
HSC Statistical Brief No. 26

Cancer Prevalence and Survivorship in West Virginia, 2009

The Lance Armstrong Foundation (2003) defines a cancer survivor as anyone who has been diagnosed with cancer including those in treatment and those whose cancer has been successfully treated. For the purposes of this brief, cancer prevalence is defined as the proportion of West Virginia adults who have ever been diagnosed with cancer. For the first time, the Health Statistics Center collected data about cancer survivorship issues in 2009 using the Behavioral Risk Factor Surveillance System (BRFSS). Data collected included age at diagnosis, type of cancer, multiple cancer diagnoses, treatment status, insurance coverage, clinical trial participation, and pain management. We hope that this data collection will occur on a yearly basis and can be used by the West Virginia Comprehensive Cancer Program to plan, implement, and evaluate evidence based interventions focusing on cancer survivorship issues.

Research has found that disparities in gender, race, ethnicity, age, education, and income are associated with cancer (Brownson & Joshu, 2010). For example, Jemal, Siegel, Ward, Murray, Xu, and Thun (2007) found that men's lifetime risk of developing cancer (45% or 1 in 2) is higher than women's risk (38% or 1 in 3). Due to low number of responses, analysis of cancer prevalence by race yielded unreliable estimates and will not be reported. The following findings will describe any disparities found in relation to cancer prevalence among West Virginia adults.

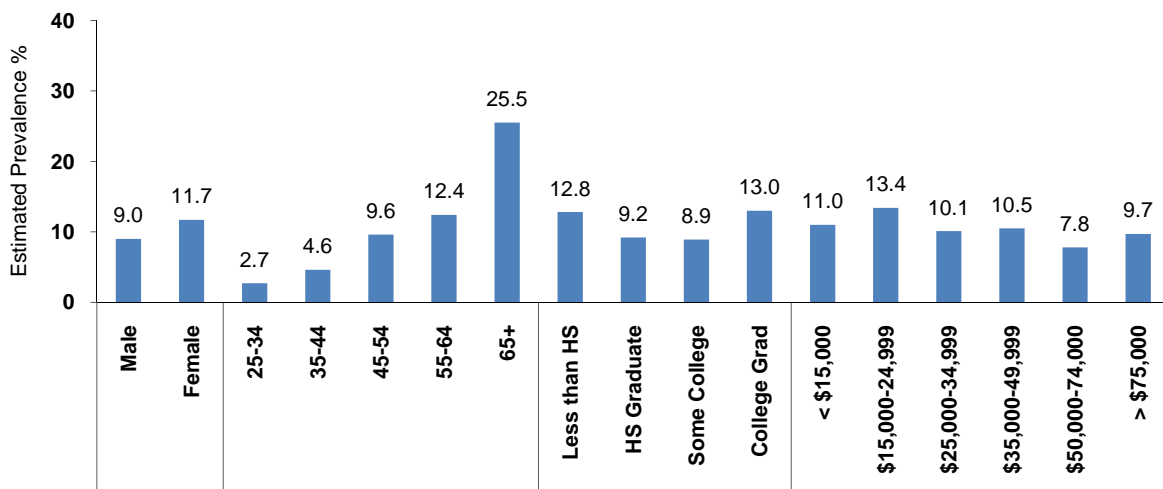
In West Virginia, approximately 1 in 10 adults (10.4%) had been diagnosed with cancer in 2009. This translates to about 147,537 adults in the state who have had cancer at some point in their lives. The West Virginia prevalence is similar to the U.S. prevalence of 9.6%. Additionally, West Virginia's cancer prevalence is the 15th highest in the nation. Other states with higher prevalence than West Virginia include Florida, Oregon, Missouri, Kentucky, Alabama, Montana, South Carolina, Arizona, Wyoming, Washington, Rhode Island, Arkansas, Nevada, and Maine. Discussing prevalence of cancer can be complicated because it includes both newly diagnosed cancer patients as well as people who have survived cancer for decades. A high rate of cancer prevalence can reflect both a high incidence of the disease (new cases or diagnoses of cancer) and excellent treatment of the disease allowing people to survive for years after diagnosis.

Figure 1 presents cancer prevalence by gender, age group, education level, and household income. The results indicate that there is a statistically significant gender difference in cancer prevalence. Cancer prevalence among females (11.7%) is significantly higher than the prevalence among males (9.0%). This represents approximately 62,030 males in the state and 85,507 females in the state who are cancer survivors. The results also indicate that 1 in 4 West

Virginia adults aged 65 and older (25.5%) have been diagnosed with cancer at some point in their life. The prevalence among seniors is double that of the next youngest age group, those aged 55-64. In general, cancer prevalence increases with age.

Analysis of cancer prevalence by educational attainment and household income (also presented in Figure 1) yielded interesting results. Cancer prevalence was highest among those with a college degree and those with less than a high school education. Significant differences were found between college graduates and those with some college and high school graduates. In regards to household income, the only significant difference in cancer prevalence was between the \$15,000-24,999 income bracket and the \$50,000-74,000 income bracket.

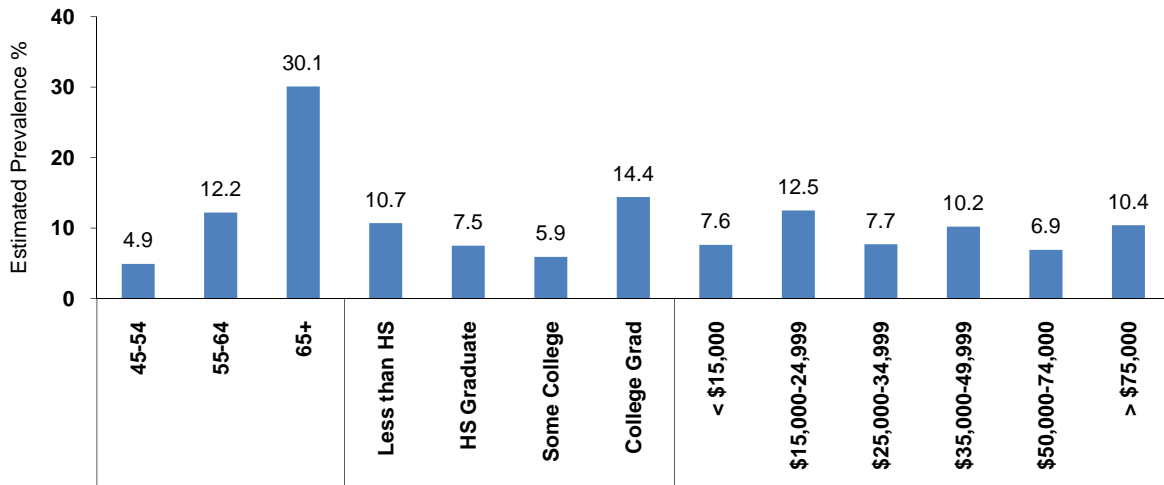
Figure 1. Percentage of WV adults who have ever been diagnosed with cancer by gender, age group, education, and income, 2009



Data Source: WV Health Statistics Center, Behavioral Risk Factor Surveillance System, 2009

Due to the gender differences described above, analyses were also conducted for men and women individually. Figure 2 displays cancer prevalence among male adult West Virginians by age group, education level, and household income. Similar to the results above, as expected, cancer prevalence among males increases with age. Nearly 1 in 3 West Virginia men aged 65 or older (30.1%) are cancer survivors. Cancer prevalence is highest among males with a college degree (14.4%) and is double that of those with some college training. Significant differences were found between college graduates and those with some college and those with a high school education. There were no significant findings for household income for males.

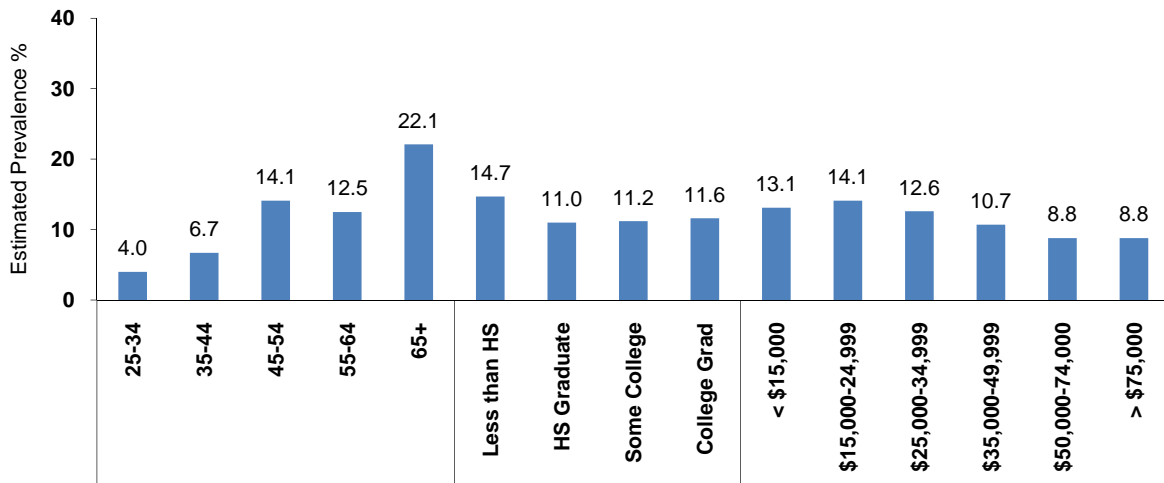
Figure 2. Percentage of WV male adults who have ever been diagnosed with cancer by age group, education, and income, 2009



Data Source: WV Health Statistics Center, Behavioral Risk Factor Surveillance System, 2009

Figure 3 displays cancer prevalence among female adult West Virginians by age group, education level, and household income. The prevalence of cancer among females also increases with age. The prevalence of cancer among 45-54 year old women (14.1%) is more than double the prevalence of cancer among 35-44 year old women (6.7%). Senior women have the highest cancer prevalence of any age group. There were no significant findings for education level or household income among females.

Figure 3. Percentage of WV females adults who have ever been diagnosed with cancer by age group, education, and income, 2009



Data Source: WV Health Statistics Center, Behavioral Risk Factor Surveillance System, 2009

The results presented above represent all types of cancer reported by the 666 cancer survivors surveyed in 2009. Table 1 presents the prevalence of each type of cancer for these cancer survivors ranked from the most prevalent to the least prevalent. The table also includes the number of BRFSS respondents with each type of cancer and the weighted number or estimated number of West Virginia adults with each type of cancer.

Table 1. Prevalence of type of cancer among West Virginia adult cancer survivors.

Type of Cancer	Prevalence (%)	# Respondents	Weighted #
Skin Cancer	25.2	162	36,828
Breast Cancer	12.0	99	17,580
Cervical Cancer	10.2	58	14,921
Prostate Cancer	9.9	64	14,515
Colorectal Cancer	8.0	52	11,784
Melanoma	7.9	51	11,563
Endometrial Cancer	4.6	32	6,708
Ovarian Cancer	3.2	26	4,750
all other cancers	2.6	17	3,853
Leukemia	2.4	15	3,572
Lung Cancer	2.3	14	3,388
Bladder Cancer	2.1	13	3,133
Renal Cancer	1.7	11	2,429
Thyroid Cancer	1.7	9	2,495
Pharyngeal Cancer	0.9	6	1,279
Testicular Cancer	0.9	4	1,284
Liver Cancer	0.8	4	1,213
Head and Neck Cancer	0.6	4	883
Hodgkin's Disease	0.6	4	877
Non-Hodgkin's Lymphoma	0.4	3	631
Oral Cancer	0.4	3	609
Bone Cancer	0.3	2	414
Esophageal Cancer	0.3	3	439
Stomach Cancer	0.3	2	517
Pancreatic Cancer	0.2	1	239
Heart Cancer	0.1	1	124
Brain Cancer	0.0	0	0
Neuroblastoma	0.0	0	0

Data Source: WV Health Statistics Center, Behavioral Risk Factor Surveillance System, 2009

Table 2 presents the top 10 types of cancer prevalence among adult cancer survivors in West Virginia for each gender. Among men diagnosed with cancer, skin cancer is the most prevalent followed by prostate cancer and colorectal cancer. For women with cancer, breast cancer is most prevalent followed by skin cancer and cervical cancer.

Table 2. Top 10 types of cancer prevalence among West Virginia cancer survivors by gender.

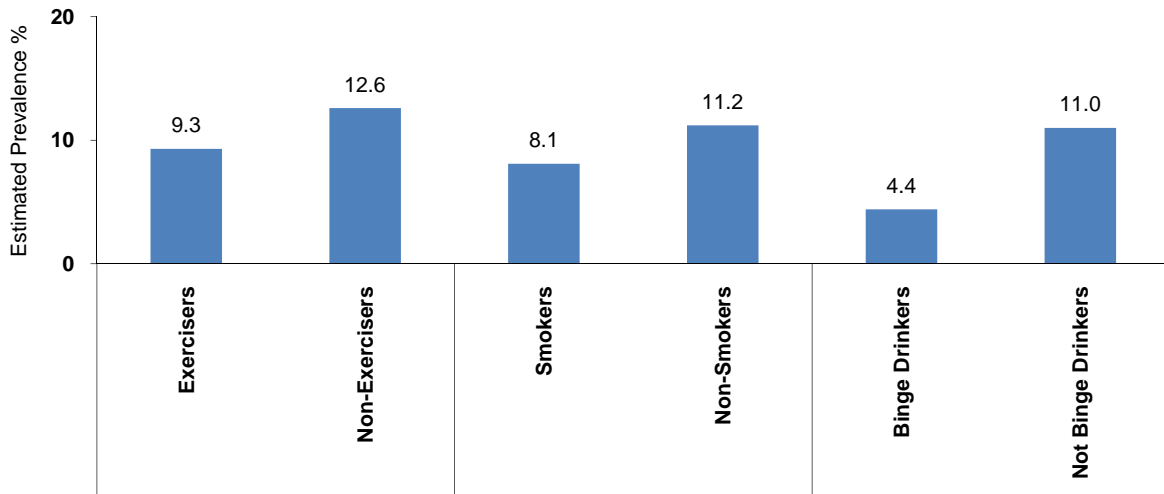
Rank	Males	Prevalence (%)	Females	Prevalence (%)
1	Skin Cancer	31.2	Breast Cancer	20.9
2	Prostate Cancer	23.4	Skin Cancer	20.8
3	Colorectal Cancer	10.5	Cervical Cancer	17.8
4	Melanoma	10.4	Endometrial Cancer	8.0
5	Lung Cancer	3.4	Colorectal Cancer	6.2
6	Bladder Cancer	3.2	Melanoma	6.1
7	Renal Cancer	2.7	Ovarian Cancer	5.7
8	Testicular Cancer	2.1	all other cancers	3.1
9	all other cancers	2.0	Leukemia	2.9
10	Leukemia	1.8	Thyroid Cancer	1.8

Data Source: WV Health Statistics Center, Behavioral Risk Factor Surveillance System, 2009

As discussed above, the cancer prevalence statistic includes both newly diagnosed cancer patients as well as people who have survived cancer for decades. According to the 2009 BRFSS, West Virginia adults who have been diagnosed with cancer have survived for an average of 11.4 years (range 0-71 years). The results also indicate that some have survived more than one type of cancer. Of those diagnosed with cancer in West Virginia, 87.5% had one cancer, 10.9% had two types of cancer, and 1.6% had three or more different types of cancer. It is also important to distinguish between those currently in treatment and those who are not in treatment. The results indicate that 11.2% of cancer survivors in the state are currently in treatment and 88.8% are not in treatment. There are no gender differences in the prevalence of multiple cancers.

Brownson and Joshu (2010) report that causes of cancer include tobacco use, physical inactivity, poor diet, alcohol use, and obesity. Figure 4 displays the WV adult cancer prevalence by several behavioral risk factors. The results of this analysis indicate that cancer prevalence is significantly higher among the sedentary than among those who exercise. Contrary to expectations, cancer prevalence was higher among non-smokers than smokers and among moderate drinkers than binge drinkers. No significant findings were found for overweight, obesity, or heavy drinking.

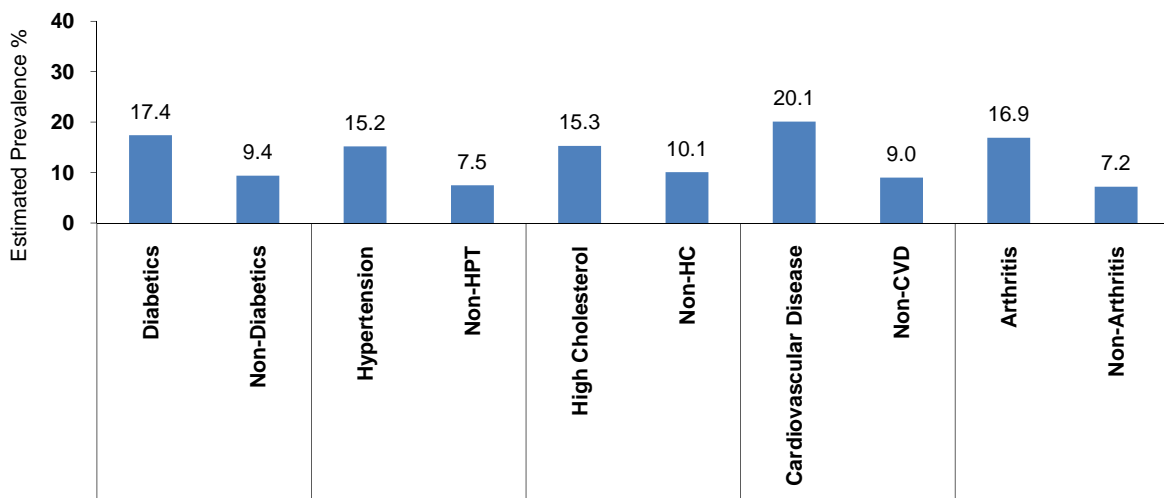
Figure 4. WV adult cancer prevalence by physical activity, cigarette smoking, and binge drinking, 2009



Data Source: WV Health Statistics Center, Behavioral Risk Factor Surveillance System, 2009

The data were also examined for co-morbid conditions to determine the prevalence of cancer among those with other chronic diseases and conditions. Figure 5 displays the prevalence of cancer among those with diabetes, hypertension, high cholesterol, and arthritis. As can be seen in the graph, cancer prevalence is higher among those with these various chronic diseases and conditions than among those without the disease. The prevalence of cancer among those with asthma was also examined but there were no significant findings.

Figure 5. WV adult cancer prevalence among other chronic diseases, 2009



Data Source: WV Health Statistics Center, Behavioral Risk Factor Surveillance System, 2009

Several factors impact the quality of life of cancer survivors including psychosocial adjustment, physical factors, and economic stability. In 2009, the West Virginia Health Statistics Center collected data on insurance coverage, clinical trial enrollment, pain, and pain management using the BRFSS. The results indicated that 91.8% of cancer survivors had health insurance that paid for part or all of their treatment while 8.2% did not have insurance that paid for treatment. Of those diagnosed with cancer in West Virginia, only 5.4% had participated in a clinical trial. About 1 in 10 cancer survivors (11.5%) in the state experienced pain associated with their cancer or cancer treatment. Of those with pain, 78.2% said their pain is currently under control, while 21.8% said pain is not under control. Analysis of contributing factors indicate that there are no gender, age, education, or income differences for insurance coverage, clinical trial enrollment, pain, or pain management. The prevalence of cancer was also found to be higher among those who reported being disabled (15.9%) than those who are not disabled (8.3%).

Overall, these findings indicate that cancer prevalence in West Virginia is a complex issue. Because prevalence is influenced by both the number of new cases of cancer diagnosed in the state and the effectiveness of treatment, it is not easy to define. On one hand, cancer prevalence may be high due to high incidence rates. On the other hand, cancer prevalence may be higher due to large numbers of people surviving cancer for long periods of time. In essence, we cannot say whether we want cancer prevalence to increase or decrease because of the complexity associated with its definition and various factors that influence it. This brief examined several important factors related to cancer survivorship that further expand upon what we know about the burden of cancer in West Virginia and should be viewed as preliminary data findings regarding cancer prevalence and survivorship. Because this brief reports on only one year of data, it will be updated as additional data are collected.


As stated above, the information contained in this brief can be used by the West Virginia Comprehensive Cancer Program to plan, implement, and evaluate evidence based interventions focusing on cancer survivorship issues. The statewide cancer coalition, Mountains of Hope, can also use this information to update the *West Virginia Cancer Plan* and set new objectives based on this valuable new data source.

References

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