Cancer Statistics for African Americans, 2019

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Abstract: In the United States, African American/black individuals bear a disproportionate share of the cancer burden, having the highest death rate and the lowest survival rate of any racial or ethnic group for most cancers. To monitor progress in reducing these inequalities, every 3 years the American Cancer Society provides the estimated number of new cancer cases and deaths for blacks in the United States and the most recent data on cancer incidence, mortality, survival, screening, and risk factors using data from the National Cancer Institute, the North American Association of Central Cancer Registries, and the National Center for Health Statistics. In 2019, approximately 202,260 new cases of cancer and 73,030 cancer deaths are expected to occur among blacks in the United States. During 2006 through 2015, the overall cancer incidence rate decreased faster in black men than in white men (2.4% vs 1.7% per year), largely due to the more rapid decline in lung cancer. In contrast, the overall cancer incidence rate was stable in black women (compared with a slight increase in white women), reflecting increasing rates for cancers of the breast, uterine corpus, and pancreas juxtaposed with declining trends for cancers of the lung and colorectum. Overall cancer death rates declined faster in blacks than whites among both males (2.6% vs 1.6% per year) and females (1.5% vs 1.3% per year), largely driven by greater declines for cancers of the lung, colorectum, and prostate. Consequently, the excess risk of overall cancer death in blacks compared with whites dropped from 47% in 1990 to 19% in 2016 in men and from 19% in 1990 to 13% in 2016 in women. Moreover, the black-white cancer disparity has been nearly eliminated in men <50 years and women ≥70 years. Twenty-five years of continuous declines in the cancer death rate among black individuals translates to more than 462,000 fewer cancer deaths. Continued progress in reducing disparities will require expanding access to high-quality prevention, early detection, and treatment for all Americans.

Introduction

Non-Hispanic (NH) blacks are the second-largest racial/ethnic minority group in the United States after Hispanics, comprising 13% of the total US population. In the United States, African American/black individuals bear a disproportionate share of the cancer burden, having the highest death rate and the lowest survival rate of any racial or ethnic group for most cancers and other leading causes of death, including heart diseases, stroke, and diabetes (Table 1). Socioeconomic status (SES), which is strongly correlated with race in this country, is the most critical factor driving these racial inequalities. For example, in 2017, the proportion of blacks living below the federal poverty level (21%) was more than double that of NH whites (9%), and just 22% of blacks, versus 36% of NH whites, had completed 4 years of college.1,2 Individuals with lower SES experience numerous barriers to high-quality health care, including lack of adequate insurance coverage. Individuals without health insurance are more likely to be diagnosed with advanced cancer and to have a higher risk of cancer death compared with those who are insured.3-5 In 2017, 11% of blacks were uninsured compared with 6% of whites.6 The 2010 passage of
the Patient Protection and Affordable Care Act (ACA) and the subsequent expansion of Medicaid helped reduce the number of uninsured blacks by one-half, particularly among those with lower SES. However, coverage gains were lowest among blacks, and it remains to be seen whether insurance coverage alone will ultimately reduce cancer disparities.

In this report, we provide data and information on cancer occurrence among the African American/black community in the United States, including incidence, survival, mortality, and the estimated numbers of new cases and deaths in 2019, as well as the prevalence of cancer risk factors and screening. We also estimate the total number of cancer deaths averted among blacks as a result of the continuous decline in cancer mortality since the early 1990s.

### Materials and Methods

#### Incidence and Mortality Data

There are 2 sources for cancer incidence data reported in this article. The Surveillance, Epidemiology, and End Results (SEER) program of the National Cancer Institute (NCI) reports long-term, high-quality, population-based incidence data covering up to 28% of the US population. Long-term incidence trends (1975-2015) were based on data from the SEER 18 registries, which are available from 2000 onward. Much of the statistical information presented in this report was previously published in the *SEER Cancer Statistics Review 1975–2015.*

The North American Association of Central Cancer Registries (NAACCR) compiles and reports incidence data from cancer registries that participate in the SEER program and the Centers for Disease Control and Prevention’s National Program of Cancer Registries (NPCR) and approach 100% coverage of the US population in the most recent period. These data are available from 1995 onward and were the source for projected new cancer cases in 2019, distribution of cases by stage at diagnosis, incidence rates in the most recent period (2011–2015) by site and state, and analyses of trends in incidence rates from 1995 to 2015.

Abbreviation: NH, non-Hispanic.

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

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

### TABLE 1. Leading Causes of Death by Sex Among NH Blacks and Whites, 2016

|             | MALES |           |           | MALES |           |           |
|-------------|-------|-----------|-----------|-------|-----------|-----------|
|             | NO.   | %         | DEATH RATE* | NO.   | %         | DEATH RATE* |
| **CANCER**  |       |           |           |       |           |           |
| **HEART**   |       |           |           |       |           |           |
| **ACCIDENTS** |     |           |           |       |           |           |
| **DIABETES** |     |           |           |       |           |           |
| **DIABETES** |     |           |           |       |           |           |
| **ALZHEIMER** |     |           |           |       |           |           |
| **TOTAL**   |       |           |           |       |           |           |

**Abbreviation:** NH, non-Hispanic.

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

Source: National Center for Health Statistics, Centers for Disease Control and Prevention.
were not available for all years during 1995 through 2015. Some of the data presented here were previously published in volumes 1 and 2 of Cancer in North America: 2011-2015.\textsuperscript{12,13}

Mortality data were obtained from the National Center for Health Statistics (NCHS), as reported by the SEER program.\textsuperscript{14} Data are available for whites and blacks beginning in 1969 and by Hispanic ethnicity since 1990. When available, incidence and mortality data are presented for NH blacks and NH whites. Incidence and death rates were age standardized to the 2000 US standard population and are expressed per 100,000 population. Incidence trends were adjusted for delays in reporting based on SEER delay factors to account for the additional time required for the complete registration of cases. All cancer cases were classified according to the International Classification of Diseases for Oncology.\textsuperscript{15} Causes of death were classified according to the International Classification of Diseases.\textsuperscript{16} The probability of developing cancer was calculated using the NCI’s DevCan software (version 6.7.3).\textsuperscript{17} All cancer cases and deaths were accessed using SEER*Stat software (version 8.3.5).\textsuperscript{18} The annual percent change in rates was quantified using the NCI’s Joinpoint Regression Program (version 4.6.0.0).\textsuperscript{19}

Projected Cancer Cases and Deaths in 2019
The most recent year for which incidence and mortality data are available lags 2 to 4 years behind the current year because of the time required for data collection, compilation, quality control, and dissemination. Therefore, we projected the numbers of new cancer cases and deaths for blacks in the United States in 2019 to provide an estimate of the contemporary cancer burden. To calculate the number of invasive cancer cases, a generalized linear mixed model was used to estimate complete counts for each county (or health service area for rare cancers) from 2002 through 2016 using delay-adjusted, high-quality incidence data from 48 states and the District of Columbia (96% population coverage) and geographic variations in sociodemographic and lifestyle factors, medical settings, and cancer screening behaviors.\textsuperscript{20} Modeled counts were aggregated for the United States for each year, and a time series projection method (vector autoregression) was applied to all 15 years to estimate cases for 2019. For complete details of the case projection methodology, please refer to Zhu et al.\textsuperscript{21}

The numbers of cancer deaths expected to occur in 2019 among blacks in the United States were estimated based on annual percent changes in the actual numbers of cancer deaths from 1998 through 2016, as reported to the NCHS. For the complete details of this methodology, please refer to Chen et al.\textsuperscript{22}

Other Statistics
The estimated numbers of cancer deaths averted in black men and women because of the reduction in overall cancer death rates were estimated by subtracting the number of recorded cancer deaths from the number that would have been expected if cancer death rates had remained at their peak. The expected numbers of deaths were calculated by applying the 5-year, age-specific cancer death rates in the peak year for age-standardized cancer death rates (1990 in men, 1991 in women) to the corresponding age-specific populations in the subsequent years through 2016. We then summed the difference between the number of expected and observed deaths in each age group and calendar year separately for men and women.

Risk Factors and Screening Data
Data from publicly available, population-based surveys were used to generate weighted prevalence estimates of cancer risk factors and screening utilization. The 2015 National Health Interview Survey (NHIS) (response rate, 55%) was used for estimates of cancer screening; the 2017 NHIS (response rate, 53%) was used for estimates of cigarette smoking and physical inactivity.\textsuperscript{23} The 2015 and 2016 National Health and Nutrition Examination Surveys were used to estimate overweight and obesity, because those surveys collect height and weight in physical examinations (response rate, 55%).\textsuperscript{24} Estimates were calculated using SAS-callable SUDAAN (version 11.0.1; RTI International, Research Triangle Park, North Carolina) and accounted for the complex survey designs.

Selected Findings
Overall Cancer Occurrence
Incidence
Approximately 98,020 cancer cases in black men and 104,240 cases in black women are expected to be newly diagnosed in 2019 (Fig. 1). Prostate cancer is the most commonly diagnosed cancer in black men, and breast cancer is the most commonly diagnosed in black women, each accounting for nearly one-third of cancers diagnosed in each sex. Cancers of the lung and colorectum are the second and third most commonly diagnosed cancers, respectively, in both black men and women. Together, the 4 most common cancers (breast, prostate, colorectal, and lung) account for more than one-half (54%) of all cancer cases among blacks. The lifetime probability of being diagnosed with cancer among black men and women is 37% and 34%, respectively, compared with 40% and 39%, respectively, among white men and women (Table 2).

Differences in cancer incidence rates between blacks and whites in the United States are presented as incidence rate ratios in Table 3. Among males, incidence rates in blacks are higher overall (9%), and for the most common cancers, including cancers of the prostate, lung, colorectum, kidney, liver, and pancreas. In contrast, black females have a lower
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Incidence rate overall (7%) and for many cancers, including cancers of the lung, breast (only 3% lower), uterine corpus, and thyroid. Importantly, analyses of uterine corpus cancer that exclude women who have had a hysterectomy find similar or even higher incidence rates in black women than in white women because hysterectomy is more common in black women.25,26

Incidence rates for all cancers combined increased from the mid-1970s to the early 1990s in blacks; rates were higher and increased faster in males than in females (Fig. 2). Among men, rates have decreased since the early 1990s, with the pace accelerating after 2009. During the most recent period (2006-2015), the decrease in overall cancer incidence rates in men was faster in NH blacks (2.4% per year) than in NH whites (1.7%) (Table 4). These trends reflect large declines, from 2.7% to 4.5% annually among blacks, for cancers of the lung, prostate, and colorectum. Among women, the overall cancer incidence rate has been relatively stable among NH blacks since 2009 but has increased slowly (0.2% per year) among NH whites.

Mortality

Cancer is the second-leading cause of death in blacks, after heart diseases, accounting for nearly one-quarter of all reported deaths in 2016 (Table 1). An estimated 36,840 black men and 36,190 black women are expected to die from cancer in 2019. Lung cancer is the leading cause of cancer death among both men (25%) and women (20%), followed by breast cancer in women (18%) and prostate cancer in men (15%) (Fig. 1). Colorectal cancer (CRC) is expected to be the third-leading cause of cancer death for black men and women.

Overall cancer death rates were lower in blacks than in whites during the early 1950s; however, rates increased sharply in blacks during 1950 through 1990 and have remained higher compared with whites since the 1960s.27 Cancer death rates peaked in black men and women in the early 1990s and have subsequently declined, with a steeper decline observed in men compared with in women (Fig. 2). This progress translates into the avoidance of more than 462,000 deaths from cancer (Fig. 3). From 2007 to 2016, the death rate declined faster in blacks than in whites among both males (2.6% vs 1.6% per year) and females (1.5% vs 1.3% per year). As a result, the overall black-white racial disparity has narrowed, particularly in males (Fig. 4). In 1990, the cancer death rate in males was 47% higher in blacks than in whites, but only 19% higher in 2016. Among females, the disparity decreased from 19% in 1990 to 13% in 2016.

The decline in the black-white cancer mortality disparity is even more striking in some age groups (Fig. 5). For example, among men aged 40 to 49 years, the cancer death rate during 1990-1991 was 102% higher in NH blacks than in NH whites, but it was only 17% higher in 2015-2016. Likewise, among women aged 40 to 49 years, the overall disparity narrowed from 44% in 1990-1991 to 30% in
In fact, among black women aged 80 to 89 years, the mortality rate was 8% higher than NH whites during 2002-2003, but 3% lower in 2015-2016. Steeper declines among blacks in death rates for lung and other smoking-related cancers, as well as for prostate, colorectal, and cervical cancers have contributed to the recent narrowing of the black-white cancer disparity. Indeed, lung and cervical cancer death rates have converged in young blacks and whites.28-30

Table 5 presents NH black-white mortality rate ratios for selected cancers during 2012 through 2016. The largest disparities are for cancers of the stomach, prostate, uterine corpus, and myeloma, for which death rates among blacks are about twice as high as those among whites. Despite lower incidence rates in NH black compared with NH white women for uterine corpus and breast cancers, death rates for these cancers in black women are 98% and 41% higher, respectively. Death rates that are lower in blacks than in whites reflect lower incidence rates, such as for non-Hodgkin lymphoma, brain and other nervous system cancers, and urinary bladder cancer (males).

**Geographic variation**

Cancer incidence and death rates vary widely by state. Among NH blacks, the total cancer incidence rate ranges from 182.7 to 292.1 per 100,000 population, which is 31% higher than NH whites. The highest rates in 2015-2016 were observed in the District of Columbia (292.1) and Louisiana (281.7). Lower rates were noted in Wyoming (182.7) and North Dakota (183.8). Among NH black women aged 80 to 89 years, the mortality rate was 8% higher than NH whites during 2002-2003, but 3% lower in 2015-2016. Steeper declines among blacks in death rates for lung and other smoking-related cancers, as well as for prostate, colorectal, and cervical cancers have contributed to the recent narrowing of the black-white cancer disparity. Indeed, lung and cervical cancer death rates have converged in young blacks and whites.28-30

### Table 5: Lifetime Probability of Developing or Dying from Invasive Cancers* by Race and Sex, United States, 2013 to 2015

| Cancer Site | Race     | Sex | Probability (1 in n) |
|------------|----------|-----|----------------------|
| All sites  | Male     | 36.6 (1 in 3) | 39.9 (1 in 3) | 22.0 (1 in 5) | 21.9 (1 in 5) |
|            | Female   | 34.0 (1 in 3) | 39.2 (1 in 3) | 18.7 (1 in 5) | 18.9 (1 in 5) |
| Breast     | Male     | 4.4 (1 in 23) | 4.3 (1 in 23) | 2.2 (1 in 46) | 1.8 (1 in 55) |
|            | Female   | 4.2 (1 in 24) | 4.0 (1 in 25) | 2.0 (1 in 51) | 1.7 (1 in 59) |
| Colon & rectum | Male   | 2.0 (1 in 50) | 2.2 (1 in 46) | 0.5 (1 in 195) | 0.6 (1 in 159) |
|            | Female   | 1.3 (1 in 79) | 1.2 (1 in 83) | 0.3 (1 in 336) | 0.3 (1 in 297) |
| Kidney & renal pelvis | Male   | 1.2 (1 in 86) | 1.9 (1 in 52) | 0.7 (1 in 150) | 1.0 (1 in 96) |
|            | Female   | 0.9 (1 in 109) | 1.3 (1 in 74) | 0.5 (1 in 191) | 0.7 (1 in 139) |
| Leukemia   | Male     | 1.6 (1 in 62) | 1.1 (1 in 89) | 1.2 (1 in 83) | 0.9 (1 in 114) |
|            | Female   | 0.6 (1 in 173) | 0.5 (1 in 212) | 0.5 (1 in 182) | 0.5 (1 in 219) |
| Lung & bronchus | Male   | 6.9 (1 in 15) | 7.0 (1 in 14) | 5.8 (1 in 17) | 6.0 (1 in 17) |
|            | Female   | 5.1 (1 in 19) | 6.5 (1 in 15) | 3.9 (1 in 26) | 5.0 (1 in 20) |
| Myeloma    | Male     | 1.4 (1 in 73) | 0.8 (1 in 122) | 0.7 (1 in 142) | 0.5 (1 in 221) |
|            | Female   | 1.2 (1 in 80) | 0.6 (1 in 175) | 0.7 (1 in 141) | 0.3 (1 in 291) |
| Ovary      | Male     | 0.9 (1 in 107) | 1.3 (1 in 75) | 0.7 (1 in 140) | 0.9 (1 in 106) |
|            | Female   | 1.6 (1 in 64) | 1.6 (1 in 62) | 1.4 (1 in 73) | 1.4 (1 in 71) |
| Pancreas   | Male     | 1.7 (1 in 59) | 1.5 (1 in 66) | 1.5 (1 in 65) | 1.3 (1 in 76) |
|            | Female   | 1.6 (1 in 64) | 1.6 (1 in 62) | 1.4 (1 in 73) | 1.4 (1 in 71) |
| Prostate   | Male     | 14.8 (1 in 7) | 10.6 (1 in 9) | 4.0 (1 in 25) | 2.2 (1 in 45) |
|            | Female   | 1.2 (1 in 83) | 0.8 (1 in 119) | 0.8 (1 in 132) | 0.4 (1 in 278) |
| Stomach    | Male     | 0.8 (1 in 118) | 0.4 (1 in 227) | 0.5 (1 in 206) | 0.2 (1 in 436) |
|            | Female   | 0.3 (1 in 325) | 0.7 (1 in 137) | <0.1 (1 in 2,893) | 0.1 (1 in 1,743) |
| Thyroid    | Male     | 1.1 (1 in 87) | 2.0 (1 in 51) | 0.1 (1 in 1,273) | 0.1 (1 in 1,576) |
|            | Female   | 1.8 (1 in 56) | 4.2 (1 in 24) | 0.5 (1 in 183) | 1.0 (1 in 99) |
| Urinary bladder | Male   | 0.8 (1 in 123) | 1.2 (1 in 82) | 0.3 (1 in 295) | 0.4 (1 in 283) |
|            | Female   | 0.7 (1 in 140) | 0.6 (1 in 177) | 0.4 (1 in 281) | 0.2 (1 in 506) |
| Uterine cervix | Female | 2.7 (1 in 37) | 3.0 (1 in 34) | 1.0 (1 in 101) | 0.6 (1 in 176) |

Abbreviation: NH, non-Hispanic.

Note: Percentages and “1 in n” numbers may not be equivalent due to rounding.

*For those who have not been previously diagnosed with cancer.

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

‡Includes in situ carcinomas.
(cases per 100,000) in Wyoming to 674.1 in Wisconsin among black men and from 171.2 in Wyoming to 493.5 in Wisconsin among black women (Table 6). The relatively low incidence rates among black men and women in Wyoming may be a statistical anomaly due to the very small black population in the state. Aside from Wisconsin, the highest death rates are found in Louisiana and Mississippi among black men and in Pennsylvania and the District of Columbia among black women (Table 7). State differences in the cancer burden reflect differences in the prevalence of risk factors, such as smoking and obesity, as well as cancer screening (eg, mammography).

Survival and stage distribution
The 5-year relative survival rate is lower in blacks than in whites for every stage of diagnosis for most cancer sites (Fig. 6). Much of this results from socioeconomic barriers to timely, high-quality medical care. As a result, for most cancer types, blacks are more likely than whites to be diagnosed at a later stage of disease (Fig. 7), when treatment choices are more limited and often less effective. Many studies have found that, in equal-access health care systems, racial disparities in cancer outcomes are eliminated. However, other studies report that racial disparities persist even after accounting for socioeconomic factors and access to care. For example, a recent comprehensive study of racial disparities in cancer in the United States indicated that blacks have higher death rates than whites even within the same socioeconomic strata.

A higher prevalence of comorbidities among black patients also likely contributes to survival differences. For example, diabetes is more common in blacks than in other racial/ethnic groups and is associated with an increased risk of cancer death. In addition, some cancer-associated genetic mutations and aggressive tumor characteristics are more common among persons of African ancestry, and likely contribute to racial disparities for some cancers.

| TABLE 3. Comparison of Cancer Incidence Rates Between NH Blacks and Whites, United States, 2011 to 2015 |
|---------------------------------------------------------------|
| **MALE** | **FEMALE** |
| CANCER | NH BLACK RATE* | NH WHITE RATE* | RATE DIFFERENCE† | RATE RATIO‡ | CANCER | NH BLACK RATE* | NH WHITE RATE* | RATE DIFFERENCE† | RATE RATIO‡ |
| Kaposi sarcoma | 1.6 | 0.4 | 1.2 | 3.75 | Kaposi sarcoma | 0.2 | <0.1 | 0.2 | 3.89 |
| Myeloma | 15.9 | 7.5 | 8.4 | 2.13 | Myeloma | 11.7 | 4.5 | 7.2 | 2.60 |
| Stomach | 14.1 | 7.8 | 6.3 | 1.81 | Stomach | 7.7 | 3.5 | 4.2 | 2.18 |
| Prostate | 179.2 | 101.7 | 77.5 | 1.76 | Liver & intrahepatic bile duct | 5.2 | 3.6 | 1.6 | 1.46 |
| Liver & intrahepatic bile duct | 17.6 | 10.3 | 7.3 | 1.70 | Pancreas | 14.8 | 10.9 | 3.9 | 1.36 |
| Breast | 1.9 | 1.3 | 0.6 | 1.44 | Uterine cervix | 9.2 | 7.1 | 2.1 | 1.30 |
| Larynx | 8.5 | 5.9 | 2.6 | 1.43 | Esophagus | 2.3 | 1.8 | 0.5 | 1.24 |
| Colon & rectum | 55.2 | 44.6 | 10.6 | 1.24 | Colon & rectum | 40.7 | 34.2 | 6.5 | 1.19 |
| Pancreas | 17.3 | 14.6 | 2.7 | 1.19 | Kidney & renal pelvis | 13.1 | 11.4 | 1.7 | 1.14 |
| Lung & bronchus | 85.4 | 74.3 | 11.1 | 1.15 | Breast | 126.5 | 130.1 | -3.6 | 0.97 |
| Kidney & renal pelvis | 25.4 | 22.5 | 2.9 | 1.13 | Uterine corpus | 24.4 | 26.1 | -1.7 | 0.93 |
| Hodgkin lymphoma | 3.2 | 3.2 | 0.0 | 0.98 | Hodgkin lymphoma | 2.4 | 2.6 | 0.2 | 0.93 |
| Esophagus | 6.8 | 8.7 | -1.9 | 0.79 | Lung & bronchus | 49.2 | 57.4 | -8.2 | 0.86 |
| Oral cavity & pharynx | 14.6 | 19.3 | -4.7 | 0.76 | Leukemia | 8.9 | 11.2 | -2.3 | 0.80 |
| Leukemia | 13.7 | 18.5 | -4.8 | 0.74 | Ovary | 9.3 | 11.9 | -2.6 | 0.78 |
| Non-Hodgkin lymphoma | 17.0 | 23.9 | -6.9 | 0.71 | Oral cavity & pharynx | 5.1 | 6.9 | -1.8 | 0.75 |
| Brain & ONS | 4.9 | 8.7 | -3.8 | 0.57 | Non-Hodgkin lymphoma | 12.0 | 16.2 | -4.2 | 0.74 |
| Urinary bladder | 19.9 | 39.5 | -19.6 | 0.50 | Urinary bladder | 6.6 | 9.7 | -3.1 | 0.68 |
| Thyroid | 3.9 | 8.2 | -4.3 | 0.48 | Thyroid | 14.0 | 23.0 | -9.0 | 0.61 |
| Testis | 1.5 | 6.8 | -5.3 | 0.22 | Brain & ONS | 3.6 | 6.3 | -2.7 | 0.57 |
| Melanoma of the skin | 1.2 | 34.0 | -32.8 | 0.03 | Melanoma of the skin | 1.0 | 22.1 | -21.1 | 0.04 |
| All sites | 549.1 | 505.5 | 43.6 | 1.09 | All sites | 407.0 | 438.4 | -31.4 | 0.93 |

Abbreviations: NH, non-Hispanic; ONS, other nervous system.
Note: Sites are listed in descending order by rate ratio.
†The rate difference is the rate in blacks minus the rate in whites.
‡The rate ratio is the unrounded rate in blacks divided by the unrounded rate in whites.
The underrepresentation of blacks and other racial/ethnic minorities in clinical trials may exacerbate survival disparities by limiting knowledge about the efficacy of therapeutic agents in diverse populations. In 2012, only 17% of industry-funded clinical trial patients were from a racial/ethnic minority group, despite representing one-third of the US population.

Nevertheless, the overall 5-year relative survival rate among blacks has improved from 27% during 1960-1963 to 63% during 2008-2014, compared with an increase in whites from 39% to 70%. Improvements in survival over time reflect earlier diagnoses and advances in treatment. Importantly, improvements in survival do not always indicate progress against cancer, such as when they result from the detection of indolent cancers (overdiagnosis) or when early diagnosis does not extend lifespan (lead time bias).

Selected Cancers

**Female breast**

Breast cancer is the most common cancer among black women in the United States and is the second-leading cause of cancer death, with an estimated 33,840 new cases of breast cancer and 6,540 deaths expected to occur in 2019. During 2008 through 2012, the overall breast cancer incidence rate among NH black women was 126.5 cases per 100,000 women compared with 130.1 per 100,000 among NH white women (Table 3). However, rates were higher among NH black women than among NH white women in 8 US states (Alabama, Indiana, Louisiana, Michigan, Mississippi, Missouri, North Carolina, and Virginia) and were not significantly different in 20 other states. Breast cancer incidence rates are also higher among blacks than among whites for women younger than 45 years. The median age of diagnosis is 59 years for black women compared with 63 years for white women. One in 9 black women is expected to be diagnosed with breast cancer in her lifetime, compared with 1 in 8 white women (Table 2).

Similar to patterns in white women, rates in black women increased rapidly during the 1980s, largely due to increased detection because of mammography screening uptake; decreased slightly (0.5% per year) during 1998 through 2005; and increased during the most recent 10-year period (2006-2015) (Fig. 8). The recent annual percent change was larger in NH black women (0.9% per year) compared with that in NH white women (0.4% per year), contributing to a convergence in incidence rates. The current increase in breast cancer incidence reflects the trend for hormone receptor (HR)-positive disease, as rates for the less common HR-negative cancer are decreasing. A recent ecologic analysis concluded that increases in body mass index and declines in the mean number of live births were contributing factors to breast cancer trends from 1980 to 2011, particularly among black women. Black women younger than 40 years experienced the largest increase in mean body mass index, from 25.6 kg/m² in 1980 to 31.2 kg/m² in 2009, compared with an increase from 23.6 to 25.7 kg/m² in white women over the same period.

Breast cancer death rates were similar between black and white women before the mid-1980s. However, a larger increase in black women from the mid-1970s to the early 1990s, followed by a slower decline, led to a widening black-white disparity that peaked in the early 2010s, with rates found to be 44% higher in black women (Fig. 4). Even over the most recent 10-year period (2007-2016), the pace of the decline has been somewhat slower among black women than among NH white women (1.5% vs 1.8% per year). As a result, breast cancer death rates remain 41% higher in NH black women than in NH white women (Table 5).

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Higher breast cancer death rates among black women likely result from a combination of factors that are difficult to parse, including more advanced stage at diagnosis, higher prevalence of obesity and other comorbidities, and unfavorable tumor characteristics (eg, triple-negative disease, inflammatory carcinoma, higher grade) as well as less access and adherence to high-quality cancer treatment. A recent study by American Cancer Society researchers found that differences in insurance status and tumor characteristics were the most important factors contributing to
the higher risk of death among younger (<65 years) black patients who had early-stage, HR-positive disease, explaining one-third and one-fifth of the disparity, respectively. 50

Although black women are twice as likely as women of other races/ethnicities to be diagnosed with triple-negative breast cancers,46 which are aggressive and challenging to treat, some of the largest disparities in outcomes are for patients with HR-positive tumors, which are amenable to endocrine therapy.51 In this study of California patients with breast cancer who were diagnosed from 2005 to 2012, the risk of death was 31% to 39% higher in black women compared with white women for those who had stage II/III, HR-positive breast cancers after adjustment for demographic factors, other tumor characteristics, first course of treatment, neighborhood SES, and insurance status. A recent meta-analysis documented that black patients with early-stage breast cancer were significantly more likely (odds ratio, 1.41; 95% confidence interval, 1.06-1.87) to experience delays of 90 days or more in the initiation of adjuvant therapy. 52 Importantly, the wide geographic variation in racial disparities in breast cancer mortality suggests that these inequalities are not inevitable.53-56

The 5-year relative survival rate for breast cancer diagnosed during 2008 through 2014 was 81% among black women, compared with 91% among white women (Fig. 6), reflecting both later stage at detection and poorer stage-specific survival. Only about one-half (54%) of breast cancers are diagnosed at a local stage among black women, compared with 64% among white women (Fig. 7), despite similar reported mammography screening rates (Table 8). However, several studies have documented that self-reported survey data overestimate mammography screening prevalence, particularly among black and Hispanic women.57-59 Additionally, black women are more likely to be screened at lower resourced and nonaccredited facilities and also to experience longer intervals between mammograms and lack of timely follow-up of suspicious results.60-62 A recent study of patients with breast cancer in Chicago concluded that differences in the method of detection and facility accreditation accounted for nearly all of the racial disparity in breast cancer stage at diagnosis.63

## Colon and rectum
CRC is the third most common cancer diagnosed among both black men and women, with 19,740 new cases expected to be diagnosed in 2019 (Fig. 1). The median age of CRC diagnosis is 63 years for black men and 64 years for black women, compared with ages 66 and 70 years for white men and women, respectively.10 CRC is also the third-leading cause of cancer death in black men and women, with 7,110 deaths from CRC expected in 2019.

Blacks have the highest rates of CRC of any racial/ethnic group in the United States. Compared with NH whites, incidence rates are 24% higher in NH black males and 19% higher in NH black females (Table 3). The increased risk of CRC among blacks may result from a higher prevalence of obesity (among women) and physical inactivity (Table 9), which are known risk factors for CRC. One study found that unhealthy diet, physical inactivity, smoking, and excess body weight together accounted for 44% of the increased risk of CRC associated with lower educational attainment and 36% of the excess risk associated with neighborhood SES.64 In addition, CRC screening has historically lagged behind in

### Table 4. Fixed-Interval Trends (Average Annual Percent Change) in Cancer Incidence Rates (2006 to 2015) and Death Rates (2007 to 2016) Among NH Blacks and Whites by Sex, United States

|                | MALE          | FEMALE        |
|----------------|---------------|---------------|
|                | NH BLACK      | NH WHITE      | NH BLACK | NH WHITE |
| All sites      | −2.4*         | −1.7*         | 0.2      | 0.2*     |
| Death          | −2.6*         | −1.6*         | −1.5*    | −1.3*    |
| Breast (female)| −2.7*         | −2.7*         | −2.8*    | −2.3*    |
| Death          | −2.7*         | −2.3*         | −3.2*    | −2.1*    |
| Colorectum     | −3.1*         | −2.4*         | −1.1*    | −0.9*    |
| Death          | −4.1*         | −3.3*         | −2.7*    | −2.3*    |
| Lung & bronchus| −4.5*         | −5.5*         | −          |          |
| Death          | −3.4*         | −2.1*         |          |          |
| Myeloma        | −2.1*         | −0.9          | −1.6*    | −0.7*    |
| Death          | −3.1*         | −2.9*         | −3.5*    | −3.1*    |
| Uterine cervix | −2.0*         | −0.4          |          |          |
| Death          | −2.6*         | −0.1          |          |          |
| Uterine corpus | 2.5*          | 1.0*          |          |          |

Abbreviation: NH, non-Hispanic.

The annual percent change is significantly different from zero (P < .05).
blacks compared with whites and remains slightly lower. In 2015, 62% of blacks aged 50 years and older were up to date on guideline-recommended CRC screening, compared with 65% of whites (Table 8). Furthermore, a recent study of Medicare enrollees indicated that blacks more often received colonoscopies from physicians with a lower polyp detection rate and were 31% more likely than whites to be diagnosed with an interval cancer.65

Before 1989, CRC incidence rates were predominantly higher in white men than in black men and were similar for women of both races. Since 1989, however, incidence rates have been higher for blacks than for whites in both men and women, likely reflecting racial differences in risk factor trends and/or greater access to and utilization of recommended screening tests by whites.66 From 2006 to 2015, incidence rates decreased by 2.7% per year among black men and by 2.8% per year among black women, similar to declines in whites (Table 4).

The racial disparity is larger for CRC mortality; death rates are 47% higher in black men and 34% higher in black women (Table 5). Similar to the pattern for incidence, CRC mortality rates were historically higher among whites than among blacks, with the crossover occurring around 1979 for women and 1984 for men. However, from 2007 to 2016, CRC death rates declined faster in blacks than in whites (Table 4), resulting in a narrowing of the racial disparity among both men and women (Fig. 4).

The 5-year relative survival rate for CRC among blacks improved from 45% during 1975-1977 to 58% during 2008-2014, which is a smaller improvement than that among whites (an increase from 50% to 65% over the same period).10 Stage at diagnosis is the most important prognostic factor for CRC, and black patients remain slightly less likely to be diagnosed with local-stage disease (37% vs 39%, respectively) (Fig. 7). Moreover, lower 5-year relative survival rates also are observed in black patients who have CRC within each stage at diagnosis (Fig. 6). Racial disparities in CRC survival largely reflect differences in treatment, SES, comorbidities, and tumor characteristics.3,67-69 Numerous studies have documented that blacks with CRC are less likely than whites to receive recommended surgical treatment, radiation, and chemotherapy.67,68,70,71 Unfavorable tumor characteristics are estimated to account for 26% of the black-white survival disparity in patients younger than 65 years but for 40% to 50% of the disparity in older (≥65 years) patients, likely because of universal health care access among seniors through Medicare.67-69

For example, one study found that black patients with CRC were approximately 4 times more likely than white patients to be diagnosed with proximal tumors, which are more difficult to detect and associated with less favorable survival.72 Notably, among patients with CRC who are younger than 65 years, differences in insurance status explained nearly one-half (47%) of the excess risk of death in blacks.67

![FIGURE 3. Total Number of Cancer Deaths Averted From 1991 to 2016 in Black Men and From 1992 to 2016 in Black Women.](https://example.com/figure3)

The blue line represents the actual number of cancer deaths recorded in each year, and the red line represents the expected number of cancer deaths that would have been expected if cancer death rates had remained at their peak.
Lung and bronchus

Lung cancer is the second-leading cause of cancer in black men and women, with 25,390 new cases expected to be diagnosed in 2019 (Fig. 1). Lung cancer is also the leading cause of cancer death in blacks, with 16,550 deaths expected in 2019. Although lung cancer rates are 15% higher in black men than in white men, the reverse is true for women (rates are 14% lower in black women), reflecting racial and sex differences in historic smoking patterns (Fig. 9). Higher rates of lung cancer among black men are limited to non-small cell lung cancer, with rates of small cell lung cancer slightly lower in black men compared with white men (7.1 vs 9.0 cases per 100,000 men).11 Lung cancer incidence rates peaked in black men in the mid-1980s and have
since been steadily declining (Fig. 8). In contrast, incidence rates did not peak in black women until the early 2000s. From 2006 to 2015, lung cancer incidence rates decreased faster in black men and women (by 3.1% and 1.1% per year, respectively) compared with whites (by 2.4% and 0.9% per year, respectively) (Table 4).

Black men have the highest lung cancer death rate of any racial or ethnic group. Lung cancer death rates in men began to decline in 1990, with acceleration in the decline beginning in 1994.10 Similar to the pattern for incidence trends, the decline in lung cancer death rates has been faster in black men and women compared with whites (Table 4).
As a result, the racial disparity in lung cancer death rates among men of all ages has been substantially reduced, from an excess of 40% during 1990-1992 to 18% during 2012-2016 (Fig. 4), and has been eliminated in adults younger than 40 years. The declines in lung cancer death rates are the result of decreases in smoking prevalence over the previous 40 years, which have been more rapid in blacks than in whites (Fig. 9).

The 5-year relative survival rate for lung cancer is lower in blacks than in whites (16% vs 19%, respectively) (Fig. 6). Five-year relative survival in blacks increases to 52% for local-stage lung cancers; however, only 16% of cases are detected early, because symptoms generally do not appear until the disease is advanced. Numerous studies have documented that, even when lung cancer is diagnosed early, blacks remain less likely than whites to receive curative-intent surgery, even after accounting for socioeconomic factors. For example, one recent population-based study of patients with early-stage lung cancer who were diagnosed during 2004 through 2013 indicated that surgery was recommended less often for black patients than for patients from other racial/ethnic groups, and, as a result, 47% of black patients did not receive surgical treatment compared with 38% of Hispanics and whites and 34% of Asians. However, another recent study indicated that racial differences in the receipt of surgery were eliminated in 2010 for patients with early-stage lung cancer who were treated at Veterans Affairs facilities, and there were subsequently no differences in survival between blacks and whites.77

**Myeloma**

An estimated 6,910 new cases of multiple myeloma and 2,360 myeloma deaths are expected among blacks in 2019. Myeloma is the seventh most common cancer diagnosed in both black men and black women in the United States and the most common hematologic malignancy. Incidence rates for myeloma in NH blacks are more than double those in NH whites (Table 3). The racial disparity is even greater before age 50 years, with rates 2.5 and 3.5 times higher in NH black men and women, respectively. The median age at diagnosis is 66 years in blacks compared with 70 years in whites. During 2006 through 2015, incidence rates for myeloma in NH blacks were more than double those in NH whites (Table 3).

### TABLE 5. Comparison of Cancer Death Rates Between NH Blacks and Whites, United States, 2012 to 2016

| CANCER                           | NH BLACK RATE* | NH WHITE RATE* | RATE DIFFERENCE† | RATE RATIO‡ |
|----------------------------------|----------------|----------------|------------------|------------|
| **MALE**                         |                |                |                  |            |
| Stomach                          | 8.4           | 3.3            | 5.1              | 2.55       |
| Prostate                         | 39.8          | 18.1           | 21.7             | 2.20       |
| Myeloma                          | 7.6           | 4.0            | 3.6              | 1.92       |
| Larynx                           | 3.2           | 1.7            | 1.5              | 1.88       |
| Liver & intrahepatic bile duct   | 13.6          | 8.3            | 5.3              | 1.64       |
| Colon & rectum                   | 24.5          | 16.6           | 7.9              | 1.47       |
| Oral cavity & pharynx            | 4.8           | 4.0            | 0.8              | 1.20       |
| Pancreas                         | 15.2          | 12.9           | 2.3              | 1.18       |
| Lung & bronchus                  | 63.9          | 54.1           | 9.8              | 1.18       |
| Kidney & renal pelvis            | 5.6           | 5.7            | −0.1             | 0.99       |
| Hodgkin lymphoma                 | 0.4           | 0.4            | 0.0              | 1.00       |
| Leukemia                         | 7.4           | 9.3            | −1.9             | 0.80       |
| Esophagus                        | 5.7           | 7.9            | −2.2             | 0.72       |
| Non-Hodgkin lymphoma             | 5.3           | 7.6            | −2.3             | 0.70       |
| Urinary bladder                  | 5.5           | 8.4            | −2.9             | 0.66       |
| Brain & ONS                      | 3.3           | 6.1            | −2.8             | 0.55       |
| Melanoma of the skin             | 0.4           | 4.7            | −4.3             | 0.10       |
| **All sites**                    | 239.8         | 197.3          | 42.5             | 1.22       |

| CANCER                           | NH BLACK RATE* | NH WHITE RATE* | RATE DIFFERENCE† | RATE RATIO‡ |
|----------------------------------|----------------|----------------|------------------|------------|
| **FEMALE**                       |                |                |                  |            |
| Melanoma of the skin             | 0.4           | 2.0            | −1.6             | 0.15       |

Abbreviations: NH, non-Hispanic; ONS, other nervous system.
Note: Sites are listed in descending order by rate ratio.
1 Rates are per 100,000 population and age adjusted to the 2000 US standard population.
†The rate difference is the rate in blacks minus the rate in whites.
‡The rate ratio is the unrounded rate in blacks divided by the unrounded rate in whites.
TABLE 6. Incidence Rates* for Selected Cancers in Non-Hispanic Black Males and Females by State, 2011 to 2015

| ALL CANCERS | LUNG & BRONCHUS | COLON & RECTUM | PROSTATE | BREAST |
|-------------|-----------------|----------------|----------|--------|
| MALE | FEMALE | MALE | FEMALE | MALE | FEMALE | MALE | FEMALE | MALE | FEMALE |
| Alabama | 556.9 | 380.1 | 90.1 | 38.6 | 62.2 | 44.3 | 188.9 | 124.5 |
| Alaska | 386.3 | 324.2 | 76.8 | † | † | † | 113.8 | 111.4 |
| Arizona | 392.1 | 360.7 | 67.3 | 43.2 | 37.0 | 35.1 | 116.8 | 113.4 |
| Arkansas | 586.0 | 390.6 | 114.9 | 50.4 | 60.2 | 46.6 | 179.4 | 117.2 |
| California | 510.3 | 403.4 | 68.9 | 48.2 | 52.0 | 40.9 | 161.6 | 130.3 |
| Colorado | 474.6 | 351.2 | 56.1 | 41.1 | 50.7 | 32.5 | 154.1 | 116.1 |
| Connecticut | 539.1 | 407.6 | 75.3 | 44.5 | 51.9 | 35.9 | 172.3 | 126.6 |
| Delaware | 589.2 | 432.4 | 81.3 | 59.1 | 51.2 | 37.7 | 214.7 | 133.2 |
| District of Columbia‡§ | 606.4 | 472.9 | 88.6 | 59.2 | 62.5 | 45.5 | 180.4 | 143.9 |
| Florida | 478.8 | 360.1 | 64.1 | 35.6 | 50.3 | 36.6 | 165.2 | 108.7 |
| Georgia | 564.2 | 399.8 | 83.8 | 43.2 | 37.0 | 35.1 | 116.8 | 113.4 |
| Hawaii | 522.2 | 354.3 | † | † | 49.9 | † | 181.6 | 126.6 |
| Idaho | 362.1 | 353.9 | † | † | † | † | 113.8 | 111.4 |
| Illinois | 587.9 | 442.1 | 100.1 | 63.2 | 66.5 | 47.5 | 178.6 | 134.9 |
| Indiana | 517.3 | 422.1 | 91.8 | 43.2 | 37.0 | 35.1 | 116.8 | 113.4 |
| Iowa | 572.6 | 453.5 | 98.1 | 65.6 | 52.3 | 42.1 | 172.5 | 110.4 |
| Kansas‡ | — | — | — | — | — | — | — | — |
| Kentucky | 580.1 | 454.7 | 110.6 | 76.9 | 59.9 | 47.7 | 157.6 | 129.2 |
| Louisiana | 616.0 | 423.3 | 106.5 | 49.1 | 67.0 | 48.6 | 191.8 | 134.2 |
| Maine | 365.4 | 295.3 | † | † | † | † | 107.2 | † |
| Maryland | 530.2 | 404.6 | 70.7 | 49.1 | 49.0 | 36.8 | 189.9 | 132.5 |
| Massachusetts | 504.5 | 393.7 | 63.6 | 42.7 | 45.7 | 34.7 | 179.5 | 119.9 |
| Michigan | 571.6 | 426.8 | 95.3 | 62.2 | 54.5 | 41.3 | 181.7 | 127.5 |
| Minnesota² | 530.7 | 402.2 | 77.8 | 53.8 | 45.8 | 34.7 | 159.3 | 102.6 |
| Mississippi | 604.3 | 402.2 | 111.5 | 64.6 | 72.2 | 50.8 | 196.3 | 121.0 |
| Missouri | 568.3 | 444.9 | 107.9 | 65.5 | 57.0 | 42.8 | 159.4 | 134.1 |
| Montana | 586.6 | — | † | † | † | † | 183.8 | 134.0 |
| Nebraska | 625.2 | 422.6 | 99.2 | 60.3 | 78.0 | 43.6 | 203.9 | 120.1 |
| Nevada³ | 380.2 | 326.0 | 62.5 | 47.9 | 49.7 | 35.6 | 101.2 | 102.5 |
| New Hampshire | 408.4 | 227.1 | † | † | † | † | 150.5 | † |
| New Jersey | 555.2 | 421.4 | 72.8 | 49.2 | 54.3 | 42.6 | 202.2 | 128.7 |
| New Mexico³ | 392.2 | 335.4 | 62.6 | 41.7 | 33.0 | 30.4 | 125.9 | 109.1 |
| New York | 571.2 | 407.5 | 68.0 | 42.1 | 52.1 | 37.7 | 217.4 | 122.0 |
| North Carolina | 565.6 | 410.3 | 96.1 | 47.3 | 51.9 | 37.3 | 183.8 | 134.0 |
| North Dakota | 329.3 | 224.6 | † | † | † | † | † | † |
| Ohio | 531.9 | 412.5 | 94.3 | 63.4 | 49.6 | 37.9 | 167.2 | 127.5 |
| Oklahoma | 578.8 | 407.2 | 97.1 | 56.9 | 54.2 | 42.5 | 186.2 | 119.7 |
| Oregon | 526.6 | 409.1 | 83.4 | 57.8 | 51.1 | 33.1 | 169.8 | 123.9 |
| Pennsylvania | 592.6 | 465.4 | 94.7 | 68.9 | 55.6 | 43.2 | 171.9 | 130.5 |
| Rhode Island | 447.0 | 367.6 | 74.2 | 45.0 | 33.9 | 27.9 | 127.7 | 114.8 |
| South Carolina | 560.6 | 392.5 | 90.2 | 41.5 | 54.8 | 36.9 | 186.0 | 127.8 |
| South Dakota | 263.4 | 203.1 | † | † | † | † | † | † |
| Tennessee | 563.7 | 402.9 | 102.6 | 51.7 | 57.8 | 41.1 | 179.5 | 126.3 |
| Texas | 535.0 | 399.7 | 90.1 | 48.2 | 58.0 | 41.2 | 153.6 | 120.0 |
| Utah | 504.0 | 372.5 | 72.6 | † | † | † | 172.2 | 99.8 |
| Vermont | 305.3 | 328.1 | † | † | † | † | † | † |
| Virginia | 528.5 | 398.6 | 84.8 | 47.9 | 49.0 | 38.8 | 175.3 | 135.1 |
| Washington | 500.8 | 383.3 | 71.4 | 45.1 | 44.3 | 32.3 | 148.3 | 123.1 |
| West Virginia | 533.4 | 390.5 | 96.1 | 47.6 | 56.8 | 42.4 | 157.2 | 124.7 |
| Wisconsin | 674.1 | 493.5 | 118.6 | 75.0 | 62.1 | 42.8 | 204.4 | 138.9 |
| Wyoming | 182.7 | 171.2 | † | † | † | † | † | † |
| United States | 549.1 | 407.0 | 85.4 | 49.2 | 55.2 | 40.7 | 179.2 | 126.5 |

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* Rates are per 100,000 population and age adjusted to the 2000 US standard population.
† Rates are suppressed when they are based on fewer than 25 cases.
‡ Data from these registries are not included in US combined rates, either because they did not consent or did not meet North American Association of Central Cancer Registries high-quality data standards for all years during 2011 through 2015.
§ Rates are for cases diagnosed from 2011 to 2014.
### TABLE 7. Death Rates* for Selected Cancers in Non-Hispanic Black Males and Females by State, 2012 to 2016

| ALL CANCERS | LUNG & BRONCHUS | COLON & RECTUM | PROSTATE | BREAST |
|-------------|-----------------|----------------|----------|--------|
|             | MALE | FEMALE | MALE | FEMALE | MALE | FEMALE | MALE | FEMALE | MALE | FEMALE |
| Alabama     | 265.3 | 158.4 | 75.2 | 28.9 | 27.4 | 17.9 | 45.1 | 28.2 |
| Alaska      | 210.2 | 138.2 | t    | t    | t    | t    | t    | t    |
| Arizona     | 188.7 | 146.2 | 47.0 | 27.8 | 19.9 | 16.4 | 28.3 | 25.2 |
| Arkansas    | 274.0 | 172.2 | 88.8 | 36.7 | 27.1 | 19.8 | 41.7 | 29.6 |
| California  | 225.4 | 166.9 | 52.2 | 34.1 | 22.3 | 16.9 | 43.2 | 31.6 |
| Colorado    | 209.2 | 143.6 | 43.8 | 26.5 | 21.7 | 10.9 | 49.4 | 29.0 |
| Connecticut | 203.4 | 142.8 | 48.8 | 25.8 | 18.5 | 12.3 | 33.0 | 21.8 |
| Delaware    | 212.9 | 163.5 | 58.8 | 39.0 | 17.4 | 14.2 | 33.6 | 25.2 |
| District of Columbia | 262.0 | 189.3 | 61.9 | 37.0 | 26.7 | 17.9 | 40.8 | 34.3 |
| Florida     | 200.8 | 138.0 | 46.9 | 22.9 | 21.0 | 14.3 | 37.6 | 25.8 |
| Georgia     | 241.7 | 148.7 | 62.1 | 26.5 | 26.3 | 15.3 | 44.2 | 28.8 |
| Hawaii      | 173.9 | 105.8 | t    | t    | t    | t    | t    | t    |
| Idaho       | t    | t    | t    | t    | t    | t    | t    | t    |
| Illinois    | 269.2 | 182.5 | 73.9 | 43.8 | 29.6 | 19.0 | 44.5 | 31.3 |
| Indiana     | 254.0 | 175.9 | 70.2 | 44.7 | 25.2 | 18.3 | 38.6 | 29.1 |
| Iowa        | 234.8 | 176.4 | 66.1 | 47.5 | 19.5 | 17.9 | t    | 19.9 |
| Kansas      | 246.0 | 170.4 | 70.7 | 40.1 | 25.1 | 15.9 | 41.4 | 28.1 |
| Kentucky    | 250.4 | 173.8 | 78.4 | 49.2 | 23.2 | 17.2 | 34.5 | 27.7 |
| Louisiana   | 278.4 | 174.6 | 85.0 | 36.3 | 28.4 | 18.1 | 37.0 | 32.5 |
| Maine       | 152.9 | 131.2 | t    | t    | t    | t    | t    | t    |
| Maryland    | 229.0 | 154.1 | 55.3 | 32.3 | 23.9 | 14.3 | 37.5 | 27.9 |
| Massachusetts | 190.7 | 129.3 | 42.1 | 26.1 | 14.9 | 12.2 | 36.5 | 19.0 |
| Michigan    | 245.2 | 173.4 | 70.6 | 40.8 | 24.5 | 16.8 | 35.9 | 29.1 |
| Minnesota   | 220.1 | 158.5 | 56.5 | 32.4 | 13.2 | 11.8 | 36.3 | 22.6 |
| Mississippi | 292.2 | 169.9 | 91.0 | 33.3 | 31.1 | 19.0 | 49.9 | 31.4 |
| Missouri    | 270.1 | 178.7 | 82.3 | 45.0 | 26.6 | 16.2 | 37.7 | 31.3 |
| Montana     | t    | t    | t    | t    | t    | t    | t    | t    |
| Nebraska    | 244.3 | 172.8 | 66.9 | 47.7 | 35.4 | 20.0 | 34.9 | 26.9 |
| Nevada      | 203.1 | 146.5 | 48.4 | 36.9 | 26.5 | 15.0 | 31.4 | 27.4 |
| New Jersey  | 228.5 | 162.7 | 54.4 | 31.9 | 25.3 | 15.0 | 44.4 | 31.4 |
| New Mexico  | 208.7 | 128.5 | 45.7 | t    | t    | t    | 37.8 | t    |
| New York    | 202.9 | 145.7 | 46.7 | 26.5 | 19.5 | 14.5 | 36.9 | 26.3 |
| North Carolina | 251.6 | 155.2 | 71.2 | 30.3 | 24.1 | 15.0 | 39.6 | 28.2 |
| North Dakota | t    | t    | t    | t    | t    | t    | t    | t    |
| Ohio        | 243.9 | 173.3 | 72.5 | 44.9 | 23.4 | 15.9 | 36.6 | 30.5 |
| Oklahoma    | 259.2 | 171.3 | 69.7 | 38.8 | 28.4 | 17.1 | 42.9 | 34.0 |
| Oregon      | 236.7 | 158.1 | 49.9 | 39.8 | 23.0 | 14.6 | 44.0 | 30.8 |
| Pennsylvania | 259.7 | 183.7 | 69.8 | 44.6 | 24.5 | 15.9 | 42.7 | 30.9 |
| Rhode Island | 154.9 | 96.2  | 37.1 | 20.4 | 20.4 | t    | t    | 23.1 |
| South Carolina | 261.1 | 154.3 | 69.0 | 27.1 | 25.1 | 15.0 | 45.7 | 27.9 |
| South Dakota | t    | t    | t    | t    | t    | t    | t    | t    |
| Tennessee   | 278.0 | 174.4 | 83.1 | 40.4 | 30.1 | 18.0 | 45.4 | 30.4 |
| Texas       | 241.1 | 159.0 | 66.9 | 32.5 | 26.8 | 16.5 | 34.2 | 29.7 |
| Utah        | 155.2 | 154.3 | t    | t    | t    | t    | t    | t    |
| Vermont     | t    | t    | t    | t    | t    | t    | t    | t    |
| Virginia    | 241.8 | 157.8 | 63.9 | 32.9 | 25.0 | 15.8 | 39.7 | 29.0 |
| Washington  | 207.0 | 135.5 | 46.7 | 29.3 | 17.4 | 10.8 | 31.4 | 23.7 |
| West Virginia | 258.0 | 176.3 | 66.0 | 39.7 | 28.0 | 15.3 | 38.4 | 32.5 |
| Wisconsin   | 289.6 | 192.8 | 88.4 | 50.1 | 26.7 | 17.1 | 35.7 | 30.8 |
| Wyoming     | t    | t    | t    | t    | t    | t    | t    | t    |
| United States | 239.8 | 160.4 | 63.9 | 33.3 | 24.5 | 16.0 | 39.8 | 28.9 |

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* Rates are per 100,000 population and age adjusted to the 2000 US standard population.
† Rates are suppressed when they are based on fewer than 25 deaths.
FIGURE 6. Five-year Relative Survival Rates for Selected Cancers by Race and Stage at Diagnosis, United States, 2008 to 2014.
Note: Relative survival rates do not exclude persons of Hispanic ethnicity because necessary life tables are only available for black and white populations.

FIGURE 7. Stage Distribution for Selected Cancers Among Non-Hispanic (NH) Blacks and Whites, United States, 2008 to 2014.
Note: Percentages may not total 100% because of rounding.
increased in NH black men and women (by 1.6% and 1.3% per year, respectively) as well as NH white men and women (by 1.8% per year in both).

Myeloma is preceded by the asymptomatic, premalignant plasma cell disorder known as monoclonal gammopathy of undetermined significance (MGUS), and individuals with MGUS have a risk of progression to myeloma of about 1% to 2% per year.78 MGUS is more prevalent and is diagnosed at earlier ages among blacks than among other racial/ethnic groups.79,80 Excess body weight is the only known modifiable risk factor for myeloma; the risk is about 20% higher in adults who are overweight or obese compared with those who are normal weight.81 Elevated rates of obesity among blacks may contribute to their excess risk (Table 9).82 A family history of hematopoietic cancers is also associated with increased risk for MGUS and myeloma, with some studies finding a stronger association among blacks than whites.83,84 Immunobiological factors have been hypothesized to contribute to racial disparities as well.79

Myeloma death rates among blacks are approximately double those among whites (Table 5), largely reflecting higher incidence rates. From 2007 to 2016, myeloma death rates declined by 1.1% per year among NH black men, 0.8% per year among NH white men, and 0.6% per year among NH white women, but were level for NH black women. Five-year relative survival improved from 29% during 1975-1977 to 54% during 2008-2014, similar to gains among whites.10 Progress in survival reflects major advances in treatment over the past several decades, including stem cell transplantation, proteasome inhibitors, and immunomodulators.85 Notably, 5-year relative survival during 2008-2014 is slightly higher in black women than in white women (53% vs 49%) and is similar in black men and white men (51% vs 50%).10

**Prostate**

Prostate cancer is the most commonly diagnosed cancer among black men and the second-leading cause of cancer death, with 29,570 cases and 5,350 deaths expected to occur in 2019. The median age of diagnosis for prostate cancer is 63 years for black men, compared with 66 years for white men.10 It is estimated that 1 in 7 black men will be diagnosed with prostate cancer in their lifetime compared with 1 in 9 white men (Table 2).

During 2011 to 2015, the average annual prostate cancer incidence rate was 179 cases per 100,000 black men, 76% higher than the rate in white men (Table 3). Similar to the pattern in white men, incidence rates in black men increased sharply between 1989 and 1992, reflecting the increased use of the prostate-specific antigen (PSA) blood test for the detection of prostate cancer, but have since been generally declining, with an acceleration in the decline in the last decade (Fig. 8). During 2006 through 2015, prostate cancer incidence rates declined annually by 4.5% in NH black men and by 5.5% in NH white men (Table 4). It is unclear whether these declines reflect less screening after the 2012 US Preventive Services Task Force recommendations against routine PSA testing, a reduced pool of indolent cancers, and/or combinations of these and other factors.86

The only well-established risk factors for prostate cancer are older age; African ancestry; a family history of the disease; and certain inherited genetic conditions, including mutations in *BRCA1* and *BRCA2* and Lynch syndrome. Men who have a first-degree relative with a history of prostate cancer are 2 to 3 times more likely to be diagnosed with the disease than men without a family history.87,88 Increasing evidence suggests that obesity and smoking may be associated with an increased risk of aggressive disease,
with some studies suggesting that the links are stronger for black men.\textsuperscript{89-93} Black men and Jamaican men of African descent have the highest prostate cancer incidence rates worldwide, suggesting differences in inherited genetic susceptibility.\textsuperscript{42,94}

Similarly, black men have the highest mortality rate for prostate cancer of any racial or ethnic group in the United States at 2.3 times higher than the rate in white men (Table 5). Studies have documented that aggressive prostate cancers are relatively more common in black men.\textsuperscript{95,96} A recent predictive modeling study of the natural history of prostate cancer concluded that black men develop prostate cancer at younger ages compared with the general male population in the United States, and they are 44\% to 75\% more likely to develop metastases before clinical diagnosis.\textsuperscript{96}

The prostate cancer death rate in black men has dropped by greater than 50\%, from a peak of 81.9 deaths per 100,000 men in 1993 to 39.8 deaths per 100,000 men during 2012-2016. From 2006 through 2015, death rates decreased faster in blacks than in whites (3.4\% vs 2.1\% per year), resulting in a narrowing disparity (Fig. 4). The decrease has been attributed to improved surgical and radiologic treatment, the use of hormonal therapy for advanced-stage disease, and earlier detection through PSA testing.\textsuperscript{86} However, the extent of the contribution of PSA testing is particularly unclear. Long-term follow-up results from US-based and UK-based randomized trials indicated no reduction in prostate cancer mortality as a result of PSA testing, whereas another European trial demonstrated a modest benefit.\textsuperscript{97} Notably, black men represented only 4.4\% of the participants in the US study.\textsuperscript{98} Studies continue to

| TABLE 8. HPV Vaccination (2017) and Cancer Screening (2015) in NH Blacks and Whites, United States |
|---------------------------------|----------------|----------------|
|                                 | NH BLACK, %    | NH WHITE, %    |
| HPV vaccination (youth 13-17 y) |                |                |
| Females                         |                |                |
| ≥ 1 Dose                        | 73             | 64             |
| Up-to-date*                     | 56             | 50             |
| Males                           |                |                |
| ≥ 1 Dose                        | 67             | 57             |
| Up-to-date*                     | 45             | 40             |
| Breast cancer screening (women ≥40 y) |            |                |
| Mammogram within the past year  | 55             | 50             |
| Mammogram within the past 2 years | 69         | 65             |
| Cervical cancer screening (women 21-65 y)\textsuperscript{1} |        |                |
| Pap test within the past 3 years| 85             | 83             |
| Up-to-date\textsuperscript{2}   | 86             | 85             |
| Colorectal cancer screening (adults ≥50 y)\textsuperscript{3} |        |                |
| Overall                         | 62             | 65             |
| Males                           | 63             | 66             |
| Females                         | 61             | 65             |
| Prostate-specific antigen test (men ≥50 y) |    |                |
| Within the past year            | 31             | 37             |

Abbreviations: HPV: human papillomavirus; NH, non-Hispanic; Pap, Papanicolaou staining.
Note: Estimates for screening are age-adjusted to the 2000 US standard population and do not distinguish between examinations for screening and diagnosis.
\textsuperscript{1}Includes those who received ≥3 doses and those who received 2 doses when the first HPV vaccine dose was initiated before age 15.
\textsuperscript{2} Among adults aged ≥20 years.
\textsuperscript{3} Among adults aged ≥18 years.
\textsuperscript{4} Either a fecal occult blood test or a fecal immunochemical test within the past year, sigmoidoscopy within the past 5 years, or a colonoscopy within the past 10 years.
Sources: Vaccination: Walker 2018.\textsuperscript{114} Screening: National Health Interview, 2015.

| TABLE 9. Risk Factors for Cancer Among NH Black and White Adults by Sex, United States |
|---------------------------------|----------------|----------------|
|                                 | NH BLACK, %    | NH WHITE, %    |
| Obesity (BMI ≥ 30.0 kg/m\textsuperscript{2})\textsuperscript{*} |                |                |
| All                             | 47             | 38             |
| Men                             | 37             | 38             |
| Women                           | 55             | 38             |
| Overweight (BMI 25.0-29.9 kg/m\textsuperscript{2})\textsuperscript{*} |        |                |
| All                             | 28             | 32             |
| Men                             | 34             | 37             |
| Women                           | 24             | 27             |
| No leisure-time physical activity\textsuperscript{7} |        |                |
| All                             | 35             | 22             |
| Men                             | 31             | 21             |
| Women                           | 38             | 23             |
| Current cigarette smoking\textsuperscript{7} |        |                |
| All                             | 15             | 16             |
| Men                             | 19             | 17             |
| Women                           | 12             | 15             |

Abbreviations: BMI: body mass index; NH, non-Hispanic.
Note: Estimates are age-adjusted to the 2000 US standard population.
\textsuperscript{*} Among adults aged ≥20 years.
\textsuperscript{1} Among adults aged ≥18 years.
\textsuperscript{7} Ever smoked 100 cigarettes and currently smoking at least some days.
Sources: BMI: National Health and Nutrition Examination Surveys, 2015-2016.
Physical activity and smoking: Centers for Disease Control and Prevention.
National Health Interview Survey, 2017.
document that black men are more likely to receive inferior treatment for prostate cancer.\textsuperscript{93,99,100} For example, a recent study of patients with local-stage prostate cancer recruited from 5 US cancer registries documented that 64% of black men received guideline-compliant radiation therapy compared with 77% of white men.\textsuperscript{99}

The overall 5-year relative survival rate for prostate cancer is 96% among blacks and 98% among whites (Fig. 6). Eighty-six percent of prostate cancers in black men are diagnosed at a local or regional stage (Fig. 7), for which the 5-year relative survival rate approaches 100%. Five-year survival rates drop to 30% when the cancer is diagnosed at distant stage.

**Stomach**

In 2019, an estimated 4,340 new cases of stomach cancer and 1,990 stomach cancer deaths will occur in black men and women. Although now a relatively uncommon malignancy in the United States, stomach cancer incidence rates remain 1.8 times higher in NH black men and 2.2 times higher in NH black women (Table 5). Higher rates of stomach cancer in blacks are limited to noncardia gastric cancers.\textsuperscript{101} *Helicobacter pylori* infection is the most important risk factor for noncardia gastric cancer and is more common in blacks and Hispanics compared with NH whites. According to National Health and Nutrition Examination Survey data from 1999 to 2000, *H. pylori* infection in the United States was more than twice as high in NH blacks (52%) as in NH whites (21%).\textsuperscript{102} A more recent analysis in US veterans confirmed higher rates of *H. pylori* infection among black men.\textsuperscript{103}

From 2006 through 2015, overall stomach cancer incidence rates decreased 2.1% per year in NH black men, 1.6% per year in NH black women, and 0.7% per year in NH white women, whereas rates were level in NH white men (Table 4). These declines are largely attributed to the decreasing prevalence of *H. pylori* infection in the United States.\textsuperscript{102} However, a recent study that examined these trends by age found that rates of noncardia gastric cancer increased in some women younger than 40 years, including an increase of 2% per year from 1999 to 2014 in NH blacks.\textsuperscript{104} Reasons for this trend are unknown but may result from an increased risk of autoimmune gastritis.\textsuperscript{105}

Similar to the pattern for incidence rates, stomach cancer death rates are 2.6 times higher in NH black men and 2.3 times higher in NH black women compared with their white counterparts. Interestingly, the racial disparity is greater among men for mortality but greater among women for incidence (Tables 5 and 6). Stomach cancer death rates have sharply declined in NH blacks, by greater than 3% per year during 2007 through 2016 (Table 4). Racial disparities in gastric cancer mortality are primarily driven by differences in incidence, as stage at diagnosis and survival are similar between blacks and whites (Figs. 6 and 7).\textsuperscript{106} Symptoms of stomach cancer are usually nonspecific, resulting in nearly 1 in 3 patients diagnosed with metastatic disease, for which the 5-year relative survival is only 6% (Fig. 6).

**Uterine cervix**

An estimated 2,250 new cases of invasive cervical cancer and 770 deaths are expected to occur among black women in 2019. The incidence rate of cervical cancer is 30% higher in NH black women than in NH white women (Table 3) with the largest disparity among older women.\textsuperscript{107} The black-white disparity is even greater when incidence rates are adjusted for hysterectomy prevalence, which is higher in black women.\textsuperscript{108,109} Nevertheless, a faster decline in the cervical cancer incidence rate among NH black women than among white women has substantially narrowed the racial disparity overall and has eliminated it among women younger than 50 years as of the mid-2000s.\textsuperscript{30} Declines in cervical cancer incidence and mortality have slowed in black women and stabilized in white women over the last decade (Table 4), perhaps approaching a nadir.

Cervical cancer screening is recommended for women aged 21 to 65 years. After age 65 years, most women with a recent negative Papanicolaou test should discontinue screening. According to 2015 data from the NHIS, 86% of NH black women and 85% of NH white women were up to date on cervical cancer screening (Table 8). A recent study, however, found substantially lower screening prevalence among older women; for example, 22% to 24% of NH black women aged 61 to 70 years had not had a Papanicolaou test within 5 years, compared with 7% among those aged 41 to 45 years.\textsuperscript{107}
The overall 5-year relative survival rate for cervical cancer among black women is 56%, compared with 68% among white women (Fig. 6), partly because black women are more likely to be diagnosed with regional-stage or distant-stage disease (Fig. 7). Racial differences in stage at diagnosis may be because of differences in the quality of screening and follow-up after abnormal results, as well as less screening. Lower SES, lack of health insurance, and older age are also associated with lower screening rates and an increased risk of late-stage diagnosis.

Cervical cancer mortality rates are 75% higher in NH black than NH white women. A recent study estimated that 47% of black-white differences in cervical cancer mortality are caused by treatment differences, and 19% are caused by a lack of health insurance. The study indicated that, among patients with early-stage cervical cancer, a greater proportion of black women (17%) failed to receive surgery, which is the standard of care, compared with white (9%) and Hispanic (12%) women.

Virtually all cervical cancers are caused by persistent human papillomavirus (HPV) infection, particularly HPV types 16 and 18. Vaccines that protect against the types of HPV that cause 90% of cervical cancers, as well as several other cancers and diseases, are recommended by the Centers for Disease Control and Prevention for use in all boys and girls by age 13 years. Data from the 2017 National Immunization Survey-Teen indicated higher rates of HPV vaccination among NH black adolescents compared with whites: 56% of NH black girls and 45% of NH black boys had completed the HPV vaccination series compared with 50% and 40% of NH white girls and boys, respectively (Table 8). Hopefully, the reduction in the recommended number of vaccine doses from 3 (originally) to 2 in October 2016 will facilitate higher completion rates for this highly effective cancer intervention.

Uterine corpus
An estimated 7,460 new cases and 2,500 deaths because of uterine corpus cancer will occur among black women in 2019. More than 90% of uterine corpus cancers arise in the endometrium. The uterine corpus cancer incidence rate in NH black women (24.4 per 100,000 women) is 7% lower than that for NH white women (26.1 per 100,000 women). However, analyses that account for hysterectomy prevalence observe incidence rates that are similar, or even higher, in NH black women. In contrast, among women younger than 50 years, a recent study noted that uterine corpus cancer rates remain lower among NH black women, even after accounting for hysterectomy prevalence. From 2006 to 2015, the incidence rate for uterine corpus cancer increased by about 2.5% per year among NH black women and by 1.0% per year among NH white women (Table 4). These trends may not reflect true disease occurrence, because they do not account for hysterectomy prevalence, which is higher in black women and rising, but declining in white women. Increasing rates of uterine corpus cancer are likely because of the rising prevalence of obesity. An estimated 60% of uterine corpus cancers among women of all races are attributable to excess body weight.

From 2007 to 2016, the death rate for cancer of the uterine corpus increased by 2.2% per year in NH black women and by 1.7% per year in white women, mirroring the trends for incidence. Despite similar incidence rates, the uterine corpus cancer death rate in black women is nearly double that in white women (8.7 vs 4.4 deaths per 100,000 women). The wide mortality gap reflects the substantially lower 5-year relative survival rate in black women (62%) compared with white women (83%). A recent study concluded that later stage at diagnosis, more aggressive tumors, and a lower likelihood of optimal surgical treatment accounted for most of this disparity. About 41% of uterine corpus cancers are diagnosed at a regional or distant stage in black women, compared with 27% in white women. Aggressive histologic subtypes, including uterine serous cancer and uterine carcinosarcoma, are more common in black women than white women, particularly among women aged 50 and older.

Data Limitations
Although the estimated numbers of new cancer cases and deaths expected to occur in 2019 provide a reasonably accurate portrayal of the contemporary cancer burden in blacks, they are model-based, 3-year-ahead, and 4-year-ahead projections that should be interpreted with caution and should not be used to track trends over time. The most informative metrics for tracking cancer trends are age-standardized or age-specific cancer death rates from the NCHS and cancer incidence rates from SEER, NPCR, and/or NAACCR.

Conclusions
Although African American/black individuals continue to bear a disproportionate share of the cancer burden, substantial progress has been made over the past several decades to reduce this disparity. Among men, the overall cancer death rate was 47% higher for blacks than for whites in 1990 versus 19% higher in 2016; among females, the disparity decreased from 19% to 13% over the same period, with the disparity nearly eliminated for some age groups. Continued progress toward equitable cancer outcomes will require expanding access to high-quality cancer prevention, early detection, and treatment for all Americans.
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