West Virginia Cancer Burden Report

2017

WVU Cancer Institute

WEST VIRGINIA Department of Health & Human Resources

Report Prepared by:
WVU Cancer Institute for
the West Virginia Department of Health and Human Resources

Authors/Editors:

Stephenie Kennedy, EdD, MA
Amy R. Allen, MA, MS
Mary Ellen Conn, MS
Steven Blankenship, MS
Jenny Ostien, MS
Amie Muraski, MPH

Contributors:
Shawn Farley, MHA, CTR
Myra Fernatt, BS
Leslie Boner, CTR
Neal Kerley, CTR
Jena Webb-Chapman

We acknowledge the Centers for Disease Control and Prevention, National Program of Cancer Registries for its support of the West Virginia Cancer Registry staff. This report was also supported by funds made available from the Centers for Disease Control and Prevention, Office for State, Tribal, Local and Territorial Support, under PHHSBG #NB01OT009134-01-01.

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

This report is made possible thanks to the efforts of the WVCR staff, personnel at reporting facilities that see cancer patients throughout West Virginia, and the employees at other state central cancer registries who provided incidence data for this report.

www.cancerregistry.wv.gov
www.wvucancer.org/cancer-prevention-control/

Suggested Citation
2017 West Virginia Cancer Burden Report. WV Cancer Registry, WV Department of Health and Human Resources and West Virginia University Cancer Institute, Morgantown, WV, December 2017.

Cover photo attributed to Rebecca Reed.

Table of Contents

* actual page does not have a page number on it

Preface

The 2017 West Virginia Cancer Burden Report reflects a collaborative effort between the office of Cancer Prevention and Control at the WVU Cancer Institute and the West Virginia Cancer Registry. We continue to partner together to better serve our state, maximize resources, build on the inherent strengths of staff, and generate a user-friendly document. Inside this edition, you will find the usual updates on incidence and mortality, but you will also discover highlighted cancers – breast, cervical, lung, colorectal (also known as colon and rectum) and a new section on HPV-associated cancers. There are summaries, one page infographics, and WV resource pages to address these cancers. We also included a Frequently Asked Questions section that defines confusing terms and showcases Mountains of Hope, our statewide Cancer Coalition. We encourage everyone to consider joining this organization and assisting in the implementation of the WV Cancer Plan.

This report provides updated statewide, age-adjusted incidence rates and counts for cancers diagnosed among West Virginia residents from 2010 to 2014. The purpose of the report is to provide WV cancer data to cancer prevention and control partners, researchers, policy makers, and the public.

A total of 57,217 new cases (approximately 11,443 cases annually) of invasive (and in situ bladder) cancer was diagnosed among WV residents from 2010 to 2014. During this time period, 29,544 cases (52%) were diagnosed among males and 27,673 cases (48%) were diagnosed among females.

From 2010 to 2014, the most common cancers reported among WV residents were lung and bronchus (18%), female breast (12%), prostate (11%), and colon and rectum (10%). These four cancer sites accounted for over half of West Virginia's cancer burden. Other cancers commonly reported in our state included urinary bladder (5%), melanoma (4%), non-Hodgkin lymphoma (4%), kidney and renal pelvis (4%), corpus and uterus (3%), and thyroid (3%). Prostate cancer was the most commonly diagnosed cancer in men and accounted for just over one-fifth (21%) of all cancers diagnosed among men. Breast cancer continues to be the most commonly diagnosed cancer among females accounting for more than a quarter (26%) of all cancers diagnosed in WV women. Lung cancer and colon and rectum cancer were the second and third most commonly diagnosed cancers in both sexes, but have higher mortality rates.

Over the past five years there have been increasing and decreasing trends for certain kinds of cancers. Incidence and mortality trends are illustrated on pages 9 and 19 respectively.

Cancer can occur at any age, but is primarily a disease of aging. For most cancer sites the risk of developing cancer increases with age, from birth through ages 75-84. Cancer risk then decreases slightly among those aged 85 and older. However, this is not true for all cancers. Some cancers, such as thyroid and testicular, peak at much younger ages. There are also cancers that affect children and data for pediatric cancers in WV can be found on page 17 of this report.

Statewide geographic differences in incidence rates were noted for specific cancer types. There are a variety of reasons why cancer incidence rates vary by county. These reflect random variation, differences in exposure to risk factors (e.g. smoking, diet, physical inactivity, environmental), genetics, and cancer screening practices. Appendix B includes county level data for 13 different cancers.

We hope that you find this information helpful and easy to read. We encourage you to use the data and infographic pages for presentations, reports, and grant applications. We truly enjoyed the process of developing this resource and hope the citizens of the Mountain State find it useful and informative.

Sincerely in service,

Stephenie K. Kennedy, Ed.D.

Stephenie K. Kennedy, EdD, MA
Director, Cancer Prevention and Control
WVU Cancer Institute
Assoc. Dir., WVU Health Disparities Program
Research Assistant Professor
WVU School of Medicine

Steven E. Blankenship, MS

Steven E. Blankenship, MS
Epidemiologist
Division of Cancer Epidemiology
WV Department of Health and Human Resources
Bureau for Public Health
Office of Epidemiology and Prevention Services

Overview of Cancer Prevention and Control

Cancer Prevention and Control (CPC) at the West Virginia University Cancer Institute connects WV communities to the University and to our Institute to address cancer health disparities unique to WV and Appalachia. Central to the Institute's mission, CPC fosters relationships to promote community engagement and innovative service opportunities; develops culturally appropriate education and outreach initiatives; conducts community-based participatory research; and translates cancer-related science and research for WV communities. CPC has served the state with its innovative programs for more than 30 years. Presently, under the leadership of Dr. Stephenie Kennedy, Director of Cancer Prevention and Control, CPC is made up of six programs described in detail in the table below. While each CPC program has unique goals, all come together as part of a strategic, comprehensive approach to control and prevent cancer in the Mountain State. These programs empower communities and West Virginians to become more active participants in their healthcare through cancer education, information, access to services, and community-based participatory research (CBPR) and benefit the entire state.

Program	Funding Source	Brief Summary
WV Breast and Cervical Cancer Screening Program (WVBCCSP)	Centers for Disease Control and Prevention through a partnership with the WV Bureau for Public Health	Provides community-clinic linkages; conducts policy, systems, and environmental change efforts; and implements evidence-based interventions at the clinic level to increase breast and cervical cancer screening
Bonnie Wells Wilson Mobile Mammography Program (also known as Bonnie's Bus)	Various grant funds, donations, and insurance reimbursement for services	Provides breast cancer screening throughout the state
Mountains of Hope WV Cancer Coalition (MOH)	Centers for Disease Control and Prevention through a partnership with the WV Bureau for Public Health	Develops and implements the WV Cancer Plan; manages statewide coalition; facilitates collaboration among coalition partners; focuses on policy, systems, and environmental change
WV Program to Increase Colorectal Cancer Screening (WV PICCS)	Centers for Disease Control and Prevention	Conducts systems-based change with primary care practices, health systems, and payers to increase colorectal cancer screening
WV Lung Cancer Project (WVLCP)	Patient Advocate Foundation	Enrolls eligible Medicaid managed care patients into lung cancer screening; addresses public and provider education regarding the need for such screening; and refers lung cancer patients to appropriate case management services
WV Lung Cancer Survivorship Project, Bridge to Good Living: Thriving Beyond Lung Cancer	Bristol-Myers Squibb Foundation	Implements an enhanced patient survivorship program for those completing lung cancer treatment; educates providers; and provides a platform for broad dissemination of cancer survivorship information

Overview of West Virginia Cancer Registry

The West Virginia Cancer Registry (WVCR) was established by the West Virginia Department of Health and Human Resources in 1991 as a breast and cervical cancer registry. In 1993, the WVCR became an all-site registry, collecting data on all cancers except basal and squamous cell carcinoma of the skin and in situ cervical cancer. In 2002, the WVCR began collecting data on non-malignant brain and other central nervous system (CNS) tumors. WVCR is funded by both state and federal funding with the latter administered through a cooperative agreement with the Centers for Disease Control and Prevention's National Program of Cancer Registries. Chapter 16-5A-2a of the West Virginia Code and Title 64, West Virginia Administrative Rules, Division of Health, Cancer Registry, Series 68, provide the legal basis of the WVCR.

The mission of the WVCR is to collect and analyze cancer data to determine incidence rates by anatomical site, sex, race, geographic location, and other factors. Registry staff also monitor trends in cancer incidence among WV residents.

The WVCR collects information on all cancers diagnosed and/or treated in the state of WV and, through lawful, reciprocal data sharing agreements, cancers diagnosed and/or treated among WV residents by health care providers outside the state. A WV resident is defined as a person reporting a WV address at the time of a cancer diagnosis.

The WVCR's reference date (the date after which reportable cancer cases must be included in the Registry) is January 1, 1993, for all cancer sites. The reference date for benign brain and CNS neoplasms is January 1, 2002.

The WVCR is subject to certification by the North American Association of Central Cancer Registries (NAACCR). Certification is based on timeliness, completeness, and quality of data. WVCR was certified at the "silver" level for diagnosis years 1997 and 1998 and at the "gold" (highest) level for diagnosis years 1999 through 2014 (the most recent year for which certification results were available at the time of this writing). In addition, WVCR data met the 24-month standards of the National Program of Cancer Registries.

The WVCR is committed to the use of cancer incidence data as a critical component of cancer control and publishes this annual report on cancer incidence in West Virginia to be used by community-based, state, regional, and national cancer control groups. The WVCR provides de-identified data to the Centers for Disease Control and Prevention for the publication of the United States Cancer Statistics and to the North American Association of Central Cancer Registries for the Cancer in North America (CINA) publications. Researchers may obtain access to case level data under strict controls including approval by the relevant Institutional Review Board and the WV Cancer Advisory Committee.

Frequently Asked Questions

1. What is a cancer registry?

   A cancer registry is an information system for the collection, management, and analysis of data on people diagnosed with cancer. The registry collects detailed information about cancer patients and the treatments they receive, and stores it in a secure computer database. This information comes from patients' medical records. All names and data that could identify a patient are kept confidential. For every cancer case, the registry includes:

   When the cancer was diagnosed
   Where the cancer occurred in the body
   How far advanced the cancer was when it was found
   The specific type of cancer
   The type of treatment the patient received, and
   Demographics like age, race, gender, and county of residence.

   The cancer registry information can help to answer questions like:

   Are more or fewer people getting colon cancer this year compared to last year?
   Is there a certain area of the state where women are finding out they have breast cancer at a later stage, when it is harder to treat?
   What groups of people are most likely to get lung cancer?

2. How will this report be used?

   Public health professionals, researchers, the medical community, and policy makers need information about the number of newly diagnosed cancer cases (called **incidence**) and deaths from cancer (called **mortality)** to understand and address the nation's cancer burden.

   Cancer registry information is used to:

   Monitor cancer trends over time
   Show cancer patterns in various populations and identify high-risk groups
   Guide planning and evaluation of cancer control programs
   Help set priorities for allocating health resources, and
   Advance clinical, epidemiologic, and health services research.

   The cancer registry information is used by many groups, like the state comprehensive cancer control coalition. Based on the registry data, cancer control partners may find that some people are not getting the cancer screening tests they need or they are making choices that increase their risk of cancer. They can then work with the community to fix the problem. Over time the cancer registry data will help show if their solution reduced the incidence of cancer.

3. How are the data obtained?

   The figures and tables on the following pages summarize cancer incidence data for West Virginia for all cancers combined and select cancer types. The data are extracted from patient records and reported directly to the West Virginia Cancer Registry (WVCR). This report includes cases reported to the WVCR as of November 1, 2016. Data included in this report may change in future reports since missed cases are added to the WVCR database.

4. What is a cancer incidence rate?
   A cancer incidence rate is defined as the number of new cancer cases that occur for a specified population at risk for developing the disease during a specified time period. Cancer rates are most commonly expressed as the number of cancers per 100,000 population. Rates allow us to compare groups of different population sizes.

5. What are age-adjusted rates?
   An age-adjusted rate is statistically modified to account for the different age distributions among populations. It is usually expressed as a rate per 100,000 population. Age-adjustment is important when looking at cancer rates because cancer is usually a disease of aging. The rates in this report are age-adjusted using the 2000 U.S. standard population.

6. What is a confidence interval?
   A confidence interval is a range of values for a variable of interest (e.g., a rate) that has a specified probability of containing the true population value. The 95% confidence interval is one of the most common levels of confidence reported.

7. What are case counts?
   State and county data are presented as total counts for the 5-year period (2010-2014) unless otherwise noted. For an average annual count, divide the 5-year count by 5.

8. Why are some case counts not available?
   Counts were suppressed (indicated by ^) in the tables if the number of cases was less than four. An important reason for suppressing counts is to protect the confidentiality of individuals whose data are included in the report.

9. How were the data analyzed?
   SEER*Stat software (version 8.3.4) was used to calculate all cancer incidence rates and counts presented in this report. All rates were expressed per 100,000 population except for pediatric cancers which are shown as the rate per million population. Age-adjusted rates were standardized to the 2000 U.S. standard population (19 age groups).

10. How are the data explained and displayed?
    Most of the data in this report are shown as rates per 100,000 people to allow for “apples to apples” comparisons of areas with different population sizes. Ninety-five percent confidence intervals are shown to allow for statistical comparisons. Average annual rates over a 5-year period are shown to provide a more stable estimate of incidence than would be possible with yearly incidence rates. Five-year case counts are provided to show the volume of cases diagnosed and treated each year.

11. What is cancer?
    Cancer is a group of diseases that develop when cells in the body grow and divide uncontrollably. If the growth and spread is not controlled, it can result in death.

12. Who is at risk of developing cancer?
    Anyone can develop cancer, but risk increases with age. In the United States, men and women combined have about a 1 in 3 lifetime risk of developing invasive cancer.

13. Where can I find additional information on cancer?
    Cancer information is available from a variety of credible resources including the following:
    - Centers for Disease Control and Prevention - https://www.cdc.gov/cancer/
    - National Cancer Institute - https://www.cancer.gov/about-cancer
    - American Cancer Society - http://www.cancer.org/cancer/index
    - WVU Cancer Institute - http://wvucancer.org/

14. What is Mountains of Hope?
    Mountains of Hope WV Cancer Coalition (MOH) is dedicated to reducing the human and economic impact of cancer in our state. The founding members of the coalition include the American Cancer Society, WV Breast and Cervical Cancer Screening Program, WV Comprehensive Cancer Program, and the WVU Cancer Institute.

    Part of the Centers for Disease Control and Prevention's National Comprehensive Cancer Control Program, MOH Coalition members meet face-to-face to pool resources and collaborate to address the goals and priorities of the WV Cancer Plan. The WV Cancer Plan is the State's ambitious comprehensive cancer plan that serves as a blueprint to address the needs of the State to improve the overall health equity of all affected by cancer. It is designed to be used by communities, organizations, universities, and legislators who want to decrease the impact of cancer on WV residents. The Coalition selects priority areas to address every two years. The priority areas for 2016-2018 are:

    1. Reducing use of artificial ultra-violet light for tanning,
    2. Increasing the immunization rates for vaccines shown to decrease the risk of cancer,
    3. Increasing risk-appropriate screening for colorectal cancer,
    4. Increasing risk-appropriate screening for lung cancer,
    5. Increasing participation in cancer clinical trials,
    6. Improving the quality of life of cancer survivors in WV, and
    7. Increasing utilization of hospice care.

    Coalition members include more than 350 health care professionals, volunteers, cancer survivors and community advocates representing over 200 community-based organizations, research and academic institutions, public and private agencies, coalitions, voluntary associations, patient advocacy groups, and other cancer-related organizations from West Virginia. Learn more about MOH by visiting www.wvmountainsofhope.org or www.moh.wv.gov.

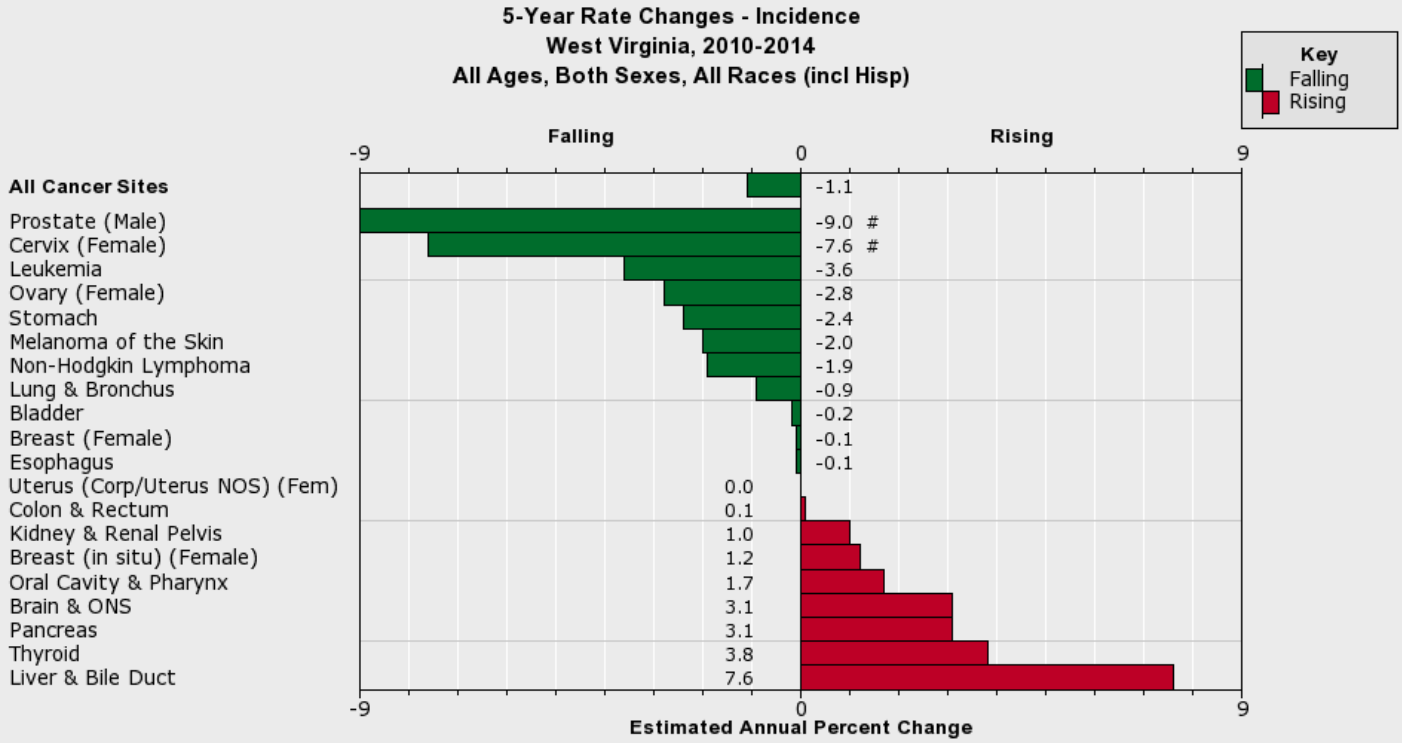
15. Where can I direct my questions or suggestions about the WV Cancer Burden Report?
    Questions regarding data in the 2017 West Virginia Cancer Burden Report may be directed to 304.356.4953. Questions or suggestions regarding the 2017 West Virginia Cancer Burden Report should be sent to cpc@hsc.wvu.edu.

References

- American Cancer Society - http://www.cancer.org/cancer/index
- Centers for Disease Control and Prevention - https://www.cdc.gov/cancer/
- Mountains of Hope WV Cancer Coalition - www.wvmountainsofhope.org or www.moh.wv.gov
- National Cancer Institute - https://www.cancer.gov/about-cancer
- West Virginia Cancer Registry - http://www.dhhr.wv.gov/oeps/cancer/pages/aboutwvcr.aspx
- WVU Cancer Institute - http://wvucancer.org/

2010-2014 Trends in Cancer Incidence

5-Year Rate Changes – Incidence, West Virginia, 2010-2014

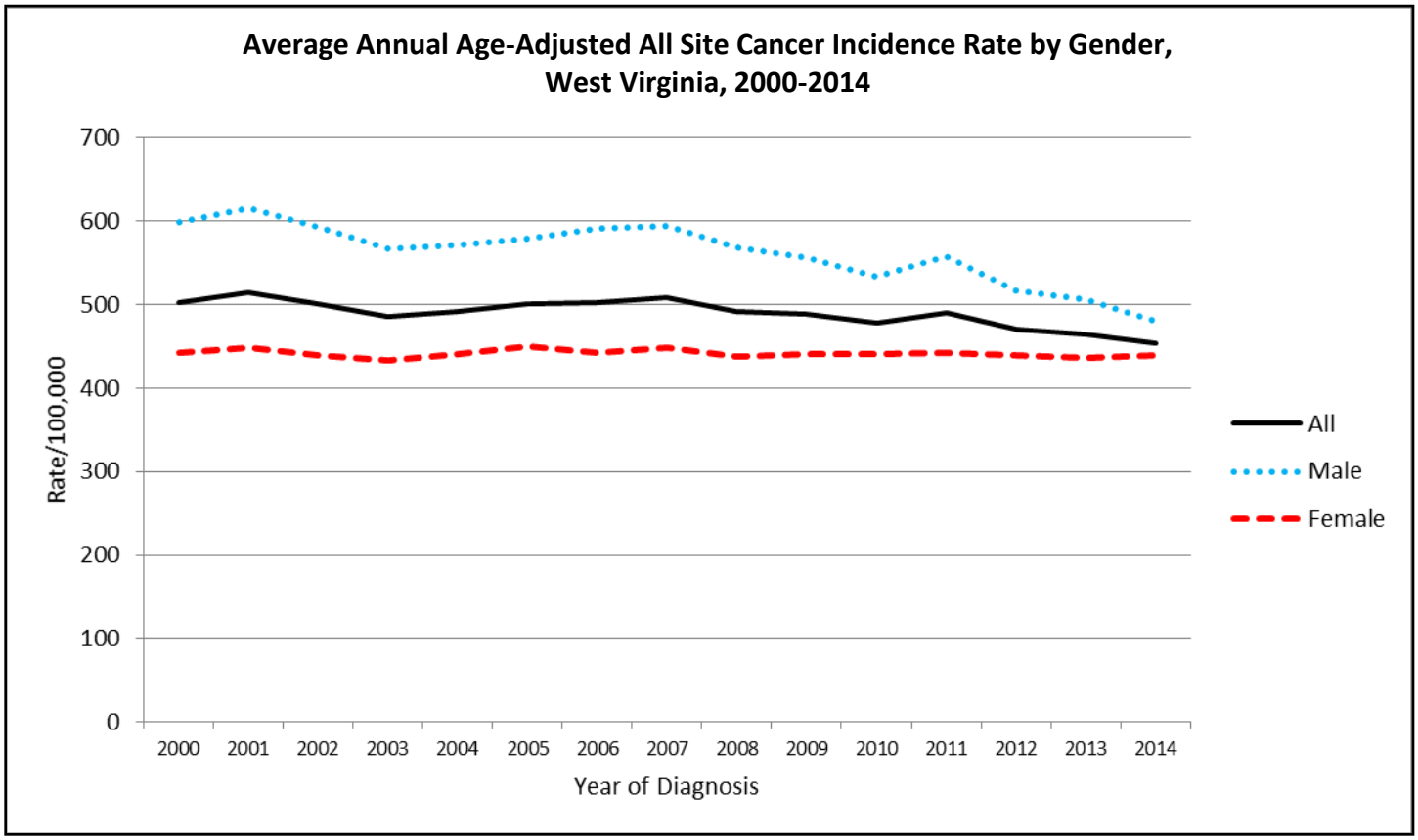


Created by statecancerprofiles.cancer.gov on 09/27/2017 1:34 pm.

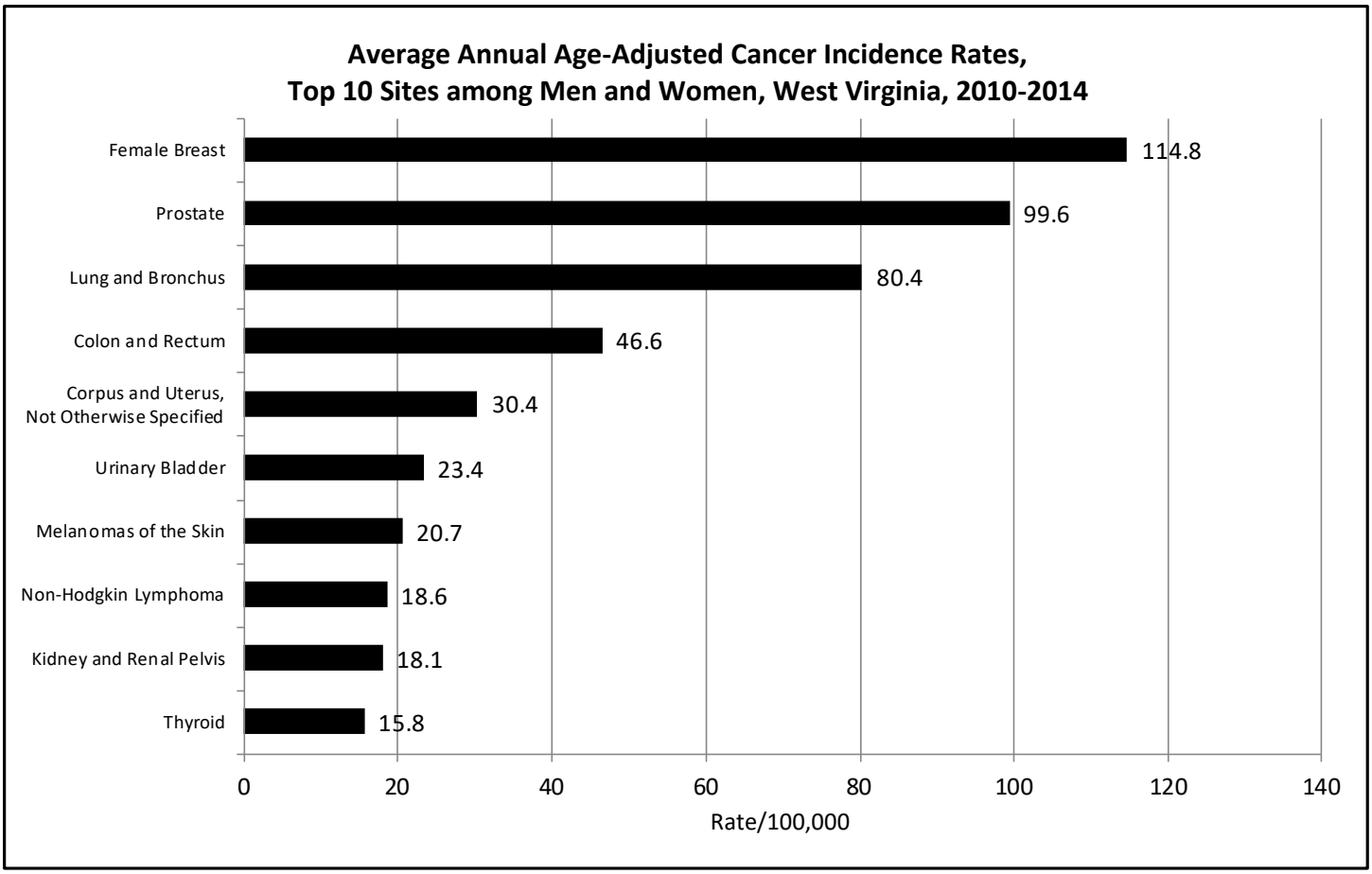
Source: Incidence data provided by the National Program of Cancer Registries (NPCR). EAPCs calculated by the National Cancer Institute using SEER*Stat. Rates are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ... , 80-84,85+). Rates are for invasive cancer only (except for bladder cancer which is invasive and in situ) or unless otherwise specified. Population counts for denominators are based on Census populations as modified by NCI. The 1969-2015 US Population Data File is used with NPCR November 2016 data.
Please note that the data comes from different sources. Due to different years of data availablility, most of the trends are AAPCs based on APCs but some are EAPCs calculated in SEER*Stat. Please refer to the source for each graph for additional information.

- The annual percent change is significantly different from zero (p<0.05).

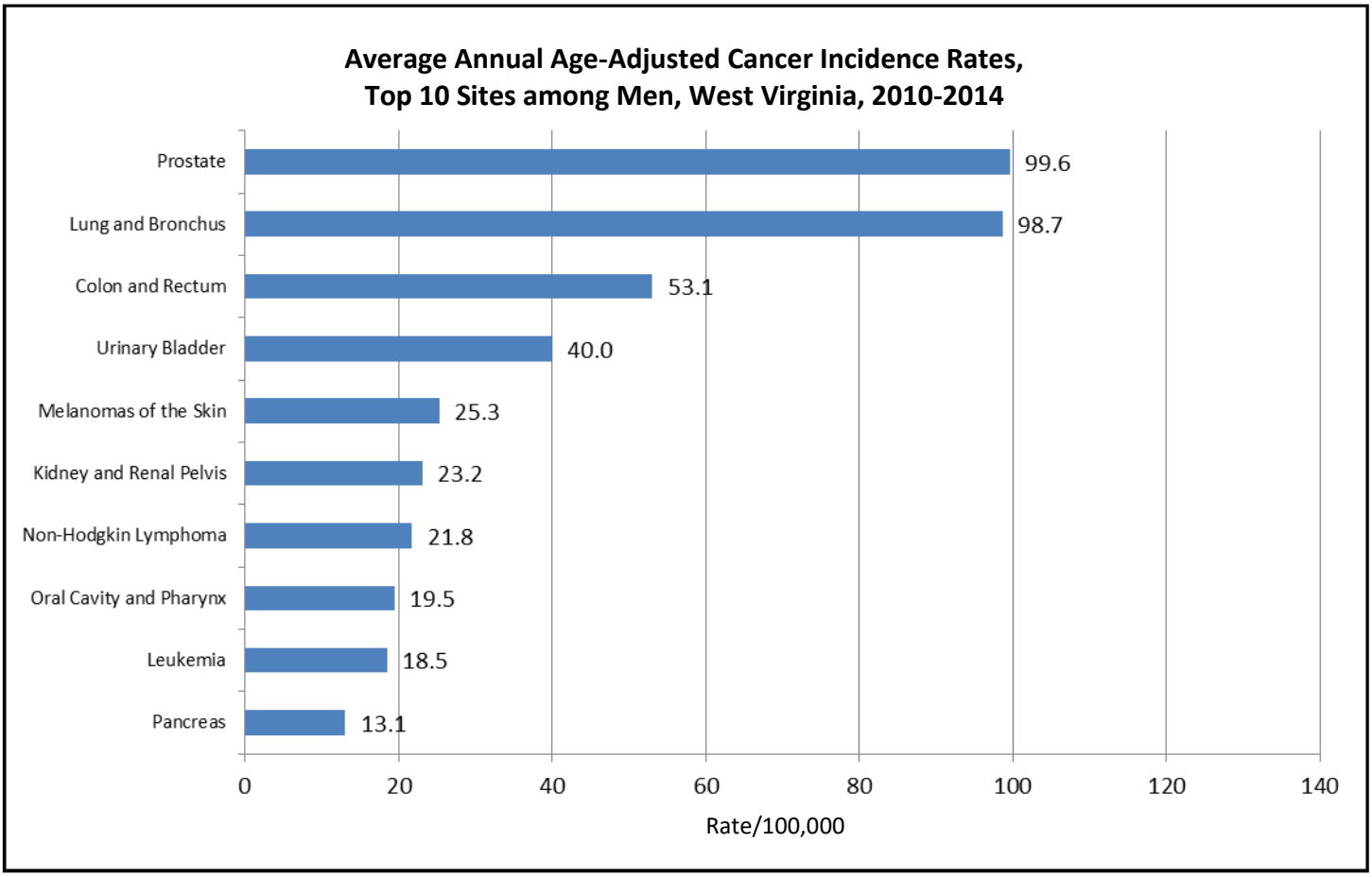
Average Annual Age-Adjusted All Site Cancer Incidence Rate (per 100,000), by Gender, West Virginia, 2000-2014			
Year	**All**	**Male**	**Female**
2000	502.4	598.1	442.2
2001	514.8	615.2	448.3
2002	500.8	592.9	438.8
2003	485.1	566.3	432.6
2004	491.8	571.6	441.2
2005	501.2	579.4	449.8
2006	503.1	590.8	441.8
2007	507.9	594.0	447.8
2008	491.5	568.3	437.9
2009	488.1	556.9	441.2
2010	477.7	533.8	440.5
2011	489.7	557.3	442.3
2012	470.7	516.2	439.4
2013	464.0	505.8	437.0
2014	454.4	479.6	438.9



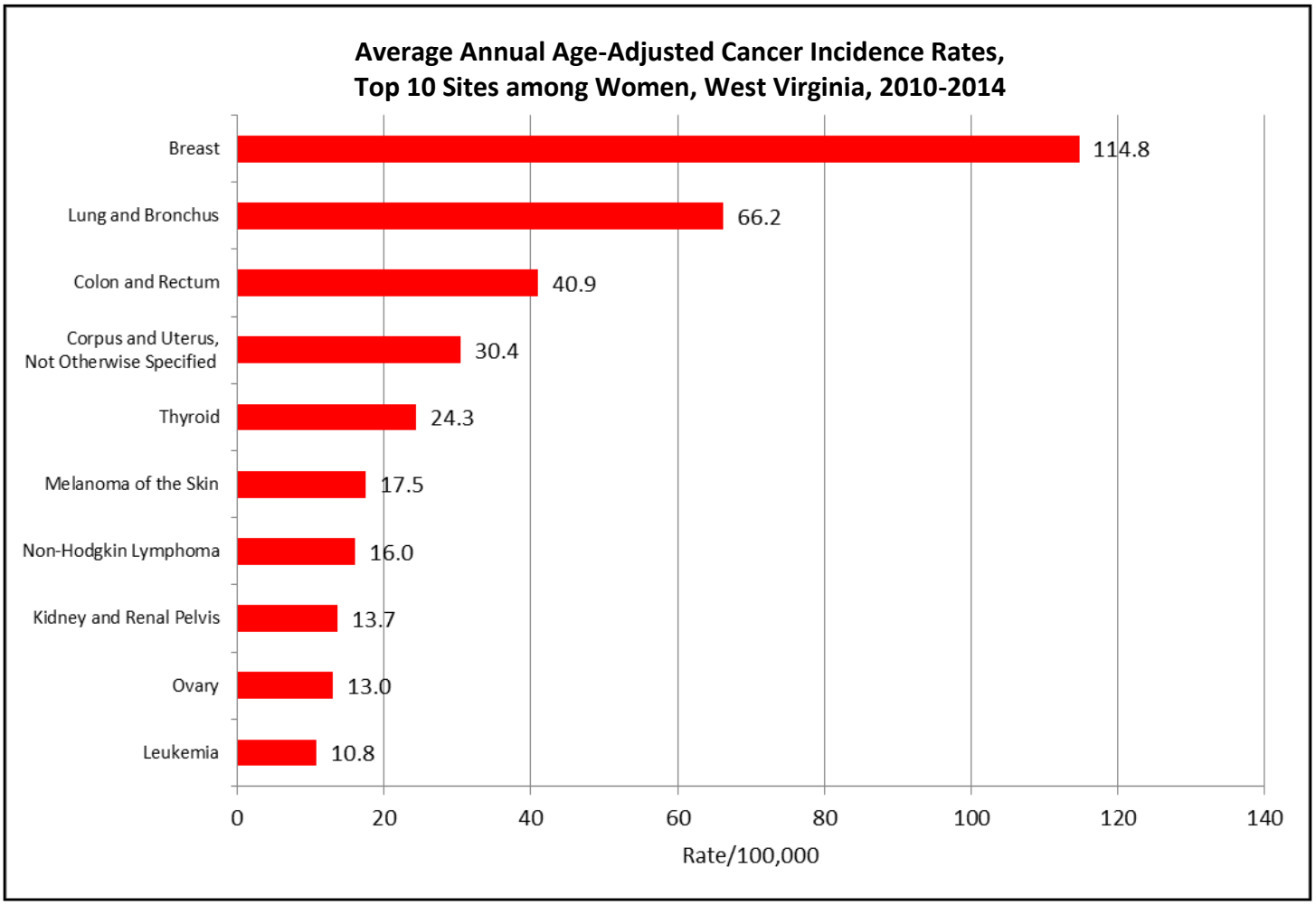
Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000), Top 10 Sites among Men and Women, West Virginia, 2010-2014	
Female Breast	114.8
Prostate	99.6
Lung and Bronchus	80.4
Colon and Rectum	46.6
Corpus and Uterus, Not Otherwise Specified	30.4
Urinary Bladder	23.4
Melanomas of the Skin	20.7
Non-Hodgkin Lymphoma	18.6
Kidney and Renal Pelvis	18.1
Thyroid	15.8



Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000), Top 10 Sites among Men, West Virginia, 2010-2014	
Prostate	99.6
Lung and Bronchus	98.7
Colon and Rectum	53.1
Urinary Bladder	40.0
Melanomas of the Skin	25.3
Kidney and Renal Pelvis	23.2
Non-Hodgkin Lymphoma	21.8
Oral Cavity and Pharynx	19.5
Leukemia	18.5
Pancreas	13.1



Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000), Top 10 Sites among Women, West Virginia, 2010-2014	
Breast	114.8
Lung and Bronchus	66.2
Colon and Rectum	40.9
Corpus and Uterus, Not Otherwise Specified	30.4
Thyroid	24.3
Melanoma of the Skin	17.5
Non-Hodgkin Lymphoma	16.0
Kidney and Renal Pelvis	13.7
Ovary	13.0
Urinary Bladder	10.8



Average Annual Age-Adjusted Cancer Incidence Rates, 95% Confidence Intervals, and 5-Year Counts by Select Sites and Gender, West Virginia, 2010-2014

Cancer Site	Male and Female				Males				Females			
	Rate	Lower CI	Upper CI	5-Year Count	Rate	Lower CI	Upper CI	5-Year Count	Rate	Lower CI	Upper CI	5-Year Count
All Sites	475.9	471.9	479.9	57,217	523.7	517.6	529.9	29,544	443.7	438.3	449.2	27,673
Oral Cavity and Pharynx	12.7	12.1	13.4	1,548	19.5	18.3	20.7	1,133	6.5	5.8	7.1	415
Esophagus	5.3	4.9	5.7	668	9.3	8.6	10.2	554	1.7	1.4	2.1	114
Stomach	6.4	5.9	6.9	782	8.8	8.0	9.6	499	4.4	3.9	4.9	283
Small Intestine	2.1	1.9	2.4	256	2.4	2.0	2.8	136	2.0	1.6	2.4	120
Colon and Rectum	46.6	45.3	47.8	5,603	53.1	51.1	55.1	2,939	40.9	39.3	42.5	2,664
Liver and Intrahepatic Bile Duct	6.0	5.6	6.5	768	9.7	8.9	10.5	577	2.8	2.4	3.3	191
Gallbladder	1.0	0.8	1.2	122	0.8	0.6	1.1	43	1.2	0.9	1.5	79
Pancreas	11.7	11.1	12.3	1,438	13.1	12.2	14.1	743	10.3	9.6	11.2	695
Larynx	5.3	4.9	5.7	668	8.3	7.6	9.1	498	2.6	2.2	3.1	170
Lung and Bronchus	80.4	78.8	82.0	10,055	98.7	96.1	101.4	5,639	66.2	64.2	68.2	4,416
Bones and Joints	0.9	0.7	1.1	85	1.0	0.7	1.3	45	0.8	0.6	1.1	40
Soft Tissues including Heart	3.0	2.6	3.3	326	3.6	3.1	4.2	187	2.5	2.0	2.9	139
Melanoma of the Skin	20.7	19.8	21.6	2,327	25.3	23.9	26.7	1,350	17.5	16.4	18.7	977
Breast	60.9	59.4	62.4	7,172	1.0	0.8	1.3	60	114.8	112.0	117.6	7,112
Cervix Uteri	---	---	---	---	---	---	---	---	9.8	8.9	10.7	485
Corpus and Uterus, NOS	---	---	---	---	---	---	---	---	30.4	29.0	31.9	1,935
Ovary	---	---	---	---	---	---	---	---	13.0	12.0	14.0	796
Prostate	---	---	---	---	99.6	97.0	102.2	6,057	---	---	---	---
Testis	---	---	---	---	5.7	5.0	6.5	239	---	---	---	---
Urinary Bladder	23.4	22.6	24.3	2,875	40.0	38.2	41.7	2,175	10.5	9.7	11.3	700
Kidney and Renal Pelvis	18.1	17.3	18.9	2,163	23.2	21.9	24.5	1,299	13.7	12.8	14.7	864
Brain and Other Nervous System	6.7	6.2	7.2	715	7.6	6.8	8.4	391	6.0	5.3	6.7	324
Thyroid	15.8	15.0	16.6	1,612	7.2	6.5	8.0	386	24.3	22.9	25.7	1,226
Hodgkin Lymphoma	2.7	2.3	3.0	251	3.0	2.5	3.5	139	2.4	1.9	2.8	112
Non-Hodgkin Lymphoma	18.6	17.8	19.4	2,219	21.8	20.6	23.2	1,189	16.0	15.0	17.1	1,030
Myeloma	5.8	5.4	6.2	717	7.5	6.7	8.2	415	4.4	3.9	4.9	302
Leukemia	14.3	13.6	15.0	1,637	18.5	17.3	19.8	977	10.8	10.0	11.7	660

Average Annual Age-Adjusted Cancer Incidence Rates, 95% Confidence Intervals, and 5-Year Counts by Select Cancer Sites and Gender for Whites, West Virginia, 2010-2014

Cancer Site	White Males and Females				White Males				White Females			
	Rate	Lower CI	Upper CI	5-Year Count	Rate	Lower CI	Upper CI	5-Year Count	Rate	Lower CI	Upper CI	5-Year Count
All Sites	476.7	472.6	480.8	55,233	523.3	517.1	529.6	28,458	445.3	439.8	450.9	26,775
Oral Cavity and Pharynx	12.9	12.2	13.6	1,508	19.7	18.5	20.9	1,100	6.6	6.0	7.3	408
Esophagus	5.3	4.9	5.8	654	9.5	8.7	10.3	542	1.8	1.4	2.1	112
Stomach	6.2	5.8	6.7	739	8.7	7.9	9.5	475	4.2	3.7	4.8	264
Small Intestine	2.1	1.9	2.4	244	2.3	1.9	2.8	128	2.0	1.6	2.4	116
Colon and Rectum	46.5	45.2	47.8	5,398	52.8	50.9	54.9	2,820	41.0	39.4	42.6	2,578
Liver and Intrahepatic Bile Duct	5.8	5.4	6.3	711	9.3	8.5	10.2	531	2.8	2.4	3.2	180
Gallbladder	0.9	0.8	1.1	113	0.8	0.6	1.1	40	1.1	0.9	1.4	73
Pancreas	11.6	11.0	12.2	1,380	13.1	12.2	14.2	719	10.2	9.4	11.0	661
Larynx	5.3	4.9	5.7	648	8.4	7.6	9.2	484	2.6	2.2	3.1	164
Lung and Bronchus	80.9	79.3	82.5	9,776	99.0	96.4	101.8	5,471	66.8	64.8	68.9	4,305
Bones and Joints	0.9	0.7	1.1	78	0.9	0.6	1.2	40	0.8	0.6	1.1	38
Soft Tissues including Heart	2.9	2.6	3.3	311	3.6	3.1	4.2	179	2.4	2.0	2.9	132
Melanoma of the Skin	21.3	20.4	22.2	2,307	26.0	24.6	27.5	1,339	18.1	16.9	19.3	968
Breast	60.8	59.3	62.3	6,904	1.0	0.7	1.3	56	114.5	111.7	117.4	6,848
Cervix Uteri	---	---	---	---	---	---	---	---	9.9	9.0	10.9	470
Corpus and Uterus, NOS	---	---	---	---	---	---	---	---	30.6	29.2	32.1	1,870
Ovary	---	---	---	---	---	---	---	---	12.9	12.0	13.9	765
Prostate	---	---	---	---	97.6	95.1	100.3	5,725	---	---	---	---
Testis	---	---	---	---	6.1	5.3	6.9	238	---	---	---	---
Urinary Bladder	23.7	22.8	24.6	2,818	40.5	38.7	42.3	2,134	10.6	9.8	11.5	684
Kidney and Renal Pelvis	18.1	17.3	18.9	2,085	23.1	21.8	24.5	1,246	13.8	12.8	14.8	839
Brain and Other Nervous System	6.8	6.3	7.4	698	7.7	7.0	8.6	383	6.0	5.4	6.8	315
Thyroid	16.0	15.2	16.8	1,557	7.3	6.5	8.1	373	24.5	23.1	26.0	1,184
Hodgkin Lymphoma	2.7	2.4	3.1	243	3.0	2.5	3.6	134	2.4	2.0	2.9	109
Non-Hodgkin Lymphoma	18.7	17.9	19.5	2,155	22.0	20.7	23.3	1,156	16.1	15.1	17.1	999
Myeloma	5.7	5.2	6.1	677	7.3	6.6	8.1	392	4.3	3.8	4.8	285
Leukemia	14.3	13.6	15.1	1,580	18.4	17.2	19.7	938	11.0	10.1	11.9	642

Average Annual Age-Adjusted Cancer Incidence Rates, 95% Confidence Intervals, and 5-Year Counts by Select Cancer Sites and Gender for Blacks, West Virginia, 2010-2014

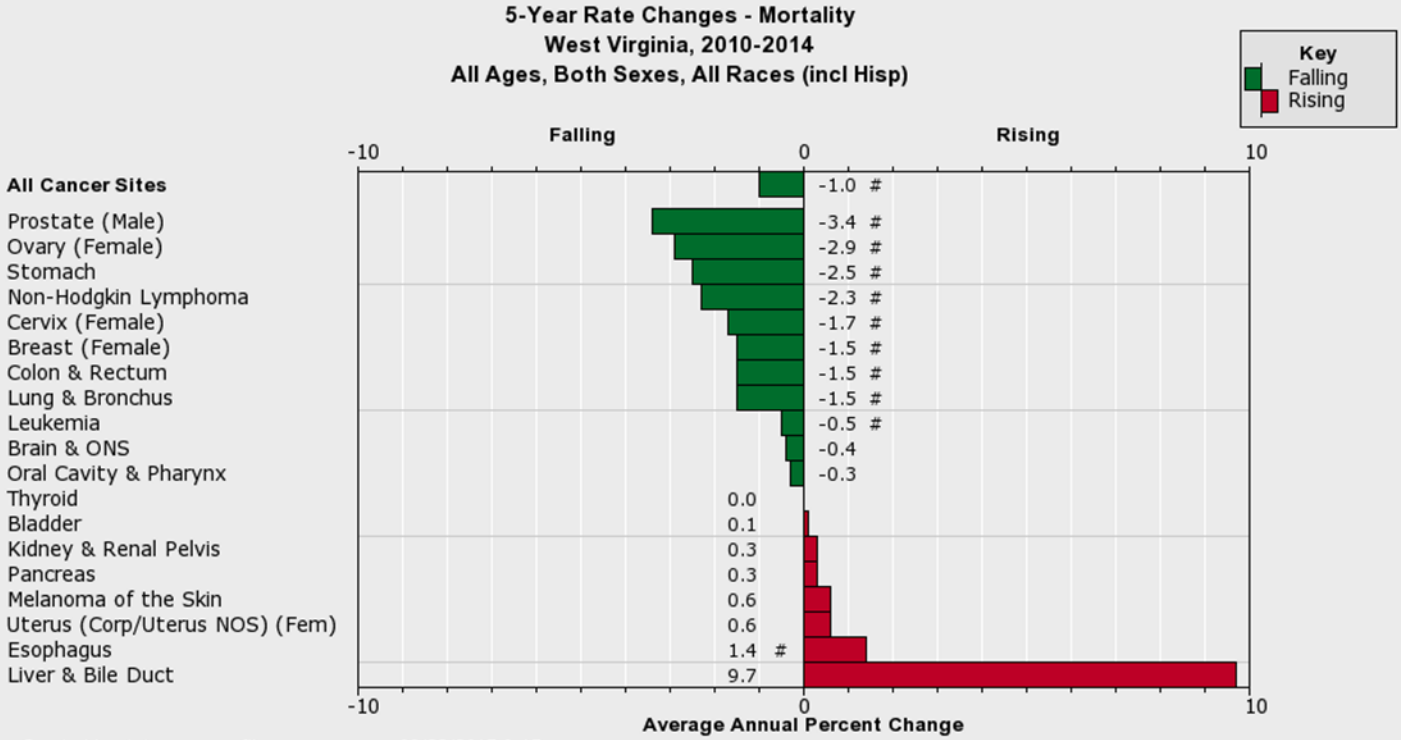
Cancer Site	Black Males and Females				Black Males				Black Females			
	Rate	Lower CI	Upper CI	5-Year Count	Rate	Lower CI	Upper CI	5-Year Count	Rate	Lower CI	Upper CI	5-Year Count
All Sites	443.8	421.0	467.6	1,516	521.1	483.8	560.5	859	381.3	352.0	412.4	657
Oral Cavity and Pharynx	9.5	6.4	13.7	31	17.3	10.8	26.0	26	3.2	1.0	7.4	5
Esophagus	2.9	1.4	5.4	10	4.3	1.8	8.8	8	1.3	0.2	4.6	2
Stomach	10.4	7.1	14.7	34	13.0	7.6	20.5	21	7.7	4.0	13.4	13
Small Intestine	3.9	2.0	6.9	12	6.0	2.4	12.0	8	2.6	0.7	6.7	4
Colon and Rectum	46.3	39.1	54.4	156	55.7	43.9	69.5	92	37.1	28.4	47.7	64
Liver and Intrahepatic Bile Duct	11.6	8.5	15.6	47	18.7	12.9	26.2	38	4.9	2.2	9.5	9
Gallbladder	2.3	0.9	4.7	7	1.2	0.1	4.4	2	3.4	1.1	7.9	5
Pancreas	14.7	10.7	19.7	47	13.1	7.8	20.6	21	14.6	9.4	21.6	26
Larynx	4.1	2.2	6.9	15	5.0	2.2	9.8	10	2.9	0.9	6.9	5
Lung and Bronchus	68.5	59.5	78.4	225	92.1	75.9	110.5	134	51.5	41.3	63.4	91
Bones and Joints	1.4	0.4	3.3	5	1.5	0.3	4.8	3	1.2	0.1	4.2	2
Soft Tissue including Heart	3.9	2.1	6.7	14	4.4	1.6	9.6	7	4.3	1.6	8.9	7
Melanoma of the Skin	0.9	0.2	2.6	3	0.5	0.0	3.2	1	1.5	0.2	5.1	2
Breast	61.9	53.5	71.3	205	2.9	0.7	7.6	4	119.2	102.9	137.4	201
Cervix Uteri	---	---	---	---	---	---	---	---	4.9	2.1	9.6	8
Corpus and Uterus, NOS	---	---	---	---	---	---	---	---	19.1	13.2	26.8	36
Ovary	---	---	---	---	---	---	---	---	11.8	7.2	18.3	21
Prostate	---	---	---	---	158.8	139.4	180.1	282	---	---	---	---
Testis	---	---	---	---	0.0	0.0	2.5	0	---	---	---	---
Urinary Bladder	12.1	8.5	16.6	38	20.1	12.8	29.7	28	5.8	2.7	10.8	10
Kidney and Renal Pelvis	19.5	15.0	24.9	68	25.2	18.1	34.2	46	13.1	8.1	20.0	22
Brain and Other Nervous System	3.2	1.5	5.8	10	3.8	1.4	8.4	6	2.3	0.6	6.0	4
Thyroid	9.7	6.6	13.7	34	4.1	1.8	8.2	9	15.4	9.8	22.9	25
Hodgkin Lymphoma	1.1	0.4	2.8	5	1.2	0.2	4.2	3	1.1	0.1	4.0	2
Non-Hodgkin Lymphoma	13.2	9.5	17.8	44	13.9	8.4	21.5	23	12.2	7.5	18.8	21
Myeloma	10.6	7.2	14.9	35	13.2	7.4	21.2	19	9.1	5.1	15.0	16
Leukemia	12.7	9.1	17.3	43	19.0	12.2	28.0	29	7.5	4.0	12.8	14

Average Annual Age-Adjusted Pediatric Cancer (Ages 0-19) Incidence Rates and 5-Year Counts, West Virginia and United States, 2010-2014				
International Classification of Childhood Cancer Grouping	**West Virginia**		**United States**	
	Rate per Million	**5-Year Count**	**Rate per Million**	**5-Year Count**
All Pediatric Invasive Cancer Sites	**179.3**	**387**	**183.0**	**75,229**
Leukemias, myeloproliferative and myelodysplastic diseases	39.8	85	47.5	19,470
Lymphomas and reticuloendothelial neoplasms	24.7	55	28.7	11,826
Central nervous system and miscellaneous intracranial and intraspinal neoplasms	36.4	78	32.2	13,146
Neuroblastoma and other peripheral nervous cell tumors	12.8	26	8.8	3,597
Retinoblastoma	6.5	13	3.3	1,330
Renal tumors	6.4	13	7.1	2,895
Hepatic tumors	2.4	5	2.6	1,060
Malignant bone tumors	10.0	22	8.9	3,673
Soft tissue and other extraosseous sarcomas	10.2	22	12.1	4,974
Germ cell and trophoblastic tumors, and neoplasms of gonads	9.9	22	11.3	4,704
Other malignant epithelial neoplasms and melanomas	19.7	45	19.5	8,127
Other and unspecified malignant neoplasms	0.0	0	0.8	312
Not classified by International Classification of Childhood Cancer, or in situ	0.5	1	0.3	115

Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.

2010-2014 Trends in Cancer Mortality

5-Year Rate Changes for Select Cancers – Mortality, West Virginia, 2010-2014

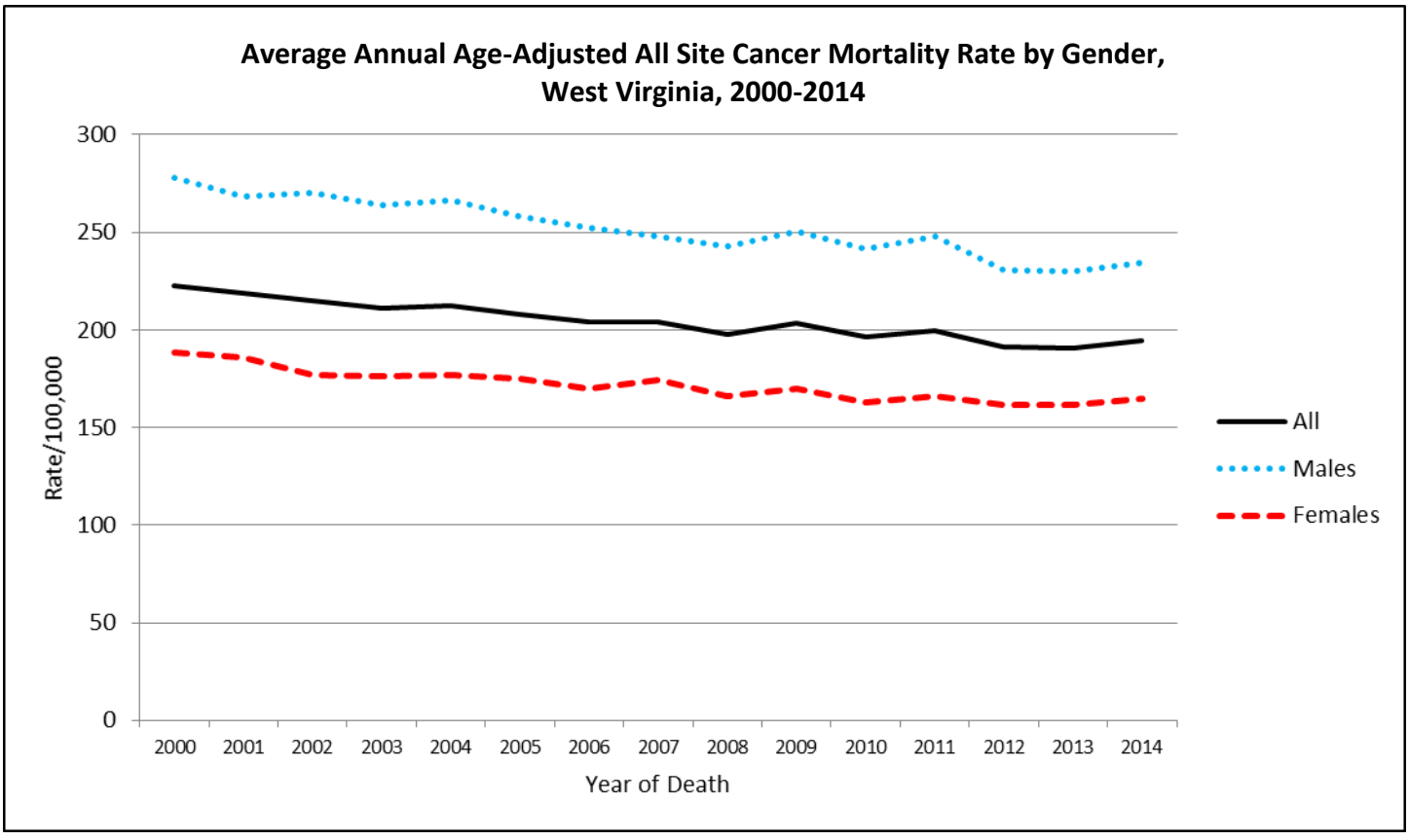


Created by statecancerprofiles.cancer.gov on 08/22/2017 9:17 am.

Source: Death data provided by the National Vital Statistics System public use data file. Death rates calculated by the National Cancer Institute using SEER*Stat . Death rates (deaths per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ... , 80-84, 85+). Population counts for denominators are based on Census populations as modified by NCI. The 1969-2015 US Population Data File is used with mortality data.
Please note that the data comes from different sources. Due to different years of data availablility, most of the trends are AAPCs based on APCs but some are EAPCs calculated in SEER*Stat. Please refer to the source for each graph for additional information.

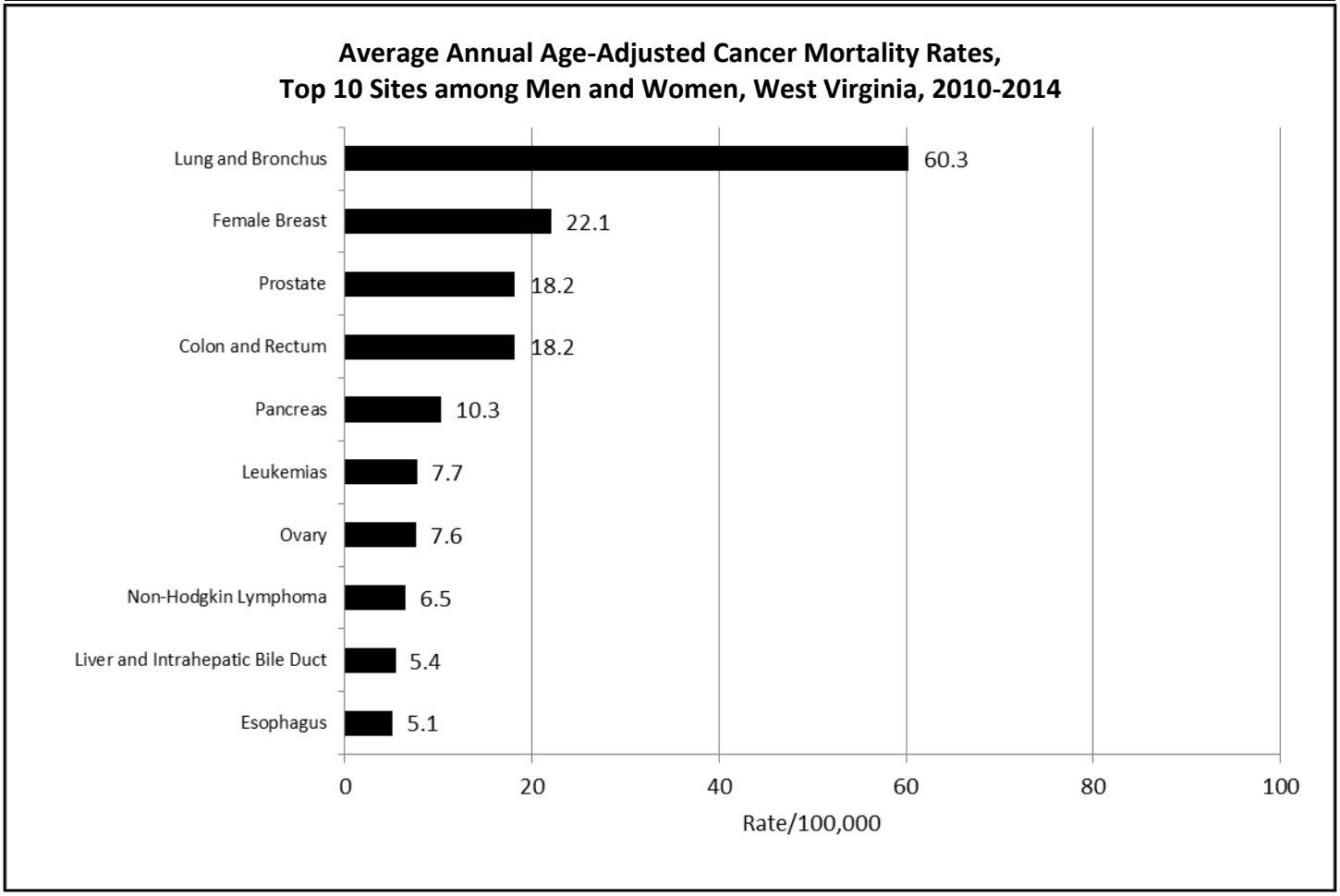
- The annual percent change is significantly different from zero (p<0.05).

Average Annual Age-Adjusted All Site Cancer Mortality Rate (per 100,000), by Gender, West Virginia, 2000-2014			
Year	All	Males	Females
2000	222.7	278.1	188.3
2001	218.5	268.4	185.6
2002	214.7	270.1	177.0
2003	211.2	263.7	176.2
2004	212.3	266.3	176.6
2005	207.6	258.1	175.1
2006	204.0	252.3	170.0
2007	204.3	248.0	174.6
2008	197.9	242.7	165.8
2009	203.3	250.6	170.2
2010	196.6	241.5	162.6
2011	199.7	247.7	166.1
2012	191.1	230.6	161.6
2013	190.5	229.9	161.7
2014	194.7	234.4	164.8



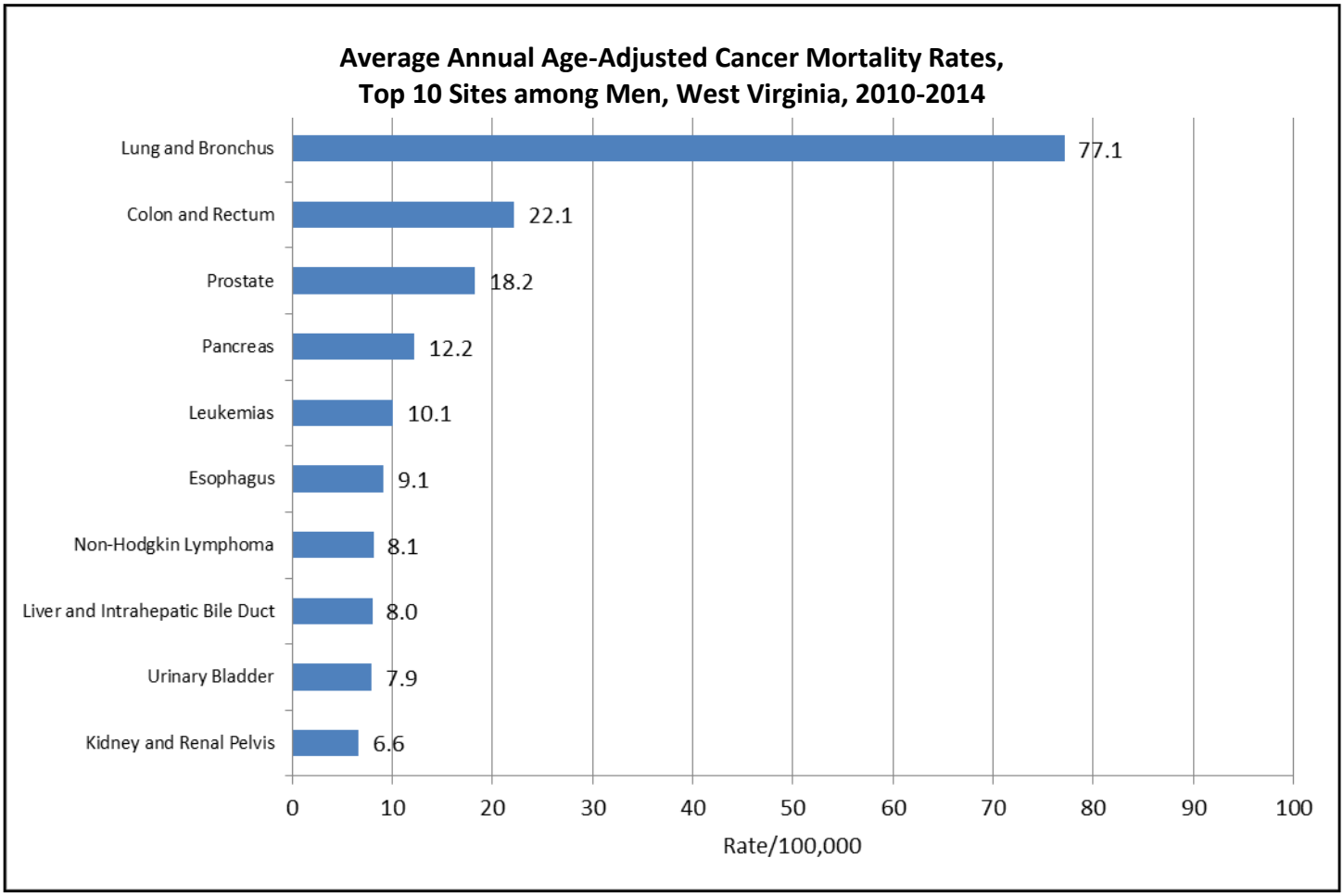
United States Cancer Statistics: 1999 - 2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.

Average Annual Age-Adjusted Cancer Mortality Rates (per 100,000), Top 10 Sites among Men and Women, West Virginia, 2010-2014			
Site	Age-adjusted Rate	Deaths	Population
Lung and Bronchus	60.3	7,473	9,267,192
Female Breast	22.1	1,446	4,694,182
Prostate	18.2	892	4,573,010
Colon and Rectum	18.2	2,201	9,267,192
Pancreas	10.3	1,276	9,267,192
Leukemias	7.7	903	9,267,192
Ovary	7.6	515	4,694,182
Non-Hodgkin Lymphoma	6.5	794	9,267,192
Liver and Intrahepatic Bile Duct	5.4	680	9,267,192
Esophagus	5.1	635	9,267,192



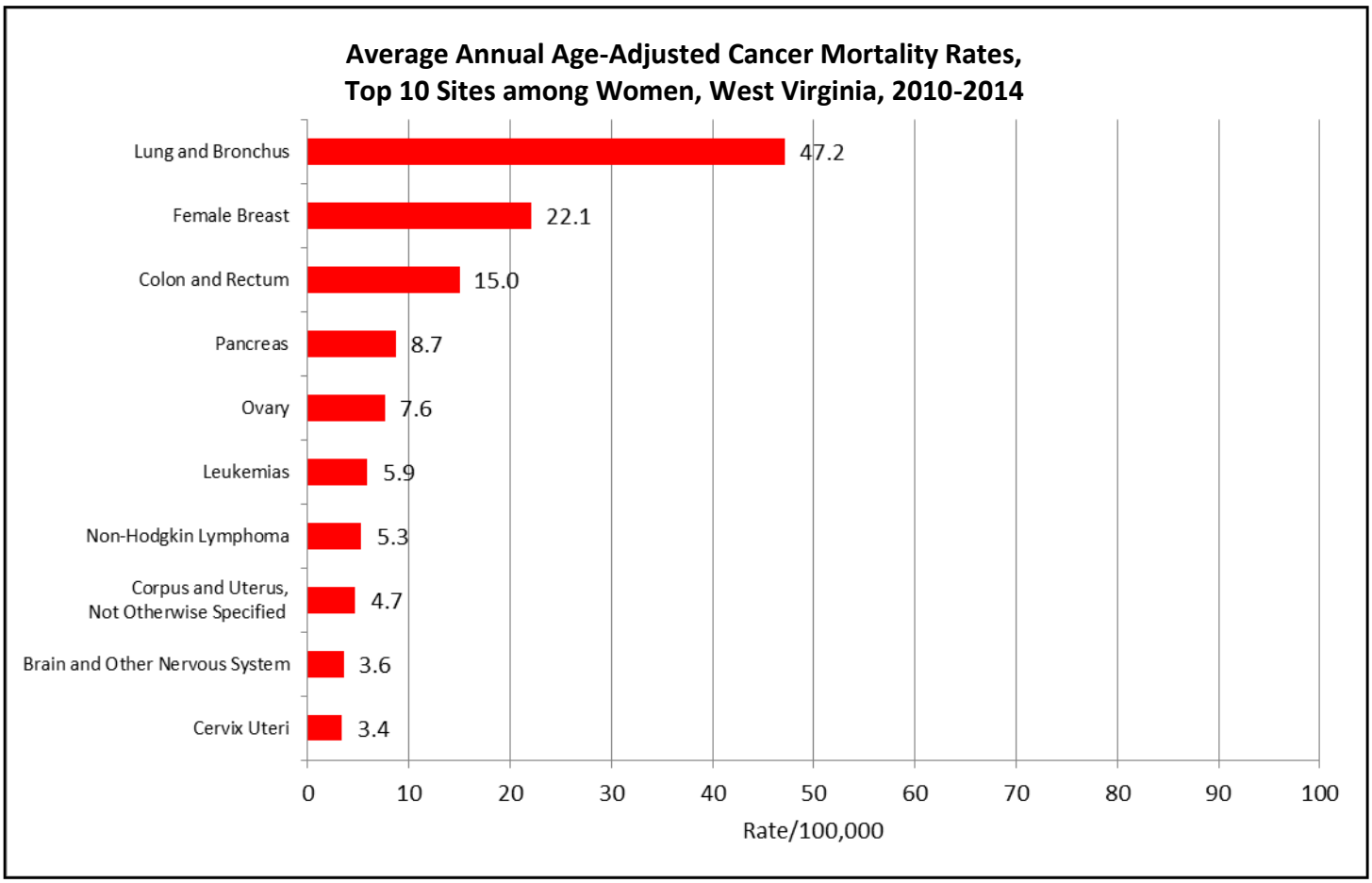
United States Cancer Statistics: 1999 - 2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.

Average Annual Age-Adjusted Cancer Mortality Rates (per 100,000), Top 10 Sites among Men, West Virginia, 2010-2014			
Site	Age-adjusted Rate	Deaths	Population
Lung and Bronchus	77.1	4,311	4,573,010
Colon and Rectum	22.1	1,189	4,573,010
Prostate	18.2	892	4,573,010
Pancreas	12.2	677	4,573,010
Leukemias	10.1	510	4,573,010
Esophagus	9.1	525	4,573,010
Non-Hodgkin Lymphoma	8.1	432	4,573,010
Liver and Intrahepatic Bile Duct	8.0	466	4,573,010
Urinary Bladder	7.9	402	4,573,010
Kidney and Renal Pelvis	6.6	362	4,573,010



United States Cancer Statistics: 1999 - 2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.

Average Annual Age-Adjusted Cancer Mortality Rates (per 100,000), Top 10 Sites among Women, West Virginia, 2010-2014			
Site	Age-adjusted Rate	Deaths	Population
Lung and Bronchus	47.2	3,162	4,694,182
Female Breast	22.1	1,446	4,694,182
Colon and Rectum	15.0	1,012	4,694,182
Pancreas	8.7	599	4,694,182
Ovary	7.6	515	4,694,182
Leukemias	5.9	393	4,694,182
Non-Hodgkin Lymphoma	5.3	362	4,694,182
Corpus and Uterus, Not Otherwise Specified	4.7	327	4,694,182
Brain and Other Nervous System	3.6	226	4,694,182
Cervix Uteri	3.4	183	4,694,182



United States Cancer Statistics: 1999 - 2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.

Summaries, Infographics, and Program Information

[This page intentionally left blank.]

Breast Cancer in West Virginia

Breast cancer starts when cells in the breast begin to grow out of control. These cells usually form a tumor that can often be seen on an x-ray, called a mammogram, or felt as a lump. Breast cancer occurs almost entirely in women, but men can get it, too.[1] An individual woman has a 1 in 8 chance of developing breast cancer over an 80-year lifespan.[2]

Breast cancer is the most common cancer diagnosed in women in the United States. Getting mammograms regularly can lower the risk of dying from breast cancer.[3] Mammograms are the best way to find breast cancer early, when it is easier to treat and before it is big enough to feel or cause symptoms.[4] The screening guidelines for breast cancer vary from one national organization to another so women are encouraged to talk to their health care provider about what screening schedule is best for them.

Breast cancer is the most commonly diagnosed cancer and the second leading cause of cancer-related death in WV women.[5] Each year in WV, approximately 1,422 women are diagnosed and 289 women die of breast cancer.[6] Over half (54%) of the women with breast cancer in WV are diagnosed with localized breast cancer.[5]

Risk factors for breast cancer include being female, increased age, and certain genetic changes. Other factors that increase risk include long-term use of combination hormone replacement therapy, personal history of breast cancer or non-cancerous breast diseases, family history of breast cancer, treatment with radiation therapy to the breast/chest, exposure to diethylstilbestrol (DES), dense breasts, and drinking alcohol. Factors that decrease risk include starting menstruation at a later age, starting menopause at an earlier age, giving birth to more children, being younger at birth of first child, breastfeeding, engaging in regular physical activity, and maintaining a healthy weight.[7]

The bottom line is that breast cancer screening saves lives and mammograms are the best early detection test currently available.

---

1. American Cancer Society. Accessed at http://www.cancer.org/cancer/breastcancer/detailedguide/breast-cancer-what-is-breast-cancer on 10/5/17 at 2:20 PM.
2. National Cancer Institute. Accessed at https://www.cancer.gov/types/breast/risk-fact-sheet on 10/5/17 at 2:30 PM.
3. Centers for Disease Control and Prevention. Accessed at https://www.cdc.gov/cancer/breast/ on 10/5/17 at 2:45 PM.
4. Centers for Disease Control and Prevention. Accessed at https://www.cdc.gov/cancer/breast/basic_info/screening.htm on 10/5/17 at 3:00 PM.
5. WV Cancer Registry.
6. United States Cancer Statistics: 1999 - 2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.
7. Centers for Disease Control and Prevention. Accessed at https://www.cdc.gov/cancer/breast/basic_info/risk_factors.htm on 10/5/17 3:25 PM.

Breast Cancer Facts

Breast Cancer in West Virginia

Breast Cancer Incidence in West Virginia per 100,000 women

114.8

Breast Cancer Deaths in West Virginia per 100,000 women

22.1

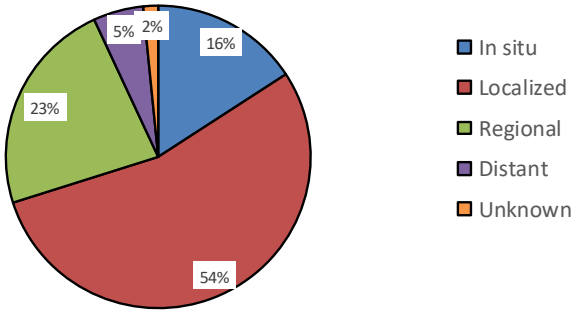
Breast Cancer Risk Factors

- Being female
- Increasing age
- Genetic mutations

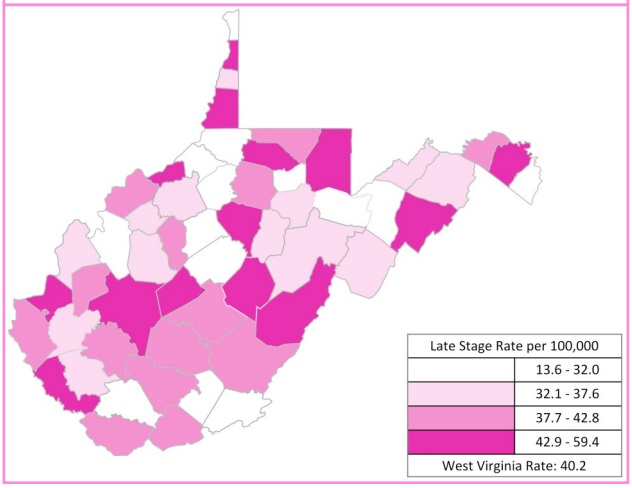
Other factors that:

Decrease Risk	Increase Risk
Starting first period at a later age	Long-term use of HRT
Starting menopause at an earlier age	Family history of breast cancer
Giving birth to more children, being younger at birth of first child, and breastfeeding	Personal history of breast cancer and non-cancerous breast conditions
Engaging in regular physical activity	Treatment with radiation to the breast or chest
Maintaining a healthy weight	Exposure to diethylstilbestrol (DES)
	Alcohol intake

Percentage of Female Breast Cancer Cases by Stage at Diagnosis, West Virginia, 2010-2014



Average Annual Age-Adjusted Late Stage Breast Cancer Incidence Rates by County, West Virginia, 2010-2014



Breast cancer is the most commonly diagnosed cancer among women in our state.

Breast cancer screening saves lives and women are encouraged to talk with their health care provider about what screening schedule is best for them.

2017 West Virginia Cancer Burden Report. WV Cancer Registry, WV Department of Health and Human Resources and West Virginia University Cancer Institute, Morgantown, WV, December 2017.

Breast Cancer Programs in West Virginia

BONNIE'S BUS

Bonnie's Bus, a 3-D mobile mammography unit, travels across West Virginia providing breast cancer screening in a comfortable, easy to access environment close to a patient's home. The Bus serves women with private insurance, Medicare, Medicaid, and those enrolled in the West Virginia Breast and Cervical Cancer Screening Program. Grant funds and donations are available to pay for women without any other coverage, so no woman over the age of 40 is ever turned away. Bonnie's Bus is a program of the WVU Cancer Institute and WVU Medicine. It has served the state since 2009 and provided over 15,000 mammograms.

CONTACT: WVU Office of Cancer Prevention and Control at 304.293.2370 or 1.877.287.2272
RESOURCES: http://wvucancer.org/cancer-prevention-control/bonnies-bus/

WV BREAST AND CERVICAL CANCER SCREENING PROGRAM

The West Virginia Breast and Cervical Cancer Screening Program (WVBCCSP) is a public health program that helps uninsured and underinsured women gain access to free or low-cost breast and cervical cancer screening services. For the prevention of breast cancer, the WVBCCSP provides clinical breast exams and mammograms to eligible women, as well as diagnostic testing for those whose screening outcome is abnormal.

Who is eligible for these free or low-cost services?
Women:

- between the ages of 25 and 64
- with no health insurance or who are underinsured
- who meet income guidelines, and
- who are WV residents

CONTACT: WVBCCSP at 304.558.5388 or 1.800.642.8522 and ask to speak to someone in the Program
RESOURCES: http://www.wvdhhr.org/bccsp/

WVBCCSP Income Guidelines

Family Size	Monthly	Yearly
1	$2,513	$30,156
2	$3,383	$40,596
3	$4,254	$51,048
4	$5,125	$61,500
5	$5,996	$71,952

Effective 6/30/2017-6/29/2018

BONNIE WELLS WILSON MOBILE MAMMOGRAPHY PROGRAM
WVU Cancer Institute

West Virginia Breast & Cervical Cancer Screening Program

[This page intentionally left blank.]

Cervical Cancer in West Virginia

Cancer of the cervix or cervical cancer is cancer that begins to grow in the lining of the cervix, the lower, narrow end of the uterus.[1] Cervical cancer usually begins as a pre-cancer and takes years to develop. A Pap test easily detects pre-cancerous or cancer cells, and when found early this cancer is highly treatable with good outcomes and long survival.[2]

Screening with Pap and Human Papillomavirus (HPV) tests is the easiest way to find cervical changes early. Cervical cancer screening saves lives and women should start getting a Pap test at age 21. Between the ages of 21 and 30, women should receive screening every three years. After age 30 women have a choice: Pap tests alone every three years or Pap tests plus HPV test every five years. All positive results require follow-up with a healthcare provider.[3] Completing these screening tests from ages 21 through 65 aids in the prevention and early detection of cervical cancer. In fact, up to 93% of cervical cancer can be prevented by screening and HPV vaccination.[4]

In addition to the Pap test, another way to prevent this cancer is use of the HPV vaccine. This vaccine is recommended for both boys and girls starting at ages 11-12. The vaccine works best before exposure to HPV so the shot is given at these ages, prior to the initiation of any sexual contact. If not vaccinated at younger ages, catch up vaccines are suggested for males up to age 21 and females up to age 26.[5]

Each year in WV, approximately 97 women[6] are diagnosed and 37 women die of cervical cancer.[7] Although these numbers are small, WV usually ranks in the top five for both cervical cancer incidence and mortality when compared with other states. Over half (52%) of the women with cervical cancer in WV are diagnosed with regional or distant metastasis.[5]

Risk factors for cervical cancer include infection with HPV, smoking, using birth control for five years or more, giving birth to three or more children, having several sexual partners, or having human immunodeficiency virus.[7]

The bottom line is that cervical cancer is a preventable cancer that can be found early, even as a pre-cancer. Vaccination and screening lead to prevention and early detection of cervical cancer. No West Virginia woman should die of cervical cancer.

---

1. American Cancer Society. Accessed at http://www.cancer.org/cancer/cervicalcancer/detailedguide/cervical-cancer-what-is-cervical-cancer on 10/4/17 at 11:35 AM.
2. Centers for Disease Control and Prevention. Accessed at https://www.cdc.gov/cancer/cervical/ on 10/4/17 at 11:40 AM.
3. Centers for Disease Control and Prevention. Accessed at https://www.cdc.gov/cancer/cervical/basic_info/screening.htm on 10/4/17 at 11:15 AM.
4. Vital Signs 2014, Centers for Disease Control and Prevention. Accessed at https://www.cdc.gov/vitalsigns/cervical-cancer/index.html on 10/4/17 at 11:30 AM.
5. Centers for Disease Control and Prevention. Accessed at https://www.cdc.gov/std/HPV/STDFact-HPV.htm#a4 on 10/4/17 at 11:50 AM.
6. WV Cancer Registry.
7. United States Cancer Statistics: 1999 - 2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.

Cervical Cancer Facts

Cervical Cancer in West Virginia

Cervical Cancer Incidence in West Virginia per 100,000 women — **9.8**

Cervical Cancer Deaths in West Virginia per 100,000 women — **3.4**

West Virginia has the highest incidence rate and second highest death rate of cervical cancer in the nation.

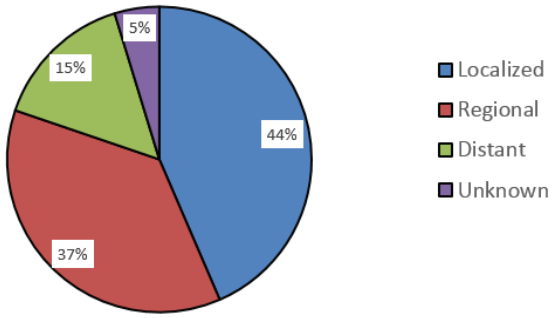
Cervical cancer screening saves lives. Women should start getting a Pap test at age 21. Between the ages of 21 and 30, women should receive screening every 3 years. After age 30, women have a choice: Pap tests alone every 3 years or Pap tests plus HPV test every 5 years. All positive results require follow -up with a healthcare provider.

Cervical Cancer Risk Factors

- Infection with Human Papillomavirus
- Smoking
- Using birth control for five years or more
- Giving birth to three or more children
- Having several sexual partners

Up to **93%** of cervical cancer can be prevented by **screening and HPV vaccination**.

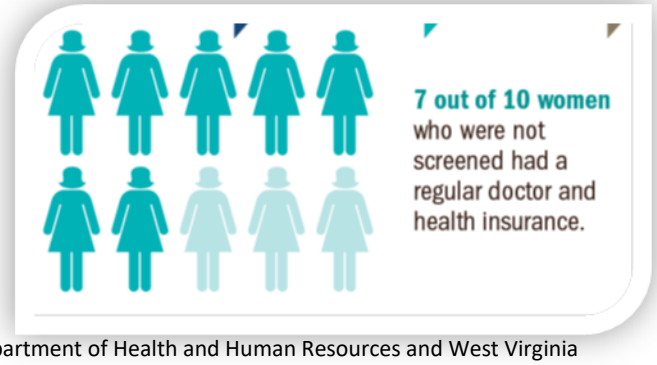
Percentage of Cervical Cancer Cases by Stage at Diagnosis, West Virginia, 2010-2014



No woman should die of Cervical Cancer. We must do better!

MISSED OPPORTUNITIES for cervical cancer screening

In 2012, **8 million women** were not screened in the last **5 years**.



2017 West Virginia Cancer Burden Report. WV Cancer Registry, WV Department of Health and Human Resources and West Virginia University Cancer Institute, Morgantown, WV, December 2017.

Cervical Cancer Programs in West Virginia

WV BREAST AND CERVICAL CANCER SCREENING PROGRAM

The West Virginia Breast and Cervical Cancer Screening Program (WVBCCSP) is a public health program that helps uninsured and underinsured women gain access to free or low-cost cervical cancer and breast cancer screening services. For the prevention of cervical cancer, the WVBCCSP provides Pap tests and pelvic exams to eligible women, as well as diagnostic testing for those whose screening outcome is abnormal.

Who is eligible for these free or low-cost services?
Women:

- between the ages of 25 and 64
- with no health insurance or who are underinsured
- who meet income guidelines, and
- who are WV residents

WVBCCSP Income Guidelines

Family Size	Monthly	Yearly
1	$2,513	$30,156
2	$3,383	$40,596
3	$4,254	$51,048
4	$5,125	$61,500
5	$5,996	$71,952

Effective 6/30/2017-6/29/2018

CONTACT: WVBCCSP at 304.558.5388 or 1.800.642.8522 and ask to speak to someone in the Program
RESOURCES: http://www.wvdhhr.org/bccsp/

WV IMMUNIZATION NETWORK

The West Virginia Immunization Network is a statewide coalition that works to foster comprehensive and sustained state and community programs to ensure residents are protected from vaccine-preventable diseases throughout their lifespan. The group is made up of more than 300 people from both the public and private sector making sure that every resident is appropriately immunized. Vaccination is safe, effective, and the best line of defense against certain illnesses, including HPV, one of the major causes of cervical cancer. Unfortunately, insufficient or misleading information about vaccine safety and effectiveness often creates confusion among adults who are considering immunization for their children or themselves.

CONTACT: WV Immunization Network at 304.397.4071
RESOURCES: http://immunizenow.org/

WV DIVISION OF IMMUNIZATION SERVICES

The mission of the West Virginia Division of Immunization Services (WVDIS) is to prevent and control vaccine-preventable diseases among children, adolescents, and adults in WV. WVDIS offers the Vaccines for Children program that provides free vaccines to eligible children including those without health insurance, all those enrolled in Medicaid, American Indians/Alaskan Natives, those with health insurance plans that do not cover vaccines, and those receiving care at Federally Qualified Health Centers or Rural Health Clinics. This federally funded program is available at more than 400 provider locations across the state including 54 local health departments.

CONTACT: WV Division of Immunization Services at 304.558.2188 or 1.800.642.3634
RESOURCES: http://www.dhhr.wv.gov/oeps/immunization/Pages/default.aspx

West Virginia Breast & Cervical Cancer Screening Program

West Virginia Immunization Network
A PROGRAM OF The Center for Rural Health Development

WEST VIRGINIA Department of Health & Human Resources
BUREAU FOR PUBLIC HEALTH
Division of Immunization Services

[This page intentionally left blank.]

Colorectal Cancer in West Virginia

Colorectal cancer is cancer that starts in the colon or rectum.[1] Sometimes it is called colon cancer, for short. Most colorectal cancers begin as a growth on the inner lining of the colon or rectum called a polyp. Some types of polyps can change into cancer over several years, but not all polyps become cancer.

The type of polyp that sometimes turns into cancer is called adenomatous polyp or adenoma. This type of polyp is called a pre-cancerous condition. Two other types of polyps that are more common are hyperplastic polyps and inflammatory polyps. In general, these types of polyps are not pre-cancerous.[1]

Both men and women are at risk of colorectal cancer, but risk goes up with age. Ninety percent (90%) of colorectal cancer cases are found in people aged 50 and older.[2] Other risk factors include previous polyps in the colon or rectum; having had colorectal cancer or cancer of the ovary, uterus or breast; having a parent, sibling or child who has had colorectal cancer; having Ulcerative Colitis, Crohn's disease, or Lynch Syndrome; or smoking.

All men and women between the ages of 50 and 75 should be regularly screened for colorectal cancer. Colorectal cancer screening can find cancer early when it is smaller and easier to treat and cure. Colorectal screening can also find polyps and remove them before they have a chance to grow into cancer.

Each year in West Virginia, approximately 1,121 people are diagnosed with colorectal cancer, and 440 die from this cancer.[3] In West Virginia, from 2010 to 2014, forty-three percent (43%) of colorectal cancers were diagnosed in the earlier stages of in situ (4%) or localized (39%) cancer. However, fifty-one percent (51%) of colorectal cancers in West Virginia during this time period were diagnosed at regional (31%) or distant (20%) stages.[4]

Regular screening saves lives. There are several screening options approved by the United States Preventive Services Task Force.[5] The stool-based, at-home testing options include the 1) Guaiac Fecal Occult Blood Test (FOBT) done annually, 2) the Fecal Immunochemical Test (FIT) done annually, or the 3) Fecal Immunochemical Test-DNA (FIT-DNA) done either annually or every three years depending on the brand. The direct visualization tests, done in a doctor's office or at the hospital, include the 1) Colonoscopy done every ten years, 2) CT Colonography done every five years, 3) Flexible sigmoidoscopy without FIT done every five years, or 4) Flexible Sigmoidoscopy with FIT done every ten years with a FIT every year. Talk with your provider to discuss which screening test is right for you.

The bottom line is that colorectal cancer is a preventable cancer that can be found early, even as a pre-cancer. No West Virginian should die of colorectal cancer.

---

1. American Cancer Society, Colorectal Cancer. Accessed at http://www.cancer.org/cancer/colonandrectumcancer/detailedguide/colorectal-cancer-what-is-colorectal-cancer?&gclid=CI_L2NK29tACFdiIswod16wI9w&mkwid=s2XvT75Hc_dc on 11/29/17 at 8:43 AM.
2. Center for Disease Control and Prevention, Colorectal Cancer. Accessed at https://www.cdc.gov/cancer/colorectal/basic_info/risk_factors.htm on 11/29/17 at 8:44 AM.
3. United States Cancer Statistics: 1999 - 2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.
4. WV Cancer Registry.
5. United States Preventive Services Task Force 2016 Colorectal Cancer Screening Guidelines. Accessed at https://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/colorectal-cancer-screening2#tab on 11/29/17 at 8:45 AM.

Colorectal Cancer Facts

Colorectal Cancer in West Virginia

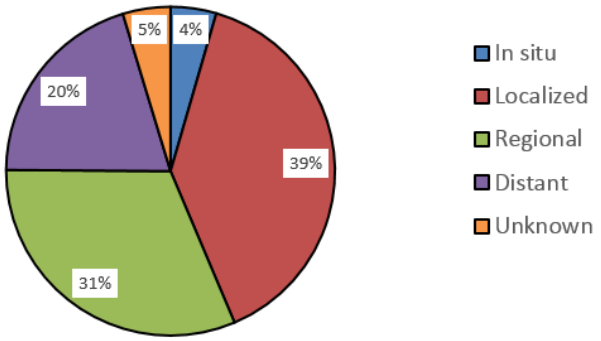
Colorectal Cancer Incidence in West Virginia per 100,000 people: **46.6**

Colorectal Cancer Deaths in West Virginia per 100,000 people: **18.2**

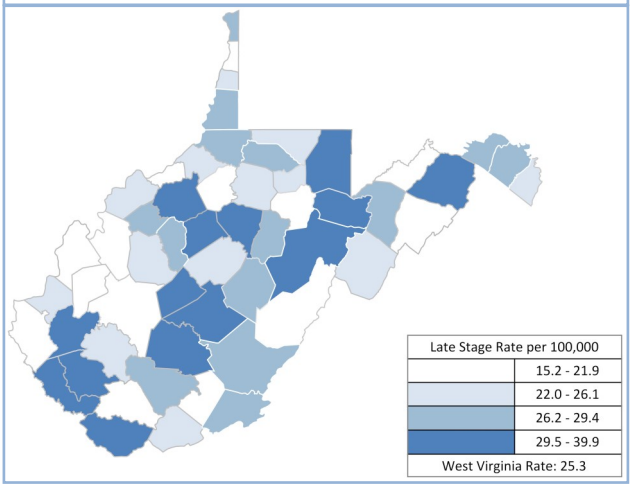
Colorectal cancer is the second leading cause of cancer related deaths in West Virginia.

Regular colorectal cancer screening can detect cancer early when it is easier to treat and cure.

Percentage of Colorectal Cancer Cases by Stage at Diagnosis, West Virginia, 2010-2014



Average Annual Age-Adjusted Late-Stage Colorectal Cancer Incidence Rates by County, 2010-2014



Colorectal Cancer Screening Guidelines: Seven Screening Options

Screening Method	Frequency
Stool Based Screening Tests	
Guaiac Fecal Occult Blood Test	Every year
Fecal Immunochemical Test (FIT)	Every year
Fecal Immunochemical Test-DNA (FIT-DNA)	Every 1 or 3 years
Direct Visualization Tests	
Colonoscopy	Every 10 years
CT Colonography	Every 5 years
Flexible Sigmoidoscopy without FIT	Every 5 years
Flexible Sigmoidoscopy with FIT	Flexible Sigmoidoscopy every 10 years with FIT every year

Current as of December 2017

Colorectal Cancer Risk Factors

Everyone is at risk of colorectal cancer. Risk increases if:

- Over age 50
- Polyps have been found in the colon or rectum
- History of cancer of the ovary, uterus, or breast
- History of colorectal cancer for a parent, sibling, or child
- Person has Ulcerative Colitis, Crohn's disease, or Lynch Syndrome
- Person smokes

2017 West Virginia Cancer Burden Report. WV Cancer Registry, WV Department of Health and Human Resources and West Virginia University Cancer Institute, Morgantown, WV, December 2017.

Colorectal Cancer Programs in West Virginia

WEST VIRGINIA PROGRAM TO INCREASE COLORECTAL CANCER SCREENING

The West Virginia Program to Increase Colorectal Cancer Screening (WV PICCS) is directed by Cancer Prevention and Control at the WVU Cancer Institute. WV PICCS partners with health care systems to implement evidence-based interventions (EBIs) shown to increase colorectal cancer screening. Partnering clinics choose from a menu that includes: provider assessment and feedback; client reminders; provider recall; reducing structural barriers; and implement these over a two year period.

CONTACT: WVU Office of Cancer Prevention and Control at 304.293.2370 or 1.877.287.2272
RESOURCES: http://www.wvucancer.org/cancer-prevention-control/wv-program-to-increase-colorectal-cancer-screening/

WEST VIRGINIA - AMERICAN CANCER SOCIETY AND THE "80% BY 2018" CAMPAIGN

The WV American Cancer Society leads the National Colorectal Cancer Roundtable (NCCRT) efforts in WV to increase colorectal cancer screening to "80% by 2018." The "80% by 2018" campaign is committed to substantially reducing colorectal cancer as a major public health problem for those 50 and older. The WV American Cancer Society, in collaboration with hundreds of other organizations across the nation, works to share information, identify needs and opportunities for screening and prevention as well as address gaps in research, programs, activities and services. Staff and resources are available to all West Virginians.

CONTACT: American Cancer Society at 404.327.6559
RESOURCES: http://nccrt.org/tools/80-percent-by-2018/ and http://www.acscan.org/action/wv

MOUNTAINS OF HOPE WEST VIRGINIA CANCER COALITION

The Mountains of Hope WV Cancer Coalition (MOH), managed by Cancer Prevention and Control at the WVU Cancer Institute, is dedicated to reducing the human and economic impact of cancer in our state. WVU Cancer Institute, American Cancer Society (ACS), WV Breast and Cervical Cancer Screening Program (WVBCCSP), and WV Comprehensive Cancer Program (WVCCP) founded the Coalition in 1998. In 2016, the organization chose colorectal cancer screening as one of its primary aims. Educational resources and strategies for increasing screening and reducing the impact of colorectal cancer incidence and mortality are available to healthcare teams and community members.

CONTACT: WVU Office of Cancer Prevention and Control at 304.293.2370 or 1.877.287.2272
RESOURCES: www.wvmountainsofhope.org or www.moh.wv.gov

WVU Cancer Institute
WV Program to Increase Colorectal Cancer Screening

American Cancer Society®

Mountains of Hope
West Virginia Cancer Coalition
Collaborating to Conquer Cancer

[This page intentionally left blank.]

Lung Cancer in West Virginia

Cancer happens when cells in the body begin to grow out of control. When this occurs in the lungs, it is called lung cancer. There are two main types of lung cancer: small cell and non-small cell. Although both occur in the lung, they grow very differently and are treated differently. Non-small cell lung cancer is the more common of the two and has many subtypes including adenocarcinoma, squamous cell carcinoma, and large cell carcinoma.[1]

At present, the only recommended screening test for lung cancer is using low-dose computed tomography (also known as a low-dose CT scan, or LDCT). An X-ray machine scans the body with low doses of radiation in order to create detailed pictures of the lungs.[2] The United States Preventive Services Task Force recommends annual screening with LDCT for individuals between 55 and 80 years old who have a 30 pack-year smoking history and currently smoke or have quit in the last 15 years.[3] Therefore, an adult aged 55 or older who smoked an average of one pack of cigarettes a day for 30 years, or two packs a day for 15 years, or any combination that equals 30 pack-years or more, is eligible.

Lung cancer (all types combined) is the second most common cancer in both men and women[4] and accounts for 18% of all new cancer cases diagnosed in West Virginia.[5] Every year in WV, approximately 2,011 people are diagnosed with lung cancer and 1,495 will die from the disease.[6] Half of all people with lung cancer diagnoses have distant metastasis, meaning the cancer has spread. Because of this, more people die of lung cancer than colorectal, prostate, and breast cancer combined.[7]

In the United States, cigarette smoking is linked to 80% to 90% of lung cancers, making it the number one risk factor for the disease. Other factors include secondhand smoke, radon, other substances and pollutants (including asbestos, arsenic, diesel exhaust, and some forms of silica and chromium), personal family history of lung cancer, previous radiation therapy to the chest, and possibly diet.[8]

The fact is that most incidents of lung cancer can be prevented as they are connected to smoking and secondhand smoke or exposure to radon or other environmental factors. Lung cancer screening using LDCT can help to find the cancer at an earlier stage when it is most treatable, improving quality of life and increasing life span for lung cancer survivors.[7]

---

1. American Cancer Society. Accessed at https://www.cancer.org/cancer/non-small-cell-lung-cancer/about/what-is-non-small-cell-lung-cancer.html on 10/2/17 at 11:46 AM.
2. Centers for Disease Control and Prevention. Accessed at https://www.cdc.gov/cancer/lung/basic_info/screening.htm on 10/2/17 at 12:15 PM.
3. U.S. Preventive Services Task Force (2014). Screening for Lung Cancer: U.S. Preventive Services Task Force Recommendation Statement. Annals of Internal Medicine, 160(5).
4. American Cancer Society. Accessed at http://www.cancer.org/cancer/non-small-cell-lung-cancer/about/key-statistics.html on 10/2/17 at 1:06 PM.
5. WV Cancer Registry.
6. United States Cancer Statistics: 1999 - 2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.
7. American Cancer Society. Accessed at http://www.cancer.org/cancer/lung-cancer/prevention-and-early-detection.html on 10/2/17 at 1:36 PM.
8. Centers for Disease Control and Prevention. Accessed at https://www.cdc.gov/cancer/lung/basic_info/risk_factors.htm on 10/2/17 at 1:25 PM.

Lung Cancer Facts

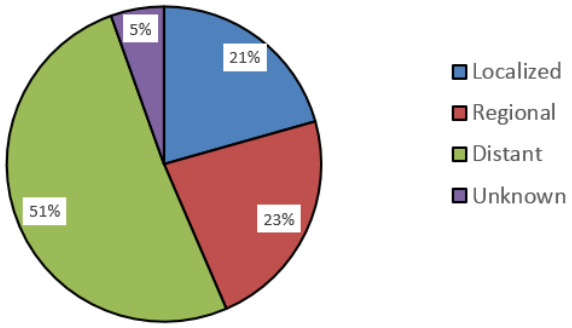
Lung Cancer in West Virginia

Lung Cancer Incidence in West Virginia per 100,000 people	80.4
Lung Cancer Deaths in West Virginia per 100,000 people	60.3

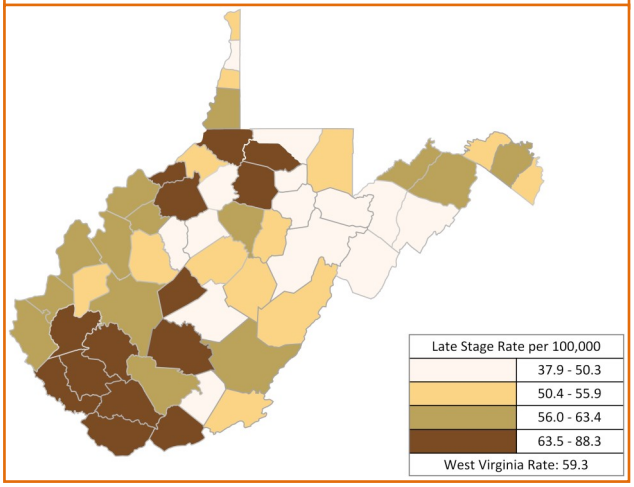
Lung cancer is the leading cause of cancer related deaths in West Virginia.

Regular lung cancer screening can detect cancer early when it is easier to treat and cure.

Percentage of Lung Cancer Cases by Stage at Diagnosis, West Virginia, 2010-2014



Average Annual Age-Adjusted Late Stage Lung Cancer Incidence Rates by County, West Virginia, 2010-2014



Lung Cancer Risk Factors

- Smoking
- Secondhand smoke
- Radon
- Personal or family history of lung cancer

Lung Cancer Screening Guidelines:

Low-Dose Computed Tomography (CT)

Yearly CT (low-dose) is recommended for people who:

- Are 55 to 80 years old, and
- Have a 30 pack-year* smoking history, and
- Are either current smokers or smokers who quit in the past 15 years.

* pack-year = packs a day x number of years smoking
(ex: 2 packs a day x 15 years = 30 pack-year smoking history)

2017 West Virginia Cancer Burden Report. WV Cancer Registry, WV Department of Health and Human Resources and West Virginia University Cancer Institute, Morgantown, WV, December 2017.

Lung Cancer Programs in West Virginia

BRIDGE PROGRAM

This Bridge Program, previously known as the West Virginia Lung Cancer Survivorship Program, based at the WVU Cancer Institute, is designed to develop an innovative model of care for lung cancer patients completing definitive curative treatment. The program goal is to improve the overall coordination of care and decrease the consequences of treatment for patients diagnosed with lung cancer in West Virginia. "Bridge to Good Living: Thriving beyond Lung Cancer" also aims to reach healthcare providers through conferences and podcasts, as well as disseminate information about lung cancer survivorship and the model to the community of patients, families, and advocates across WV.

CONTACT: WVU Office of Cancer Prevention and Control at 304.293.2370 or 1.877.287.2272
RESOURCES: http://wvucancer.org/cancer-prevention-control/bridge-program/

WEST VIRGINIA TOBACCO QUITLINE

The biggest risk factor in the development of lung cancer is smoking. West Virginia's Tobacco Quitline has operated since July 2000 enrolling over 73,000 West Virginians. The Quitline offers smoking cessation services to residents over the age of 18 who are uninsured, underinsured, or whose insurance does not provide its own smoking cessation services. Participants are eligible for four free proactive coaching calls and a supply of free nicotine replacement therapy (NRT) with a choice of patches, gum, or lozenges. Medicaid patients are to receive an NRT prescription through their doctor.

CONTACT: 1.800.QUIT.NOW (1.800.784.8669) or 1.877.966.8784 to speak to a Quitline representative
RESOURCES: http://www.dhhr.wv.gov/wvdtp/quitline/Pages/default.aspx

WEST VIRGINIA LUNG CANCER PROJECT

WVU Cancer Institute's Cancer Prevention and Control (CPC) through a partnership with the Patient Advocate Foundation (PAF) addresses lung cancer disparities in WV. The overall goals are to decrease lung cancer mortality, improve early diagnosis of lung cancer, and to provide support services to lung cancer patients through the WV Lung Cancer CareLine. This multi-faceted approach works with Medicaid managed care organizations to identify their enrollees at need for lung cancer screening. The Project also works to educate health care providers and the general public about lung cancer screening benefits, guidelines, and eligibility. Finally, WV lung cancer patients are given access to the WV Lung Cancer CareLine, a resource specific to WV patients that assists with barriers to treatment and survivorship, including assistance with access to care, finances, insurance, and job retention. This service is provided by the PAF and is free for all patients diagnosed with lung cancer or in the process of being screened or diagnosed.

CONTACT: WVU Office of Cancer Prevention and Control at 304.293.2370 or 1.877.287.2272
RESOURCES: http://www.wvucancer.org/cancer-prevention-control/wv-program-to-increase-colorectal-cancer-screening/ and https://wvlungcancer.pafcareline.org/index.php

WVU Cancer Institute
Bridge Program

West Virginia TOBACCO QUITLINE
1-800-QUIT-NOW 1-877-966-8784

WV Lung Cancer Project

[This page intentionally left blank.]

HPV-Associated Cancers in West Virginia

The Human Papillomavirus (HPV) causes most cervical cancers, but it is also linked to some cancers of the vagina, vulva, penis, anus, rectum, and oropharynx (cancers of the back of the throat, including the base of the tongue and tonsils).[1] According to data from 2009 to 2013 there were about 39,800 HPV-associated cancers reported in the United States with 23,300 of those in women and about 16,500 in men. Cervical cancer is the most common HPV-associated cancer in women while oropharyngeal cancers (cancers of the back of the throat, including the base of the tongue and tonsils) are the most common among men.[2]

HPV-associated cancers are estimated by examining cancer in parts of the body and cancer cell types that are more likely to be caused by HPV. Cancer registries do not collect data on the presence or absence of HPV in cancer tissue at the time of diagnosis. In general, HPV is thought to be responsible for more than 90% of anal and cervical cancers, about 70% of vaginal and vulvar cancers, and more than 60% of penile cancers. Studies also show that about 70% of cancers of the oropharynx may be linked to HPV or a combination of tobacco, alcohol, and HPV.[2]

There is no one way to prevent infection with all the different types of HPV, but there are things you can do to lower your chances of being infected.[3] People who are not sexually active almost never develop genital HPV infections. Receiving the HPV vaccination before sexual activity can reduce the risk of infection by the HPV types targeted by the vaccine.[4] The Food and Drug Administration has approved three vaccines to prevent HPV infection: Gardasil®, Gardasil®9, and Cervarix®. These vaccines provide strong protection against new HPV infections, but they are not effective at treating established HPV infections or disease caused by HPV. [5, 6] The National Cancer Institute has also identified a few factors with adequate evidence of an increased risk of oral cavity and oropharyngeal cancer. They are tobacco use, alcohol use, tobacco and alcohol use, and betel-quid chewing[7]. Reducing or eliminating these factors may reduce the chances of developing a HPV-associated cancer.

1. Centers for Disease Control and Prevention. Accessed at https://www.cdc.gov/cancer/hpv.index.htm on 9/27/17 at 1:55 PM.
2. Centers for Disease Control and Prevention. Accessed at https://www.cdc.gov/cancer/hpv/statistics/index.htm on 9/27/17 at 1:58 PM.
3. American Cancer Society. Accessed at https://www.cancer.org/cancer/cancer-causes/infectious-agents/hpv/hpv-and-cancer-info.html on 9/28/17 at 12:52 PM.
4. National Cancer Institute. Accessed at https://www.cancer.gov/about-cancer/causes-prevention/risk/infectious-agents/hpv-fact-sheet on 9/28/17 at 12:39 PM.
5. Hildesheim A, Herrero R, Wacholder S, et al. Effect of human papillomavirus 16/18 L1 viruslike particle vaccine among young women with preexisting infection: A randomized trial. *JAMA* 2007; 298(7):743–753.
6. Schiller JT, Castellsague X, Garland SM. A review of clinical trials of human papillomavirus prophylactic vaccines. *Vaccine* 2012; 30 Suppl 5:F123-138.
7. National Cancer Institute. Accessed at https://www.cancer.gov/types/head-and-neck/hp/oral-prevention-pdq#link/_240_toc on 11/15/17 at 9:45 PM.

HPV-Associated Cancer Facts

HPV-Associated Cancer in West Virginia

HPV Vaccination Rates in West Virginia and the United States, Male and Female, 2016				
	Male ≤1 Dose	Males who completed the series	Female ≤1 Dose	Females who completed the series
WV	50.0%	33.0%	58.5%	49.7%
US	56.0%	37.5%	65.1%	49.5%

National Immunization Survey-Teen, United States, 2016

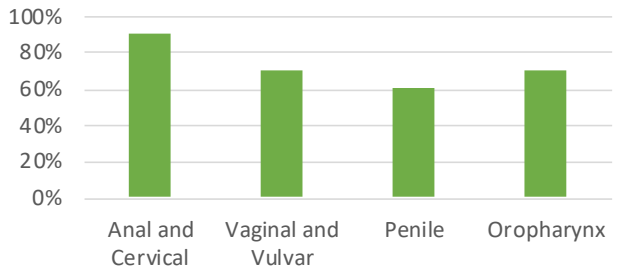
Human papillomavirus (HPV) causes most cervical cancers, as well as some cancers of the vagina, vulva, penis, anus, rectum, and oropharynx (cancers of the back of the throat, including the base of the tongue and tonsils).

HPV vaccines are recommended for preteen girls and boys to protect against HPV infection.

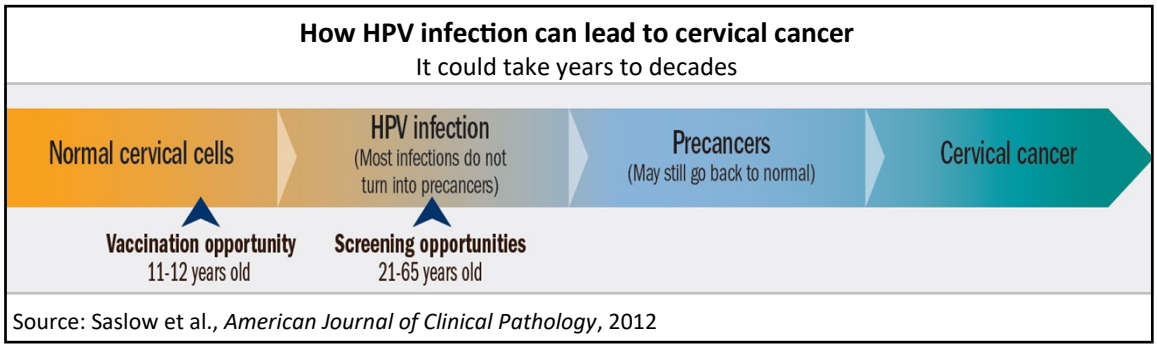
Other factors that may increase the risk that an infection with a high-risk HPV type will persist and possibly develop into cancer include:

- Smoking or chewing tobacco (for ↑ risk of oropharyngeal cancer)
- Having a weakened immune system
- Having many children (for ↑ risk of cervical cancer)
- Poor oral hygiene (for ↑ risk of oropharyngeal cancer)
- Chronic inflammation

Shi R, Devarakonda S, Liu L, Taylor H, Mills G. Factors associated with genital human papillomavirus infection among adult females in the United States, NHANES 2007-2010. *Biomed Central Research Notes*2014; 7:544.



Myths:	Facts:
People with HPV always have symptoms.	You can have HPV even if you do not have any signs or symptoms.
You can get HPV from toilet seats, hugging or holding hands, swimming pools or hot tubs, sharing food or utensils, or by being unclean.	HPV is spread through skin-to-skin contact, not through an exchange of bodily fluid.
The HPV vaccine can cure the infection.	The HPV vaccine prevents infection in someone who has never had HPV but can not treat someone already infected.
HPV only affects women.	Both men and women are affected by the HPV viruses.
Smoking is not a risk-factor for cervical cancer.	Smoking raises your risk of HPV-associated cancer.
There is only one type of HPV.	There are approximately 100 types of HPV.



Source: Saslow et al., *American Journal of Clinical Pathology*, 2012

2017 West Virginia Cancer Burden Report. WV Cancer Registry, WV Department of Health and Human Resources and West Virginia University Cancer Institute, Morgantown, WV, December 2017.

Appendices

[This page intentionally left blank.]

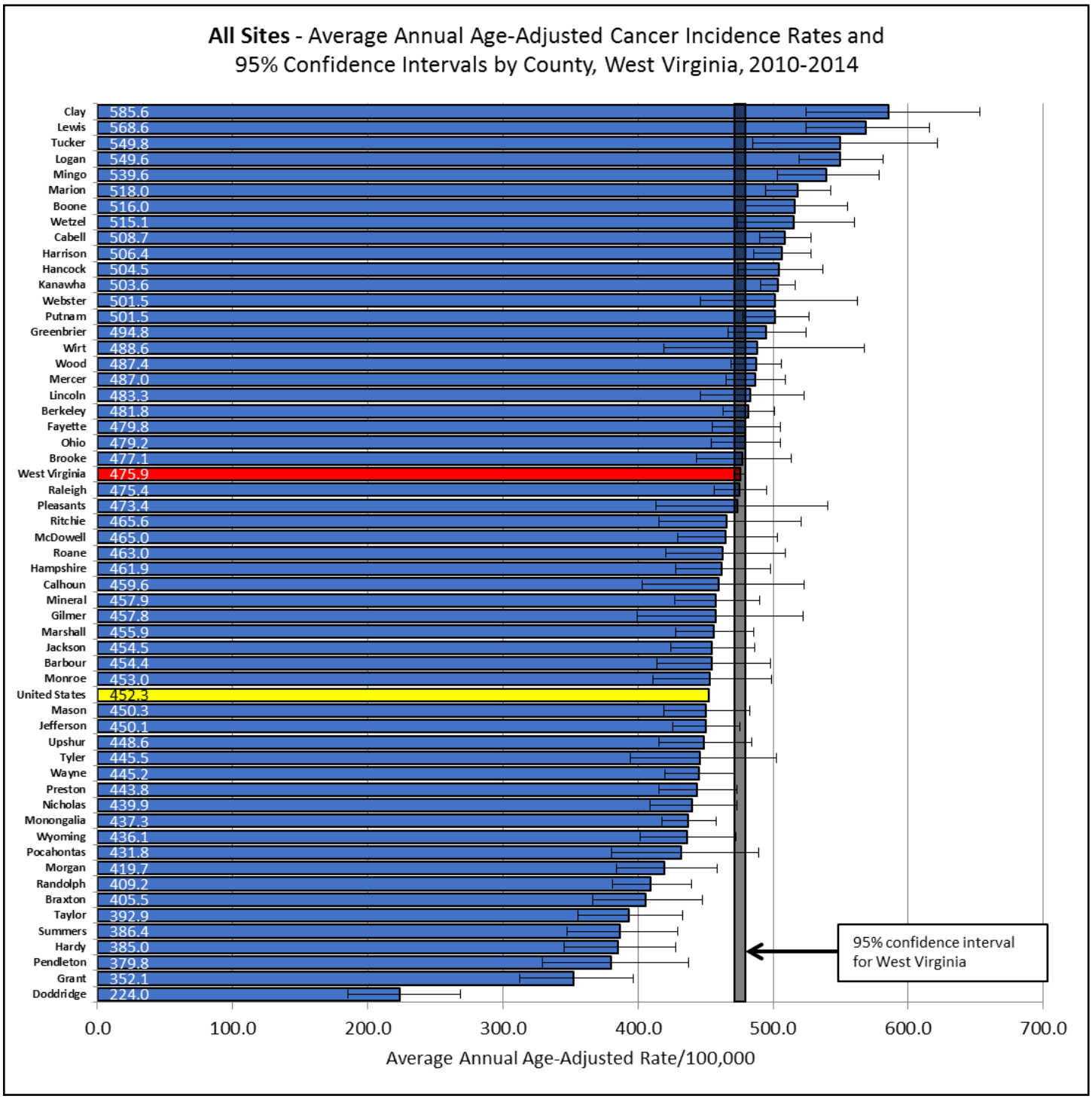
How to Read These Tables

The county-level graphs on the following pages, arranged in alphabetical order by primary site, are packed with information. With a quick glance at these graphs, you can answer such questions as:

- **What is the lung and bronchus cancer incidence rate for Logan County?**
  - The average annual incidence rate for each county is shown at the left margin of each bar. On page 58, you can see that Logan County, at the top of the graph, has an annual average incidence rate of 112.2.
- **Which 5 counties have the highest breast cancer incidence rate?**
  - Each graph is arranged in order from the county with the highest average annual incidence rate to the lowest. On page 50, you can see that the 5 counties with the highest breast cancer incidence rates are Brooke, Cabell, Greenbrier, Pleasants, and Marion.
- **Is the melanoma skin cancer incidence rate for Jackson County significantly higher than the West Virginia average?**
  - The thin black lines extending from each bar are called "error bars," and show the 95% confidence interval for each county's average annual estimate. If the error bars for any two counties do not touch or overlap, then we can be 95% certain that the two average annual estimates are statistically different. The 95% confidence interval for West Virginia appears a gray vertical bar to allow easy comparisons with any given county. On page 60, you can see that the average annual melanoma skin cancer rate for Jackson County (second from the top) is 35.1, compared to 20.7 for West Virginia (the red bar). Are they significantly different? Look at the left edge of the thin black error bar for Jackson County, and you can see that it does not overlap or touch the gray vertical bar. This means that the rate for Jackson County is significantly higher than the state average.
- **Is West Virginia higher or lower than the national average in lung and bronchus cancer incidence?**
  - The average annual incidence rate for West Virginia is shown as a red bar on the graphs. The average annual incidence rate for the United States is shown as a yellow bar. On page 58, you can see that the West Virginia rate for lung and bronchus cancer (80.4) is significantly higher than the United States rate (61.5).
- **How can I easily find rates for my county?**
  - For convenience, we have included a data table for each site that shows the average annual rates and 95% confidence intervals for each county arranged in alphabetical order. Your county will appear on the same line in each of the tables. The West Virginia average annual rate is shown as the first entry at the top left of each table.

All Sites - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000), 95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2010-2014

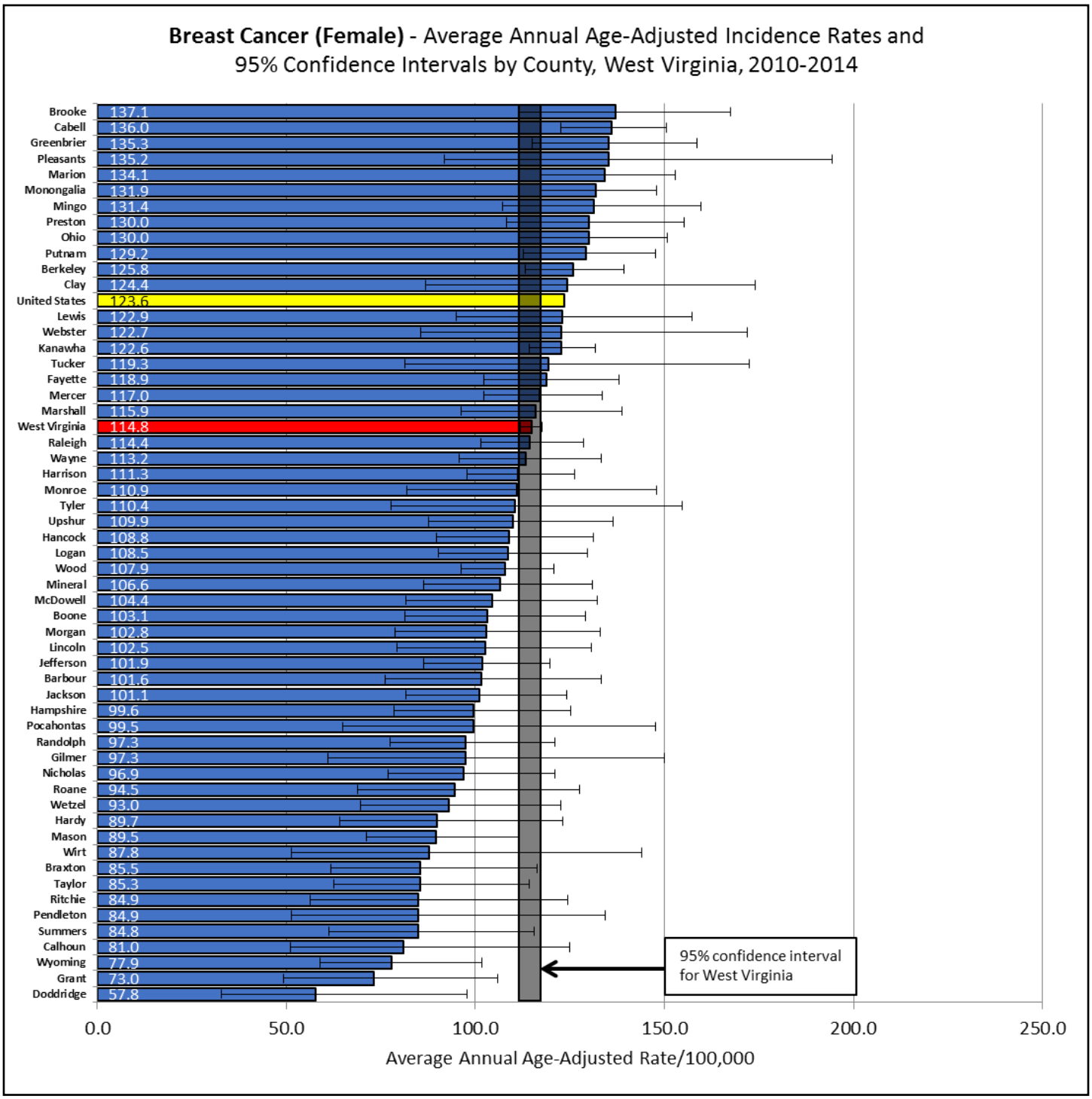
County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	**475.9**	**471.9**	**479.9**	**57,217**
Barbour	454.4	414.2	497.8	498
Berkeley	481.8	463.4	500.7	2,764
Boone	516.0	479.4	554.8	789
Braxton	405.5	366.9	447.5	432
Brooke	477.1	443.2	513.2	817
Cabell	508.7	490.1	527.7	3,001
Calhoun	459.6	403.3	522.6	258
Clay	585.6	524.1	652.8	352
Doddridge	224.0	185.6	268.8	127
Fayette	479.8	455.0	505.7	1,495
Gilmer	457.8	399.8	522.5	229
Grant	352.1	312.2	396.3	305
Greenbrier	494.8	466.7	524.3	1,273
Hampshire	461.9	427.8	498.2	735
Hancock	504.5	474.0	536.6	1,105
Hardy	385.0	345.6	428.1	370
Harrison	506.4	485.4	528.2	2,302
Jackson	454.5	424.4	486.3	894
Jefferson	450.1	425.8	475.6	1,368
Kanawha	503.6	491.0	516.5	6,443
Lewis	568.6	524.5	615.7	649
Lincoln	483.3	445.9	523.1	663
Logan	549.6	519.0	581.7	1,292
Marion	518.0	494.4	542.6	1,919
Marshall	455.9	427.6	485.7	1,048
Mason	450.3	419.5	482.9	843
McDowell	465.0	429.2	503.2	676
Mercer	487.0	465.4	509.3	2,076
Mineral	457.9	427.3	490.4	883
Mingo	539.6	502.9	578.3	861
Monongalia	437.3	417.6	457.6	1,966
Monroe	453.0	411.0	498.7	464
Morgan	419.7	383.8	458.4	542
Nicholas	439.9	408.7	472.9	791
Ohio	479.2	454.0	505.5	1,482
Pendleton	379.8	329.0	437.2	229
Pleasants	473.4	413.2	540.6	234
Pocahontas	431.8	380.3	489.3	282
Preston	443.8	415.6	473.5	970
Putnam	501.5	477.6	526.4	1,735
Raleigh	475.4	456.3	495.1	2,479
Randolph	409.2	380.9	439.3	827
Ritchie	465.6	415.3	520.9	335
Roane	463.0	420.6	508.9	473
Summers	386.4	347.4	429.1	392
Taylor	392.9	355.9	432.9	437
Tucker	549.8	485.2	621.8	291
Tyler	445.5	394.4	502.2	299
Upshur	448.6	415.4	483.9	716
Wayne	445.2	419.8	471.8	1,214
Webster	501.5	446.5	562.2	331
Wetzel	515.1	473.4	559.9	610
Wirt	488.6	419.0	567.6	194
Wood	487.4	469.0	506.4	2,798
Wyoming	436.1	402.0	472.5	657



Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.

Female Breast Cancer - Average Annual Age-Adjusted Incidence Rates (per 100,000), 95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2010-2014

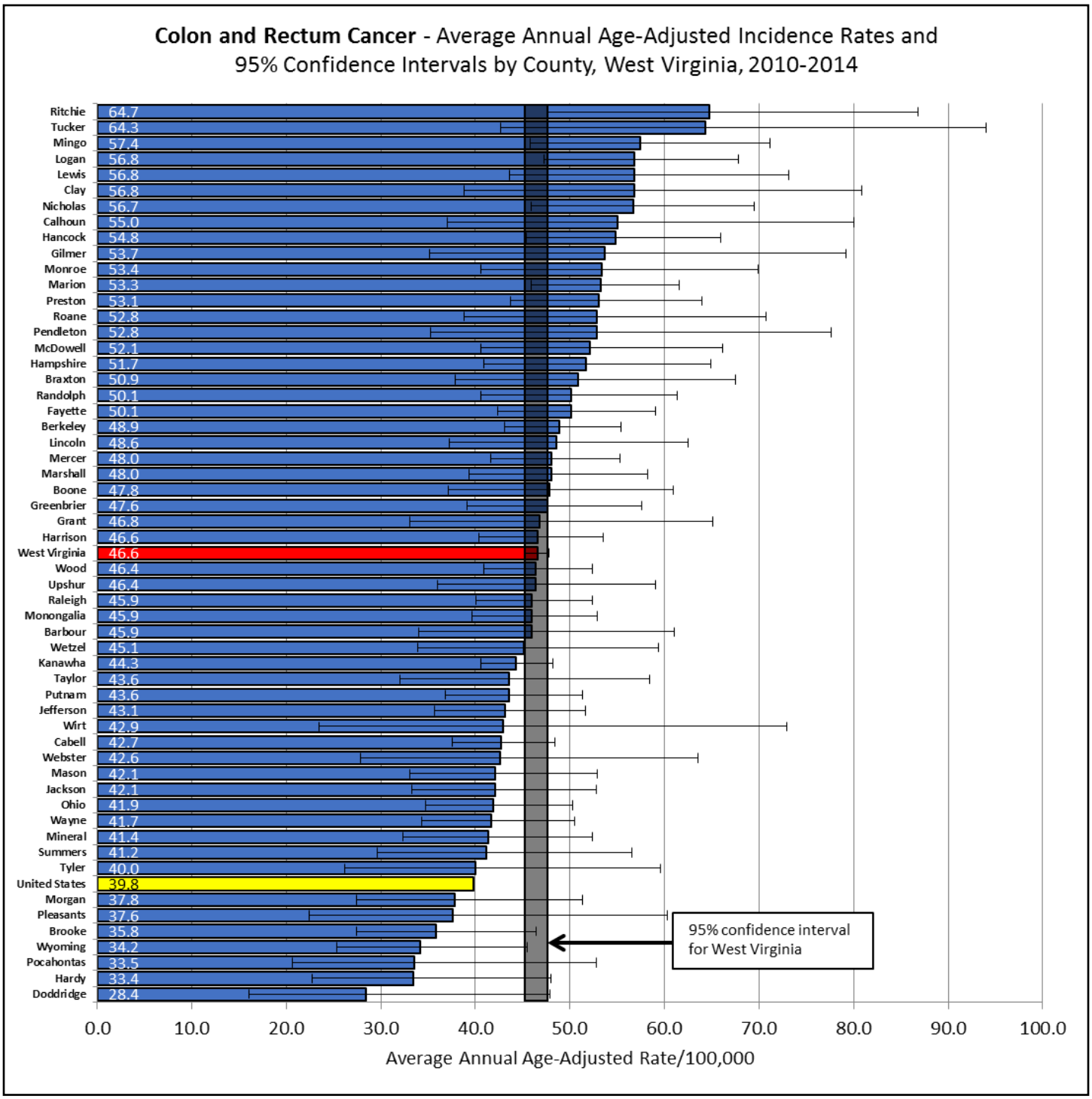
County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	**114.8**	**112.0**	**117.6**	**7,112**
Barbour	101.6	76.2	133.3	57
Berkeley	125.8	113.2	139.4	379
Boone	103.1	81.4	129.1	84
Braxton	85.5	61.9	116.4	46
Brooke	137.1	111.5	167.4	116
Cabell	136.0	122.7	150.4	421
Calhoun	81.0	51.2	124.9	24
Clay	124.4	86.7	174.1	37
Doddridge	57.8	32.8	97.8	17
Fayette	118.9	102.2	137.9	194
Gilmer	97.3	61.0	150.0	24
Grant	73.0	49.3	105.8	34
Greenbrier	135.3	114.9	158.5	177
Hampshire	99.6	78.5	125.2	82
Hancock	108.8	89.7	131.1	127
Hardy	89.7	64.1	123.1	43
Harrison	111.3	97.7	126.3	261
Jackson	101.1	81.6	124.2	101
Jefferson	101.9	86.3	119.6	159
Kanawha	122.6	114.1	131.6	847
Lewis	122.9	94.9	157.4	71
Lincoln	102.5	79.2	130.7	70
Logan	108.5	90.2	129.6	135
Marion	134.1	117.3	152.8	253
Marshall	115.9	96.2	138.7	136
Mason	89.5	71.2	111.4	88
McDowell	104.4	81.7	132.1	79
Mercer	117.0	102.2	133.5	254
Mineral	106.6	86.2	130.8	104
Mingo	131.4	107.3	159.7	111
Monongalia	131.9	117.2	148.0	307
Monroe	110.9	81.8	147.9	55
Morgan	102.8	78.7	133.1	66
Nicholas	96.9	76.8	121.1	86
Ohio	130.0	111.7	150.8	205
Pendleton	84.9	51.4	134.4	23
Pleasants	135.2	91.8	194.3	33
Pocahontas	99.5	65.0	147.7	30
Preston	130.0	108.1	155.3	135
Putnam	129.2	112.7	147.5	232
Raleigh	114.4	101.4	128.7	311
Randolph	97.3	77.4	121.1	91
Ritchie	84.9	56.3	124.4	31
Roane	94.5	68.8	127.6	49
Summers	84.8	61.3	115.5	46
Taylor	85.3	62.6	114.2	50
Tucker	119.3	81.4	172.5	34
Tyler	110.4	77.6	154.7	39
Upshur	109.9	87.7	136.4	91
Wayne	113.2	95.7	133.3	159
Webster	122.7	85.6	171.9	41
Wetzel	93.0	69.6	122.7	58
Wirt	87.8	51.4	143.9	18
Wood	107.9	96.1	120.8	329
Wyoming	77.9	58.8	101.6	61



Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.

Colon and Rectum Cancer - Average Annual Age-Adjusted Incidence Rates (per 100,000), 95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2010-2014

County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	**46.6**	**45.3**	**47.8**	**5,603**
Barbour	45.9	34.0	61.0	51
Berkeley	48.9	43.1	55.4	269
Boone	47.8	37.1	60.9	71
Braxton	50.9	37.9	67.5	54
Brooke	35.8	27.4	46.4	65
Cabell	42.7	37.5	48.4	255
Calhoun	55.0	37.0	80.0	32
Clay	56.8	38.8	80.9	33
Doddridge	28.4	16.0	47.9	16
Fayette	50.1	42.4	59.1	154
Gilmer	53.7	35.2	79.2	27
Grant	46.8	33.1	65.1	41
Greenbrier	47.6	39.1	57.6	120
Hampshire	51.7	40.9	64.9	83
Hancock	54.8	45.4	65.9	124
Hardy	33.4	22.7	48.0	32
Harrison	46.6	40.4	53.5	214
Jackson	42.1	33.3	52.8	82
Jefferson	43.1	35.7	51.6	128
Kanawha	44.3	40.6	48.2	571
Lewis	56.8	43.6	73.1	66
Lincoln	48.6	37.2	62.5	65
Logan	56.8	47.3	67.8	134
Marion	53.3	45.9	61.6	197
Marshall	48.0	39.3	58.2	112
Mason	42.1	33.1	52.9	79
McDowell	52.1	40.6	66.2	75
Mercer	48.0	41.6	55.3	210
Mineral	41.4	32.3	52.4	75
Mingo	57.4	45.8	71.2	90
Monongalia	45.9	39.6	52.9	199
Monroe	53.4	40.6	69.9	60
Morgan	37.8	27.4	51.3	47
Nicholas	56.7	45.9	69.5	101
Ohio	41.9	34.7	50.3	131
Pendleton	52.8	35.3	77.6	33
Pleasants	37.6	22.4	60.3	19
Pocahontas	33.5	20.6	52.8	23
Preston	53.1	43.7	64.0	117
Putnam	43.6	36.8	51.3	153
Raleigh	45.9	40.1	52.4	235
Randolph	50.1	40.6	61.3	103
Ritchie	64.7	47.6	86.8	49
Roane	52.8	38.8	70.7	50
Summers	41.2	29.6	56.5	44
Taylor	43.6	32.0	58.4	48
Tucker	64.3	42.7	94.0	32
Tyler	40.0	26.2	59.6	27
Upshur	46.4	36.0	59.0	72
Wayne	41.7	34.3	50.5	113
Webster	42.6	27.8	63.5	29
Wetzel	45.1	33.9	59.4	56
Wirt	42.9	23.5	72.9	16
Wood	46.4	40.9	52.4	269
Wyoming	34.2	25.3	45.5	52

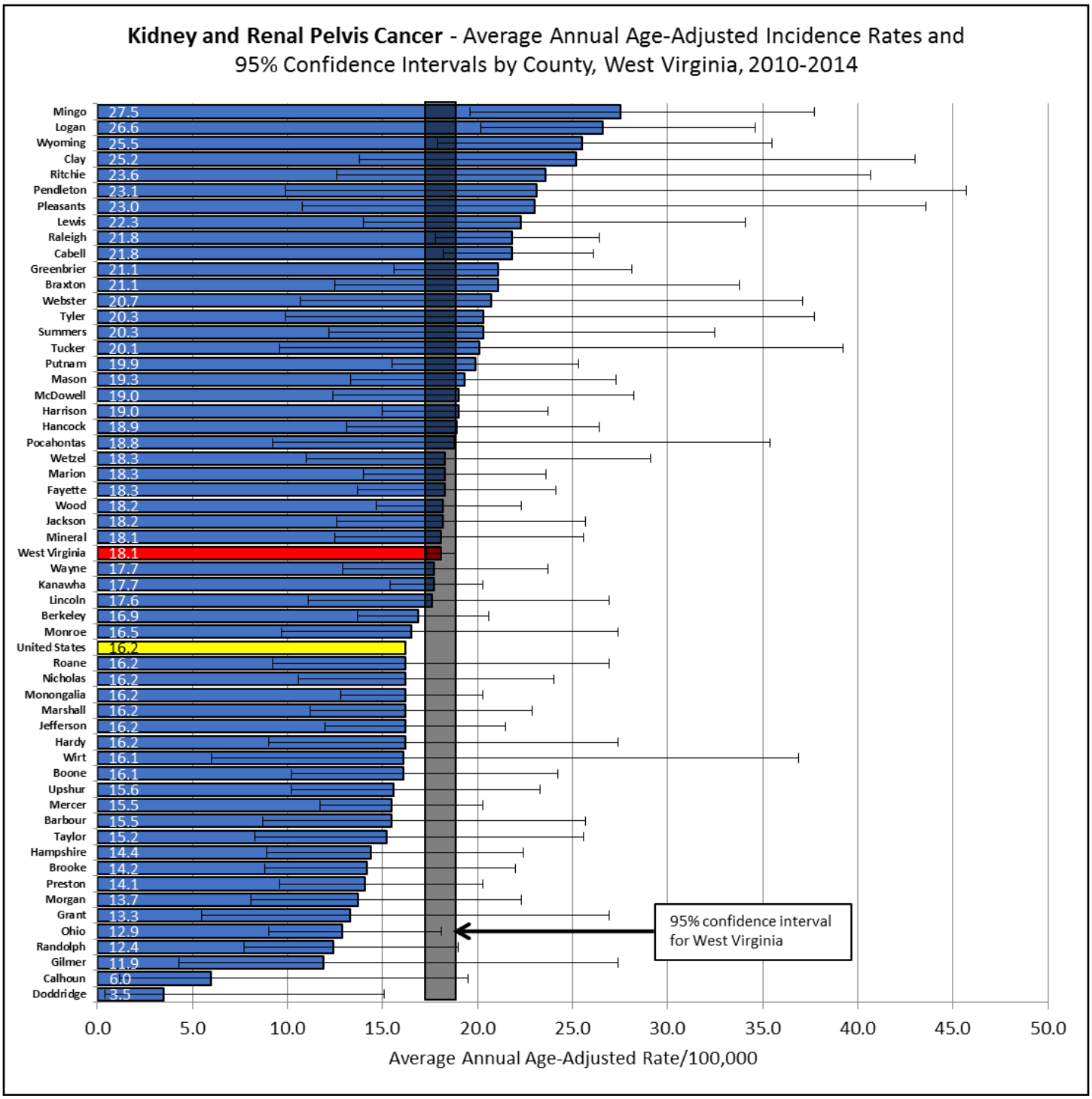


Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.

Kidney and Renal Pelvis Cancer - Average Annual Age-Adjusted Incidence Rates (per 100,000), 95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2010-2014

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	**18.1**	**17.3**	**18.9**	**2,163**	Mercer	15.5	11.7	20.3	60
Barbour	15.5	8.7	25.7	16	Mineral	18.1	12.5	25.6	36
Berkeley	16.9	13.7	20.6	103	Mingo	27.5	19.6	37.7	42
Boone	16.1	10.2	24.2	25	Monongalia	16.2	12.8	20.3	80
Braxton	21.1	12.5	33.8	20	Monroe	16.5	9.7	27.4	18
Brooke	14.2	8.8	22.0	24	Morgan	13.7	8.1	22.3	19
Cabell	21.8	18.2	26.1	131	Nicholas	16.2	10.6	24.0	28
Calhoun	6.0	1.2	19.5	^	Ohio	12.9	9.0	18.1	38
Clay	25.2	13.8	43.0	15	Pendleton	23.1	9.9	45.7	10
Doddridge	3.5	0.4	15.1	^	Pleasants	23.0	10.8	43.6	10
Fayette	18.3	13.7	24.1	57	Pocahontas	18.8	9.2	35.4	12
Gilmer	11.9	4.3	27.4	6	Preston	14.1	9.6	20.3	32
Grant	13.3	5.5	26.9	9	Putnam	19.9	15.5	25.3	72
Greenbrier	21.1	15.6	28.1	54	Raleigh	21.8	17.8	26.4	114
Hampshire	14.4	8.9	22.4	22	Randolph	12.4	7.7	19.0	24
Hancock	18.9	13.1	26.4	38	Ritchie	23.6	12.6	40.7	14
Hardy	16.2	9.0	27.4	16	Roane	16.2	9.2	26.9	17
Harrison	19.0	15.0	23.7	84	Summers	20.3	12.2	32.5	21
Jackson	18.2	12.6	25.7	36	Taylor	15.2	8.3	25.6	15
Jefferson	16.2	12.0	21.5	52	Tucker	20.1	9.6	39.2	11
Kanawha	17.7	15.4	20.3	230	Tyler	20.3	9.9	37.7	12
Lewis	22.3	14.0	34.1	24	Upshur	15.6	10.2	23.3	27
Lincoln	17.6	11.1	26.9	24	Wayne	17.7	12.9	23.7	48
Logan	26.6	20.2	34.6	64	Webster	20.7	10.7	37.1	13
Marion	18.3	14.0	23.6	67	Wetzel	18.3	11.0	29.1	21
Marshall	16.2	11.2	22.9	37	Wirt	16.1	6.0	36.9	7
Mason	19.3	13.3	27.3	35	Wood	18.2	14.7	22.3	100
McDowell	19.0	12.4	28.2	28	Wyoming	25.5	17.9	35.5	40

^ indicates suppressed data for counties with 3 or fewer cases over the 5-year period

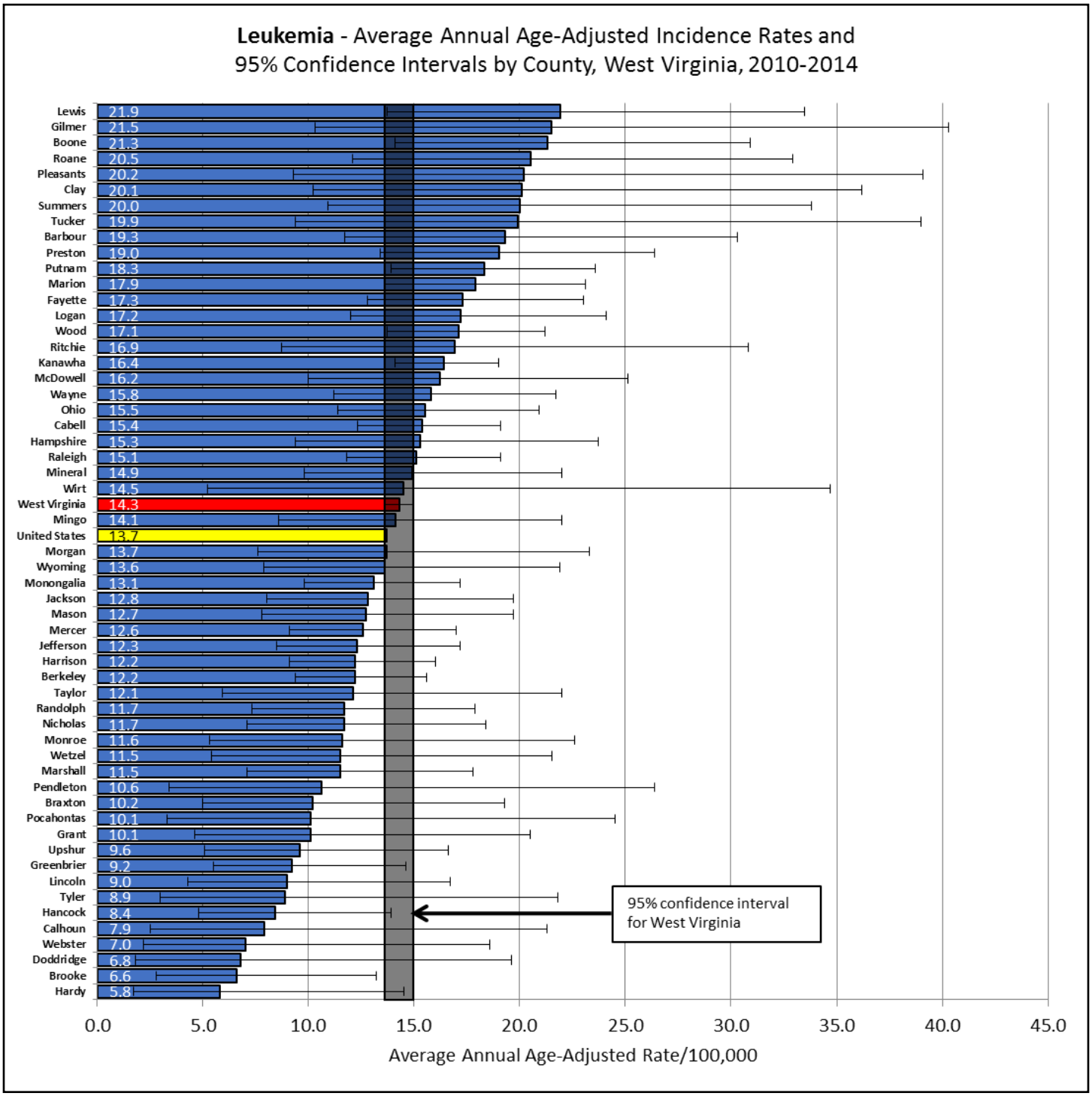


Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.

Leukemia - Average Annual Age-Adjusted Incidence Rates (per 100,000), 95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2010-2014

County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	**14.3**	**13.6**	**15.0**	**1,637**
Barbour	19.3	11.7	30.3	21
Berkeley	12.2	9.4	15.6	69
Boone	21.3	14.1	30.9	29
Braxton	10.2	5.0	19.3	11
Brooke	6.6	2.8	13.2	9
Cabell	15.4	12.3	19.1	90
Calhoun	7.9	2.5	21.3	5
Clay	20.1	10.2	36.2	12
Doddridge	6.8	1.8	19.6	4
Fayette	17.3	12.8	23.0	52
Gilmer	21.5	10.3	40.3	10
Grant	10.1	4.6	20.5	9
Greenbrier	9.2	5.5	14.6	21
Hampshire	15.3	9.4	23.7	23
Hancock	8.4	4.8	13.9	18
Hardy	5.8	1.7	14.5	5
Harrison	12.2	9.1	16.0	55
Jackson	12.8	8.0	19.7	23
Jefferson	12.3	8.5	17.2	36
Kanawha	16.4	14.1	19.0	194
Lewis	21.9	13.7	33.5	24
Lincoln	9.0	4.3	16.7	11
Logan	17.2	12.0	24.1	37
Marion	17.9	13.6	23.1	63
Marshall	11.5	7.1	17.8	24
Mason	12.7	7.8	19.7	22
McDowell	16.2	10.0	25.1	23

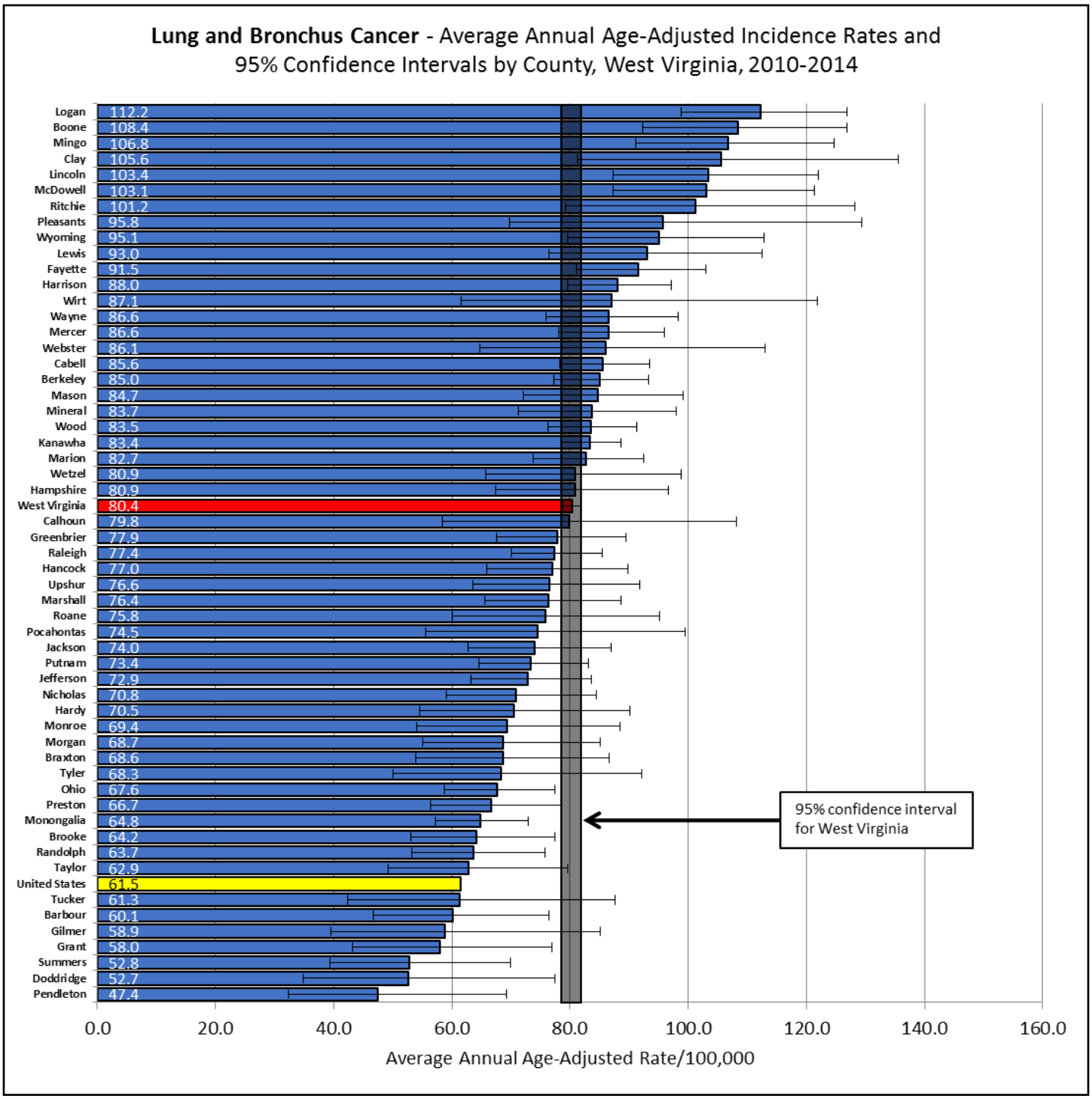
County	Rate	Lower CI	Upper CI	5-yr Count
Mercer	12.6	9.1	17.0	48
Mineral	14.9	9.8	22.0	29
Mingo	14.1	8.6	22.0	22
Monongalia	13.1	9.8	17.2	56
Monroe	11.6	5.3	22.6	10
Morgan	13.7	7.6	23.3	16
Nicholas	11.7	7.1	18.4	21
Ohio	15.5	11.4	20.9	50
Pendleton	10.6	3.4	26.4	6
Pleasants	20.2	9.3	39.1	10
Pocahontas	10.1	3.3	24.5	6
Preston	19.0	13.4	26.4	39
Putnam	18.3	13.9	23.6	62
Raleigh	15.1	11.8	19.1	75
Randolph	11.7	7.3	17.9	23
Ritchie	16.9	8.7	30.8	12
Roane	20.5	12.1	32.9	19
Summers	20.0	10.9	33.8	16
Taylor	12.1	5.9	22.0	11
Tucker	19.9	9.4	39.0	10
Tyler	8.9	3.0	21.8	6
Upshur	9.6	5.1	16.6	14
Wayne	15.8	11.2	21.7	41
Webster	7.0	2.2	18.6	5
Wetzel	11.5	5.4	21.5	11
Wirt	14.5	5.2	34.7	6
Wood	17.1	13.7	21.2	94
Wyoming	13.6	7.9	21.9	19



Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.

Lung and Bronchus Cancer - Average Annual Age-Adjusted Incidence Rates (per 100,000), 95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2010-2014

County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	**80.4**	**78.8**	**82.0**	**10,055**
Barbour	60.1	46.7	76.4	71
Berkeley	85.0	77.3	93.3	481
Boone	108.4	92.3	126.8	168
Braxton	68.6	53.9	86.6	77
Brooke	64.2	53.1	77.4	122
Cabell	85.6	78.3	93.5	522
Calhoun	79.8	58.4	108.1	47
Clay	105.6	81.3	135.6	68
Doddridge	52.7	34.9	77.5	29
Fayette	91.5	81.2	103.0	296
Gilmer	58.9	39.6	85.2	30
Grant	58.0	43.2	77.0	53
Greenbrier	77.9	67.6	89.5	216
Hampshire	80.9	67.4	96.6	134
Hancock	77.0	65.9	89.8	178
Hardy	70.5	54.6	90.1	70
Harrison	88.0	79.6	97.1	416
Jackson	74.0	62.7	86.9	156
Jefferson	72.9	63.2	83.7	217
Kanawha	83.4	78.5	88.6	1,115
Lewis	93.0	76.5	112.6	114
Lincoln	103.4	87.3	122.0	153
Logan	112.2	98.9	126.8	274
Marion	82.7	73.8	92.5	324
Marshall	76.4	65.6	88.7	186
Mason	84.7	72.1	99.2	165
McDowell	103.1	87.3	121.3	159
Mercer	86.6	78.1	96.0	389
Mineral	83.7	71.2	98.0	166
Mingo	106.8	91.1	124.7	173
Monongalia	64.8	57.3	73.0	282
Monroe	69.4	54.0	88.5	74
Morgan	68.7	55.1	85.2	91
Nicholas	70.8	59.0	84.5	132
Ohio	67.6	58.8	77.5	222
Pendleton	47.4	32.3	69.2	32
Pleasants	95.8	69.7	129.4	46
Pocahontas	74.5	55.5	99.5	53
Preston	66.7	56.4	78.6	152
Putnam	73.4	64.6	83.2	258
Raleigh	77.4	70.1	85.4	419
Randolph	63.7	53.3	75.8	136
Ritchie	101.2	79.3	128.2	77
Roane	75.8	60.0	95.1	82
Summers	52.8	39.4	69.9	55
Taylor	62.9	49.2	79.7	74
Tucker	61.3	42.4	87.6	35
Tyler	68.3	50.1	92.2	48
Upshur	76.6	63.6	91.8	125
Wayne	86.6	75.9	98.4	248
Webster	86.1	64.8	113.1	58
Wetzel	80.9	65.8	98.9	104
Wirt	87.1	61.5	121.9	39
Wood	83.5	76.2	91.3	499
Wyoming	95.1	79.7	112.8	145

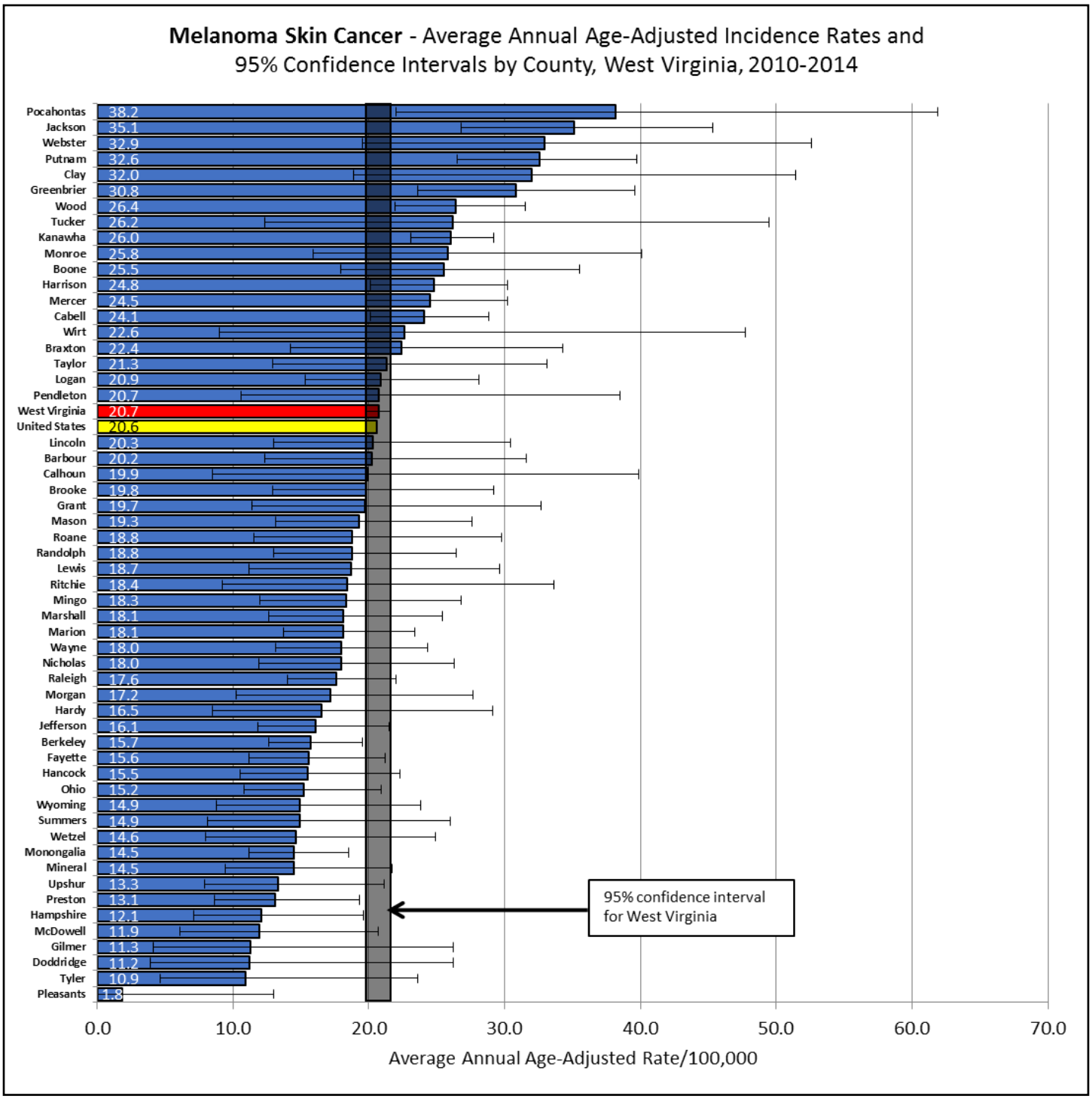


Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.

Melanoma Skin Cancer - Average Annual Age-Adjusted Incidence Rates (per 100,000), 95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2010-2014

County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	**20.7**	**19.8**	**21.6**	**2,327**
Barbour	20.2	12.3	31.6	21
Berkeley	15.7	12.6	19.5	89
Boone	25.5	17.9	35.5	39
Braxton	22.4	14.2	34.3	24
Brooke	19.8	12.9	29.2	30
Cabell	24.1	20.1	28.8	132
Calhoun	19.9	8.5	39.9	9
Clay	32.0	18.9	51.4	19
Doddridge	11.2	3.9	26.2	6
Fayette	15.6	11.2	21.2	46
Gilmer	11.3	4.1	26.2	6
Grant	19.7	11.4	32.7	17
Greenbrier	30.8	23.6	39.6	71
Hampshire	12.1	7.1	19.6	19
Hancock	15.5	10.5	22.3	33
Hardy	16.5	8.5	29.1	13
Harrison	24.8	20.1	30.2	106
Jackson	35.1	26.8	45.3	64
Jefferson	16.1	11.8	21.5	49
Kanawha	26.0	23.1	29.2	308
Lewis	18.7	11.2	29.6	20
Lincoln	20.3	13.0	30.4	26
Logan	20.9	15.3	28.1	50
Marion	18.1	13.7	23.4	63
Marshall	18.1	12.6	25.4	38
Mason	19.3	13.1	27.6	34
McDowell	11.9	6.1	20.7	13
Mercer	24.5	19.8	30.2	102
Mineral	14.5	9.4	21.7	26
Mingo	18.3	12.0	26.8	29
Monongalia	14.5	11.2	18.5	68
Monroe	25.8	15.9	40.1	23
Morgan	17.2	10.2	27.7	20
Nicholas	18.0	11.9	26.3	30
Ohio	15.2	10.8	20.9	43
Pendleton	20.7	10.6	38.5	13
Pleasants	1.8	0.0	13.0	^
Pocahontas	38.2	22.0	61.9	19
Preston	13.1	8.6	19.3	28
Putnam	32.6	26.5	39.7	105
Raleigh	17.6	14.0	22.0	86
Randolph	18.8	13.0	26.4	37
Ritchie	18.4	9.2	33.6	12
Roane	18.8	11.5	29.8	21
Summers	14.9	8.1	26.0	15
Taylor	21.3	12.9	33.1	21
Tucker	26.2	12.3	49.5	11
Tyler	10.9	4.6	23.6	8
Upshur	13.3	7.9	21.1	20
Wayne	18.0	13.1	24.3	47
Webster	32.9	19.5	52.6	20
Wetzel	14.6	8.0	24.9	16
Wirt	22.6	9.0	47.7	8
Wood	26.4	21.9	31.5	134
Wyoming	14.9	8.8	23.8	19

^ indicates suppressed data for counties with 3 or fewer cases over the 5-year period



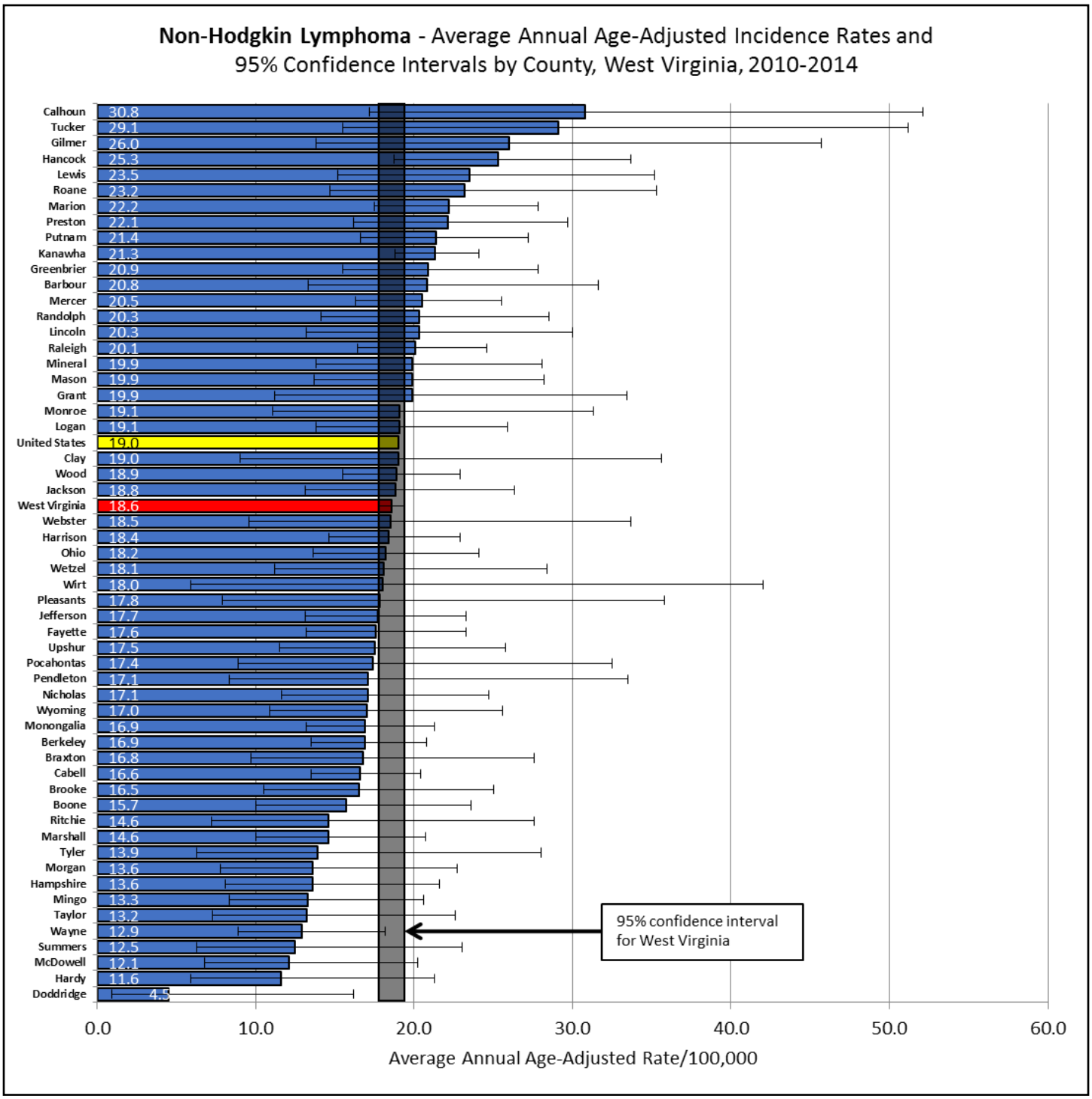
Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.

Non-Hodgkin Lymphoma - Average Annual Age-Adjusted Incidence Rates (per 100,000), 95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2010-2014

County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	**18.6**	**17.8**	**19.4**	**2,219**
Barbour	20.8	13.3	31.6	24
Berkeley	16.9	13.5	20.8	93
Boone	15.7	10.0	23.6	25
Braxton	16.8	9.7	27.6	18
Brooke	16.5	10.5	25.0	26
Cabell	16.6	13.5	20.4	100
Calhoun	30.8	17.2	52.1	16
Clay	19.0	9.0	35.6	11
Doddridge	4.5	0.9	16.2	^
Fayette	17.6	13.2	23.3	55
Gilmer	26.0	13.8	45.7	13
Grant	19.9	11.2	33.4	17
Greenbrier	20.9	15.5	27.8	53
Hampshire	13.6	8.1	21.6	20
Hancock	25.3	18.7	33.7	54
Hardy	11.6	5.9	21.3	12
Harrison	18.4	14.6	22.9	85
Jackson	18.8	13.1	26.3	37
Jefferson	17.7	13.1	23.3	53
Kanawha	21.3	18.8	24.1	273
Lewis	23.5	15.2	35.2	26
Lincoln	20.3	13.2	30.0	27
Logan	19.1	13.8	25.9	46
Marion	22.2	17.5	27.8	81
Marshall	14.6	10.0	20.7	35
Mason	19.9	13.7	28.2	36
McDowell	12.1	6.8	20.2	17

County	Rate	Lower CI	Upper CI	5-yr Count
Mercer	20.5	16.3	25.5	87
Mineral	19.9	13.8	28.1	36
Mingo	13.3	8.3	20.6	23
Monongalia	16.9	13.2	21.3	74
Monroe	19.1	11.1	31.3	19
Morgan	13.6	7.8	22.7	18
Nicholas	17.1	11.6	24.7	31
Ohio	18.2	13.6	24.1	56
Pendleton	17.1	8.3	33.5	11
Pleasants	17.8	7.9	35.8	9
Pocahontas	17.4	8.9	32.5	12
Preston	22.1	16.2	29.7	48
Putnam	21.4	16.6	27.2	70
Raleigh	20.1	16.4	24.6	104
Randolph	20.3	14.1	28.5	37
Ritchie	14.6	7.2	27.6	11
Roane	23.2	14.7	35.3	24
Summers	12.5	6.3	23.0	12
Taylor	13.2	7.3	22.6	15
Tucker	29.1	15.5	51.2	15
Tyler	13.9	6.3	28.0	9
Upshur	17.5	11.5	25.8	28
Wayne	12.9	8.9	18.2	35
Webster	18.5	9.6	33.7	13
Wetzel	18.1	11.2	28.4	22
Wirt	18.0	5.9	42.0	6
Wood	18.9	15.5	22.9	111
Wyoming	17.0	10.9	25.6	27

^ indicates suppressed data for counties with 3 or fewer cases over the 5-year period

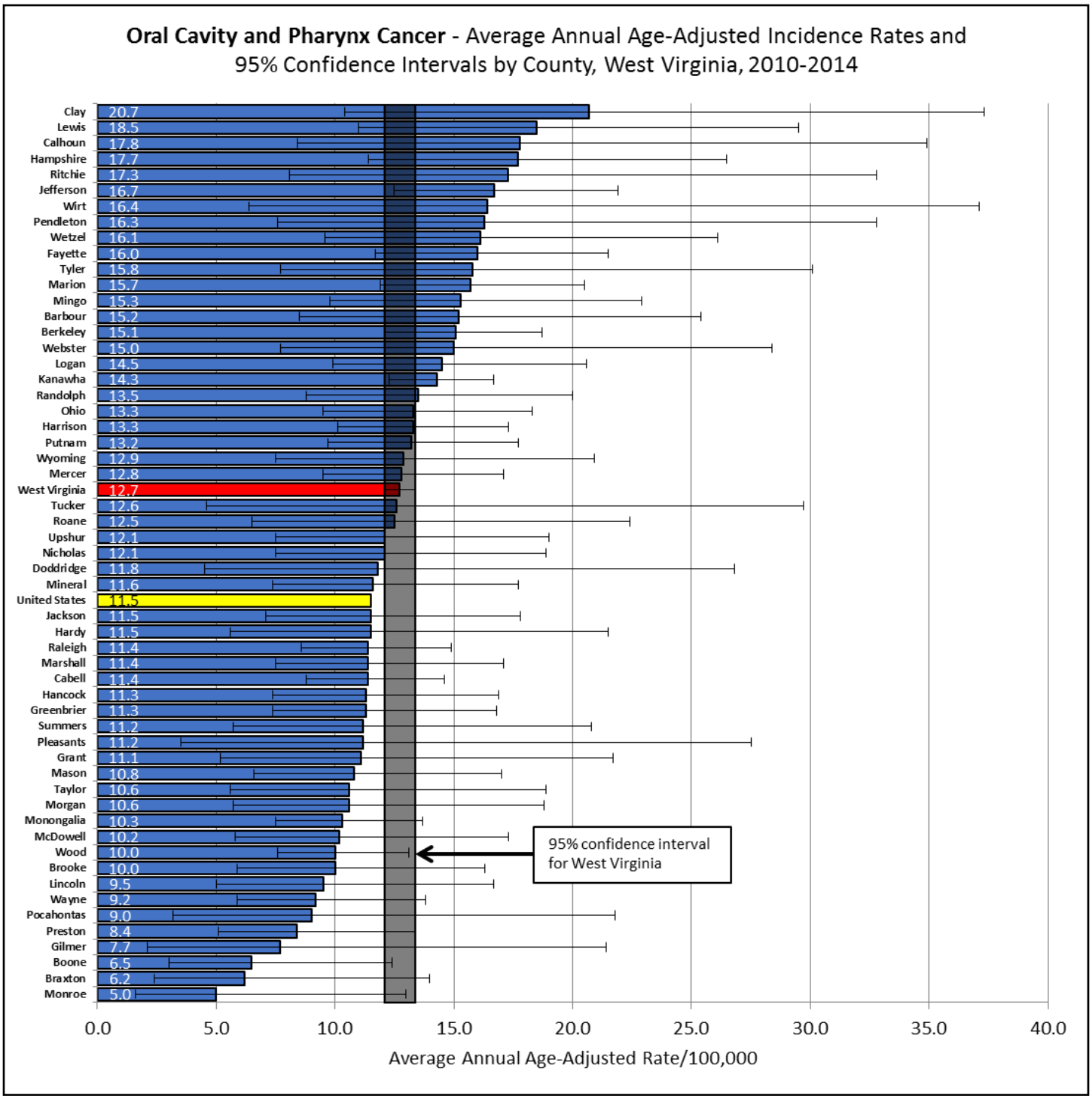


Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.

Oral Cavity and Pharynx Cancer - Average Annual Age-Adjusted Incidence Rates (per 100,000), 95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2010-2014

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	**12.7**	**12.1**	**13.4**	**1,548**	Mercer	12.8	9.5	17.1	53
Barbour	15.2	8.5	25.4	16	Mineral	11.6	7.4	17.7	24
Berkeley	15.1	12.1	18.7	90	Mingo	15.3	9.8	22.9	26
Boone	6.5	3.0	12.4	10	Monongalia	10.3	7.5	13.7	47
Braxton	6.2	2.4	14.0	7	Monroe	5.0	1.6	13.0	5
Brooke	10.0	5.9	16.3	19	Morgan	10.6	5.7	18.8	14
Cabell	11.4	8.8	14.6	69	Nicholas	12.1	7.5	18.9	23
Calhoun	17.8	8.4	34.9	10	Ohio	13.3	9.5	18.3	43
Clay	20.7	10.4	37.3	12	Pendleton	16.3	7.6	32.8	10
Doddridge	11.8	4.5	26.8	7	Pleasants	11.2	3.5	27.5	5
Fayette	16.0	11.7	21.5	49	Pocahontas	9.0	3.2	21.8	6
Gilmer	7.7	2.1	21.4	4	Preston	8.4	5.1	13.4	20
Grant	11.1	5.2	21.7	10	Putnam	13.2	9.7	17.7	49
Greenbrier	11.3	7.4	16.8	29	Raleigh	11.4	8.6	14.9	60
Hampshire	17.7	11.4	26.5	27	Randolph	13.5	8.8	20.0	27
Hancock	11.3	7.4	16.9	27	Ritchie	17.3	8.1	32.8	11
Hardy	11.5	5.6	21.5	11	Roane	12.5	6.5	22.4	13
Harrison	13.3	10.1	17.3	60	Summers	11.2	5.7	20.8	12
Jackson	11.5	7.1	17.8	22	Taylor	10.6	5.6	18.9	13
Jefferson	16.7	12.5	21.9	55	Tucker	12.6	4.6	29.7	7
Kanawha	14.3	12.3	16.7	183	Tyler	15.8	7.7	30.1	11
Lewis	18.5	11.0	29.5	19	Upshur	12.1	7.5	19.0	21
Lincoln	9.5	5.0	16.7	13	Wayne	9.2	5.9	13.8	26
Logan	14.5	9.9	20.6	35	Webster	15.0	7.7	28.4	12
Marion	15.7	11.9	20.5	59	Wetzel	16.1	9.6	26.1	19
Marshall	11.4	7.5	17.1	27	Wirt	16.4	6.4	37.1	7
Mason	10.8	6.6	17.0	21	Wood	10.0	7.6	13.1	58
McDowell	10.2	5.8	17.3	16	Wyoming	12.9	7.5	20.9	19

^ indicates suppressed data for counties with 3 or fewer cases over the 5-year period

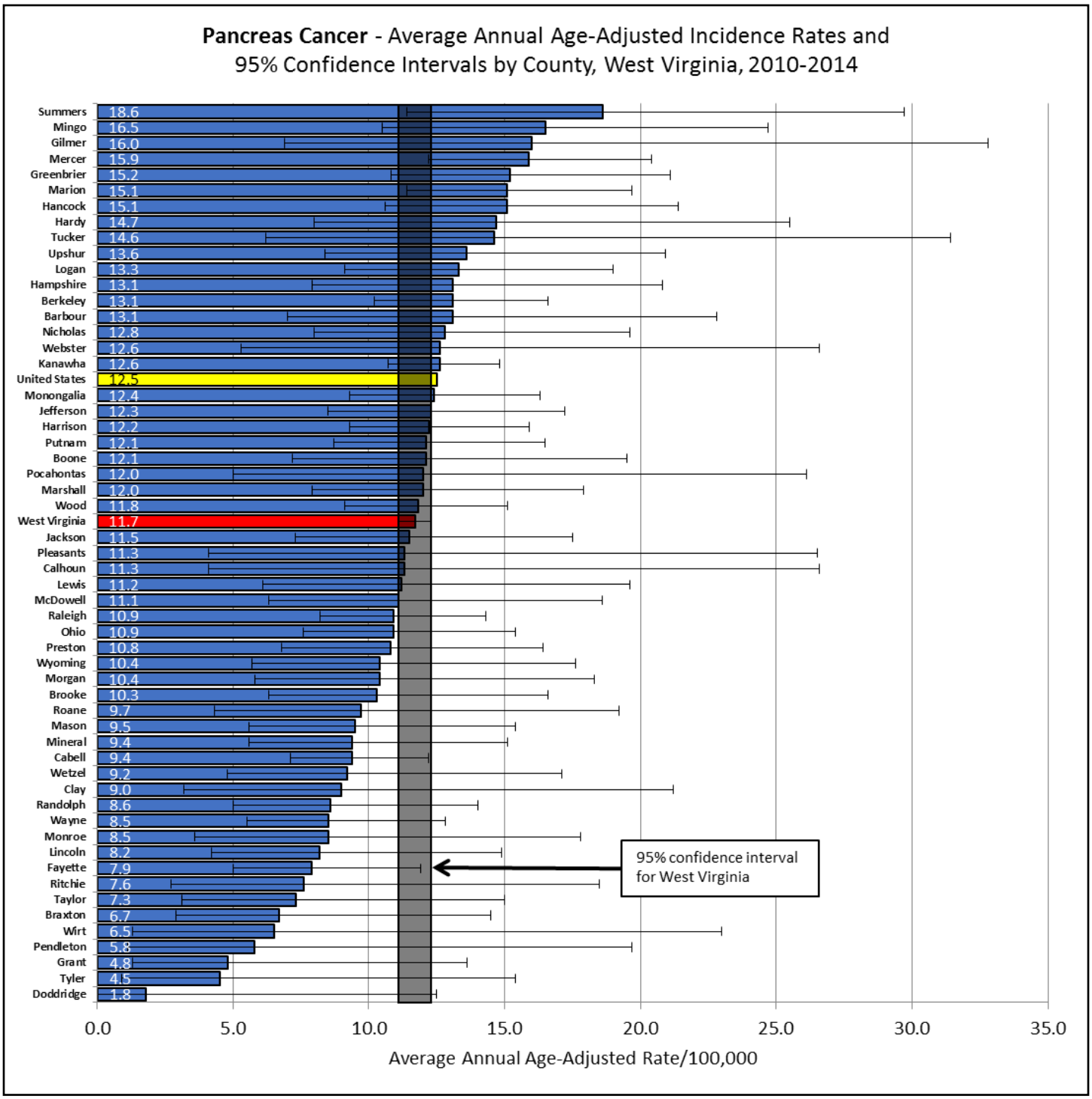


Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.

Pancreas Cancer - Average Annual Age-Adjusted Incidence Rates (per 100,000), 95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2010-2014

County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	**11.7**	**11.1**	**12.3**	**1,438**
Barbour	13.1	7.0	22.8	14
Berkeley	13.1	10.2	16.6	73
Boone	12.1	7.2	19.5	19
Braxton	6.7	2.9	14.5	8
Brooke	10.3	6.3	16.6	20
Cabell	9.4	7.1	12.2	60
Calhoun	11.3	4.1	26.6	6
Clay	9.0	3.2	21.2	6
Doddridge	1.8	0.0	12.5	^
Fayette	7.9	5.0	11.9	25
Gilmer	16.0	6.9	32.8	8
Grant	4.8	1.3	13.6	4
Greenbrier	15.2	10.8	21.1	41
Hampshire	13.1	7.9	20.8	20
Hancock	15.1	10.6	21.4	36
Hardy	14.7	8.0	25.5	14
Harrison	12.2	9.3	15.9	61
Jackson	11.5	7.3	17.5	24
Jefferson	12.3	8.5	17.2	36
Kanawha	12.6	10.7	14.8	161
Lewis	11.2	6.1	19.6	14
Lincoln	8.2	4.2	14.9	12
Logan	13.3	9.1	19.0	33
Marion	15.1	11.4	19.7	59
Marshall	12.0	7.9	17.9	27
Mason	9.5	5.6	15.4	18
McDowell	11.1	6.3	18.6	16
Mercer	15.9	12.2	20.4	69
Mineral	9.4	5.6	15.1	19
Mingo	16.5	10.5	24.7	25
Monongalia	12.4	9.3	16.3	54
Monroe	8.5	3.6	17.8	8
Morgan	10.4	5.8	18.3	15
Nicholas	12.8	8.0	19.6	24
Ohio	10.9	7.6	15.4	37
Pendleton	5.8	1.1	19.7	^
Pleasants	11.3	4.1	26.5	6
Pocahontas	12.0	5.0	26.1	8
Preston	10.8	6.8	16.4	24
Putnam	12.1	8.7	16.5	43
Raleigh	10.9	8.2	14.3	58
Randolph	8.6	5.0	14.0	18
Ritchie	7.6	2.7	18.5	6
Roane	9.7	4.3	19.2	10
Summers	18.6	11.4	29.7	21
Taylor	7.3	3.1	15.0	8
Tucker	14.6	6.2	31.4	8
Tyler	4.5	0.9	15.4	^
Upshur	13.6	8.4	20.9	22
Wayne	8.5	5.5	12.8	26
Webster	12.6	5.3	26.6	8
Wetzel	9.2	4.8	17.1	12
Wirt	6.5	1.3	23.0	^
Wood	11.8	9.1	15.1	69
Wyoming	10.4	5.7	17.6	15

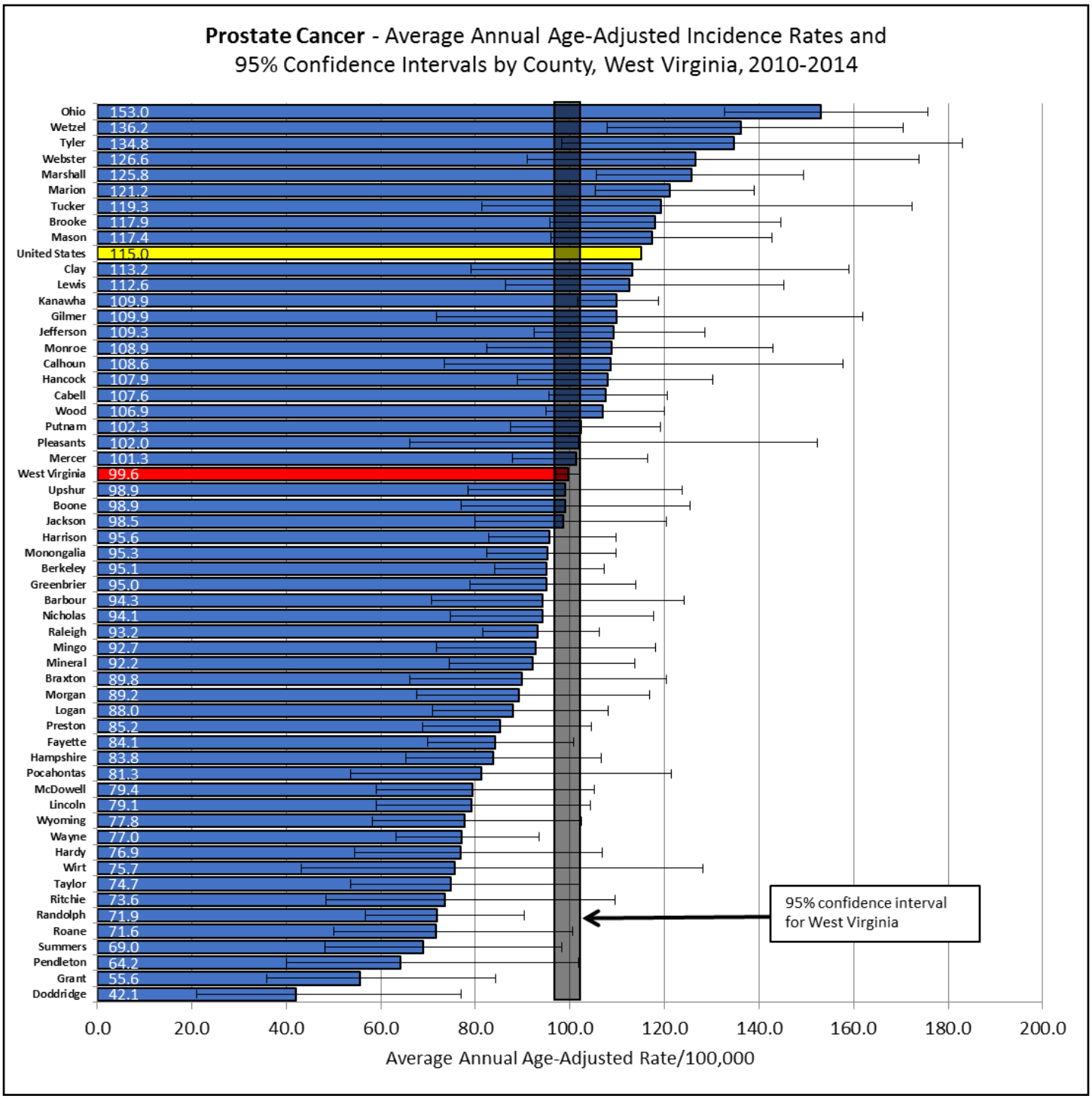
^ indicates suppressed data for counties with 3 or fewer cases over the 5-year period.



Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.

Prostate Cancer - Average Annual Age-Adjusted Incidence Rates (per 100,000), 95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2010-2014

County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	**99.6**	**97.0**	**102.2**	**6,057**
Barbour	94.3	70.8	124.1	56
Berkeley	95.1	84.0	107.3	290
Boone	98.9	77.0	125.5	77
Braxton	89.8	66.2	120.4	51
Brooke	117.9	95.7	144.6	102
Cabell	107.6	95.6	120.7	304
Calhoun	108.6	73.4	157.8	32
Clay	113.2	79.0	159.1	37
Doddridge	42.1	21.1	77.0	12
Fayette	84.1	69.9	100.7	131
Gilmer	109.9	71.8	162.0	27
Grant	55.6	35.9	84.3	26
Greenbrier	95.0	78.9	113.9	128
Hampshire	83.8	65.2	106.7	74
Hancock	107.9	88.9	130.3	117
Hardy	76.9	54.5	106.9	40
Harrison	95.6	82.9	109.8	212
Jackson	98.5	80.0	120.4	101
Jefferson	109.3	92.4	128.5	167
Kanawha	109.9	101.6	118.7	683
Lewis	112.6	86.3	145.3	64
Lincoln	79.1	59.1	104.4	57
Logan	88.0	71.0	108.0	102
Marion	121.2	105.3	139.0	220
Marshall	125.8	105.5	149.4	143
Mason	117.4	96.0	142.7	110
McDowell	79.4	59.1	105.1	56
Mercer	101.3	87.9	116.4	215
Mineral	92.2	74.4	113.7	97
Mingo	92.7	71.8	118.1	75
Monongalia	95.3	82.4	109.7	213
Monroe	108.9	82.4	142.9	59
Morgan	89.2	67.5	116.8	59
Nicholas	94.1	74.7	117.6	86
Ohio	153.0	132.8	175.7	219
Pendleton	64.2	40.1	101.8	22
Pleasants	102.0	66.1	152.3	27
Pocahontas	81.3	53.6	121.4	29
Preston	85.2	68.9	104.6	100
Putnam	102.3	87.5	119.2	180
Raleigh	93.2	81.5	106.2	245
Randolph	71.9	56.8	90.4	81
Ritchie	73.6	48.3	109.5	28
Roane	71.6	50.0	100.6	39
Summers	69.0	48.1	98.3	37
Taylor	74.7	53.6	102.0	44
Tucker	119.3	81.4	172.4	34
Tyler	134.8	98.2	183.1	48
Upshur	98.9	78.5	123.7	84
Wayne	77.0	63.1	93.4	110
Webster	126.6	90.9	173.9	44
Wetzel	136.2	107.9	170.6	83
Wirt	75.7	43.2	128.1	17
Wood	106.9	95.0	120.0	303
Wyoming	77.8	58.2	102.5	60

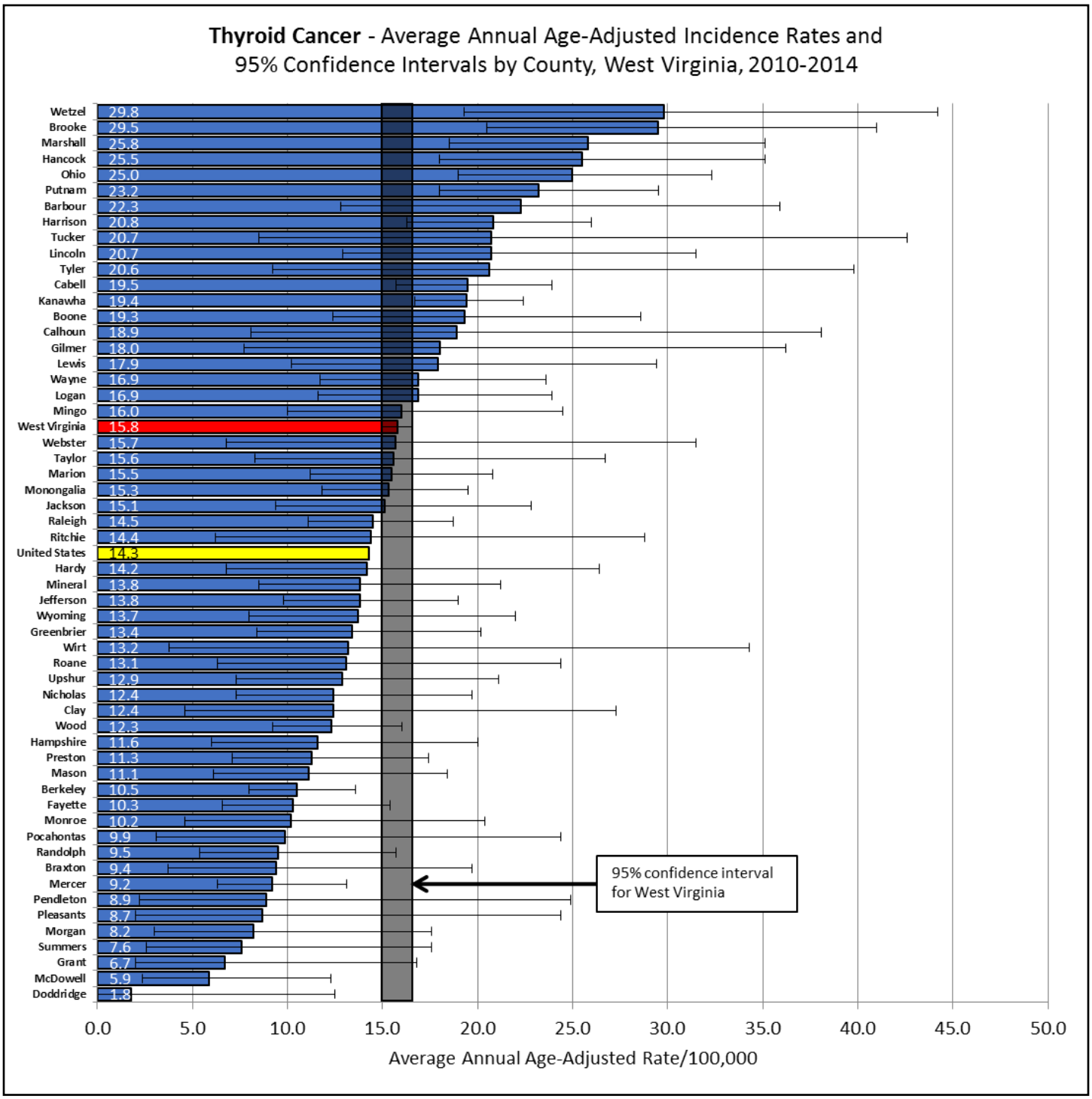


Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.

Thyroid Cancer - Average Annual Age-Adjusted Incidence Rates (per 100,000), 95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2010-2014

County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	**15.8**	**15.0**	**16.6**	**1,612**
Barbour	22.3	12.8	35.9	17
Berkeley	10.5	8.0	13.6	59
Boone	19.3	12.4	28.6	27
Braxton	9.4	3.7	19.7	8
Brooke	29.5	20.5	41.0	41
Cabell	19.5	15.7	23.9	97
Calhoun	18.9	8.1	38.1	9
Clay	12.4	4.6	27.3	7
Doddridge	1.8	0.0	12.5	^
Fayette	10.3	6.6	15.4	26
Gilmer	18.0	7.7	36.2	8
Grant	6.7	2.0	16.8	5
Greenbrier	13.4	8.4	20.2	25
Hampshire	11.6	6.0	20.0	13
Hancock	25.5	18.0	35.1	43
Hardy	14.2	6.8	26.4	11
Harrison	20.8	16.3	26.0	81
Jackson	15.1	9.4	22.8	24
Jefferson	13.8	9.8	19.0	40
Kanawha	19.4	16.7	22.4	200
Lewis	17.9	10.2	29.4	17
Lincoln	20.7	12.9	31.5	23
Logan	16.9	11.6	23.9	35
Marion	15.5	11.2	20.8	48
Marshall	25.8	18.5	35.1	46
Mason	11.1	6.1	18.4	16
McDowell	5.9	2.4	12.3	8
Mercer	9.2	6.3	13.1	35
Mineral	13.8	8.5	21.2	23
Mingo	16.0	10.0	24.5	23
Monongalia	15.3	11.8	19.5	70
Monroe	10.2	4.6	20.4	10
Morgan	8.2	3.0	17.6	7
Nicholas	12.4	7.3	19.7	20
Ohio	25.0	19.0	32.3	65
Pendleton	8.9	2.2	24.9	4
Pleasants	8.7	2.0	24.4	4
Pocahontas	9.9	3.1	24.4	6
Preston	11.3	7.1	17.4	23
Putnam	23.2	18.0	29.5	72
Raleigh	14.5	11.1	18.7	67
Randolph	9.5	5.4	15.7	17
Ritchie	14.4	6.2	28.8	9
Roane	13.1	6.3	24.4	11
Summers	7.6	2.6	17.6	6
Taylor	15.6	8.3	26.7	14
Tucker	20.7	8.5	42.6	8
Tyler	20.6	9.2	39.8	10
Upshur	12.9	7.3	21.1	17
Wayne	16.9	11.7	23.6	36
Webster	15.7	6.8	31.5	9
Wetzel	29.8	19.3	44.2	28
Wirt	13.2	3.8	34.3	5
Wood	12.3	9.2	16.0	59
Wyoming	13.7	8.0	22.0	19

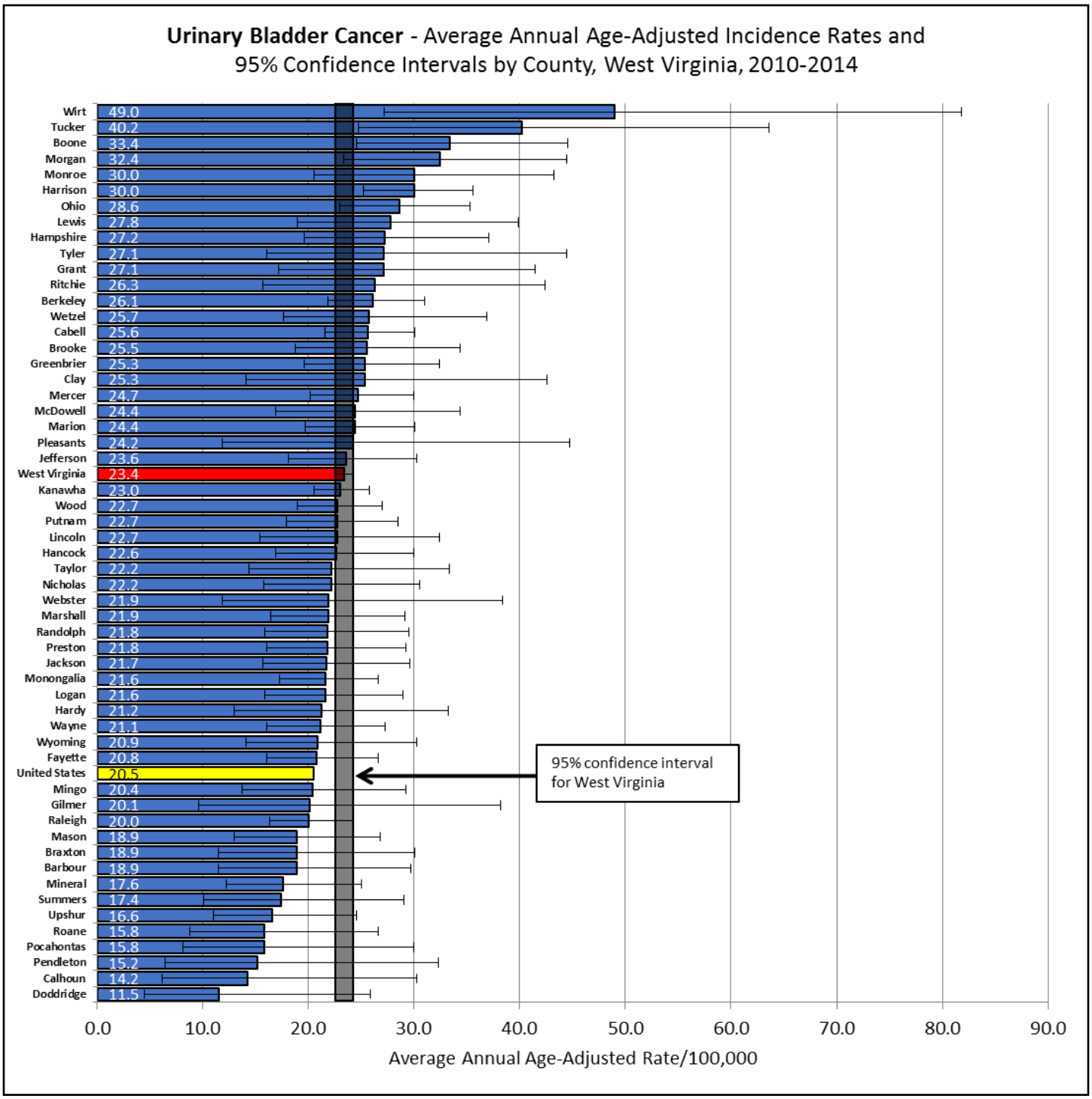
^ indicates suppressed data for counties with 3 or fewer cases over the 5-year period.



Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.

Urinary Bladder Cancer - Average Annual Age-Adjusted Incidence Rates (per 100,000), 95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2010-2014

County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	**23.4**	**22.6**	**24.3**	**2,875**
Barbour	18.9	11.5	29.7	21
Berkeley	26.1	21.8	31.0	139
Boone	33.4	24.5	44.5	50
Braxton	18.9	11.5	30.1	20
Brooke	25.5	18.8	34.4	50
Cabell	25.6	21.6	30.1	153
Calhoun	14.2	6.1	30.2	8
Clay	25.3	14.1	42.6	15
Doddridge	11.5	4.5	25.9	7
Fayette	20.8	16.0	26.6	67
Gilmer	20.1	9.6	38.2	10
Grant	27.1	17.2	41.5	24
Greenbrier	25.3	19.6	32.4	69
Hampshire	27.2	19.6	37.1	44
Hancock	22.6	16.9	30.0	54
Hardy	21.2	13.0	33.2	21
Harrison	30.0	25.2	35.6	141
Jackson	21.7	15.7	29.6	44
Jefferson	23.6	18.1	30.2	67
Kanawha	23.0	20.5	25.8	308
Lewis	27.8	18.9	39.9	32
Lincoln	22.7	15.4	32.4	33
Logan	21.6	15.9	28.9	49
Marion	24.4	19.7	30.1	94
Marshall	21.9	16.4	29.1	54
Mason	18.9	13.0	26.8	35
McDowell	24.4	16.9	34.4	36
Mercer	24.7	20.2	30.0	110
Mineral	17.6	12.2	25.0	35
Mingo	20.4	13.7	29.2	31
Monongalia	21.6	17.3	26.6	92
Monroe	30.0	20.5	43.2	33
Morgan	32.4	23.3	44.4	43
Nicholas	22.2	15.8	30.5	41
Ohio	28.6	23.0	35.3	95
Pendleton	15.2	6.4	32.3	9
Pleasants	24.2	11.8	44.7	11
Pocahontas	15.8	8.1	30.0	12
Preston	21.8	16.0	29.2	48
Putnam	22.7	17.9	28.5	80
Raleigh	20.0	16.3	24.3	105
Randolph	21.8	15.9	29.5	47
Ritchie	26.3	15.7	42.4	19
Roane	15.8	8.8	26.6	16
Summers	17.4	10.1	29.0	18
Taylor	22.2	14.4	33.3	26
Tucker	40.2	24.7	63.6	22
Tyler	27.1	16.0	44.4	18
Upshur	16.6	11.0	24.5	28
Wayne	21.1	16.0	27.3	61
Webster	21.9	11.8	38.4	14
Wetzel	25.7	17.6	36.9	33
Wirt	49.0	27.2	81.8	16
Wood	22.7	18.9	27.0	135
Wyoming	20.9	14.1	30.2	32



Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2014 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2017. Available at www.cdc.gov/uscs.