities of color,[4,5] including slower recovery of cancer screening,[6] which will likely exacerbate existing cancer disparities.

In this article, we provide the estimated numbers of new cancer cases and deaths in 2025 in the United States nationally and for each state as well as a comprehensive overview of cancer occurrence based on up-to-date, population-based data for cancer incidence and mortality through 2021 and 2022, respectively. We also estimate the total number of cancer deaths averted through 2022 because of the continuous decline in the cancer death rate over the past several decades.

MATERIALS AND METHODS

Data sources

Population-based cancer incidence data in the United States have been collected by the National Cancer Institute's (NCI's) Surveillance, Epidemiology, and End Results (SEER) program since 1973 and by the Centers for Disease Control and Prevention's (CDC's) National Program of Cancer Registries (NPCR) since 1995. The SEER program is the only source for historic population-based incidence data from the eight oldest SEER areas (Connecticut, Hawaii, Iowa, New Mexico, Utah, and the metropolitan areas of Atlanta, San Francisco-Oakland, and Seattle-Puget Sound), representing approximately 8% of the US population.[7] Historical survival data (1975–1977 and 1995–1997) are based on the SEER 8 areas plus the Detroit metropolitan area, as published previously.[8] Contemporary survival statistics are based on data from the SEER 8 registries plus the Alaska Native Tumor Registry and the registries in California, Georgia, Idaho, Kentucky, Louisiana, New Jersey, New York, and Texas,[9] representing 42% of the US population, with vital status follow-up through 2021. All 22 SEER registries (with the addition of Massachusetts and Illinois), covering 48% of the United States, were the source for the probability of developing cancer.

The North American Association of Central Cancer Registries (NAACCR) compiles and reports incidence data from 1995 forward for registries that participate in the SEER program and/or the NPCR. These data approach 100% coverage of the US population for the most recent years and were the source for the projected new cancer cases in 2025, contemporary incidence trends, cross-sectional incidence rates, and stage distribution.[10,11] The incidence data presented herein differ slightly from those published online in the NAACCR's Cancer in North America (CiNA) Explorer (apps.naaccr.org/explorer/, September 1, 2024) because rates are adjusted for delays in case reporting using national delay factors. Incidence data for Puerto Rico were abstracted from the CiNA Explorer.

Mortality data from 1930 to 2022 were provided by the National Center for Health Statistics (NCHS).[12,13] Forty-seven states and the District of Columbia met data quality requirements for reporting to the national vital statistics system in 1930, and Texas, Alaska, and Hawaii began reporting in 1933, 1959, and 1960, respectively. The methods for abstraction and age-adjustment of mortality data before 1969 are described elsewhere.[13,14] Contemporary 5-year mortality rates for Puerto Rico were obtained from State Cancer Profiles (statecancerprofiles.cancer.gov, August 1, 2024), a collaboration between the CDC and the NCI.

All cancer cases were classified according to the *International Classification of Diseases for Oncology*, third edition, except childhood and adolescent cancers, which were classified according to the *International Classification of Childhood Cancer*.[15–17] Causes of death were classified according to the *International Classification of Diseases*.[18]

Statistical analysis

Incidence and mortality

All incidence and death rates were age standardized to the 2000 US standard population (19 age groups) and expressed per 100,000 persons (or per million for childhood and adolescent cancer incidence), as calculated by the NCI's SEER*Stat software, version 8.4.2. Population data were modified intercensal annual county estimates by age, sex, race, and Hispanic origin produced by the US Census Bureau and the NCHS with support from the NCI except for 2010–2019 data, which were produced by Woods & Poole Economics, Inc. through a contract with the NCI, and 2020–2022 data, which were based on Vintage 2022 estimates. Official US Census Bureau intercensal population estimates are anticipated to be released in fall 2024 and will be incorporated into 2025 data releases (https://seer.cancer.gov/popdata/, September 1, 2024). Population estimates incorporate race-bridging, which combines multiple-race categories in the 2000 and 2010 census into individual race categories. For more information on population estimates issued by the US Census Bureau, see census.gov/programs-surveys/popest/guidance.html, July 1, 2024.

The probability of developing cancer was calculated using the NCI's DevCan software, version 6.9.1, and the annual percent change (APC) in rates was quantified using the NCI's Joinpoint Regression Program, version 5.2.0. Trends were described as increasing or decreasing when the APC was statistically significant based on a two-sided p value < .05, calculated using the parametric method, and otherwise were described as stable. Trend and lifetime risk analyses exclude cancer incidence in 2020 because the Joinpoint and DevCan modeling programs were not designed to accommodate such a large, single-year data anomaly as occurred because of pandemic-related disruptions in health care.[19]

All statistics presented by race are exclusive of Hispanic ethnicity for reduced racial misclassification. Racial misclassification for the American Indian and Alaska Native (AIAN) population was further mitigated by restricting incidence rates to Purchased/Referred Care Delivery Area counties and adjusting nationally representative mortality rates using classification ratios previously published by the NCHS.[20] Life tables by Hispanic ethnicity were published in 2018 and were used for relative survival comparisons between White and Black individuals.[21]

Whenever possible, cancer incidence rates were adjusted for delays in reporting, which occur because of lags in case capture and data corrections. Delay adjustment has the largest effect on the most recent data years and for cancers that are frequently diagnosed in outpatient settings (e.g., melanoma, leukemia, and prostate cancer). For example, the leukemia incidence rate for 2021 was 13% higher after adjusting for reporting delays (15.4 vs. 13.6 per 100,000 persons). Delay adjustment is particularly important when quantifying contemporary trends.[22]

Projected cancer cases and deaths in 2025

The most recent year for which incidence and mortality data are available lags 2–3 years behind the current year because of the time required for data collection, compilation, quality control, and dissemination. Therefore, we project the numbers of new cancer cases and deaths in the United States in 2025 to estimate the contemporary cancer burden using two-step statistical modeling described in detail elsewhere.[23,24] Briefly, complete cancer diagnoses were estimated for every state from 2007 through 2021 based on high-quality, delay-adjusted incidence data from 50 states and the District of Columbia (99.7% population coverage) and state-level variations in sociodemographic characteristics, lifestyle factors, medical settings, and cancer screening behaviors.[25] Counts were adjusted for the deficit in cases during March through May 2020 because of the COVID-19 pandemic based on the proportion of cases diagnosed in those months in previous years. Modeled state and national counts were then projected 4 years ahead using a novel, data-driven Joinpoint algorithm.[24] Basal cell and squamous cell skin cancers cannot be estimated because these diagnoses are not recorded by most cancer registries.

Ductal carcinoma in situ of the female breast and in situ melanoma of the skin were estimated by approximating annual case counts from 2012 through 2021 based on NAACCR age-specific incidence rates, delay factors for invasive disease (delay factors are unavailable for in situ cases), and US population estimates. Counts were then projected 4 years ahead based on the average APC generated by the Joinpoint regression model. The number of cancer deaths expected to occur in 2025 was estimated by applying the previously described, data-driven Joinpoint algorithm to reported cancer deaths from 2008 through 2022 at the state and national levels.[24]

Other statistics

The number of cancer deaths averted in men and women because of the reduction in cancer death rates since the early 1990s was estimated by summing the annual difference between the number of cancer deaths recorded and the number that would have been expected if cancer death rates had remained at their peak. The expected number of deaths was estimated by applying the 5-year, age-specific and sex-specific cancer death rate in the peak year for age-standardized cancer death rates (1990 in men, 1991 in women) to the corresponding age-specific and sex-specific population in subsequent years through 2022.

SELECTED FINDINGS

Expected number of new cancer cases and deaths

Table 1 presents the estimated numbers of new invasive cancer cases in the United States in 2025 by sex and cancer type. In total, there will be approximately 2,041,910 new cancer diagnoses, the equivalent of about 5600 cases each day. In addition, there will be about 59,080 new cases of ductal carcinoma in situ in women and 107,240 new cases of melanoma in situ of the skin in 2025. The estimated numbers of new cases for selected cancers by state are shown in Table 2. The lifetime probability of being diagnosed with invasive cancer is only slightly higher for men (39.9%) than for women (39.0%; Table 3).

Although cancer risk increases exponentially with advancing age, the proportion of new diagnoses in adults aged 65 years and older decreased from 61% in 1995 to 59% in 2021 despite the growth of this age group in the general population from 13% to 17%. In contrast, the proportion of adults aged 50–64 years increased in both the cancer patient population, from 25% to 29%, and the general population, from 13% to 19%. The shift toward more middle-aged patients partly reflects steep declines in incidence among older men for smoking-related cancers and prostate cancer from the early 1990s through the late 2000s. Also contributing more recently is increased cancer risk in people born since the 1950s because of changing patterns in known exposures (e.g., higher obesity rates), as well as other factors yet to be elucidated.[26] Although people younger than 50 years were the only age group to experience an increase in cancer incidence from 1995 through 2021, the steep drop in population size (from 74% to 64%) drove a decrease in the proportion of cancer diagnoses in this age group from 15% to 12%.

Figure 1 depicts the most common cancers diagnosed in men and women in 2025. Prostate cancer, lung and bronchus (hereinafter *lung*) cancer, and CRC account for almost one half (48%) of all incident cases in men, with prostate cancer alone accounting for 30% of

TABLE 1 Estimated number of new cancer cases and deaths by sex, United States, 2025.

	Estimated new cases			Estimated deaths		
	Both sexes	Male	Female	Both sexes	Male	Female
All sites	2,041,910	1,053,250	988,660	618,120	323,900	294,220
Oral cavity & pharynx	59,660	42,500	17,160	12,770	9130	3640
Tongue	20,040	14,120	5920	3270	2210	1060
Mouth	15,730	9090	6640	3360	2090	1270
Pharynx	21,640	17,800	3840	4590	3,630	960
Other oral cavity	2250	1490	760	1550	1200	350
Digestive system	362,200	201,190	161,010	174,520	100,250	74,270
Esophagus	22,070	17,430	4640	16,250	12,940	3310
Stomach	30,300	17,720	12,580	10,780	6400	4380
Small intestine	13,920	7190	6730	2060	1190	870
Colon & rectum[a]	154,270	82,460	71,810	52,900	28,900	24,000
Colon	107,320	54,510	52,810			
Rectum	46,950	27,950	19,000			
Anus, anal canal, & anorectum	10,930	3560	7370	2030	780	1250
Liver & intrahepatic bile duct	42,240	28,220	14,020	30,090	19,250	10,840
Gallbladder & other biliary	12,610	6040	6570	4400	1950	2450
Pancreas	67,440	34,950	32,490	51,980	27,050	24,930
Other digestive organs	8420	3620	4800	4030	1790	2240
Respiratory system	245,700	124,700	121,000	130,200	68,340	61,860
Larynx	13,020	10,110	2910	3910	3140	770
Lung & bronchus	226,650	110,680	115,970	124,730	64,190	60,540
Other respiratory organs	6030	3910	2120	1560	1010	550
Bones & joints	3770	2150	1620	2190	1240	950
Soft tissue (including heart)	13,520	7600	5920	5410	2960	2450
Skin (excluding basal & squamous)	112,690	65,740	46,950	14,110	9550	4560
Melanoma of the skin	104,960	60,550	44,410	8430	5470	2960
Other nonepithelial skin	7730	5190	2540	5680	4080	1600
Breast	319,750	2800	316,950	42,680	510	42,170
Genital system	444,610	325,690	118,920	71,510	36,880	34,630
Uterine cervix	13,360		13,360	4320		4320
Uterine corpus	69,120		69,120	13,860		13,860
Ovary	20,890		20,890	12,730		12,730
Vulva	7480		7480	1770		1770
Vagina & other genital, female	8070		8070	1950		1950
Prostate	313,780	313,780		35,770	35,770	
Testis	9720	9720		600	600	
Penis & other genital, male	2190	2190		510	510	
Urinary system	170,470	120,320	50,150	33,140	22,840	10,300
Urinary bladder	84,870	65,080	19,790	17,420	12,640	4780
Kidney & renal pelvis	80,980	52,410	28,570	14,510	9550	4960

(Continues)

TABLE 1 (Continued)

	Estimated new cases			Estimated deaths		
	Both sexes	Male	Female	Both sexes	Male	Female
Ureter & other urinary organs	4620	2830	1790	1210	650	560
Eye & orbit	3140	1620	1520	490	270	220
Brain & other nervous system	24,820	14,040	10,780	18,330	10,170	8160
Endocrine system	52,140	16,450	35,690	3440	1680	1760
Thyroid	44,020	12,670	31,350	2290	1090	1200
Other endocrine	8120	3780	4340	1150	590	560
Lymphoma	89,070	49,980	39,090	20,540	11,780	8760
Hodgkin lymphoma	8720	4840	3880	1150	720	430
Non-Hodgkin lymphoma	80,350	45,140	35,210	19,390	11,060	8330
Myeloma	36,110	20,030	16,080	12,030	6540	5490
Leukemia	66,890	38,720	28,170	23,540	13,500	10,040
Acute lymphocytic leukemia	6100	3450	2650	1400	720	680
Chronic lymphocytic leukemia	23,690	14,340	9350	4460	2810	1650
Acute myeloid leukemia	22,010	12,060	9950	11,090	6130	4960
Chronic myeloid leukemia	9560	5610	3950	1290	740	550
Other leukemia	5530	3260	2270	5300	3100	2200
Other & unspecified primary sites[b]	37,370	19,720	17,650	53,220	28,260	24,960

Note: These are model-based estimates that should be interpreted with caution and not compared with those for previous years. Estimates are rounded to the nearest 10; cases exclude basal cell and squamous cell skin cancer and in situ carcinoma except urinary bladder. About 59,080 cases of female breast ductal carcinoma in situ and 107,240 cases of melanoma in situ will be diagnosed in 2025.

[a]Deaths for colon and rectal cancers are combined because a large number of deaths from rectal cancer are misclassified as colon.

[b]More deaths than cases may reflect a lack of specificity in recording an underlying cause of death on death certificates and/or an undercount in the case estimate.

diagnoses. For women, breast cancer, lung cancer, and CRC account for 51% of all new diagnoses, with breast cancer alone accounting for 32% of cases.

An estimated 618,120 people in the United States will die from cancer in 2025, corresponding to approximately 1700 deaths per day (Table 1). Despite steep declines in cigarette smoking prevalence, from 42% in 1965 to 12% in 2022,[27] smoking continues to be the leading cause of preventable death in the United States, accounting for almost 500 cancer deaths each day in 2025, most from lung cancer.[28] Approximately 85% (106,150) of lung cancer deaths in 2025 (124,730) will be caused by cigarette smoking directly, with an additional 3500 caused by second-hand smoke[28] and 15,100 caused by a combination of other combustible tobacco products (e.g., cigar or pipe smoking),[29,30] radon,[31] occupational exposures,[32] air pollution, and other environmental exposures.[33] There is growing concern that e-cigarettes and vaping may contribute to this burden in the future given their carcinogenic potential and wide popularity.[34] Lung cancer causes nearly 2.5 times more deaths than second-ranking CRC and third-ranking pancreatic cancer. Table 4 provides the estimated number of deaths for these and other common cancers by state.

Trends in cancer incidence

Figure 2 illustrates long-term trends in overall cancer incidence rates from 1975 through 2021 by sex. Observed rates in 2020 are shown separate from the trend line because of the large deficit in cancer diagnoses that resulted from pandemic-related health care closures. The 2020 rate for cancer overall was 9% lower than the 2019 rate, with the largest reductions for asymptomatic (in situ and localized stage) disease because of both less screening and less incidental detection through provider visits and imaging.[19,35] Analyses of 2021 incidence rates indicate a continuation of prepandemic trends without an obvious recovery of deficient cases from 2020 except for breast cancer.[1,36]

Overall cancer incidence in men spiked during the early 1990s because of a surge in the detection of asymptomatic prostate cancer as a result of rapid, widespread uptake of prostate-specific antigen (PSA) testing.[37] The steep decline from 2007 through 2013 was similarly driven by prostate cancer, although rates leveled off thereafter and have remained stable through 2021 (Table 5). In contrast, cancer incidence in women has been much less erratic and gradually rose from a nadir of 361.2 per 100,000 in 1978 to 443.2 in

TABLE 2 Estimated number of new cases for selected cancers by state, United States, 2025.

State	All sites	Female breast	Colon & rectum	Leukemia	Lung & bronchus	Melanoma of the skin	Non-Hodgkin lymphoma	Prostate	Urinary bladder	Uterine cervix	Uterine corpus
Alabama	30,030	4960	2630	860	4050	1470	980	5440	1240	230	920
Alaska	3670	550	350	110	430	90	150	710	170	—[a]	110
Arizona	42,560	6950	3220	1440	4250	3790	1700	5380	2090	270	1450
Arkansas	19,700	2690	1560	590	2660	970	690	2930	780	150	480
California	199,980	32,860	16,050	6000	16,330	11,140	8280	29,600	7220	1490	7480
Colorado	29,020	5250	2130	1030	2520	2060	1210	4400	1220	190	910
Connecticut	23,920	3790	1630	770	2740	780	990	3570	1150	110	860
Delaware	7680	1210	500	220	920	410	290	1460	350	—[a]	260
District of Columbia	3140	580	230	80	330	100	110	380	80	—[a]	140
Florida	171,960	23,920	12,330	6980	18,530	10,290	7550	26,920	8070	1160	5720
Georgia	66,210	10,180	5160	1980	6810	3520	2150	10,360	2390	460	2000
Hawaii	9040	1510	820	270	880	570	330	1160	290	60	440
Idaho	11,820	1820	860	430	1120	960	500	1970	580	70	310
Illinois	78,870	12,160	6110	2430	9270	4220	3090	12,350	3220	490	2780
Indiana	42,150	6470	3410	1330	6120	2300	1600	6160	1870	290	1400
Iowa	21,340	3010	1580	810	2490	1660	860	3150	920	120	710
Kansas	15,810	2620	1430	510	2010	670	680	2520	670	120	550
Kentucky	30,420	4290	2580	1010	4950	1590	1150	4140	1270	220	960
Louisiana	29,980	4230	2490	890	3290	1270	1030	4650	1050	210	780
Maine	11,080	1520	710	370	1460	500	440	1620	610	—[a]	340
Maryland	37,200	6270	2620	1090	3940	1780	1380	6680	1380	220	1320
Massachusetts	44,000	7240	2770	1380	5300	1370	1820	6690	1870	180	1600
Michigan	66,040	9900	4710	2100	8460	3040	2590	10,230	2970	380	2110
Minnesota	37,650	5620	2600	1300	4110	2900	1590	5700	1510	160	1200
Mississippi	17,820	2710	1710	510	2460	700	590	2940	710	150	550
Missouri	39,220	6090	3010	1310	5650	2070	1520	5320	1600	250	1230
Montana	7560	1080	550	230	750	560	280	1230	360	—[a]	210
Nebraska	12,390	1790	940	380	1260	780	460	2030	490	60	390
Nevada	17,540	2760	1480	560	1800	1050	670	2680	800	140	560
New Hampshire	10,290	1470	640	340	1330	460	430	1820	530	—[a]	370
New Jersey	59,840	9290	4430	2090	5420	2340	2470	10,740	2630	360	2270
New Mexico	11,540	1850	960	400	940	670	450	1720	450	90	410
New York	123,430	19,170	8920	4020	12,770	4030	5100	20,490	5210	790	4440
North Carolina	71,320	11,320	4890	2270	8810	3850	2550	11,210	2860	420	2260
North Dakota	4510	640	360	160	520	330	190	800	190	—[a]	130
Ohio	77,010	11,800	5760	2220	9950	4440	2900	10,820	3450	490	2620
Oklahoma	24,120	3460	1970	790	3100	1180	860	2930	960	190	700
Oregon	26,980	4440	1850	800	2950	1420	1070	3570	1220	140	950

(Continues)

TABLE 2 (Continued)

State	All sites	Female breast	Colon & rectum	Leukemia	Lung & bronchus	Melanoma of the skin	Non-Hodgkin lymphoma	Prostate	Urinary bladder	Uterine cervix	Uterine corpus
Pennsylvania	90,240	13,650	6500	2900	10,250	3710	3540	13,400	4150	540	3330
Rhode Island	7480	1140	480	270	930	270	300	1060	350	—[a]	260
South Carolina	35,300	5870	2640	1030	4710	1850	1220	6280	1460	240	1110
South Dakota	5870	830	450	200	630	440	240	950	260	—[a]	160
Tennessee	42,750	6960	3450	1300	6400	1880	1560	6630	1860	300	1310
Texas	150,870	23,880	12,710	5660	14,030	5700	5940	21,070	5160	1420	5270
Utah	14,120	2290	990	540	790	1700	600	2700	530	100	510
Vermont	4670	740	290	150	590	220	200	760	220	—[a]	170
Virginia	50,510	8250	3670	1350	6100	2410	1910	9040	1970	290	1750
Washington	46,500	7680	3240	1470	4860	2440	1920	6730	1970	280	1350
West Virginia	13,250	1690	1020	410	2050	530	470	1620	590	70	500
Wisconsin	39,940	5920	2,630	1460	4320	2230	1660	6500	1750	170	1380
Wyoming	3580	530	270	100	340	230	120	550	170	—[a]	100
United States	2,041,910	316,950	154,270	66,890	226,650	104,960	80,350	313,780	84,870	13,360	69,120

Note: Estimates are rounded to the nearest 10. Excludes basal and squamous cell skin cancers and in situ carcinoma except urinary bladder. Estimates for Puerto Rico are unavailable. These are model-based estimates and should be interpreted with caution. State estimates may not sum to US total because of rounding and exclusion of state estimates of fewer than 50 cases.

[a]Estimate is fewer than 50 cases.

2021, an overall increase of 23%. Generally declining trends in men alongside increasing incidence in women has narrowed the male-to-female rate ratio from a peak of 1.6 in 1992 to 1.1 in 2021. (Even preceding the prostate/PSA peak in men, the rate ratio was 1.4.) Higher risk in men for most cancer types reflects greater exposure to carcinogenic environmental and lifestyle factors, such as smoking, as well as other factors, including height,[38,39] endogenous hormone exposure, and immune function and response.[40,41]

However, sex differences in cancer risk vary markedly by age because of variation in both cancer distribution and age-specific temporal trends. For example, incidence rates in middle-aged women (50–64 years) have already surpassed those of men and were statistically equivalent in 2021 (832.5 vs. 830.6 per 100,000, respectively) after being 21% lower than in men in 2007 (780.1 vs. 992.6 per 100,000; Figure 3). Among people younger than 50 years, for whom the burden in women is already greater largely because of breast cancer, the chasm is widening. The incidence rate in women younger than 50 years was 82% higher than in their male counterparts in 2021 (141.1 vs. 77.4 per 100,000), up from 51% higher in 2002. During this period, incidence declined slightly in young men, but rose in young women by nearly 20%, largely because of increasing trends for breast and thyroid cancers, which make up almost one half (46%) of all cancers in this age group. Although rates in men younger than 50 years are increasing for the four leading cancers (colorectal, testicular, kidney, and leukemia), these trends were offset by declines for other common cancers (e.g., melanoma, non-Hodgkin lymphoma, and prostate). Notably, among those younger than 65 years, lung cancer incidence was higher in women than in men in 2021 for the first time (15.7 versus 15.4 per 100,000; $p = .03$). These patterns harken back to the pretobacco epidemic era, when the cancer burden was higher in women than in men,[13] and may be a bellwether for the future cancer landscape.

Figure 4 shows incidence rates by sex for all ages combined for the most common cancers. The incidence rate for prostate cancer dropped by almost 40% from 2007 to 2014 because of reductions in PSA testing and the diagnosis of localized tumors that coincided with recommendations against screening by the US Preventive Services Task Force (USPSTF) for men aged 75 years and older in 2008 and for all men (temporarily) in 2012.[42,43] Since 2014, however, the prostate cancer incidence rate has risen by 3% per year, ranging from an increase of 2.4% per year for localized disease to more than 4.5% per year for advanced (regional or distant-stage) disease diagnoses that began as early as 2011.[10] A recent study estimated that more than one half of men in the United States living with metastatic prostate cancer were initially diagnosed with localized or regional-stage disease.[44]

Untethered PSA screening of the 1990s and 2000s was plagued by diagnosis and treatment of clinically insignificant prostate cancer while simultaneously credited with steep reductions in prostate cancer mortality.[45,46] Fortunately, refined early detection strategies, genetic testing for disease aggressiveness, and more conservative treatment have emerged rapidly. A Swedish population-based trial reported that the diagnosis of clinically insignificant tumors was reduced by more than one half when biopsy was limited to men with

TABLE 3 Probability (%) of developing invasive cancer during selected age intervals by sex, United States, 2018–2021 (2020 excluded).

Site	Sex	Birth to 49 years	50–64 years	65–84 years	85 years and older	Birth to death
All sites[a]	Male	3.4 (1 in 29)	11.3 (1 in 9)	31.3 (1 in 3)	18.7 (1 in 5)	39.9 (1 in 3)
	Female	5.9 (1 in 17)	10.8 (1 in 9)	24.2 (1 in 4)	14.1 (1 in 7)	39.0 (1 in 3)
Breast	Female	2.1 (1 in 47)	4.0 (1 in 25)	7.3 (1 in 14)	2.6 (1 in 38)	13.1 (1 in 8)
Colon & rectum	Male	0.4 (1 in 238)	1.2 (1 in 85)	2.6 (1 in 39)	1.7 (1 in 59)	4.1 (1 in 24)
	Female	0.4 (1 in 255)	0.9 (1 in 117)	2.1 (1 in 47)	1.6 (1 in 62)	3.8 (1 in 26)
Kidney & renal pelvis	Male	0.3 (1 in 390)	0.7 (1 in 146)	1.5 (1 in 68)	0.5 (1 in 183)	2.2 (1 in 45)
	Female	0.2 (1 in 599)	0.3 (1 in 289)	0.8 (1 in 129)	0.3 (1 in 313)	1.3 (1 in 75)
Leukemia	Male	0.3 (1 in 381)	0.3 (1 in 297)	1.2 (1 in 83)	0.8 (1 in 122)	1.8 (1 in 55)
	Female	0.2 (1 in 483)	0.2 (1 in 454)	0.7 (1 in 138)	0.5 (1 in 201)	1.3 (1 in 77)
Lung & bronchus	Male	0.1 (1 in 901)	1.1 (1 in 90)	4.8 (1 in 21)	2.5 (1 in 40)	5.8 (1 in 17)
	Female	0.1 (1 in 783)	1.1 (1 in 93)	4.1 (1 in 24)	1.8 (1 in 54)	5.6 (1 in 18)
Melanoma of the skin[b]	Male	0.4 (1 in 258)	0.8 (1 in 120)	2.3 (1 in 43)	1.4 (1 in 72)	3.5 (1 in 29)
	Female	0.6 (1 in 162)	0.7 (1 in 152)	1.1 (1 in 89)	0.6 (1 in 181)	2.5 (1 in 40)
Non-Hodgkin lymphoma	Male	0.2 (1 in 407)	0.5 (1 in 204)	1.6 (1 in 64)	0.9 (1 in 105)	2.3 (1 in 44)
	Female	0.2 (1 in 534)	0.4 (1 in 265)	1.2 (1 in 87)	0.6 (1 in 158)	1.9 (1 in 54)
Prostate	Male	0.2 (1 in 468)	3.8 (1 in 26)	10.6 (1 in 9)	3.2 (1 in 31)	12.8 (1 in 8)
Thyroid	Male	0.2 (1 in 500)	0.2 (1 in 506)	0.3 (1 in 362)	0.1 (1 in 1434)	0.6 (1 in 160)
	Female	0.8 (1 in 126)	0.5 (1 in 207)	0.5 (1 in 220)	0.1 (1 in 1136)	1.7 (1 in 59)
Uterine cervix	Female	0.3 (1 in 340)	0.2 (1 in 564)	0.2 (1 in 580)	0.1 (1 in 1691)	0.6 (1 in 156)
Uterine corpus	Female	0.3 (1 in 295)	1.1 (1 in 91)	1.7 (1 in 57)	0.4 (1 in 245)	3.1 (1 in 32)

Note: Probabilities are for those who are free of cancer at the beginning of each age interval.

[a]Excludes basal and squamous cell skin cancers and in situ carcinoma except urinary bladder.

[b]Probabilities for non-Hispanic White individuals only.

positive magnetic resonance imaging (MRI) results.[47] Similarly, a recent meta-analysis found that MRI-integrated screening reduced the odds of biopsy by 72% and the diagnosis of clinically insignificant cancers by 66%.[48] The inclusion of MRI and genomic testing is associated with increased active surveillance management, although uptake of these strategies is low and geographically uneven.[49,50] In the United States, approximately 60% of men with low-risk disease are managed with active surveillance[51,52] versus 9% with intermediate-risk disease.[53] PSA testing increased slightly after the USPSTF upgraded their recommendation to informed decision making in men aged 55–69 years in 2018,[54–56] but it remains underused at only 37% in men aged 50 years and older overall and 34% among Black men,[57] who tend to have more aggressive disease and thus greater benefit.[46,58–60] A recent review supports screening Black men from ages 45–75 years at potentially more frequent intervals than other men depending on baseline PSA,[61] consistent with long-standing American Cancer Society recommendations.[62]

Female breast cancer incidence rates have been slowly increasing since the mid-2000s (Table 5), largely driven by diagnoses of localized-stage and hormone receptor-positive disease.[63] In the past decade (2012–2021), the rate increased by 1% per year overall, with the steepest slope in women younger than 50 years (1.4% per year) and Hispanic (1.6% per year) or Asian American and Pacific Islander (AAPI, 2.6% per year) women. Although rising incidence is largely attributed to a decreasing fertility rate and increasing obesity prevalence,[64] excess body weight is associated with a decreased risk of breast cancer in premenopausal women.[65] Physical inactivity and alcohol consumption account for 7% and 16% of breast cancers, respectively,[28] and may also contribute. Binge and heavy drinking is increasing in women younger than 50 years,[66] especially among those with high education and income[67] and without children.[68] Many of these same risk factors, including increased adiposity and sedentary lifestyle and less and/or later childbearing, also likely contribute to the increase in uterine corpus cancer incidence of about 1% annually also since the mid-2000s.

After decades of increase, thyroid cancer incidence rates have declined since 2014 by 2% per year (Table 5) because of changes in clinical practice designed to mitigate overdiagnosis, including recommendations against thyroid cancer screening by the USPSTF and for more restrictive criteria by professional societies for performing and interpreting biopsies.[69,70] Data from autopsy studies indicate that the occurrence of clinically relevant tumors has remained stable since 1970 and is generally similar in males and females,[71,72] despite three-fold higher incidence rates in females. Even among adolescents

Estimated New Cases

Male			Female		
Prostate	313,780	30%	Breast	316,950	32%
Lung & bronchus	110,680	11%	Lung & bronchus	115,970	12%
Colon & rectum	82,460	8%	Colon & rectum	71,810	7%
Urinary bladder	65,080	6%	Uterine corpus	69,120	7%
Melanoma of the skin	60,550	6%	Melanoma of the skin	44,410	4%
Kidney & renal pelvis	52,410	5%	Non-Hodgkin lymphoma	35,210	4%
Non-Hodgkin lymphoma	45,140	4%	Pancreas	32,490	3%
Oral cavity & pharynx	42,500	4%	Thyroid	31,350	3%
Leukemia	38,720	4%	Kidney & renal pelvis	28,570	3%
Pancreas	34,950	3%	Leukemia	28,170	3%
All sites	**1,053,250**		**All sites**	**988,660**	

Estimated Deaths

Male			Female		
Lung & bronchus	64,190	20%	Lung & bronchus	60,540	21%
Prostate	35,770	11%	Breast	42,170	14%
Colon & rectum	28,900	9%	Pancreas	24,930	8%
Pancreas	27,050	8%	Colon & rectum	24,000	8%
Liver & intrahepatic bile duct	19,250	6%	Uterine corpus	13,860	5%
Leukemia	13,500	4%	Ovary	12,730	4%
Esophagus	12,940	4%	Liver & intrahepatic bile duct	10,840	4%
Urinary bladder	12,640	4%	Leukemia	10,040	3%
Non-Hodgkin lymphoma	11,060	3%	Non-Hodgkin lymphoma	8,330	3%
Brain & other nervous system	10,170	3%	Brain & other nervous system	8,160	3%
All sites	**323,900**		**All sites**	**294,220**	

FIGURE 1 Leading sites of estimated new cancer cases and deaths by sex, United States, 2025. Estimates exclude US territories and are rounded to the nearest 10, and cases exclude basal cell and squamous cell skin cancers and in situ carcinoma except urinary bladder. Ranking is based on modeled projections and may differ from the most recent observed data.

(aged 15–19 years), incidence rates are five times higher in girls than in boys (5 vs. 1 per 100,000), increased steeply through 2018, but show signs of leveling in more recent years.

Lung cancer incidence declined over the past decade (2012–2021) by 3% per year in men and 1.4% per year in women (Table 5). The downturn began later and remains slower in women than in men because women took up cigarette smoking in large numbers later and were also slower to quit, including upticks in smoking prevalence in some generations born after 1965.[73,74] In contrast, CRC incidence patterns have long been similar by sex, with rates declining since 2011/2012 by 1.2% per year in both men and women. However, these declines are increasingly driven by adults aged 65 years and older because CRC is rising in people born after the 1950s, some of whom are now middle-aged. From 2012 through 2021, incidence increased by 0.4% per year in those aged 50–64 years and by 2.4% per year in younger adults. Rising incidence in the United States and several other high-income countries since the mid-1990s[75] remains unexplained but likely reflects changes in lifestyle exposures that began with generations born during the last one half of the 20th century.[76] In response, the American Cancer Society recommended beginning CRC screening at age 45 years instead of 50 years in 2018,[77] and the USPSTF followed suit in a draft statement in 2020 that was finalized in 2021.[78] Although only 20% of people aged 45–49 years reported being up to date for CRC screening in 2021,[79] we may already be seeing signs of prevalent disease detection in this newly eligible cohort. The CRC incidence rate jumped 17% in people aged 45–49 years from 2018 to 2021 (vs. 1.2% in the previous 3 years). Claims data on 10 million private health insurance beneficiaries aged 45–49 years showed a three-fold increase in CRC screening from January 2021 to December 2022, when it reached the same level as that in people aged 50–75 years.[80]

After a long history of increase, non-Hodgkin lymphoma incidence decreased by about 1% per year in both men and women from 2017 through 2021, and liver cancer and melanoma have stabilized in men, although both cancers continue to increase in women by about 2% per year (Table 5). In adults younger than 50 years, melanoma has stabilized in women, but liver cancer continues to increase by about 2% per year; whereas rates for both cancers have decreased in men by about 1% and 2.5% per year, respectively. The decline in urinary bladder cancer since the mid-2000s accelerated from <1% per year to 1.4% per year during 2015 through 2021 overall. Incidence rates appear to have finally stabilized for kidney cancer after increasing since the 1970s, but they continue to increase by about 1% per year for cancers of the pancreas and oral cavity and pharynx. Increasing trends for oral cavity are mostly confined to cancers of the tongue, tonsil, and oropharynx (increasing by 1.9% per year), which are usually associated with human papillomavirus (HPV).

Cervical cancer incidence has decreased by more than one half since the mid-1970s because of the widespread uptake of vaccination, screening, and treatment of precursor lesions. Although incidence overall has stabilized in the past decade, trends vary widely by age. For example, rates in women aged 30–44 years have increased by 11%, from 12.7 in 2013 to 14.1 in 2021 after decades of decline, consistent with persistent reports of underscreening among young women in recent studies.[81,82] In contrast, rates in women aged 20–24 years who were first to be exposed to the HPV vaccine[83,84] have

TABLE 4 Estimated number of deaths for selected cancers by state, United States, 2025.

State	All sites	Brain & other nervous system	Female breast	Colon & rectum	Leukemia	Liver & intrahepatic bile duct	Lung & bronchus	Non-Hodgkin lymphoma	Ovary	Pancreas	Prostate
Alabama	10,210	310	720	920	350	530	2350	270	190	840	550
Alaska	1120	—[a]	70	110	—[a]	70	220	—[a]	—[a]	80	70
Arizona	14,110	410	990	1250	550	680	2390	530	330	1180	870
Arkansas	6730	190	400	630	220	370	1680	170	110	470	370
California	60,620	2040	4620	5450	2350	3630	9480	2080	1420	5270	4140
Colorado	8620	310	700	750	450	460	1310	270	270	730	520
Connecticut	6760	230	420	460	260	330	1230	220	150	610	430
Delaware	2590	70	250	180	90	110	510	80	50	220	160
District of Columbia	930	—[a]	90	90	—[a]	60	150	—[a]	—[a]	70	80
Florida	49,040	1440	3210	3970	2010	2050	10,090	1490	1050	4160	2950
Georgia	19,090	580	1420	1680	690	950	3680	510	410	1520	1110
Hawaii	2700	50	200	250	90	140	470	90	50	240	190
Idaho	3380	100	250	290	150	140	580	120	80	290	220
Illinois	23,170	680	1670	2020	880	1060	4880	630	410	1900	1280
Indiana	14,080	370	920	1190	510	490	3460	440	250	1180	770
Iowa	6260	150	380	520	260	260	1350	220	120	500	370
Kansas	5680	190	380	500	240	190	1240	210	110	450	290
Kentucky	10,330	270	650	900	390	470	2660	320	150	750	440
Louisiana	9340	240	650	830	320	530	1990	270	170	760	460
Maine	3540	100	190	250	120	130	830	110	70	300	200
Maryland	10,780	310	830	950	350	500	2050	340	250	920	690
Massachusetts	12,390	380	710	820	460	640	2500	400	300	1170	710
Michigan	21,530	610	1350	1700	810	880	4860	710	440	1880	1100
Minnesota	10,490	330	620	760	440	430	2060	370	200	910	660
Mississippi	6740	190	480	640	260	370	1630	160	120	470	380
Missouri	13,330	370	1020	1260	490	630	3240	420	180	960	680
Montana	2290	80	140	180	80	120	390	60	—[a]	190	150
Nebraska	3470	120	160	360	150	160	720	120	70	330	190
Nevada	5450	140	440	520	210	260	940	200	100	480	380
New Hampshire	2980	110	180	190	100	120	620	100	60	260	170
New Jersey	15,180	440	1160	1210	610	700	2670	460	340	1440	780
New Mexico	3900	110	290	340	120	220	600	120	70	320	260
New York	31,190	940	1920	2610	1190	1400	6060	950	750	2980	1660
North Carolina	20,910	570	1450	1670	770	1020	4690	600	390	1910	1210
North Dakota	1280	—[a]	70	100	60	60	260	—[a]	—[a]	110	70
Ohio	24,440	580	1400	1960	960	910	5630	780	460	1980	1160
Oklahoma	8710	240	570	780	270	350	2080	260	170	590	440

(Continues)

TABLE 4 (Continued)

State	All sites	Brain & other nervous system	Female breast	Colon & rectum	Leukemia	Liver & intrahepatic bile duct	Lung & bronchus	Non-Hodgkin lymphoma	Ovary	Pancreas	Prostate
Oregon	8770	280	580	700	340	400	1700	300	160	710	580
Pennsylvania	27,500	750	1800	2160	1040	1250	5820	890	550	2270	1480
Rhode Island	2110	50	120	140	70	130	410	60	–[a]	150	110
South Carolina	11,340	350	790	1100	420	550	2430	390	170	820	640
South Dakota	1790	60	100	140	70	100	390	–[a]	–[a]	150	100
Tennessee	14,920	410	1040	1360	520	700	3730	440	270	1130	790
Texas	45,220	1370	3330	4470	1590	3050	8010	1400	960	3710	2470
Utah	3760	170	340	320	180	180	450	130	110	330	290
Vermont	1500	50	90	130	50	60	300	50	–[a]	120	100
Virginia	16,280	500	1160	1390	680	800	3370	480	350	1380	1040
Washington	13,870	470	800	1280	520	700	2620	490	320	1240	920
West Virginia	4750	120	280	420	180	190	1390	120	80	340	230
Wisconsin	11,760	370	690	840	480	530	2340	390	230	1060	780
Wyoming	1240	–[a]	80	170	–[a]	50	210	–[a]	–[a]	120	70
United States	618,120	18,330	42,170	52,900	23,540	30,090	124,730	19,390	12,730	51,980	35,770

Note: Estimates are rounded to the nearest 10 and are unavailable for Puerto Rico. These estimates are model-based and should be interpreted with caution. State estimates may not sum to US total because of rounding and exclusion of state estimates of fewer than 50 deaths.
[a]Estimate is fewer than 50 deaths.

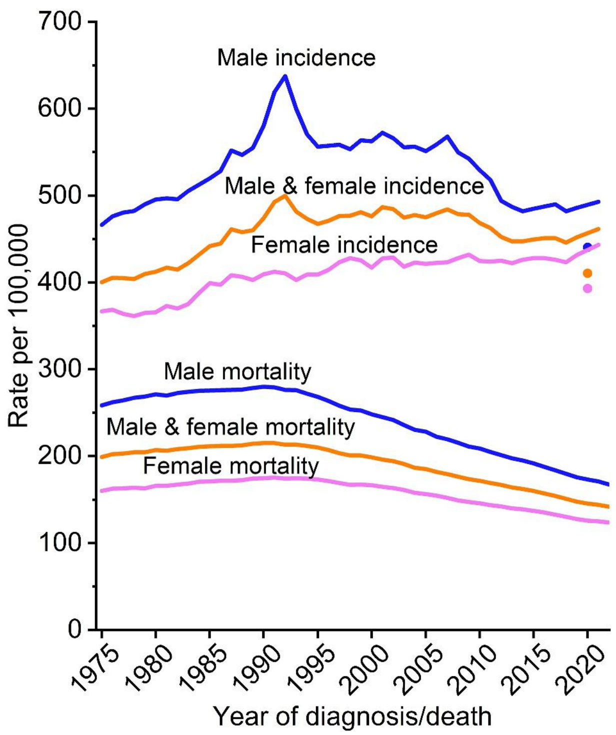

FIGURE 2 Trends in cancer incidence (1975–2021) and mortality (1975–2022) rates by sex, United States. Rates are age adjusted to the 2000 US standard population, and incidence rates are adjusted for delays in case reporting. Incidence data for 2020 are shown separate from trend lines.

plummeted by 69% during this time. A recent study based on data from the New Mexico HPV Pap Registry found that the incidence of cervical intraepithelial neoplasia grades 2 and 3 had dropped from 153 and 41 cases, respectively, in 2007 to zero in 2019 among adolescents 15-19 years.[85] Vaccine efficacy against other HPV-related cancers is also emerging, including a 70% reduction in high-grade anal squamous intraepithelial lesions and cancer among women who were vaccinated before age 17 years.[86] Surprisingly large herd immunity[87] and single-dose efficacy[88,89] spurred the UK Health Security Agency to move to single-dose vaccination in 2023.[90] In the United States, where the annual number of HPV-associated cancers is estimated at greater than 37,000,[91] 77% of adolescents had received at least one vaccine dose in 2023, and 61% were up to date (2 doses if initiated before 15th birthday, 3 doses otherwise), down from 63% in 2022.[92]

Cancer survival

The 5-year relative survival rate for all cancers combined has increased from 49% for diagnoses during the mid-1970s to 69% during 2014–2020 (Table 6),[8,9] with the highest contemporary survival for cancers of the thyroid (98%), prostate (97%), testis (95%), and melanoma (94%). Earlier diagnosis through screening and incidental detection through imaging has contributed to gains in survival for some cancers (e.g., breast, prostate, thyroid, and kidney) both by increasing the likelihood of successful treatment and through lead-time bias and the detection

TABLE 5 Trends in incidence rates for selected cancers by sex, United States, 1998–2021.

	Trend 1		Trend 2		Trend 3		Trend 4		Trend 5		AAPC	
	Years	APC	Years	APC	Years	APC	Years	APC	Years	APC	2017–2021	2012–2021
All sites	1998–2001	1.0[a]	2001–2004	−1.0	2004–2008	0.4	2008–2012	−1.4[a]	2012–2021	0.1	0.1	0.1
Male	1998–2001	1.3	2001–2004	−1.5	2004–2007	0.6	2007–2013	−2.1[a]	2013–2021	−0.1	−0.1	−0.3[a]
Female	1998–2011	0.1	2011–2021	0.4[a]							0.4[a]	0.4[a]
Female breast	1998–2001	−0.6	2001–2004	−3.0	2004–2017	0.5[a]	2017–2021	1.6[a]			1.6[a]	1.0[a]
Colon & rectum[b]	1998–2001	−1.3[a]	2001–2008	−2.7[a]	2008–2011	−4.3[a]	2011–2021	−1.2[a]			−1.2[a]	−1.2[a]
Male	1998–2003	−2.0[a]	2003–2012	−3.5[a]	2012–2021	−1.2[a]					−1.2[a]	−1.2[a]
Female	1998–2001	−1.3[a]	2001–2008	−2.5[a]	2008–2011	−4.3[a]	2011–2021	−1.2[a]			−1.2[a]	−1.2[a]
Kidney & renal pelvis	1998–2007	3.5[a]	2007–2011	−0.2	2011–2018	1.6[a]	2018–2021	−0.2			0.3	1.0[a]
Male	1998–2007	3.3[a]	2007–2011	−0.2	2011–2018	1.6[a]	2018–2021	−0.2			0.3	1.0[a]
Female	1998–2007	3.6[a]	2007–2013	−0.0	2013–2017	2.2[a]	2017–2021	−0.1			−0.1	0.9[a]
Liver & intrahepatic bile duct	1998–2002	2.4[a]	2002–2009	4.5[a]	2009–2015	3.3[a]	2015–2021	0.3			0.3	1.3[a]
Male	1998–2002	2.9[a]	2002–2008	4.8[a]	2008–2015	3.1[a]	2015–2021	−0.3			−0.3	0.8[a]
Female	1998–2004	1.4[a]	2004–2014	4.2[a]	2014–2021	2.0[a]					2.0[a]	2.5[a]
Lung & bronchus	1998–2006	−0.4[a]	2006–2018	−1.6[a]	2018–2021	−3.3[a]					−2.9[a]	−2.2[a]
Male	1998–2006	−1.3[a]	2006–2018	−2.4[a]	2018–2021	−4.1[a]					−3.7[a]	−3.0[a]
Female	1998–2006	0.7[a]	2006–2018	−0.9[a]	2018–2021	−2.5[a]					−2.1[a]	−1.4[a]
Melanoma of skin	1998–2005	3.6[a]	2005–2021	1.6[a]							1.6[a]	1.6[a]
Male	1998–2001	5.7[a]	2001–2016	2.1[a]	2016–2021	0.1					0.1	1.1[a]
Female	1998–2001	7.0[a]	2001–2021	1.7[a]							1.7[a]	1.7[a]
Ovary	1998–2021	−1.6[a]									−1.6[a]	−1.6[a]
Oral cavity & pharynx	1998–2004	−0.4	2004–2015	1.0[a]	2015–2021	0.5[a]					0.5[a]	0.7[a]
Male	1998–2005	−0.2	2005–2015	1.1[a]	2015–2021	0.4					0.4	0.6[a]
Female	1998–2003	−1.1[a]	2003–2021	0.6[a]							0.6[a]	0.6[a]
Tongue, tonsil, oropharynx	1998–2014	2.6[a]	2014–2021	1.9[a]							1.9[a]	2.1[a]
Other oral cavity	1998–2004	−2.6[a]	2005–2015	−0.5[a]	2015–2021	−1.2[a]					−1.2[a]	−0.9[a]
Pancreas	1998–2021	1.1[a]									1.1[a]	1.1[a]
Male	1998–2002	0.5	2002–2021	1.1[a]							1.1[a]	1.1[a]
Female	1998–2021	1.1[a]									1.1[a]	1.1[a]
Prostate	1998–2001	3.1	2001–2004	−5.4	2004–2007	3.1	2007–2014	−6.4[a]	2014–2021	3.0[a]	3.0[a]	0.8
Thyroid	1998–2009	7.2[a]	2009–2014	1.8[a]	2014–2021	−2.0[a]					−2.0[a]	−1.2[a]
Male	1998–2009	6.7[a]	2009–2014	2.1[a]	2014–2021	−1.1[a]					−1.1[a]	−0.4
Female	1998–2009	7.4[a]	2009–2014	1.8[a]	2014–2021	−2.2[a]					−2.2[a]	−1.4[a]
Uterine cervix	1998–2003	−3.7[a]	2003–2013	−1.1[a]	2013–2016	1.8	2016–2021	−0.8			−0.8	0.0
Uterine corpus	1998–2004	−0.5	2004–2021	1.3[a]							1.3[a]	1.3[a]

Note: Trends were analyzed by the Joinpoint Regression Program, version 5.2.0, allowing up to four joinpoints.

Abbreviations: AAPC, average annual percent change; APC, annual percent change (based on incidence rates age adjusted to the 2000 US standard population and adjusted for delays in reporting).

[a]The APC or AAPC is significantly different from zero ($p < .05$).

[b]Excludes appendix.

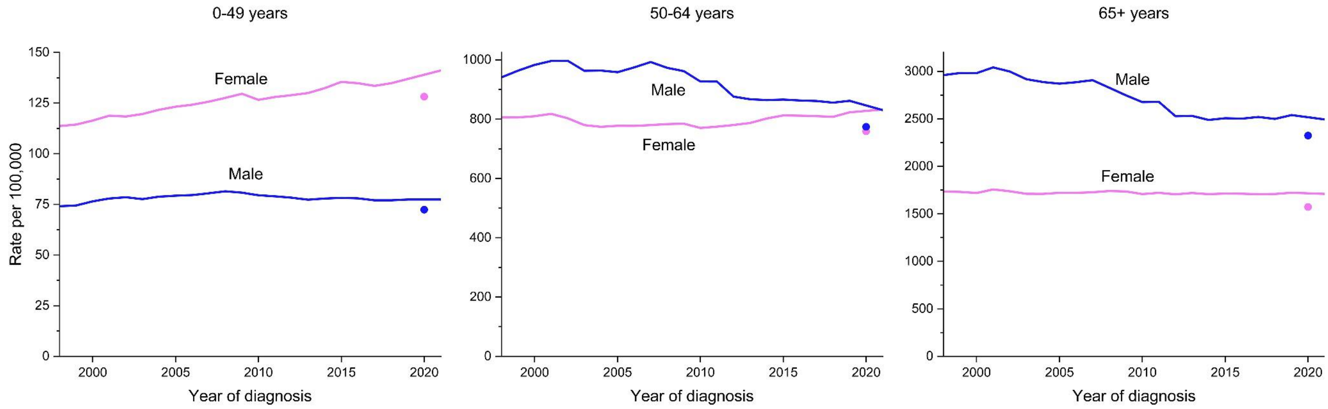

FIGURE 3 Trends in cancer incidence by age and sex, United States, 1998–2021. Rates are age adjusted to the 2000 US standard population and adjusted for delays in case reporting. Data for 2020 are shown separate from trend lines.

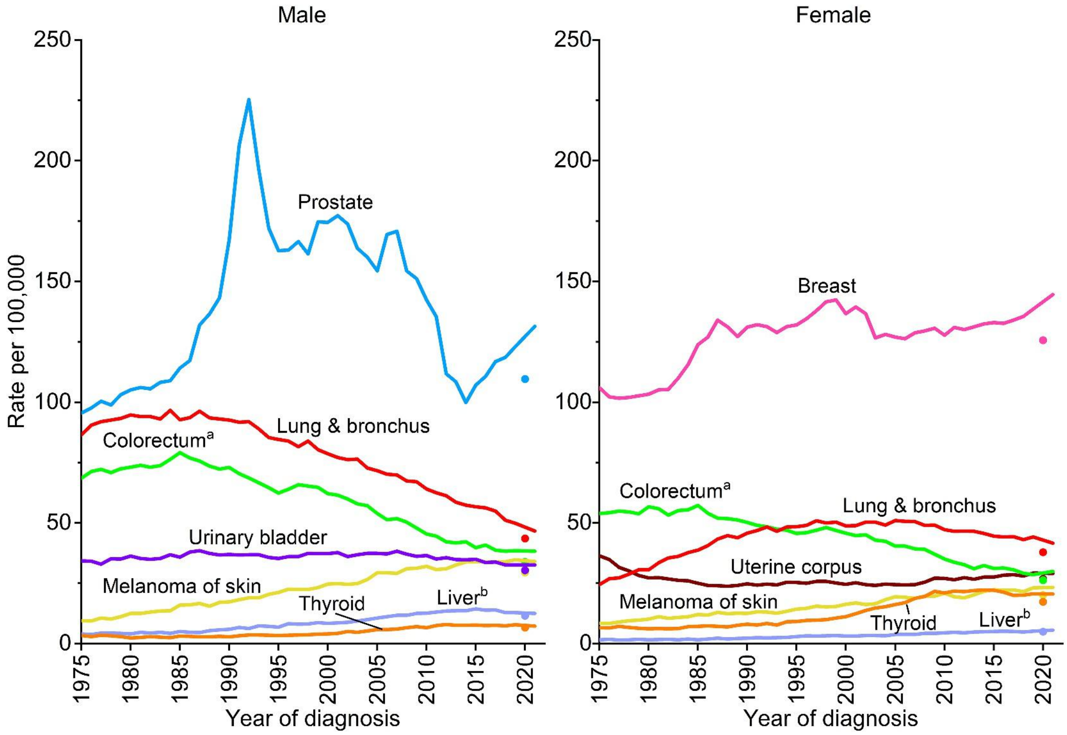

FIGURE 4 Trends in incidence rates for selected cancers by sex, United States, 1975 to 2021. Rates are age adjusted to the 2000 US standard population and adjusted for delays in reporting. Data for 2020 are shown separate from trend lines. [a]Excludes appendix. [b]Includes intrahepatic bile duct.

of indolent cancers (e.g., overdiagnosis).[62,93,94] Liver cancer has the largest increase in survival (in relative terms), from 3% to 22%, but remains among the least favorable prognosis, along with cancers of the lung (27%), esophagus (22%), and pancreas (13%).

Gains in survival have been especially rapid for hematopoietic and lymphoid malignancies because of improvements in treatment protocols, including the development of targeted therapies and immunotherapies, likely in part because of a history of high research funding.[95] The 5-year relative survival rate for chronic myeloid leukemia has more than tripled, from 22% in the mid-1970s to 70% for those diagnosed during 2014–2020, with tyrosine-kinase inhibitors providing most patients with near-normal life expectancy.[96] Although three generations of tyrosine-kinase inhibitors have been approved, drug resistance and risk of progression to acute disease occurs in 5% to 10% of patients with chronic myeloid leukemia and is an active area of research.[97] Metabolic intervention is an emerging therapeutic strategy for resistant chronic myeloid leukemia[98] as well as acute myeloid leukemia,[99] for which 5-year relative survival remains just 32%.

A cascade of new regimens of immunotherapy and targeted therapy has also revolutionized the management of cancer, particularly melanoma, over the past 2 decades, especially in the treatment of metastatic disease.[100] Consequently, 5-year relative survival for

TABLE 6 Trends in 5-year relative survival rates (%) by race, United States, 1975–2020.

	All races & ethnicities			White			Black		
	1975–1977	1995–1997	2014–2020	1975–1977	1995–1997	2014–2020	1975–1977	1995–1997	2014–2020
All sites	49	63	69	50	64	70	39	54	65
Brain & other nervous system	23	32	33	22	31	30	25	39	37
Breast (female)	75	87	91	76	89	93	62	75	84
Colon & rectum[a]	50	61	64	50	62	65	45	54	59
Colon[a]	51	61	63	51	62	64	45	54	57
Rectum	48	62	67	48	62	67	44	55	65
Esophagus	5	13	22	6	14	22	4	9	16
Hodgkin lymphoma	72	84	89	72	85	90	70	82	88
Kidney & renal pelvis	50	62	78	50	62	78	49	62	77
Larynx	66	66	62	67	68	63	58	52	55
Leukemia	34	48	67	35	50	68	33	42	61
Liver & intrahepatic bile duct	3	7	22	3	7	21	2	4	20
Lung & bronchus	12	15	27	12	15	27	11	13	24
Melanoma of the skin	82	91	94	82	91	94	57[b]	76[b]	70
Myeloma	25	32	61	24	32	61	29	32	62
Non-Hodgkin lymphoma	47	56	74	47	57	76	49	49	70
Oral cavity & pharynx	53	58	69	54	60	71	36	38	57
Ovary	36	43	51	35	43	50	42	36	43
Pancreas	3	4	13	3	4	13	2	4	11
Prostate	68	97	97	69	97	98	61	94	97
Stomach	15	22	36	14	20	37	16	22	38
Testis	83	96	95	83	96	96	73[b,c]	86[b]	89
Thyroid	92	95	98	92	96	99	90	95	97
Urinary bladder	72	80	78	73	81	79	50	63	66
Uterine cervix	69	73	67	70	74	68	65	66	58
Uterine corpus	87	84	81	88	86	84	60	62	63

Note: Rates are age adjusted for normal life expectancy and are based on cases diagnosed in the Surveillance, Epidemiology, and End Results (SEER) 9 areas for 1975–1977 and 1995–1997, and in SEER 22 areas for 2014–2020; all cases were followed through 2021. Rates for White and Black patients diagnosed during 2014–2020 are exclusive of Hispanic ethnicity.

[a]Excludes appendix.

[b]The standard error is between 5 and 10 percentage points.

[c]Survival rate is for cases diagnosed from 1978 to 1980.

distant-stage melanoma has doubled, from 18% for patients diagnosed in 2009 to 35% in 2014–2020 (Figure 5). Immunotherapy has also shown efficacy for nonsmall and small cell lung cancer.[101] Advances in treatment for lung cancer have been almost exclusively confined to nonsmall cell disease, for which 3-year relative survival has increased from 26% in 2004 to 43% in 2018, compared with an increase from 9% to 12% for small cell lung cancer.[9] Progress not only reflects improved disease management[102–104] but also advances in staging[105] and earlier detection.[106,107]

The only cancer for which survival has decreased over the past 4 decades is uterine corpus cancer (Table 6), which is the fourth most common cancer in women and the fifth most common cause of cancer death. Uterine corpus cancer is one of only a handful of cancers with increasing mortality (Table 7) and also has among the largest Black–White mortality disparity (Table 8), with a 5-year relative survival rate of just 63% among Black women versus 84% among White women (Figure 5). Aside from modest advances in treatment[108] and slightly improved survival for women with regional

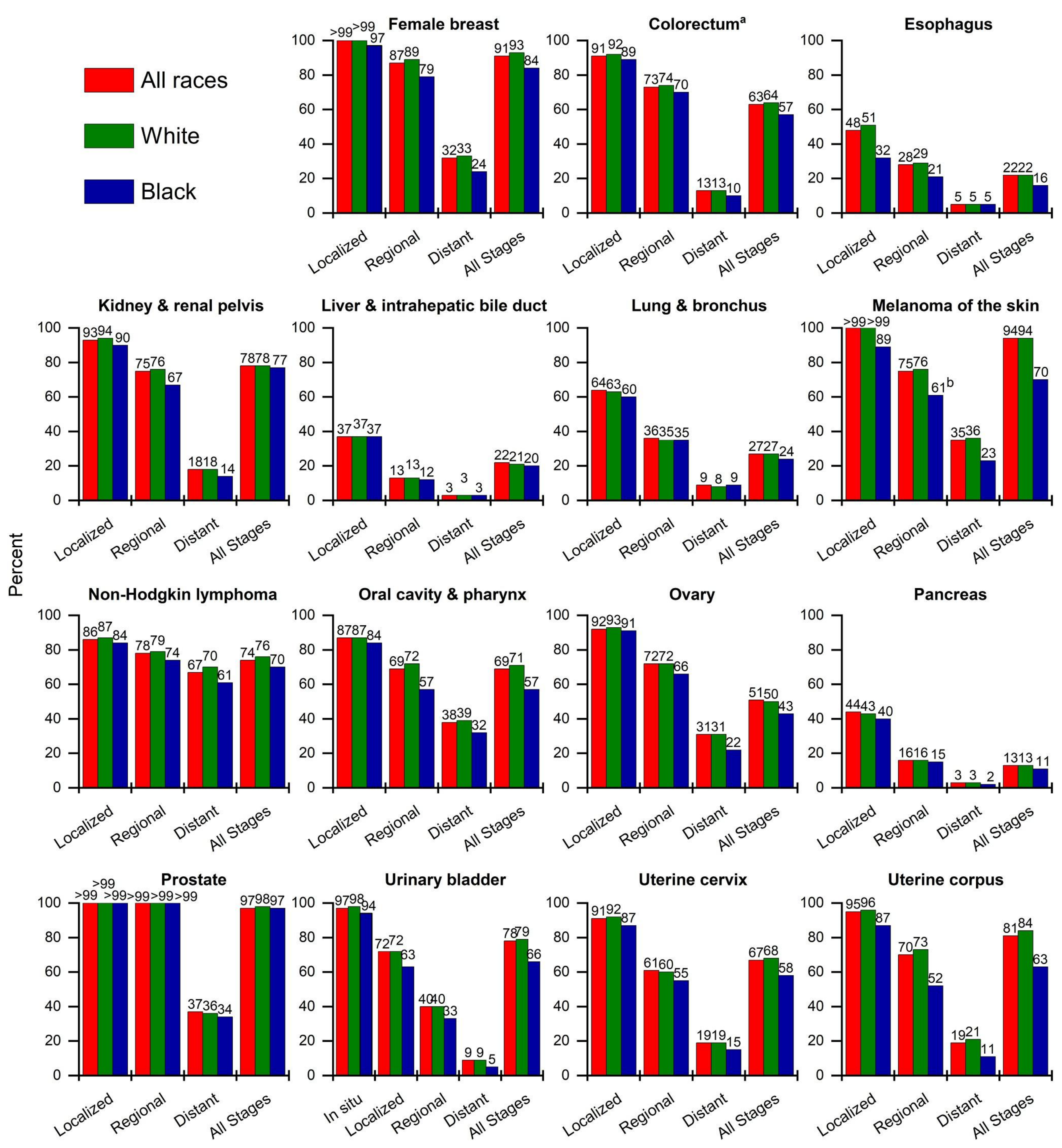

FIGURE 5 Five-year relative survival rates for selected cancers by race and stage at diagnosis, United States, 2014 to 2020. All patients were followed through 2021. White and Black race are exclusive of Hispanic ethnicity. [a]Excludes appendix. [b]Standard error is between 5 and 10 percentage points.

stage disease,[109] progress has lagged behind other common cancers, at least in part reflecting persistent underfunding.[95] The NCI allocated almost six times more research dollars in 2019 for cervical cancer ($86 million) than for uterine corpus cancer ($14.9 million), which killed three times more women in 2022 (4051 vs. 12,763, respectively).

Cervical cancer survival rates have also stagnated, although this partly reflects an increased proportion of adenocarcinoma, which has

TABLE 7 Trends in mortality rates for selected cancers by sex, United States, 1975–2022.

	Trend 1		Trend 2		Trend 3		Trend 4		Trend 5		Trend 6		AAPC	
	Years	APC	Years	APC	Years	APC	Years	APC	Years	APC	Years	APC	2018–2022	2013–2022
All sites	1975–1990	0.5[a]	1990–1993	−0.3	1993–2001	−1.0[a]	2001–2015	−1.5[a]	2015–2022	−1.7[a]			−1.7[a]	−1.7[a]
Male	1975–1979	1.0[a]	1979–1990	0.3[a]	1990–1993	−0.5	1993–2002	−1.5[a]	2002–2022	−1.8[a]			−1.8[a]	−1.8[a]
Female	1975–1991	0.6[a]	1991–2001	−0.6[a]	2001–2022	−1.4[a]							−1.4[a]	−1.4[a]
Female breast	1975–990	0.4[a]	1990–1995	−1.8[a]	1995–1998	−3.2[a]	1998–2010	−1.9[a]	2010–2022	−1.2[a]			−1.2[a]	−1.2[a]
Colon & rectum	1975–1984	−0.5[a]	1984–2002	−1.8[a]	2002–2005	−3.8[a]	2005–2012	−2.5[a]	2012–2022	−1.7[a]			−1.7[a]	−1.7[a]
Male	1975–1979	0.6	1979–1987	−0.6[a]	1987–2002	−1.9[a]	2002–2005	−4.0[a]	2005–2013	−2.5[a]	2013–2022	−1.7[a]	−1.7[a]	−1.7[a]
Female	1975–1984	−1.0[a]	1984–2001	−1.8[a]	2001–2011	−2.9[a]	2011–2022	−1.7[a]					−1.7[a]	−1.7[a]
Liver & intrahepatic bile duct	1975–1980	0.2	1980–1987	2.0[a]	1987–1996	3.8[a]	1996–2000	0.7	2000–2015	2.6[a]	2015–2022	−0.4[a]	−0.4[a]	0.3[a]
Male	1975–1985	1.5[a]	1985–1996	3.8[a]	1996–1999	0.3	1999–2013	2.7[a]	2013–2017	0.7	2017–2022	−1.2[a]	−1.2[a]	−0.3
Female	1975–1984	0.2	1984–1995	3.1[a]	1995–2008	1.2[a]	2008–2014	3.2[a]	2014–2022	0.7[a]			0.7[a]	1.0[a]
Lung & bronchus	1975–1980	3.0[a]	1980–1990	1.8[a]	1990–1995	−0.2	1995–2005	−1.0[a]	2005–2013	−2.3[a]	2013–2022	−4.3[a]	−4.3[a]	−4.3[a]
Male	1975–1982	1.8[a]	1982–1991	0.4[a]	1991–2005	−1.9[a]	2005–2013	−2.9[a]	2013–2022	−4.8[a]			−4.8[a]	−4.8[a]
Female	1975–1982	6.0[a]	1982–1990	4.2[a]	1990–1995	1.8[a]	1995–2005	0.2[a]	2005–2014	−1.8[a]	2014–2022	−3.9[a]	−3.9[a]	−3.7[a]
Melanoma of skin	1975–1988	1.6[a]	1988–2013	0.0	2013–2017	−6.1[a]	2017–2022	−1.4[a]					−1.4[a]	−3.5[a]
Male	1975–1989	2.3[a]	1989–2013	0.3[a]	2013–2017	−6.5[a]	2017–2022	−1.6[a]					−1.6[a]	−3.8[a]
Female	1975–1988	0.8[a]	1988–2013	−0.5[a]	2013–2017	−5.5[a]	2017–2022	−0.9					−0.9	−2.9[a]
Oral cavity & pharynx	1975–1991	−1.5[a]	1991–2000	−2.6[a]	2000–2009	−1.4	2009–2022	0.7[a]					0.7[a]	0.7[a]
Male	1975–2007	−2.1[a]	2007–2022	0.7[a]									0.7[a]	0.7[a]
Female	1975–1989	−0.9[a]	1989–2009	−2.2[a]	2009–2022	0.5[a]							0.5[a]	0.5[a]
Tongue, tonsil, oropharynx	1975–2000	−1.6[a]	2000–2009	−0.2	2009–2022	2.1[a]							2.1[a]	2.1[a]
Other oral cavity	1975–1993	−1.6[a]	1993–2006	−3.0[a]	2006–2022	−0.6[a]							−0.6[a]	−0.6[a]
Ovary	1975–1982	−1.2[a]	1982–1992	0.3	1992–1998	−1.1[a]	1998–2004	0.2	2004–2022	−2.4[a]			−2.4[a]	−2.4[a]

(Continues)

TABLE 7 (Continued)

	Trend 1		Trend 2		Trend 3		Trend 4		Trend 5		Trend 6		AAPC	
	Years	APC	Years	APC	Years	APC	Years	APC	Years	APC	Years	APC	2018–2022	2013–2022
Pancreas	1975–2002	−0.1[a]	2002–2005	1.0	2005–2022	0.2[a]							0.2[a]	0.2[a]
Male	1975–1986	−0.8[a]	1986–2000	−0.3[a]	2000–2022	0.3[a]							0.3[a]	0.3[a]
Female	1975–1983	0.7[a]	1983–2022	0.2[a]									0.2[a]	0.2[a]
Prostate	1975–1987	0.9[a]	1987–1990	3.3	1990–1993	0.9	1993–2012	−3.6[a]	2012–2022	−0.5[a]			−0.5[a]	−0.5[a]
Uterine corpus	1975–1989	−1.6[a]	1989–1997	−0.7[a]	1997–2009	0.4[a]	2009–2016	2.4[a]	2016–2022	1.1[a]			1.1[a]	1.5[a]

Note: Trends were analyzed using the Joinpoint Regression Program, version 5.2.0, allowing up to five joinpoints.

Abbreviations: AAPC, average annual percent change; APC, annual percent change (based on mortality rates age adjusted to the 2000 US standard population).

[a]The APC or AAPC is significantly different from zero ($p < .05$).

less favorable survival, as a result of high cytology screening, which disproportionately detects and removes squamous cell carcinoma.[110,111] Cervical cancer has the highest screening prevalence of any screen-detectable cancer at 75% among women aged 25–65 years in 2021.[60]

Trends in cancer mortality

Mortality rates are a better indicator of progress against cancer than incidence or survival because they are less affected by detection biases, such as those that can occur for screen-detected cancers.[112] Cancer mortality rose during most of the 20th century (Figure 7), largely because of a rapid increase in lung cancer among men as a consequence of the tobacco epidemic. However, reductions in smoking as well as improvements in disease management and the uptake of screening have resulted in a 34% overall drop in the cancer death rate from 1991 through 2022, translating to nearly 4.5 million fewer cancer deaths (3,021,200 in men and 1,437,500 in women) than if mortality had remained at its peak (Figure 8). The number of averted deaths is twice as large for men than for women because the death rate in men peaked higher and declined faster (Figure 7).

Despite decades of decline, lung cancer continues to dwarf other cancers in the number of deaths, causing more deaths in 2022 than colorectal, breast, and prostate cancers combined (Figure 7). The lung cancer death rate has dropped by 61% from the peak in 1990 among men and by 38% from the peak in 2002 among women, consistent with the later downturn in incidence. Since 2013/2014, the pace of decline accelerated from 3% to almost 5% per year in men and from 2% to 4% per year in women (Table 7) because of earlier detection and treatment advances that have extended survival.[107] A recent study found that mortality declines accelerated for both smoking-related and smoking-unrelated lung cancer but are slower for the latter because they are not influenced by reductions in incidence.[113] Low-dose computed tomography screening reduces the odds of lung cancer mortality by 16%–24% among high-risk individuals[114,115] and is associated with a substantial survival advantage.[116] The potential for reducing the mortality burden is further increased by updated American Cancer Society guidelines that expanded screening eligibility to an additional 5 million people by eliminating cessation time among former smokers because of protracted excess risk.[117] Nevertheless, lung cancer screening prevalence remains low, ranging from one of 10 eligible adults in most Western states to three of 10 in the Northeast,[118] and most cases (43%) are diagnosed at a distant stage (Figure 6).

Sustained reductions in mortality for CRC, the second-most common cause of cancer death in men and women combined, are the result of changing patterns in risk factors, such as declines in smoking, screening uptake, and improved treatment. The CRC death rate has dropped by 55% among males since 1980 and by 60% among females since 1969. (The rate in women began declining before 1969, but those data are not exclusive of cancer in the small intestine.) Contemporary trends in CRC are remarkably similar by sex, with rates decreasing during the most recent decade (2013–2022) by 1.7% per year in both men and women (Table 7).

In contrast, death rates for pancreatic cancer, the third leading cause of cancer death, have gradually increased since cancer mortality reporting began, from about five per 100,000 in both men and women in the 1930s to 13 per 100,000 men and 10 per 100,000 women today (Figure 7). This trend reflects improved classification on death certificates as well as increased incidence since the mid-1990s, in part because of the obesity epidemic. In contrast to most cancers, however, therapeutic advances are also lacking despite substantial effort that includes national legislation to focus attention on pancreatic cancer (House Resolution 733: Recalcitrant Cancer

TABLE 8 Incidence and mortality rates for selected cancers by race and ethnicity, United States.

	All races & ethnicities	White	Black	American Indian/ Alaska Native[b]	Asian American/ Pacific Islander	Hispanic/ Latino
Incidence, 2017–2021						
All sites	455.6	476.9	462.0	497.2	303.0	362.5
Male	493.5	513.0	535.0	520.1	298.1	378.5
Female	431.4	454.0	413.5	487.2	312.3	359.6
Breast (female)	131.8	137.9	131.3	123.6	108.3	104.1
Colon & rectum[a]	35.1	35.0	40.4	50.6	27.9	32.3
Male	40.4	40.1	48.2	57.6	32.9	38.2
Female	30.5	30.5	34.7	44.7	23.9	27.5
Kidney & renal pelvis	17.7	18.0	19.3	34.2	8.4	18.2
Male	23.9	24.3	26.3	45.6	11.6	23.6
Female	12.3	12.2	13.8	24.6	5.6	13.7
Liver & intrahepatic bile duct	8.8	7.6	10.2	19.4	11.5	14.1
Male	13.1	11.2	16.4	27.0	17.5	20.3
Female	5.0	4.3	5.5	13.0	6.6	8.7
Lung & bronchus	54.0	58.5	55.5	64.0	33.0	28.3
Male	60.4	63.9	70.2	68.7	39.8	33.6
Female	49.1	54.5	45.4	61.0	27.9	24.6
Prostate	118.3	114.5	191.5	99.1	63.1	92.9
Stomach	6.4	5.2	9.9	10.3	8.9	9.4
Male	8.4	7.1	13.0	13.4	11.7	11.4
Female	4.8	3.5	7.8	8.0	6.8	8.0
Uterine cervix	7.6	7.2	8.5	11.9	6.1	9.8
Uterine corpus	28.1	28.1	29.7	31.7	22.4	26.7
Mortality, 2018–2022						
All sites	146.0	151.3	168.6	178.1	93.0	106.8
Male	173.2	179.0	208.3	207.4	107.5	126.8
Female	126.4	131.0	144.7	158.7	82.6	93.2
Breast (female)	19.3	19.4	26.8	20.5	11.9	13.7
Colon & rectum	12.9	12.9	16.7	18.4	9.1	10.7
Male	15.4	15.2	21.3	22.2	10.9	13.4
Female	10.8	10.9	13.5	15.6	7.7	8.5
Kidney & renal pelvis	3.4	3.6	3.3	6.7	1.6	3.2
Male	5.1	5.3	4.9	10.1	2.3	4.7
Female	2.1	2.2	2.1	4.2	1.0	2.1
Liver & intrahepatic bile duct	6.6	5.9	7.9	13.0	8.1	9.1
Male	9.5	8.4	12.3	18.2	11.8	12.6
Female	4.2	3.8	4.6	9.0	5.1	6.1
Lung & bronchus	32.4	35.4	34.3	40.0	18.7	14.6
Male	38.7	41.2	46.7	45.4	23.7	19.4
Female	27.6	31.0	25.9	36.4	15.0	11.1

(Continues)

TABLE 8 (Continued)

	All races & ethnicities	White	Black	American Indian/ Alaska Native[b]	Asian American/ Pacific Islander	Hispanic/ Latino
Prostate	19.0	18.1	37.2	21.2	8.8	15.4
Stomach	2.7	2.0	4.7	5.3	4.2	4.6
Male	3.6	2.8	6.6	7.0	5.4	5.7
Female	2.0	1.4	3.3	4.0	3.3	3.8
Uterine cervix	2.2	2.1	3.2	3.6	1.6	2.4
Uterine corpus	5.2	4.7	9.5	5.4	3.7	4.4

Note: Rates are per 100,000 population, age adjusted to the 2000 US standard population, and exclude data from Puerto Rico. Incidence is adjusted for delays in reporting. All race groups are exclusive of Hispanic origin.

[a]Excludes appendix.

[b]To reduce racial misclassification, incidence is limited to Purchased/Referred Care Delivery Area counties, and mortality (for the entire United States) is adjusted using factors from the National Center for Health Statistics.

Research Act of 2012). Since 2000, there have been 481 phase 1 clinical trials and 85 phase 3 trials conducted on metastatic pancreatic cancer, along with five new drug approvals; yet median survival for the disease remains less than 1 year.[119] The appearance of a three-fold increase in the 5-year relative survival rate, from 4% in the mid-1990s to 13% in 2014–2020, is partly an artifact of a burgeoning number of incidentally detected, well differentiated neuroendocrine tumors.[120,121] For the nine in 10 patients diagnosed with pancreatic adenocarcinoma, 5-year survival remains just 8%.

Female breast cancer mortality peaked in 1989 and has since decreased by 44% through 2022, translating to the avoidance of more than 517,900 deaths. A recent study attributed three fourths of this progress to treatment advances and the remainder to earlier diagnosis through screening.[122] Declines in breast cancer mortality have slowed from 2% per year during the 2000s to 1% per year since 2010 (Table 7), reflecting relatively stable mammography prevalence over the past 2 decades and perhaps increased incidence. Reductions in prostate cancer mortality have similarly decelerated from 3.6% per year during the late 1990s and 2000s to 0.5% per year from 2012 through 2022 (Table 7, Figure 7). The prostate cancer death rate in 2022 was 52% lower than the peak in 1993 because of earlier detection through PSA screening and advances in treatment.[45,123] Steep declines in melanoma mortality during 2013–2017 (6.1% per year) because of breakthrough treatments noted earlier have slowed to 1.4% during 2017–2022 (Table 7). Declining mortality trends for melanoma, leukemia, and cancers of the kidney, prostate, and breast, despite increasing or stable (leukemia) incidence, underscore the impact of advances in treatment, but perhaps also signal some overdiagnosis.

The decades-long increase in liver cancer mortality has finally reversed in men, as rates decreased by 1.2% per year from 2018–2022, but continued in women with an increase of 0.7% per year during this time period. Mortality rates also continue to rise for uterine corpus cancer by 1.5% per year from 2013 through 2022 and for HPV-associated oral cancers (tongue, tonsil, and oropharynx) by 2% per year (Table 7).

Recorded number of deaths in 2022

In 2022, a total of 3,279,857 deaths were recorded in the United States: 184,374 fewer than in 2021 (Table 9). The large drop is because the number of COVID-19 deaths fell by more than one half, from 12% of total deaths in 2021 (416,893) to 6% in 2022 (186,552). This large shift altered the proportion of other deaths as well. For example, the percentage of deaths from cancer increased from 17% in 2021 to 19% in 2022; however, in the absence of COVID-19 deaths, cancer accounted for 20% of deaths in both years. The age-adjusted cancer death rate decreased by 1.5% from 2021 to 2022 despite 3158 more cancer deaths in 2022 because of the aging and growth of the population.

Although cancer remained the second leading cause of death after heart diseases in 2022 overall, it is the leading cause of death among men aged 60–79 years and women aged 40–79 years (Table 10). Notably, suicide was the second leading cause of death in young adult men (aged 20–39 years). Table 11 presents the number of deaths in 2022 for the five leading cancer types by age and sex. Brain and other nervous system (hereafter *brain*) tumors are the leading cause of cancer death among children and adolescents younger than 20 years (480 deaths), followed closely by leukemia (450 deaths). Brain is also the leading cause of cancer death in men aged 20–39 years, causing twice as many deaths as in women in this age group (624 vs. 305). Breast cancer is the leading cause of cancer death among women younger than 50 years, and lung cancer leads among both men and women aged 50 years and older.

Cancer disparities by race and ethnicity

This section highlights the most striking cancer disparities among the five broadly defined racial and ethnic groups shown in Table 8. Although race and ethnicity are social constructs that aggregate heterogeneous population groups, they are useful for examining the

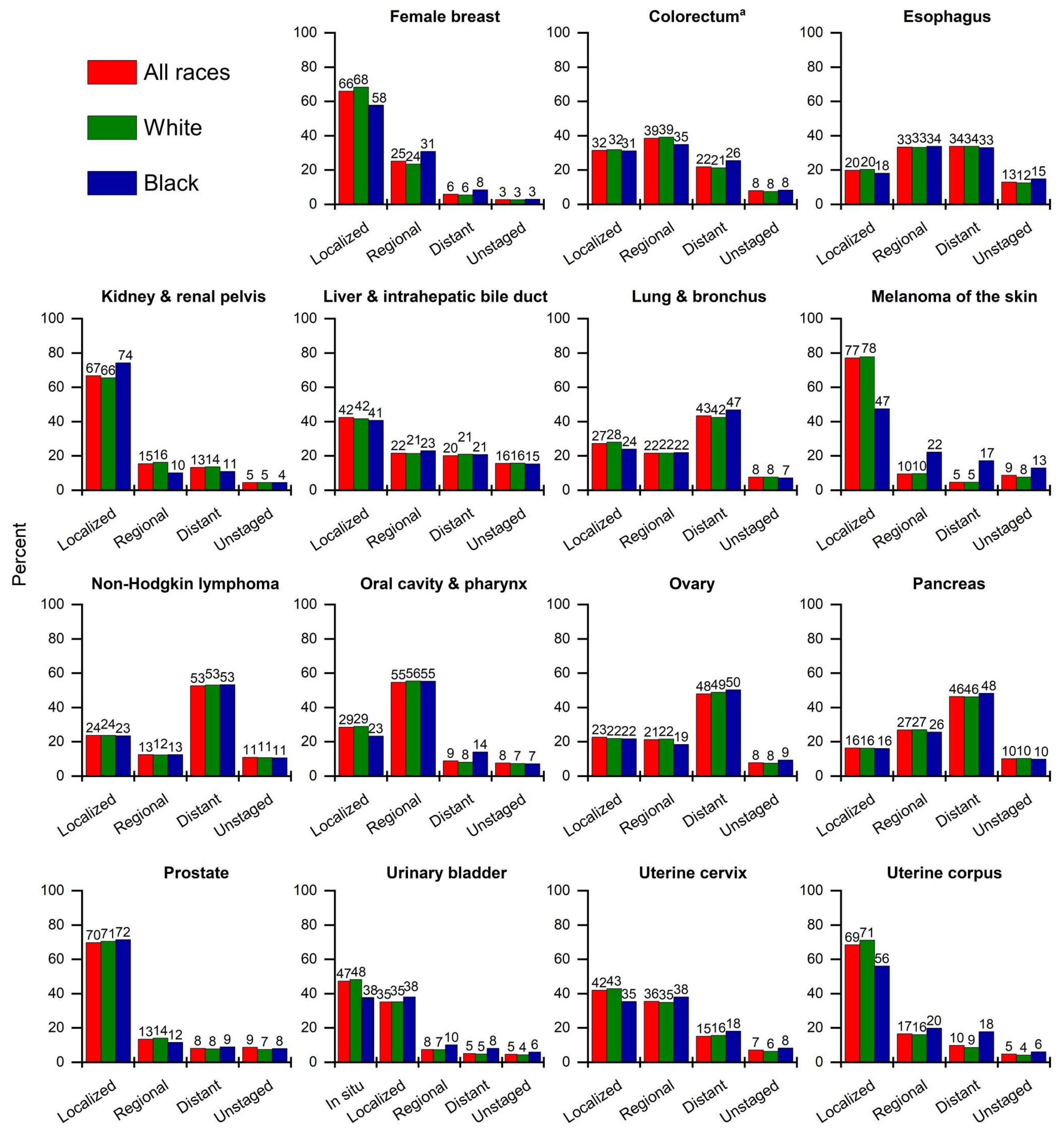

FIGURE 6 Stage distribution for selected cancers by race, United States, 2017 to 2021. White and Black race are exclusive of Hispanic ethnicity. Stage categories may not sum to 100% because of rounding. [a]Excludes appendix.

influence of discrimination and inequality in health disparities. Cancer incidence and mortality are highest among AIAN people overall and in women, whereas Black men have the highest sex-specific rates (Table 8). The incidence rate in Black men during 2017–2021 was about 80% higher than in AAPI men (535 vs. 298 per 100,000), who have the lowest rate of any sex-race group. AAPI people are the only group for which the incidence in men is lower than in women.

AIAN people have the highest cancer mortality of any group for cancers of the colorectum, kidney, liver, lung, stomach, and cervix. Black men have the highest prostate cancer mortality, from two-fold to four-fold that in any other group, whereas Black women have the highest breast and uterine corpus cancer mortality, with the latter from two-fold to three-fold that of all other women. Although Hispanic and AAPI people have relatively low risk for most common

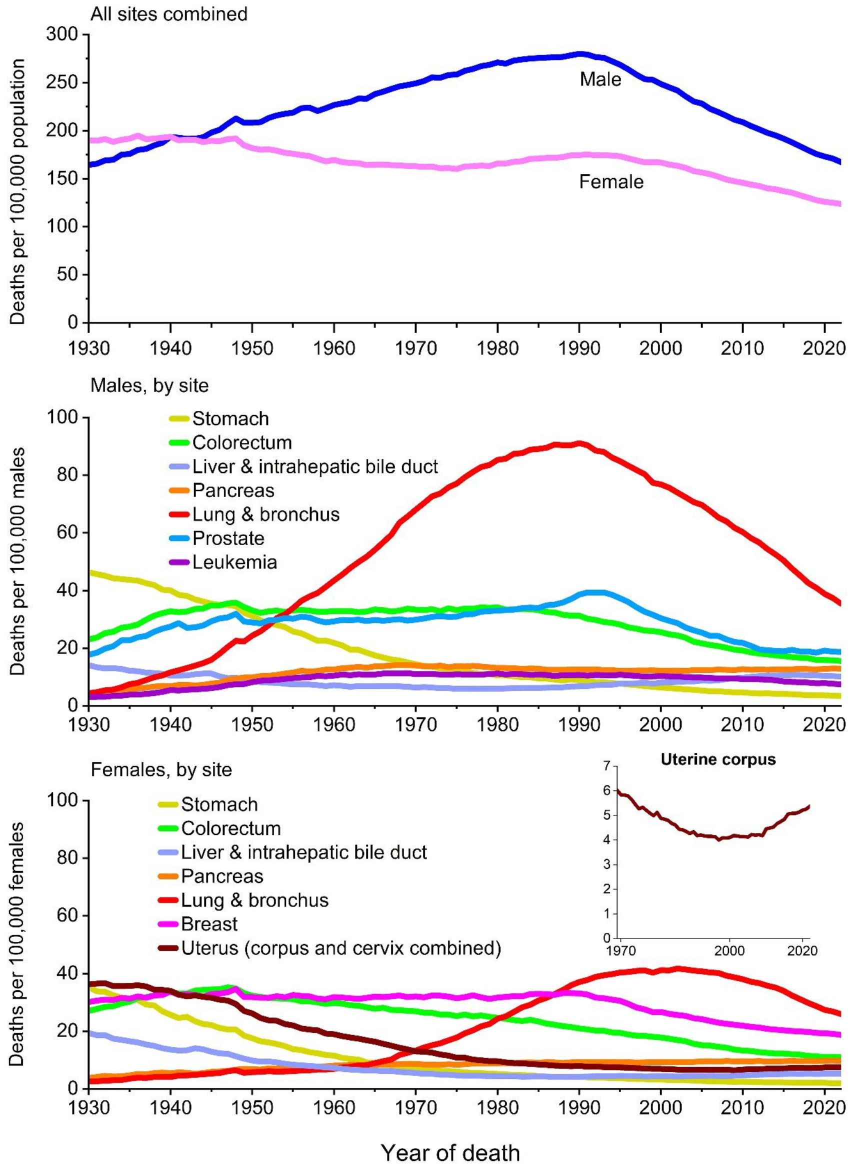

FIGURE 7 Trends in cancer mortality rates by sex overall and for selected cancers by sex, United States, 1930 to 2022. Rates are age adjusted to the 2000 US standard population. Numerator data for cancers of the lung and bronchus, colon and rectum, liver, and uterus differ from the contemporary time period because of improvements in International Classification of Diseases coding over time. For example, rates for lung and bronchus include pleura, trachea, mediastinum, and other respiratory organs.

cancers, their rates of liver cancer mortality are approximately 40%–50% higher than in White people, and their stomach cancer mortality is two-fold higher. Aggregated data for broad racial and ethnic groups mask substantial heterogeneity. For example, combined AAPI data mask even larger disparities among Pacific Islander people, who have three-fold higher stomach cancer mortality and from two and one half–fold to three-fold higher rates of uterine corpus and cervical cancer mortality compared with White women.[124]

Disparities in cancer occurrence and outcomes are often the result of socioeconomic deprivation as a consequence of structural racism, which limits opportunities for education and other mechanisms of upward mobility.[125] For example, the historical practice of mortgage lending discrimination known as redlining is associated with later stage cancer diagnosis, lower likelihood of receiving recommended treatment, and higher cancer mortality.[126–130] Inequalities in wealth lead to differences in the prevalence of risk factor exposures as well as access to high-quality cancer prevention, early detection, and treatment.[131,132] Even beyond higher prevalence of common risk factors like smoking and obesity,[60] exposure to carcinogenic air emissions is up to 50% higher among people experiencing poverty, regardless of race or ethnicity.[133] In 2022, 25% of AIAN people lived below the federal poverty level ($27,750 for a family of four), as well as 17% of Black and Hispanic people, compared with 9% of White and Asian people.[134] Persistent poverty

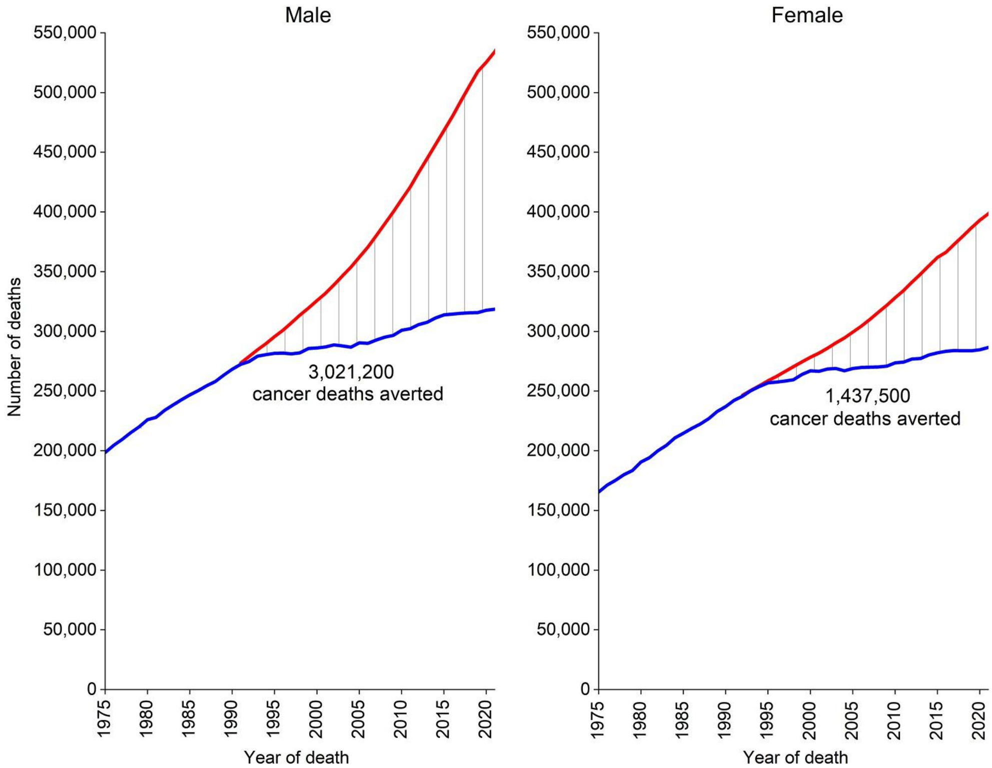

FIGURE 8 Total number of cancer deaths averted during 1991 to 2022 in men and 1992 to 2022 in women, United States. The blue line represents the actual number of cancer deaths recorded in each year; the red line represents the number of cancer deaths that would have been expected if cancer death rates had remained at their peak.

ranks among the leading causes of death alongside smoking[135] and is consistently associated with higher cancer incidence, later stage diagnosis, and worse outcomes.[136–138] The effects of poverty are both compounded by and independent of racial status. A recent study found that living in a disadvantaged neighborhood increased the likelihood of aggressive prostate cancer by 30% among Black men but had no impact on risk in White men, suggesting the contribution of race-specific factors, such as minority stress.[139]

Cancer survival after diagnosis is lower among Black people than among White people for almost every cancer type shown in Figure 5, even after controlling for stage at diagnosis (Figure 6) and socioeconomic status.[138] A higher likelihood of more aggressive disease (e.g., triple-negative breast cancer, nonendometrioid uterine corpus cancer) explains a small portion of this gap, but the largest contributor is less access to high-quality care across the cancer continuum from prevention to diagnosis and treatment. Black women are one half as likely as White women to receive guideline-concordant diagnostic procedures for the workup of uterine corpus cancer,[140] less likely to receive a provider referral for mammography,[141] and less likely to receive timely follow-up after an abnormal mammogram.[142] These inequalities directly translate to later stage disease, as only 56% of uterine corpus cancers and 58% of breast cancers are diagnosed at a localized stage in Black women versus 71% and 68%, respectively, in White women (Figure 6). A recent study estimated that CRC mortality rates in Black people would be reduced by 19%, eliminating two thirds of the Black–White disparity, merely by ensuring the same quality screening as White people.[143] Asian, Black, and Hispanic people are less likely to receive both a physician recommendation for cancer screening[144] and recommended germline genetic testing necessary for receipt of game-changing targeted therapies.[145] The economic burden of racial and ethnic health inequalities was estimated at $421–$451 billion in 2018[146] and will surely rise in the wake of the COVID-19 pandemic because of a slower rebound in screening and other routine care among people of color.[6]

Geographic variation in cancer occurrence

Tables 12 and 13 show the 5-year average annual incidence and mortality rates for selected cancers by state. Geographic variation reflects population demographic characteristics and differences in the prevalence of cancer risk factors, early detection practices, and access to care, including state and local public health policies. For example, states have a large influence on the health of their residents by controlling accessibility and affordability of health insurance through the Marketplace and Medicaid.[147,148] Cancer death rates range from <150 per 100,000 people in Utah, Hawaii, and New York to >210 per 100,000 people in West Virginia, Kentucky, and Mississippi (Table 13). This gap is largely driven by lung cancer and

TABLE 9 Leading causes of death in the United States in 2022 versus 2021.

	2022				2021			
Cause of death	Rank	No.	Rate	Percent	Rank	No.	Rate	Percent
All causes		3,279,857	799.5			3,464,231	860.0	
Heart diseases	1	702,880	167.4	21%	1	695,547	168.7	20%
Cancer	2	608,371	142.0	19%	2	605,213	144.2	17%
Accidents (unintentional injuries)	3	227,039	64.0	7%	4	224,935	64.1	6%
COVID-19	4	186,552	44.5	6%	3	416,893	102.4	12%
Cerebrovascular diseases	5	165,393	39.7	5%	5	162,890	39.8	5%
Chronic lower respiratory diseases	6	147,382	34.3	4%	6	142,342	33.9	4%
Alzheimer disease	7	120,122	29.1	4%	7	119,399	29.5	3%
Diabetes mellitus	8	101,209	24.1	3%	8	103,294	25.0	3%
Nephritis, nephrotic syndrome and nephrosis	9	57,937	13.8	2%	10	54,358	13.2	2%
Chronic liver disease and cirrhosis	10	54,803	13.8	2%	9	56,585	14.4	2%

Note: Counts include unknown age. Rates are per 100,000, exclude people with unknown age, and are age adjusted to the 2000 US standard population.
Abbreviation: COVID-19, coronavirus disease 2019.
Source: National Center for Health Statistics, Centers for Disease Control and Prevention, 2024.

mirrors patterns in smoking prevalence, which have remained consistent geographically despite temporal declines. In 2022, the highest smoking prevalence was in West Virginia (22%); Arkansas (20%); Tennessee (19%); and Mississippi, Missouri, Ohio, and Kentucky (18%) compared with 7% in Utah and 10% in California.[27]

Although it is mostly preventable, cervical cancer incidence varies two-fold by state, ranging from five per 100,000 women in Massachusetts, New Hampshire, and Connecticut to ≥10 per 100,000 women in Texas, Kentucky, West Virginia, Oklahoma, and Puerto Rico (Table 12). Advances in cancer control create or exacerbate disparities because of the unequal dissemination of interventions. Although HPV vaccination can virtually eliminate cervical cancer[149] and prevent against numerous other cancers, large state differences in coverage will likely widen existing disparities. In 2022, up-to-date HPV vaccination among boys and girls aged 13 to 17 years per 100,000 people ranged from 38% in Mississippi and 46% in Oklahoma to 78% in the District of Columbia and 85% in Rhode Island.[27]

Cancer in children and adolescents

Cancer is the second most common cause of death among children aged 1–14 years (after accidents) and the fourth most common cause of death among adolescents (aged 15–19 years). In 2025, an estimated 9550 children (aged birth to 14 years) and 5140 adolescents (aged 15–19 years) will be diagnosed with cancer, and 1050 and 600, respectively, will die from the disease. An estimated one in 264 children and adolescents will be diagnosed with cancer before age 20 years.

Leukemia is the most common childhood cancer, accounting for 28% of cases, followed closely by central nervous system tumors (27%), one third of which are benign or borderline malignant (Table 14). Cancer types and their distribution differ in adolescents, among whom the most common cancer is central nervous system tumors (22%), more than one half of which are benign or borderline malignant, followed by lymphoma (19%) and leukemia (13%). In addition, Hodgkin lymphoma is much more common than non-Hodgkin lymphoma among adolescents, whereas the reverse is true among children. Thyroid carcinoma accounts for 12% of cancers in adolescents but only 2% in children.

After increasing since at least 1975, the overall invasive cancer incidence rate in children declined slightly from 2015 through 2021 by 0.8% per year driven by a recent rapid decline in malignant brain tumors (from 37.3 per million in 2017 to 31.9 per million in 2021) and stabilized rates of lymphoid leukemia.[11] In contrast, overall incidence continued a slow increase in adolescents (by 0.7% per year) because of climbing rates for both lymphoid leukemia and non-Hodgkin lymphoma. Malignant brain tumors decreased rapidly, consistent with the pattern in children, but represent only 9% of all malignancies versus 20% in children. The steep (4% per year) rise in thyroid cancer incidence rates since at least 1998 may be stabilizing in recent years.

In contrast, cancer mortality has declined steadily since 1970, from 6.3 to 1.9 per 100,000 in 2020–2022 in children and from 7.2 to 2.7 in adolescents, for overall reductions of 70% and 63%, respectively. Much of this progress reflects the dramatic declines in mortality for leukemia of 83% in children and 73% in adolescents (based on the average rate during 2018–2022 compared to 1970). Remission rates of 90%–100% have been achieved for childhood acute lymphocytic leukemia over the past 4 decades, primarily through the

TABLE 10 Five leading causes of death in the United States by age and sex, 2022.

Ranking	All ages	1–19 years	20–39 years	40–59 years	60–79 years	80 years and older
Male						
All causes	1,719,250	15,120	102,845	257,978	753,950	577,899
1	Heart diseases	Accidents (unintentional injuries)	Accidents (unintentional injuries)	Heart diseases	Cancer	Heart diseases
	386,766	5108	45,344	51,505	184,307	152,554
2	Cancer	Assault (homicide)	Intentional self-harm (suicide)	Accidents (unintentional injuries)	Heart diseases	Cancer
	319,336	2969	13,387	48,585	176,156	90,689
3	Accidents (unintentional injuries)	Intentional self-harm (suicide)	Assault (homicide)	Cancer	COVID-19	COVID-19
	151,629	1954	10,702	39,241	47,702	39,777
4	COVID-19	Cancer	Heart diseases	Chronic liver disease & cirrhosis	Chronic lower respiratory diseases	Cerebrovascular disease
	102,660	933	6041	13,090	38,256	33,032
5	Cerebrovascular diseases	Congenital anomalies	Cancer	COVID-19	Accidents (unintentional injuries)	Alzheimer disease
	71,819	591	4149	12,829	34,092	28,081
Female						
All causes	1,560,607	8020	44,483	154,762	571,441	772,703
1	Heart diseases	Accidents (unintentional injuries)	Accidents (unintentional injuries)	Cancer	Cancer	Heart diseases
	316,114	2594	16,445	40,260	154,096	188,406
2	Cancer	Cancer	Cancer	Heart diseases	Heart diseases	Cancer
	289,035	799	4473	22,188	102,346	89,379
3	Cerebrovascular diseases	Intentional self-harm (suicide)	Intentional self-harm (suicide)	Accidents (unintentional injuries)	Chronic lower respiratory diseases	Alzheimer disease
	93,574	712	3322	18,497	37,963	67,721
4	COVID-19	Assault (homicide)	Heart diseases	COVID-19	COVID-19	Cerebrovascular disease
	83,892	701	2809	8931	34,606	59,939
5	Alzheimer disease	Congenital anomalies	Assault (homicide)	Chronic liver disease & cirrhosis	Cerebrovascular disease	COVID-19
	82,647	512	2115	7266	27,697	38,771

Note: Deaths within each age group do not sum to all ages combined because of the inclusion of unknown ages and deaths occurring in individuals younger than 1 year. In accordance with the National Center for Health Statistics' cause-of-death ranking, symptoms, signs, and abnormal clinical or laboratory findings and categories that begin with other and all other were not ranked, and assault excludes legal intervention.

Abbreviation: COVID-19, coronavirus disease 2019.

Source: National Vital Statistics System, Underlying Cause of Death, 2018–2022, CDC WONDER Online Database; Centers for Disease Control and Prevention; 2024.

TABLE 11 Five leading causes of cancer death in the United States by age and sex, 2022.

	All ages	Birth to 19 years	20–39 years	40–49 years	50–64 years	65–79 years	80 years and older
Sexes combined							
All sites	608,371	1772	8622	18,494	126,988	272,422	180,068
1	Lung & bronchus	Brain & ONS	Breast	Breast	Lung & bronchus	Lung & bronchus	Lung & bronchus
	131,889	480	1072	2766	27,603	67,754	34,380
2	Colon & rectum	Leukemia	Colon & rectum	Colon & rectum	Colon & rectum	Pancreas	Prostate
	52,967	450	972	2705	13,387	23,514	16,025
3	Pancreas	Bones & joints	Brain & ONS	Lung & bronchus	Pancreas	Colon & rectum	Colon & rectum
	48,323	235	929	1831	10,458	20,070	15,819
4	Breast	Soft tissue[a]	Leukemia	Brain & ONS	Breast	Breast	Pancreas
	42,672	180	767	1105	10,656	16,177	13,056
5	Prostate	Liver[b]	Soft tissue[a]	Pancreas	Liver[b]	Liver[b]	Breast
	33,363	41	429	1096	7045	14,930	12,001
Male							
All sites	319,336	946	4149	8307	66,663	148,578	90,689
1	Lung & bronchus	Leukemia	Brain & ONS	Colon & rectum	Lung & bronchus	Lung & bronchus	Lung & bronchus
	69,358	239	624	1516	14,633	36,643	16,872
2	Prostate	Brain & ONS	Colon & rectum	Lung & bronchus	Colon & rectum	Prostate	Prostate
	33,363	234	557	1019	8050	14,179	16,025
3	Colon & rectum	Bones & joints	Leukemia	Brain & ONS	Pancreas	Pancreas	Colon & rectum
	28,560	136	444	684	5977	12,583	6879
4	Pancreas	Soft tissue[a]	Soft tissue[a]	Pancreas	Liver[b]	Colon & rectum	Urinary bladder
	25,186	101	251	678	4976	11,548	5936
5	Liver[b]	Liver[b]	Testis	Liver[b]	Esophagus	Liver[b]	Pancreas
	18,884	27	237	414	3418	10,143	5833
Female							
All sites	289,035	826	4473	10,187	60,325	123,844	89,379
1	Lung &bronchus	Brain & ONS	Breast	Breast	Lung & bronchus	Lung & bronchus	Lung & bronchus
	62,531	246	1067	2751	12,970	31,111	17,508
2	Breast	Leukemia	Colon & rectum	Colon & rectum	Breast	Breast	Breast
	42,211	211	415	1189	10,573	15,957	11,863
3	Colon & rectum	Bones & joints	Uterine cervix	Lung & bronchus	Colon & rectum	Pancreas	Colon & rectum
	24,407	99	390	812	5337	10,931	8940
4	Pancreas	Soft tissue[a]	Leukemia	Uterine cervix	Pancreas	Colon & rectum	Pancreas
	23,137	79	323	710	4481	8522	7223
5	Ovary	Kidney[c]	Brain & ONS	Ovary	Ovary	Uterine Corpus	Leukemia
	13,214	26	305	551	3416	6434	4098

Abbreviation: ONS, other nervous system.

[a]Includes heart.

[b]Includes intrahepatic bile duct.

[c]Includes renal pelvis.

Source: National Center for Health Statistics, Centers for Disease Control and Prevention, 2024.

TABLE 12 Incidence rates for selected cancers by state, United States, 2017–2021.

State	All sites		Breast	Colon & rectum[a]		Lung & bronchus		Non-Hodgkin lymphoma		Prostate	Uterine cervix
	Male	Female	Female	Male	Female	Male	Female	Male	Female	Male	Female
Alabama	495.0	404.3	125.2	45.2	33.6	73.9	47.7	18.3	11.8	121.8	9.4
Alaska[b]	460.7	422.2	125.9	43.1	37.6	58.6	50.8	21.7	15.4	104.1	7.1
Arizona	425.5	384.9	119.3	35.3	26.6	46.1	40.2	18.9	12.5	83.6	6.5
Arkansas[b]	549.3	442.8	125.2	48.1	35.7	89.7	62.0	23.4	14.9	119.8	9.3
California	431.4	394.7	125.9	37.0	28.7	41.2	34.3	21.7	15.0	103.0	7.4
Colorado	422.4	397.7	135.3	33.5	26.6	39.9	37.2	20.7	13.7	104.4	6.1
Connecticut	515.2	456.0	145.3	36.9	28.4	59.0	54.1	24.9	18.0	135.8	5.3
Delaware	514.7	444.3	141.3	37.0	27.8	61.3	52.9	21.9	14.0	136.0	7.2
District of Columbia	470.6	419.6	143.3	39.8	30.1	50.2	42.0	20.4	12.5	143.5	7.9
Florida	510.1	451.5	128.6	39.6	30.0	61.0	50.2	26.2	18.8	107.7	9.3
Georgia	542.2	436.4	134.6	44.7	32.5	68.9	49.0	21.6	14.5	144.4	8.2
Hawaii	440.5	405.2	142.3	42.8	31.2	46.4	35.4	18.5	12.8	106.9	6.7
Idaho	497.6	424.9	134.8	38.6	29.2	48.4	43.4	22.9	15.8	125.2	6.9
Illinois	508.5	447.3	135.7	43.6	32.0	65.7	54.4	23.2	16.1	122.8	7.3
Indiana[c]	517.7	447.8	128.7	46.5	35.2	83.2	62.8	22.9	15.8	106.1	8.7
Iowa	551.0	472.5	139.1	42.5	33.9	70.4	55.0	26.3	18.0	131.4	7.8
Kansas	502.6	446.1	137.8	42.4	33.2	57.9	49.2	23.1	15.4	126.6	8.3
Kentucky	578.5	491.5	131.2	51.5	37.7	97.9	76.5	23.5	16.9	119.0	9.8
Louisiana	568.4	440.4	132.4	50.3	37.0	75.7	51.2	23.0	16.4	147.9	9.3
Maine	520.9	467.5	134.9	36.6	29.6	72.9	64.7	24.6	16.0	109.3	6.4
Maryland	497.4	432.5	137.6	38.2	30.3	54.9	47.7	21.8	14.7	142.4	6.5
Massachusetts	484.2	434.0	138.9	34.7	26.2	60.6	56.6	23.3	16.0	119.8	4.9
Michigan	489.9	427.1	128.9	38.5	30.0	65.4	55.4	22.8	15.6	119.8	6.7
Minnesota	529.0	468.3	142.6	39.0	30.0	59.6	52.1	27.9	18.2	122.2	5.5
Mississippi	553.5	427.9	126.6	53.1	38.6	87.8	56.3	20.8	13.1	141.2	9.3
Missouri	492.0	446.2	135.3	43.1	32.6	76.2	62.2	22.4	15.3	101.6	8.4
Montana	504.4	437.5	138.4	41.5	29.6	47.6	46.6	22.0	14.0	137.3	6.8
Nebraska	503.3	444.2	132.7	42.5	33.1	58.8	48.3	23.7	16.5	128.1	7.5
Nevada	417.9	384.2	114.7	37.9	29.0	46.8	44.2	17.9	12.1	98.2	8.5
New Hampshire	520.6	460.0	141.8	36.2	27.7	63.0	58.6	24.2	17.5	121.5	5.2
New Jersey	533.4	455.1	138.5	41.8	32.2	54.2	46.8	25.7	17.8	149.0	7.3
New Mexico	395.6	371.2	118.1	36.8	27.5	36.5	30.7	17.3	12.0	90.8	8.0
New York	517.6	451.2	136.1	39.8	29.8	59.0	50.9	25.0	17.6	137.0	7.2
North Carolina	537.5	453.3	145.4	39.2	29.8	74.1	55.5	22.5	15.1	134.6	7.0
North Dakota	499.6	440.7	132.9	42.8	33.5	61.4	53.0	24.1	16.0	126.8	5.8
Ohio	523.6	454.9	134.3	43.2	32.5	74.2	58.3	23.7	16.1	123.4	7.9
Oklahoma	499.6	435.2	126.4	45.3	33.6	73.0	57.6	20.5	15.3	108.6	10.4
Oregon	446.0	419.2	133.1	34.9	27.7	51.1	46.4	22.0	15.1	101.6	6.7
Pennsylvania	503.7	451.3	133.2	41.1	31.3	65.4	53.9	23.5	16.6	114.1	7.1

(Continues)

TABLE 12 (Continued)

State	All sites		Breast	Colon & rectum[a]		Lung & bronchus		Non-Hodgkin lymphoma		Prostate	Uterine cervix
	Male	Female	Female	Male	Female	Male	Female	Male	Female	Male	Female
Rhode Island	494.9	447.2	141.3	34.5	26.9	65.9	57.9	22.4	16.0	118.6	6.9
South Carolina	488.5	415.5	135.7	40.0	29.4	70.1	50.7	20.2	12.8	116.7	8.1
South Dakota	506.0	451.0	131.6	42.6	33.8	59.2	53.4	21.9	17.5	130.7	6.3
Tennessee	520.2	431.8	126.5	43.4	32.2	80.4	60.4	21.4	14.5	120.2	7.7
Texas	480.6	403.8	123.2	44.2	30.6	55.0	40.5	21.7	14.8	113.1	9.8
Utah	462.8	393.3	120.9	31.0	24.3	28.0	23.0	23.4	15.1	127.7	6.1
Vermont	489.3	439.0	129.9	37.5	25.8	60.0	50.7	22.5	16.3	111.8	5.7
Virginia	435.7	401.1	131.0	37.0	28.7	59.5	46.3	20.3	13.9	111.4	6.0
Washington	474.3	438.3	139.2	36.7	28.9	52.2	48.1	23.5	16.1	108.6	6.7
West Virginia	529.2	485.1	126.6	48.8	37.4	85.3	70.9	23.7	16.5	104.1	9.9
Wisconsin	518.7	449.9	139.1	37.0	28.8	61.8	52.6	25.7	17.0	127.6	5.9
Wyoming	439.9	403.8	124.6	38.4	28.6	41.0	39.2	18.9	14.0	119.9	9.1
Puerto Rico[d]	386.9	320.1	99.0	43.6	29.5	20.1	11.2	16.6	11.3	140.3	11.6
United States[e]	493.5	431.4	131.8	40.4	30.5	60.4	49.1	22.8	15.7	118.3	7.6

Note: Rates are per 100,000, age adjusted to the 2000 US standard population using 19 age groups, and adjusted for delays in case reporting.
[a]Excludes appendix.
[b]Based on cases diagnosed during 2016–2020.
[c]Based on cases diagnosed during 2015–2019.
[d]Data are not adjusted for delays.
[e]Rates do not include Puerto Rico.
Source: North American Association of Central Cancer Registries, 2024.

optimization of established chemotherapeutic regimens as opposed to the development of new therapies.[150] However, progress among adolescents has lagged behind that in children, partly because of differences in tumor biology, clinical trial enrollment, treatment protocols, and tolerance and adherence to treatment.[151]

The 5-year relative survival rate for all cancers combined improved from 58% for diagnoses during the mid-1970s to 85% during 2014 through 2020 in children and from 68% to 87% in adolescents, but it varies substantially by cancer type and age at diagnosis. Survival is higher in children than in adolescents for lymphoid leukemia (92% vs. 76%), Ewing sarcoma (81% vs. 68%), hepatic tumors (79% vs. 53%), and rhabdomyosarcoma (66% vs. 53%) but is higher in adolescents (although not statistically significantly) for neuroblastoma (82% vs. 86%) and malignant brain tumors (75% vs. 78%; Table 14). Survival rates are lowest in both children and adolescents for hepatic tumors, osteosarcoma, and rhabdomyosarcoma. Long-term survivors of childhood cancer are at substantially elevated risk of treatment-related adverse health effects as they age. For example, one longitudinal study found that 18% of childhood cancer survivors had experienced a major cardiovascular event by the age of 50 years compared with 0.9% of community controls.[152] Thus survivorship care plans are particularly critical for young survivors to help facilitate informed prevention and early detection interventions in addition to surveillance for subsequent cancers.

Limitations

The estimated numbers of new cancer cases and deaths in 2025 provide a reasonably accurate portrayal of the contemporary cancer burden, but these model-based 3-year to 4-year projections should not be used to track temporal trends for several reasons. First, the methodology changes, most recently in 2021,[23,24] to take advantage of improved modeling techniques and cancer surveillance coverage. Second, although the models are robust, they can only account for trends through the most recent data year (currently, 2021 for incidence and 2022 for mortality) and cannot accommodate abrupt fluctuations caused by changes in detection practice, such as those that occurred for prostate cancer because of changes in PSA testing. Third, the model can be oversensitive to sudden or steep changes in observed data. The most informative metrics for tracking cancer trends are age-standardized or age-specific cancer incidence rates from SEER, NPCR, and/or NAACCR and cancer death rates from the NCHS.

TABLE 13 Death rates for selected cancers by state, United States 2018–2022.

State	All sites		Breast	Colon & rectum		Lung & bronchus		Non-Hodgkin lymphoma		Pancreas		Prostate
	Male	Female	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Alabama	197.6	133.2	20.4	17.6	11.8	53.3	30.7	6.3	3.2	13.4	10.0	19.9
Alaska	172.3	129.3	17.1	14.8	13.1	34.2	29.8	6.7	4.4	11.0	9.0	21.8
Arizona	155.5	117.1	18.8	14.8	10.2	29.8	23.5	5.9	3.4	12.0	9.0	17.6
Arkansas	205.4	140.6	19.8	18.2	12.3	56.6	37.1	6.9	3.8	13.3	9.5	19.8
California	155.8	116.5	18.8	14.2	10.2	27.5	20.0	6.2	3.6	11.9	9.2	20.2
Colorado	150.3	111.6	18.6	13.2	9.8	25.3	20.0	5.9	3.3	11.2	8.8	21.6
Connecticut	161.0	118.1	16.8	12.4	8.8	32.6	25.2	6.6	3.6	12.9	10.2	19.0
Delaware	184.7	134.5	22.0	14.8	10.3	41.5	30.9	7.2	4.0	14.5	10.8	19.7
District of Columbia	174.7	135.7	24.0	16.0	12.1	32.4	22.8	5.7	3.0	14.0	12.0	29.7
Florida	163.6	120.2	18.6	14.5	9.9	37.7	27.0	5.9	3.4	12.5	9.1	16.7
Georgia	182.5	128.7	20.7	16.6	11.5	43.8	27.0	6.0	3.4	13.2	9.6	21.3
Hawaii	144.9	105.1	16.6	14.5	9.4	28.6	20.2	5.9	3.5	12.1	9.2	15.5
Idaho	162.1	121.0	19.7	14.4	10.6	29.2	23.5	6.2	4.5	12.2	9.1	21.2
Illinois	177.2	131.9	20.2	16.3	11.2	41.0	29.6	6.5	3.9	13.5	10.3	19.0
Indiana	198.3	141.7	20.3	17.4	12.3	50.9	35.6	7.1	4.5	14.2	10.6	20.4
Iowa	179.2	128.4	17.8	16.1	11.2	41.3	30.3	7.4	4.2	12.3	9.5	20.0
Kansas	179.1	134.4	19.9	16.5	11.8	42.5	31.7	7.3	4.3	13.8	9.4	17.9
Kentucky	215.1	153.0	21.4	19.6	13.2	61.0	43.2	7.4	4.6	13.4	10.4	18.2
Louisiana	202.3	138.2	22.1	18.5	12.5	52.4	31.5	7.0	3.9	13.9	11.0	19.8
Maine	191.1	135.5	16.7	14.2	11.1	45.1	36.2	6.7	4.3	13.9	9.6	20.0
Maryland	167.2	124.8	20.0	15.0	11.0	35.1	26.2	6.2	3.5	12.9	9.7	19.9
Massachusetts	164.8	118.3	15.2	12.3	8.6	34.4	28.1	6.2	3.6	13.6	9.9	18.3
Michigan	186.8	138.2	20.3	15.9	11.3	45.0	33.2	7.7	4.4	14.2	10.8	19.0
Minnesota	167.2	122.8	17.2	13.5	9.6	33.6	26.7	7.6	4.0	12.7	9.5	19.8
Mississippi	223.0	149.5	23.4	21.9	14.2	63.1	35.9	6.6	3.6	13.8	11.0	24.5
Missouri	194.4	139.3	20.0	17.2	11.7	50.6	36.0	7.0	4.1	13.9	10.1	18.4
Montana	165.4	122.6	17.7	14.4	10.1	31.1	26.0	5.9	2.9	11.8	9.2	20.7
Nebraska	173.9	128.5	19.5	17.9	12.0	37.2	27.5	6.7	3.7	13.9	10.2	19.3
Nevada	166.4	129.5	21.7	16.0	11.7	33.9	28.8	6.1	3.9	12.5	9.5	20.4
New Hampshire	172.2	124.6	17.6	13.2	9.4	36.1	31.0	6.2	3.5	13.2	10.0	19.0
New Jersey	152.2	118.2	19.1	13.9	10.2	31.2	23.5	5.8	3.3	12.8	10.0	16.3
New Mexico	157.1	114.4	19.3	15.2	9.8	25.7	18.1	5.6	3.5	11.3	8.5	19.8
New York	148.7	113.7	17.2	13.1	9.3	31.8	23.3	5.7	3.3	12.2	9.4	15.6
North Carolina	186.2	130.8	19.9	15.0	10.8	46.8	30.7	6.5	3.6	13.1	10.1	20.2
North Dakota	162.1	119.3	16.2	14.9	10.2	35.2	27.3	6.2	3.2	11.9	9.4	17.9
Ohio	194.2	137.8	20.2	16.9	11.5	48.5	33.2	7.4	4.1	14.1	10.5	19.3
Oklahoma	209.4	150.3	22.4	19.3	13.6	54.2	38.5	7.5	4.5	13.0	9.7	20.5
Oregon	173.4	131.1	19.1	14.3	10.3	34.0	29.1	7.3	4.2	12.8	10.1	21.0
Pennsylvania	182.2	131.6	19.6	15.6	11.0	41.6	29.0	7.0	4.1	13.7	10.3	18.5

(Continues)

TABLE 13 (Continued)

State	All sites		Breast	Colon & rectum		Lung & bronchus		Non-Hodgkin lymphoma		Pancreas		Prostate
	Male	Female	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Rhode Island	173.4	122.9	16.1	12.2	10.1	38.1	29.6	6.9	3.6	13.5	9.2	18.2
South Carolina	190.9	131.7	21.3	16.7	11.2	47.4	29.8	6.4	3.5	13.5	9.9	20.8
South Dakota	177.4	131.2	18.3	15.5	12.1	38.1	31.4	6.4	4.0	13.2	10.0	20.0
Tennessee	201.8	140.7	21.7	18.2	11.9	53.9	36.5	7.1	4.0	13.3	9.9	19.6
Texas	172.0	122.8	19.7	17.2	11.1	36.0	23.8	6.6	3.6	12.4	9.3	18.2
Utah	137.7	106.4	20.2	11.6	9.5	18.0	13.5	6.3	3.4	11.4	8.5	22.1
Vermont	180.4	127.6	16.9	16.0	9.9	36.6	28.5	7.2	3.5	12.8	10.9	22.0
Virginia	176.0	127.5	20.2	15.3	11.1	40.5	27.6	6.5	3.7	12.9	9.9	20.4
Washington	167.9	126.8	18.7	13.9	10.2	33.3	27.1	7.1	4.2	12.7	10.2	20.5
West Virginia	211.4	152.5	21.1	20.6	13.3	58.1	41.9	7.6	4.2	13.4	10.0	18.0
Wisconsin	176.7	127.6	17.9	13.8	9.9	37.1	29.0	7.2	4.0	13.9	10.2	21.2
Wyoming	164.0	129.5	19.9	16.9	12.1	30.3	27.2	6.3	3.7	12.9	9.7	19.6
Puerto Rico[a]	124.8	83.2	15.4	16.3	10.0	14.3	7.3	4.3	2.4	8.1	5.4	19.3
Total US	173.2	126.4	19.3	15.4	10.8	38.7	27.6	6.5	3.7	12.9	9.8	19.0

Note: Rates are per 100,000, age adjusted to the 2000 US standard population.
[a]Rates were obtained from statecancerprofiles.cancer.gov, and are not included in overall US combined rates.

TABLE 14 Incidence rates, case distribution, and 5-year relative survival by age and International Classification of Childhood Cancer type, ages birth to 19 years, United States.

	Birth to 14 years				15–19 years			
	Rate per million	Distribution %, with benign/borderline malignant brain	Distribution %, malignant only	Survival %	Rate per million	Distribution %, with benign/borderline malignant brain	Distribution %, malignant only	Survival %
All ICCC groups combined	184.8	100	—	—	269.2	100	—	—
Malignant only	168.0	91	100	85	230.2	86	100	87
Leukemias, myeloproliferative & myelodysplastic diseases	51.5	28	31	88	33.7	13	15	78
Lymphoid leukemia	40.3	22	24	92	17.9	7	8	76
Acute myeloid leukemia	7.5	4	4	68	8.6	3	4	70
Lymphomas and reticuloendothelial neoplasms	21.3	12	13	95	50.6	19	22	94
Hodgkin lymphoma	5.5	3	3	99	30.6	11	13	98
Non-Hodgkin lymphoma[a]	10.8	6	6	91	18.0	7	8	89
Central nervous system neoplasms	49.7	27	—	—	60.2	22	—	—
Malignant tumors	33.4	18	20	75	21.5	8	9	78

TABLE 14 (Continued)

	Birth to 14 years				15–19 years			
	Rate per million	Distribution %, with benign/borderline malignant brain	Distribution %, malignant only	Survival %	Rate per million	Distribution %, with benign/borderline malignant brain	Distribution %, malignant only	Survival %
Benign/borderline malignant tumors	16.2	9	–	98	38.7	14	–	99
Neuroblastoma & other peripheral nervous cell tumors	11.5	6	7	82	1.2	<1	1	86
Retinoblastoma	4.0	2	2	96	–[b]	–[b]	–[b]	–[c]
Nephroblastoma & other nonepithelial renal tumors	8.1	4	5	93	0.3	<1	<1	–[c]
Hepatic tumors	3.5	2	2	79	1.4	1	1	53[d]
Hepatoblastoma	3.0	2	2	81	0.1	<1	<1	–[c]
Malignant bone tumors	7.3	4	4	72	14.3	5	6	69
Osteosarcoma	4.1	2	3	65	7.9	3	3	64
Ewing tumor & related bone sarcomas	2.4	1	1	81	4.3	2	2	68
Rhabdomyosarcoma	4.9	3	3	66	3.7	1	2	53
Germ cell & gonadal tumors	5.6	3	3	93	25.8	10	11	95
Thyroid carcinoma	3.4	2	2	>99	31.3	12	14	>99
Malignant melanoma	1.5	1	1	94	7.3	3	3	97

Note: Incidence rates are per 1,000,000 population, based on diagnoses during 2017–2021, and age-adjusted to the US standard population. Survival rates are based on diagnoses during 2014 through 2020, all followed through 2021. Benign and borderline brain tumors were included in central nervous system tumor incidence rates.

Abbreviation: ICCC indicates International Classification of Childhood Cancer.

[a]Includes Burkitt lymphoma.

[b]Statistic could not be calculated due to fewer than six cases during 2017–2021.

[c]Statistic could not be calculated due to fewer than 25 cases during 2014–2020.

[d]The standard error of the survival rate is between 5 and 10 percentage points.

Errors in reporting race and ethnicity in medical records and on death certificates result in underestimated cancer incidence and mortality in persons who are not White, particularly Native American populations. Racial misclassification for cancer incidence is reduced by confining cases to those diagnosed in Purchased/Referred Care Delivery Area counties, which are associated with the Indian Health Service, but thus excludes one third of the Native American population who reside in urban areas. In addition, mortality data for the Native American population are adjusted for racial misclassification using factors for all cancers combined and may overestimate or underestimate rates for individual cancer types.[20] Cancer data for other non-White groups in the United States are mostly limited to the broadly defined racial and ethnic categories developed by the Office of Management and Budget and mask important differences in the cancer burden within these heterogenous populations. For example, breast cancer mortality is approximately 40% lower in AAPI women than in White women overall (Table 8), but it is 30% higher in Native Hawaiian and other Pacific Islander women, who are classified within this category.[124] Finally, the lack of sexual orientation and gender identity data collection precludes an analysis of cancer occurrence in the LGBTQ+ (lesbian, gay, bisexual, transgender, and queer or questioning) population, which would undoubtedly inform targeted cancer control efforts given the high prevalence of smoking in this group.[153]

CONCLUSION

Cancer mortality continued to decline in the United States through 2022, resulting in an overall drop of 34% since 1991 because of reductions in smoking, earlier detection for some cancers, and improved treatment, including recent developments in targeted treatment and immunotherapy. However, progress is lagging in cancer prevention. Incidence continues to increase for six of the top

10 cancers (breast, prostate, melanoma, uterine corpus, pancreas, and CRC [aged <65 years]), two of which primarily affect women. Consequently, the cancer burden is shifting from older to younger adults and from men to women. Middle-aged women now have slightly higher cancer risk than their male counterparts, and young women are almost twice as likely to be diagnosed as young men. Wide, unabated racial disparities are also alarming. Native American and Black people have two to three times the cancer death rate as White people for numerous cancers, many of which are largely preventable. Overall progress against cancer could be accelerated by increasing investment in both cancer prevention and treatment, especially for uterine corpus and pancreatic cancer, and mitigating disparities through expanded access to high-quality care, with emphasis on AIAN and Black communities.

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CONFLICT OF INTEREST STATEMENT

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