

Surveillance of Demographic Characteristics and Health Behaviors Among Adult Cancer Survivors — Behavioral Risk Factor Surveillance System, United States, 2009



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Surveillance of Demographic Characteristics and Health Behaviors Among Adult Cancer Survivors — Behavioral Risk Factor Surveillance System, United States, 2009

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Abstract

Problem/Condition: Approximately 12 million people are living with cancer in the United States. Limited information is available on national and state assessments of health behaviors among cancer survivors. Using data from the Behavioral Risk Factor Surveillance System (BRFSS), this report provides a descriptive state-level assessment of demographic characteristics and health behaviors among cancer survivors aged ≥ 18 years.

Reporting Period Covered: 2009

Description of System: BRFSS is an ongoing, state-based, random-digit-dialed telephone survey of the noninstitutionalized U.S. population aged ≥ 18 years. BRFSS collects information on health risk behaviors and use of preventive health services related to leading causes of death and morbidity. In 2009, BRFSS added questions about previous cancer diagnoses to the core module. The 2009 BRFSS also included an optional cancer survivorship module that assessed cancer treatment history and health insurance coverage for cancer survivors. In 2009, all 50 states, the District of Columbia, Guam, Puerto Rico, and the U.S. Virgin Islands administered the core cancer survivorship questions, and 10 states administered the optional supplemental cancer survivorship module. Five states added questions on mammography and Papanicolaou (Pap) test use, eight states included questions on colorectal screening, and five states included questions on prostate cancer screening.

Results: An estimated 7.2% of the U.S. general population aged ≥ 18 years reported having received a previous cancer diagnosis (excluding nonmelanoma skin cancer). A total of 78.8% of cancer survivors were aged ≥ 50 years, and 39.2% had received a diagnosis of cancer >10 years previously. A total of 57.8% reported receiving an influenza vaccination during the previous year, and 48.3% reported ever receiving a pneumococcal vaccination. At the time of the interview, 6.8% of cancer survivors had no health insurance, and 12% had been denied health insurance, life insurance, or both because of their cancer diagnosis. The prevalence of cardiovascular disease was higher among male cancer survivors (23.4%) than female cancer survivors (14.3%), as was the prevalence of diabetes (19.6% and 14.7%, respectively). Overall, approximately 15.1% of cancer survivors were current cigarette smokers, 27.5% were obese, and 31.5% had not engaged in any leisure-time physical activity during the past 30 days.

Demographic characteristics and health behaviors among cancer survivors varied substantially by state.

Interpretation: Health behaviors and preventive health care practices among cancer survivors vary by state and

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demographic characteristics. A large proportion of cancer survivors have comorbid conditions, currently smoke, do not participate in any leisure-time physical activity, and are obese. In addition, many are not receiving recommended preventive care, including cancer screening and influenza and pneumococcal vaccinations.

Public Health Action: Health-care providers and patients should be aware of the importance of preventive care, smoking cessation, regular physical activity, and maintaining a healthy weight for cancer survivors. The findings in this report can help public health practitioners, researchers, and comprehensive cancer control programs evaluate the effectiveness of program activities for cancer survivors, assess the needs of cancer survivors at the state level, and allocate appropriate resources to address those needs.

Introduction

A cancer survivor is a person who has received a diagnosis of cancer, from the time of diagnosis throughout the person's life (1–3). The aging of the U.S. population has resulted in an increase in the number of cancer diagnoses (4), and because of improvements in early detection and treatment, the number of cancer survivors has steadily increased during the last 3 decades. As of 2007, nearly 12 million cancer survivors were living in the United States (5).

Cancer survivors often face long-term adverse physical, psychosocial, and financial effects from their cancer diagnosis and treatment (2,6–10); the impact of cancer on family members, friends, and caregivers of survivors is considered a part of cancer survivorship (1). Cancer survivors have a greater risk for new cancers compared with persons who have never had cancer (11,12). Various healthy lifestyle behaviors have been shown to prevent new malignancies and decrease the chances of recurrence among cancer survivors (2,13). Prevention and cessation of tobacco use (primarily cigarette smoking) (14), regular physical activity (15), maintenance of a healthy weight (16–18), and routine consultation with health-care providers about follow-up care after a cancer diagnosis (i.e., survivorship care plans) (19) have shown evidence of the ability to prevent new cancers or cancer recurrence, increase survival, and strengthen quality of life after a cancer diagnosis. Survivor-specific resources and support are necessary to promote positive health outcomes and improve quality of life.

Increased recognition of the potential benefits of healthy lifestyle behaviors among persons with cancer contributed to the development of responsive public health strategies such as the *National Action Plan for Cancer Survivorship: Advancing Public Health Strategies* (2), a publication cosponsored by Livestrong (formerly the Lance Armstrong Foundation) and CDC, and *From Cancer Patient to Cancer Survivor: Lost in Transition* (13), by the Institute of Medicine. In addition, CDC's National Comprehensive Cancer Control Program (NCCCP) funds states, the District of Columbia (DC), tribes and tribal organizations, selected U.S. territories, and associated Pacific Island jurisdictions to develop and implement local comprehensive cancer control plans (20), most of which include specific goals and objectives about survivorship (21).

NCCCP programs use population-based data sources to assess the effectiveness of activities related to survivorship and to conduct state-specific analyses of cancer survivor health behaviors. Population-based information about survivors also is useful for public health practitioners, program implementers, and researchers who assess and develop interventions to improve the health and quality of life of cancer survivors.

The Behavioral Risk Factor Surveillance System (BRFSS) survey is a state-based surveillance system that monitors health behaviors, chronic diseases, injuries, access to health care, and preventive health care. Core module questions are asked of all survey respondents in each state and territory, and each state and territory may include select optional modules in their surveys. In 2009, BRFSS added questions about previous cancer diagnoses to the core survey module. The survey also included an optional cancer survivorship module that assessed cancer treatment history and health insurance coverage of cancer treatment for cancer survivors. Because BRFSS data are obtained through respondent interviews, the cancer survivors described in this report are all classified as cancer survivors on the basis of self-reporting; cancer diagnoses were not confirmed. Therefore, these data might differ from data reported by the CDC's National Program of Cancer Registries or the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) program, which both confirm diagnoses (5).

This report provides a descriptive analysis of the 2009 BRFSS data among cancer survivors, including demographic characteristics and health behaviors, as well as cancer treatment history and health insurance coverage of treatment in states that included the optional module in the 2009 survey. Although the effects of cancer on those who know and care for cancer survivors are a component of cancer survivorship, the analyses in this report include only the persons who received the cancer diagnosis (1).

Methods

BRFSS is an ongoing, cross-sectional, random-digit-dial telephone survey of noninstitutionalized adults aged ≥18 years. Trained interviewers use the standard core and optional questionnaire modules to collect uniform data from all states, DC, and select U.S. territories. In 2009, BRFSS was conducted

in all 50 states, DC, Guam, Puerto Rico, and the U.S. Virgin Islands. The optional module on cancer survivorship was administered by 10 states (California, Connecticut, Maryland, Massachusetts, Nebraska, New Jersey, North Carolina, Oklahoma, Vermont, and Virginia). Detailed BRFSS methods have been described in previous publications (22,23).

Questionnaire

The standard BRFSS questionnaire consists of three parts: 1) core questions, 2) optional supplemental modules that include sets of questions on specific topics, and 3) state-added questions. All jurisdictions ask the same core questions. Individual jurisdictions may opt to include optional modules and jurisdiction-added questions to address specific health-care concerns.

As part of the core module, respondents were asked whether they had ever been told by a doctor, nurse, or other health-care professional that they had cancer. Respondents who answered yes were asked how many different types of cancer they had, the age when they were told that they had cancer, and which type of cancer they had. If respondents reported having had more than one type of cancer, only the most recently diagnosed type was recorded. Respondents who were unsure about their history of cancer, who refused to answer the question, or who reported nonmelanoma skin cancer were excluded from the analysis.

Of 432,607 BRFSS respondents, 411,654 answered the question regarding previous cancer diagnoses. Among these respondents, 4,252 either refused to answer the question or were not sure that they had ever been diagnosed with cancer and were excluded from the analysis; in addition, 13,632 reported having had nonmelanoma skin cancer and were excluded from the analysis. Nonmelanoma skin cancers (i.e., basal and squamous cell skin cancers) are not routinely collected in cancer registries because they do not require treatment beyond surgery (5).

Years since diagnosis (0–5, 6–10, and >10 years) were calculated using the respondents' current age and age at first cancer diagnosis. Type of cancer was categorized as breast, female genital system (cancers of the cervix, uterus, and ovary), head or neck (cancers of the head, neck, mouth, and throat), gastrointestinal (cancers of the colon, esophagus, liver, pancreas, stomach, and rectum), leukemia or lymphoma (Hodgkin's lymphoma, non-Hodgkin's lymphoma, and leukemia), male genital system (cancers of the prostate and testis), skin (melanoma), lung, urinary tract (bladder and kidney), other cancer types (thyroid, bone, brain, heart, neuroblastoma, and other), and unknown or refused to answer.

Using data from the core module, the following characteristics were compared among cancer survivors: age at interview, sex,

race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Asian/Pacific Islander [A/PI], American Indian/Alaska Native [AI/AN], other/multiracial [preferred race not asked], unknown or refused to answer), marital status (married or living together, divorced, never married, widowed, or separated), education level (did not graduate high school, high school graduate, some college, or college graduate), employment status (employment for wages, out of work or unable to work, retired, or other), insurance coverage (yes or no), and U.S. Census region of residence (Northeast, South, Midwest, West, or the U.S. territories). Quality of life was measured by self-reported health status (excellent, very good, good, fair, or poor), number of physically unhealthy days during the past 30 days, receipt of social support (always, usually, sometimes, rarely, or never), and life satisfaction (very satisfied, satisfied, dissatisfied, or very dissatisfied).

In addition, the following health risk behaviors were analyzed: current smoking (smoking cigarettes every day or some days and having smoked >100 cigarettes during lifetime), obesity (body mass index [BMI] ≥ 30 kg/m²), and no leisure-time physical activity during the past 30 days. The presence of the following chronic health conditions was assessed: cardiovascular disease (history of myocardial infarction, angina or coronary heart disease, or stroke), diabetes, current asthma ("Have you ever been told by a doctor, nurse, or other health professional that you had asthma?" "Do you still have asthma?"), and disability (activity limitations from physical, mental, and emotional problems). The following preventive health care measures also were examined: ever having received pneumococcal vaccine and receipt of injected influenza vaccine during the past 12 months. (Receipt of live, attenuated influenza vaccine [LAIV] was not analyzed because most cancer survivors in this analysis were not eligible to receive LAIV.)

Five states (Georgia, Hawaii, New Jersey, Tennessee, and Wyoming) added questions on mammography and Papanicolaou (Pap) test use among women. Mammography use within the past 2 years and Pap test use (excluding women who had received a hysterectomy) within the past 3 years were analyzed among female cancer survivors aged ≥ 40 years and aged ≥ 18 years, respectively. Eight states (Delaware, Hawaii, Maine, Massachusetts, Nebraska, New Jersey, Oklahoma, and Wyoming) included questions on colorectal screening, and five states (Delaware, Hawaii, Kentucky, Nebraska, and New Jersey) included questions on prostate cancer screening. Cancer survivors aged ≥ 50 years were considered up to date with screening for colorectal cancer if they had received a fecal occult blood test within the previous year, sigmoidoscopy within the past 5 years, or colonoscopy within the past 10 years.

Data from the 10 states that administered the cancer survivorship optional module (California, Connecticut,

Maryland, Massachusetts, Nebraska, New Jersey, North Carolina, Oklahoma, Vermont, and Virginia) were examined for the following cancer-related health care experience variables: type of physician providing the majority of their care, receipt of treatment summary or follow-up instructions, insurance coverage of cancer treatment, and denial of health or life insurance coverage because of a cancer diagnosis. Variables related to cancer treatments also were examined, including current receipt of cancer treatment, whether respondent had ever participated in a clinical trial, current pain from cancer or treatment, and current control of cancer-related pain.

Data Collection and Processing

Trained interviewers administer the BRFSS questionnaire using a computer-assisted telephone interviewing system. Data are collected monthly by each state and territory using disproportionate stratified random sampling in all states and DC and simple random sampling in Guam, Puerto Rico, and the U.S. Virgin Islands (24). According to the guidelines of the Council of American Survey Research Organizations (CASRO), the median cooperation rate (defined as the percentage of persons who completed interviews among all eligible persons who were contacted) for the 2009 BRFSS was 75%; the CASRO response rate (defined as the percentage of persons who completed interviews among all eligible persons, including those who were not successfully contacted) was 52.5% (25).

Data Weighting and Statistical Analysis

Statistical software was used to account for the complex sampling design. Statistics are not presented if the sample size for the numerator was <50 or if the half-width of the confidence interval was >10; however, the values are included in overall total calculations. Each sample is weighted to the respondent's probability of selection and the age- and sex-specific population or the age-, sex-, and race/ethnicity-specific population by using the 2009 postcensus projections for each state. Using the public-use BRFSS data file, all estimates were weighted to represent noninstitutionalized adults aged ≥18 years living within their respective state, DC, or U.S. territory. Some of the 17 states that administered either the optional cancer survivorship module or the women's health, colorectal cancer screening, or prostate cancer screening modules used multiple questionnaires. For these states, the survey weights provided in the multiple questionnaire data files were used. A new weight variable was created so that records from states using multiple questionnaires could be analyzed along with records from states that either included these modules on their common BRFSS survey or did not use multiple questionnaires.

This allowed states that used optional modules on multiple questionnaire versions to be included in the analysis, thereby increasing the sample size for these modules.

Results

Demographic Characteristics

Of 432,607 BRFSS respondents, 411,654 answered the question regarding whether they had ever been told by a doctor, nurse, or other health-care professional that they had cancer. Among these respondents, 45,541 reported ever having cancer (7.2% of all respondents in all 50 states, DC, and the U.S. territories), not including nonmelanoma skin cancer (Table 1). A greater proportion of women (8.4%) than men (6.0%) reported ever receiving a diagnosis of cancer. A greater proportion of cancer survivors reported having received the diagnosis >10 years before the survey (39.2%) than in the past 5 years (36.2%) or 6–10 years before the survey (20.8%). Men were more likely to have received the diagnosis within the last 5 years (42.1%) compared with other time periods, whereas women were more likely to have received the diagnosis >10 years before the survey (44.0%). Most cancer survivors were non-Hispanic white (81.2%) and aged ≥50 years (78.8%). More male cancer survivors (74.9%) than female cancer survivors (57.0%) were married or living with a significant other. Approximately 10% of all cancer survivors had not graduated from high school. A total of 42.4% of cancer survivors were retired, and 93% had insurance coverage at the time of the survey.

Among male cancer survivors, the prevalences of cardiovascular disease (23.4%) and diabetes (19.6%) were higher than the prevalence of cardiovascular disease (14.3%) and diabetes (14.7%) among female cancer survivors. Current asthma was more prevalent among female cancer survivors (13.3%) than male cancer survivors (7.5%).

Preventive Care

Among cancer survivors in the eight states (Delaware, Hawaii, Maine, Massachusetts, Nebraska, New Jersey, Oklahoma, and Wyoming) that included colorectal cancer screening questions on the survey, 77.9% (1,138) of men and 73.1% (1,912) of women reported having been screened for colorectal cancer within the recommended period. Among the five states (Georgia, Hawaii, New Jersey, Tennessee, and Wyoming) that included questions on mammography and Pap test use among women on the survey, 79.4% (823) of women reported having been screened for cervical cancer, and 80.4%

(1,517) reported having been screened for breast cancer within the recommended period. Approximately 57.8% of cancer survivors reported receiving an injected influenza vaccination during the previous year, and 48.3% reported ever receiving a pneumococcal vaccination.

Types of Cancer

Cancers of the breast (19.5%) were the most common cancers among all survivors, followed by female (14.8%) and male (14.6%) genital cancers (Table 2). Among women, the most common primary cancer types were breast (32.4%); cervix, uterus, ovary (24.8%); and melanoma (9.6%). The most common primary cancer types among men were prostate and testis (36.1%), melanoma, (16.2%), and gastrointestinal (10.5%). Breast cancer was the most commonly reported cancer in all racial/ethnic populations (19.3%, non-Hispanic white; 23.9%, non-Hispanic black; 25.8%, A/PI; 16.1%, AI/AN; and 17.3% Hispanic) (Table 3). Of the male genital cancers, prostate cancer (33.3%) was the most commonly reported cancer among all male racial/ethnic populations. Percentages of prostate cancer were highest among non-Hispanic black men (53.6%), followed by Hispanic (34.1%) and non-Hispanic white men (31.3%). Cervical cancer (14.5%) was the most commonly reported genital cancer among women. Percentages were highest among AI/AN women (28.9%), followed by Hispanic (20.4%), non-Hispanic black (14.7%), and non-Hispanic white women (13.8%).

Regional Differences

Cancer prevalences were similar in the Northeast (7.8%), Midwest (7.6%), and South (7.5%) U.S. Census regions; the prevalence was slightly lower in the West (6.2%) (Table 4). Whereas cancer prevalence was higher among women than men overall in the United States, states with the highest ratio of female-male cancer prevalence were Indiana (1.70), Oklahoma (1.66), Maine (1.57), and Montana (1.52). Breast cancer was most prevalent among women in the Northeast (36.4%). Cervical cancer (17.1%) and melanoma (13.2%) were most prevalent in the South. Prostate (34.8%) and female genital cancers (excluding cervical cancer) were highest in the West (11.3%).

Quality of Life

When asked to describe overall health status, 68.5% of cancer survivors indicated that their overall health was excellent, very good, or good (Table 5). Approximately one third (31.8%) of cancer survivors reported experiencing ≥ 5 physically unhealthy

days during the past 30 days, with wide variations by state. The highest percentage of survivors reporting ≥ 5 unhealthy days was reported among survivors living in Kentucky (44.1%), and the lowest was among those living in Iowa (24.7%). Half (50.2%) of cancer survivors living in the United States reported always receiving needed social or emotional support, and 92.7% of all cancer survivors reported being very satisfied or satisfied with their life.

Health Behaviors

Smoking

Approximately 15.1% of cancer survivors aged ≥ 18 years in the 50 states and DC were current cigarette smokers (Figure 1). Smoking prevalence among cancer survivors was highest in Oklahoma (23.9%) and lowest in California (10.3%). Regional differences also were observed, with the highest prevalence in the South (17.2%), followed by the Midwest (15.8%), Northeast (15.1%), and West (13.0%).

Obesity

A total of 27.5% of cancer survivors were obese (BMI ≥ 30 kg/m²) (Figure 2); however, the prevalence varied widely by state, ranging from 15.7% in Colorado to 33.8% in Missouri. Similarly, obesity prevalence among cancer survivors varied by geographic region. Obesity was most prevalent among cancer survivors in the Midwest (29.8%), followed by the South (28.4%), Northeast (26.0%), and West (24.5%).

Leisure-Time Physical Activity

Approximately 31.5% of cancer survivors had not participated in any leisure-time physical activity during the past 30 days (Figure 3). The highest proportion of cancer survivors reporting no leisure-time physical activity lived in the South (34.3%), followed by the Midwest (32.5%), Northeast (31.3%), and West (25.5%). Among states, percentages of inactivity were highest in West Virginia (42.3%) and lowest in Oregon (21.4%).

Treatment Regimens and Pain

Among the 6,384 respondents in the 10 states that included the optional module, 12% of cancer survivors reported that they were currently receiving treatment, with estimates ranging from 9.1% to 14.0% among states (Table 6). A total of 7.5% of cancer survivors reported ever having participated in a clinical trial. Whereas 10.1% of survivors reported current pain that they attributed to cancer or cancer treatment, approximately 80.9% of these survivors reported that the pain was currently well controlled.

Health-Care Experience

Among the 5,593 respondents not currently undergoing treatment from the 10 states that included the optional module, 21.2% of cancer survivors reported that the type of physician who provided the majority of their health care was either an oncologist or another cancer specialist, ranging from 14.3% in North Carolina to 29.3% in California (Table 7). Approximately 40.2% of cancer survivors reported receipt of a written summary of their cancer treatments, and 73.9% reported receipt of instructions on follow-up care. Approximately 90.7% of respondents reported that insurance covered all or part of their cancer treatment. Overall, 12.0% of respondents said they had been denied health or life insurance coverage because of their cancer diagnosis.

Discussion

Cancer is among the most prevalent diseases diagnosed and the second leading cause of death in the United States (26). This report presents the first population-based survey with state-level assessment of health behaviors and demographic characteristics among cancer survivors. Although previous studies also have examined state-level preventive health practices among cancer survivors (e.g., cancer screenings and influenza and pneumococcal vaccinations) (27,28), this is the only report with data from all 50 states, DC, and U.S. territories.

Research has indicated that cancer survivors might benefit from higher levels of recommended screenings and increased vaccine coverage because of their increased susceptibility to future illness (2,10). All cancer survivors in this report were recommended to have received the flu vaccine (which is recommended for all persons aged >6 months), and most were candidates for the pneumococcal vaccination (which is recommended for adults aged > 65 years and for persons with certain chronic medical conditions which put them at risk for pneumococcal infection); however, a substantial proportion of cancer survivors did not receive these vaccines. A previous study of the Medicare population indicated that breast cancer survivors are less likely to receive preventive care (e.g., influenza vaccination, cholesterol screening, colorectal cancer screening, bone densitometry, and mammography) than age-, ethnicity- and sex-matched controls (29). Other studies also have shown that cancer survivors are less likely to receive recommended preventive care for a broad range of chronic medical conditions, and cancer screening rates decrease significantly as oncologists are less involved in patient treatment (30,31).

Demographic Characteristics and Use of Preventive Care

Approximately 7% of all 2009 BRFSS respondents reported ever receiving a diagnosis of cancer from a health-care professional. This prevalence is slightly lower than the estimated 10% found in a recent BRFSS study (32), likely because nonmelanoma skin cancers were included in that study. Cases of nonmelanoma skin cancer account for nearly one fifth of all reported cancer cases. Approximately 3.5 million basal and squamous skin cancers occurred in 2006 (33).

This report confirms findings from previous studies: the majority of cancer survivors are older (5), female (5,34), non-Hispanic white (35–37), and married (36). Cancer is strongly associated with aging (38), and researchers expect the cancer survivor population to continue increasing as the U.S. population ages (39).

There are more female than male cancer survivors, possibly because certain cancers among women (e.g., breast and cervical cancer) can be detected earlier through effective screening methods and treated more successfully than many other cancers, leading to longer survival (40). Minority populations have higher cancer incidence rates than whites for some but not all cancers (41). The potential lack of BRFSS respondent representativeness compared with the total U.S. population, in addition to a lower death rate among white cancer survivors compared with all other racial groups, might contribute to the higher proportion of cancer survivors among non-Hispanic whites observed in this study (41). Approximately 64% of cancer survivors were married, and nearly 27% were divorced or widowed, consistent with a previous study of cancer survivors (36). In contrast, 90% of cancer survivors in this report graduated from high school, whereas approximately 80% of cancer survivors in previous studies reported graduating (35–37). This difference might be associated with a previous finding that households with landline telephones (which are required for BRFSS participation) are associated with higher educational attainment (42).

Breast cancer is the most common invasive cancer among U.S. women (43), and incidence rates are high across all racial/ethnic groups. Black women tend to have more deaths from breast cancer (43), and the results in this report showed a higher prevalence of breast cancer among non-Hispanic black women than among non-Hispanic white women. Through the combination of widespread mammography screening programs and improvements in therapeutic treatment agents, the proportion of long-term breast cancer survivors has increased considerably over the last several decades (5,44). For prostate cancer, a significantly higher proportion of

non-Hispanic black men were prostate cancer survivors than were men of other races/ethnicities, consistent with incidence data showing prostate cancer is more common among black men (43). Although black men also tend to have higher death rates than other racial populations from prostate cancer, the high proportion of indolent disease contributes to the relatively high (99%) overall 5-year relative survival (45).

Types of Cancer

The patterns of cancer by type among cancer survivors in this report differ from estimates that are based on cancer registry data. In one such report, prostate, colorectal, and female breast cancer survivors accounted for the majority of survivors (5). In this analysis, although prostate and female breast cancers also account for the majority of cancer types among male and female cancer survivors, respectively, melanoma survivors are the third largest group. A plausible explanation for these differences is that national estimates of survivors, which are based on SEER data (45), do not include in situ melanoma cases. In contrast, BRFSS respondents may report all types of cancer, regardless of whether the cancer was invasive. In addition, common noncancer diagnoses such as cervical dysplasia and uterine fibroids might be misreported as cancer by BRFSS respondents (46). Variations in cancer prevalence by cancer type also might reflect differences in incidence, risk, availability of screening tests and effective treatment for each cancer, and whether the cancer is likely to be curable.

Health Behaviors

Despite significant decreases in cigarette smoking since 1980, a 2011 CDC study indicated that 20% of U.S. adults aged ≥ 18 years in the general population currently smoke (47), compared with 15% of cancer survivors in this report. Cigarette smoking continues to be the leading preventable cause of morbidity and mortality, resulting in approximately 443,000 deaths annually (47). Cancer survivors are at increased risk for subsequent cancers, including tobacco-related cancers (48,49). Adverse health conditions from smoking include compromised cancer treatment efforts, delayed healing after surgery, and impeded recovery of optimal daily functioning (48). In this report, current smoking was reported by cancer survivors and varied substantially by state; however, certain states, such as California and Massachusetts, had a relatively low prevalence.

The low smoking prevalence among cancer survivors in California and Massachusetts is partially attributable to implementation of the long-running comprehensive tobacco control program in California and mandated tobacco cessation coverage in the Massachusetts Medicaid program (47,50,51).

Because of the hazardous effects of smoking, especially among persons with cancer, promotion of smoking cessation and initiation of smoking prevention measures among cancer survivors are especially important. Studies have shown that health-care providers might miss opportunities to counsel cancer survivors about healthy behaviors, including smoking cessation (30,52). Health-care professionals should promote smoking cessation resources and treatments to persons who continue to smoke after receiving a cancer diagnosis. CDC recently recommended use of the U.S. Public Health Service *Guidelines for Treating Tobacco Use and Dependence* to decrease tobacco use among current smokers (53). CDC recommends a comprehensive approach to tobacco control, which includes evidence-based tobacco prevention and cessation strategies (e.g., targeted media campaigns, smoking cessation counseling interventions, quit lines, and medications) that are proven to be effective (53).

The obesity prevalence among cancer survivors in this report is similar to the obesity prevalence in the general U.S. population (54). Although the association between obesity and numerous chronic diseases has been well established, increasing numbers of studies are linking obesity to cancer. Obese cancer survivors have an increased risk for recurrence or death from colon, breast, prostate, esophageal, uterine, ovarian, kidney, and pancreatic cancers (55–58). In addition, studies have shown that obese cancer survivors with leukemia, non-Hodgkin's lymphoma, and multiple myeloma are more likely to experience new cancers than those who are not obese (59).

Research also associates physical activity with a reduced risk for recurrence and death from certain cancers, and the evidence is increasing. The results in this report indicate that approximately one of three cancer survivors in the United States did not participate in any leisure-time physical activity during the past 30 days. Several studies reported a 30%–60% reduction in risk for breast cancer recurrence, cancer-specific death, or overall mortality with moderate physical activity, equivalent to average-paced walking 2–3 hours a week (60–63). Studies also have found a 50%–60% reduction in risk for colorectal cancer recurrence, cancer-specific death, or overall mortality from regular physical activity after receiving a cancer diagnosis; however, these protective effects only occurred with the highest physical activity intensity and longest duration (64,65).

Many of the studies investigating the effect of physical activity on cancer recurrence and mortality are observational; additional data are needed to evaluate the association. However, evidence describing the positive effects of physical activity on other cancer outcomes such as overall functioning, aerobic and strength capacity, psychological well-being, and

quality of life, is more consistent (66,67). On the basis of this evidence, the American College of Sports Medicine released physical activity guidelines for cancer survivors, which are consistent with the U.S. Department of Health and Human Services *2008 Physical Activity Guidelines for Americans*. These guidelines support the safety and efficacy of physical activity for cancer survivors (68). The findings in this report indicate that many U.S. cancer survivors do not follow current physical activity recommendations, possibly increasing the risk for poor outcomes. In addition, rates of inactivity are higher among cancer survivors than in the general population. In 2009, 24.2% of the general population reported no leisure-time activity (69), compared with 31.3% of cancer survivors in this report. Because cancer survivors are at a higher risk for inactivity than the general population, additional effort is needed to increase physical activity among cancer survivors (68).

Although the reported variation in health-related behaviors and use of clinical preventive services across the states might be a result of differences in demographic characteristics and the availability of state-level services for cancer survivors, they also might reflect previously reported regional and state-level differences in the general population (70).

Treatment Regimens and Pain

Several barriers prevent cancer survivors from receiving appropriate follow-up care after completing cancer treatment, including lack of coordination among health-care providers, lack of standardized follow-up medical care, and lack of knowledge among cancer survivors about appropriate follow-up (13). In 2005, the Institute of Medicine recommended that cancer patients be provided with a comprehensive summary of their cancer treatments and recommendations for follow-up care (13). Despite this recommendation, 40% of cancer survivors reported receiving a written summary of all their cancer treatments, and 74% of cancer survivors received instructions (written or oral) for follow-up care. The lack of cancer treatment summaries and follow-up care recommendations for many cancer survivors might contribute to the finding that cancer survivors have many unmet cancer-related health information needs (71–73). The prevalence of cancer survivors who reported receiving the majority of their health care from a cancer specialist varied substantially by state, a finding that might reflect a lack of consensus on the roles of cancer specialists and primary care physicians in the medical care of cancer survivors (74–76).

Most cancer survivors received their cancer diagnosis many years before the BRFSS interview. A total of 12% were

undergoing treatment at the time of the survey. However, the question regarding current treatment was specific (“Are you currently receiving treatment for cancer? By treatment, we mean surgery, radiation therapy, chemotherapy, or chemotherapy pills”). Certain respondents might have been receiving medications that were indeed part of a cancer treatment regimen, but if they did not consider the medication to be a type of chemotherapy, they might have answered no to the question, resulting in an underestimation of cancer survivors currently receiving therapy. For example, many women take oral antiestrogen therapy for estrogen-receptor-positive breast cancer (77). Furthermore, patients undergoing cancer therapy might have been less likely to participate in BRFSS, also leading to an underestimation of the proportion of survivors in current treatment.

Approximately 8% of survivors reported having participated in a clinical trial as part of their cancer treatment, more than the 4.7% of survivors from the 1992 National Health Interview Survey (NHIS) (78). However, caution should be used when comparing these estimates because they are from different surveys, and the NHIS analysis only included survivors who had received the cancer diagnosis within the past 10 years. Previous studies also have shown that cancer clinical trial participation rates are low (79). However, these findings raise questions about whether clinical trials during the past 20 years are more available and accepted by more persons with cancer.

The prevalence of current pain among survivors in this report (10.1%) was somewhat lower than that the prevalence reported in a statement by a National Institutes of Health State-of-the-Science panel; however, findings from that report suggested a wide range, with estimates ranging from 14%–100% (80). Although most survivors in this sample reported that their pain was under control, 20% reported that it was not. Others have concluded that pain control among cancer patients is inadequate (81,82). Potential barriers to effective pain management exist at the patient, health-care provider, and system levels (80). Suboptimal pain control might be an indicator of poor quality care (80), and multiple quality measures related to controlling cancer pain have been recommended (83).

Health Care and Economic Factors

Twelve percent of cancer survivors in this study reported being denied health or life insurance coverage because of a cancer diagnosis, and 7% were uninsured, a finding that is consistent with a previous population health survey on health insurance among cancer survivors (37). Health insurance coverage among cancer survivors is of particular importance.

Previous research has shown that a lack of adequate insurance coverage might lead to more delayed or unmet medical care needs for cancer survivors than for adults without cancer (84). Health insurance coverage is especially important for cancer survivors because of the potential costs associated with cancer and for the multiple comorbid conditions described in this and another report (36). Because of financial hardships, such as lack of adequate insurance coverage, cancer survivors might be unable to afford copayments, prescription medications, and other necessary medical care (85). The Affordable Care Act, which was enacted in 2010, might provide a solution for cancer survivors by increasing health insurance coverage and ensuring that persons will not be denied coverage because of a previous cancer diagnosis (86).

Researchers projected that in 2010 and 2020, the United States would have an estimated 13.8 and 18.1 million cancer survivors, with associated costs of cancer care of \$124.6 and \$157.8 billion, respectively (87). These projections underscore the substantial economic effects measured by direct medical care costs, lost productivity, and intangible costs (such as lesser quality of life) that cancer survivors might face. Direct medical care costs include hospitalization, outpatient care, physician services, prescription and nonprescription drugs, nursing home and long-term care, and other medical supplies (88–92). Cancer survivors also incur substantial nonmedical care costs, such as transportation to and from health-care providers, losses in patients' time (e.g., from spending time receiving treatments), and other health-care services (6). Lost productivity is usually measured as a morbidity cost resulting from foregone earnings among employed persons or a mortality cost from premature death.

Many cancer survivors are unable to resume their usual activities, including work (7–9,93). In addition to lost productivity among cancer survivors, productivity is lost among the caregivers of survivors (92,94,95). Caregivers include spouses, relatives, friends, or others providing health services and other activities of daily living services to a cancer survivor; the economic effects associated with caregiver services are substantial (96,97). Intangible costs, which are typically measured by quality of life (90,91,98), are measures of cancer-related pain and suffering that affect the health and well-being of a patient. Intangible costs also include psychosocial interventions to alleviate anxiety and depression among cancer survivors (99). Although estimating the economic effects of cancer on cancer survivors is important for assessing and planning for the future, the available population-based surveys (including BRFSS) do not directly address this variable. As a result, CDC, the National Cancer Institute, the Agency for

Healthcare Quality and Research, and the American Cancer Society are collaborating to enhance the Medical Expenditure Panel Survey to collect more detailed data to estimate the economic effects on cancer survivors, the families of cancer survivors, and society.

Limitations

The findings in this report are subject to several limitations. First, BRFSS data are self-reported and subject to recall bias, which could lead to inaccurate estimates of cancer prevalence (100). Recall bias might be responsible for the slightly higher cancer prevalence observed for certain cancers when compared with a recent study using cancer registry data (5). In addition, overreporting of cervical cancer is especially likely because abnormal Pap tests, cervical cancer precursors, and cervical intraepithelial neoplasia might be misperceived as diagnoses of cancer because of treatments used to remove the precancerous lesions (78). Second, BRFSS might not be representative of persons who do not have a landline telephone, which is required for BRFSS participation (42). Because of the growing number households that only have cellular telephones, BRFSS is conducting pilot studies to include participation among these previously excluded households (101). Third, because the findings are limited to noninstitutionalized U.S. citizens, cancer survivors who might have had an advanced-stage cancer and are therefore living in nursing homes, long-term-care facilities, or hospice or who are in the military are not included. Fourth, the estimates in this report are not age adjusted, which might contribute to state variations in cancer survivor prevalence. Fifth, because BRFSS does not assess any indicators of smoking dependence or intensity, no conclusions can be made regarding the magnitude of tobacco use among cancer survivors. Sixth, because of survival bias, respondents might have survived cancer for several reasons: their cancer was an in situ or early-stage cancer, was well differentiated, or was more responsive to treatment, or the survivors had better access to treatment or engaged in more positive health behaviors. Therefore, the results might not be representative of the overall cancer experience in the United States. Finally, the low cooperation rate of the BRFSS survey might limit the generalizability of the results to all cancer survivors living in the United States. However, studies have concluded that the survey findings are reliable and valid (102).

Conclusion

A large proportion of cancer survivors have comorbid conditions, and many are not receiving recommended preventive care, not only for cancer screening but for influenza and pneumococcal vaccinations. Furthermore, many cancer survivors currently smoke, do not participate in adequate physical activity, and are obese. Health-care providers and patients should be aware of the importance of preventive care, smoking cessation, regular physical activity, and maintaining a healthy weight among cancer survivors, factors that have been linked to longer survival and better quality of life among cancer survivors, as well as to decreased risk for new and recurrent cancer. Health care for cancer survivors should include improvements in pain management and a written treatment summary (including follow-up instructions). Modification of health behaviors among cancer survivors would be facilitated by increasing insurance coverage and access to care.

The data in this report reflect variations in health behaviors and preventive health care practices that might be a result of availability of state-level resources for cancer survivors. These findings can be used by public health practitioners, researchers, and state comprehensive cancer control planners to assess the need for state resources for cancer survivors and evaluate the effectiveness of current programmatic efforts; therefore, surveillance data among cancer survivors should be regularly collected at the local and national levels. Additional research on cancer survivors, including health behaviors and patient access to quality care, should be conducted to address the needs of the increasing cancer survivor population in the United States.

References

1. CDC. Basic information about cancer survivorship. Atlanta, GA: CDC; 2011. Available at http://www.cdc.gov/cancer/survivorship/basic_info. Accessed May 26, 2011.
2. CDC. A national action plan for cancer survivorship: advancing public health strategies. Atlanta GA: CDC; 2004. Available at <http://www.cdc.gov/cancer/survivorship/pdf/plan.pdf>. Accessed November 3, 2011.
3. National Cancer Institute. National Cancer Institute Office of Cancer Survivorship fact sheet. Bethesda, MD: National Cancer Institute; 2011. Available at http://cancercontrol.cancer.gov/ocs/ocs_factsheet.pdf. Accessed July 28, 2011.
4. Edwards BK, Howe HL, Ries LA, et al. Annual report to the nation on the status of cancer, 1973–1999, featuring implications of age and aging on U.S. cancer burden. *Cancer* 2002;94:2766–92.
5. CDC. Cancer survivors—United States, 2007. *MMWR* 2011;60:269–72.
6. Yabroff KR, Davis WW, Lamont EB, et al. Patient time costs associated with cancer care. *J Natl Cancer Inst* 2007;99:14–23.
7. Yabroff KR, Lawrence WF, Clauser S, Davis WW, Brown ML. Burden of illness in cancer survivors: findings from a population-based national sample. *J Natl Cancer Inst* 2004;96:1322–30.
8. Sasser AC, Rousculp MD, Birnbaum HG, Oster EF, Lufkin E, Mallet D. Economic burden of osteoporosis, breast cancer, and cardiovascular disease among postmenopausal women in an employed population. *Womens Health Issues* 2005;15:97–108.
9. Bradley CJ, Bednarek HL, Neumark D. Breast cancer and women's labor supply. *Health Serv Res* 37:1309–28.
10. The Lancet. Cancer survivors: living longer, and now, better [editorial]. *Lancet* 2004;364:2153–4.
11. Sunga AY, Eberl MM, Oeffinger KC, Hudson MM, Mahoney MC. Care of cancer survivors. *Am Fam Physician* 2005;71:699–706.
12. Ng AK, Travis LB. Subsequent malignant neoplasms in cancer survivors. *Cancer J* 2008;14:429–34.
13. Hewitt M, Greenfield S, Stovall E. From cancer patient to cancer survivor: lost in transition. Washington, DC: National Academies Press; 2006.
14. Johnston-Early A, Cohen MH, Minna JD, et al. Smoking abstinence and small cell lung cancer survival. An association. *JAMA* 1980;244:2175–9.
15. Doyle C, Kushi LH, Byers T, et al. Nutrition and physical activity during and after cancer treatment: an American Cancer Society guide for informed choices. *CA Cancer J Clin* 2006;56:323–53.
16. Whiteman MK, Hillis SD, Curtis KM, McDonald JA, Wingo PA, Marchbanks PA. Body mass and mortality after breast cancer diagnosis. *Cancer Epidemiol Biomarkers Prev* 2005;14:2009–14.
17. Bassett WW, Cooperberg MR, Sadetsky N, et al. Impact of obesity on prostate cancer recurrence after radical prostatectomy: data from CaPSURE. *Urology* 2005;66:1060–5.
18. Haydon AM, Macinnis RJ, English DR, Giles GG. Effect of physical activity and body size on survival after diagnosis with colorectal cancer. *Gut* 2006;55:62–7.
19. Earle CC. Failing to plan is planning to fail: improving the quality of care with survivorship care plans. *J Clin Oncol* 2006;24:5112–6.
20. CDC. National Comprehensive Cancer Control Program. Atlanta, GA: CDC; 2011. Available at <http://www.cdc.gov/cancer/ncccp/about.htm>. Accessed May 26, 2011.
21. Pollack LA, Greer GE, Rowland JH, et al. Cancer survivorship: a new challenge in comprehensive cancer control. *Cancer Causes Control* 2005;16(Suppl 1):51–9.
22. Gentry EM, Kalsbeek WD, Hogelin GC, et al. The behavioral risk factor surveys: II. Design, methods, and estimates from combined state data. *Am J Prev Med* 1985;1:9–14.
23. CDC. Public health surveillance for behavioral risk factors in a changing environment: recommendations from the Behavioral Risk Factor Surveillance team. *MMWR* 2003;52(No. RR-9).
24. CDC. Behavioral Risk Factor Surveillance System: survey data information. Atlanta, GA: CDC; 2010. Available at http://www.cdc.gov/brfss/technical_infodata/surveydata/2009.htm. Accessed August 18, 2011.
25. CDC. Behavioral Risk Factor Surveillance System: 2009 summary data quality report [Internet]. Atlanta, GA: CDC; 2010. Available at ftp://ftp.cdc.gov/pub/Data/Brfss/2009_Summary_Data_Quality_Report.pdf. Accessed July 19, 2010.
26. Kochanek KD, Xu J, Murphy SL, Miniño AM, Kung HC. Deaths: preliminary data for 2009. *Natl Vital Stat Rep* 2011;56(4).
27. Richardson LC, Townsend JS, Fairley TL, et al. Use of 2001–2002 Behavioral Risk Factor Surveillance System data to characterize cancer survivors in North Carolina. *NC Med J* 2011;72:20–7.
28. Fairley TL, Hawk H, Pierre S. Health behaviors and quality of life of cancer survivors in Massachusetts, 2006: data use for comprehensive cancer control. *Prev Chronic Dis* 2010;7(9) [Epub].
29. Snyder CF, Frick KD, Kantsiper ME, et al. Prevention, screening, and surveillance care for breast cancer survivors compared with controls: changes from 1998 to 2002. *J Clin Oncol* 2009;27:1054.
30. Earle CC, Neville BA. Under use of necessary care among cancer survivors. *Cancer* 2004;101:1712–19.
31. Snyder CF, Earle CC, Herbert RJ, Neville BA, Blackford AL, Frick KD. Preventive care for colorectal cancer survivors: a 5-year longitudinal study. *J Clinical Oncol* 2008;26:1073.
32. CDC. Surveillance of certain health behaviors and conditions among states and selected local areas—Behavioral Risk Factor Surveillance System, United States, 2009. *MMWR* 2011;60(No. SS-9).

33. Rogers HW, Weinstock MA, Harris AR, et al. Incidence estimate of nonmelanoma skin cancer in the United States, 2006. *Arch Dermatol* 2010;146:283–7.
34. Altekruse SF, Kosary CL, Krapcho M, et al, eds. SEER cancer statistics review, 1975–2007. Bethesda, MD: National Cancer Institute; 2010. Available at http://seer.cancer.gov/csr/1975_2007. Accessed June 8, 2011.
35. Coups EJ, Ostroff JS. A population-based estimate of the prevalence of behavioral risk factors among adult cancer survivors and noncancer controls. *Prev Med* 2005;40:702–11.
36. Hewitt M, Rowland JH, Yancik R. Cancer survivors in the United States: age, health, and disability. *J Gerontol A Biol Sci Med Sci* 2003;58:82–91.
37. Bellizzi KM, Rowland JH, Jeffery DD, McNeel T. Health behaviors of cancer survivors: examining opportunities for cancer control intervention. *J Clin Oncol* 2005;23:8884–93.
38. World Health Organization. Cancer fact sheet. Geneva, Switzerland: World Health Organization. Available at <http://www.who.int/mediacentre/factsheets/fs297/en/index.html>. Accessed June 12, 2011.
39. Pollack LA, Rowland JH, Crammer C, Stefanek M. Introduction: charting the landscape of cancer survivors' health-related outcomes and care. *Cancer* 2009;115(Suppl 18):4265–9.
40. Garland SM, Smith JS. Human papillomavirus vaccines: current status and future prospects. *Drugs* 2010;70:1079–98.
41. Jemal A, Siegel R, Xu J, Ward E. Cancer statistics, 2010. *CA Cancer J Clin* 2010;60:277–300.
42. Blumberg SJ, Luke JV. Wireless substitution: early release of estimates from the National Health Interview Survey, July–December 2007. Hyattsville, MD: CDC, National Center for Health Statistics; 2009. Available at <http://www.cdc.gov/nchs/nhis.htm>. Accessed December 2, 2011.
43. CDC. United States cancer statistics: 1999–2007 incidence and mortality web-based report. Atlanta, GA: CDC, National Cancer Institute; 2010. Available at www.cdc.gov/uscs. Accessed November 3, 2011.
44. Soerjomataram I, Louwman MW, Ribot JG, Roukema JA, Coebergh JW. An overview of prognostic factors for long-term survivors of breast cancer. *Breast Cancer Res Treat* 2008;107:309–30.
45. Howlader N, Noone AM, Krapcho M, et al, eds. SEER cancer statistics review, 1975–2008. Bethesda, MD: National Cancer Institute; 2011. Available at http://seer.cancer.gov/csr/1975_2008. Accessed November 3, 2011.
46. Breitkopf CR, Pearson HC, Breitkopf DM. Poor knowledge regarding the Pap test among low-income women undergoing routine screening. *Perspect Sex Reprod Health* 2005;37:78–84.
47. CDC. Vital signs: current cigarette smoking among adults aged ≥18 years—United States, 2005–2010. 2011;60:1207–12.
48. Klosky JL, Tyc VL, Garces-Webb DM, Buscemi J, Klesges RC, Hudson MM. Emerging issues in smoking among adolescent and adult cancer survivors: a comprehensive review. *Cancer* 2007;110:2408–19.
49. Mariotto AB, Rowland JH, Ries LA, Scoppa S, Feuer EJ. Multiple cancer prevalence: a growing challenge in long-term survivorship. *Cancer Epidemiol Biomarkers Prev* 2007;16:566–71.
50. CDC. Best practices for comprehensive tobacco control programs—2007. Atlanta, GA: CDC; 2007. Available at http://www.cdc.gov/tobacco/stateandcommunity/best_practices/index.htm. Accessed November 3, 2011.
51. Land T, Warner D, Paskowsky M, et al. Medicaid coverage for tobacco dependence treatments in Massachusetts and associated decreases in smoking prevalence. *PLoS One* 2010;5:e9770.
52. Sabatino SA, Coates RJ, Uhler RJ, Pollack LA, Alley LG, Zauderer LJ. Provider counseling about health behaviors among cancer survivors in the United States. *J Clin Oncol* 2007;25:2100–6.
53. Underwood JM, Townsend JS, Tai E, et al. Racial and regional disparities in lung cancer incidence. *Cancer* 2011 Sep 14. doi: 10.1002/cncr.26479 [Epub ahead of print].
54. CDC. Vital signs: state-specific obesity prevalence among adults—United States, 2009. *MMWR* 2010;59:1–5.
55. Irwin ML, McTiernan A, Baumgartner RN, et al. Changes in body fat and weight after a breast cancer diagnosis: influence of demographic, prognostic, and lifestyle factors. *J Clin Oncol* 2005;23:774–82.
56. Calle EE, Rodriguez C, Walker-Thurmond K, Thun MJ. Overweight, obesity, and mortality from cancer in a prospectively studied cohort of U.S. adults. *N Engl J Med* 2003;348:1625–38.
57. Flegal KM, Graubard BI, Williamson DF, Gail MH. Cause-specific excess deaths associated with underweight, overweight, and obesity. *JAMA* 2007;298:2028–37.
58. Adami HO, Trichopoulos D. Obesity and mortality from cancer. *N Engl J Med* 2003;348:1623–4.
59. Reeves GK, Pirie K, Beral V, Green J, Spencer E, Bull D. Cancer incidence and mortality in relation to body mass index in the Million Women Study: cohort study. *BMJ* 2007;335:1134.
60. Holmes MD, Chen WY, Feskanich D, Kroenke CH, Colditz GA. Physical activity and survival after breast cancer diagnosis. *JAMA* 2005;293:2479–86.
61. Friedenreich CM, Gregory J, Kopciuk KA, Mackey JR, Courneya KS. Prospective cohort study of lifetime physical activity and breast cancer survival. *Int J Cancer* 2009;124:1954–62.
62. Irwin ML, Smith AW, McTiernan A, et al. Influence of pre- and postdiagnosis physical activity on mortality in breast cancer survivors: the health, eating, activity, and lifestyle study. *J Clin Oncol* 2008;26:3958–64.
63. Holick CN, Newcomb PA, Trentham-Dietz A, et al. Physical activity and survival after diagnosis of invasive breast cancer. *Cancer Epidemiol Biomarkers Prev* 2008;17:379.
64. Meyerhardt JA, Giovannucci EL, Holmes MD, et al. Physical activity and survival after colorectal cancer diagnosis. *J Clin Oncol* 2006;24:3527–34.
65. Meyerhardt JA, Heseltine D, Niedzwiecki D, et al. Impact of physical activity on cancer recurrence and survival in patients with stage III colon cancer: findings from CALGB 89803. *J Clin Oncol* 2006;24:3535–41.
66. Schmitz KH, Holtzman J, Courneya KS, Mâsse LC, Duval S, Kane R. Controlled physical activity trials in cancer survivors: a systematic review and meta-analysis. *Cancer Epidemiol Biomarkers Prev* 2005;14:1588.
67. Speck RM, Courneya KS, Mâsse LC, Duval S, Schmitz KH. An update of controlled physical activity trials in cancer survivors: a systematic review and meta-analysis. *J Cancer Surviv* 2010;4:87–100.
68. Schmitz KH, Courneya KS, Matthews C, et al. American College of Sports Medicine roundtable on exercise guidelines for cancer survivors. *Med Sci Sports Exerc* 2010;42:1409.
69. CDC. Physical activity among Behavioral Risk Factor Surveillance System respondents. Atlanta, GA: CDC; 2011. Available at <http://apps.nccd.cdc.gov/BRFSS>. Accessed July 27, 2011.
70. Nelson DE, Bland S, Powell-Griner E, et al. State trends in health risk factors and receipt of clinical preventive services among U.S. adults during the 1990s. *JAMA* 2002;287:2659.
71. McInnes DK, Cleary PD, Stein KD, Ding L, Mehta CC, Ayanian JZ. Perceptions of cancer-related information among cancer survivors: a report from the American Cancer Society's Studies of Cancer Survivors. *Cancer* 2008;113:1471–9.
72. Beckjord EB, Arora NK, McLaughlin W, Oakley-Girvan I, Hamilton AS, Hesse BW. Health-related information needs in a large and diverse sample of adult cancer survivors: implications for cancer care. *J Cancer Surviv* 2008;2:179–89.
73. Hawkins NA, Pollack LA, Leadbetter S, et al. Informational needs of patients and perceived adequacy of information available before and after treatment of cancer. *J Psychosocial Oncol* 2008;26:1.
74. Gage EA, Paillet M, Zevon MA, et al. Structuring survivorship care: discipline-specific clinician perspectives. *J Cancer Surviv* 2011; 5:217–25.
75. Snyder CF, Earle CC, Herbert RJ, Neville BA, Blackford AL, Frick KD. Trends in follow-up and preventive care for colorectal cancer survivors. *J Gen Intern Med* 2008;23:254–9.

76. Snyder CF, Earle CC, Herbert RJ, Neville BA, Blackford AL, Frick KD. Preventive care for colorectal cancer survivors: a 5-year longitudinal study. *J Clin Oncol* 2008;26:1073-9.
77. Wu X, Richardson LC, Kahn AR, et al. Survival difference between non-Hispanic black and non-Hispanic white women with localized breast cancer: the impact of guideline-concordant therapy. *J Natl Med Assoc* 2008;100:490-8.
78. Hewitt M, Breen N, Devesa S. Cancer prevalence and survivorship issues: analyses of the 1992 National Health Interview Survey. *J Natl Cancer Inst* 1999;91:1480-6.
79. Murthy VH, Krumholz HM, Gross CP. Participation in cancer clinical trials. *JAMA* 2004;291:2720.
80. Patrick DL, Ferketich SL, Frame PS, et al; National Institutes of Health State-of-the-Science Panel. National Institutes of Health State-of-the-Science Conference Statement: Symptom Management in Cancer: Pain, Depression, and Fatigue, July 15-17, 2002. *J Natl Cancer Inst* 2003;95:1110-7.
81. Anderson KO, Mendoza TR, Valero V, et al. Minority cancer patients and their providers: pain management attitudes and practice. *Cancer* 2000;88:1929-38.
82. McMillan SC, Tittle M, Hagan S, Laughlin J. Management of pain and pain-related symptoms in hospitalized veterans with cancer. *Cancer Nurs* 2000;23:327-36.
83. Gordon DB, Dahl JL, Miaskowski C, et al. American Pain Society recommendations for improving the quality of acute and cancer pain management: American Pain Society Quality of Care Task Force. *Arch Intern Med* 2005;165:1574-80.
84. Sabatino SA, Coates RJ, Uhler RJ, Alley LG, Pollack LA. Health insurance coverage and cost barriers to needed medical care among U.S. adult cancer survivors age <65 years. *Cancer* 2006;106:2466-75.
85. Weaver KE, Rowland JH, Bellizzi KM, Aziz NM. Forgoing medical care because of cost: assessing disparities in healthcare access among cancer survivors living in the United States. *Cancer* 2010;116:3493-504.
86. Patient Protection and Affordable Care Act of 2010. Pub. L. No. 111-148 (March 23, 2010).
87. Mariotto AB, Yabroff KR, Shao Y, Feuer EJ, Brown ML. Projections of the cost of cancer care in the United States: 2010-2020. *J Natl Cancer Inst* 2011;103:117-28.
88. Brown ML, Lipscomb J, Snyder C. The burden of illness of cancer: economic cost and quality of life. *Annu Rev Public Health* 2001;22:91-113.
89. Taplin SH, Barlow W, Urban N, et al. Stage, age, comorbidity, and direct costs of colon, prostate, and breast cancer care. *J Natl Cancer Inst* 1995;87:417-26.
90. Rice DP. Estimating the cost of illness. Washington, DC: US Government Printing Office; 1966. Publication no. 947-6.
91. Gold M. Panel on cost-effectiveness in health and medicine. *Med Care* 1996;34(Suppl):DS197-199.
92. Brown M, Hodgson T, Rice D. Economic impact of cancer in the United States. In: Schottenfeld D, Fraumeni J, eds. *Cancer epidemiology and prevention*. 2nd ed. New York, NY: Oxford University Press; 1993:255-66.
93. Chirikos TN, Russell-Jacobs A, Cantor AB. Indirect economic effects of long-term breast cancer survival. *Cancer Pract* 2002;10:248-55.
94. Given BA, Given CW, Stommel M. Family and out-of-pocket costs for women with breast cancer. *Cancer Pract* 1994;2:187-93.
95. Stommel M, Given CW, Given BA. The cost of cancer home care to families. *Cancer* 1993;71:1867-74.
96. Hayman JA, Langa KM, Kabeto MU, et al. Estimating the cost of informal caregiving for elderly patients with cancer. *J Clin Oncol* 2001;19:3219-25.
97. Emanuel EJ, Fairclough DL, Slutsman J, Alpert H, Baldwin D, Emanuel LL. Assistance from family members, friends, paid care givers, and volunteers in the care of terminally ill patients. *N Engl J Med* 1999;341:956-63.
98. Hodgson T, Meiners M. Cost-of-illness methodology: a guide to assessment practices and procedures. *Milbank Mem Fund Q* 1982;60:429-91.
99. Jacobsen PB, Jim HS. Psychosocial interventions for anxiety and depression in adult cancer patients: achievements and challenges. *CA Cancer J Clin* 2008;58:214-30.
100. Desai MM, Bruce ML, Desai RA, Druss BG. Validity of self-reported cancer history: a comparison of health interview data and cancer registry records. *Am J Epidemiol* 2001;153:299-306.
101. CDC. Improvements to BRFSS methodology, design, and implementation. Atlanta, GA: CDC; 2006. Available at <http://www.cdc.gov/brfss/pubs/methodology.htm>. Accessed August 29, 2011.
102. Nelson DE, Powell-Griner E, Town M, Kovar MG. A comparison of national estimates from the National Health Interview Survey and the Behavioral Risk Factor Surveillance System. *Am J Public Health* 2003;93:1335-41.

TABLE 1. Demographic and health behavior characteristics of cancer survivors aged ≥18 years, by sex — Behavioral Risk Factor Surveillance System, United States 2009

Characteristic	Total cancer survivors				Men				Women			
	%*	(95% CI)	Sample size	Weighted no.	%	(95% CI)	Sample size	Weighted no.	%	(95% CI)	Sample size	Weighted no.
Total	7.2	(7.1–7.4)	45,541	16,062,667	6.0	(5.8–6.2)	15,719	6,473,938	8.4	(8.2–8.6)	29,822	9,588,729
Years since diagnosis												
≤5 yrs	36.2	(35.4–37.1)	15,379	5,822,630	42.1	(40.7–43.6)	6,406	2,728,532	32.3	(31.2–33.3)	8,973	3,094,098
6–10 yrs	20.8	(20.1–21.6)	9,047	3,346,909	22.6	(21.3–23.9)	3,583	1,463,463	19.6	(18.8–20.5)	5,464	1,883,446
>10 yrs	39.2	(38.4–40.1)	19,159	6,299,258	32.1	(30.8–33.4)	5,177	2,075,636	44.0	(43.0–45.1)	13,982	4,223,622
Unknown or don't know	3.7	(3.4–4.0)	1,956	593,870	3.2	(2.8–3.7)	553	206,307	4.0	(3.7–4.4)	1,403	387,563
Age at interview (yrs)												
18–29	3.2	(2.7–3.7)	453	508,241	2.3	(1.6–3.2)	83	146,198	3.8	(3.2–4.4)	370	362,042
30–39	6.1	(5.5–6.7)	1,378	980,679	4.2	(3.4–5.3)	233	273,339	7.4	(6.7–8.2)	1,145	707,339
40–49	11.4	(10.8–12.0)	3,483	1,830,682	7.4	(6.6–8.4)	706	481,314	14.1	(13.2–15.0)	2,777	1,349,368
50–64	31.0	(30.2–31.8)	13,656	4,980,839	30.4	(29.0–31.8)	4,248	1,965,662	31.4	(30.5–32.4)	9,408	3,015,177
65–74	21.7	(21.1–22.4)	12,538	3,491,080	25.3	(24.2–26.5)	4,983	1,640,652	19.3	(18.5–20.1)	7,555	1,850,428
≥75	26.1	(25.4–26.8)	13,739	4,185,609	30.0	(28.8–31.2)	5,405	1,941,363	23.4	(22.6–24.2)	8,334	2,244,245
Unknown/refused	0.5	(0.4–0.6)	294	85,539	0.4	(0.3–0.6)	61	25,409	0.6	(0.5–0.8)	233	60,129
Race/Ethnicity												
White, non-Hispanic	81.2	(80.3–82.1)	39,686	13,047,059	82.2	(80.7–83.7)	13,790	5,323,997	80.5	(79.4–81.7)	25,896	7,723,062
Black, non-Hispanic	7.8	(7.1–8.4)	2,503	1,246,610	7.4	(6.4–8.4)	847	476,464	8.0	(7.2–8.9)	1,656	770,146
Hispanic	6.3	(5.7–7.0)	1,524	1,012,231	5.6	(4.7–6.7)	459	365,259	6.7	(6.0–7.6)	1,065	646,972
American Indian/Alaska Native	1.7	(1.4–1.9)	716	267,555	1.3	(0.9–1.7)	194	82,589	1.9	(1.6–2.3)	522	184,966
Asian/Pacific Islander	1.6	(1.2–2.1)	514	257,229	1.8	(1.1–2.8)	160	115,214	1.5	(1.1–1.9)	354	142,016
Other or multiracial	0.8	(0.7–1.0)	309	131,547	0.9	(0.6–1.3)	128	58,494	0.8	(0.6–1.0)	181	73,053
Unknown or refused	0.6	(0.5–0.7)	289	100,436	0.8	(0.6–1.0)	141	51,921	0.5	(0.4–0.7)	148	48,515
Marital status												
Married/living together	64.2	(63.4–65.0)	23,971	10,313,261	74.9	(73.6–76.2)	10,508	4,851,629	57.0	(55.9–58.0)	13,463	5,461,632
Divorced	11.6	(11.1–12.1)	6,908	1,859,130	8.7	(7.9–9.5)	1,844	561,136	13.5	(12.9–14.2)	5,064	1,297,994
Never married	7.0	(6.4–7.6)	2,879	1,118,044	6.5	(5.6–7.5)	944	419,719	7.3	(6.6–8.1)	1,935	698,325
Widowed	15.2	(14.7–15.7)	10,864	2,441,337	8.5	(7.9–9.2)	2,173	551,385	19.7	(19.0–20.5)	8,691	1,889,952
Separated	1.8	(1.6–2.1)	769	292,729	1.3	(1.0–1.6)	210	81,019	2.2	(1.9–2.6)	559	211,710
Education												
<High school	10.0	(9.5–10.5)	4,646	1,602,784	9.0	(8.3–9.9)	1,599	585,539	10.6	(9.9–11.4)	3,047	1,017,245
High school graduate or GED	28.7	(28.0–29.5)	14,061	4,614,762	26.7	(25.5–28.0)	4,406	1,730,141	30.1	(29.1–31.1)	9,655	2,884,621
Some college or technical school (1–3 yrs)	27.3	(26.5–28.1)	12,444	4,382,522	24.9	(23.5–26.2)	3,713	1,609,601	28.9	(28.0–29.9)	8,731	2,772,922
College graduate (≥4 yrs)	33.8	(33.0–34.6)	14,313	5,429,339	39.1	(37.7–40.5)	5,979	2,531,544	30.2	(29.2–31.3)	8,334	2,897,795

See table footnotes on page 14.

TABLE 1. (Continued) Demographic and health behavior characteristics of self-reported cancer survivors aged ≥18 years, by sex — Behavioral Risk Factor Surveillance System, United States 2009

Characteristic	Total cancer survivors				Men				Women			
	%*	(95% CI)	Sample size	Weighted no.	%	(95% CI)	Sample size	Weighted no.	%	(95% CI)	Sample size	Weighted no.
Employment												
Employed for wages	34.6	(33.8–35.5)	13,719	5,565,366	34.7	(33.2–36.3)	4,645	2,248,424	34.6	(33.5–35.7)	9,074	3,316,941
Out of work or unable to work	14.2	(13.6–14.9)	6,036	2,283,019	11.5	(10.5–12.6)	1,583	744,942	16.0	(15.2–16.9)	4,453	1,538,078
Retired	42.4	(41.5–43.2)	22,390	6,806,185	52.5	(51.0–54.0)	9,398	3,397,729	35.5	(34.6–36.5)	12,992	3,408,456
Other	8.6	(8.0–9.1)	3,297	1,373,776	1.0	(0.7–1.6)	63	67,727	13.6	(12.8–14.5)	3,234	1,306,049
Insurance coverage												
Yes	93.0	(92.4–93.5)	43,046	14,938,414	94.3	(93.4–95.2)	15,094	6,107,834	92.1	(91.3–92.8)	27,952	8,830,580
No	6.8	(6.3–7.4)	2,421	1,090,994	5.4	(4.6,6.3)	602	350,558	7.7	(7.0–8.5)	1,819	740,436
Chronic conditions												
Cardiovascular disease	18.0	(17.4–18.6)	8,962	2,890,570	23.4	(22.3–24.7)	4,001	1,518,057	14.3	(13.7–15.0)	4,961	1,372,513
Diabetes	16.7	(16.0–17.3)	8,086	2,674,835	19.6	(18.5–20.7)	3,115	1,267,312	14.7	(14.0–15.4)	4,971	1,407,523
Current asthma	10.9	(10.4–11.5)	4,986	1,756,367	7.5	(6.7–8.3)	1,146	482,789	13.3	(12.6–14.0)	3,840	1,273,578
Cancer screenings[†]												
Cervical [§] (n = 1,065)	—	—	—	—	—	—	—	—	79.4	(75.4–82.9)	823	382,531
Colorectal [¶] (n = 4,146)	75.1	(72.8–77.2)	3,050	843,740	77.9	(74.0–81.4)	1,138	359,289	73.1	(70.3–75.7)	1,912	484,451
Breast ^{**} (n = 1,920)	—	—	—	—	—	—	—	—	80.4	(77.4–83.0)	1,517	580,689
Prostate ^{††} (n = 898)	—	—	—	—	81.7	(77.5–85.2)	700	248,036	—	—	—	—
Other												
Activity limitations because of health problems	35.3	(34.5–36.1)	16,850	5,666,446	34.0	(32.6–35.4)	5,525	2,200,270	36.1	(35.1–37.2)	11,325	3,466,177
Influenza vaccine within the past 12 months ^{§§}	57.8	(56.9–58.7)	28,501	9,281,437	62.3	(60.8–63.8)	10,430	4,032,535	54.7	(53.6–55.8)	18,071	5,248,902
Ever received pneumococcal vaccine	48.3	(47.4–49.1)	24,874	7,751,436	49.8	(48.3–51.2)	8,840	3,222,560	47.2	(46.1–48.3)	16,034	4,528,876

Abbreviations: CI = confidence interval; GED = general educational development.

* Percentages might not total 100% because unknown and refused categories were excluded.

[†] Five states (Georgia, Hawaii, New Jersey, Tennessee, and Wyoming) included questions on mammography and Papanicolaou (Pap) test use among women. Eight states (Delaware, Hawaii, Maine, Massachusetts, Nebraska, New Jersey, Oklahoma, and Wyoming) included colorectal cancer screening questions. Five states (Delaware, Hawaii, Kentucky, Nebraska, and New Jersey) included prostate cancer screening questions among men.

[§] Cervical cancer screening: prevalence estimate of women aged ≥18 years who received a Pap test within the past 3 years, excluding women who had received a hysterectomy.

[¶] Colorectal cancer screening: prevalence estimate of men and women aged ≥50 years who received a fecal occult blood test within the past year, sigmoidoscopy within the past 5 years, or colonoscopy within the past 10 years.

^{**} Breast cancer screening: prevalence estimate of women aged ≥40 years who received mammography screening within the past 2 years.

^{††} Prostate cancer screening: prevalence estimate of men aged ≥50 years who received a prostate-specific antigen test within the past 2 years (proxy measure for discussion about prostate cancer risk).

^{§§} Injectable influenza vaccine only.

TABLE 2. Prevalence of cancer survivors aged ≥18 years, by sex and type of cancer — Behavioral Risk Factor Surveillance System, United States, 2009

Cancer type*	Both sexes				Men				Women			
	%	(95% CI)	Sample size	Weighted no.	%	(95% CI)	Sample size	Weighted no.	%	(95% CI)	Sample size	Weighted no.
All types	100.0	—	45,541	16,062,667	100.0	—	15,719	6,473,938	100.0	—	29,822	9,588,729
Breast	19.5	(18.9–20.2)	10,314	3,135,383	0.4	(0.3–0.6)	66	25,435	32.4	(31.4–33.4)	10,248	3,109,948
Female genital system†	14.8	(14.2–15.5)	6,594	2,377,247	NA	NA	NA	NA	24.8	(23.8–25.8)	6,594	2,377,247
Cervical	8.7	(8.2–9.2)	3,512	1,392,855	NA	NA	NA	NA	14.5	(13.7–15.4)	3,512	1,392,855
Uterine	3.2	(2.9–3.5)	1,778	518,305	NA	NA	NA	NA	5.4	(4.9–5.9)	1,778	518,305
Ovarian	2.9	(2.6–3.3)	1,304	466,087	NA	NA	NA	NA	4.9	(4.3–5.4)	1,304	466,087
Male genital†	14.6	(13.9–15.2)	6,016	2,337,392	36.1	(34.7–37.5)	6,016	2,337,392	NA	NA	NA	NA
Prostate	13.4	(12.8–14.0)	5,713	2,153,172	33.3	(31.9–34.6)	5,713	2,153,172	NA	NA	NA	NA
Testicular	1.1	(0.9–1.5)	303	184,220	2.8	(2.2–3.6)	303	184,220	NA	NA	NA	NA
Other cancer types‡	12.9	(12.3–13.5)	5,321	2,073,380	13.3	(12.2–14.3)	1,758	858,337	12.7	(11.9–13.4)	3,563	1,215,043
Other¶	8.9	(8.4–9.5)	3,655	1,434,360	10.0	(9.1–10.9)	1,353	646,077	8.2	(7.6–8.9)	2,302	788,283
Thyroid	2.7	(2.4–3.0)	1,195	429,033	1.7	(1.3–2.1)	216	108,035	3.3	(3.0–3.7)	979	320,998
Bone	0.7	(0.5–0.9)	249	110,416	0.9	(0.6–1.5)	103	59,945	0.5	(0.4–0.8)	146	50,471
Brain	0.6	(0.4–0.8)	193	93,969	0.7	(0.5–0.9)	79	42,154	0.5	(0.4–0.8)	114	51,815
Melanoma	12.3	(11.8–12.8)	5,571	1,971,310	16.2	(15.3–17.2)	2,627	1,049,745	9.6	(9.1–10.2)	2,944	921,565
Gastrointestinal	8.3	(7.8–8.7)	4,063	1,326,236	10.5	(9.7–11.3)	1,764	677,381	6.8	(6.3–7.3)	2,299	648,855
Colon (intestine)	6.2	(5.8–6.6)	3,074	1,000,723	7.6	(6.9–8.3)	1,264	490,332	5.3	(4.9–5.8)	1,810	510,390
Rectal	0.5	(0.4–0.6)	257	76,851	0.6	(0.4–0.8)	111	36,878	0.4	(0.3–0.6)	146	39,974
Stomach	0.5	(0.4–0.6)	237	73,788	0.7	(0.5–0.9)	111	42,830	0.3	(0.2–0.4)	126	30,957
Liver	0.4	(0.3–0.5)	169	66,426	0.6	(0.4–0.8)	91	39,390	0.3	(0.2–0.4)	78	27,036
Pancreatic	0.4	(0.3–0.5)	167	61,153	0.5	(0.4–0.8)	78	35,511	0.3	(0.2–0.4)	89	25,641
Esophageal	0.3	(0.2–0.4)	159	47,296	0.5	(0.4–0.7)	109	32,440	0.2	(0.1–0.2)	50	14,856
Leukemia/Lymphoma (lymph nodes and bone marrow)	5.1	(4.7–5.6)	1,846	823,072	6.9	(6.0–7.9)	793	445,353	3.9	(3.5–4.4)	1,053	377,720
Non-Hodgkin's lymphoma	1.9	(1.6–2.3)	696	309,034	2.6	(2.0–3.5)	297	170,366	1.4	(1.2–1.7)	399	138,668
Hodgkin's lymphoma (Hodgkin's disease)	1.7	(1.5–2.0)	539	276,828	2.3	(1.8–2.9)	232	149,014	1.3	(1.1–1.6)	307	127,814
Leukemia (blood)	1.5	(1.3–1.7)	611	237,209	1.9	(1.5–2.5)	264	125,972	1.2	(1.0–1.4)	347	111,237
Urinary tract	3.8	(3.5–4.1)	1,787	612,395	6.4	(5.8–7.0)	1,044	411,989	2.1	(1.8–2.4)	743	200,406
Bladder	2.3	(2.1–2.5)	1,140	367,569	4.1	(3.7–4.6)	736	267,086	1.0	(0.9–1.2)	404	100,483
Renal (kidney)	1.5	(1.3–1.7)	647	244,826	2.2	(1.9–2.7)	308	144,903	1.0	(0.8–1.3)	339	99,923
Lung	2.8	(2.4–3.2)	1,252	445,055	3.1	(2.5–3.8)	480	199,879	2.6	(2.1–3.0)	772	245,176
Head/Neck, all	1.8	(1.6–2.0)	675	286,539	2.7	(2.3–3.2)	357	174,805	1.2	(1.0–1.4)	318	111,734
Head and neck	0.7	(0.5–0.8)	247	106,612	0.9	(0.7–1.3)	122	60,727	0.5	(0.4–0.6)	125	45,886
Pharyngeal (throat)	0.6	(0.5–0.7)	249	96,759	1.0	(0.8–1.3)	151	66,784	0.3	(0.2–0.4)	98	29,975
Oral	0.5	(0.4–0.7)	179	83,167	0.7	(0.5–1.1)	84	47,293	0.4	(0.2–0.6)	95	35,874
Unknown/Refused	4.2	(3.9–4.6)	2,102	674,658	4.5	(3.9–5.2)	814	293,624	4.0	(3.6–4.4)	1,288	381,034

Abbreviations: CI = confidence interval; NA = not applicable.

* For cancer survivors who reported more than one cancer diagnosis, the cancer type reported was the most recently diagnosed cancer.

† Male and female genital cancer calculations use sex-specific denominators.

‡ Includes soft tissue cancers of the heart and neuroblastoma.

¶ Response category of other; cancer type not specified.

TABLE 3. Prevalence of selected types of cancer among cancer survivors aged ≥18 years, by race/ethnicity — Behavioral Risk Factor Surveillance System, United States, 2009

Cancer type	All races/ethnicities				White, non Hispanic				Black, non Hispanic			
	%	(95% CI)	Sample size	Weighted no.	%	(95% CI)	Sample size	Weighted no.	%	(95% CI)	Sample size	Weighted no.
All types	100	—	45,541	16,062,667	100	—	39,686	13,047,059	100	—	2,503	1,246,610
Both sexes												
Breast*	19.5	(18.9–20.2)	10,314	3,135,383	19.3	(18.6–19.9)	8,919	2,512,599	23.9	(20.6–27.6)	657	298,090
Melanoma	12.3	(11.8–12.8)	5,571	1,971,310	14.3	(13.7–14.9)	5,343	1,864,099	—†	—	—	—
Gastrointestinal	8.3	(7.8–8.7)	4,063	1,326,236	8.1	(7.7–8.5)	3,474	1,055,679	11.3	(8.9–14.2)	280	140,855
Colorectal	6.7	(6.3–7.1)	3,331	1,077,574	6.7	(6.3–7.1)	2,868	873,132	8.6	(6.5–11.3)	229	106,979
Leukemia/Lymphoma (lymph nodes and bone marrow)	5.1	(4.7–5.6)	1,846	823,072	5.2	(4.8–5.7)	1,639	680,943	3.7	(2.3–5.9)	71	46,307
Urinary tract	3.8	(3.5–4.1)	1,787	612,395	3.9	(3.6–4.3)	1,595	514,353	2.5	(1.6–3.7)	72	30,642
Lung	2.8	(2.4–3.2)	1,252	445,055	2.6	(2.3–2.8)	1,093	336,311	4.5	(2.5–8.1)	87	56,648
Head/Neck, all	1.8	(1.6–2.0)	675	286,539	1.9	(1.7–2.2)	598	249,037	—	—	—	—
Genital	29.4	(28.5–30.2)	12,610	4,714,639	27.7	(26.9–28.5)	10,572	3,614,127	36.6	(32.6–40.9)	918	456,432
Other cancer types¶	12.9	(12.3–13.5)	5,321	2,073,380	13.2	(12.6–13.8)	4,724	1,716,464	9.8	(7.3–13.0)	211	121,954
Unknown/Refused	4.2	(3.9–4.6)	2,102	674,658	3.9	(3.5–4.2)	1,729	503,446	4.7	(3.4–6.4)	142	58,659
Male genital[§]	36.1	(34.7–37.5)	6,016	2,337,392	34.1	(32.8–35.4)	5,038	1,814,591	54.6	(47.4–61.5)	542	260,014
Prostate	33.3	(31.9–34.6)	5,713	2,153,172	31.3	(30.1–32.6)	4,768	1,668,261	53.6	(46.5–60.6)	535	255,401
Female genital[§]	24.8	(23.8–25.8)	6,594	2,377,247	23.3	(22.4–24.3)	5,534	1,799,536	25.5	(21.0–30.6)	376	196,418
Cervical	14.5	(13.7–15.4)	3,512	1,392,855	13.8	(13.0–14.6)	2,914	1,066,854	14.7	(11.6–18.4)	212	112,898

See table footnotes below.

TABLE 3. (Continued) Prevalence of selected types of cancer among cancer survivors aged ≥18 years, by race/ethnicity — Behavioral Risk Factor Surveillance System, United States, 2009

Cancer type	Asian/Pacific Islander				American Indian/Alaska Native				Hispanic			
	%	(95% CI)	Sample size	Weighted no.	%	(95% CI)	Sample size	Weighted no.	%	(95% CI)	Sample size	Weighted no.
All types	100	—	514	257,229	100	—	716	267,555	100	—	1,524	1,012,231
Both sexes												
Breast*	25.8	(17.0–37.2)	173	66,493	16.1	(11.3–22.3)	130	42,957	17.3	(13.6–21.7)	333	174,875
Melanoma	—†	—	—	—	—	—	—	—	4.2	(2.7–6.6)	72	43,005
Gastrointestinal	5.8	(3.2–10.1)	50	14,801	6.1	(3.2–11.2)	66	16,193	8.4	(6.3–11.1)	143	85,111
Colorectal	—	—	—	—	—	—	—	—	6.4	(4.6–8.7)	112	64,293
Leukemia/Lymphoma (lymph nodes and bone marrow)	—	—	—	—	—	—	—	—	5.6	(3.6–8.5)	61	56,302
Urinary tract	—	—	—	—	—	—	—	—	4.3	(2.8–6.6)	52	43,500
Lung	—	—	—	—	—	—	—	—	—	—	—	—
Head/Neck, all	—	—	—	—	—	—	—	—	—	—	—	—
Genital	—	—	—	—	42.3	(34.9–50.1)	266	113,208	36.1	(31.1–41.3)	514	365,119
Other cancer types¶	17.4	(9.8–29.0)	63	44,821	12.0	(7.5–18.6)	75	32,083	12.7	(9.8–16.3)	179	128,744
Unknown/Refused	—	—	—	—	9.6	(5.5–16.4)	52	25,708	6.1	(4.4–8.5)	109	62,209
Male genital[§]	—	—	—	—	—	—	—	—	35.2	(27.1–44.2)	194	128,565
Prostate	—	—	—	—	—	—	—	—	34.1	(26.1–43.2)	183	124,635
Female genital[§]	—	—	—	—	41.1	(32.7–50.1)	200	76,028	36.6	(30.5–43.1)	320	236,554
Cervical	—	—	—	—	28.9	(21.6–37.6)	132	53,477	20.4	(15.3–26.6)	178	131,943

Abbreviation: CI = confidence interval.

* Breast cancer includes prevalence among men and women (see Table 2).

† Data suppressed because the sample size of the numerator was <50 or the half-width of the confidence interval was >10.

§ Male and female genital cancer calculations use sex-specific denominators.

¶ Includes brain, bone, thyroid, heart, neuroblastoma, and the response category of other.

TABLE 4. (Continued) Prevalence of cancer among adults aged ≥18 years and of selected types of cancer among survivors aged ≥18 years, by geographic area and sex — Behavioral Risk Factor Surveillance System, United States, 2009

State/Area	Breast cancer prevalence among female cancer survivors [†]				Cervical cancer prevalence among female cancer survivors [†]				Other female genital system cancer prevalence among female cancer survivors [†]			
	%	(95% CI)	Sample size	Weighted no.	%	(95% CI)	Sample size	Weighted no.	%	(95% CI)	Sample size	Weighted no.
United States	32.4	(31.4–33.4)	10,248	3,109,948	14.5	(13.7–15.4)	3,512	1,392,855	10.3	(9.6–11.0)	3,082	984,392
Northeast	36.4	(33.7–39.2)	1,951	670,248	10.5	(9.0–12.2)	532	193,291	9.4	(7.9–11.1)	511	172,871
Connecticut	38.3	(32.5–44.5)	184	46,287	—	—	—	—	—	—	—	—
Maine	30.9	(26.5–35.5)	192	16,272	15.8	(12.6–19.7)	91	8,342	13.0	(10.3–16.3)	85	6,863
Massachusetts	34.2	(30.5–38.2)	390	73,356	10.7	(8.2–13.9)	111	22,876	9.4	(7.0–12.6)	105	20,176
New Hampshire	34.4	(29.3–40.0)	166	15,831	—	—	—	—	—	—	—	—
New Jersey	34.6	(30.3–39.1)	291	92,785	10.9	(7.5–15.6)	75	29,351	5.9	(4.3–8.0)	55	15,778
New York	39.5	(33.1–46.2)	183	256,211	—	—	—	—	—	—	—	—
Pennsylvania	34.8	(30.0–39.8)	233	149,762	13.0	(9.7–17.3)	69	55,960	11.8	(8.6–16.1)	70	50,841
Rhode Island	32.8	(28.1–37.9)	155	12,684	—	—	—	—	—	—	—	—
Vermont	32.3	(27.7–37.2)	157	7,060	—	—	—	—	12.3	(9.3–16.1)	60	2,694
Midwest	32.6	(30.8–34.5)	2,448	705,540	12.6	(11.2–14.3)	773	273,183	9.8	(8.7–11.1)	757	212,764
Illinois	33.1	(27.5–39.2)	131	125,632	—	—	—	—	—	—	—	—
Indiana	29.9	(25.5–34.7)	213	65,660	21.2	(16.0–27.6)	94	46,574	11.8	(8.6–16.1)	79	25,975
Iowa	32.9	(28.0–38.3)	141	33,180	—	—	—	—	—	—	—	—
Kansas	31.3	(28.5–34.1)	469	28,525	17.6	(14.8–20.9)	170	16,103	10.4	(8.7–12.4)	148	9,487
Michigan	30.6	(26.8–34.7)	238	108,878	14.7	(11.2–19.0)	80	52,165	6.7	(4.9–9.1)	50	23,726
Minnesota	37.1	(31.6–42.9)	133	51,509	—	—	—	—	—	—	—	—
Missouri	31.9	(25.8–38.7)	131	68,292	—	—	—	—	14.9	(9.8–21.9)	54	31,816
Nebraska	33.0	(28.2–38.2)	403	18,450	14.7	(10.4–20.3)	103	8,208	7.3	(5.6–9.5)	118	4,070
North Dakota	29.8	(24.1–36.3)	95	5,579	—	—	—	—	—	—	—	—
Ohio	31.4	(27.1–36.1)	226	117,033	11.6	(8.2–16.3)	63	43,318	8.9	(6.7–11.7)	65	33,054
South Dakota	33.5	(28.2–39.2)	160	8,103	13.0	(9.4–17.7)	55	3,142	14.3	(10.5–19.2)	61	3,467
Wisconsin	38.9	(31.0–47.5)	108	74,697	—	—	—	—	—	—	—	—
South	30.8	(29.2–32.4)	3,224	1,101,678	17.1	(15.6–18.7)	1,213	613,128	10.3	(9.1–11.7)	1,003	369,707
Alabama	28.0	(22.8–34.0)	148	45,705	18.8	(14.0–24.9)	66	30,718	12.0	(8.9–16.0)	68	19,553
Arkansas	30.8	(24.9–37.4)	112	31,230	—	—	—	—	—	—	—	—
Delaware	40.5	(33.3–48.1)	120	12,243	—	—	—	—	—	—	—	—
District of Columbia	31.8	(25.6–38.9)	82	5,403	—	—	—	—	—	—	—	—
Florida	30.5	(26.2–35.1)	306	207,073	16.4	(12.5–21.4)	135	111,712	9.9	(6.9–14.1)	93	67,530
Georgia	32.1	(26.2–38.5)	132	91,059	20.3	(14.5–27.6)	53	57,569	—	—	—	—
Kentucky	27.6	(23.0–32.8)	246	43,887	16.2	(11.7–21.9)	105	25,736	16.4	(11.7–22.6)	100	26,148
Louisiana	28.9	(24.7–33.5)	200	42,092	17.3	(12.9–22.7)	72	25,171	10.9	(7.9–14.8)	66	15,822
Maryland	32.1	(27.6–37.0)	217	53,157	12.5	(8.9–17.4)	54	20,719	—	—	—	—
Mississippi	29.1	(25.3–33.2)	256	25,244	16.6	(13.0–20.8)	96	14,373	12.9	(9.9–16.6)	94	11,186
North Carolina	35.8	(31.3–40.6)	339	115,615	11.7	(8.7–15.4)	100	37,671	13.2	(10.0–17.2)	123	42,599
Oklahoma	28.5	(24.7–32.7)	215	37,948	22.4	(17.7–27.8)	101	29,753	10.4	(7.9–13.7)	65	13,855
South Carolina	30.3	(25.8–35.2)	239	47,144	18.8	(14.0–24.7)	85	29,198	8.4	(6.0–11.5)	66	13,003
Tennessee	27.1	(22.1–32.7)	131	53,281	22.8	(17.2–29.7)	69	44,905	—	—	—	—
Texas	30.7	(25.7–36.1)	262	195,587	17.8	(13.4–23.4)	95	113,769	12.3	(8.1–18.3)	67	78,293
Virginia	33.0	(26.7–40.0)	120	77,431	—	—	—	—	—	—	—	—
West Virginia	25.8	(21.1–31.2)	99	17,580	21.9	(16.9–28.0)	58	14,921	16.8	(12.9–21.7)	58	11,459
West	31.6	(29.6–33.7)	2,509	610,990	15.9	(14.2–17.7)	969	307,107	11.3	(9.9–13.0)	773	219,353
Alaska	—	—	—	—	—	—	—	—	—	—	—	—
Arizona	31.9	(25.3–39.2)	135	66,405	—	—	—	—	—	—	—	—
California	33.3	(29.4–37.5)	357	276,385	16.0	(12.9–19.7)	130	132,946	13.7	(10.8–17.1)	114	113,279
Colorado	31.5	(27.6–35.7)	253	41,404	16.9	(13.5–21.0)	98	22,261	13.5	(10.8–16.7)	99	17,740
Hawaii	42.6	(36.6–48.9)	174	16,458	—	—	—	—	—	—	—	—
Idaho	28.1	(22.5–34.5)	110	13,645	18.5	(13.7–24.5)	56	8,985	—	—	—	—
Montana	32.3	(27.3–37.8)	188	11,729	14.3	(10.3–19.6)	71	5,205	12.1	(9.0–16.1)	71	4,385
Nevada	28.7	(21.4–37.3)	86	24,728	20.8	(14.2–29.3)	59	17,898	—	—	—	—
New Mexico	34.2	(29.6–39.2)	209	20,943	17.7	(13.9–22.2)	86	10,811	10.5	(7.8–14.0)	71	6,423
Oregon	24.7	(20.0–30.0)	108	36,589	—	—	—	—	—	—	—	—
Utah	28.2	(23.7–33.1)	173	17,420	17.4	(12.8–23.3)	67	10,772	11.9	(8.8–15.9)	61	7,375
Washington	29.5	(26.6–32.4)	528	72,754	19.1	(15.4–23.5)	205	47,173	7.5	(6.0–9.4)	127	18,627
Wyoming	26.1	(21.9–30.8)	140	4,905	16.3	(12.4–21.1)	59	3,057	12.2	(9.1–16.0)	55	2,281
Territories	31.8	(24.8–39.6)	116	21,492	—	—	—	—	—	—	—	—
Guam	—	—	—	—	—	—	—	—	—	—	—	—
Puerto Rico	31.3	(24.1–39.6)	67	20,120	—	—	—	—	—	—	—	—
U.S. Virgin Islands	—	—	—	—	—	—	—	—	—	—	—	—

See table footnotes on page 19.

TABLE 5. Quality of life indicators among cancer survivors aged ≥18 years, by geographic area — Behavioral Risk Factor Surveillance System, United States, 2009

State/Area	Health status self-rated as excellent, very good, or good				≥5 physically unhealthy days during the past 30 days			
	%	(95% CI)	Sample size	Weighted no.	%	(95% CI)	Sample size	Weighted no.
United States	68.5	(67.7–69.3)	30,476	11,002,112	31.8	(31.0–32.6)	14,494	5,107,819
Northeast	70.7	(68.7–72.7)	5,815	2,173,044	29.8	(27.8–31.7)	2,512	913,939
Connecticut	75.0	(70.3–79.1)	519	149,099	25.7	(21.5–30.5)	193	51,185
Maine	71.4	(67.9–74.7)	638	59,677	30.0	(26.5–33.7)	273	25,050
Massachusetts	73.0	(70.0–75.9)	1,134	258,802	28.0	(25.1–31.2)	518	99,358
New Hampshire	71.1	(66.9–75.0)	497	55,824	29.1	(25.0–33.6)	213	22,831
New Jersey	73.6	(70.3–76.6)	836	319,719	26.8	(23.6–30.3)	319	116,528
New York	69.2	(64.4–73.6)	516	750,992	31.1	(26.8–35.7)	237	337,285
Pennsylvania	68.7	(64.6–72.5)	662	503,016	31.7	(27.9–35.7)	335	231,783
Rhode Island	71.1	(67.2–74.7)	493	48,174	29.7	(26.0–33.6)	227	20,094
Vermont	75.9	(71.7–79.6)	520	27,742	26.9	(23.2–30.9)	197	9,826
Midwest	67.6	(65.9–69.1)	7,298	2,460,369	32.7	(31.1–34.4)	3,358	1,191,136
Illinois	64.9	(59.6–69.8)	394	395,471	37.0	(32.1–42.2)	206	225,627
Indiana	67.9	(63.8–71.8)	620	231,460	35.0	(31.0–39.2)	358	119,189
Iowa	69.3	(64.8–73.4)	415	114,627	24.7	(21.1–28.7)	166	40,852
Kansas	68.9	(66.2–71.5)	1,337	103,419	31.3	(28.5–34.2)	606	46,950
Michigan	69.6	(65.9–73.0)	713	424,081	30.4	(26.3–34.9)	330	185,344
Minnesota	73.0	(67.8–77.6)	405	180,527	26.2	(21.6–31.3)	136	64,709
Missouri	67.6	(62.2–72.6)	373	240,828	35.3	(30.1–40.9)	218	125,730
Nebraska	74.5	(71.1–77.7)	1,246	71,018	27.6	(24.1–31.3)	526	26,252
North Dakota	71.6	(66.0–76.6)	306	23,310	26.0	(20.7–32.0)	108	8,455
Ohio	61.4	(57.5–65.2)	648	400,413	35.5	(31.8–39.5)	356	231,762
South Dakota	72.1	(67.8–76.0)	504	31,024	26.1	(22.3–30.4)	194	11,236
Wisconsin	71.9	(65.1–77.7)	337	244,193	30.9	(25.2–37.2)	154	105,031
South	66.9	(65.5–68.3)	8,988	4,028,132	32.3	(30.9–33.8)	4,911	1,945,825
Alabama	61.9	(56.6–67.0)	398	179,261	34.7	(29.8–39.9)	261	100,368
Arkansas	59.2	(53.2–64.9)	258	95,481	35.5	(30.0–41.4)	173	57,256
Delaware	74.0	(68.9–78.5)	336	37,875	29.7	(24.8–35.1)	158	15,217
District of Columbia	72.4	(67.1–77.2)	282	21,873	26.5	(22.0–31.7)	114	8,014
Florida	70.8	(66.9–74.4)	1,027	869,979	27.7	(24.2–31.4)	488	340,235
Georgia	63.7	(57.7–69.3)	344	291,943	37.8	(31.6–44.4)	208	173,067
Kentucky	56.9	(51.6–62.0)	562	153,075	44.1	(38.9–49.4)	484	118,585
Louisiana	62.6	(58.5–66.6)	531	149,473	33.5	(29.6–37.7)	320	79,982
Maryland	71.5	(67.2–75.4)	667	211,348	31.1	(27.0–35.5)	285	92,008
Mississippi	62.3	(58.6–65.7)	714	93,997	29.7	(26.5–33.1)	406	44,785
North Carolina	70.2	(66.4–73.7)	954	358,837	28.8	(25.2–32.8)	430	147,536
Oklahoma	60.2	(56.1–64.1)	535	126,003	38.0	(34.1–42.1)	335	79,628
South Carolina	65.7	(61.0–70.0)	683	173,507	29.3	(25.1–33.9)	319	77,470
Tennessee	58.5	(53.0–63.8)	301	172,488	40.5	(35.1–46.0)	212	119,247
Texas	69.6	(65.4–73.5)	763	734,980	32.3	(27.7–37.2)	362	340,685
Virginia	73.8	(69.1–78.1)	358	295,565	27.2	(22.3–32.6)	152	108,678
West Virginia	56.4	(51.5–61.2)	275	62,445	38.9	(34.3–43.7)	204	43,066
West	71.3	(69.6–72.9)	8,158	2,292,655	31.7	(30.1–33.4)	3,577	1,020,314
Alaska	73.3	(62.9–81.6)	138	23,248	—*	—	—	—
Arizona	71.3	(65.7–76.3)	451	261,526	28.8	(23.7–34.4)	216	105,469
California	69.3	(65.9–72.5)	1,026	918,674	34.7	(31.4–38.2)	460	459,662
Colorado	75.2	(72.0–78.1)	840	161,671	26.5	(23.4–29.8)	305	57,002
Hawaii	72.9	(67.4–77.8)	460	46,305	30.0	(25.1–35.4)	164	19,055
Idaho	70.2	(65.2–74.7)	394	55,547	36.2	(31.2–41.6)	191	28,661
Montana	71.4	(67.4–75.1)	585	42,655	30.4	(26.6–34.4)	284	18,127
Nevada	67.2	(59.8–73.8)	299	101,670	33.5	(26.8–40.8)	138	50,642
New Mexico	67.2	(63.3–70.9)	578	67,952	36.5	(32.6–40.5)	327	36,910
Oregon	76.2	(71.3–80.4)	406	193,344	29.7	(24.9–34.9)	173	75,298
Utah	73.3	(69.4–76.9)	628	79,978	31.2	(27.3–35.4)	301	34,001
Washington	74.2	(72.0–76.3)	1,879	317,768	28.1	(25.9–30.4)	794	120,242
Wyoming	70.7	(66.5–74.5)	474	22,319	25.8	(22.1–29.8)	183	8,139

See table footnotes on page 21.

TABLE 5. (Continued) Quality of life indicators among cancer survivors aged ≥18 years, by geographic area — Behavioral Risk Factor Surveillance System, United States, 2009

State/Area	Always receive needed social or emotional support				Satisfied or very satisfied with life			
	%	(95% CI)	Sample size	Weighted no.	%	(95% CI)	Sample size	Weighted no.
United States	50.2	(49.3–51.1)	22,225	8,067,485	92.7	(92.2–93.1)	42,114	14,886,915
Northeast	47.4	(45.3–49.6)	3,936	1,456,490	92.7	(91.6–93.7)	7,655	2,847,895
Connecticut	48.9	(43.9–53.9)	348	97,221	93.8	(90.5–96.0)	673	186,605
Maine	47.9	(44.0–51.8)	415	40,038	92.6	(90.3–94.4)	843	77,374
Massachusetts	48.7	(45.2–52.3)	785	172,741	91.6	(89.6–93.2)	1,479	324,596
New Hampshire	48.2	(43.5–52.9)	337	37,814	93.7	(91.6–95.3)	660	73,519
New Jersey	51.9	(48.1–55.7)	608	225,508	92.5	(90.3–94.3)	1,091	402,126
New York	43.8	(38.9–48.8)	321	475,481	92.9	(90.4–94.9)	677	1,008,640
Pennsylvania	48.8	(44.7–52.9)	457	357,223	92.4	(90.0–94.2)	914	676,435
Rhode Island	49.6	(45.3–54.0)	346	33,631	94.7	(92.7–96.2)	678	64,178
Vermont	46.0	(41.7–50.4)	319	16,834	94.1	(92.1–95.7)	640	34,421
Midwest	49.9	(48.2–51.5)	5,192	1,816,330	93.1	(92.1–93.9)	10,096	3,389,553
Illinois	49.3	(44.3–54.3)	291	300,553	95.0	(91.3–97.2)	558	579,096
Indiana	48.7	(44.4–53.1)	451	165,997	92.4	(89.9–94.3)	875	314,660
Iowa	48.1	(43.2–53.1)	278	79,650	95.2	(93.2–96.7)	570	157,567
Kansas	47.8	(45.0–50.7)	941	71,756	92.5	(90.5–94.0)	1,833	138,781
Michigan	46.8	(42.6–51.1)	490	285,504	94.2	(92.4–95.5)	1,005	574,020
Minnesota	52.1	(47.0–57.1)	285	128,779	95.4	(93.4–96.9)	515	235,949
Missouri	51.0	(45.3–56.6)	290	181,640	91.2	(86.3–94.5)	543	324,909
Nebraska	48.3	(44.1–52.5)	850	46,012	93.0	(90.3–95.0)	1,700	88,625
North Dakota	52.9	(47.0–58.7)	218	17,216	95.8	(93.2–97.4)	411	31,183
Ohio	53.7	(49.9–57.6)	530	350,474	90.8	(88.2–92.9)	953	592,157
South Dakota	46.1	(41.5–50.8)	330	19,848	96.4	(94.4–97.6)	692	41,458
Wisconsin	49.7	(43.0–56.4)	238	168,902	91.6	(87.0–94.6)	441	311,147
South	51.2	(49.6–52.7)	7,254	3,081,401	92.3	(91.4–93.0)	13,251	5,555,069
Alabama	50.6	(44.9–56.2)	365	146,424	90.0	(84.8–93.5)	641	260,567
Arkansas	45.2	(39.4–51.2)	213	73,004	92.0	(88.5–94.6)	420	148,533
Delaware	53.4	(47.5–59.2)	263	27,346	92.5	(89.2–94.8)	441	47,370
District of Columbia	36.4	(31.0–42.0)	137	10,978	94.4	(91.3–96.5)	367	28,512
Florida	50.7	(46.4–54.9)	753	622,791	91.8	(89.3–93.8)	1,432	1,128,657
Georgia	51.4	(45.2–57.6)	301	235,669	94.9	(92.5–96.6)	539	434,992
Kentucky	49.4	(44.2–54.6)	520	132,818	88.4	(83.0–92.2)	968	237,716
Louisiana	57.6	(53.3–61.8)	506	137,421	91.6	(89.0–93.6)	839	218,561
Maryland	49.4	(44.9–53.9)	452	145,959	92.5	(90.0–94.4)	868	273,622
Mississippi	54.1	(50.3–57.8)	655	81,667	91.6	(89.0–93.6)	1,121	138,323
North Carolina	51.8	(47.7–55.8)	738	264,924	92.5	(90.0–94.5)	1,324	473,309
Oklahoma	47.3	(43.3–51.3)	420	99,022	90.3	(87.2–92.7)	813	189,108
South Carolina	43.2	(38.5–47.9)	500	114,059	90.1	(86.3–92.9)	989	238,159
Tennessee	59.3	(53.8–64.6)	322	174,870	92.0	(88.7–94.4)	483	271,073
Texas	52.0	(47.2–56.8)	570	549,284	94.7	(92.3–96.3)	1,068	999,678
Virginia	51.4	(45.6–57.1)	263	205,631	91.6	(87.6–94.4)	479	366,526
West Virginia	53.8	(48.8–58.6)	276	59,534	90.7	(87.3–93.2)	459	100,365
West	51.0	(49.3–52.8)	5,594	1,641,703	92.9	(91.9–93.8)	10,702	2,987,307
Alaska	59.8	(50.0–68.9)	97	18,968	94.9	(88.9–97.7)	178	30,085
Arizona	51.1	(45.1–57.1)	343	187,457	92.9	(89.5–95.3)	628	340,720
California	51.4	(47.8–54.9)	685	680,797	93.4	(91.4–94.9)	1,321	1,236,966
Colorado	48.6	(44.9–52.2)	531	104,409	92.1	(89.8–93.9)	1,054	198,015
Hawaii	50.1	(44.7–55.5)	294	31,817	94.3	(91.5–96.2)	565	59,892
Idaho	50.1	(44.8–55.3)	276	39,636	93.5	(90.2–95.7)	531	73,987
Montana	47.7	(43.1–52.3)	387	28,486	92.0	(89.3–94.0)	785	54,928
Nevada	57.2	(49.9–64.3)	214	86,617	88.6	(79.9–93.8)	399	134,101
New Mexico	46.2	(42.1–50.3)	408	46,697	91.0	(88.4–93.1)	811	92,021
Oregon	50.7	(44.9–56.5)	284	128,699	93.9	(89.9–96.4)	517	238,299
Utah	55.6	(51.2–59.9)	451	60,606	92.5	(90.1–94.3)	821	100,839
Washington	49.1	(46.5–51.8)	1,273	210,343	92.7	(91.3–94.0)	2,442	397,249
Wyoming	54.4	(49.8–58.9)	351	17,171	95.6	(93.6–97.1)	650	30,206

Abbreviation: CI = confidence interval.

* Data suppressed because the sample size of the numerator was <50 or the half-width of the confidence interval was >10.

TABLE 6. Treatment-related factors among cancer survivors aged ≥18 years (N = 6,384) — Behavioral Risk Factor Surveillance System, 10 states, 2009

State	Currently receiving treatment				Participated in a clinical trial*				Currently have physical pain caused by cancer or cancer treatment*				Pain currently under control*			
	%	(95% CI)	Sample size	Weighted no.	%	(95% CI)	Sample size	Weighted no.	%	(95% CI)	Sample size	Weighted no.	%	(95% CI)	Sample size	Weighted no.
Total	12.0	(10.4–13.7)	713	449,415	7.5	(6.1–9.1)	388	245,879	10.1	(8.6–11.9)	484	333,872	80.9	(74.3–86.1)	389	269,994
California	12.9	(9.2–17.8)	52	160,062	—†	—	—	—	—	—	—	—	—	—	—	—
Connecticut	10.8	(8.2–14.0)	82	21,335	—	—	—	—	—	—	—	—	—	—	—	—
Maryland	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Massachusetts	11.4	(8.3–15.6)	56	38,767	—	—	—	—	—	—	—	—	—	—	—	—
Nebraska	9.1	(6.1–13.3)	54	8,127	—	—	—	—	—	—	—	—	—	—	—	—
New Jersey	14.0	(10.9–17.8)	89	63,333	—	—	—	—	—	—	—	—	—	—	—	—
North Carolina	9.7	(7.7–12.1)	148	48,691	—	—	—	—	—	—	—	—	—	—	—	—
Oklahoma	11.8	(8.5–16.2)	50	27,142	—	—	—	—	—	—	—	—	—	—	—	—
Vermont	10.1	(7.8–12.9)	65	3,691	—	—	—	—	—	—	—	—	—	—	—	—
Virginia	12.4	(8.9–17.0)	69	49,159	—	—	—	—	—	—	—	—	—	—	—	—

Abbreviation: CI = confidence interval.

* Only includes cancer survivors not currently undergoing treatment (n = 5,593).

† Data suppressed because the sample size of the numerator was <50 or the half-width of the confidence interval was >10.

TABLE 7. Health care experience* among cancer survivors aged ≥18 years (N = 5,593) — Behavioral Risk Factor Surveillance System, 10 states, 2009

State	Currently receiving majority of health care from oncologist or other cancer specialist†				Received a written treatment summary from health-care provider				Received instructions on follow-up care			
	%	(95% CI)	Sample size	Weighted no.	%	(95% CI)	Sample size	Weighted no.	%	(95% CI)	Sample size	Weighted no.
Total	21.2	(18.8–23.7)	896	696,724	40.2	(37.6–42.9)	2,007	1,323,807	73.9	(71.6–76.0)	3,963	2,431,944
California	29.3	(23.3–36.0)	97	314,713	47.6	(41.0–54.3)	172	511,693	75.3	(69.3–80.5)	290	809,652
Connecticut	22.6	(18.0–28.1)	114	39,938	34.4	(29.4–39.8)	203	60,706	73.6	(68.4–78.3)	464	129,964
Maryland	15.7	(11.1–21.7)	55	38,604	43.4	(36.5–50.5)	128	106,511	75.6	(69.5–80.8)	263	185,630
Massachusetts	19.7	(14.4–26.3)	83	59,007	31.1	(25.1–37.8)	142	93,050	72.3	(66.2–77.7)	325	216,559
Nebraska	16.5	(10.3–25.3)	56	13,361	36.6	(29.1–44.8)	163	29,597	63.1	(55.8–69.7)	310	51,043
New Jersey	21.6	(17.0–26.9)	103	82,952	34.9	(29.3–40.9)	171	134,031	74.6	(69.3–79.3)	374	286,800
North Carolina	14.3	(11.8–17.4)	182	64,468	36.7	(32.6–40.9)	481	164,796	71.5	(67.5–75.1)	889	321,486
Oklahoma	—§	—	—	—	42.6	(35.9–49.6)	147	86,096	66.6	(60.5–72.2)	241	134,587
Vermont	18.6	(14.9–23.1)	95	6,111	40.0	(35.5–44.7)	232	13,101	78.4	(74.5–81.9)	471	25,709
Virginia	15.6	(11.8–20.3)	69	53,841	36.0	(30.5–41.9)	168	124,226	78.4	(73.2–82.8)	336	270,515

See table footnotes below.

TABLE 7. (Continued) Health care experience* among cancer survivors aged ≥18 years (N = 5,593) — Behavioral Risk Factor Surveillance System, 10 states, 2009

State	Insurance covered all or part of cancer treatment				Ever denied health insurance or life insurance coverage because of cancer			
	%	(95% CI)	Sample size	Weighted no.	%	(95% CI)	Sample size	Weighted no.
Total	90.7	(88.9–92.2)	5,130	2,984,587	12.0	(9.9–14.4)	489	393,340
California	91.2	(86.3–94.4)	364	980,237	—	—	—	—
Connecticut	95.5	(92.2–97.5)	597	168,553	—	—	—	—
Maryland	88.9	(82.7–93.0)	341	218,359	—	—	—	—
Massachusetts	90.6	(85.9–93.8)	428	271,395	—	—	—	—
Nebraska	90.9	(85.2–94.6)	479	73,554	—	—	—	—
New Jersey	91.8	(87.5–94.6)	471	352,611	—	—	—	—
North Carolina	89.7	(86.5–92.3)	1,133	403,371	—	—	—	—
Oklahoma	85.7	(77.7–91.1)	337	172,682	—	—	—	—
Vermont	91.9	(88.6–94.3)	576	30,087	—	—	—	—
Virginia	90.9	(86.3–94.1)	404	313,738	—	—	—	—

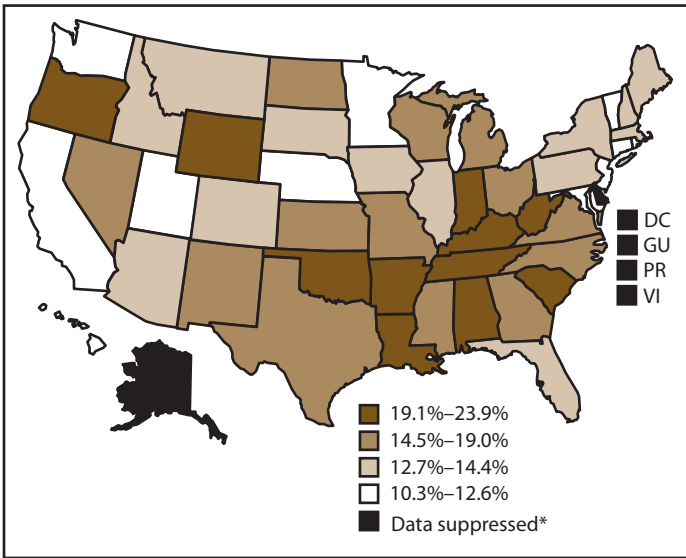
Abbreviation: CI = confidence interval.

* Only includes cancer survivors not currently undergoing treatment (n = 5,593).

† Cancer specialists include cancer surgeons, gynecologic oncologists, medical oncologists, and radiation oncologists.

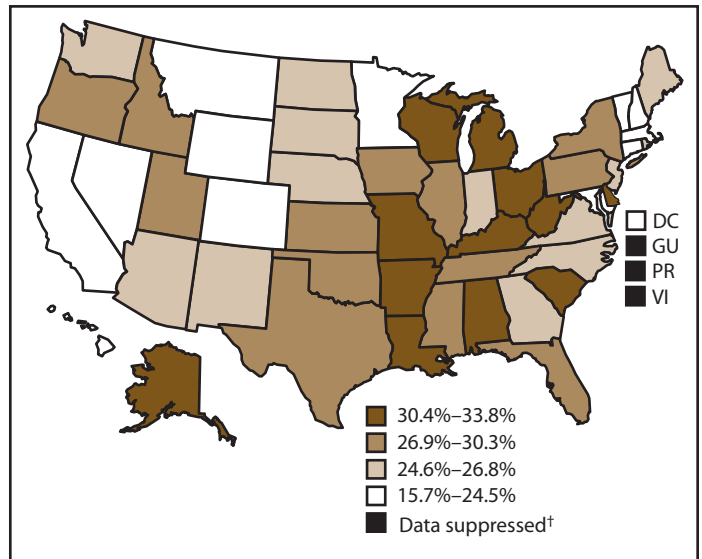
§ Data suppressed because the sample size of the numerator was <50 or the half-width of the confidence interval was >10.

FIGURE 1. Prevalence of current cigarette smoking among cancer survivors aged ≥ 18 years — Behavioral Risk Factor Surveillance System, United States, 2009



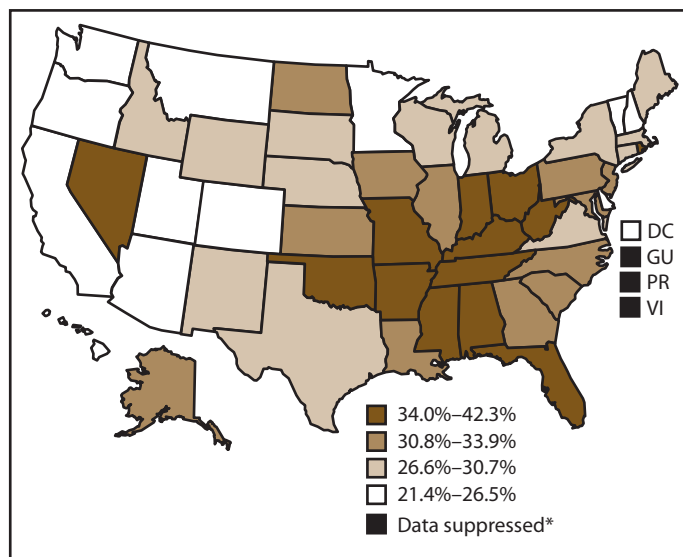
Abbreviations: GU = Guam; PR = Puerto Rico; VI = US Virgin Islands.
 * The sample size of the numerator was < 50 or the half-width of the confidence interval was > 10 .

FIGURE 2. Prevalence of obesity* among cancer survivors aged ≥ 18 years — Behavioral Risk Factor Surveillance System, United States, 2009



Abbreviations: GU = Guam; PR = Puerto Rico; VI = US Virgin Islands.
 * Body mass index ≥ 30 kg/m².
 † The sample size of the numerator was < 50 or the half-width of the confidence interval was > 10 .

FIGURE 3. Prevalence of cancer survivors aged ≥ 18 years reporting no leisure-time physical activity during the past 30 days — Behavioral Risk Factor Surveillance System, United States, 2009



Abbreviations: GU = Guam; PR = Puerto Rico; VI = US Virgin Islands.
 * The sample size of the numerator was < 50 or the half-width of the confidence interval was > 10 .

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