

**Health Status and Behaviors  
among Cancer Survivors in Idaho, 2014**

November 2016



IDAHO DEPARTMENT OF HEALTH & WELFARE  
**DIVISION OF PUBLIC HEALTH**

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## Introduction

**8,000**  
new cancer  
cases annually  
in Idaho

Cancer is one of America's greatest public health concerns. About 40 percent of men and 30 to 40 percent of women in the United States will be diagnosed with cancer sometime in their life.<sup>1</sup> Cancer is the second leading cause of death in the United States.<sup>2</sup> In Idaho, cancer has been the leading cause of death since 2008, and accounted for about 22 percent of deaths in 2014.<sup>3</sup> Each year in Idaho, there are approximately 8,000 new cases of cancer (invasive and in situ) and 2,700 cancer deaths.<sup>4</sup> As the population of Idaho grows and continues to age, we can expect more cases of cancer in the future. Total annual cancer cases will likely double in the United States by 2050.<sup>5</sup>

**2,700**  
cancer deaths  
annually in  
Idaho

The term *cancer survivor* refers to a person who has been diagnosed with cancer, from the time of diagnosis throughout his or her life. In the U.S., approximately 15.5 million adults with a history of invasive cancer were alive on January 1, 2016, including 70,970 Idahoans.<sup>6</sup> Including in situ disease, there are more than 81,000 cancer survivors living in Idaho today.<sup>7</sup> These estimates exclude basal and squamous cell skin cancers, which are not reportable to cancer registries. Because adults are living longer after being told they have cancer due to advances in early detection and treatment, the number of cancer survivors is expected to increase at a faster rate than incidence, to approach 18 million in the United States by 2022.<sup>8,9</sup> Sixty-four percent (64%) of cancer survivors have survived at least 5 years after diagnosis; 40% have survived 10 years or more; and 15% have survived 20 years or more.<sup>8</sup>

Cancer cases  
are expected to  
double by the  
year 2050

*Cancer survivorship* encompasses the physical, emotional, economic, and social issues associated with cancer from diagnosis until the end of life. There are several phases associated with cancer survivorship, including the time from diagnosis to the end of initial treatment, the transition from treatment to extended survival, and long-term survival.<sup>10</sup> Many survivors, including those who are cancer-free, are faced with long-term effects of treatment and fear of recurrence. Cancer survivors are also at greater risk for developing second cancers and other health conditions. It is noteworthy that not everyone who has had a cancer diagnosis may identify with the term “cancer survivor.”

More than  
**70,000**  
Idahoans have  
a history of  
invasive cancer

Data collected from the 2013 and 2014 Behavioral Risk Factor Surveillance System (BRFSS) are used in this report to describe cancer survivors in Idaho and compare health status and selected health behaviors between cancer survivors and adults who have never been diagnosed with cancer. It is hoped this information will help inform cancer program planning and implementation activities for cancer survivors in Idaho.

## Methods

The Idaho BRFSS is a telephone survey of non-institutionalized residents aged 18 and older, which is conducted under a cooperative agreement between the Bureau of Vital Records and Health Statistics (BVRHS), Division of Public Health, Idaho Department of Health and Welfare, and the Centers for Disease Control and Prevention. Details of the BRFSS methodology have been published elsewhere.<sup>11,12</sup> Idaho has conducted telephone BRFSS surveys since 1984 of random samples of adult Idahoans to measure population prevalence of health-related risk behaviors and events, chronic health conditions, and use of preventive services. Surveys are administered throughout the year, and questionnaire content changes from year to year. After annual data collection is complete, data are weighted to be representative of Idaho's adult population, and analysis is performed on the weighted data. Idaho uses disproportionate stratified sampling by public health district, and interviews are conducted by telephone, both cellular and land-line, using computer-assisted telephone interviewing (CATI) software to record responses.



The Behavioral Risk Factor Surveillance System (BRFSS) collects state data about health-related risk behaviors, chronic health conditions, and use of preventive services.

In 2013 and 2014, two questions were included in the BRFSS pertaining to cancer prevalence:

*Now I would like to ask you some questions about general health conditions. Has a doctor, nurse or other health professional EVER told you that you had any of the following? For each, tell me "Yes," "No," or you're "Not sure."*

*C1. Ever told you had skin cancer?*

*1 Yes*

*2 No*

*7 DON'T KNOW/NOT SURE*

*9 REFUSED*

*C2. Ever told you had any other types of cancer?*

*1 Yes*

*2 No*

*7 DON'T KNOW/NOT SURE*

*9 REFUSED*

The specific health status, cancer screening, and risk factor measures were selected to assist in monitoring Comprehensive Cancer Alliance for Idaho (CCAI) objectives.<sup>13</sup> All results included in Tables 1 and 2 (pages 12 and 13) use 2014 BRFSS data, except for fruit and vegetable consumption, which uses 2013 BRFSS data.

Basal and squamous cell carcinomas of the skin are not reportable by law to state cancer registries. There is no way to differentiate between these cancers and melanoma

of the skin using the 2013 and 2014 BRFSS data. The analyses in this report compare respondents who indicated having cancer *other than* skin cancer (*Yes* to question C2) to those who reported they had not been told they had other types of cancer (*No* to question C2). Throughout the report, these groups are referred to as *cancer survivors* and *no history of cancer* even though the latter group may include adults with a history of skin cancer.

All percentages listed in the tables and text are weighted estimates for adult Idahoans. Cancer rates generally increase with age, and age is related to many of the health status, cancer screening, and risk factor measures selected for analysis. In order to compare the prevalence of the selected measures between cancer survivors and adults with no history of cancer while accounting for the confounding effects of age, age-adjusted estimates are also presented. The estimates were standardized to the 2000 U.S. standard population using the following age groups: 18-29, 30-39, 40-49, 50-64, 65-74, and 75 and older. For the Pap test cancer screening measure, the age groups 21-29, 30-39, 40-49, and 50-65 were used. For the colorectal cancer screening measure, the age groups 50-64 and 65-75 were used. For the breast cancer screening measure, the age groups 50-64 and 65-74 were used.

Data management was conducted using SAS V9.3 (SAS Institute Inc., Cary, NC) and statistical analyses were conducted using SAS and SAS-callable SUDAAN (Research Triangle Institute, Research Triangle Park, NC). Wald chi-square statistics were used to test for independence of the cancer survivors and no history of cancer groups and the selected measures, taking into account the complex survey design. The SAS SURVEYLOGISTIC procedure was used to test differences in the prevalence estimates of the selected measures between the cancer survivors and no history of cancer groups, adjusting for differences in age distribution and accounting for the complex survey design. Confidence intervals are based on logit transformations, which yield asymmetric intervals that have better coverage properties for small and large proportions.

## Results

In the 2014 Idaho BRFSS, 7.1% of adults responded that they were ever told by a doctor, nurse or other health professional they had skin cancer, and 6.8% responded that they were ever told they had any other type of cancer. In the 2013 Idaho BRFSS, these percentages were about the same (7.1% and 6.3%, respectively). In 2014, there were about 81,641 adult cancer survivors in Idaho. Including all types of skin cancer, there were about 152,309 cancer survivors in Idaho.

### *Demographics*

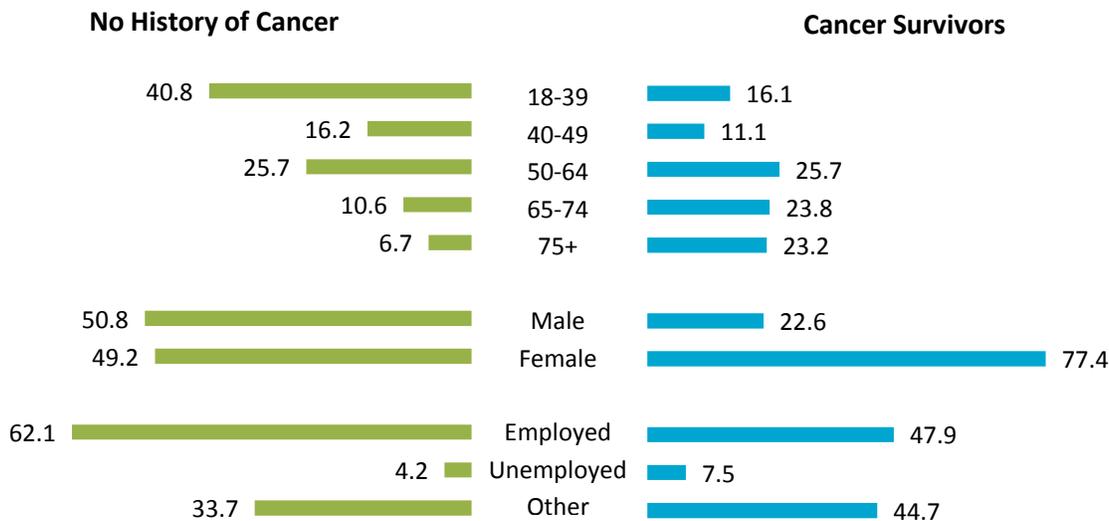
Table 1 (page 12) shows weighted prevalence estimates of demographic variables for cancer survivors and adults with no history of cancer. Two-thirds (66.6%) of cancer

survivors in Idaho were female, 47.0% were aged 65 or older, and the majority was non-Hispanic White. Cancer survivors were significantly older ( $p < .001$ ) than adults with no history of cancer. Although the percentage of White, Non-Hispanic adults among cancer survivors was 5.5% higher than among adults with no history of cancer, the difference was not significant ( $p = 0.061$ ); Cancer survivors were significantly less likely ( $p < .001$ ) to be employed and more likely to be retired (41.7% versus 16.0%) or unable to work (12.5% versus 3.8%). There was no significant difference in education or income distributions between cancer survivors and adults with no history of cancer ( $p = 0.257$  and  $p = 0.459$ , respectively), nor was there a significant difference in body mass index (BMI) category ( $p = 0.359$ ).

As with crude data, differences between age-adjusted distributions of cancer survivors and adults with no history of cancer were significant for sex ( $p < .001$ ) and employment status ( $p = 0.001$ ). Cancer survivors were significantly more likely to be unable to work (16.4% versus 3.7%;  $p < .001$ , age-adjusted data).

Differences between age-adjusted distributions were not significant for race/ethnicity ( $p = 0.510$ ), education ( $p = 0.500$ ), income distribution ( $p = 0.313$ ), or BMI category ( $p = 0.644$ ).

## Cancer survivors were more likely to be older, female and unable to work



Results by sex and employment status are age adjusted.

## Health-Related Quality of Life

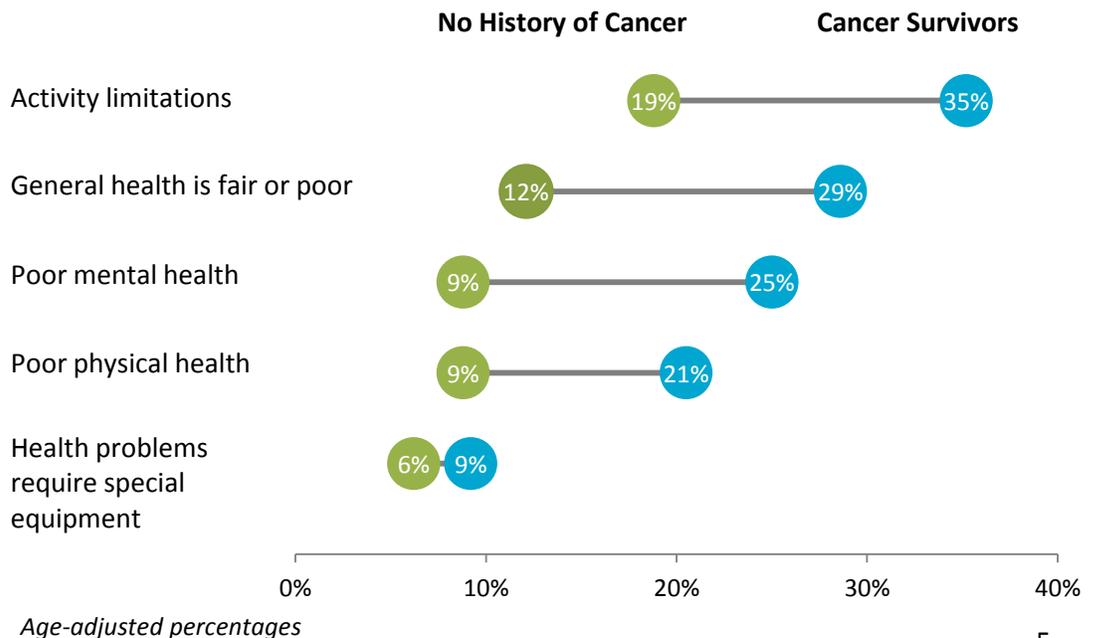
Table 2 (page 13) shows weighted prevalence estimates for cancer survivors and adults with no history of cancer of health-related quality of life measures, health care access measures, cancer-related health behaviors, and cancer screening behaviors. Cancer

survivors were more than twice as likely as adults with no history of cancer to report having fair or poor health (compared to good, very good, or excellent; 27.7% versus 12.0%;  $p < .001$ ) and more than twice as likely to report having poor physical health in 14 or more of the previous 30 days (19.6% versus 8.9%;  $p < .001$ ). Cancer survivors were nearly twice as likely as adults with no history of cancer to report having poor mental health in 14 or more of the previous 30 days (15.9% versus 8.8%;  $p = 0.031$ ).

Cancer survivors were about twice as likely as adults with no history of cancer to report activity limitations because of physical, mental, or emotional problems (37.5% versus 19.1%;  $p < .001$ ) and more than twice as likely to have a health problem that requires them to use special equipment, such as a cane, a wheelchair, a special bed, or a special telephone (14.5% versus 6.1%;  $p < .001$ ).

Similar to the crude percentages, age-adjusted percentages for cancer survivors, when compared with adults having no history of cancer, were more than twice as high for having fair or poor health ( $p < .001$ ), having poor physical health in 14 or more of the previous 30 days ( $p < .001$ ), and having poor mental health in 14 or more of the previous 30 days ( $p = 0.001$ ). Age-adjusted percentages for cancer survivors having activity limitations because of physical, mental, or emotional problems or having health problems requiring use of special equipment, such as canes, wheelchairs, special beds, or special telephones were 87% higher ( $p < .001$ ) and 48% higher ( $p = 0.020$ ), respectively, than for adults with no history of cancer.

## A greater percentage of cancer survivors had health-related quality of life issues than those with no history of cancer

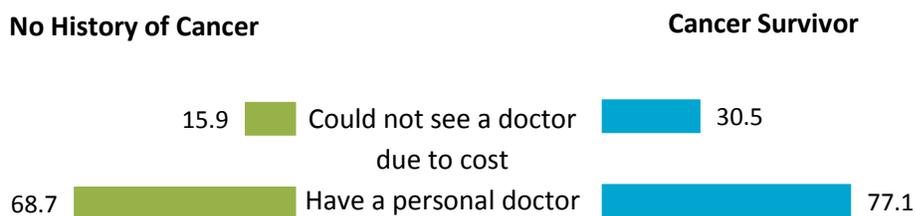


## Health Care Access

Cancer survivors were not significantly more likely to have health care coverage/insurance (87.7% versus 83.2%;  $p=0.093$ ), but cancer survivors were significantly more likely to have a personal doctor or other health care provider (87.2% versus 69.4%;  $p<.001$ ), and significantly more likely to have had a routine health check up in the past year (71.1% versus 57.1%;  $p<.001$ ). There was no significant difference between cancer survivors and adults with no history of cancer in the proportion reporting they could not see a doctor because of cost in the past 12 months (17.2% versus 15.7%;  $p=0.651$ ).

When age-adjusted percentages were compared, there were no significant differences between cancer survivors and adults with no history of cancer in the proportions with health care coverage ( $p=0.399$ ) or who had a routine health check up in the past year ( $p=0.189$ ). After age-adjustment, cancer survivors were significantly more likely to have a personal doctor or other health care provider ( $p=0.013$ ), but cancer survivors were almost twice as likely to report they could not see a doctor because of cost in the past 12 months ( $p=0.032$ ).

**Although cancer survivors were more likely to have a health care provider, they were twice as likely to report that they could not see a doctor because of cost in the past 12 months**



*Age-adjusted percentages*

## Health Behaviors



**Cancer survivors** were twice as likely to be current smokers than those with **no history of cancer**.

Cancer survivors were not significantly more likely to be a current smoker (22.2% versus 15.5%;  $p=0.065$ ) but were significantly less likely to engage in binge drinking in the past 30 days (7.5% versus 15.4%;  $p<.001$ ). There were no significant differences between cancer survivors and adults with no history of cancer in the proportions who were heavy drinkers (4.0% versus 5.1%;  $p=0.409$ ), who participated in leisure time physical activity during the past 30 days (21.2% versus 18.5% did not participate in leisure time physical activity;  $p=0.318$ ), or who ate five or more servings of fruits and vegetables every day (2013 BRFSS; 16.0% versus 17.3%;  $p= 0.609$ ).

The age-adjusted percentage for cigarette smoking among cancer survivors was over twice the percentage among adults with no history of cancer (36.7% vs. 15.8%, respectively,  $p<0.001$ ). There were no significant differences between cancer survivors and adults with no history of cancer in age-adjusted percentages for binge drinking ( $p=0.243$ ), heavy drinking ( $p=0.862$ ), participating in leisure time physical activity ( $p=0.863$ ), or eating five or more servings of fruits and vegetables per day (2013 BRFSS;  $p=0.993$ ).

## Cancer Screening

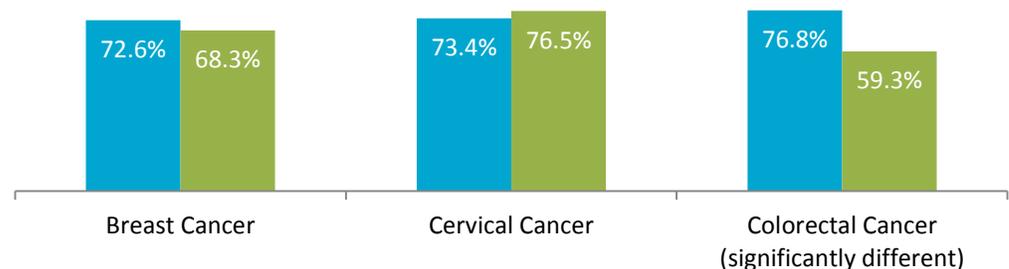


**Cancer survivors** were more likely to be current on colorectal cancer screening

Cancer survivors were significantly more likely to be current with colorectal cancer screening guidelines (80.1% versus 58.9%;  $p<.001$ ). There were no significant differences between cancer survivors and adults with no history of cancer in the proportion current for mammography to screen for breast cancer (74.2% versus 68.3%;  $p=0.203$ ) or Pap testing for cervical cancer (74.7% versus 76.6%;  $p=0.783$ ).

After age-adjustment, there were no differences between cancer survivors and adults with no history of cancer in the proportions who were current for screening for breast cancer ( $p=0.280$ ) or cervical cancer ( $p=0.763$ ). Adjusting for age, cancer survivors were significantly more likely to be current for colorectal cancer screening ( $p<.001$ ).

## Cancer screening among cancer survivors and those with no history of cancer



Age-adjusted percentages

## Discussion

The results showing that cancer survivors in Idaho are predominately older, non-Hispanic White, and female are consistent with national data.<sup>14</sup> These findings are sensible because cancer incidence rates increase with age for most cancers, the non-Hispanic White population in Idaho has an older age distribution than other racial/ethnic groups, and non-Hispanic White females have higher incidence rates of several common cancers, such as breast cancer.<sup>4</sup> Also, the incidence rates of several sites/types of cancer associated with greater survival are higher among non-Hispanic Whites (e.g. breast, melanoma, thyroid). Despite the fact that crude and age-adjusted rates of cancer incidence are higher among males,<sup>4</sup> the majority of cancer survivors (66.6%) were female. This is due in part to differences in primary site distribution between males and females, and the survival rates for those sites.

The results in this report are consistent with previous studies describing poor health-related quality of life, activity limitations, inability to see a doctor due to cost, and higher smoking rates among different populations of cancer survivors.<sup>15-18</sup> Because cancer survivors are, on average, older than the remainder of Idahoans, they are more likely to have other health conditions and activity limitations due to older age, in addition to those related to their cancer. In this analysis, the health-related quality of life deficits among cancer survivors were not ameliorated when adjusting for age, meaning the differences may largely be attributable to the diagnosis of cancer. As part of its 2016-2020 strategic plan, CCAI will continue to routinely monitor objectives to increase the physical and mental health-related quality of life of cancer survivors, seeking 10% improvements from 2011-2012 baseline data.<sup>13</sup>

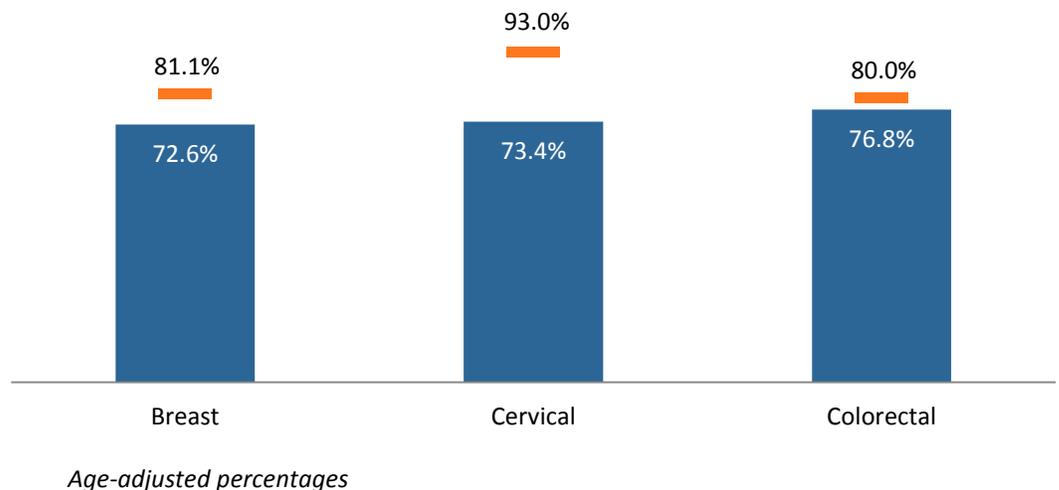
Common effects of cancer and its treatment that may persist after active treatment can include pain, a reduction in bone density, a wide range of cardiovascular diseases, and cognitive deficits, depending on treatment modalities.<sup>6</sup> Fatigue is the most common side effect of active cancer treatment, reported in 80-90% of those receiving chemotherapy or radiation.<sup>19</sup> For treatment of some cancers, pulmonary dysfunction, sexual dysfunction, and infertility are also concerns.<sup>6</sup> Regular medical care after active treatment is vital for cancer survivors because of possible lasting and delayed effects of treatment in addition to risks of recurrences and new primary cancers. Results of the health care access measures showed that a substantial proportion of cancer survivors could not see a doctor due to cost sometime in the past year. Tai et al. showed a similar result for adolescent and young adult cancer survivors.<sup>20</sup> When age-adjusted data were compared, cancer survivors were no more likely than adults with no history of cancer to have health care coverage or a routine health check-up in the past year, but were more likely to have a personal doctor or other health care provider.

Cancer survivors are at greater risk for recurrence and for developing second cancers due to the effects of treatment and lifestyle behaviors and other factors that

contributed to the first cancer. For many cancers, being overweight and obesity have been associated with increased risk of recurrence and lower survival rates, while physical activity after active cancer treatment has been associated with increased overall and recurrence-free survival.<sup>21-23</sup> It has been recommended that cancer survivors limit alcohol use due to potential mutagenic effects that increase the risk for second cancers or late effects.<sup>24,25</sup> Smoking increases the risk of more than 15 different types of cancer and accounts for at least 30% of all cancer deaths.<sup>26</sup> In addition, smoking interferes with some common cancer treatments. However, age-adjusted prevalence of smoking was more than twice as high among cancer survivors than among adults with no history of cancer. This finding is consistent with other reports.<sup>20,27,28</sup> Studies have demonstrated that smoking cessation is more successful if begun soon after cancer diagnosis.<sup>29</sup>

The CCAI age-adjusted target for screening for breast cancer was not achieved among cancer survivors (at least 81.1% of women aged 50-74 will report having had a mammogram in the prior two years). Similarly, the CCAI age-adjusted target for screening for cervical cancer was not achieved among cancer survivors (at least 93.0% of women aged 21-65 who have not had a hysterectomy will report having had a Pap test in the prior three years). Idaho consistently has among the lowest overall breast and cervical cancer screening rates in the U.S., and this study showed this for both cancer survivors and adults with no history of cancer. The 80% by 2018 age-adjusted target for colorectal cancer screening established by the National Colorectal Cancer Roundtable, and also used as the CCAI target (at least 80.0% of Idahoans aged 50-75 will report receiving a blood stool test in the past year, sigmoidoscopy in the past 5 years and blood stool test in the past 3 years, or a colonoscopy in the past 10 years), was not achieved among cancer survivors or adults with no history of cancer.<sup>30</sup>

## CCAI screening goals were not met for any measure among cancer survivors



This report has several limitations. BRFSS data are self-reported and may be subject to several types of biases, including recall and social desirability, and the direction of bias may vary by primary site.<sup>31,32</sup> Idaho BRFSS data from 2011-2014 do not include information on self-reported primary site or treatment modalities. Medical record review to confirm cancer diagnosis or other responses was not conducted. Because the BRFSS is a survey of the non-institutionalized adult population, cancer survivors who are in institutions are not represented. If having cancer is a reason for their being institutionalized, this could be an additional source of potential bias.

Adults with skin cancer, including melanoma, are included in the “no history of cancer” category. Thus, differences between cancer survivors and adults with no history of cancer may be different than presented. Because the proportion of skin cancers that is melanoma is relatively small, this is unlikely to be an important limitation and would not be anticipated to meaningfully change the results.

The BRFSS is not an appropriate source of information for tracking improvements in cancer prognosis. The Cancer Data Registry of Idaho (CDRI) collects incidence and survival data on all Idaho residents and residents of other states who are diagnosed or treated for cancer in Idaho. Population-based cancer registries such as CDRI can provide direct information about trends in cancer survival.

There are some aspects of cancer survivorship not covered by this report, including pain management, use of treatment summary and survivorship care plans, and needs for palliative care. Several recent studies have described health status, health behaviors, and quality of life among cancer survivors diagnosed with specific cancers, such as breast, prostate, and colorectal.<sup>33-35</sup> Other recent studies of cancer survivors have focused on topics of the impact of time since diagnosis on behaviors and adult survivorship of adolescent and young adult (AYA; aged 15-39 at diagnosis) cancers. For example, among breast cancer survivors, smoking prevalence, excessive alcohol drinking, and obesity increased with time since diagnosis.<sup>36</sup> The chronic disease questions included in the Idaho BRFSS since 2011 do not support such analyses, but if Idaho utilizes the BRFSS Cancer Survivorship Module in the future, it will be possible to address some of these topics. Meanwhile, it is important to acknowledge that certain groups of cancer survivors are at higher risk and persistent efforts are needed to encourage survivors to practice healthy behaviors. Program standards from the Commission on Cancer of the American College of Surgeons include measurement of the proportion of cancer patients who receive treatment summary and survivorship care plans when they complete their active phase of treatment. The impact of cancer on family members, friends, and caregivers of survivors is also acknowledged as part of survivorship.

## Conclusion

In terms of public health and health care needs, cancer survivors in Idaho face many of the same challenges as the remainder of the population, including difficulties accessing health care, insufficient screening, and continued cancer risks associated with modifiable behaviors. In addition, cancer survivors have health-related quality of life problems in excess of those among adults with no history of cancer. It is hoped that this report will be a useful resource for identifying needs and planning services, such as targeted tobacco cessation, for the large and increasing number of cancer survivors in Idaho.

Table 1. Prevalence of cancer survivors in Idaho and distribution of cancer survivors and person not diagnosed with cancer by select demographic variables, 2014.

	Weighted Prevalence				Age-Adjusted Weighted Prevalence <sup>2</sup>			
	Cancer Survivors		No History of Cancer <sup>1</sup>		Cancer Survivors		No History of Cancer <sup>1</sup>	
	Pct	95% CI	Pct	95% CI	AA Pct	95% CI	AA Pct	95% CI
Sample Size	508		4964					
Sum of Weights	81,641		1,120,646					
<b>Idaho overall</b>	<b>6.8 ( 6.0, 7.7)</b>		<b>93.2 (92.3,94.0)</b>		<b>6.4 ( 5.6, 7.3)</b>		<b>93.6 (92.7,94.4)</b>	
Age			p<.001					
18-39	16.1 ( 10.2,24.4)		40.8 (38.7,42.9)					
40-49	11.1 ( 7.4,16.4)		16.2 (14.7,17.9)					
50-64	25.7 (20.8,31.3)		25.7 (24.1,27.3)					
65-74	23.8 (19.4,28.8)		10.6 ( 9.7,11.5)					
75+	23.2 (18.7,28.4)		6.7 ( 6.0, 7.4)					
Sex			p<.001				p<.001	
Male	33.4 (27.8,39.5)		50.8 (48.7,52.8)		22.6 (16.8,29.8)		50.8 (48.6,52.9)	
Female	66.6 (60.5,72.2)		49.2 (47.2,51.3)		77.4 (70.2,83.2)		49.2 (47.1,51.4)	
Race/Ethnicity			p=0.061				p=0.510	
White, non-Hispanic	91.6 (87.2,96.1)		86.1 (84.3,87.8)		88.3 (78.6,93.9)		85.9 (84.0,87.6)	
Other race, non-Hispanic	3.8 ( 0.8, 6.7)		5.2 ( 4.2, 6.3)		5.5 ( 1.9, 15.0)		5.1 ( 4.1, 6.3)	
Hispanic (all races)	4.6 ( 1.1, 8.1)		8.7 ( 7.2,10.2)		6.2 ( 2.7,13.8)		9.0 ( 7.6,10.6)	
Education			p=0.257				p=0.500	
K-11	13.1 ( 8.8,19.0)		11.8 (10.2,13.5)		19.1 (11.6,29.7)		12.1 (10.5,14.0)	
High School Grad	23.5 (18.7,29.0)		29.2 (27.4,31.0)		17.2 (11.4,25.1)		29.0 (27.2,30.9)	
Some College	40.7 (34.3,47.5)		36.6 (34.6,38.7)		43.7 (33.5,54.5)		36.4 (34.3,38.5)	
College Grad	22.8 (18.5,27.8)		22.4 (20.9,23.9)		20.0 (15.2,25.9)		22.5 (21.0,24.1)	
Employment			p<.001				p=0.001	
Employed	33.5 (27.3,40.3)		61.4 (59.5,63.3)		47.9 (36.8,59.2)		62.1 (60.3,63.9)	
Unemployed	4.5 ( 2.4, 8.5)		4.3 ( 3.5, 5.2)		7.5 ( 3.2, 16.3)		4.2 ( 3.5, 5.1)	
Other	62.0 (55.2,68.4)		34.3 (32.5,36.1)		44.7 (34.3,55.5)		33.7 (32.0,35.4)	
Income			p=0.459				p=0.313	
Less than 15k	11.2 ( 7.4,16.6)		9.1 (8.0,10.2)		15.8 ( 8.4,27.8)		9.1 ( 8.0,10.3)	
15k to 24.9k	21.4 (16.2,27.7)		19.2 (17.5,21.0)		23.5 (15.2,34.4)		19.5 (17.8,21.3)	
25k to 34.9k	13.9 ( 8.9,21.0)		12.4 (11.1,13.9)		14.9 ( 7.3,28.0)		12.6 (11.2,14.1)	
35k to 49.9k	17.5 (12.9,23.4)		17.0 (15.4,18.7)		15.9 ( 9.9,24.5)		16.8 (15.1,18.5)	
50k to 74.9k	16.3 (12.2,21.4)		17.0 (15.4,18.7)		10.2 ( 7.0,14.6)		16.8 (15.2,18.6)	
75k+	19.7 (15.1,25.2)		25.4 (23.5,27.3)		19.8 (14.3,26.7)		25.2 (23.3,27.2)	
BMI			p=0.359				p=0.644	
Underweight	0.8 ( 0.4, 1.8)		1.5 ( 1.1, 2.1)		0.4 ( 0.2, 0.8)		1.5 ( 1.1, 2.1)	
Normal Weight	31.0 (24.8,38.0)		32.9 (30.9,35.0)		34.7 (24.2,47.0)		33.4 (31.3,35.5)	
Overweight	37.4 (31.4,43.8)		36.7 (34.8,38.8)		30.6 (23.5,38.7)		36.3 (34.3,38.5)	
Obese	30.7 (25.0,37.1)		28.8 (26.9,30.8)		34.4 (24.5,45.7)		28.8 (26.9,30.9)	

Abbreviations: Pct, Percent; CI, confidence interval; AA, age-adjusted.

<sup>1</sup> Also includes cancer survivors with skin cancer (see methods section).

<sup>2</sup> Age-adjusted to 2000 U.S. standard population.

Percentages may not sum to 100% due to rounding.

Table 2. Prevalence estimates of health-related quality of life, health care access, health behaviors, and cancer screening measures among cancer survivors and adults not diagnosed with cancer, Idaho 2014.

	Weighted Prevalence					Age-Adjusted Weighted Prevalence <sup>2</sup>				
	Cancer Survivors			No History of Cancer <sup>1</sup>		Cancer Survivors			No History of Cancer <sup>1</sup>	
	Pct	95% CI	p-value	Pct	95% CI	AA Pct	95% CI	p-value	AA Pct	95% CI
<b>Health-related quality of life</b>										
General health status is fair or poor	27.7	(22.5,33.6)	<.001	12.0	(10.8,13.4)	28.6	(19.9,39.3)	<.001	12.1	(10.8,13.5)
Poor physical health in 14+ of the previous 30 days	19.6	(15.1,25.2)	<.001	8.9	( 7.9, 9.9)	20.5	(13.3,30.1)	<.001	8.8	( 7.8, 9.9)
Poor mental health in 14+ of the previous 30 days	15.9	(10.7,23.0)	0.031	8.8	( 7.7, 9.9)	25.0	(14.9,38.8)	0.001	8.8	( 7.7,10.0)
Activity limitations due to health problems	37.5	(31.6,43.7)	<.001	19.1	(17.7,20.6)	35.2	(25.9,45.7)	<.001	18.8	(17.3,20.3)
Health problems require special equipment	14.5	(11.0,18.8)	<.001	6.1	( 5.3, 7.1)	9.2	( 6.5,12.9)	0.020	6.2	( 5.3, 7.2)
<b>Health Care Access</b>										
Have health care coverage/insurance	87.7	(81.6,92.0)	0.093	83.2	(81.5,84.7)	75.4	(63.9,84.1)	0.399	82.8	(81.0,84.4)
Have personal doctor or other health care provider	87.2	(81.6,91.3)	<.001	69.4	(67.4,71.4)	77.1	(65.2,85.9)	0.013	68.7	(66.6,70.7)
Could not see a doctor due to cost sometime in past year	17.2	(11.7,24.5)	0.651	15.7	(14.2,17.3)	30.5	(22.2,40.2)	0.032	15.9	(14.4,17.6)
Routine health check-up in past year	71.1	(64.6,76.9)	<.001	57.1	(55.1,59.2)	60.8	(50.2,70.4)	0.189	56.4	(54.3,58.5)
<b>Health Behaviors</b>										
Current smoker	22.2	(16.2,29.7)	0.065	15.5	(14.0,17.0)	36.7	(27.1,47.4)	<.001	15.8	(14.2,17.5)
Binge drinking in past 30 days	7.5	( 4.6,12.1)	<.001	15.4	(13.8,17.1)	9.7	( 5.0,18.2)	0.243	15.8	(14.1,17.6)
Heavy drinking, past 30 days	4.0	( 2.2, 7.3)	0.409	5.1	( 4.2, 6.2)	3.3	( 1.6, 6.8)	0.862	5.3	( 4.2, 6.5)
No leisure time physical activity in past month	21.2	(16.6,26.6)	0.318	18.5	(17.0,20.2)	16.8	(11.0,24.8)	0.863	18.7	(17.1,20.5)
Consumed 5+ servings fruits & vegetables per day <sup>3</sup>	16.0	(11.8,21.3)	0.609	17.3	(15.8,18.9)	18.0	(11.5,27.1)	0.993	17.3	(15.7,19.0)
<b>Cancer Screening Measures</b>										
Mammogram within past 2 years, women aged 50-74	74.2	(64.9,81.8)	0.203	68.3	(64.9,71.6)	72.6	(62.5,80.9)	0.280	68.3	(64.9,71.6)
Pap test within past 3 years, women aged 21-65	74.7	(59.2,85.7)	0.783	76.6	(73.5,79.5)	73.4	(57.6,84.8)	0.763	76.5	(73.4,79.4)
Colorectal cancer screening, ages 50-75	80.1	(73.8,85.2)	<.001	58.9	(56.2,61.6)	76.8	(69.1,83.0)	<.001	59.3	(56.7,61.9)

Abbreviations: Pct, Percent; CI, confidence interval; AA, age-adjusted.

<sup>1</sup> Also includes cancer survivors with skin cancer (see methods section).

<sup>2</sup> Age-adjusted to 2000 U.S. standard population (distributions vary by measure; see methods section).

<sup>3</sup> Results based on 2013 BRFSS data.

## References

1. Howlader N, Noone AM, Krapcho M, Garshell J, Miller D, Altekruse SF, Kosary CL, Yu M, Ruhl J, Tatalovich Z, Mariotto A, Lewis DR, Chen HS, Feuer EJ, Cronin KA (eds). SEER Cancer Statistics Review, 1975-2012. National Cancer Institute. Bethesda, MD. [http://seer.cancer.gov/csr/1975\\_2012/](http://seer.cancer.gov/csr/1975_2012/). Based on November 2014 SEER data submission. Posted to the SEER web site April 2015.
2. Kochanek KD, Murphy SL, Xu J, Tejada-Vera B. Deaths: Final Data for 2014. Natl Vital Stat Rep. 2016 Jun;65(4):1-122.
3. Final 2014 mortality data, Bureau of Vital Records and Health Statistics, Idaho Department of Health and Welfare; August 2015.
4. Johnson CJ, Carson SL. Cancer in Idaho, 2013. Boise, ID: Cancer Data Registry of Idaho; December 2015.
5. Hayat MJ, Howlader N, Reichman ME, Edwards BK. Cancer statistics, trends, and multiple primary cancer analyses from the Surveillance, Epidemiology, and End Results (SEER) Program. Oncologist. 2007 Jan;12(1):20-37.
6. American Cancer Society. Cancer Treatment & Survivorship Facts & Figures 2016-2017. Atlanta: American Cancer Society; 2016.  
<http://www.cancer.org/acs/groups/content/@research/documents/document/acspc-048074.pdf>
7. Idaho Behavioral Risk Factor Surveillance System. Boise: Idaho Department of Health and Welfare, Division of Public Health, Bureau of Vital Records and Health Statistics, 2016.
8. de Moor JS, Mariotto AB, Parry C, Alfano CM, Padgett L, Kent EE, Forsythe L, Scoppa S, Hachey M, Rowland JH. Cancer survivors in the United States: prevalence across the survivorship trajectory and implications for care. Cancer Epidemiol Biomarkers Prev. 2013 Apr;22(4):561-570.
9. Ryerson AB, Ehemann CR, Altekruse SF, Ward JW, Jemal A, Sherman RL, Henley SJ, Holtzman D, Lake A, Noone AM, Anderson RN, Ma J, Ly KN, Cronin KA, Penberthy L, Kohler BA. Annual Report to the Nation on the Status of Cancer, 1975-2012, featuring the increasing incidence of liver cancer. Cancer. 2016 May 1;122(9):1312-1337. doi: 10.1002/cncr.29936. Epub 2016 Mar 9.
10. Mullan F. Seasons of survival: reflections of a physician with cancer. N Engl J Med. 1985;313:270-273.
11. 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.
12. Centers for Disease Control and Prevention (CDC). Methodologic changes in the Behavioral Risk Factor Surveillance System in 2011 and potential effects on prevalence estimates. MMWR Morb Mortal Wkly Rep. 2012 Jun 8;61(22):410-413.
13. Idaho Comprehensive Cancer Strategic Plan 2016-2020. Comprehensive Cancer Alliance for Idaho, 2016. <http://www.ccaidaho.org>
14. Underwood JM, Townsend JS, Stewart SL, et al. Surveillance of demographic characteristics and health behaviors among adult cancer survivors--Behavioral Risk Factor Surveillance System, United States, 2009. MMWR Surveill Summ. 2012 Jan 20;61(1):1-23.
15. Fairley TL, Hawk H, Pierre S. Health behaviors and quality of life of cancer survivors in Massachusetts, 2006: data use for comprehensive cancer control [serial online]. Prev Chronic Dis. 2010;7:A09.
16. Richardson LC, Wingo PA, Zack MM, Zahran HS, King JB. Health-related quality of life in cancer survivors between ages 20 and 64 years: population-based estimates from the Behavioral Risk Factor Surveillance System. Cancer. 2008;112:1380-1389.

17. 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;40:702-711.
18. Utah Department of Health. Utah health status update: cancer survivorship. September 2012. [http://health.utah.gov/opha/publications/hsu/1209\\_CancerS.pdf](http://health.utah.gov/opha/publications/hsu/1209_CancerS.pdf)
19. Hofman M, Ryan JL, Figueroa-Moseley CD, Jean-Pierre P, Morrow GR. Cancer-related fatigue: the scale of the problem. *Oncologist.* 2007;12 Suppl 1:4-10.
20. Tai E, Buchanan N, Townsend J, Fairley T, Moore A, Richardson LC. Health status of adolescent and young adult cancer survivors. *Cancer* 2012. doi: 10.1002/cncr.27445.
21. 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;348:1625-1638.
22. McTiernan A, Irwin M, Vongruenigen V. Weight, physical activity, diet, and prognosis in breast and gynecologic cancers. *J Clin Oncol.* 2010;28:4074-4080.
23. Winzer BM, Whiteman DC, Reeves MM, Paratz JD. Physical activity and cancer prevention: a systematic review of clinical trials. *Cancer Causes Control.* 2011;22:811-826.
24. Schwartz CL. Long-term survivors of childhood cancer: the late effects of therapy. *Oncologist.* 1999;4:45-54.
25. Lown EA, Goldsby R, Mertens AC, et al. Alcohol consumption patterns and risk factors among childhood cancer survivors compared with siblings and general population peers. *Addiction.* 2008;103:1139-1448.
26. Centers for Disease Control and Prevention. Smoking-attributable mortality, years of potential life lost, and productivity losses – United States, 2000-2004. *MMWR. Morb Mortal Wkly Rep.* 2008;57(45):1226-1228.
27. National Center for Health Statistics. National Health Interview Survey, 2000, 2005, and 2008. Hyattsville, MD: National Center for Health Statistics, Centers for Disease Control and Prevention; 2009.
28. Tomedi L. Cancer survivorship among adults in New Mexico, 2009-2010. *New Mexico Epidemiology.* 2012;3. <http://nmcancercouncil.org/documents/NMEpiRptonSurvivorship-LauraTomedi2012.pdf>
29. Sanderson Cox L, Patten CA, Ebbert JO, et al. Tobacco use outcomes among patients with lung cancer treated for nicotine dependence. *J Clin Oncol.* 2002;20:3461-3469.
30. National Colorectal Cancer Roundtable. <http://nccrt.org/about/80-percent-by-2018/>
31. 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 Feb 1;153(3):299-306.
32. Hewitt M, Breen N, Devesa S. Cancer prevalence and survivorship issues: analyses of the 1992 National Health Interview Survey. *J Natl Cancer Inst.* 1999 Sep 1;91(17):1480-1486.
33. LeMasters TJ, Madhavan SS, Sambamoorthi U, Kurian S. Health behaviors among breast, prostate, and colorectal cancer survivors: a US population-based case-control study, with comparisons by cancer type and gender. *J Cancer Surviv.* 2014;8(3):336–348.
34. Rohan EA, Townsend JS, Fairley TL, Stewart SL. Health behaviors and quality of life among colorectal cancer survivors. *Journal of the National Comprehensive Cancer Network.* 2015;13(3):297–302.
35. Homan SG, Kayani N, Yun S. Risk Factors, Preventive Practices, and Health Care Among Breast Cancer Survivors, United States, 2010. *Prev Chronic Dis.* 2016 Jan 21;13:E09. doi: 10.5888/pcd13.150377.
36. Zhao G, Li C, Okoro CA, Li J, Wen XJ, White A, Balluz LS. Trends in modifiable lifestyle-related risk factors following diagnosis in breast cancer survivors. *J Cancer Surviv.* 2013 Dec;7(4):563-569. doi: 10.1007/s11764-013-0295-5. Epub 2013 Jun 22.