

West Virginia Cancer Burden Report

2019



 **WVU**CancerInstitute™

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	Steven Blankenship, MS
Amy R. Allen, MA, MS	Jenny Ostien, MS
Mary Ellen Conn, MS	Lauren Wright, MPH
Markie McCoy, MPH	

Contributors:

Shawn Farley, MHA, CTR
Myra Fernatt, BS
Leslie Boner, CTR
Neal Kerley, CTR
Mark Wigal, CTR
Michael Gray, CTR

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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/

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Preface

The 2019 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), HPV-associated cancers, obesity-related cancers, tobacco-related cancers, and new sections on prostate cancer. There are summaries, one page infographics, and WV resource pages that are easy to understand, replicate and use in the community. 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 2012 to 2016. The purpose of the report is to provide WV cancer data to cancer prevention and control partners, researchers, policy makers, and the public.

From 2012 to 2016, 58,265 new cases (approximately 11,653 cases annually) of invasive (and in situ bladder) cancer were diagnosed among WV residents. During this time, 29,697 cases (51%) were diagnosed among males and 28,568 cases (49%) were diagnosed among females.

From 2012 to 2016, the most common cancers reported among WV residents were lung and bronchus (10,237; 18%), female breast (7,350; 13%), prostate (5,772; 10%), and colon and rectum (5,666; 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 (2,904; 5%), melanomas of the skin (2,386; 4%), kidney and renal pelvis (2,358; 4%), non-Hodgkin lymphoma (2,310; 4%), corpus and uterus (1,991; 3%), leukemia (1,682; 3%), and thyroid (1,651; 3%). Prostate cancer was the most commonly diagnosed cancer in men and accounted for almost one-fifth (19%) of all cancers diagnosed among WV 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 and bronchus 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. Thyroid and testicular cancer, for example, 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 influences), genetics, and cancer screening practices. Appendix B includes county level data for 28 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-Rea, Ed.D.

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

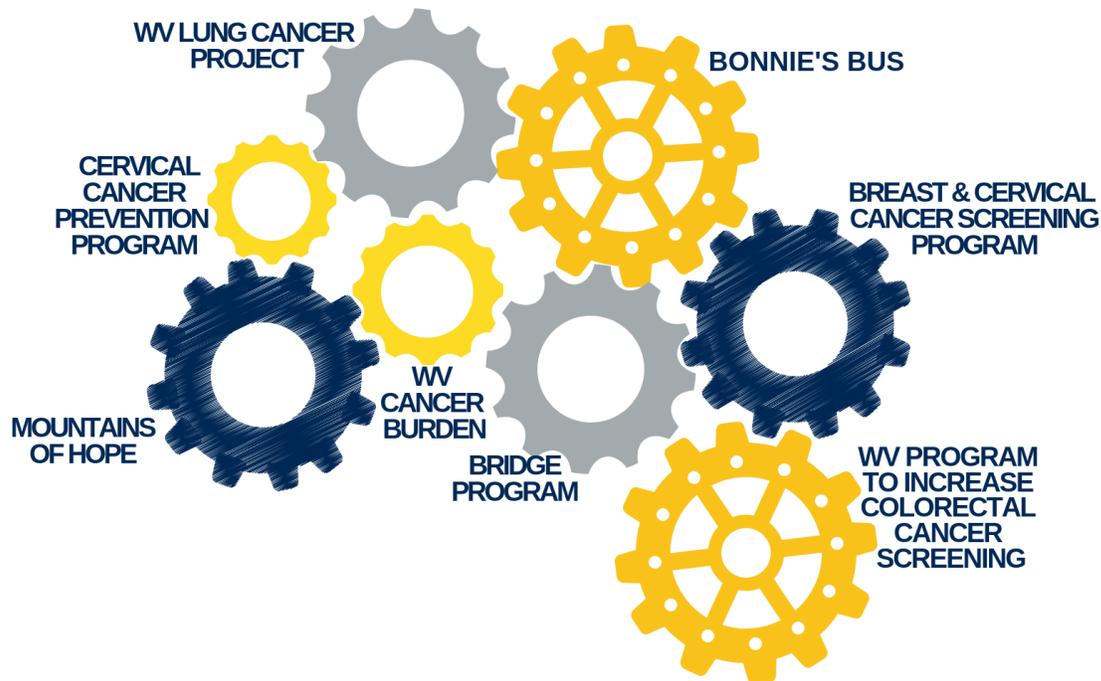
Steven E. Blankenship, MS

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 addresses 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 and connects WV communities to the University and the Cancer Institute. CPC houses eight programs illustrated below. While each CPC program has unique goals, all come together as part of a strategic, comprehensive approach to empower West Virginians to become more active participants in their healthcare through cancer education, information, access to services, and community-based participatory research that benefit the Mountain state. For more information about CPC and specific programs, visit <http://wvucancer.org/cancer-prevention-control/>.

CPC Programs



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 supported 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 2016 (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.

WV Cancer Advisory Committee		
Mohammed Almubarak, MD Mary Babb Randolph Cancer Center	Chaste Truman Barclay American Lung Association of West Virginia	Steve Blankenship, MS DHHR, Bureau for Public Health
Craig Bromley DHHR, Bureau for Public Health	Michelle Chappell, MS American Cancer Society	Juliana Frederick Curry, MS American Cancer Society Cancer Action Network
Phyllis Edwards, RHIT, CTR Cabell Huntington Hospital	Shawn Farley, MHA, CTR DHHR, Bureau for Public Health	Tony J. Gregory West Virginia Hospital Association
Julie Huron, RN, LNHA WV Nurses Association	Steven Jubelirer, MD CAMC Cancer Center	Stephenie Kennedy-Rea, EdD Mountains of Hope Cancer Coalition
Joanna Kolodney, MD WVU Cancer Institute	Brittany Richo, MS, HAS DHHR, Bureau for Public Health	

Frequently Asked Questions

1. What is cancer?

Cancer is a group of more than 100 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. Uncontrolled cell growth is nearly the only common feature of different types of cancer. Lung cancer, liver cancer, breast cancer, and leukemia, for example, all have very different causes, symptoms, treatments, and after-care requirements.

2. What causes cancer?

Cancer is a complex disease, and, unfortunately, we do not currently know the cause of most cancers. We know that some cancers are associated with behaviors and environmental factors. For example, lung cancer is often associated with smoking. Liver cancer can often be tied to exposure to hepatitis or to alcohol abuse. Cervical cancer is associated with the human papillomavirus. In most cases, however, we do not know the cause of a particular cancer. Identifying causes of cancer is made more difficult by the fact that cancer often does not appear until decades after exposure to a cancer-causing agent.

3. 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.

4. 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 identifies:

- 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.

5. 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.

6. How are the data obtained?

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, 2018. Data included in this report may change in future editions since missed cases are added to the WVCR database as they are received.

7. 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.

8. What are age-adjusted rates?

An age-adjusted rate is statistically modified to account for the different age distributions among populations. Age-adjustment is important when looking at cancer rates because cancer is usually a disease of aging. Areas with a more elderly population generally have more cases of cancer, and age-adjustment accounts for this. The rates in this report are age-adjusted using the 2000 U.S. standard population, and are expressed as the rate per 100,000 unless otherwise noted.

9. What is a confidence interval?

A confidence interval is a range of values for a variable of interest (such as 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. Year-to-year fluctuations in case counts make the exact rate difficult to determine. With a 95% confidence interval, we can be 95% sure that the true rate lies within that range.

10. What are case counts?

Case counts are the number of people who have been diagnosed with an illness in a particular calendar year or span of years. State and county data are presented as total counts for the 5-year period (2012-2016) unless otherwise noted. For an average annual count, divide the 5-year count by 5. 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.

11. How were the data analyzed?

SEER*Stat software (version 8.3.6) was used to calculate all cancer incidence rates and counts presented in this report. All rates were expressed as the number of cases per 100,000 population except for pediatric cancers which are shown as the number of cases per million population. Age-adjusted rates were standardized to the 2000 U.S. standard population (19 age groups).

12. 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.

13. How is cancer staged?

For the purpose of this document, we discuss cancer diagnosed at the **local, regional, and distant stages**. Cancer diagnosed at the **local stage**, otherwise known as a localized tumor, describes a tumor limited to only the tissue or organ where it began. Cancer diagnosed at the **regional stage** defines a tumor that has spread beyond the original tissue or organ into surrounding tissue, organs, or regional lymph nodes. Cancer diagnosed at the **distant stage** describes a tumor whose cells have broken away and traveled from the primary tumor to areas of the body distant from that primary tumor. The earlier a tumor is found, the easier it is to treat, and survival rates are usually higher. This demonstrates the importance of regular screening for these dangerous diseases.

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.

Coalition members include health care professionals, volunteers, cancer survivors and community advocates representing over 125 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.moh.wv.gov.

Members of the Coalition participate in one of three subcommittees (prevention, early detection, and quality of life) based on their area of interest. Each committee focuses on policy, system, and environmental change efforts; education and outreach; and addressing social determinants of health.

15. Where can I find information about cancer clinical trials in West Virginia?

Clinical trials are research studies that involve people that test new ways to:

- Treat cancer,
- Find and diagnose cancer,
- Prevent cancer, and
- Manage symptoms of cancer and side effects from its treatment.

Cancer clinical trials information can be found from a variety of credible sources including the following:

- West Virginia Cancer Clinical Trials Network—<https://www.wvctn.org>,
- National Cancer Institute—www.cancer.gov/about-cancer/treatment/clinical-trials, and
- Find an NCI-Supported Clinical Trial—<https://www.cancer.gov/about-cancer/treatment/clinical-trials/search>.

16. Where can I find additional information on cancer?

Cancer information is available from a variety of credible sources 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>, and
- WVU Cancer Institute—<http://wvucancer.org/>.

17. Where can I direct my questions or suggestions about the WV Cancer Burden Report?

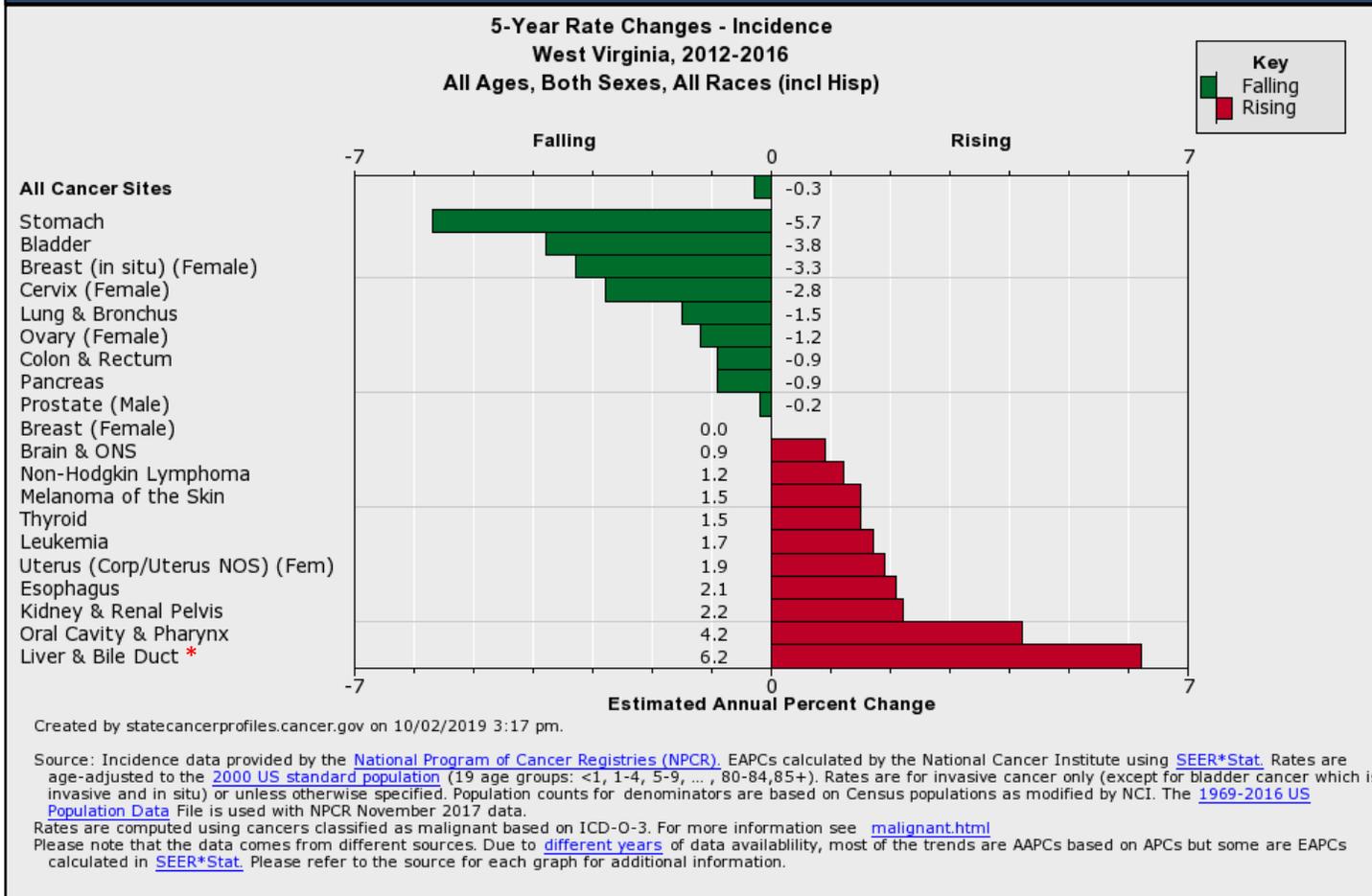
Questions regarding data in the 2019 West Virginia Cancer Burden Report may be directed to 304.356.4953. Questions or suggestions regarding the 2019 West Virginia Cancer Burden Report should be sent to cpc@hsc.wvu.edu.

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—<http://www.moh.wv.gov>
- National Cancer Institute—<https://www.cancer.gov/about-cancer>
- West Virginia Cancer Registry—<https://oeps.wv.gov/>
- WVU Cancer Institute—<http://wvucancer.org/>

Trends in Cancer Incidence

5-Year Rate Changes – Incidence, West Virginia, 2012-2016

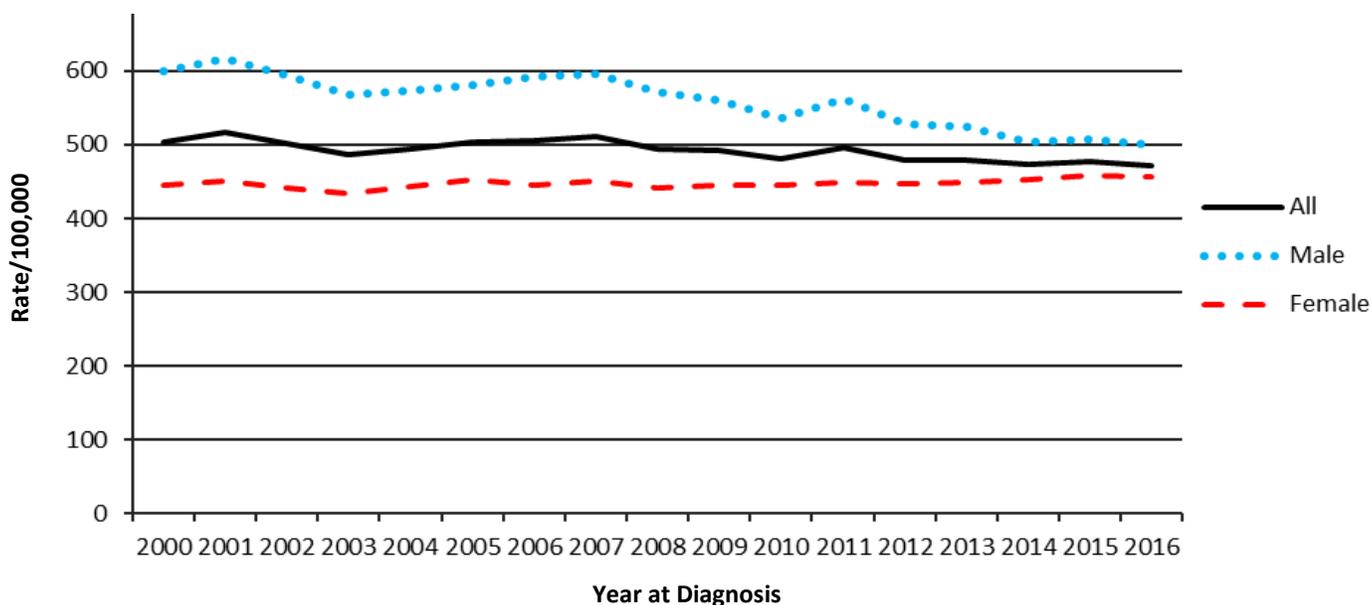


* Although this graphic shows the 6.2% annual rate increase in Liver & Bile Duct cancers is not statistically significant, this increasing trend has continued for several years. In light of high Hepatitis B and C rates in West Virginia, it is likely Liver & Bile Duct cancers will continue to increase in the foreseeable future.

Average Annual Age-Adjusted All Site Cancer Incidence Rate (per 100,000), by Gender, West Virginia, 2000-2016

Year	All	Male	Female
2000	503.9	598.9	444.3
2001	516.2	616.0	450.4
2002	502.2	593.4	441.0
2003	486.6	566.7	434.8
2004	493.9	573.8	443.0
2005	503.5	580.6	452.9
2006	505.6	592.7	444.5
2007	510.8	596.4	451.2
2008	494.6	570.7	441.5
2009	491.9	560.3	445.4
2010	481.4	536.5	445.2
2011	495.6	562.4	448.8
2012	479.7	527.3	446.9
2013	478.5	523.5	449.1
2014	472.8	503.6	453.2
2015	477.5	506.9	459.3
2016	472.0	499.2	455.6

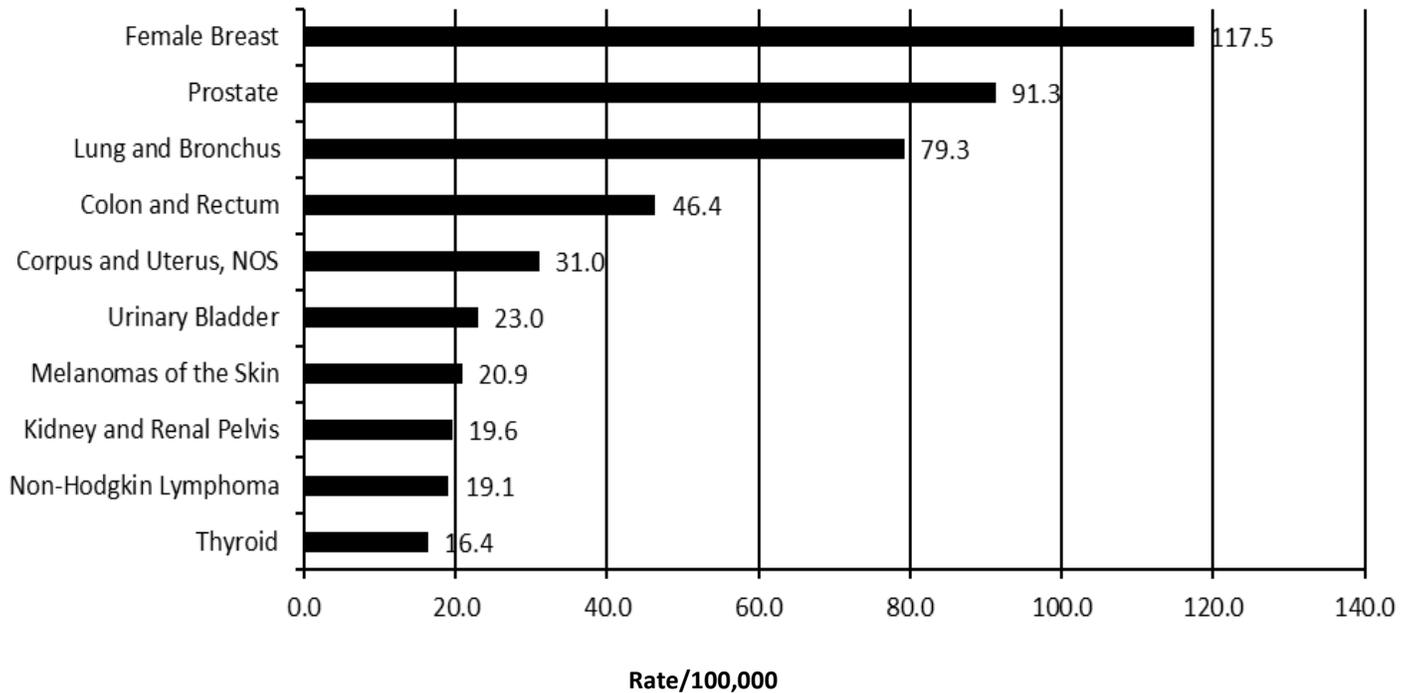
**Average Annual Age-Adjusted All Site Cancer Incidence Rate by Gender,
West Virginia, 2000-2016**



Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000), Top 10 Sites among Men and Women, West Virginia, 2012-2016

Female Breast	117.5
Prostate	91.3
Lung and Bronchus	79.3
Colon and Rectum	46.4
Corpus and Uterus, Not Otherwise Specified	31.0
Urinary Bladder	23.0
Melanomas of the Skin	20.9
Kidney and Renal Pelvis	19.6
Non-Hodgkin Lymphoma	19.1
Thyroid	16.4

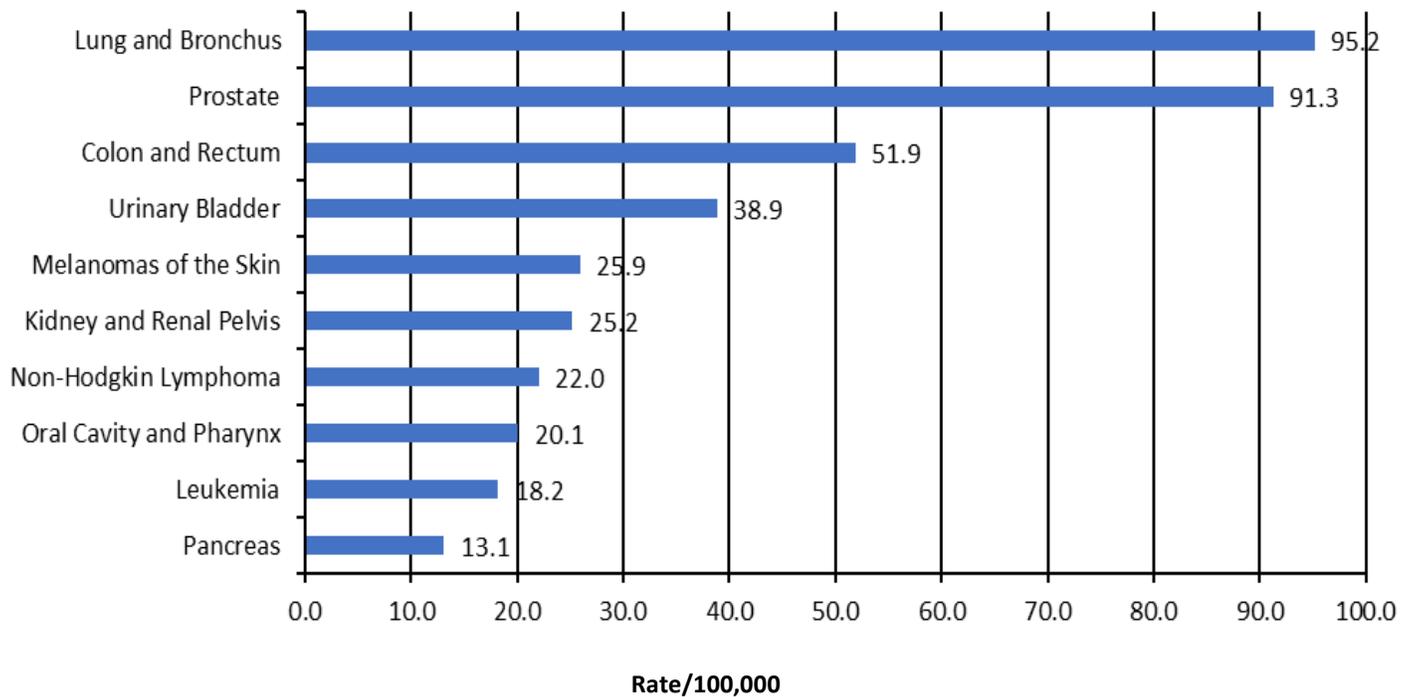
Average Annual Age-Adjusted Cancer Incidence Rates,
Top 10 Sites among Men and Women, West Virginia, 2012-2016



Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000), Top 10 Sites among Men, West Virginia, 2012-2016

Lung and Bronchus	95.2
Prostate	91.3
Colon and Rectum	51.9
Urinary Bladder	38.9
Melanomas of the Skin	25.9
Kidney and Renal Pelvis	25.2
Non-Hodgkin Lymphoma	22.0
Oral Cavity and Pharynx	20.1
Leukemia	18.2
Pancreas	13.1

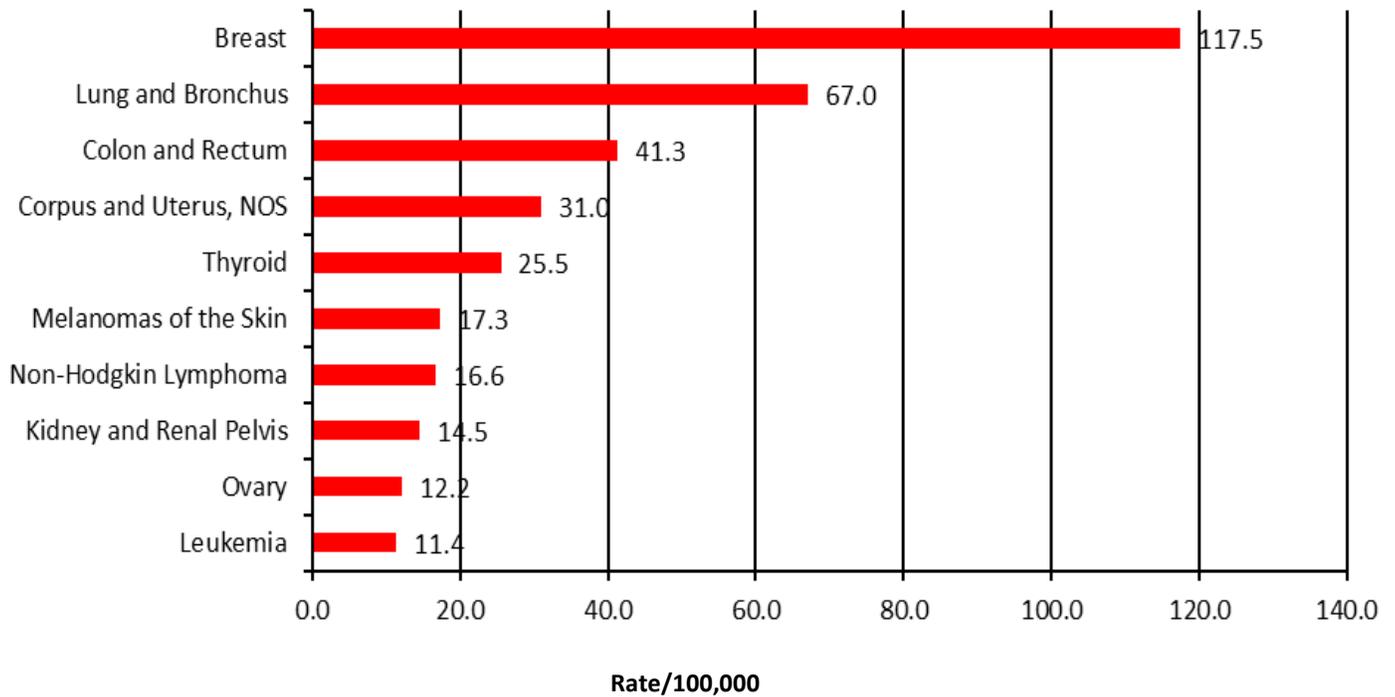
Average Annual Age-Adjusted Cancer Incidence Rates,
Top 10 Sites among Men, West Virginia, 2012-2016



Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000), Top 10 Sites among Women, West Virginia, 2012-2016

Breast	117.5
Lung and Bronchus	67.0
Colon and Rectum	41.3
Corpus and Uterus, Not Otherwise Specified	31.0
Thyroid	25.5
Melanomas of the Skin	17.3
Non-Hodgkin Lymphoma	16.6
Kidney and Renal Pelvis	14.5
Ovary	12.2
Leukemia	11.4

Average Annual Age-Adjusted Cancer Incidence Rates,
Top 10 Sites among Women, West Virginia, 2012-2016



Average Annual Age-Adjusted Cancer Incidence Rates, 95% Confidence Intervals, and 5-Year Counts by Select Cancer Sites and Gender, West Virginia, 2012-2016

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	476.0	472.1	480.1	58,265	511.9	505.9	517.9	29,697	452.8	447.3	458.3
Oral Cavity and Pharynx	13.2	12.6	13.9	1,621	20.1	18.9	21.3	1,174	7.0	6.3	7.7	447
Esophagus	5.5	5.1	5.9	709	9.6	8.8	10.4	580	1.9	1.6	2.3	129
Stomach	6.2	5.7	6.6	771	8.1	7.4	8.9	469	4.5	4.0	5.1	302
Small Intestine	2.2	2.0	2.5	270	2.4	2.0	2.9	138	2.1	1.8	2.5	132
Colon and Rectum	46.4	45.1	47.6	5,666	51.9	50.0	53.9	2,938	41.3	39.7	42.9	2,728
Liver and Intrahepatic Bile Duct	6.9	6.4	7.3	895	10.8	9.9	11.6	664	3.4	2.9	3.8	231
Gallbladder	0.8	0.7	1.0	103	0.6	0.4	0.8	32	1.0	0.8	1.3	71
Pancreas	11.9	11.3	12.6	1,494	13.1	12.1	14.1	762	10.8	10.0	11.7	732
Larynx	5.1	4.7	5.5	660	8.1	7.4	8.9	501	2.4	2.0	2.8	159
Lung and Bronchus	79.3	77.8	80.9	10,237	95.2	92.6	97.8	5,651	67.0	65.0	69.0	4,586
Bones and Joints	1.0	0.8	1.2	93	0.9	0.7	1.3	44	1.0	0.8	1.4	49
Soft Tissues including Heart	3.3	2.9	3.6	364	3.6	3.1	4.1	189	3.1	2.6	3.6	175
Melanomas of the Skin	20.9	20.0	21.8	2,386	25.9	24.5	27.3	1,414	17.3	16.2	18.5	972
Breast	62.1	60.7	63.6	7,412	1.1	0.8	1.4	62	117.5	114.7	120.3	7,350
Cervix Uteri	—	—	—	—	—	—	—	—	8.9	8.1	9.8	430
Corpus and Uterus, NOS	—	—	—	—	—	—	—	—	31.0	29.6	32.5	1,991
Ovary	—	—	—	—	—	—	—	—	12.2	11.3	13.2	768
Prostate	—	—	—	—	91.3	88.9	93.8	5,772	—	—	—	—
Testis	—	—	—	—	5.6	4.9	6.4	234	—	—	—	—
Urinary Bladder	23.0	22.2	23.9	2,904	38.9	37.3	40.6	2,203	10.4	9.6	11.2	701
Kidney and Renal Pelvis	19.6	18.8	20.4	2,358	25.2	23.9	26.6	1,429	14.5	13.6	15.6	929
Brain and Other Nervous System	7.2	6.7	7.8	772	8.2	7.4	9.1	429	6.4	5.7	7.1	343
Thyroid	16.4	15.6	17.3	1,651	7.3	6.6	8.1	390	25.5	24.0	27.0	1,261
Hodgkin Lymphoma	2.4	2.1	2.7	224	2.7	2.2	3.2	125	2.1	1.7	2.6	99
Non-Hodgkin Lymphoma	19.1	18.3	19.9	2,310	22.0	20.8	23.3	1,233	16.6	15.5	17.6	1,077
Myeloma	5.9	5.5	6.4	750	7.5	6.8	8.2	428	4.6	4.1	5.2	322
Leukemia	14.5	13.8	15.3	1,682	18.2	17.1	19.5	987	11.4	10.5	12.3	695

Average Annual Age-Adjusted Cancer Incidence Rates, 95% Confidence Intervals, and 5-Year Counts by Select Cancer Sites and Gender for Whites, West Virginia, 2012-2016

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	475.5	471.4	479.6	56,045	509.2	503.1	515.4	28,455	453.8	448.2	459.5	27,590
Oral Cavity and Pharynx	13.3	12.6	14.0	1,574	20.2	19.0	21.5	1,139	7.0	6.3	7.7	435
Esophagus	5.6	5.2	6.0	696	9.8	9.0	10.6	572	1.9	1.6	2.3	124
Stomach	6.0	5.6	6.5	724	8.0	7.2	8.8	445	4.3	3.8	4.9	279
Small Intestine	2.2	1.9	2.5	253	2.3	1.9	2.8	127	2.1	1.7	2.5	126
Colon and Rectum	46.3	45.1	47.6	5,460	51.8	49.9	53.8	2,824	41.3	39.7	43.0	2,636
Liver and Intrahepatic Bile Duct	6.6	6.2	7.1	827	10.4	9.6	11.3	613	3.2	2.8	3.7	214
Gallbladder	0.8	0.6	1.0	98	0.6	0.4	0.8	30	1.0	0.8	1.3	68
Pancreas	11.8	11.2	12.5	1,429	12.9	12.0	13.9	728	10.8	9.9	11.6	701
Larynx	5.1	4.7	5.6	641	8.2	7.5	9.0	489	2.4	2.0	2.8	152
Lung and Bronchus	79.6	78.0	81.2	9,917	95.1	92.6	97.8	5,460	67.4	65.4	69.5	4,457
Bones and Joints	0.9	0.7	1.2	85	0.9	0.6	1.2	38	1.0	0.8	1.4	47
Soft Tissues including Heart	3.2	2.9	3.6	343	3.5	2.9	4.0	176	3.1	2.6	3.6	167
Melanoma of the Skin	21.2	20.3	22.1	2,327	26.2	24.8	27.7	1,379	17.6	16.4	18.8	948
Breast	61.9	60.4	63.4	7,120	1.1	0.8	1.4	59	116.9	114.1	119.8	7,061
Cervix Uteri	—	—	—	—	—	—	—	—	9.1	8.2	10.0	416
Corpus and Uterus, NOS	—	—	—	—	—	—	—	—	31.5	30.0	33.0	1,939
Ovary	—	—	—	—	—	—	—	—	12.3	11.4	13.2	744
Prostate	—	—	—	—	88.4	86.0	90.9	5,382	—	—	—	—
Testis	—	—	—	—	6.0	5.2	6.8	234	—	—	—	—
Urinary Bladder	23.4	22.5	24.3	2,852	39.5	37.8	41.3	2,167	10.5	9.7	11.4	685
Kidney and Renal Pelvis	19.7	18.9	20.6	2,284	25.3	23.9	26.7	1,376	14.8	13.8	15.8	908
Brain and Other Nervous System	7.2	6.7	7.8	745	8.2	7.4	9.1	413	6.4	5.7	7.2	332
Thyroid	16.6	15.8	17.5	1,592	7.4	6.6	8.2	377	25.7	24.2	27.3	1,215
Hodgkin Lymphoma	2.4	2.1	2.8	215	2.7	2.2	3.3	121	2.1	1.7	2.6	94
Non-Hodgkin Lymphoma	19.1	18.3	20.0	2,239	22.0	20.8	23.4	1,189	16.7	15.7	17.8	1,050
Myeloma	5.7	5.3	6.1	693	7.2	6.5	8.0	398	4.4	3.9	5.0	295
Leukemia	14.4	13.7	15.2	1,606	18.1	16.9	19.3	943	11.3	10.4	12.2	663

Average Annual Age-Adjusted Cancer Incidence Rates, 95% Confidence Intervals, and 5-Year Counts by Select Cancer Sites and Gender for Blacks, West Virginia, 2012-2016

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	460.8	437.7	484.9	1,610	541.4	503.6	581.1	917	395.3	365.6	426.8
Oral Cavity and Pharynx	10.1	6.9	14.4	33	16.1	9.9	24.6	24	5.5	2.4	10.5	9
Esophagus	2.2	0.8	4.5	7	1.8	0.3	5.5	3	2.2	0.6	5.7	4
Stomach	10.3	7.0	14.6	34	12.3	7.2	19.6	20	8.1	4.4	13.8	14
Small Intestine	5.2	2.9	8.5	16	7.9	3.7	14.4	11	3.0	1.0	7.2	5
Colon and Rectum	46.4	39.2	54.5	160	49.4	38.4	62.3	84	43.2	33.8	54.4	76
Liver and Intrahepatic Bile Duct	12.6	9.4	16.6	54	18.3	13.1	25.1	42	6.3	3.2	11.2	12
Gallbladder	1.2	0.3	3.1	4	1.3	0.1	4.8	2	1.3	0.1	4.6	2
Pancreas	16.1	11.9	21.3	53	19.1	12.3	28.0	30	13.2	8.3	20.0	23
Larynx	4.3	2.4	7.2	16	5.0	2.2	9.8	10	3.4	1.2	7.6	6
Lung and Bronchus	71.6	62.5	81.7	241	95.8	79.3	114.5	144	54.3	43.8	66.6	97
Bones and Joints	2.0	0.8	4.2	7	3.2	0.9	7.8	5	1.1	0.1	4.1	2
Soft Tissue including Heart	5.1	2.8	8.3	16	6.9	3.1	13.0	10	3.8	1.3	8.2	6
Melanoma of the Skin	0.2	0.0	1.5	1	0.0	0.0	0.0	0	0.6	0.0	3.3	1
Breast	65.3	56.6	75.0	218	2.1	0.3	6.5	3	126.7	109.8	145.4	215
Cervix Uteri	—	—	—	—	—	—	—	—	2.2	0.6	5.9	4
Corpus and Uterus, NOS	—	—	—	—	—	—	—	—	19.2	13.4	26.7	38
Ovary	—	—	—	—	—	—	—	—	10.0	5.7	16.2	17
Prostate	—	—	—	—	166.7	147.1	188.3	307	—	—	—	—
Testis	—	—	—	—	0.0	0.0	0.0	0	—	—	—	—
Urinary Bladder	10.9	7.5	15.1	36	18.3	11.4	27.4	27	5.0	2.2	9.6	9
Kidney and Renal Pelvis	17.2	13.0	22.3	61	24.9	17.4	34.4	42	10.6	6.2	16.8	19
Brain and Other Nervous System	3.1	1.5	5.6	11	3.9	1.5	8.2	7	2.0	0.5	5.4	4
Thyroid	11.9	8.5	16.2	42	6.8	3.4	12.2	13	17.8	11.7	25.8	29
Hodgkin Lymphoma	2.3	1.0	4.5	9	1.8	0.5	5.2	4	2.8	0.8	6.7	5
Non-Hodgkin Lymphoma	13.7	10.0	18.4	48	16.6	10.8	24.5	29	10.5	6.3	16.6	19
Myeloma	13.8	10.1	18.6	48	15.2	9.2	23.4	24	12.7	8.0	19.2	24
Leukemia	15.7	11.6	20.8	52	22.8	15.1	32.8	33	10.9	6.4	17.2	19

**Average Annual Age-Adjusted Pediatric Cancer (Ages 0-19) Incidence Rates
and 5-Year Counts, West Virginia and United States, 2012-2016**

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	178.4	381	188.7	77,849
Leukemias, myeloproliferative and myelodysplastic diseases	38.0	81	48.3	19,863
Lymphomas and reticuloendothelial neoplasms	25.1	54	30.0	12,394
Central nervous system and miscellaneous intracranial and intraspinal neoplasms	38.2	81	32.2	13,214
Neuroblastoma and other peripheral nervous cell tumors	10.4	22	9.1	3,734
Retinoblastoma	7.6	16	3.3	1,370
Renal tumors	9.0	19	7.3	3,006
Hepatic tumors	1.9	4	2.6	1,088
Malignant bone tumors	8.5	18	9.3	3,830
Soft tissue and other extraosseous sarcomas	9.9	21	12.2	5,008
Germ cell and trophoblastic tumors, and neoplasms of gonads	7.0	15	11.5	4,788
Other malignant epithelial neoplasms and melanomas	22.5	49	21.8	9,082
Other and unspecified malignant neoplasms	0.0	0	0.9	362
Not classified by International Classification of Childhood Cancer, or in situ	0.5	1	0.3	110

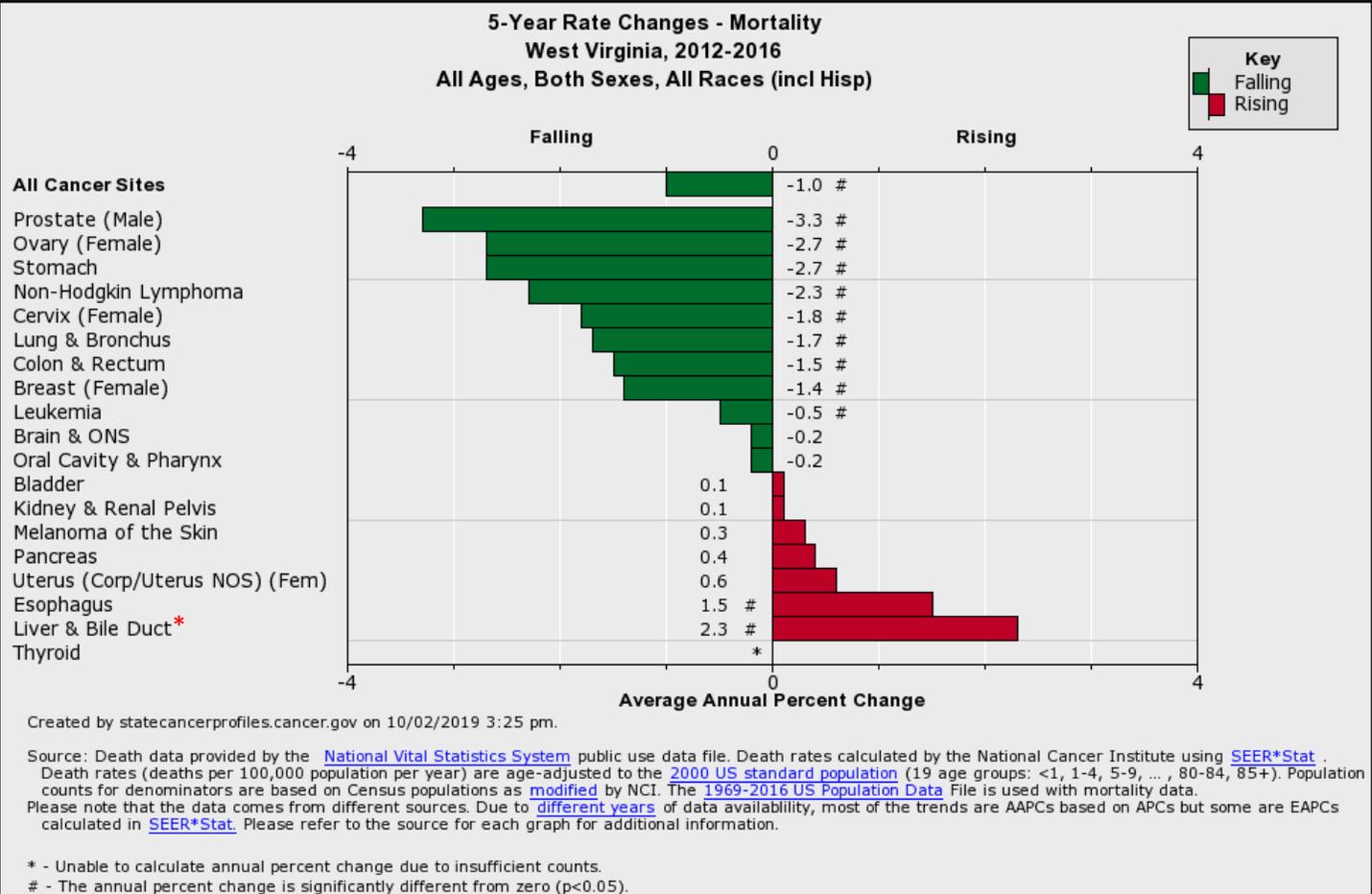
Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States Cancer Statistics—Incidence: 1999-2016, WONDER Online Database, United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2019



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Trends in Cancer Mortality

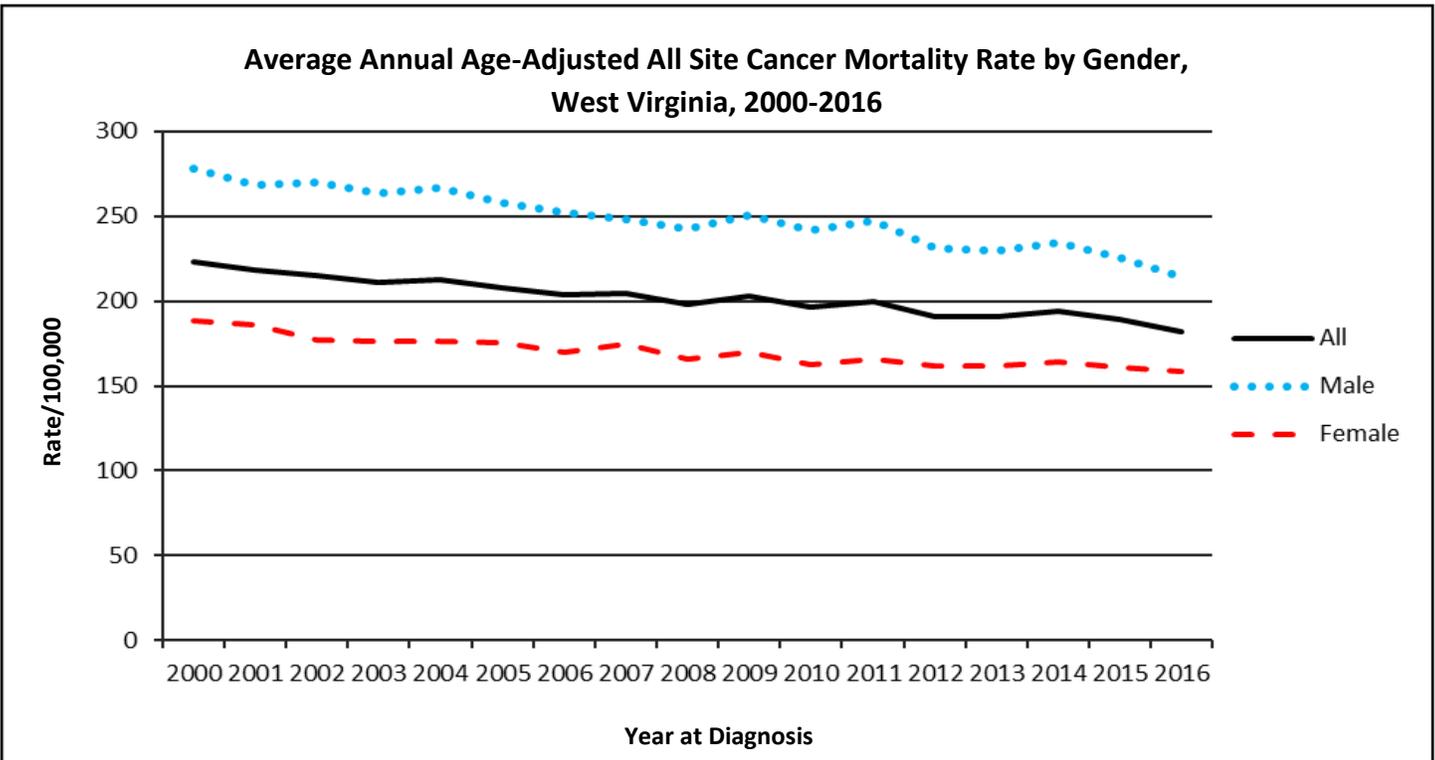
5-Year Rate Changes for Select Cancers – Mortality, West Virginia, 2012-2016



* As mentioned on page 9, Liver and Bile Duct cancers are increasing, and this graphic shows a significant increasing trend in deaths from this cancer. High Hepatitis B and C rates in West Virginia suggest this trend will continue to increase for the foreseeable future.

Average Annual Age-Adjusted All Site Cancer Mortality Rate (per 100,000), by Gender, West Virginia, 2000-2016

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	196.5	241.4	162.5
2011	199.4	247.4	165.9
2012	191.2	230.8	161.7
2013	190.4	229.8	161.5
2014	194.3	234.1	164.3
2015	189.3	225.5	161.3
2016	182.0	214.5	158.2

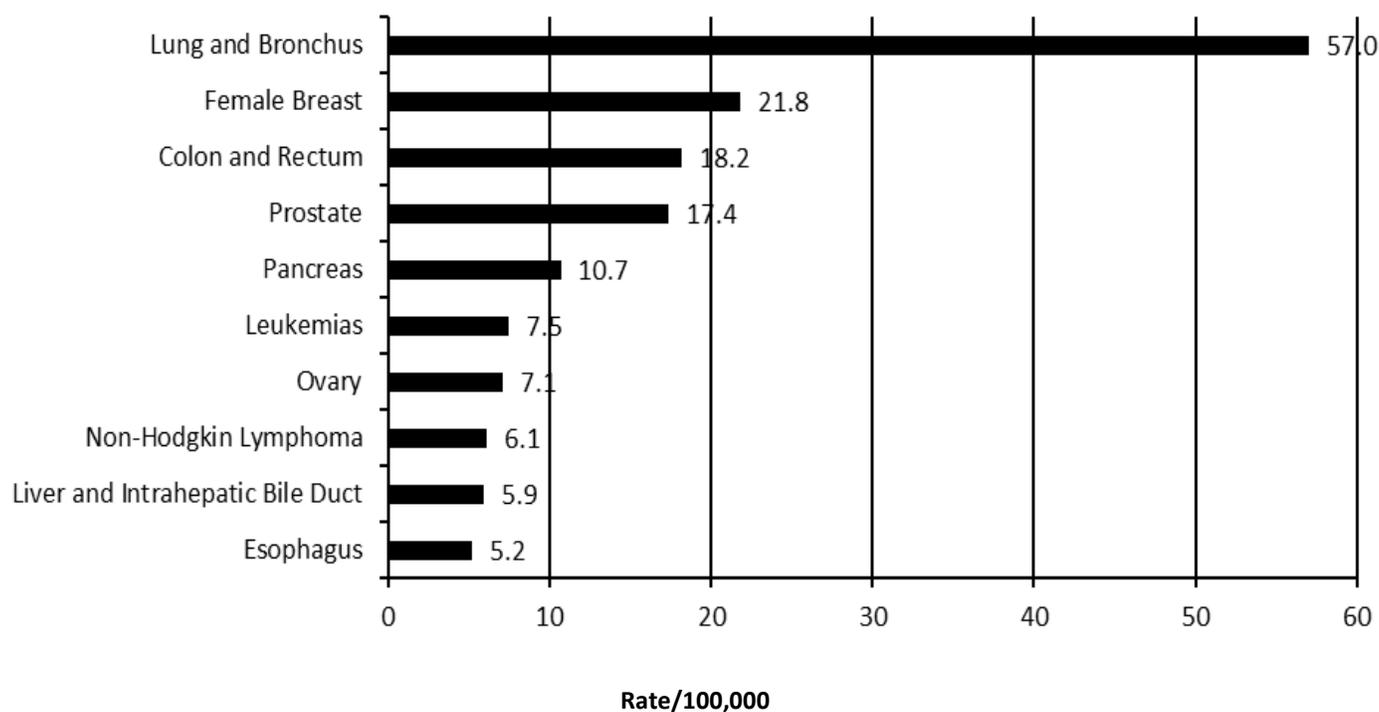


U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2018 submission data (1999-2016): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; www.cdc.gov/cancer/dataviz, June 2019.

Average Annual Age-Adjusted Cancer Mortality Rates (per 100,000), Top 10 Sites among Men and Women, West Virginia, 2012-2016

Site	Age-adjusted Rate	Deaths	Population
Lung and Bronchus	57.0	7,300	9,223,721
Female Breast	21.8	1,440	4,666,047
Colon and Rectum	18.2	2,265	9,223,721
Prostate	17.4	886	4,557,674
Pancreas	10.7	1,352	9,223,721
Leukemias	7.5	906	9,223,721
Ovary	7.1	497	4,666,047
Non-Hodgkin Lymphoma	6.1	771	9,223,721
Liver and Intrahepatic Bile Duct	5.9	756	9,223,721
Esophagus	5.2	662	9,223,721

Average Annual Age-Adjusted Cancer Mortality Rates,
Top 10 Sites among Men and Women, West Virginia, 2012-2016

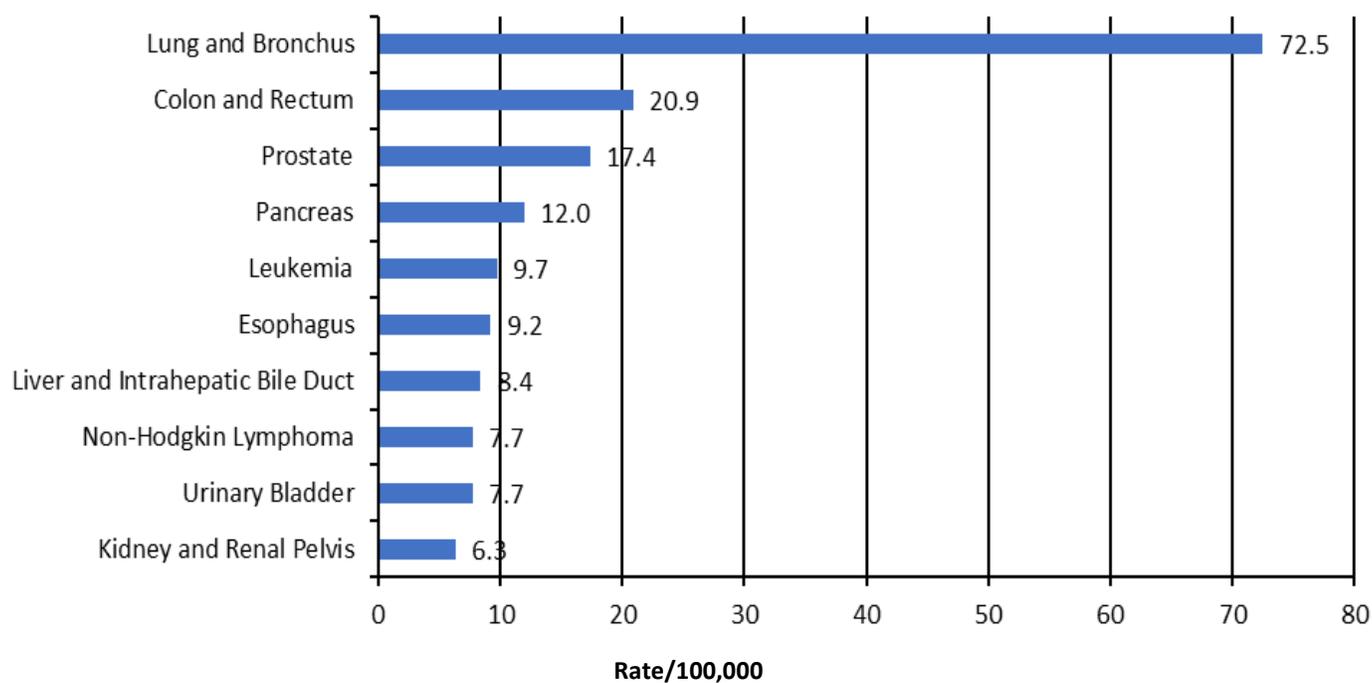


U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2018 submission data (1999-2016): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; www.cdc.gov/cancer/dataviz, June 2019.

Average Annual Age-Adjusted Cancer Mortality Rates (per 100,000), Top 10 Sites among Men, West Virginia, 2012-2016

Site	Age-adjusted Rate	Deaths	Population
Lung and Bronchus	72.5	4,206	4,557,674
Colon and Rectum	20.9	1,156	4,557,674
Prostate	17.4	886	4,557,674
Pancreas	12.0	699	4,557,674
Leukemia	9.7	511	4,557,674
Esophagus	9.2	542	4,557,674
Liver and Intrahepatic Duct	8.4	507	4,557,674
Non-Hodgkin Lymphoma	7.7	430	4,557,674
Urinary Bladder	7.7	408	4,557,674
Kidney and Renal Pelvis	6.3	357	4,557,674

Average Annual Age-Adjusted Cancer Mortality Rates,
Top 10 Sites among Men, West Virginia, 2012-2016

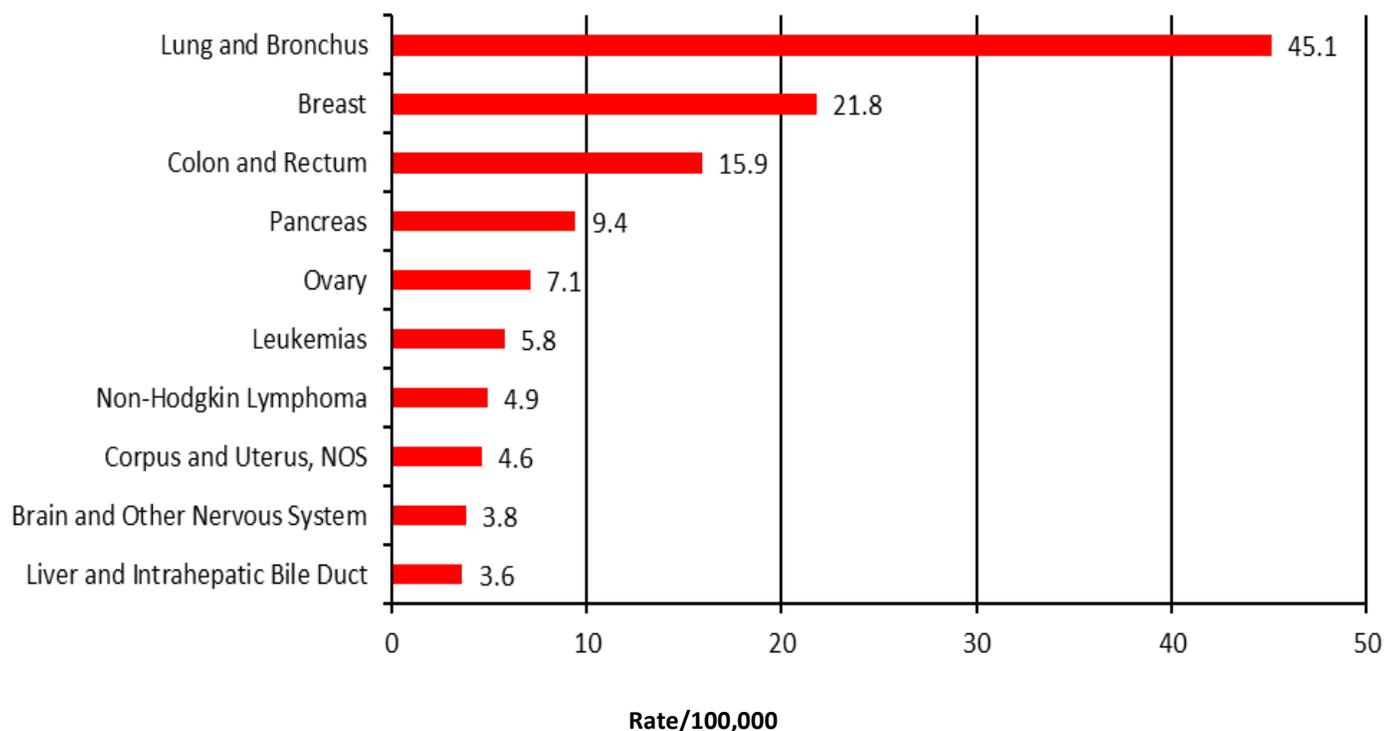


U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2018 submission data (1999-2016): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; www.cdc.gov/cancer/dataviz, June 2019.

Average Annual Age-Adjusted Cancer Mortality Rates (per 100,000), Top 10 Sites among Women, West Virginia, 2012-2016

Site	Age-adjusted Rate	Deaths	Population
Lung and Bronchus	45.1	3,094	4,666,047
Breast	21.8	1,440	4,666,047
Colon and Rectum	15.9	1,109	4,666,047
Pancreas	9.4	653	4,666,047
Ovary	7.1	497	4,666,047
Leukemias	5.8	395	4,666,047
Non-Hodgkin Lymphoma	4.9	341	4,666,047
Corpus and Uterus, NOS	4.6	327	4,666,047
Brain and Other Nervous System	3.8	239	4,666,047
Liver and Intrahepatic Bile Duct	3.6	249	4,666,047

Average Annual Age-Adjusted Cancer Mortality Rates,
Top 10 Sites among Women, West Virginia, 2012-2016



U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2018 submission data (1999-2016): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; www.cdc.gov/cancer/dataviz, June 2019.

**Summaries, Infographics, and
Program Information**



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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

Not counting some types of skin cancer, breast cancer is the most common cancer diagnosed in women in the United States regardless of race and ethnicity.³ Getting mammograms regularly can lower the risk of dying from breast cancer. 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 1,470 women are diagnosed and 288 women die of breast cancer.⁶ Over half (55%) 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 mutations. Other factors that increase risk include early menstrual period, late or no pregnancy, starting menopause after age 55, not being physically active, being overweight or obese after menopause, having dense breasts, using combination hormone therapy, taking oral contraceptives, personal history of breast cancer, personal history of certain non-cancerous breast diseases, family history of breast cancer, previous treatment using radiation therapy, exposure to diethylstilbestrol (DES), and drinking alcohol. Research suggests that other factors such as smoking, being exposed to chemicals that can cause cancer (carcinogens), and night shift working may also increase breast cancer risk.⁷ Actions that a person can take to help lower their risk of breast cancer include: breastfeeding, limiting alcoholic drinks to no more than one per day, limiting exposure to carcinogens, limiting exposure to radiation, asking about the risks of hormone replacement therapy and oral contraceptives before taking them, engaging in regular physical activity, getting enough sleep, and maintaining a healthy weight.⁸

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 08/30/19 at 1:00 PM.

2. National Cancer Institute. Accessed at <https://www.cancer.gov/types/breast/risk-fact-sheet> on 08/30/19 at 1:05 PM.

3. Centers for Disease Control and Prevention. Accessed at <https://www.cdc.gov/cancer/breast/statistics> on 08/30/19 at 1:09 PM.

4. Centers for Disease Control and Prevention. Accessed at https://www.cdc.gov/cancer/breast/basic_info/screening.htm on 08/30/19 at 1:15 PM.

5. WV Cancer Registry. Accessed at <https://oeps.wv.gov/cancer/Pages/default.aspx> on 09/10/19 at 11:26 AM.

6. U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2018 submission data (1999-2016): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute. Accessed at <http://www.cdc.gov/cancer/dataviz> on 06/11/19 at 1:35 PM.

7. Centers for Disease Control and Prevention. Accessed at https://www.cdc.gov/cancer/breast/basic_info/risk_factors.htm on 08/30/19 at 1:21 PM.

8. Centers for Disease Control and Prevention. Accessed at https://www.cdc.gov/cancer/breast/basic_info/prevention.htm on 08/30/19 at 1:30 PM.

Breast Cancer in West Virginia

Breast Cancer Incidence in West Virginia per 100,000 women



Breast Cancer Deaths in West Virginia per 100,000 women



Breast Cancer Risk Factors

- Being female
- Increasing age
- Genetic mutations

Other Factors That:

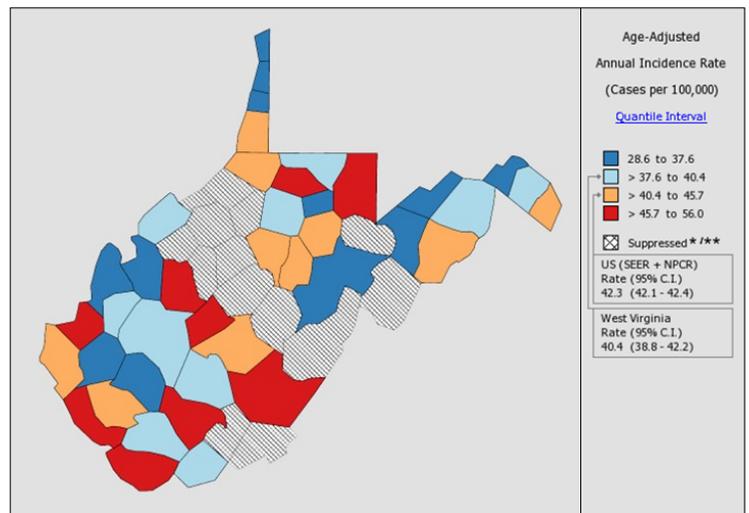
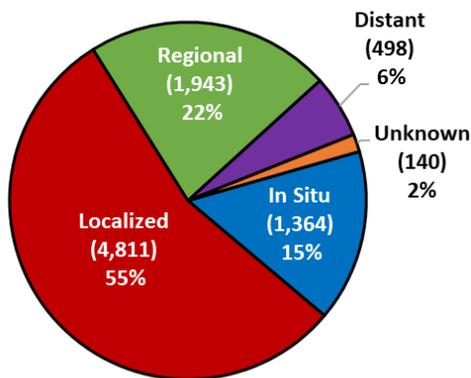
Decrease Risk	Increase Risk
Starting first period at a later age	Long-term use of HRT
Starting menopause at an earlier age	Family history of breast cancer
Giving birth to more children, being younger at birth of first child, and breastfeeding	Personal history of breast cancer and non-cancerous breast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

Only **77.8%** of WV women aged 50-74 had a mammogram within the past 2 years.

<https://statecancerprofiles.cancer.gov/risk/index.php?topic=women&risk=v05&race=00&type=risk&sortVariableName=default&sortOrder=default#results>

Average Annual Age-Adjusted Late Stage Breast Cancer Incidence Rates by County, West Virginia, 2012-2016*

Percentage of Female Breast Cancer Cases by Stage at Diagnosis, West Virginia, 2012-2016



* From statecancerprofiles.cancer.gov

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.

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 20,000 mammograms.

CONTACT: WVU Office of Cancer Prevention and Control at 304.293.2370 or 1.877.287.2272

RESOURCES: <http://wvucancer.org/bonnie>

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

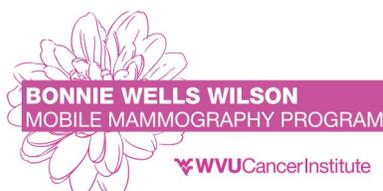
WVBCCSP Income Guidelines

Family Size	Monthly	Yearly
1	\$2,602	\$31,224
2	\$3,523	\$42,276
3	\$4,444	\$53,328
4	\$5,365	\$64,380
5	\$6,285	\$75,420

Effective 6/30/2019-6/29/2020

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/>





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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 precancer and takes years to develop. A Pap test looks for precancers, cell changes on the cervix that might become cervical cancer if they are not treated appropriately.² When found early this cancer is highly treatable and associated with long survival and good quality of life.³

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 29, women should receive screening every three years. After age 30 women have a choice: Pap tests alone every three years, an HPV test only every five years, or Pap tests plus HPV test every five years. All positive results require follow-up with a healthcare provider.² 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. The age recommendations for this vaccine were recently updated:

- Children and adults aged 9-26 years. HPV vaccination is routinely recommended at age 11 or 12 years; vaccination can be given starting at age 9 years. Catch-up HPV vaccination is recommended for all persons through age 26 years who are not adequately vaccinated.
- Adults aged >26 years. Catch-up HPV vaccination is not recommended for all adults aged >26 years. Instead, shared clinical decision-making regarding HPV vaccination is recommended for some adults aged 27 through 45 years who are not adequately vaccinated. HPV vaccines are not licensed for use in adults aged >45 years.⁵

In 2016 in WV, 83 women were diagnosed with and 38 women died of cervical cancer.⁶ Although these numbers are small, WV usually ranks in the top ten for both cervical cancer incidence and mortality when compared with other states. Half (50%) of the women with cervical cancer in WV are diagnosed with regional or distant metastasis.⁷

Risk factors for cervical cancer include infection with HPV, having human immunodeficiency virus, smoking, using birth control for five years or more, giving birth to three or more children, or having several sexual partners.⁸

The bottom line is that cervical cancer is a preventable cancer that can be found early, even as a precancer. Vaccination and screening lead to prevention and early detection of cervical cancer. No woman in West Virginia 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 10/02/19 at 1:37 PM.

2. Centers for Disease Control and Prevention. Accessed at https://www.cdc.gov/cancer/cervical/basic_info/screening.htm on 10/02/19 at 1:44 PM.

3. Centers for Disease Control and Prevention. Accessed at https://www.cdc.gov/cancer/cervical/basic_info/index.htm on 10/02/19 at 1:45 PM.

4. Vital Signs 2014, Centers for Disease Control and Prevention. Accessed at www.cdc.gov/vitalsigns/cervical-cancer/index.html on 10/02/19 at 1:50 PM.

5. Centers for Disease Control and Prevention. Accessed at [https://www.cdc.gov/mmwr/volumes/68/wr/mm6832a3.htm#targetText=Vaccination%20against%20human%20papillomavirus%20\(HPV,starting%20at%20age%209%20years](https://www.cdc.gov/mmwr/volumes/68/wr/mm6832a3.htm#targetText=Vaccination%20against%20human%20papillomavirus%20(HPV,starting%20at%20age%209%20years). on 10/02/19 at 1:58 PM.

6. Centers for Disease Control and Prevention. Accessed at <https://www.cdc.gov/cancer/dataviz/>, on 10/18/2019 at 8:39 AM.

7. North American Association of Central Cancer Registries. Accessed at <https://faststats.naaccr.org/selections.php?#Output> on 1/3/2020 at 2:01 PM.

8. Centers for Disease Control and Prevention. Accessed at https://www.cdc.gov/cancer/cervical/basic_info/risk_factors.htm on 10/02/19 at 2:03 PM.

Cervical Cancer in West Virginia

Cervical Cancer Incidence in West Virginia per 100,000 women

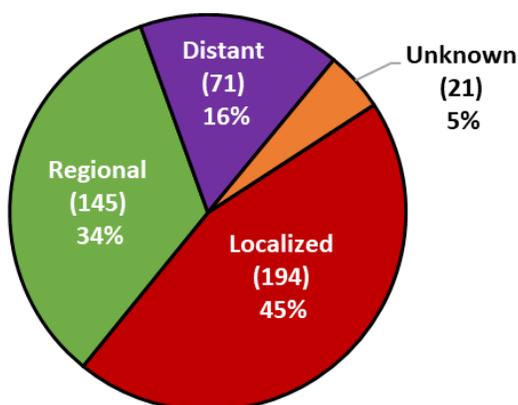
8.9

Cervical Cancer Deaths in West Virginia per 100,000 women

3.0

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

Percentage of Cervical Cancer Cases by Stage at Diagnosis, West Virginia, 2012-2016



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

Risk Factors for Cervical Cancer



How HPV infection can lead to cervical cancer



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

Cervical Cancer Programs in West Virginia

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 the children, adolescents, and adults of WV. WVDIS administers the Vaccines for Children (VFC) program that provides free vaccines to eligible children. Eligible children are those without health insurance, those enrolled in Medicaid, American Indian and Alaskan natives, and those with health insurance that does not cover some or all vaccines. This federally funded program is available at more than 400 health care provider locations across the state including all county health departments. Children with insurance through the Children's Health Insurance Program (CHIP) are also eligible for free vaccines at all the provider locations participating in the VFC program. WVDIS provides a limited amount of vaccines for uninsured adults through county health departments. Vaccines provided for adults include pneumococcal, tetanus-diphtheria-pertussis (Tdap), influenza, and shingles.

CONTACT: WV Division of Immunization Services at 304.558.2188 or 1.800.642.3634

RESOURCES: <http://www.oeps.wv.gov/immunizations/Pages/default.aspx>

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.

WVBCCSP Income Guidelines

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

Family Size	Monthly	Yearly
1	\$2,529	\$30,348
2	\$3,429	\$41,148
3	\$4,329	\$51,948
4	\$5,229	\$62,748
5	\$6,129	\$73,548

Effective 6/30/2018-6/29/2019

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, a program of the Center for Rural Health Development, 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.

CONTACT: WV Immunization Network at 304.397.4071

RESOURCES: <https://dhhr.wv.gov/oeps/immunization/WIN/Pages/default.aspx>



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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 can turn into cancer is called an adenomatous polyp or adenoma. This type of polyp is called a precancerous condition. Two other types of polyps that are more common are hyperplastic polyps and inflammatory polyps. In general, these types of polyps are not precancerous.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 1,133 people are diagnosed with colorectal cancer, and 453 die from this cancer.³ In West Virginia, from 2012 to 2016, forty-four percent (44%) of colorectal cancers were diagnosed in the earlier stages of in situ (5%) 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 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 precancer. No West Virginian should die of colorectal cancer.

1. American Cancer Society, Colorectal Cancer. Accessed at <https://www.cancer.org/cancer/colon-rectal-cancer/about/what-is-colorectal-cancer.html> on 10/10/19 at 9:32 AM.

2. Center for Disease Control and Prevention, Colorectal Cancer. Accessed at https://www.cdc.gov/cancer/colorectal/basic_info/risk_factors.htm on 10/10/19 at 9:35 AM.

3. U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2018 submission data (1999-2016): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute. Accessed at <https://www.cdc.gov/cancer/dataviz> on 06/11/19 at 9:47 AM.

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 10/10/19 at 9:45 AM.

Colorectal Cancer in West Virginia

Colorectal Cancer Incidence in West Virginia per 100,000 people

46.4

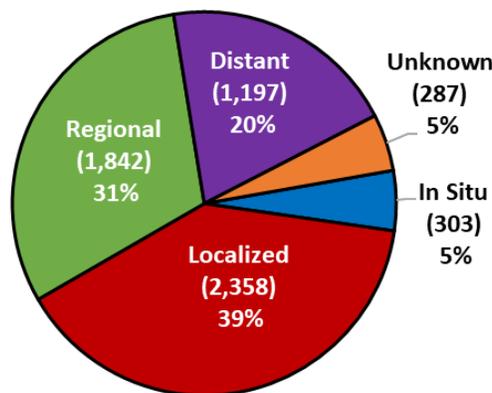
Colorectal Cancer Deaths in West Virginia per 100,000 people

18.2

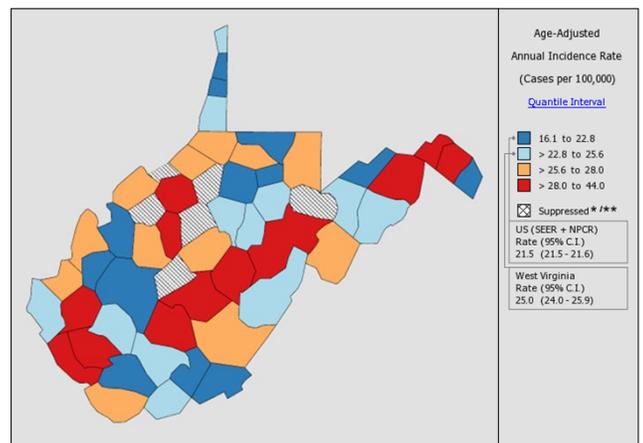
Colorectal cancer is the second leading cause of cancer related deaths in West Virginia.

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, 2012-2016



Average Annual Age-Adjusted Late-Stage Colorectal Cancer Incidence Rates by County, 2012-2016*



* From statecancerprofiles.cancer.gov

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 2019

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

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% in Every Community” CAMPAIGN

Over the past seven years, 82 WV organizations joined with the more than 1,900 organizations committed to working toward the shared goal of 80% of adults aged 50 and older being regularly screened for colorectal cancer. 80% in Every Community is an NCCRT initiative that continues the progress and commitment from 80% by 2018, and reemphasizes our dedication to partnership, collective action, and the pooling of resources to reach 80% colorectal cancer screening rates nationally. Our shared efforts are working. Hospitals, community health clinics, health plans, employers, counties, and others are achieving 80% screening rates and higher. With 80% in Every Community, we will continue working to bring down barriers to screening, because everyone deserves to live a life free from colorectal cancer. To find more information on national, state, and local level colorectal cancer incidence, mortality, and screening rates, visit <https://nccrt.org/data-progress/>. For additional information on colorectal cancer, visit the American Cancer Society website at <https://cancer.org>, or <https://nccrt.org/resource-center/>.

CONTACT: American Cancer Society at 1.800.227.2345 or 404.327.6559

RESOURCES: <http://nccrt.org/tools/80-percent-by-2018/> and <http://www.acscan.org/action/wv>

MOUNTAINS OF HOPE WV 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: <http://www.moh.wv.gov>



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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 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 women⁴ and accounts for 18% of all new cancer cases diagnosed in West Virginia.⁵ Every year in WV, approximately 2,047 people are diagnosed with lung cancer and 1,460 will die from the disease.^{5,6} Only 22% of people are diagnosed at a local stage indicating a need for lung cancer screening. 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.⁴

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.⁷

Most lung cancers can be prevented as they are connected to smoking, secondhand smoke, or exposure to radon or other environmental factors. Lung cancer screening using LDCT can help find lung cancer at an earlier stage when it is most treatable, thus improving quality of life and increasing life span for lung cancer survivors.⁸

1. American Cancer Society. Accessed at <https://www.cancer.org/cancer/lung-cancer/about/what-is.html> on 10/01/19 at 5:04 PM.

2. Centers for Disease Control and Prevention. Accessed at https://www.cdc.gov/cancer/lung/basic_info/screening.htm on 10/01/19 at 5:10 PM.

3. U.S. Preventive Services Task Force. Accessed at <https://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/lung-cancer-screening> on 10/01/19 at 5:25 PM.

4. American Cancer Society. Accessed at <http://www.cancer.org/cancer/lung-cancer/about/key-statistics.html> on 10/01/19 at 5:25 PM.

5. WV Cancer Registry.

6. U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2018 submission data (1999-2016): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute. Accessed at <http://www.cdc.gov/cancer/dataviz> on 06/11/19 at 5:32 PM.

7. Centers for Disease Control and Prevention. Accessed at https://www.cdc.gov/cancer/lung/basic_info/risk_factors.htm on 10/01/19 at 5:45 PM.

8. American Cancer Society. Accessed at <https://www.cancer.org/cancer/lung-cancer/detection-diagnosis-staging/detection.html> on 10/01/19 at 5:50 PM.

Lung Cancer in West Virginia

Lung Cancer Incidence in West Virginia per 100,000 people

79.3

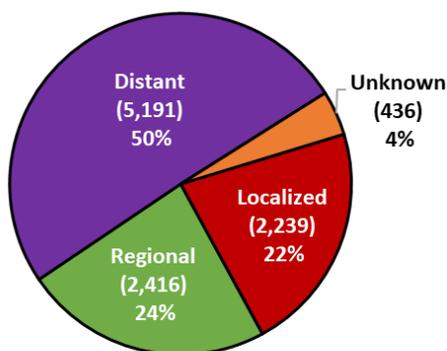
Lung Cancer Deaths in West Virginia per 100,000 people

57.0

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.

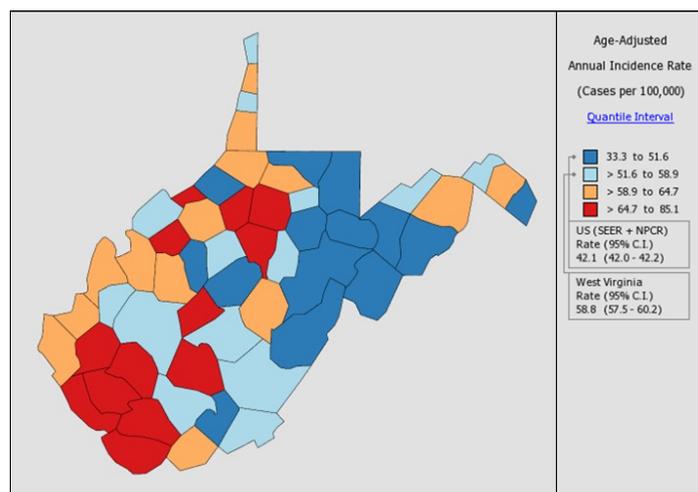
Percentage of Lung and Bronchus Cancer Cases by Stage at Diagnosis, West Virginia, 2012-2016



Lung Cancer Risk Factors

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

Average Annual Age-Adjusted Late Stage Lung Cancer Incidence Rates by County, West Virginia, 2012-2016*



* From statecancerprofiles.cancer.gov

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)

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 implementing 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/wvdtq/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-lung-cancer-project/> and <https://wvlungcancer.pafcareline.org/>



Prostate Cancer in West Virginia

Prostate cancer occurs when abnormal cells grow in the prostate, the walnut-shaped gland that sits below the male bladder. These abnormal prostate cells can form a tumor that can have fragments that break off and spread throughout the rest of the body affecting other organs and tissues.¹ The majority of prostate cancers grow slowly and may not cause any health problems throughout the remainder of a man's life.² However, some prostate cancers are more aggressive and require early treatment. One of the only ways to detect prostate cancer in its early stages is through screening.²

Men between the ages of 55 and 69 should make their own decision about being screened for prostate cancer.³ Men should discuss the following factors with their physician: if there is a family history of prostate cancer, if the man is African-American, if other medical conditions are present making prostate cancer treatment difficult or impossible, and the potential benefits and harms of screening and treatment.³ Screening for prostate cancer starts with a blood test that measures the level of a protein, prostate specific antigen (PSA), found in the prostate. If the PSA score is low, the test is considered normal. If the PSA score is high, or rises rapidly, the test is considered abnormal. If the PSA test is abnormal, a biopsy can be done to determine if cancer cells are present.¹

Approximately 1 in 9 men will be diagnosed with prostate cancer at some point, and the average age at diagnosis is 66.⁴ Prostate cancer is the most commonly diagnosed cancer and is the third leading cause of cancer-related death in WV men.⁵ In 2016, 1,213 cases of prostate cancer were diagnosed in WV, and 203 deaths due to prostate cancer were reported.⁵

Screening for prostate cancer is not as straightforward as screening for other cancers because the risks of screening can often outweigh the benefits. For example, while prostate cancer screening can detect cancer early, allowing for treatment that can slow or prevent the spread of the disease, prostate cancer screening also has a high rate of false positives leading to unneeded biopsies.¹ In addition, even if the biopsy finds cancer, that cancer may be slow growing and any treatment may result in irreversible and permanent damage including impotence and incontinence.¹ However, all men should discuss their need for prostate cancer screening with their primary care provider to determine if screening is right for them.

1. Urology Care Foundation. Accessed at <http://www.urologyhealth.org/educational-materials/is-prostate-cancer-screening-right-for-me> on 9/23/2019 at 11:18 AM.

2. Centers for Disease Control and Prevention. Accessed at <http://www.cdc.gov/cancer/prostate/prostate-cancer-health-tip-sheet.htm> on 9/23/2019 at 11:20 AM.

3. Centers for Disease Control and Prevention. Accessed at http://www.cdc.gov/cancer/prostate/basic_info/get-screened.htm on 10/17/19 at 10:57 AM.

4. American Cancer Society. Accessed at <http://www.cancer.org/cancer/prostate-cancer/about/key-statistics.html> on 9/23/2019 at 11:01 AM.

5. Centers for Disease Control and Prevention. Accessed at <http://www.gis.cdc.gov/Cancer/USCS/DataViz.html> on 9/23/2019 at 10:45 AM.

Prostate Cancer in West Virginia

Prostate Cancer Incidence in West Virginia per 100,000 people

91.3

Prostate Cancer Deaths in West Virginia per 100,000 people

17.4

West Virginia has the 44th highest incidence rate and 49th highest death rate of prostate cancer in the nation.

Prostate cancer screening can save lives. All men need to discuss prostate cancer screening with their primary care provider.

Risk Factors



AGE

Prostate cancer risk increases with age.

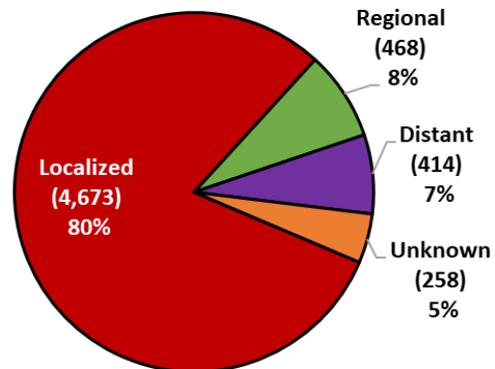
RACE

Men of African-American descent have an increased risk of prostate cancer.

FAMILY HISTORY

If it runs in your immediate family, you have an increased risk of getting prostate cancer.

Percentage of Prostate Cancer Cases by Stage at Diagnosis, West Virginia, 2012-2016



getchecked.ca

Prostate Cancer Screening Test	Test Description
Prostate Specific Antigen (PSA)	A blood test to measure this protein found in the prostate <ul style="list-style-type: none"> •Low scores suggest healthy prostates •High scores suggest a possible problem (not necessarily cancer)
Biopsy	Tissue sample removed from prostate to be viewed under a microscope to look for cancer cells if PSA caused concern

HPV-Associated Cancers in West Virginia

Human Papillomavirus (HPV) is a recognized cause of cancer. Although most HPV infections are asymptomatic and clear spontaneously, persistent infections can progress to precancer or cancer. HPV causes most cervical cancers, as well as some cancers of the vagina, vulva, penis, anus, and oropharynx (cancers of the back of the throat, including the base of the tongue and tonsils).¹

Based on data from 2012 to 2016, approximately 44,000 new cases of HPV-associated cancers occurred in the United States each year, including an estimated 24,900 among women and 19,100 among men. Cervical cancer is the most common HPV-associated cancer among women, and oropharyngeal cancers are the most common among men.¹

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 around 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 first approved three vaccines to prevent HPV infection for girls in 2006⁵ and for boys and girls in 2011. As of May 2017, Gardasil 9 is the only HPV vaccine available for use in the United States. This vaccine provides strong protection against new HPV infections, but is not effective at treating established HPV infections or disease caused by HPV.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/uscs/pdf/USCS-DataBrief-No10-August2019-h.pdf> on 10/03/19 at 9:55 AM.

2. Centers for Disease Control and Prevention. Accessed at <https://www.cdc.gov/cancer/hpv/statistics/index.htm> on 10/03/19 at 9:57 AM.

3. American Cancer Society. Accessed at <https://www.cancer.org/cancer/cancer-causes/infectious-agents/hpv/hpv-and-cancer-info.html> on 10/03/19 at 10:00 AM.

4. National Cancer Institute. Accessed at <https://www.cancer.gov/about-cancer/causes-prevention/risk/infectious-agents/hpv-vaccine-fact-sheet> on 10/02/19 at 10:14 AM.

5. Centers for Disease Control and Prevention. Accessed at <https://www.cdc.gov/vaccinesafety/vaccines/hpv-vaccine.html> on 10/02/19 at 10:16 AM.

6. National Cancer Institute. Accessed at <https://www.cancer.gov/about-cancer/causes-prevention/risk/infectious-agents/hpv-vaccine-fact-sheet> on 10/02/19 at 10:18 AM.

7. National Cancer Institute. Access at <https://www.cancer.gov/types/head-and-neck/hp/oral-prevention-pdq> on 10/03/19 at 10:20 AM.

HPV-Associated Cancers in West Virginia

HPV Vaccination Rates in West Virginia and the United States, Male and Female, 2018				
	1 dose, male	Males who completed the series	1 dose, female	Females who completed the series
WV	54.7%	39.3%	67.5%	48.6%
US	62.6%	44.3%	68.6%	53.1%

National Immunization Survey-Teen, United States, 2018

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).

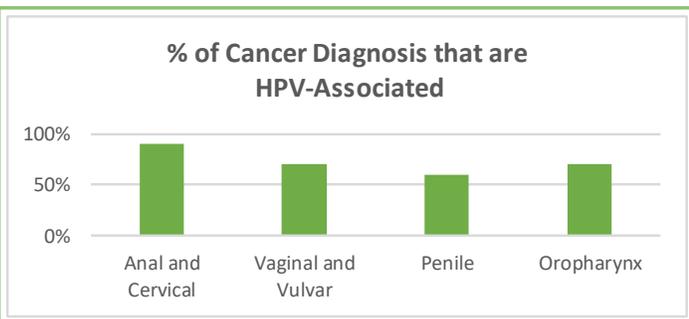
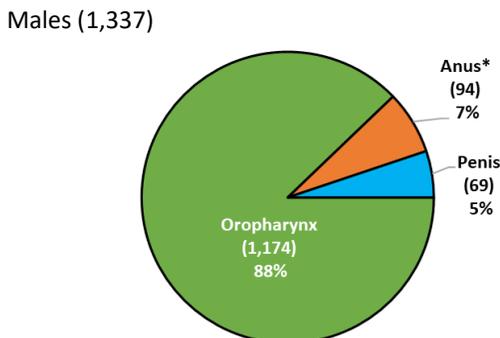
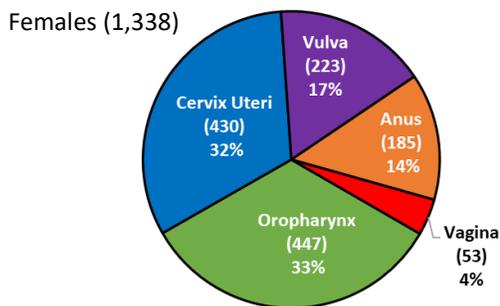
The HPV vaccine is recommended for children and adults aged 9 through 26 years. Adults who are not adequately vaccinated and are aged 27 through 45 should talk to their doctor about their options.

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

 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.

Percentage of HPV-Associated Cancers** by Site and Sex, West Virginia, 2012-2016



*Anus, Anal Canal, and Anorectum

**Not all incidence are directly attributed to the HPV virus

Obesity-Related Cancers in West Virginia

Obesity is a prevalent problem throughout both West Virginia and the United States. In 2018, the prevalence of obesity in the United States was 30.9%, and in West Virginia, the prevalence of obesity was 39.5% which placed West Virginia first in the nation for obesity.¹ Obesity is linked to an increased cancer risk. In fact, it is estimated that one out of three cancer deaths that occur in the United States is linked to a combination of obesity, poor nutrition, and physical inactivity. Of these three factors, obesity, or excess body weight, shows the strongest link to cancer risk.² The types of cancer linked to obesity include esophageal, pancreatic, colorectal, post-menopausal breast, ovarian, kidney, thyroid, endometrium, liver, multiple myeloma, upper stomach, and gallbladder.³

There are several mechanisms that may explain how obesity increases the risk of getting certain cancers. For example, obese individuals are more likely to have chronic inflammation in their bodies that can lead to DNA damage that leads to cancer.⁴ Chronic inflammation produces certain chemicals within the body's cells, and these chemicals damage the nucleic acids that make up DNA. This damage causes DNA to mutate at high rates eventually leading to the formation of cancer.³ This inflammation can appear in various forms such as gastroesophageal reflux disease, gallstones, or chronic ulcerative colitis.⁴ Also, excess fat tissue produces larger amounts of estrogen which is linked to breast, endometrial, and ovarian cancers.⁵ From 2012-2016, the most common obesity related cancers in West Virginia included post-menopausal breast (6,761 cases), colon and rectum (5,666 cases), and kidney and renal pelvis (2,358 cases).⁵

There is some evidence suggesting that weight loss reduces the risk of breast, endometrial, colon, and prostate cancers specifically.⁴ Further studies focused on determining the impact of weight loss on cancer risk are needed. There are many studies that show that individuals who maintain a lower, healthier weight throughout adulthood have a decreased cancer risk, specifically for colorectal cancer, kidney cancer, post-menopausal breast, endometrial, and ovarian cancers.⁴ Reaching and maintaining a healthy weight is important in working toward cancer prevention.

1. Centers for Disease Control and Prevention. National Center for Chronic Disease Prevention and Health Promotion, Division of Nutrition, Physical Activity, and Obesity. Data, Trend and Maps [online]. [accessed Jan 06, 2020]. URL: <https://www.cdc.gov/nccdphp/dnpao/data-trends-maps/index.html>.

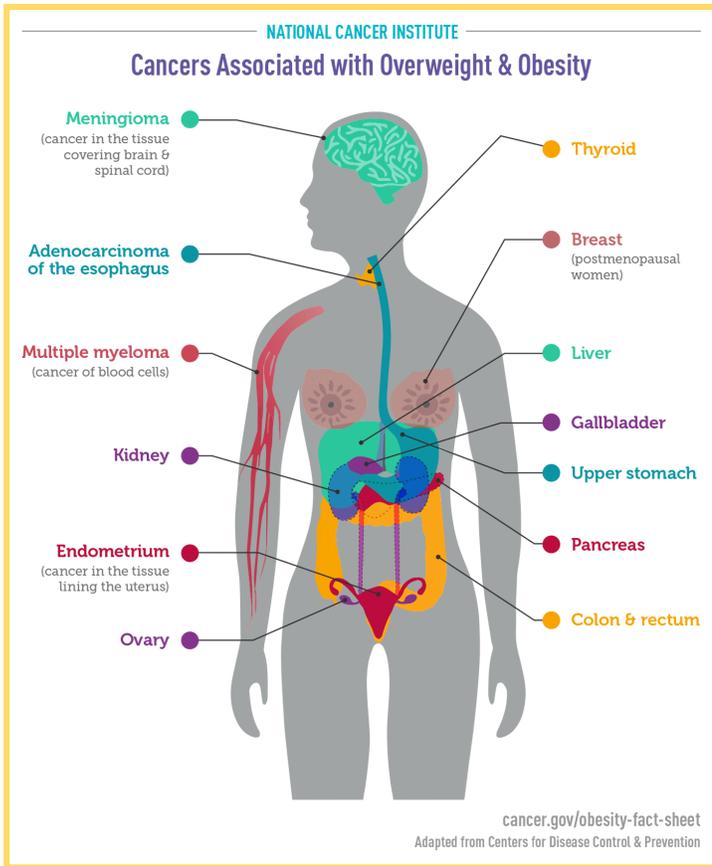
2. National Cancer Institute. Accessed at <https://www.cancer.gov/about-cancer/causes-prevention/risk/obesity/obesity-fact-sheet> on 8/30/2019 at 4:15 PM.

3. Kawanishi, S., Ohnishi, S. Ma, N., Hiraku, Y., & Murata, M. (2017). Crosstalk between DNA Damage and Inflammation in the Multiple Steps of Carcinogenesis. *International Journal of Molecular sciences*, 18(8), 1808. <http://mdpi.com/1422-0067/18/8/1808>.

4. National Cancer Institute. Accessed at <https://www.cancer.gov/about-cancer/causes-prevention/risk/obesity/obesity-fact-sheet> on 8/30/2019 at 4:45 PM.

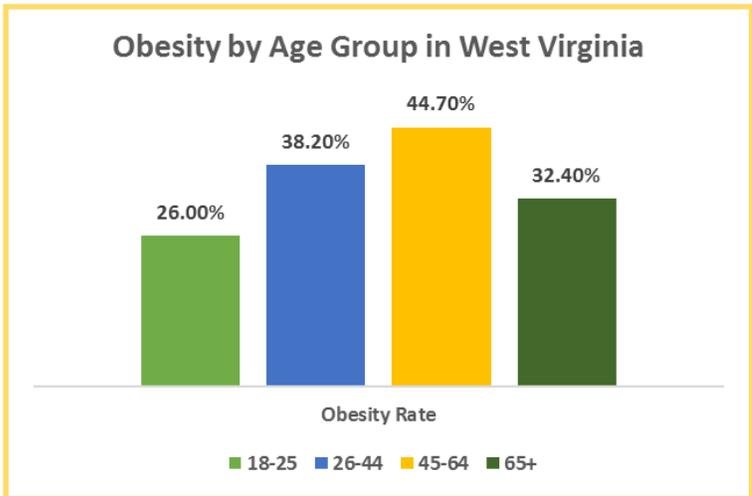
5. West Virginia Cancer Registry.

Obesity-Related Cancers in West Virginia



Counts of Obesity-Related Cancers in West Virginia, 2012-2016

Post-Menopausal Breast (Female)	6,761
Colon and Rectum	5,666
Kidney and Renal Pelvis	2,358
Endometrium	1,859
Thyroid	1,651
Pancreas	1,494
Ovary	768
Liver	752
Multiple Myeloma	715
Adenocarcinoma of the Esophagus	503
Upper Stomach (Gastric Cardia)	283
Gallbladder	103
Meningiomas	8
TOTAL:	22,921



How do you find your BMI?

$$\frac{\text{Weight}}{(\text{Height in inches})^2} \times 703$$


Tobacco-Related Cancers in West Virginia

Tobacco use is the leading preventable cause of cancer and death from cancer.¹ There are many forms of tobacco available, but there is no safe form of tobacco use; all tobacco causes health problems. Smoking leads to disease and disability and harms nearly every organ in the body.² Smoking causes about one in five, or 20%, of all deaths in the United States.³

Tobacco use can lead to cancers of the lung, larynx (voice box), mouth, esophagus, throat, bladder, kidney, liver, stomach, pancreas, colon, rectum, cervix, and blood (acute myeloid leukemia). Use of smokeless tobacco increases the risk for cancers of the mouth, esophagus, and pancreas.¹

WV currently has the highest adult smoking rate in the country and there are clear health disparities related to smoking and tobacco use. The highest smoking rates are seen among those with less than a high school education and the lowest rates are among college graduates. As educational level increases, use of tobacco products significantly decreases. A similar pattern is observed when looking at income levels. The highest smoking rates are observed among those with a household income less than \$30,000 per year (30.9%) and lowest among those with a household income of \$100,000 per year or more (11.4%).⁴

People who stop using tobacco products reduce their risk of developing cancer and experience health benefits. Heart rate and body temperature begin to change in as little as 20 minutes after someone stops smoking. Many people find quitting the use of tobacco products very hard and require both medical assistance and psychosocial support to stop. There are community, state, and national resources available to assist those interested in quitting. According to the Centers for Disease Control and Prevention, “Quitting smoking is a marathon, not a sprint.”

1. Tobacco. National Cancer Institute. Accessed at <https://www.cancer.gov/about-cancer/causes-prevention/risk/tobacco> on 10/16/19 at 10:15 AM.

2. Centers for Disease Control and Prevention. Accessed at https://www.cdc.gov/tobacco/data_statistics/fact_sheets/index.htm?s_cid=osh-stu-home-spotlight-001 on 10/16/19 at 10:20 AM.

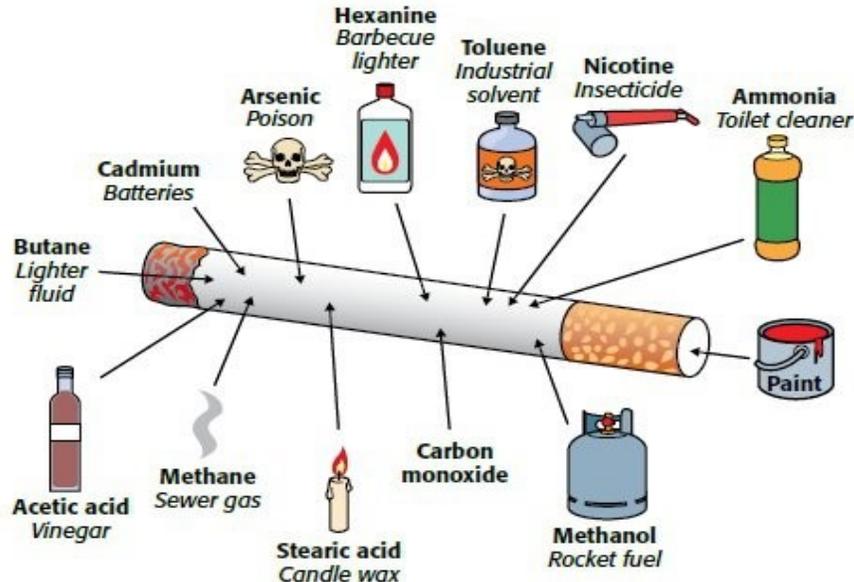
3. American Cancer Society. Accessed at <https://www.cancer.org/cancer/cancer-causes/tobacco-and-cancer/health-risks-of-smoking-tobacco.html> on 10/16/19 at 10:25 AM.

4. West Virginia Prevention Research Center. Findings from the 2014 West Virginia Adult Tobacco Survey.

Tobacco-Related Cancers in West Virginia

Tobacco is the leading cause of cancer and death from cancer.

There is **NO** safe level of tobacco use!



1 in 5 U.S. deaths is related to smoking



Tobacco Causes These Cancers:

1. Lung
2. Larynx (voice box)
3. Mouth
4. Esophagus
5. Throat
6. Bladder
7. Kidney
8. Liver
9. Stomach
10. Pancreas
11. Colon and rectum
12. Cervix
13. Acute Myeloid Leukemia



Appendices

How to Read These Tables

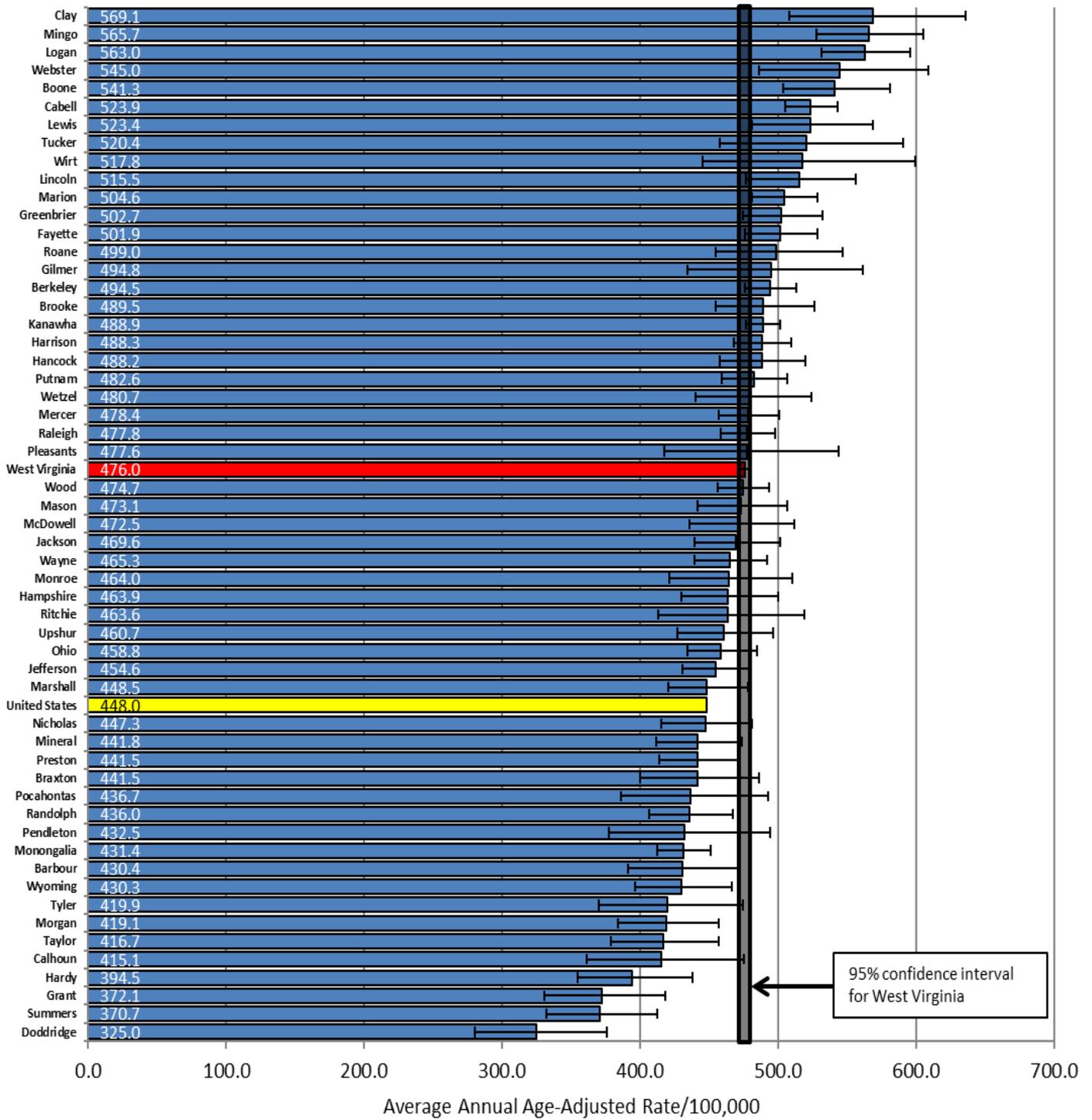
The county-level graphs on the following pages, arranged in alphabetical order by primary site, are packed with information. With a quick glance at these graphs, you can answer such questions as:

- **What is the lung and bronchus cancer incidence rate for Mingo County?**
 - The average annual incidence rate for each county is shown at the left margin of each bar. On page 80, you can see that Mingo County, at the top of the graph, has an annual average incidence rate of 113.7.
- **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 58, you can see that the 5 counties with the highest breast cancer incidence rates are Greenbrier, Marion, Pleasants, Cabell, and Ohio.
- **Is the melanoma skin cancer incidence rate for Putnam 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 as a gray vertical bar to allow easy comparisons with any given county. On page 82, you can see that the average annual melanoma skin cancer rate for Putnam County (second from the top) is 30.7, compared to 20.9 for West Virginia (the red bar). Are they significantly different? Look at the left edge of the thin black error bar for Putnam County, and you can see that it does not overlap or touch the gray vertical bar. This means that the rate for Putnam 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 80, you can see that the West Virginia rate for lung and bronchus cancer (79.3) is significantly higher than the United States rate (59.2).
- **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, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	476.0	472.1	480.1	58,265	Mercer	478.4	457.1	500.6	2,068
Barbour	430.4	391.4	472.5	480	Mineral	441.8	411.5	473.9	851
Berkeley	494.5	476.4	513.2	2,999	Mingo	565.7	527.9	605.6	903
Boone	541.3	503.7	581.2	832	Monongalia	431.4	412.3	451.1	2,037
Braxton	441.5	400.3	486.3	461	Monroe	464.0	421.1	510.6	478
Brooke	489.5	454.8	526.3	834	Morgan	419.1	383.9	457.2	563
Cabell	523.9	505.2	543.2	3,137	Nicholas	447.3	415.6	480.9	808
Calhoun	415.1	361.6	475.2	239	Ohio	458.8	434.1	484.7	1,422
Clay	569.1	508.3	635.8	342	Pendleton	432.5	377.5	494.4	261
Doddridge	325.0	280.1	376.1	199	Pleasants	477.6	417.8	544.2	240
Fayette	501.9	476.4	528.6	1,562	Pocahontas	436.7	386.5	492.7	305
Gilmer	494.8	434.5	561.7	250	Preston	441.5	413.8	470.8	1,002
Grant	372.1	330.4	418.2	324	Putnam	482.6	459.4	506.6	1,720
Greenbrier	502.7	474.3	532.4	1,306	Raleigh	477.8	458.6	497.7	2,511
Hampshire	463.9	429.9	500.2	758	Randolph	436.0	406.6	467.1	886
Hancock	488.2	458.1	520.0	1,087	Ritchie	463.6	413.1	519.2	339
Hardy	394.5	354.6	437.9	385	Roane	499.0	454.5	547.0	510
Harrison	488.3	467.8	509.5	2,261	Summers	370.7	332.3	412.8	382
Jackson	469.6	439.4	501.6	951	Taylor	416.7	379.2	457.1	483
Jefferson	454.6	430.7	479.5	1,455	Tucker	520.4	457.6	590.4	286
Kanawha	488.9	476.5	501.7	6,302	Tyler	419.9	370.4	474.9	287
Lewis	523.4	481.3	568.5	607	Upshur	460.7	427.3	496.2	751
Lincoln	515.5	477.1	556.3	715	Wayne	465.3	439.5	492.4	1,299
Logan	563.0	531.9	595.6	1,329	Webster	545.0	486.6	609.3	353
Marion	504.6	481.3	528.8	1,892	Wetzel	480.7	440.2	524.2	572
Marshall	448.5	420.4	478.1	1,044	Wirt	517.8	445.3	599.8	204
Mason	473.1	441.4	506.6	893	Wood	474.7	456.6	493.4	2,764
McDowell	472.5	435.7	511.8	672	Wyoming	430.3	396.6	466.3	662

All Sites - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016



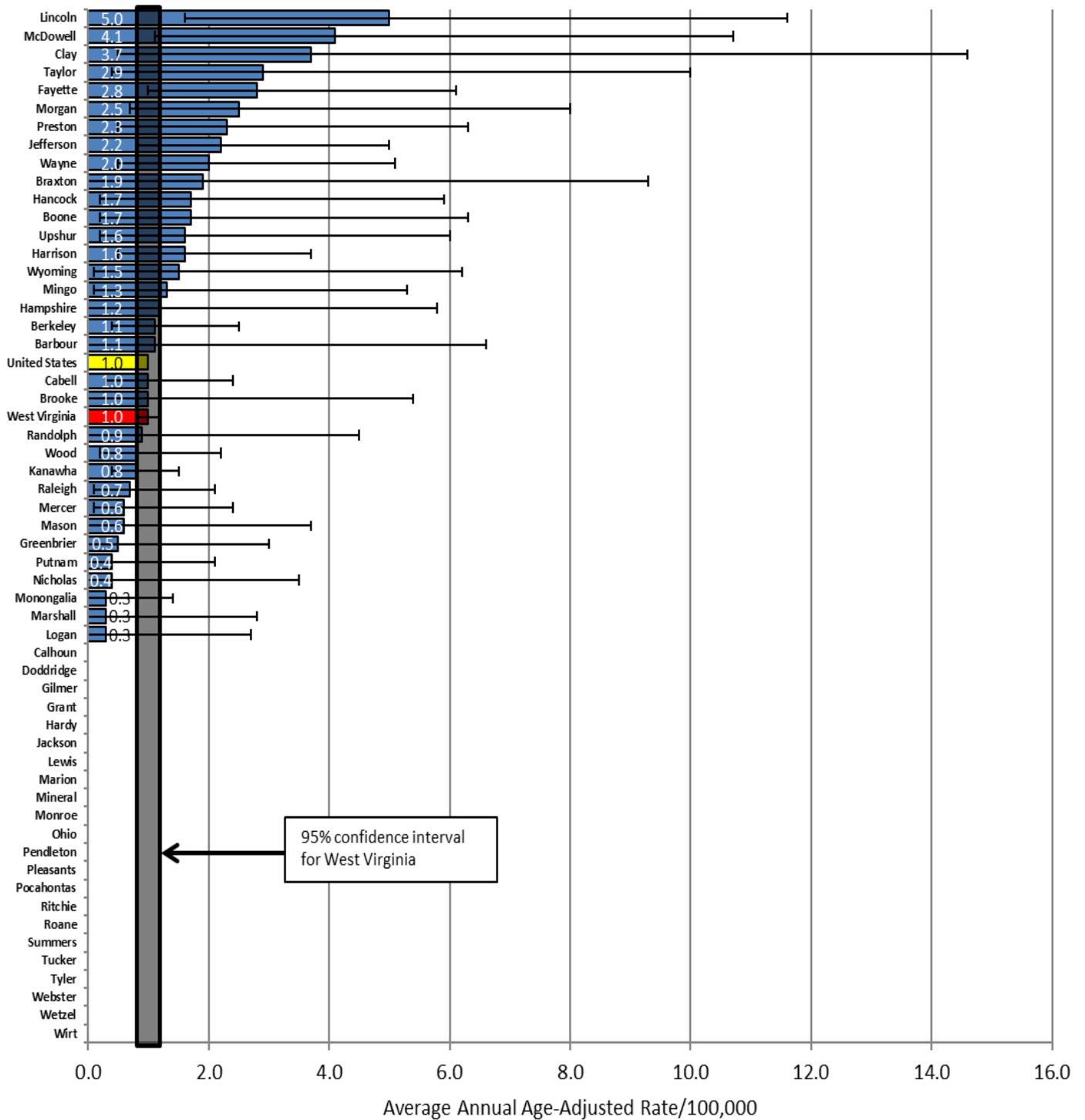
Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Bones and Joints - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	1.0	0.8	1.2	93	Mercer	0.6	0.1	2.4	^
Barbour	1.1	0.0	6.6	^	Mineral	0.0	0.0		0
Berkeley	1.1	0.4	2.5	6	Mingo	1.3	0.1	5.3	^
Boone	1.7	0.2	6.3	^	Monongalia	0.3	0.0	1.4	^
Braxton	1.9	0.0	9.3	^	Monroe	0.0	0.0		0
Brooke	1.0	0.0	5.4	^	Morgan	2.5	0.7	8.0	4
Cabell	1.0	0.3	2.4	5	Nicholas	0.4	0.0	3.5	^
Calhoun	0.0	0.0		0	Ohio	0.0	0.0		0
Clay	3.7	0.5	14.6	^	Pendleton	0.0	0.0		0
Doddridge	0.0	0.0		0	Pleasants	0.0	0.0		0
Fayette	2.8	1.0	6.1	6	Pocahontas	0.0	0.0		0
Gilmer	0.0	0.0		0	Preston	2.3	0.5	6.3	^
Grant	0.0	0.0		0	Putnam	0.4	0.0	2.1	^
Greenbrier	0.5	0.0	3.0	^	Raleigh	0.7	0.1	2.1	^
Hampshire	1.2	0.0	5.8	^	Randolph	0.9	0.0	4.5	^
Hancock	1.7	0.2	5.9	^	Ritchie	0.0	0.0		0
Hardy	0.0	0.0		0	Roane	0.0	0.0		0
Harrison	1.6	0.5	3.7	5	Summers	0.0	0.0		0
Jackson	0.0	0.0		0	Taylor	2.9	0.4	10.0	^
Jefferson	2.2	0.8	5.0	6	Tucker	0.0	0.0		0
Kanawha	0.8	0.4	1.5	10	Tyler	0.0	0.0		0
Lewis	0.0	0.0		0	Upshur	1.6	0.2	6.0	^
Lincoln	5.0	1.6	11.6	5	Wayne	2.0	0.5	5.1	4
Logan	0.3	0.0	2.7	^	Webster	0.0	0.0		0
Marion	0.0	0.0		0	Wetzel	0.0	0.0		0
Marshall	0.3	0.0	2.8	^	Wirt	0.0	0.0		0
Mason	0.6	0.0	3.7	^	Wood	0.8	0.2	2.2	4
McDowell	4.1	1.1	10.7	4	Wyoming	1.5	0.1	6.2	^

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

Bones and Joints - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016



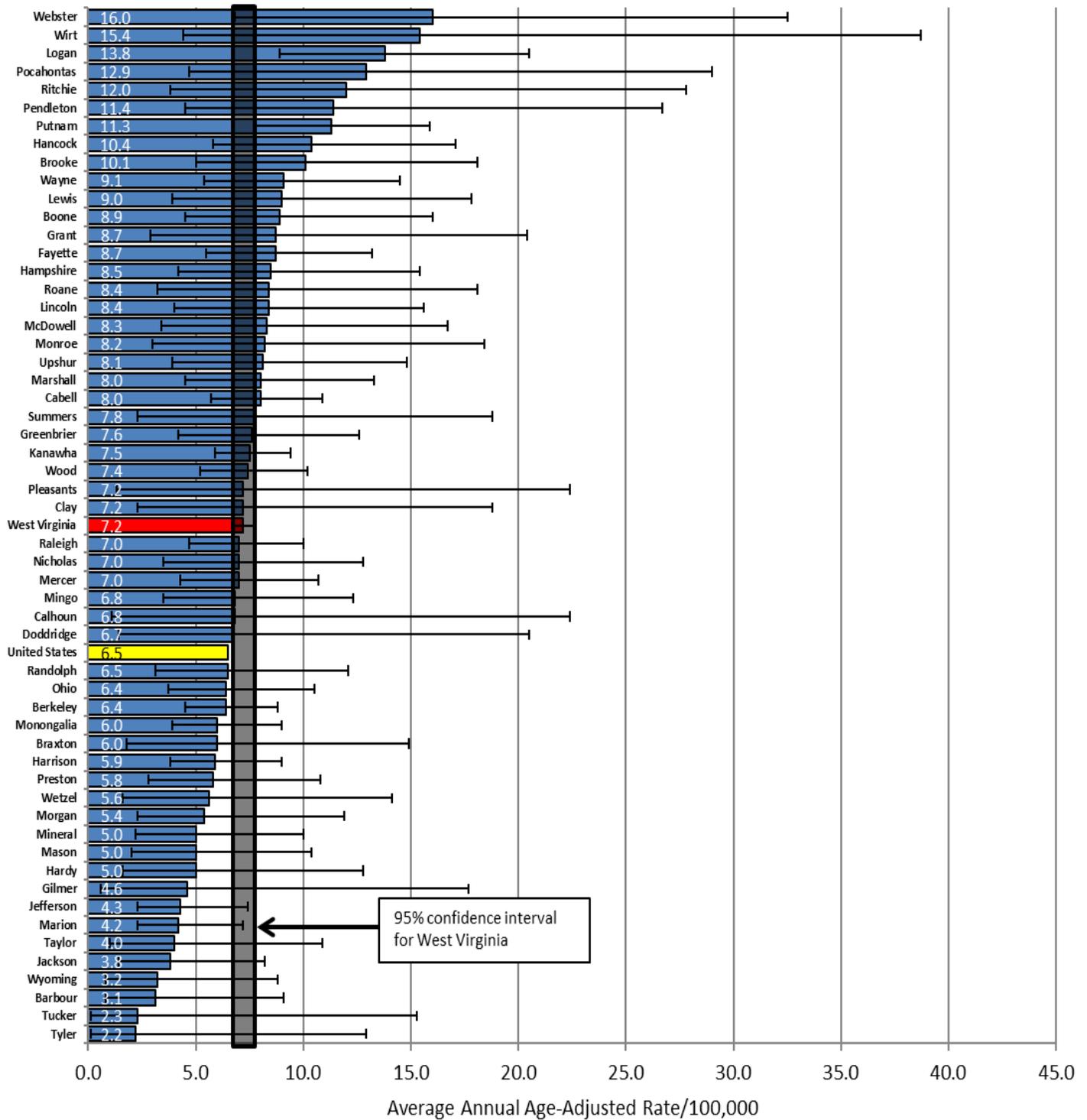
Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Brain and Other Nervous System - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	7.2	6.7	7.8	772	Mercer	7.0	4.3	10.7	23
Barbour	3.1	0.8	9.1	4	Mineral	5.0	2.2	10.0	9
Berkeley	6.4	4.5	8.8	39	Mingo	6.8	3.5	12.3	13
Boone	8.9	4.5	16.0	12	Monongalia	6.0	3.9	9.0	26
Braxton	6.0	1.8	14.9	5	Monroe	8.2	3.0	18.4	7
Brooke	10.1	5.0	18.1	12	Morgan	5.4	2.3	11.9	8
Cabell	8.0	5.7	10.9	43	Nicholas	7.0	3.5	12.8	12
Calhoun	6.8	1.1	22.4	^	Ohio	6.4	3.7	10.5	18
Clay	7.2	2.3	18.8	5	Pendleton	11.4	4.5	26.7	7
Doddridge	6.7	1.4	20.5	^	Pleasants	7.2	1.3	22.4	^
Fayette	8.7	5.5	13.2	25	Pocahontas	12.9	4.7	29.0	7
Gilmer	4.6	0.6	17.7	^	Preston	5.8	2.8	10.8	11
Grant	8.7	2.9	20.4	6	Putnam	11.3	7.7	15.9	34
Greenbrier	7.6	4.2	12.6	17	Raleigh	7.0	4.7	10.0	33
Hampshire	8.5	4.2	15.4	12	Randolph	6.5	3.1	12.1	11
Hancock	10.4	5.8	17.1	18	Ritchie	12.0	3.8	27.8	5
Hardy	5.0	1.6	12.8	5	Roane	8.4	3.2	18.1	7
Harrison	5.9	3.8	9.0	25	Summers	7.8	2.3	18.8	5
Jackson	3.8	1.4	8.2	7	Taylor	4.0	1.0	10.9	4
Jefferson	4.3	2.3	7.4	14	Tucker	2.3	0.1	15.3	^
Kanawha	7.5	5.9	9.4	83	Tyler	2.2	0.1	12.9	^
Lewis	9.0	3.9	17.8	9	Upshur	8.1	3.9	14.8	11
Lincoln	8.4	4.0	15.6	11	Wayne	9.1	5.4	14.5	19
Logan	13.8	8.9	20.5	27	Webster	16.0	6.8	32.5	9
Marion	4.2	2.3	7.2	15	Wetzel	5.6	1.6	14.1	5
Marshall	8.0	4.5	13.3	17	Wirt	15.4	4.4	38.7	5
Mason	5.0	2.0	10.4	8	Wood	7.4	5.2	10.2	39
McDowell	8.3	3.4	16.7	8	Wyoming	3.2	0.8	8.8	4

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

Brain and Other Nervous System - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016

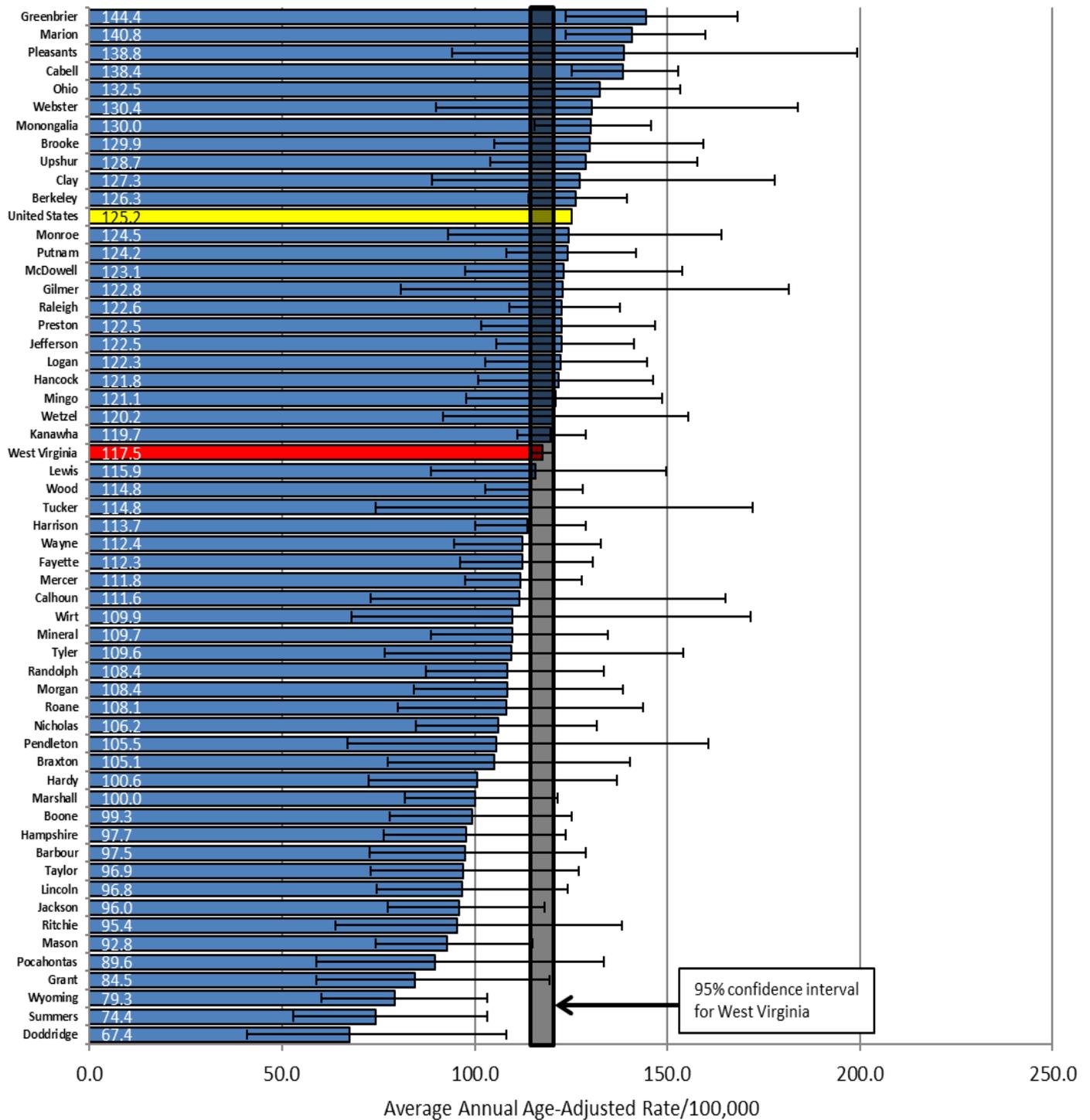


Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Breast (Female) - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	117.5	114.7	120.3	7,350	Mercer	111.8	97.4	127.8	247
Barbour	97.5	72.7	128.7	56	Mineral	109.7	88.7	134.6	105
Berkeley	126.3	113.9	139.6	402	Mingo	121.1	97.8	148.7	101
Boone	99.3	77.9	125.2	80	Monongalia	130.0	115.6	145.8	313
Braxton	105.1	77.5	140.3	54	Monroe	124.5	93.1	164.1	61
Brooke	129.9	105.2	159.3	112	Morgan	108.4	84.3	138.6	74
Cabell	138.4	125.1	152.9	434	Nicholas	106.2	84.7	131.8	94
Calhoun	111.6	73.1	165.2	30	Ohio	132.5	114.1	153.3	212
Clay	127.3	88.8	178.0	38	Pendleton	105.5	67.1	160.6	29
Doddridge	67.4	40.9	108.3	21	Pleasants	138.8	94.2	199.3	33
Fayette	112.3	96.1	130.7	186	Pocahontas	89.6	58.9	133.5	31
Gilmer	122.8	80.9	181.5	30	Preston	122.5	101.6	146.7	132
Grant	84.5	58.9	119.3	40	Putnam	124.2	108.3	141.9	233
Greenbrier	144.4	123.5	168.2	193	Raleigh	122.6	108.9	137.7	323
Hampshire	97.7	76.4	123.7	79	Randolph	108.4	87.3	133.4	104
Hancock	121.8	101.0	146.2	138	Ritchie	95.4	63.9	138.2	33
Hardy	100.6	72.5	136.8	46	Roane	108.1	80.0	143.7	55
Harrison	113.7	100.1	128.8	273	Summers	74.4	52.9	103.2	42
Jackson	96.0	77.4	118.0	100	Taylor	96.9	73.0	127.0	59
Jefferson	122.5	105.7	141.3	200	Tucker	114.8	74.3	172.2	30
Kanawha	119.7	111.2	128.7	820	Tyler	109.6	76.7	154.2	39
Lewis	115.9	88.7	149.6	67	Upshur	128.7	104.0	157.8	104
Lincoln	96.8	74.5	124.2	68	Wayne	112.4	94.6	132.8	155
Logan	122.3	102.7	144.8	152	Webster	130.4	90.0	183.9	39
Marion	140.8	123.6	159.9	270	Wetzel	120.2	91.8	155.4	69
Marshall	100.0	81.8	121.4	119	Wirt	109.9	67.9	171.5	22
Mason	92.8	74.3	114.9	94	Wood	114.8	102.7	128.1	357
McDowell	123.1	97.4	154.0	88	Wyoming	79.3	60.2	103.2	64

Breast (Female) - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016



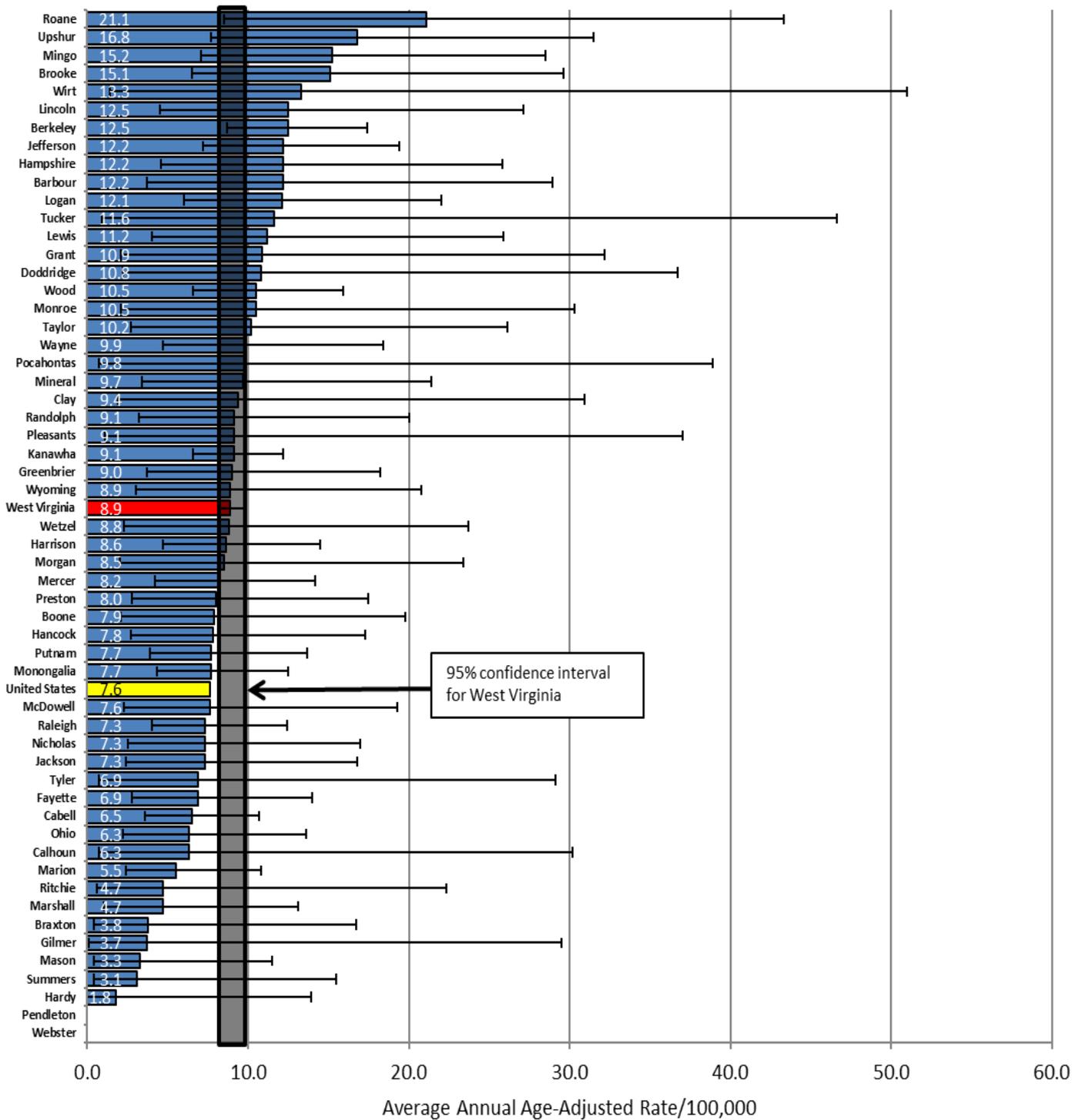
Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Cervix Uteri - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	8.9	8.1	9.8	430	Mercer	8.2	4.2	14.2	14
Barbour	12.2	3.7	28.9	5	Mineral	9.7	3.4	21.4	6
Berkeley	12.5	8.7	17.4	36	Mingo	15.2	7.1	28.5	10
Boone	7.9	2.1	19.8	4	Monongalia	7.7	4.3	12.5	16
Braxton	3.8	0.4	16.7	^	Monroe	10.5	2.1	30.3	^
Brooke	15.1	6.5	29.6	9	Morgan	8.5	2.0	23.4	4
Cabell	6.5	3.6	10.7	16	Nicholas	7.3	2.5	17.0	6
Calhoun	6.3	0.7	30.2	^	Ohio	6.3	2.2	13.6	7
Clay	9.4	1.9	30.9	^	Pendleton	0.0	0.0		0
Doddridge	10.8	2.2	36.7	^	Pleasants	9.1	1.1	37.0	^
Fayette	6.9	2.8	14.0	8	Pocahontas	9.8	0.7	38.9	^
Gilmer	3.7	0.1	29.5	^	Preston	8.0	2.8	17.5	6
Grant	10.9	2.1	32.2	^	Putnam	7.7	3.9	13.7	12
Greenbrier	9.0	3.7	18.2	8	Raleigh	7.3	4.0	12.4	15
Hampshire	12.2	4.6	25.8	7	Randolph	9.1	3.2	20.0	6
Hancock	7.8	2.7	17.3	6	Ritchie	4.7	0.6	22.3	^
Hardy	1.8	0.0	13.9	^	Roane	21.1	8.5	43.3	8
Harrison	8.6	4.7	14.5	15	Summers	3.1	0.4	15.5	^
Jackson	7.3	2.4	16.8	6	Taylor	10.2	2.7	26.1	4
Jefferson	12.2	7.2	19.4	19	Tucker	11.6	0.9	46.6	^
Kanawha	9.1	6.6	12.2	48	Tyler	6.9	0.7	29.1	^
Lewis	11.2	4.0	25.9	6	Upshur	16.8	7.7	31.5	10
Lincoln	12.5	4.5	27.1	6	Wayne	9.9	4.7	18.4	10
Logan	12.1	6.0	22.0	12	Webster	0.0	0.0		0
Marion	5.5	2.4	10.8	9	Wetzel	8.8	2.3	23.7	4
Marshall	4.7	1.0	13.1	^	Wirt	13.3	1.4	51.0	^
Mason	3.3	0.4	11.5	^	Wood	10.5	6.6	15.9	24
McDowell	7.6	2.3	19.3	5	Wyoming	8.9	3.0	20.8	6

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

Cervix Uteri - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016

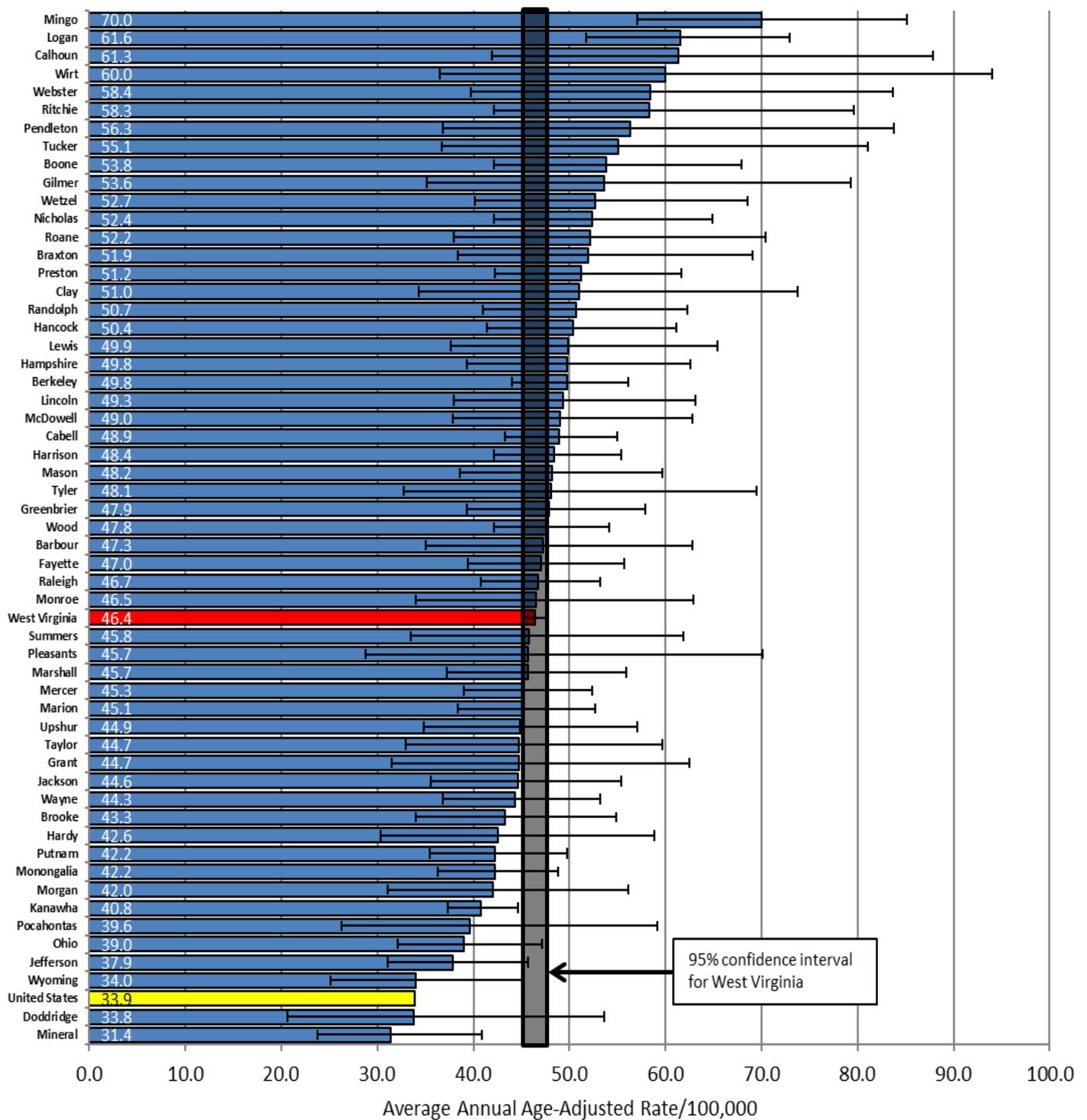


Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Colon and Rectum - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	46.4	45.1	47.6	5,666	Mercer	45.3	39.0	52.4	198
Barbour	47.3	35.0	62.8	52	Mineral	31.4	23.8	40.9	60
Berkeley	49.8	44.0	56.1	291	Mingo	70.0	57.1	85.1	111
Boone	53.8	42.1	67.9	77	Monongalia	42.2	36.3	48.8	190
Braxton	51.9	38.4	69.1	54	Monroe	46.5	34.0	62.9	49
Brooke	43.3	34.0	54.9	79	Morgan	42.0	31.1	56.1	54
Cabell	48.9	43.3	55.0	296	Nicholas	52.4	42.1	64.9	95
Calhoun	61.3	41.9	87.9	35	Ohio	39.0	32.1	47.1	122
Clay	51.0	34.3	73.8	31	Pendleton	56.3	36.8	83.8	33
Doddridge	33.8	20.6	53.6	21	Pleasants	45.7	28.8	70.1	23
Fayette	47.0	39.4	55.7	146	Pocahontas	39.6	26.3	59.1	30
Gilmer	53.6	35.1	79.3	27	Preston	51.2	42.2	61.7	119
Grant	44.7	31.5	62.5	40	Putnam	42.2	35.5	49.8	150
Greenbrier	47.9	39.3	57.9	121	Raleigh	46.7	40.8	53.2	244
Hampshire	49.8	39.3	62.6	83	Randolph	50.7	41.0	62.3	102
Hancock	50.4	41.4	61.1	116	Ritchie	58.3	42.1	79.6	45
Hardy	42.6	30.3	58.8	41	Roane	52.2	38.0	70.4	49
Harrison	48.4	42.1	55.4	224	Summers	45.8	33.5	61.9	50
Jackson	44.6	35.6	55.4	89	Taylor	44.7	32.9	59.7	50
Jefferson	37.9	31.1	45.7	118	Tucker	55.1	36.7	81.1	31
Kanawha	40.8	37.3	44.6	529	Tyler	48.1	32.7	69.5	32
Lewis	49.9	37.6	65.4	58	Upshur	44.9	34.8	57.1	71
Lincoln	49.3	38.0	63.1	68	Wayne	44.3	36.8	53.2	126
Logan	61.6	51.7	72.9	149	Webster	58.4	39.7	83.7	36
Marion	45.1	38.4	52.7	171	Wetzel	52.7	40.2	68.5	64
Marshall	45.7	37.2	55.9	106	Wirt	60.0	36.5	94.0	23
Mason	48.2	38.6	59.7	92	Wood	47.8	42.1	54.1	272
McDowell	49.0	37.9	62.8	71	Wyoming	34.0	25.1	45.3	52

Colon and Rectum - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016



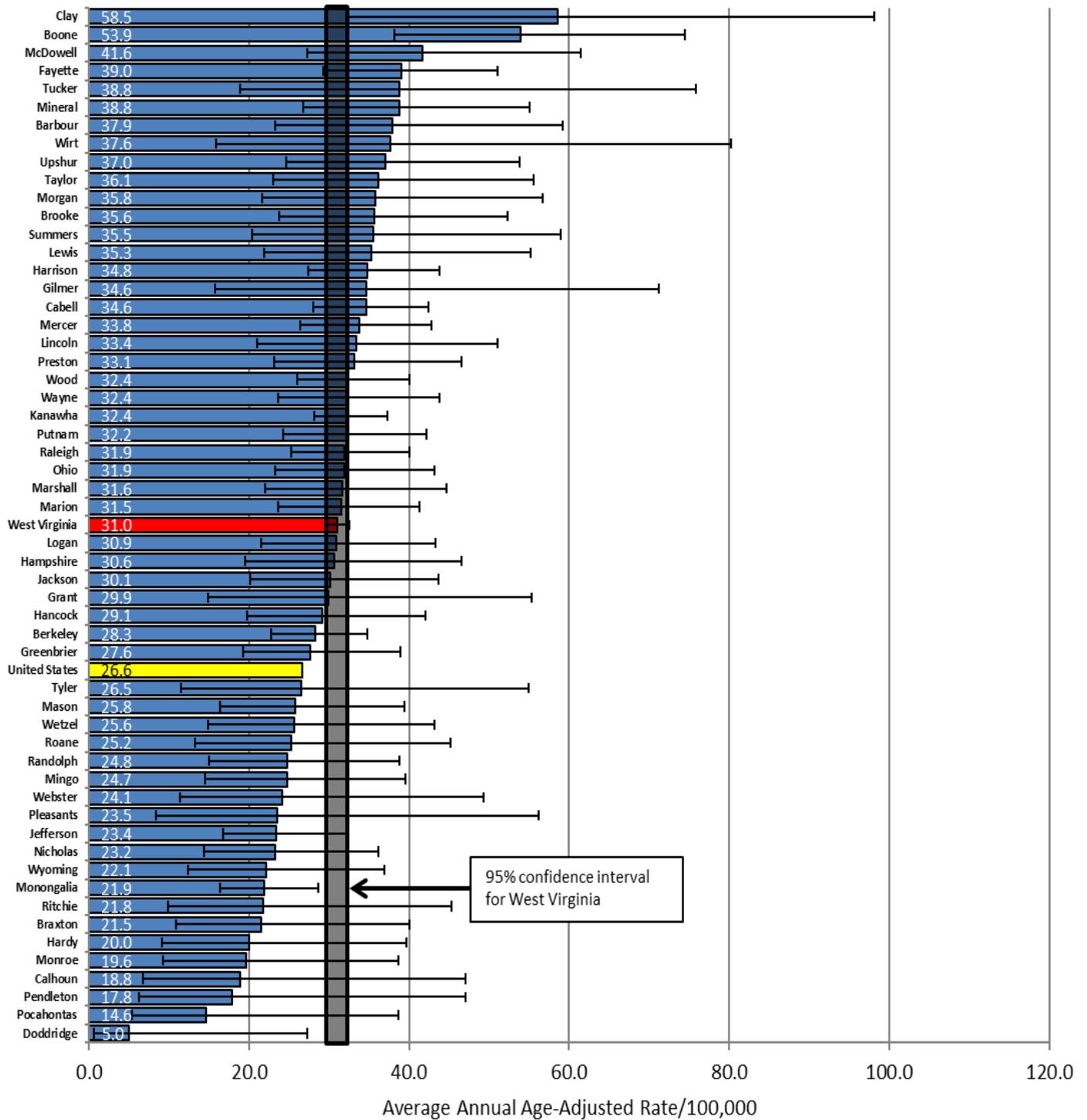
Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Corpus and Uterus, NOS - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	31.0	29.6	32.5	1,991	Mercer	33.8	26.4	42.8	80
Barbour	37.9	23.2	59.2	22	Mineral	38.8	26.7	55.0	38
Berkeley	28.3	22.8	34.8	95	Mingo	24.7	14.5	39.5	20
Boone	53.9	38.1	74.5	42	Monongalia	21.9	16.4	28.6	57
Braxton	21.5	10.9	40.0	12	Monroe	19.6	9.2	38.6	10
Brooke	35.6	23.7	52.3	33	Morgan	35.8	21.6	56.7	22
Cabell	34.6	28.0	42.4	106	Nicholas	23.2	14.4	36.1	23
Calhoun	18.8	6.7	47.1	6	Ohio	31.9	23.3	43.1	52
Clay	58.5	32.4	98.1	16	Pendleton	17.8	6.2	47.1	6
Doddridge	5.0	0.6	27.3	^	Pleasants	23.5	8.3	56.2	6
Fayette	39.0	29.3	51.1	62	Pocahontas	14.6	5.3	38.6	6
Gilmer	34.6	15.7	71.2	9	Preston	33.1	23.1	46.5	38
Grant	29.9	14.8	55.3	12	Putnam	32.2	24.3	42.1	60
Greenbrier	27.6	19.2	38.9	40	Raleigh	31.9	25.2	40.0	87
Hampshire	30.6	19.5	46.6	26	Randolph	24.8	15.0	38.8	23
Hancock	29.1	19.7	42.0	35	Ritchie	21.8	9.8	45.3	9
Hardy	20.0	9.1	39.6	10	Roane	25.2	13.2	45.1	14
Harrison	34.8	27.4	43.8	82	Summers	35.5	20.3	59.0	18
Jackson	30.1	20.1	43.6	31	Taylor	36.1	23.0	55.5	24
Jefferson	23.4	16.7	32.1	43	Tucker	38.8	18.8	75.9	11
Kanawha	32.4	28.1	37.3	225	Tyler	26.5	11.5	54.9	9
Lewis	35.3	21.9	55.2	22	Upshur	37.0	24.6	53.8	31
Lincoln	33.4	21.0	51.1	24	Wayne	32.4	23.6	43.8	47
Logan	30.9	21.5	43.3	39	Webster	24.1	11.4	49.3	10
Marion	31.5	23.6	41.3	60	Wetzel	25.6	14.8	43.1	17
Marshall	31.6	22.0	44.6	40	Wirt	37.6	15.8	80.2	8
Mason	25.8	16.3	39.4	26	Wood	32.4	26.0	40.0	98
McDowell	41.6	27.3	61.5	30	Wyoming	22.1	12.4	36.9	17

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

Corpus and Uterus, NOS - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016



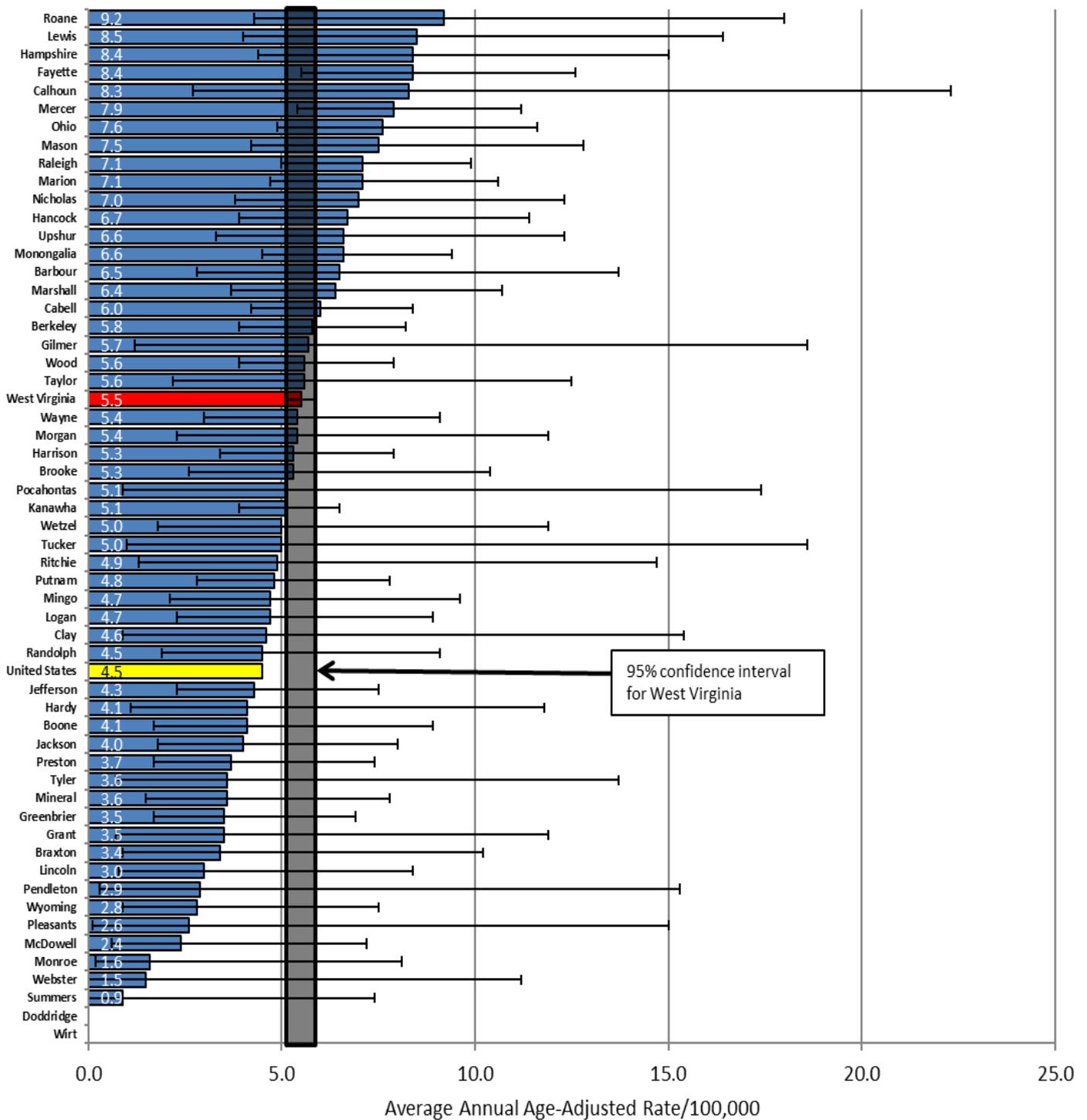
Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Esophagus - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	5.5	5.1	5.9	709	Mercer	7.9	5.4	11.2	35
Barbour	6.5	2.8	13.7	8	Mineral	3.6	1.5	7.8	8
Berkeley	5.8	3.9	8.2	34	Mingo	4.7	2.1	9.6	9
Boone	4.1	1.7	8.9	8	Monongalia	6.6	4.5	9.4	32
Braxton	3.4	0.9	10.2	4	Monroe	1.6	0.2	8.1	^
Brooke	5.3	2.6	10.4	11	Morgan	5.4	2.3	11.9	8
Cabell	6.0	4.2	8.4	37	Nicholas	7.0	3.8	12.3	14
Calhoun	8.3	2.7	22.3	5	Ohio	7.6	4.9	11.6	25
Clay	4.6	0.9	15.4	^	Pendleton	2.9	0.3	15.3	^
Doddridge	0.0	0.0		0	Pleasants	2.6	0.1	15.0	^
Fayette	8.4	5.5	12.6	27	Pocahontas	5.1	0.9	17.4	^
Gilmer	5.7	1.2	18.6	^	Preston	3.7	1.7	7.4	9
Grant	3.5	0.7	11.9	^	Putnam	4.8	2.8	7.8	18
Greenbrier	3.5	1.7	6.9	10	Raleigh	7.1	5.0	9.9	38
Hampshire	8.4	4.4	15.0	13	Randolph	4.5	1.9	9.1	9
Hancock	6.7	3.9	11.4	17	Ritchie	4.9	1.3	14.7	4
Hardy	4.1	1.1	11.8	4	Roane	9.2	4.3	18.0	10
Harrison	5.3	3.4	7.9	26	Summers	0.9	0.0	7.4	^
Jackson	4.0	1.8	8.0	9	Taylor	5.6	2.2	12.5	7
Jefferson	4.3	2.3	7.5	14	Tucker	5.0	1.0	18.6	^
Kanawha	5.1	3.9	6.5	67	Tyler	3.6	0.7	13.7	^
Lewis	8.5	4.0	16.4	10	Upshur	6.6	3.3	12.3	11
Lincoln	3.0	0.8	8.4	4	Wayne	5.4	3.0	9.1	16
Logan	4.7	2.3	8.9	11	Webster	1.5	0.0	11.2	^
Marion	7.1	4.7	10.6	28	Wetzel	5.0	1.8	11.9	6
Marshall	6.4	3.7	10.7	17	Wirt	0.0	0.0		0
Mason	7.5	4.2	12.8	16	Wood	5.6	3.9	7.9	36
McDowell	2.4	0.6	7.2	4	Wyoming	2.8	0.9	7.5	5

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

Esophagus - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016



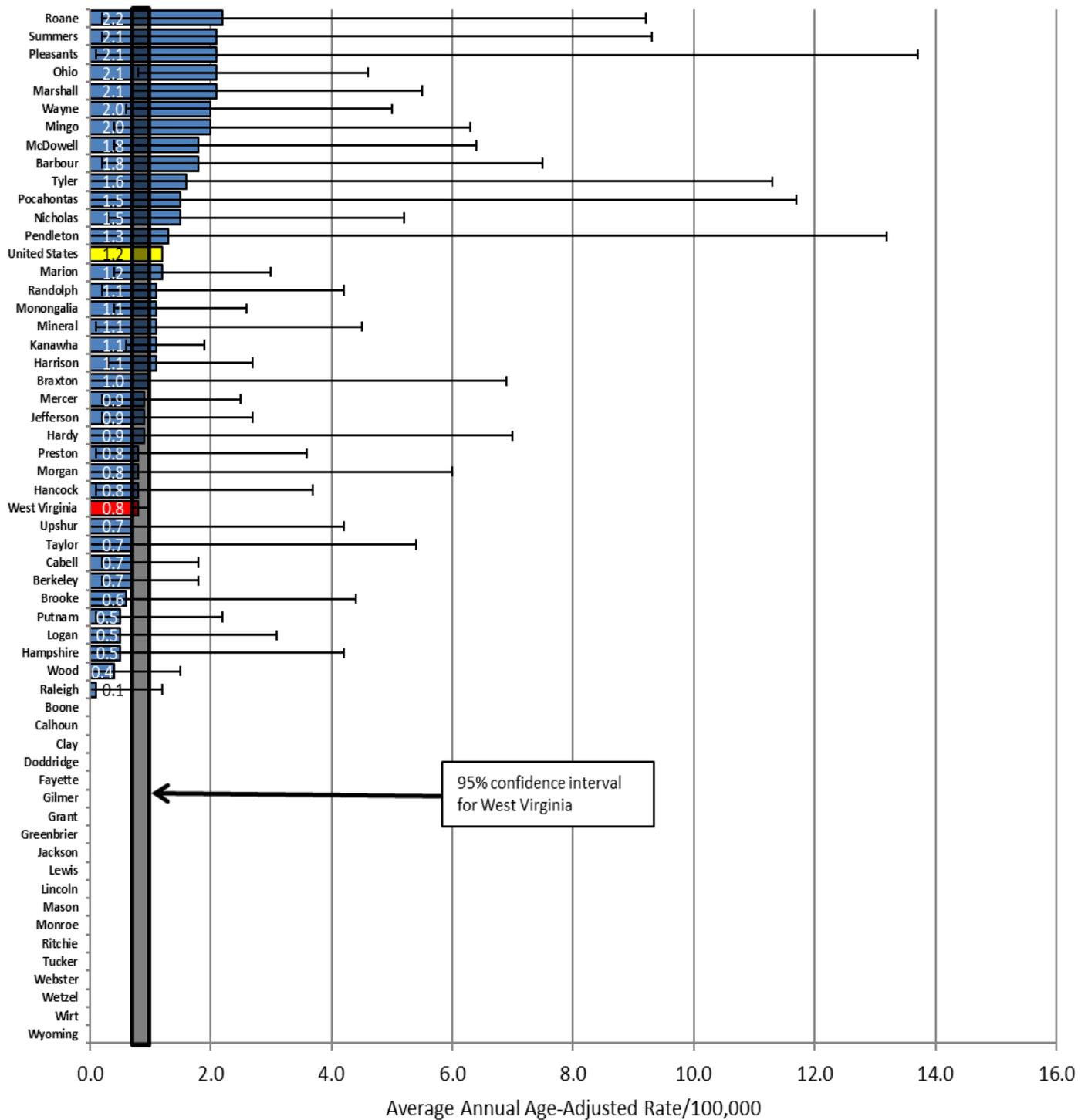
Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Gallbladder - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	0.8	0.7	1.0	103	Mercer	0.9	0.2	2.5	4
Barbour	1.8	0.2	7.5	^	Mineral	1.1	0.1	4.5	^
Berkeley	0.7	0.2	1.8	5	Mingo	2.0	0.4	6.3	^
Boone	0.0	0.0		0	Monongalia	1.1	0.4	2.6	5
Braxton	1.0	0.0	6.9	^	Monroe	0.0	0.0		0
Brooke	0.6	0.0	4.4	^	Morgan	0.8	0.0	6.0	^
Cabell	0.7	0.2	1.8	4	Nicholas	1.5	0.3	5.2	^
Calhoun	0.0	0.0		0	Ohio	2.1	0.8	4.6	7
Clay	0.0	0.0		0	Pendleton	1.3	0.0	13.2	^
Doddridge	0.0	0.0		0	Pleasants	2.1	0.1	13.7	^
Fayette	0.0	0.0		0	Pocahontas	1.5	0.0	11.7	^
Gilmer	0.0	0.0		0	Preston	0.8	0.1	3.6	^
Grant	0.0	0.0		0	Putnam	0.5	0.1	2.2	^
Greenbrier	0.0	0.0		0	Raleigh	0.1	0.0	1.2	^
Hampshire	0.5	0.0	4.2	^	Randolph	1.1	0.2	4.2	^
Hancock	0.8	0.1	3.7	^	Ritchie	0.0	0.0		0
Hardy	0.9	0.0	7.0	^	Roane	2.2	0.2	9.2	^
Harrison	1.1	0.3	2.7	5	Summers	2.1	0.2	9.3	^
Jackson	0.0	0.0		0	Taylor	0.7	0.0	5.4	^
Jefferson	0.9	0.2	2.7	4	Tucker	0.0	0.0		0
Kanawha	1.1	0.6	1.9	13	Tyler	1.6	0.0	11.3	^
Lewis	0.0	0.0		0	Upshur	0.7	0.0	4.2	^
Lincoln	0.0	0.0		0	Wayne	2.0	0.6	5.0	5
Logan	0.5	0.0	3.1	^	Webster	0.0	0.0		0
Marion	1.2	0.4	3.0	5	Wetzel	0.0	0.0		0
Marshall	2.1	0.7	5.5	5	Wirt	0.0	0.0		0
Mason	0.0	0.0		0	Wood	0.4	0.0	1.5	^
McDowell	1.8	0.4	6.4	^	Wyoming	0.0	0.0		0

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

Gallbladder - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016



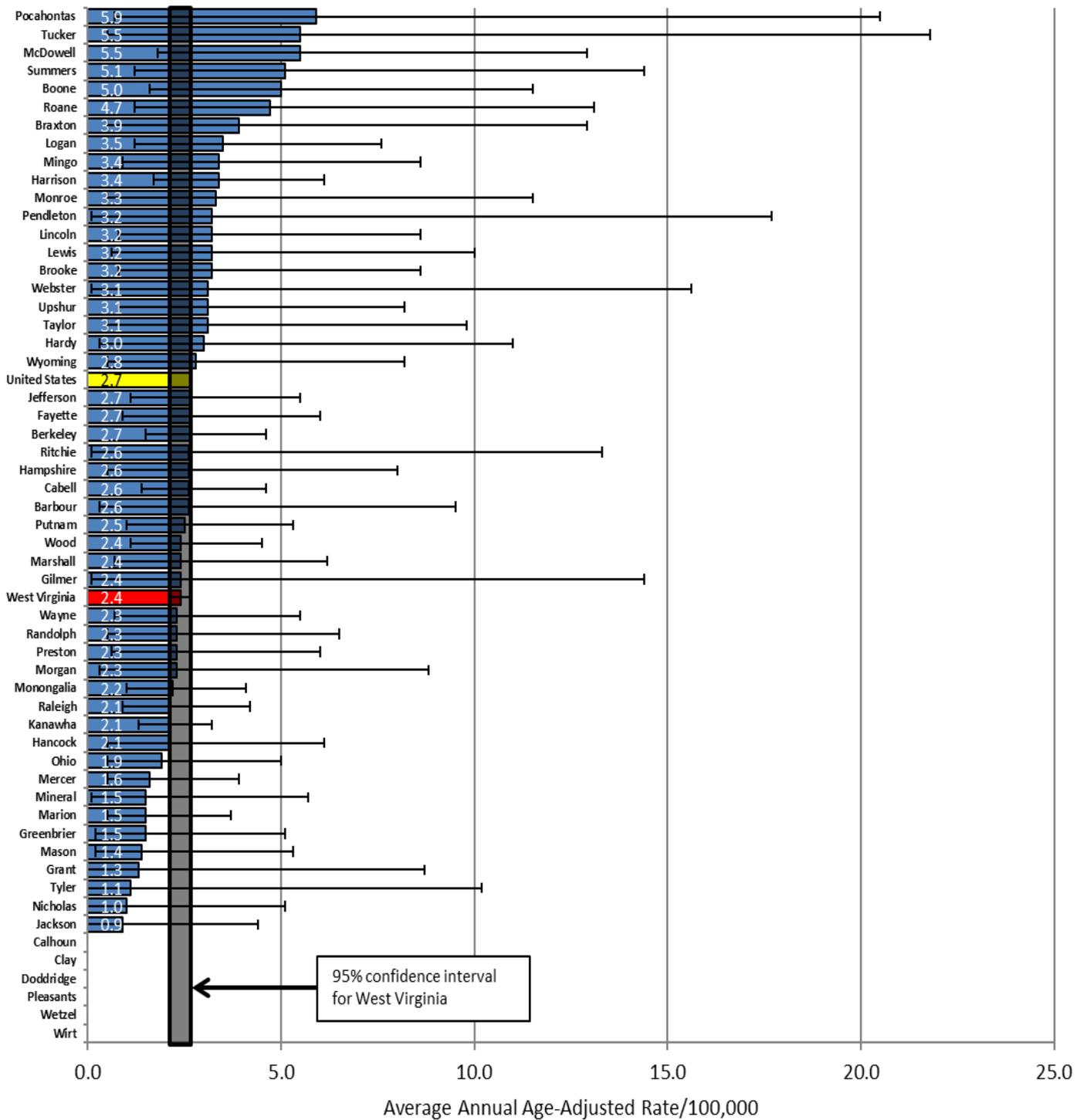
Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Hodgkin Lymphoma - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	2.4	2.1	2.7	224	Mercer	1.6	0.5	3.9	5
Barbour	2.6	0.3	9.5	^	Mineral	1.5	0.1	5.7	^
Berkeley	2.7	1.5	4.6	15	Mingo	3.4	0.9	8.6	4
Boone	5.0	1.6	11.5	5	Monongalia	2.2	1.0	4.1	10
Braxton	3.9	0.5	12.9	^	Monroe	3.3	0.5	11.5	^
Brooke	3.2	0.8	8.6	4	Morgan	2.3	0.3	8.8	^
Cabell	2.6	1.4	4.6	13	Nicholas	1.0	0.0	5.1	^
Calhoun	0.0	0.0		0	Ohio	1.9	0.5	5.0	4
Clay	0.0	0.0		0	Pendleton	3.2	0.1	17.7	^
Doddridge	0.0	0.0		0	Pleasants	0.0	0.0		0
Fayette	2.7	0.9	6.0	6	Pocahontas	5.9	0.7	20.5	^
Gilmer	2.4	0.1	14.4	^	Preston	2.3	0.6	6.0	4
Grant	1.3	0.0	8.7	^	Putnam	2.5	1.0	5.3	7
Greenbrier	1.5	0.2	5.1	^	Raleigh	2.1	0.9	4.2	8
Hampshire	2.6	0.5	8.0	^	Randolph	2.3	0.5	6.5	^
Hancock	2.1	0.5	6.1	4	Ritchie	2.6	0.1	13.3	^
Hardy	3.0	0.3	11.0	^	Roane	4.7	1.2	13.1	4
Harrison	3.4	1.7	6.1	12	Summers	5.1	1.2	14.4	4
Jackson	0.9	0.0	4.4	^	Taylor	3.1	0.5	9.8	^
Jefferson	2.7	1.1	5.5	7	Tucker	5.5	0.5	21.8	^
Kanawha	2.1	1.3	3.2	21	Tyler	1.1	0.0	10.2	^
Lewis	3.2	0.6	10.0	^	Upshur	3.1	0.8	8.2	4
Lincoln	3.2	0.8	8.6	4	Wayne	2.3	0.7	5.5	5
Logan	3.5	1.2	7.6	6	Webster	3.1	0.1	15.6	^
Marion	1.5	0.5	3.7	5	Wetzel	0.0	0.0		0
Marshall	2.4	0.7	6.2	5	Wirt	0.0	0.0		0
Mason	1.4	0.2	5.3	^	Wood	2.4	1.1	4.5	9
McDowell	5.5	1.8	12.9	5	Wyoming	2.8	0.5	8.2	^

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

Hodgkin Lymphoma - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016

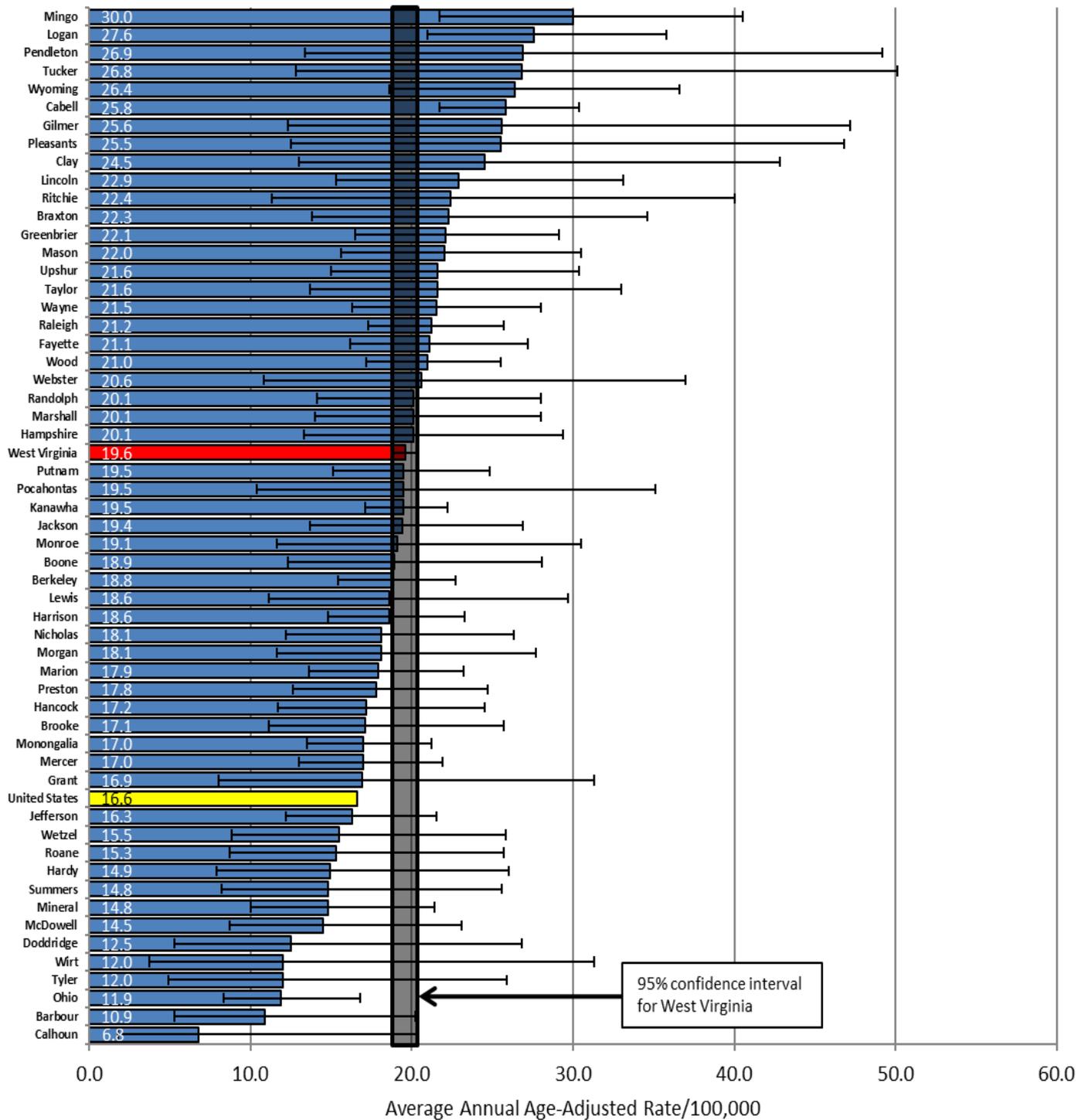


Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Kidney and Renal Pelvis - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	19.6	18.8	20.4	2,358	Mercer	17.0	13.0	21.9	68
Barbour	10.9	5.3	20.2	11	Mineral	14.8	10.0	21.4	32
Berkeley	18.8	15.4	22.7	113	Mingo	30.0	21.7	40.5	47
Boone	18.9	12.3	28.1	28	Monongalia	17.0	13.5	21.2	85
Braxton	22.3	13.8	34.6	23	Monroe	19.1	11.6	30.5	21
Brooke	17.1	11.1	25.7	29	Morgan	18.1	11.6	27.7	25
Cabell	25.8	21.7	30.4	153	Nicholas	18.1	12.2	26.3	32
Calhoun	6.8	1.8	20.3	4	Ohio	11.9	8.3	16.8	37
Clay	24.5	13.0	42.8	14	Pendleton	26.9	13.4	49.2	14
Doddridge	12.5	5.3	26.8	8	Pleasants	25.5	12.5	46.8	11
Fayette	21.1	16.2	27.2	67	Pocahontas	19.5	10.4	35.1	14
Gilmer	25.6	12.3	47.2	11	Preston	17.8	12.6	24.7	40
Grant	16.9	8.0	31.3	12	Putnam	19.5	15.1	24.8	71
Greenbrier	22.1	16.5	29.1	59	Raleigh	21.2	17.3	25.7	113
Hampshire	20.1	13.3	29.4	31	Randolph	20.1	14.1	28.0	40
Hancock	17.2	11.7	24.5	36	Ritchie	22.4	11.3	40.0	13
Hardy	14.9	7.9	26.0	14	Roane	15.3	8.7	25.7	17
Harrison	18.6	14.8	23.3	85	Summers	14.8	8.2	25.6	16
Jackson	19.4	13.7	26.9	40	Taylor	21.6	13.7	33.0	24
Jefferson	16.3	12.2	21.5	56	Tucker	26.8	12.8	50.1	13
Kanawha	19.5	17.1	22.2	250	Tyler	12.0	4.9	25.9	8
Lewis	18.6	11.1	29.7	20	Upshur	21.6	15.0	30.4	37
Lincoln	22.9	15.3	33.1	31	Wayne	21.5	16.3	28.0	62
Logan	27.6	21.0	35.8	65	Webster	20.6	10.8	37.0	14
Marion	17.9	13.6	23.2	63	Wetzel	15.5	8.8	25.8	18
Marshall	20.1	14.0	28.0	41	Wirt	12.0	3.7	31.3	5
Mason	22.0	15.6	30.5	41	Wood	21.0	17.2	25.5	113
McDowell	14.5	8.7	23.1	21	Wyoming	26.4	18.6	36.6	42

Kidney and Renal Pelvis - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016



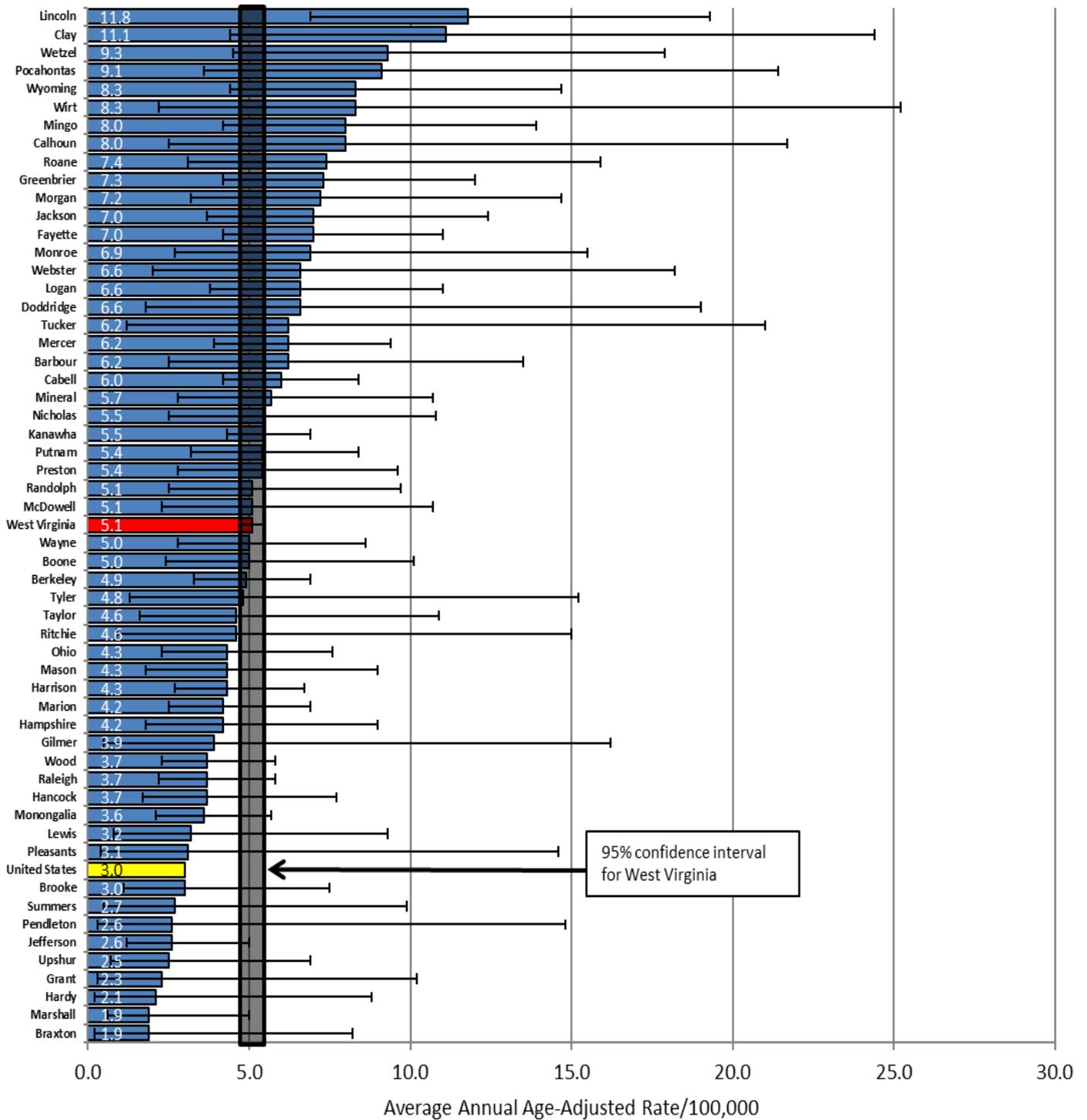
Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Larynx - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	5.1	4.7	5.5	660	Mercer	6.2	3.9	9.4	25
Barbour	6.2	2.5	13.5	7	Mineral	5.7	2.8	10.7	11
Berkeley	4.9	3.3	6.9	33	Mingo	8.0	4.2	13.9	14
Boone	5.0	2.4	10.1	10	Monongalia	3.6	2.1	5.7	18
Braxton	1.9	0.2	8.2	^	Monroe	6.9	2.7	15.5	7
Brooke	3.0	1.1	7.5	6	Morgan	7.2	3.2	14.7	9
Cabell	6.0	4.2	8.4	38	Nicholas	5.5	2.5	10.8	10
Calhoun	8.0	2.5	21.7	5	Ohio	4.3	2.3	7.6	14
Clay	11.1	4.4	24.4	7	Pendleton	2.6	0.3	14.8	^
Doddridge	6.6	1.8	19.0	4	Pleasants	3.1	0.4	14.6	^
Fayette	7.0	4.2	11.0	21	Pocahontas	9.1	3.6	21.4	7
Gilmer	3.9	0.5	16.2	^	Preston	5.4	2.8	9.6	13
Grant	2.3	0.3	10.2	^	Putnam	5.4	3.2	8.4	20
Greenbrier	7.3	4.2	12.0	18	Raleigh	3.7	2.2	5.8	21
Hampshire	4.2	1.8	9.0	8	Randolph	5.1	2.5	9.7	11
Hancock	3.7	1.7	7.7	9	Ritchie	4.6	0.9	15.0	^
Hardy	2.1	0.2	8.8	^	Roane	7.4	3.1	15.9	8
Harrison	4.3	2.7	6.7	22	Summers	2.7	0.5	9.9	^
Jackson	7.0	3.7	12.4	13	Taylor	4.6	1.6	10.9	6
Jefferson	2.6	1.2	5.0	10	Tucker	6.2	1.2	21.0	^
Kanawha	5.5	4.3	6.9	75	Tyler	4.8	1.3	15.2	4
Lewis	3.2	0.8	9.3	4	Upshur	2.5	0.7	6.9	4
Lincoln	11.8	6.9	19.3	18	Wayne	5.0	2.8	8.6	15
Logan	6.6	3.8	11.0	18	Webster	6.6	2.0	18.2	5
Marion	4.2	2.5	6.9	18	Wetzel	9.3	4.5	17.9	11
Marshall	1.9	0.6	5.0	5	Wirt	8.3	2.2	25.2	4
Mason	4.3	1.8	9.0	8	Wood	3.7	2.3	5.8	22
McDowell	5.1	2.3	10.7	9	Wyoming	8.3	4.4	14.7	14

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

Larynx - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016

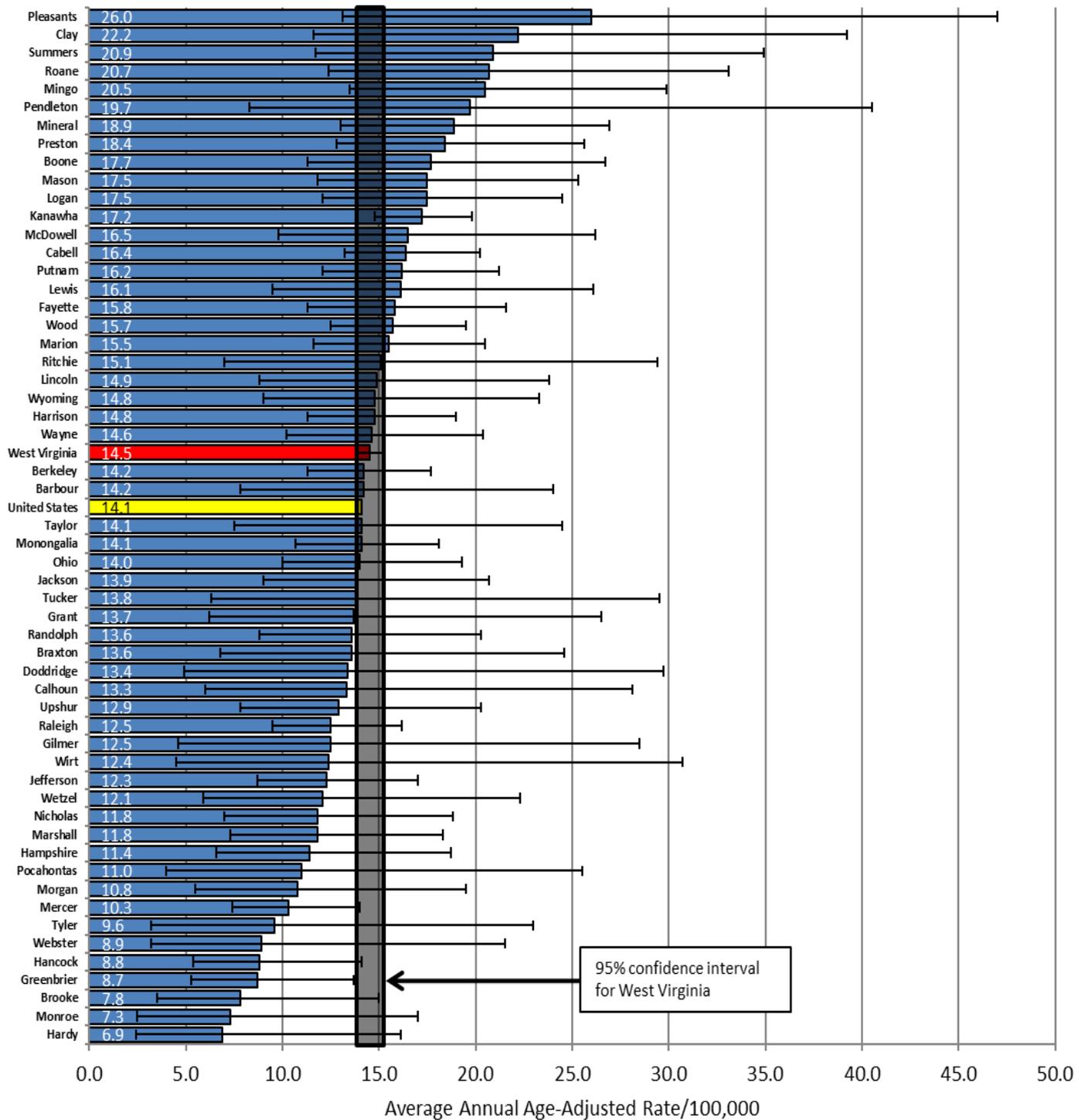


Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Leukemia - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	14.5	13.8	15.3	1,682	Mercer	10.3	7.4	14.0	46
Barbour	14.2	7.8	24.0	16	Mineral	18.9	13.0	26.9	36
Berkeley	14.2	11.3	17.7	84	Mingo	20.5	13.5	29.9	29
Boone	17.7	11.3	26.7	25	Monongalia	14.1	10.7	18.1	63
Braxton	13.6	6.8	24.6	13	Monroe	7.3	2.5	17.0	6
Brooke	7.8	3.5	15.0	10	Morgan	10.8	5.5	19.5	13
Cabell	16.4	13.2	20.2	96	Nicholas	11.8	7.0	18.8	20
Calhoun	13.3	6.0	28.1	9	Ohio	14.0	10.0	19.3	43
Clay	22.2	11.6	39.2	13	Pendleton	19.7	8.3	40.5	10
Doddridge	13.4	4.9	29.7	7	Pleasants	26.0	13.1	47.0	12
Fayette	15.8	11.3	21.6	44	Pocahontas	11.0	4.0	25.5	7
Gilmer	12.5	4.6	28.5	6	Preston	18.4	12.8	25.6	38
Grant	13.7	6.2	26.5	10	Putnam	16.2	12.1	21.2	57
Greenbrier	8.7	5.3	13.7	22	Raleigh	12.5	9.5	16.2	62
Hampshire	11.4	6.6	18.7	19	Randolph	13.6	8.8	20.3	27
Hancock	8.8	5.4	14.1	21	Ritchie	15.1	7.0	29.4	10
Hardy	6.9	2.4	16.1	6	Roane	20.7	12.4	33.1	20
Harrison	14.8	11.3	19.0	66	Summers	20.9	11.7	34.9	18
Jackson	13.9	9.0	20.7	27	Taylor	14.1	7.5	24.5	14
Jefferson	12.3	8.7	17.0	40	Tucker	13.8	6.3	29.5	9
Kanawha	17.2	14.8	19.8	204	Tyler	9.6	3.2	23.0	6
Lewis	16.1	9.5	26.1	19	Upshur	12.9	7.8	20.3	20
Lincoln	14.9	8.8	23.8	19	Wayne	14.6	10.2	20.4	39
Logan	17.5	12.1	24.5	37	Webster	8.9	3.2	21.5	6
Marion	15.5	11.6	20.5	55	Wetzel	12.1	5.9	22.3	12
Marshall	11.8	7.3	18.3	24	Wirt	12.4	4.5	30.7	6
Mason	17.5	11.8	25.3	32	Wood	15.7	12.5	19.5	88
McDowell	16.5	9.8	26.2	20	Wyoming	14.8	9.0	23.3	21

Leukemia - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016



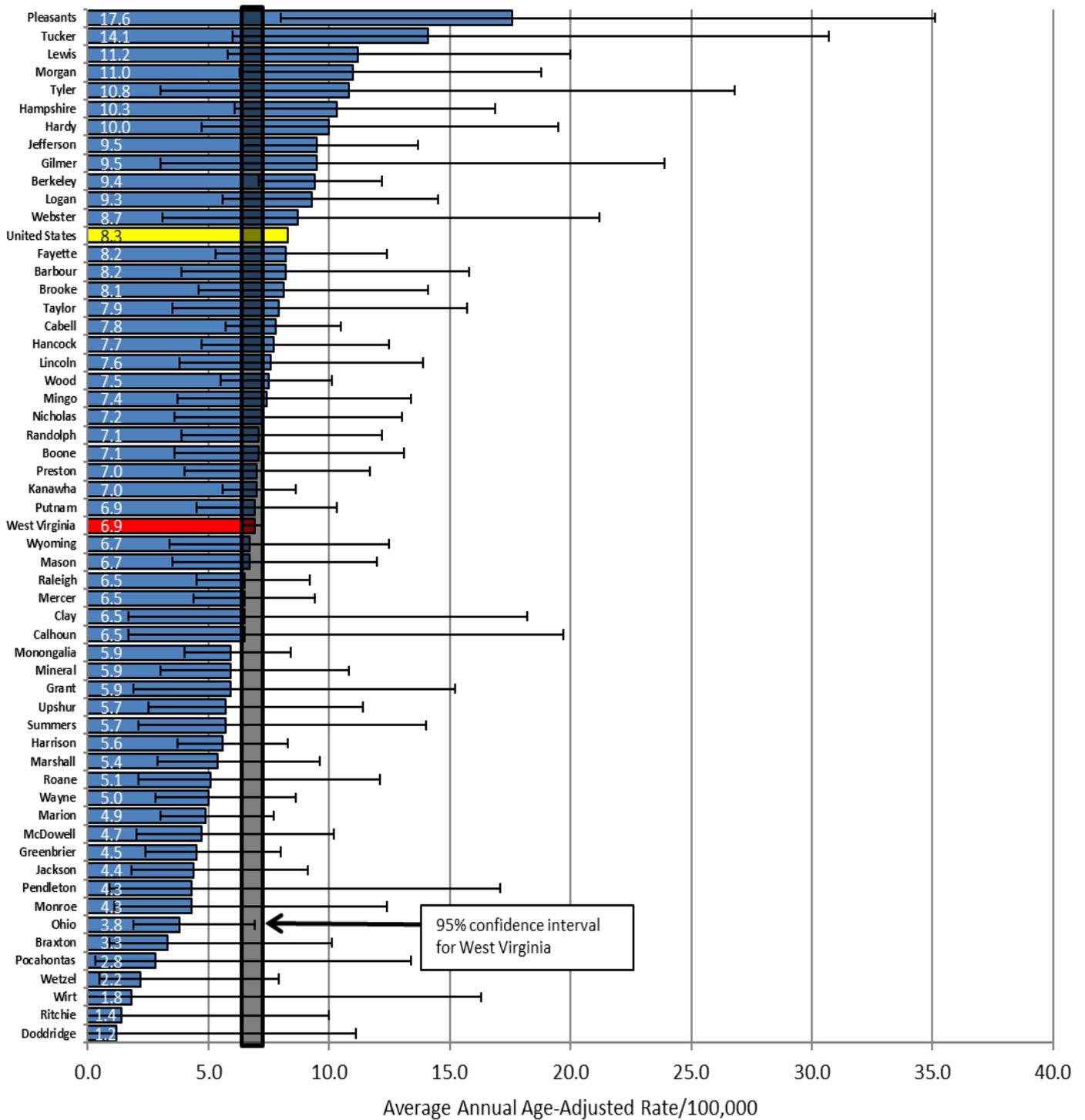
Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Liver and Bile Duct - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	6.9	6.4	7.3	895	Mercer	6.5	4.4	9.4	31
Barbour	8.2	3.9	15.8	10	Mineral	5.9	3.0	10.8	12
Berkeley	9.4	7.1	12.2	61	Mingo	7.4	3.7	13.4	12
Boone	7.1	3.6	13.1	12	Monongalia	5.9	4.0	8.4	32
Braxton	3.3	0.9	10.1	4	Monroe	4.3	1.1	12.4	4
Brooke	8.1	4.6	14.1	16	Morgan	11.0	6.3	18.8	17
Cabell	7.8	5.7	10.5	49	Nicholas	7.2	3.6	13.0	13
Calhoun	6.5	1.7	19.7	4	Ohio	3.8	1.9	6.9	12
Clay	6.5	1.7	18.2	4	Pendleton	4.3	0.9	17.1	^
Doddridge	1.2	0.0	11.1	^	Pleasants	17.6	8.0	35.1	9
Fayette	8.2	5.3	12.4	26	Pocahontas	2.8	0.3	13.4	^
Gilmer	9.5	3.0	23.9	5	Preston	7.0	4.0	11.7	16
Grant	5.9	1.9	15.2	5	Putnam	6.9	4.5	10.3	27
Greenbrier	4.5	2.4	8.0	14	Raleigh	6.5	4.5	9.2	36
Hampshire	10.3	6.1	16.9	19	Randolph	7.1	3.9	12.2	15
Hancock	7.7	4.7	12.5	20	Ritchie	1.4	0.0	10.0	^
Hardy	10.0	4.7	19.5	10	Roane	5.1	2.1	12.1	7
Harrison	5.6	3.7	8.3	28	Summers	5.7	2.1	14.0	6
Jackson	4.4	1.8	9.1	8	Taylor	7.9	3.5	15.7	9
Jefferson	9.5	6.4	13.7	31	Tucker	14.1	6.0	30.7	8
Kanawha	7.0	5.6	8.6	97	Tyler	10.8	3.0	26.8	5
Lewis	11.2	5.8	20.0	13	Upshur	5.7	2.5	11.4	9
Lincoln	7.6	3.8	13.9	12	Wayne	5.0	2.8	8.6	15
Logan	9.3	5.6	14.5	21	Webster	8.7	3.1	21.2	6
Marion	4.9	3.0	7.7	21	Wetzel	2.2	0.5	7.9	^
Marshall	5.4	2.9	9.6	14	Wirt	1.8	0.0	16.3	^
Mason	6.7	3.5	12.0	13	Wood	7.5	5.5	10.1	46
McDowell	4.7	2.0	10.2	8	Wyoming	6.7	3.4	12.5	12

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

Liver and Bile Duct - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016

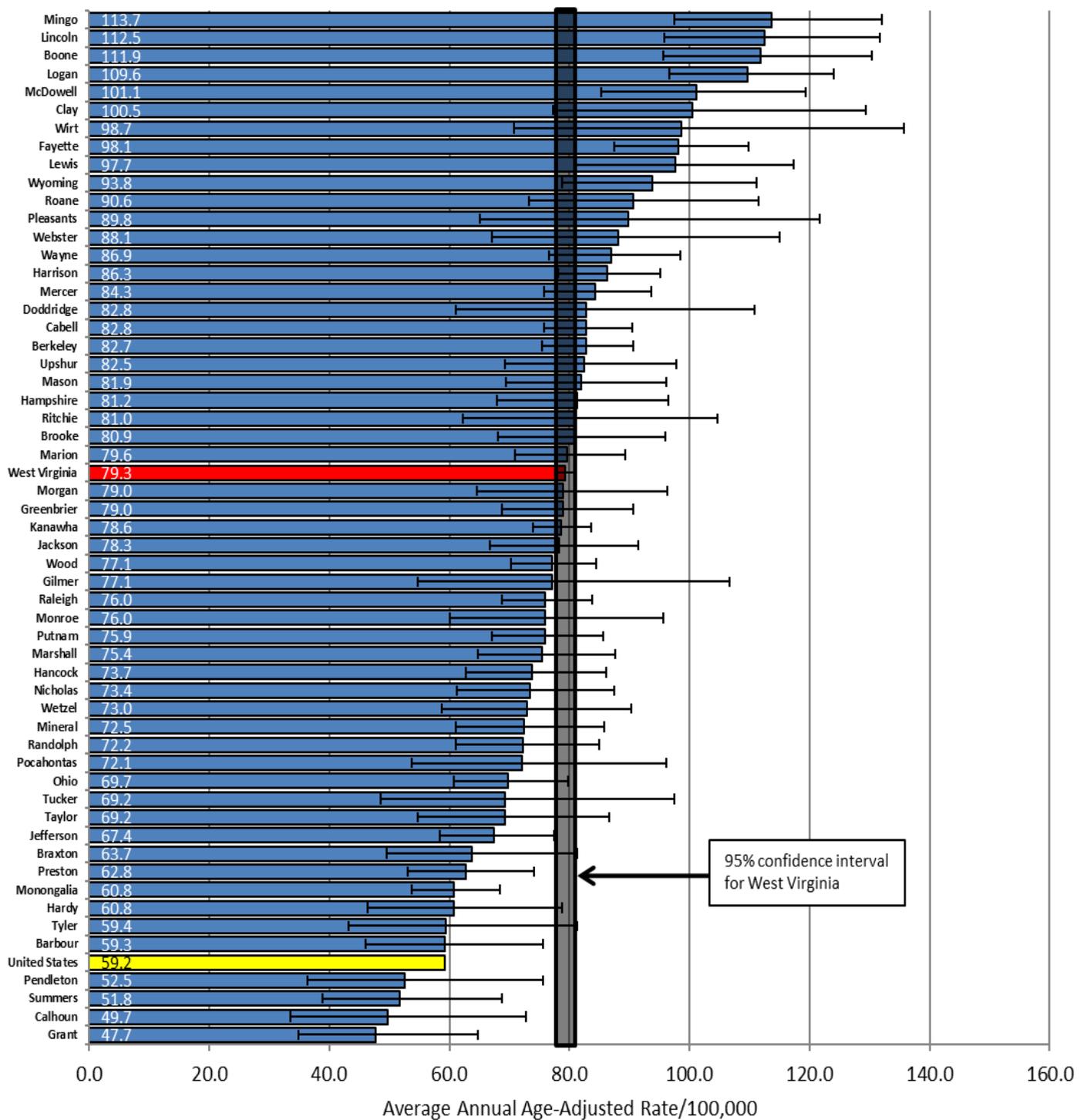


Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Lung and Bronchus - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	79.3	77.8	80.9	10,237	Mercer	84.3	75.8	93.6	382
Barbour	59.3	46.1	75.6	71	Mineral	72.5	61.1	85.8	148
Berkeley	82.7	75.4	90.6	503	Mingo	113.7	97.4	132.1	187
Boone	111.9	95.7	130.4	179	Monongalia	60.8	53.7	68.5	284
Braxton	63.7	49.6	81.2	72	Monroe	76.0	60.0	95.7	82
Brooke	80.9	68.1	95.9	149	Morgan	79.0	64.5	96.3	109
Cabell	82.8	75.7	90.4	523	Nicholas	73.4	61.3	87.4	139
Calhoun	49.7	33.5	72.8	31	Ohio	69.7	60.7	79.8	229
Clay	100.5	77.2	129.4	66	Pendleton	52.5	36.4	75.6	35
Doddridge	82.8	61.0	110.8	50	Pleasants	89.8	65.1	121.7	45
Fayette	98.1	87.4	109.9	319	Pocahontas	72.1	53.8	96.1	54
Gilmer	77.1	54.7	106.6	39	Preston	62.8	53.0	74.1	151
Grant	47.7	34.9	64.8	47	Putnam	75.9	67.1	85.7	275
Greenbrier	79.0	68.8	90.6	226	Raleigh	76.0	68.8	83.8	426
Hampshire	81.2	68.0	96.5	142	Randolph	72.2	61.0	85.0	155
Hancock	73.7	62.8	86.1	175	Ritchie	81.0	62.2	104.7	66
Hardy	60.8	46.4	78.8	63	Roane	90.6	73.2	111.5	99
Harrison	86.3	78.1	95.2	422	Summers	51.8	38.8	68.7	56
Jackson	78.3	66.8	91.5	168	Taylor	69.2	54.8	86.6	83
Jefferson	67.4	58.4	77.4	217	Tucker	69.2	48.5	97.4	40
Kanawha	78.6	73.9	83.6	1,074	Tyler	59.4	43.2	81.2	45
Lewis	97.7	80.9	117.4	122	Upshur	82.5	69.2	97.8	141
Lincoln	112.5	95.8	131.7	168	Wayne	86.9	76.6	98.4	265
Logan	109.6	96.6	124.0	274	Webster	88.1	67.0	115.0	62
Marion	79.6	70.9	89.3	312	Wetzel	73.0	58.7	90.3	94
Marshall	75.4	64.7	87.6	187	Wirt	98.7	70.8	135.8	43
Mason	81.9	69.5	96.1	161	Wood	77.1	70.2	84.5	480
McDowell	101.1	85.3	119.4	154	Wyoming	93.8	78.7	111.2	147

Lung and Bronchus - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016

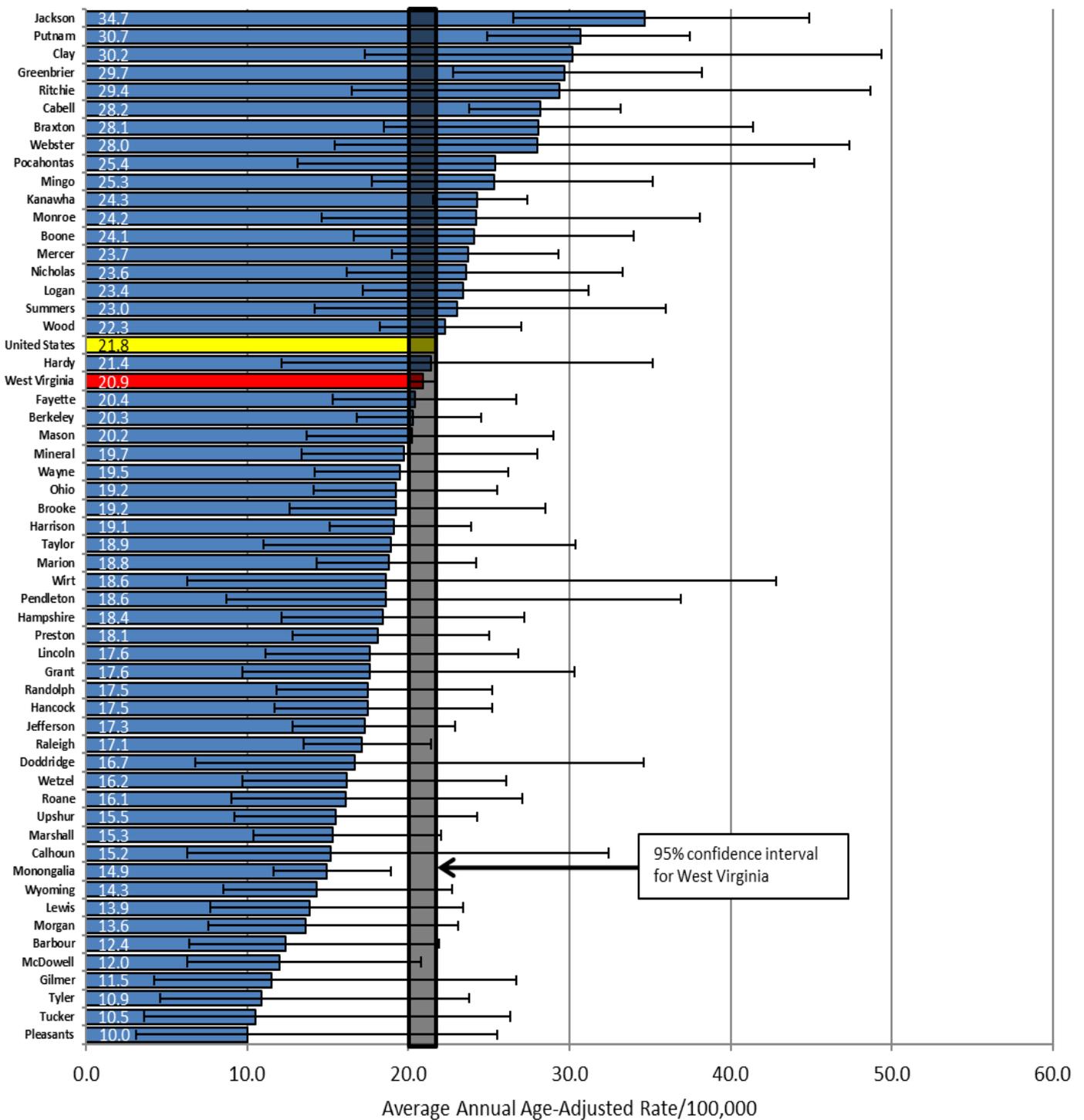


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**Melanomas of the Skin - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	20.9	20.0	21.8	2,386	Mercer	23.7	19.0	29.3	99
Barbour	12.4	6.4	21.9	13	Mineral	19.7	13.4	28.0	34
Berkeley	20.3	16.8	24.5	120	Mingo	25.3	17.7	35.2	39
Boone	24.1	16.6	34.0	37	Monongalia	14.9	11.6	18.9	75
Braxton	28.1	18.5	41.4	29	Monroe	24.2	14.6	38.1	23
Brooke	19.2	12.6	28.5	30	Morgan	13.6	7.6	23.1	16
Cabell	28.2	23.8	33.2	156	Nicholas	23.6	16.2	33.3	37
Calhoun	15.2	6.3	32.4	8	Ohio	19.2	14.1	25.5	54
Clay	30.2	17.3	49.4	18	Pendleton	18.6	8.7	36.9	11
Doddridge	16.7	6.8	34.6	8	Pleasants	10.0	3.1	25.5	5
Fayette	20.4	15.3	26.7	58	Pocahontas	25.4	13.1	45.2	14
Gilmer	11.5	4.2	26.7	6	Preston	18.1	12.8	25.0	40
Grant	17.6	9.7	30.3	16	Putnam	30.7	24.9	37.5	102
Greenbrier	29.7	22.8	38.2	72	Raleigh	17.1	13.5	21.4	84
Hampshire	18.4	12.1	27.2	29	Randolph	17.5	11.8	25.2	33
Hancock	17.5	11.7	25.2	33	Ritchie	29.4	16.5	48.7	17
Hardy	21.4	12.1	35.2	17	Roane	16.1	9.0	27.1	17
Harrison	19.1	15.1	23.9	84	Summers	23.0	14.2	36.0	23
Jackson	34.7	26.5	44.9	65	Taylor	18.9	11.0	30.4	18
Jefferson	17.3	12.8	22.9	53	Tucker	10.5	3.6	26.3	6
Kanawha	24.3	21.5	27.4	295	Tyler	10.9	4.6	23.8	8
Lewis	13.9	7.7	23.4	16	Upshur	15.5	9.2	24.3	21
Lincoln	17.6	11.1	26.8	24	Wayne	19.5	14.2	26.2	48
Logan	23.4	17.2	31.2	51	Webster	28.0	15.4	47.4	16
Marion	18.8	14.3	24.2	64	Wetzel	16.2	9.7	26.1	20
Marshall	15.3	10.4	22.0	34	Wirt	18.6	6.3	42.8	6
Mason	20.2	13.7	29.0	34	Wood	22.3	18.2	27.0	116
McDowell	12.0	6.3	20.8	14	Wyoming	14.3	8.5	22.7	20

Melanomas of the Skin - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016



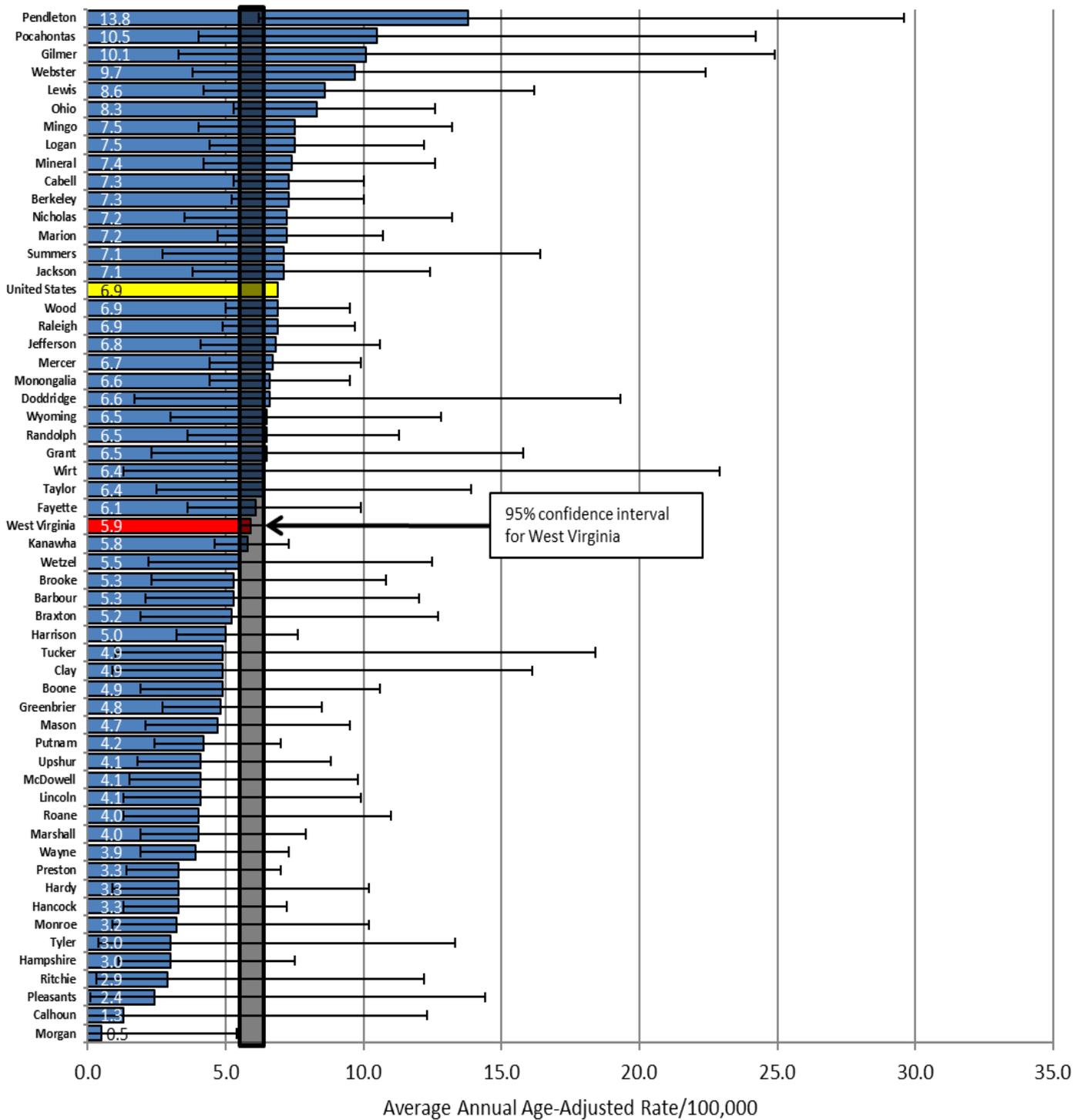
Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Myeloma - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	5.9	5.5	6.4	750	Mercer	6.7	4.4	9.9	29
Barbour	5.3	2.1	12.0	7	Mineral	7.4	4.2	12.6	16
Berkeley	7.3	5.2	10.0	43	Mingo	7.5	4.0	13.2	14
Boone	4.9	1.9	10.6	7	Monongalia	6.6	4.4	9.5	31
Braxton	5.2	1.9	12.7	6	Monroe	3.2	0.9	10.2	4
Brooke	5.3	2.3	10.8	9	Morgan	0.5	0.0	5.4	^
Cabell	7.3	5.3	10.0	43	Nicholas	7.2	3.5	13.2	12
Calhoun	1.3	0.0	12.3	^	Ohio	8.3	5.3	12.6	26
Clay	4.9	0.9	16.1	^	Pendleton	13.8	6.2	29.6	9
Doddridge	6.6	1.7	19.3	4	Pleasants	2.4	0.1	14.4	^
Fayette	6.1	3.6	9.9	18	Pocahontas	10.5	4.0	24.2	7
Gilmer	10.1	3.3	24.9	5	Preston	3.3	1.4	7.0	8
Grant	6.5	2.3	15.8	6	Putnam	4.2	2.4	7.0	16
Greenbrier	4.8	2.7	8.5	15	Raleigh	6.9	4.9	9.7	38
Hampshire	3.0	1.1	7.5	6	Randolph	6.5	3.6	11.3	15
Hancock	3.3	1.3	7.2	7	Ritchie	2.9	0.3	12.2	^
Hardy	3.3	0.9	10.2	4	Roane	4.0	1.3	11.0	5
Harrison	5.0	3.2	7.6	25	Summers	7.1	2.7	16.4	7
Jackson	7.1	3.8	12.4	14	Taylor	6.4	2.5	13.9	7
Jefferson	6.8	4.1	10.6	20	Tucker	4.9	1.0	18.4	^
Kanawha	5.8	4.6	7.3	80	Tyler	3.0	0.4	13.3	^
Lewis	8.6	4.2	16.2	11	Upshur	4.1	1.8	8.8	8
Lincoln	4.1	1.3	9.9	5	Wayne	3.9	1.9	7.3	11
Logan	7.5	4.4	12.2	18	Webster	9.7	3.8	22.4	7
Marion	7.2	4.7	10.7	28	Wetzel	5.5	2.2	12.5	7
Marshall	4.0	1.9	7.9	10	Wirt	6.4	1.3	22.9	^
Mason	4.7	2.1	9.5	9	Wood	6.9	5.0	9.5	42
McDowell	4.1	1.5	9.8	6	Wyoming	6.5	3.0	12.8	9

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

Myeloma - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016

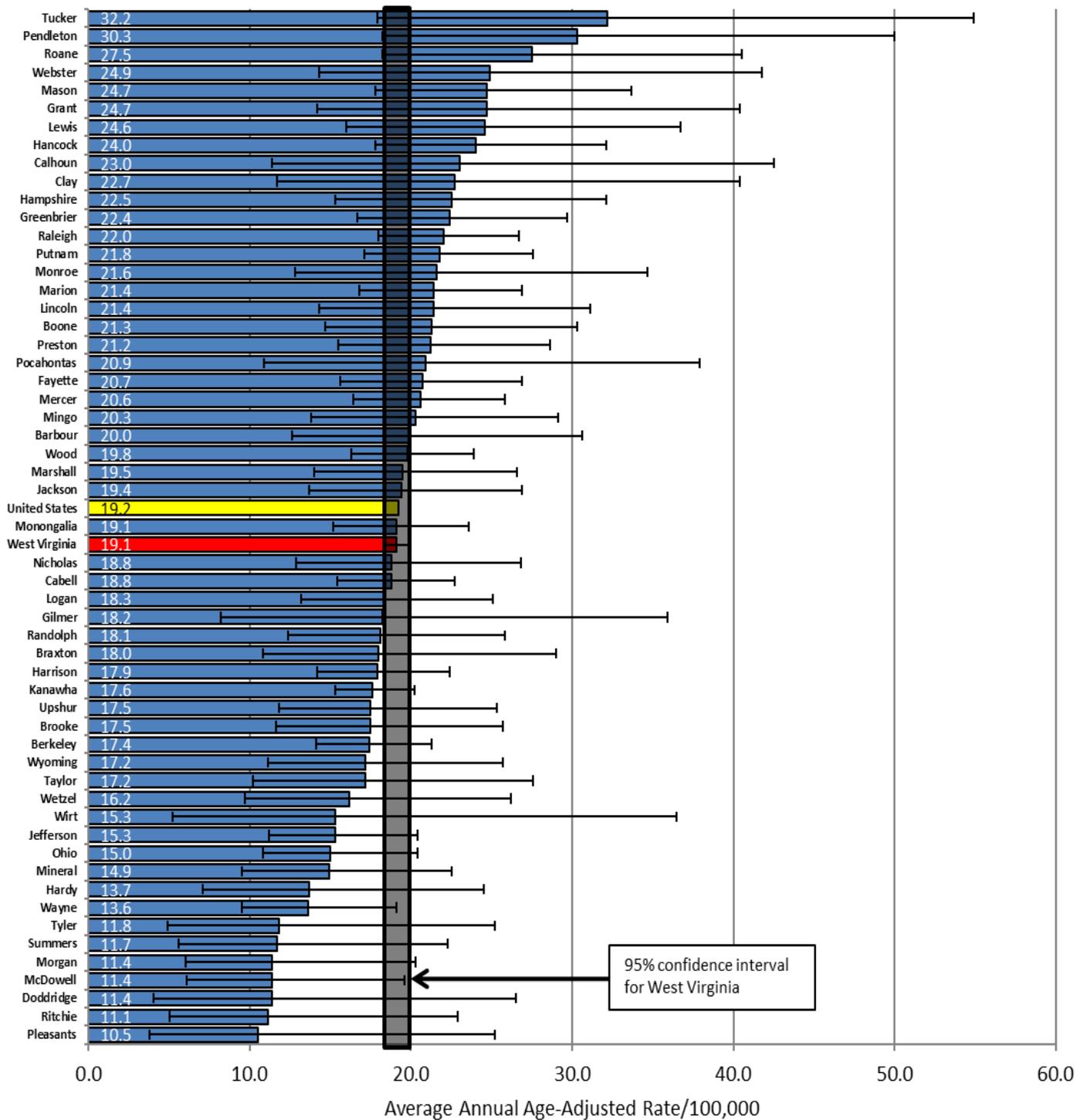


Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Non-Hodgkin Lymphoma - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	19.1	18.3	19.9	2,310	Mercer	20.6	16.4	25.8	88
Barbour	20.0	12.6	30.6	23	Mineral	14.9	9.5	22.5	26
Berkeley	17.4	14.1	21.3	104	Mingo	20.3	13.8	29.1	34
Boone	21.3	14.7	30.3	35	Monongalia	19.1	15.2	23.6	90
Braxton	18.0	10.8	29.0	20	Monroe	21.6	12.8	34.7	21
Brooke	17.5	11.6	25.7	31	Morgan	11.4	6.0	20.3	14
Cabell	18.8	15.4	22.7	114	Nicholas	18.8	12.9	26.8	34
Calhoun	23.0	11.4	42.5	12	Ohio	15.0	10.8	20.4	47
Clay	22.7	11.7	40.4	13	Pendleton	30.3	18.2	50.0	20
Doddridge	11.4	4.0	26.5	6	Pleasants	10.5	3.8	25.2	6
Fayette	20.7	15.6	26.9	61	Pocahontas	20.9	10.9	37.9	14
Gilmer	18.2	8.2	35.9	9	Preston	21.2	15.5	28.6	48
Grant	24.7	14.2	40.4	20	Putnam	21.8	17.1	27.6	74
Greenbrier	22.4	16.7	29.7	56	Raleigh	22.0	18.0	26.7	114
Hampshire	22.5	15.3	32.1	35	Randolph	18.1	12.4	25.8	35
Hancock	24.0	17.8	32.1	54	Ritchie	11.1	5.0	22.9	9
Hardy	13.7	7.1	24.5	13	Roane	27.5	18.2	40.5	29
Harrison	17.9	14.2	22.4	83	Summers	11.7	5.6	22.3	11
Jackson	19.4	13.7	26.9	40	Taylor	17.2	10.2	27.6	19
Jefferson	15.3	11.2	20.4	50	Tucker	32.2	17.9	54.9	17
Kanawha	17.6	15.3	20.2	230	Tyler	11.8	4.9	25.2	8
Lewis	24.6	16.0	36.7	27	Upshur	17.5	11.8	25.3	31
Lincoln	21.4	14.3	31.1	30	Wayne	13.6	9.5	19.1	38
Logan	18.3	13.2	25.1	44	Webster	24.9	14.3	41.8	18
Marion	21.4	16.8	26.9	79	Wetzel	16.2	9.7	26.2	20
Marshall	19.5	14.0	26.6	44	Wirt	15.3	5.2	36.5	6
Mason	24.7	17.8	33.7	46	Wood	19.8	16.3	23.9	117
McDowell	11.4	6.1	19.6	15	Wyoming	17.2	11.1	25.7	28

Non-Hodgkin Lymphoma - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016

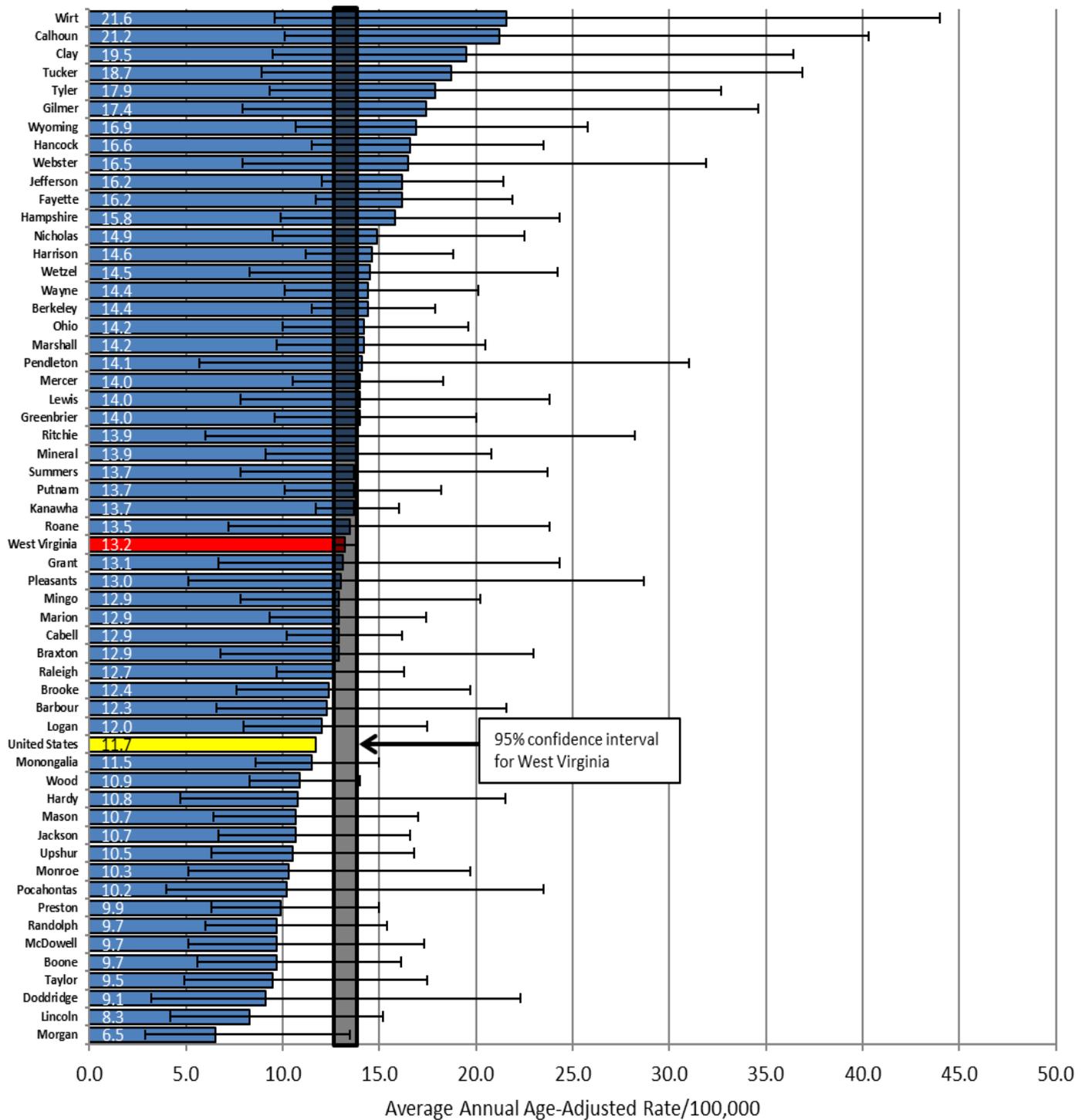


Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Oral Cavity and Pharynx - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	13.2	12.6	13.9	1,621	Mercer	14.0	10.5	18.3	60
Barbour	12.3	6.6	21.6	14	Mineral	13.9	9.1	20.8	27
Berkeley	14.4	11.5	17.9	90	Mingo	12.9	7.8	20.2	21
Boone	9.7	5.6	16.1	18	Monongalia	11.5	8.6	15.0	55
Braxton	12.9	6.8	23.0	13	Monroe	10.3	5.1	19.7	11
Brooke	12.4	7.6	19.7	22	Morgan	6.5	2.9	13.5	9
Cabell	12.9	10.2	16.2	79	Nicholas	14.9	9.5	22.5	27
Calhoun	21.2	10.1	40.3	11	Ohio	14.2	10.0	19.6	42
Clay	19.5	9.5	36.4	11	Pendleton	14.1	5.7	31.0	8
Doddridge	9.1	3.2	22.3	6	Pleasants	13.0	5.1	28.7	7
Fayette	16.2	11.7	21.9	47	Pocahontas	10.2	4.0	23.5	7
Gilmer	17.4	7.9	34.6	9	Preston	9.9	6.3	15.0	25
Grant	13.1	6.7	24.3	12	Putnam	13.7	10.1	18.2	50
Greenbrier	14.0	9.6	20.0	35	Raleigh	12.7	9.7	16.3	65
Hampshire	15.8	9.9	24.3	24	Randolph	9.7	6.0	15.4	21
Hancock	16.6	11.5	23.5	37	Ritchie	13.9	6.0	28.2	9
Hardy	10.8	4.7	21.5	9	Roane	13.5	7.2	23.8	14
Harrison	14.6	11.2	18.8	67	Summers	13.7	7.8	23.7	16
Jackson	10.7	6.7	16.6	23	Taylor	9.5	4.9	17.5	12
Jefferson	16.2	12.0	21.4	53	Tucker	18.7	8.9	36.9	11
Kanawha	13.7	11.7	16.0	174	Tyler	17.9	9.3	32.7	13
Lewis	14.0	7.8	23.8	15	Upshur	10.5	6.3	16.8	19
Lincoln	8.3	4.2	15.2	12	Wayne	14.4	10.1	20.1	39
Logan	12.0	8.0	17.5	31	Webster	16.5	7.9	31.9	11
Marion	12.9	9.3	17.4	47	Wetzel	14.5	8.3	24.2	17
Marshall	14.2	9.7	20.5	33	Wirt	21.6	9.6	44.0	9
Mason	10.7	6.4	17.0	20	Wood	10.9	8.3	14.0	65
McDowell	9.7	5.1	17.3	14	Wyoming	16.9	10.7	25.8	25

Oral Cavity and Pharynx - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016



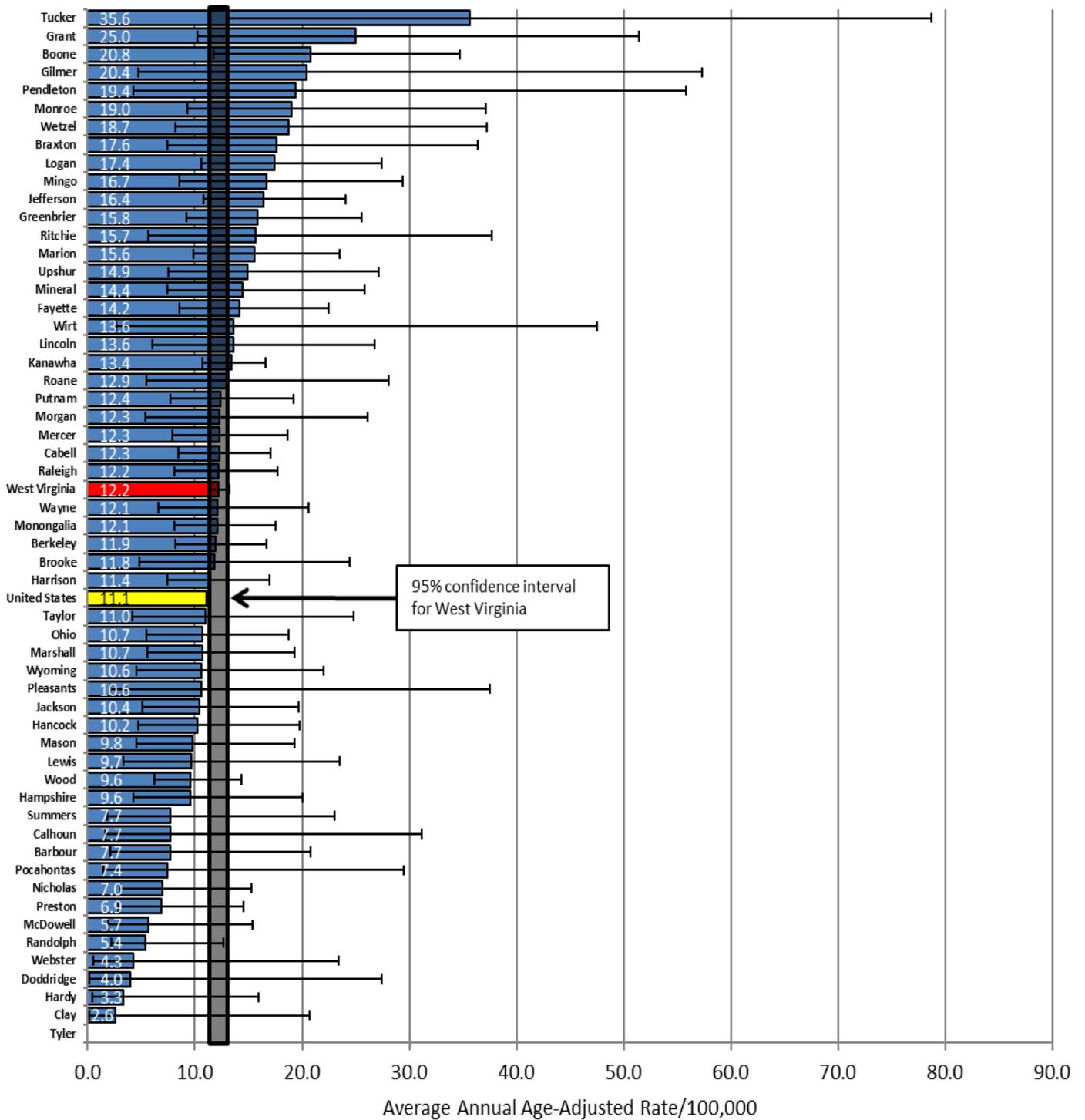
Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Ovary - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	12.2	11.3	13.2	768	Mercer	12.3	7.9	18.6	27
Barbour	7.7	2.1	20.8	4	Mineral	14.4	7.4	25.8	14
Berkeley	11.9	8.2	16.7	35	Mingo	16.7	8.6	29.4	13
Boone	20.8	11.7	34.7	17	Monongalia	12.1	8.1	17.5	31
Braxton	17.6	7.4	36.4	9	Monroe	19.0	9.3	37.1	11
Brooke	11.8	4.8	24.4	9	Morgan	12.3	5.4	26.1	9
Cabell	12.3	8.5	17.1	39	Nicholas	7.0	3.0	15.3	8
Calhoun	7.7	1.6	31.2	^	Ohio	10.7	5.5	18.7	15
Clay	2.6	0.1	20.7	^	Pendleton	19.4	4.3	55.8	4
Doddridge	4.0	0.1	27.4	^	Pleasants	10.6	2.1	37.5	^
Fayette	14.2	8.6	22.5	22	Pocahontas	7.4	1.5	29.5	^
Gilmer	20.4	4.7	57.3	4	Preston	6.9	2.9	14.5	9
Grant	25.0	10.2	51.4	8	Putnam	12.4	7.7	19.2	22
Greenbrier	15.8	9.2	25.6	20	Raleigh	12.2	8.1	17.7	32
Hampshire	9.6	4.3	20.0	9	Randolph	5.4	2.2	12.7	7
Hancock	10.2	4.7	19.8	11	Ritchie	15.7	5.7	37.7	6
Hardy	3.3	0.4	15.9	^	Roane	12.9	5.5	28.1	8
Harrison	11.4	7.4	17.0	28	Summers	7.7	1.8	23.0	4
Jackson	10.4	5.1	19.7	11	Taylor	11.0	4.2	24.8	7
Jefferson	16.4	10.8	24.1	28	Tucker	35.6	12.9	78.7	8
Kanawha	13.4	10.7	16.6	96	Tyler	0.0	0.0		0
Lewis	9.7	3.3	23.5	6	Upshur	14.9	7.5	27.1	12
Lincoln	13.6	6.0	26.8	9	Wayne	12.1	6.6	20.6	15
Logan	17.4	10.6	27.4	22	Webster	4.3	0.5	23.4	^
Marion	15.6	9.9	23.5	26	Wetzel	18.7	8.2	37.2	10
Marshall	10.7	5.6	19.3	14	Wirt	13.6	2.7	47.5	^
Mason	9.8	4.5	19.3	10	Wood	9.6	6.2	14.3	28
McDowell	5.7	1.9	15.4	5	Wyoming	10.6	4.5	22.0	8

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

Ovary - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016

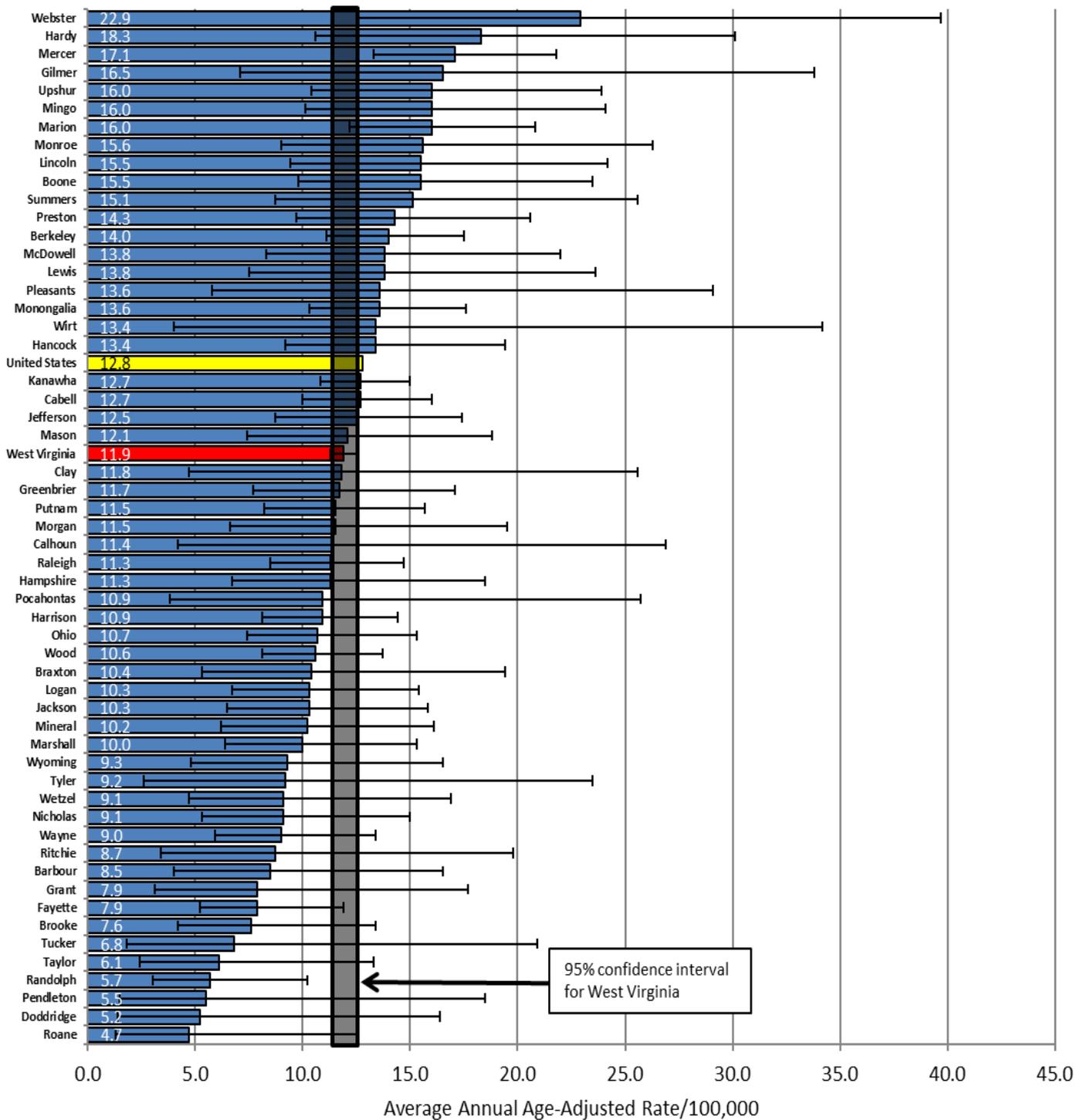


Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Pancreas - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	11.9	11.3	12.6	1,494	Mercer	17.1	13.3	21.8	75
Barbour	8.5	4.0	16.5	10	Mineral	10.2	6.2	16.1	21
Berkeley	14.0	11.1	17.5	82	Mingo	16.0	10.1	24.1	25
Boone	15.5	9.8	23.5	25	Monongalia	13.6	10.3	17.6	61
Braxton	10.4	5.3	19.4	12	Monroe	15.6	9.0	26.3	17
Brooke	7.6	4.2	13.4	15	Morgan	11.5	6.6	19.5	17
Cabell	12.7	10.0	16.0	79	Nicholas	9.1	5.3	15.0	18
Calhoun	11.4	4.2	26.9	6	Ohio	10.7	7.4	15.3	35
Clay	11.8	4.7	25.6	7	Pendleton	5.5	1.5	18.5	4
Doddridge	5.2	1.4	16.4	4	Pleasants	13.6	5.8	29.1	8
Fayette	7.9	5.2	11.9	27	Pocahontas	10.9	3.8	25.7	7
Gilmer	16.5	7.1	33.8	8	Preston	14.3	9.7	20.6	32
Grant	7.9	3.1	17.7	7	Putnam	11.5	8.2	15.7	43
Greenbrier	11.7	7.7	17.1	31	Raleigh	11.3	8.5	14.7	61
Hampshire	11.3	6.7	18.5	18	Randolph	5.7	3.0	10.2	13
Hancock	13.4	9.2	19.4	33	Ritchie	8.7	3.4	19.8	7
Hardy	18.3	10.6	30.1	17	Roane	4.7	1.3	12.6	5
Harrison	10.9	8.1	14.4	54	Summers	15.1	8.7	25.6	17
Jackson	10.3	6.5	15.8	23	Taylor	6.1	2.4	13.3	7
Jefferson	12.5	8.7	17.4	37	Tucker	6.8	1.8	20.9	4
Kanawha	12.7	10.8	15.0	164	Tyler	9.2	2.6	23.5	5
Lewis	13.8	7.5	23.6	15	Upshur	16.0	10.4	23.9	27
Lincoln	15.5	9.4	24.2	21	Wayne	9.0	5.9	13.4	27
Logan	10.3	6.7	15.4	27	Webster	22.9	12.5	39.7	15
Marion	16.0	12.2	20.8	62	Wetzel	9.1	4.7	16.9	12
Marshall	10.0	6.4	15.3	25	Wirt	13.4	4.0	34.2	5
Mason	12.1	7.4	18.8	22	Wood	10.6	8.1	13.7	62
McDowell	13.8	8.3	22.0	20	Wyoming	9.3	4.8	16.5	13

Pancreas - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016

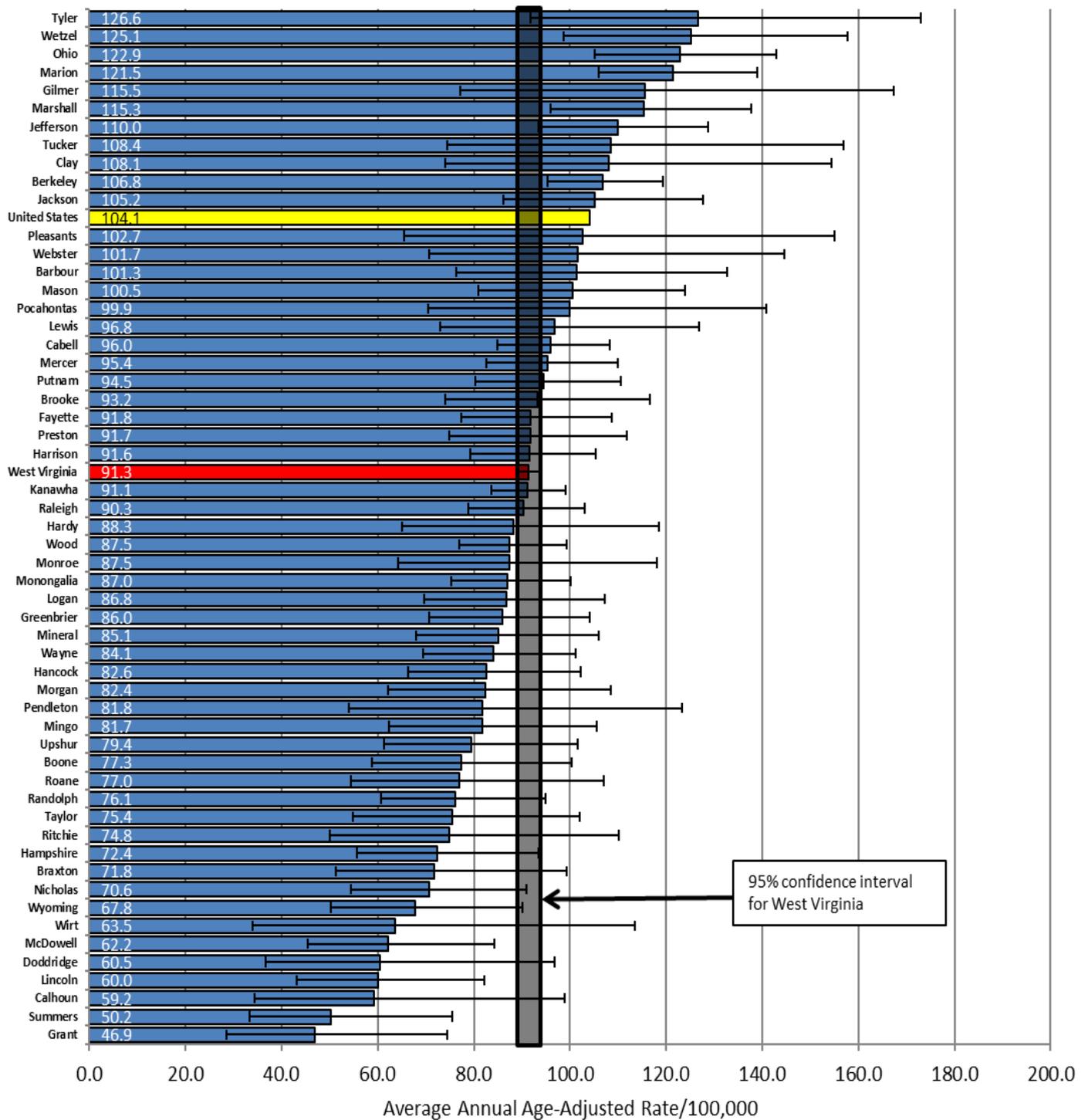


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**Prostate - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	91.3	88.9	93.8	5,772	Mercer	95.4	82.6	109.9	209
Barbour	101.3	76.4	132.7	58	Mineral	85.1	67.9	106.0	89
Berkeley	106.8	95.3	119.3	345	Mingo	81.7	62.4	105.6	68
Boone	77.3	58.9	100.3	65	Monongalia	87.0	75.3	100.1	212
Braxton	71.8	51.3	99.4	42	Monroe	87.5	64.3	118.1	49
Brooke	93.2	74.0	116.7	85	Morgan	82.4	62.2	108.5	58
Cabell	96.0	84.9	108.2	284	Nicholas	70.6	54.4	90.9	68
Calhoun	59.2	34.4	98.8	18	Ohio	122.9	105.2	143.0	184
Clay	108.1	74.0	154.4	34	Pendleton	81.8	54.1	123.3	28
Doddridge	60.5	36.7	96.8	20	Pleasants	102.7	65.4	155.0	26
Fayette	91.8	77.3	108.6	152	Pocahontas	99.9	70.5	140.9	39
Gilmer	115.5	77.2	167.4	30	Preston	91.7	74.8	111.8	108
Grant	46.9	28.6	74.5	21	Putnam	94.5	80.4	110.5	171
Greenbrier	86.0	70.6	104.2	115	Raleigh	90.3	78.8	103.1	238
Hampshire	72.4	55.6	93.5	68	Randolph	76.1	60.7	94.9	87
Hancock	82.6	66.3	102.3	94	Ritchie	74.8	50.0	110.1	30
Hardy	88.3	65.1	118.6	50	Roane	77.0	54.5	107.0	42
Harrison	91.6	79.3	105.4	207	Summers	50.2	33.4	75.5	29
Jackson	105.2	86.1	127.7	110	Taylor	75.4	54.8	102.1	47
Jefferson	110.0	93.5	128.7	177	Tucker	108.4	74.4	156.9	35
Kanawha	91.1	83.7	99.1	588	Tyler	126.6	91.7	172.9	47
Lewis	96.8	73.1	126.8	58	Upshur	79.4	61.4	101.6	69
Lincoln	60.0	43.1	82.1	44	Wayne	84.1	69.5	101.2	121
Logan	86.8	69.6	107.3	97	Webster	101.7	70.8	144.5	37
Marion	121.5	105.9	138.9	230	Wetzel	125.1	98.6	157.8	79
Marshall	115.3	96.0	137.8	134	Wirt	63.5	33.9	113.4	14
Mason	100.5	81.0	123.9	96	Wood	87.5	77.0	99.2	261
McDowell	62.2	45.4	84.3	49	Wyoming	67.8	50.3	90.2	56

Prostate - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016



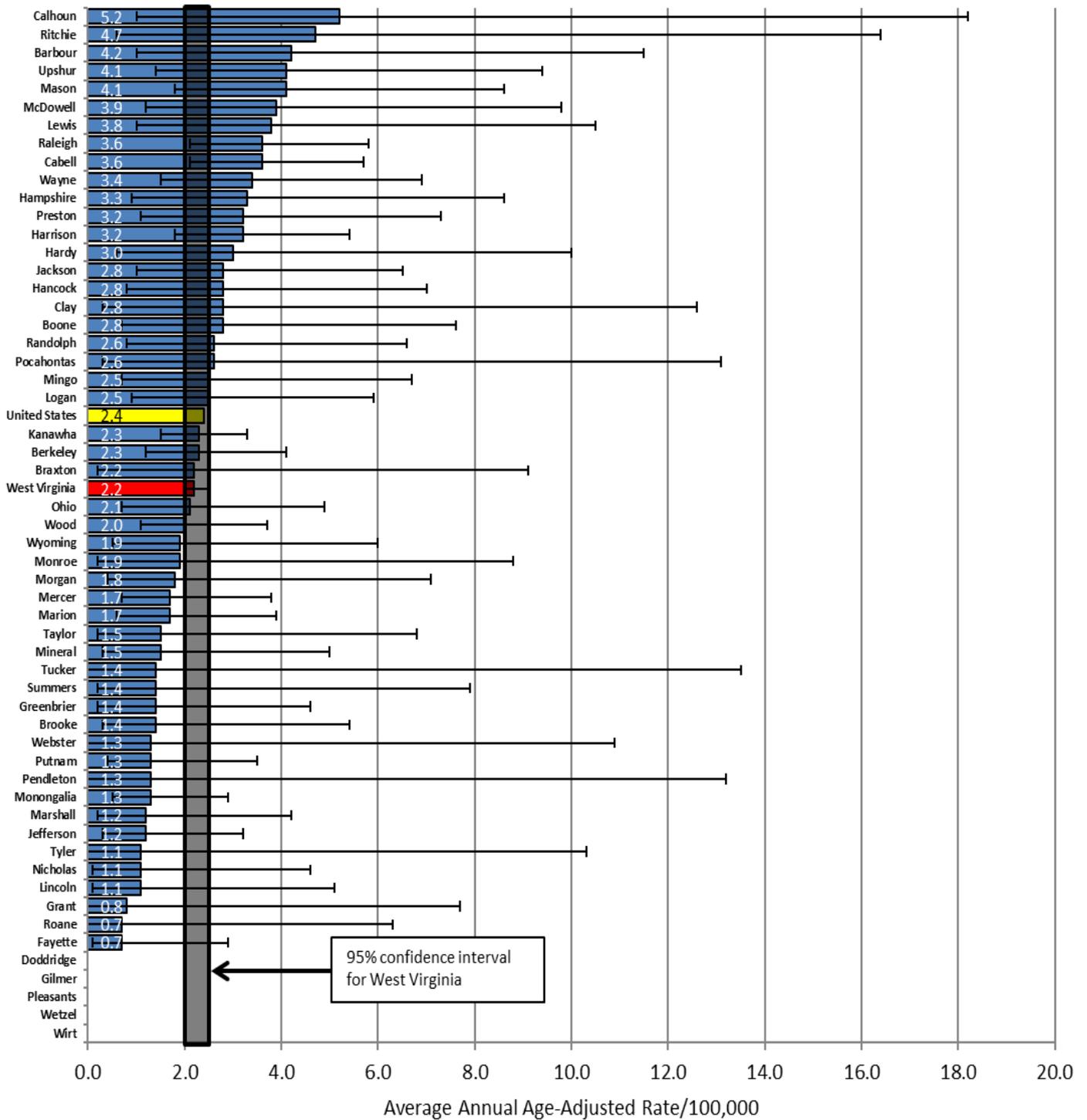
Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Small Intestine - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	2.2	2.0	2.5	270	Mercer	1.7	0.7	3.8	7
Barbour	4.2	1.0	11.5	4	Mineral	1.5	0.3	5.0	^
Berkeley	2.3	1.2	4.1	13	Mingo	2.5	0.7	6.7	4
Boone	2.8	0.7	7.6	4	Monongalia	1.3	0.5	2.9	6
Braxton	2.2	0.2	9.1	^	Monroe	1.9	0.2	8.8	^
Brooke	1.4	0.3	5.4	^	Morgan	1.8	0.4	7.1	^
Cabell	3.6	2.1	5.7	19	Nicholas	1.1	0.1	4.6	^
Calhoun	5.2	1.0	18.2	^	Ohio	2.1	0.7	4.9	6
Clay	2.8	0.3	12.6	^	Pendleton	1.3	0.0	13.2	^
Doddridge	0.0	0.0		0	Pleasants	0.0	0.0		0
Fayette	0.7	0.1	2.9	^	Pocahontas	2.6	0.3	13.1	^
Gilmer	0.0	0.0		0	Preston	3.2	1.1	7.3	6
Grant	0.8	0.0	7.7	^	Putnam	1.3	0.4	3.5	4
Greenbrier	1.4	0.2	4.6	^	Raleigh	3.6	2.1	5.8	18
Hampshire	3.3	0.9	8.6	5	Randolph	2.6	0.8	6.6	5
Hancock	2.8	0.8	7.0	5	Ritchie	4.7	0.6	16.4	^
Hardy	3.0	0.6	10.0	^	Roane	0.7	0.0	6.3	^
Harrison	3.2	1.8	5.4	15	Summers	1.4	0.2	7.9	^
Jackson	2.8	1.0	6.5	6	Taylor	1.5	0.2	6.8	^
Jefferson	1.2	0.3	3.2	4	Tucker	1.4	0.0	13.5	^
Kanawha	2.3	1.5	3.3	31	Tyler	1.1	0.0	10.3	^
Lewis	3.8	1.0	10.5	4	Upshur	4.1	1.4	9.4	6
Lincoln	1.1	0.1	5.1	^	Wayne	3.4	1.5	6.9	9
Logan	2.5	0.9	5.9	6	Webster	1.3	0.0	10.9	^
Marion	1.7	0.6	3.9	6	Wetzel	0.0	0.0		0
Marshall	1.2	0.2	4.2	^	Wirt	0.0	0.0		0
Mason	4.1	1.8	8.6	8	Wood	2.0	1.1	3.7	13
McDowell	3.9	1.2	9.8	5	Wyoming	1.9	0.5	6.0	4

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

Small Intestine - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016



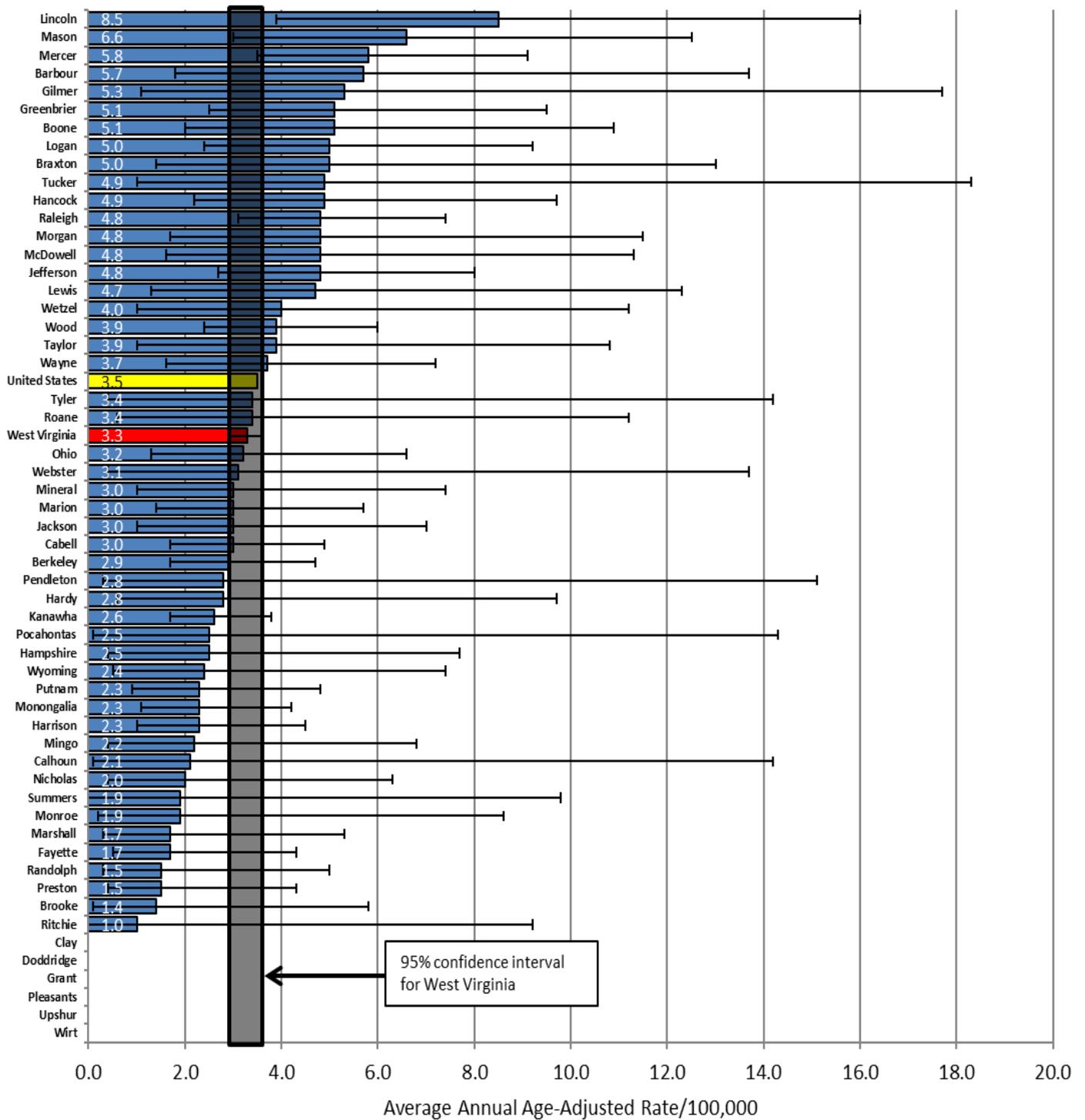
Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Soft Tissue including Heart - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	3.3	2.9	3.6	364	Mercer	5.8	3.5	9.1	22
Barbour	5.7	1.8	13.7	5	Mineral	3.0	1.0	7.4	5
Berkeley	2.9	1.7	4.7	18	Mingo	2.2	0.4	6.8	^
Boone	5.1	2.0	10.9	7	Monongalia	2.3	1.1	4.2	12
Braxton	5.0	1.4	13.0	5	Monroe	1.9	0.2	8.6	^
Brooke	1.4	0.1	5.8	^	Morgan	4.8	1.7	11.5	6
Cabell	3.0	1.7	4.9	17	Nicholas	2.0	0.4	6.3	^
Calhoun	2.1	0.1	14.2	^	Ohio	3.2	1.3	6.6	8
Clay	0.0	0.0		0	Pendleton	2.8	0.3	15.1	^
Doddridge	0.0	0.0		0	Pleasants	0.0	0.0		0
Fayette	1.7	0.5	4.3	5	Pocahontas	2.5	0.1	14.3	^
Gilmer	5.3	1.1	17.7	^	Preston	1.5	0.4	4.3	4
Grant	0.0	0.0		0	Putnam	2.3	0.9	4.8	7
Greenbrier	5.1	2.5	9.5	12	Raleigh	4.8	3.1	7.4	25
Hampshire	2.5	0.4	7.7	^	Randolph	1.5	0.3	5.0	^
Hancock	4.9	2.2	9.7	10	Ritchie	1.0	0.0	9.2	^
Hardy	2.8	0.6	9.7	^	Roane	3.4	0.6	11.2	^
Harrison	2.3	1.0	4.5	9	Summers	1.9	0.0	9.8	^
Jackson	3.0	1.0	7.0	6	Taylor	3.9	1.0	10.8	4
Jefferson	4.8	2.7	8.0	16	Tucker	4.9	1.0	18.3	^
Kanawha	2.6	1.7	3.8	30	Tyler	3.4	0.4	14.2	^
Lewis	4.7	1.3	12.3	4	Upshur	0.0	0.0		0
Lincoln	8.5	3.9	16.0	10	Wayne	3.7	1.6	7.2	9
Logan	5.0	2.4	9.2	11	Webster	3.1	0.4	13.7	^
Marion	3.0	1.4	5.7	10	Wetzel	4.0	1.0	11.2	4
Marshall	1.7	0.3	5.3	^	Wirt	0.0	0.0		0
Mason	6.6	3.0	12.5	10	Wood	3.9	2.4	6.0	23
McDowell	4.8	1.6	11.3	6	Wyoming	2.4	0.5	7.4	^

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

Soft Tissue including Heart - Average Annual Age-Adjusted Cancer Incidence Rate and 95% Confidence Intervals by County, West Virginia, 2012-2016



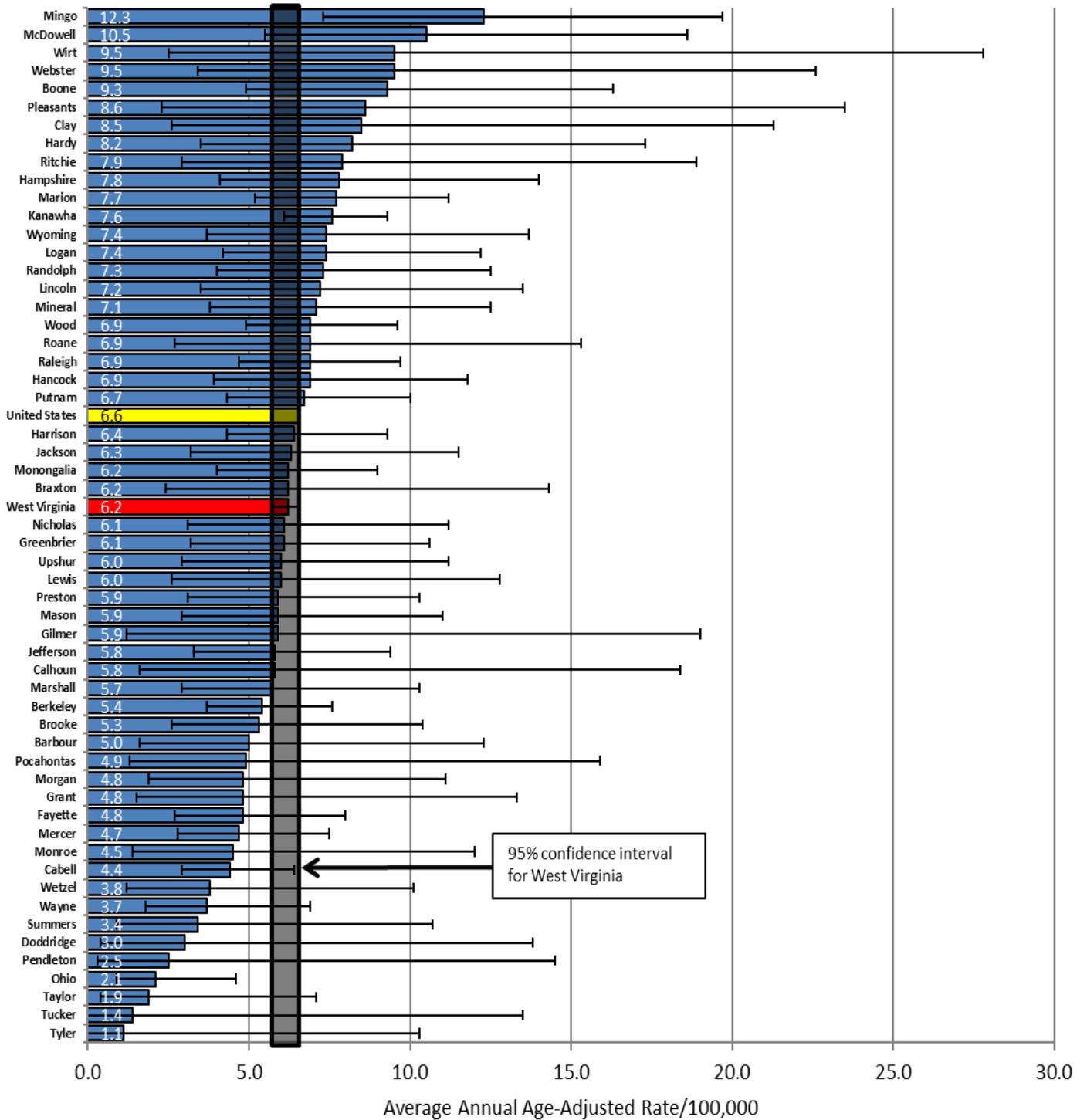
Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Stomach - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	6.2	5.7	6.6	771	Mercer	4.7	2.8	7.5	21
Barbour	5.0	1.6	12.3	5	Mineral	7.1	3.8	12.5	14
Berkeley	5.4	3.7	7.6	34	Mingo	12.3	7.3	19.7	19
Boone	9.3	4.9	16.3	14	Monongalia	6.2	4.0	9.0	27
Braxton	6.2	2.4	14.3	7	Monroe	4.5	1.4	12.0	5
Brooke	5.3	2.6	10.4	11	Morgan	4.8	1.9	11.1	7
Cabell	4.4	2.9	6.4	29	Nicholas	6.1	3.1	11.2	12
Calhoun	5.8	1.6	18.4	4	Ohio	2.1	0.9	4.6	8
Clay	8.5	2.6	21.3	5	Pendleton	2.5	0.3	14.5	^
Doddridge	3.0	0.4	13.8	^	Pleasants	8.6	2.3	23.5	4
Fayette	4.8	2.7	8.0	16	Pocahontas	4.9	1.3	15.9	4
Gilmer	5.9	1.2	19.0	^	Preston	5.9	3.1	10.3	13
Grant	4.8	1.5	13.3	5	Putnam	6.7	4.3	10.0	26
Greenbrier	6.1	3.2	10.6	14	Raleigh	6.9	4.7	9.7	35
Hampshire	7.8	4.1	14.0	13	Randolph	7.3	4.0	12.5	15
Hancock	6.9	3.9	11.8	17	Ritchie	7.9	2.9	18.9	6
Hardy	8.2	3.5	17.3	8	Roane	6.9	2.7	15.3	7
Harrison	6.4	4.3	9.3	30	Summers	3.4	0.9	10.7	4
Jackson	6.3	3.2	11.5	12	Taylor	1.9	0.4	7.1	^
Jefferson	5.8	3.3	9.4	17	Tucker	1.4	0.0	13.5	^
Kanawha	7.6	6.1	9.3	98	Tyler	1.1	0.0	10.3	^
Lewis	6.0	2.6	12.8	8	Upshur	6.0	2.9	11.2	11
Lincoln	7.2	3.5	13.5	11	Wayne	3.7	1.8	6.9	11
Logan	7.4	4.2	12.2	17	Webster	9.5	3.4	22.6	6
Marion	7.7	5.2	11.2	31	Wetzel	3.8	1.2	10.1	5
Marshall	5.7	2.9	10.3	13	Wirt	9.5	2.5	27.8	4
Mason	5.9	2.9	11.0	11	Wood	6.9	4.9	9.6	40
McDowell	10.5	5.5	18.6	13	Wyoming	7.4	3.7	13.7	12

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

Stomach - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016



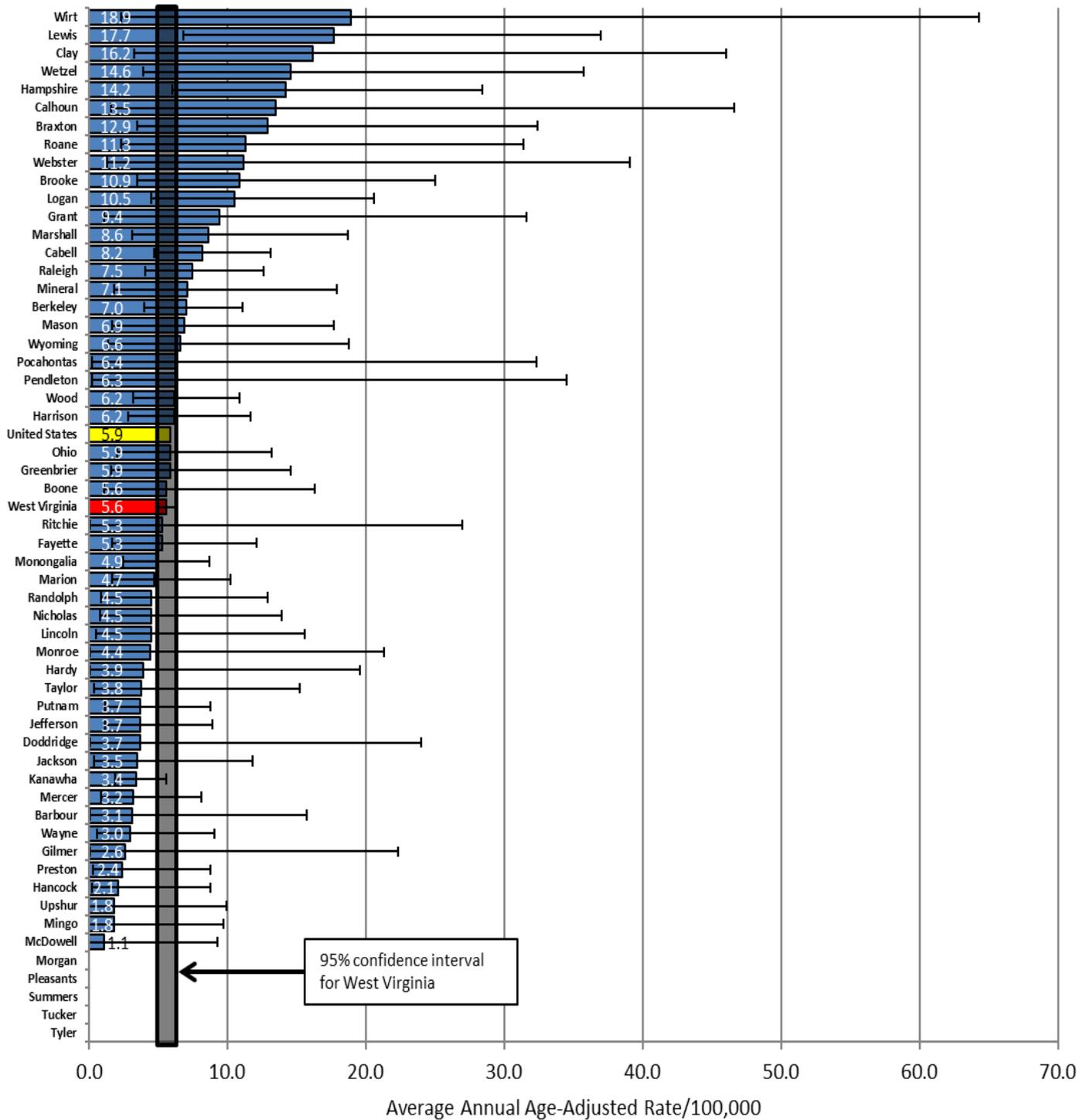
Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Testis - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	5.6	4.9	6.4	234	Mercer	3.2	0.9	8.1	4
Barbour	3.1	0.1	15.7	^	Mineral	7.1	1.8	17.9	4
Berkeley	7.0	4.0	11.1	17	Mingo	1.8	0.0	9.7	^
Boone	5.6	1.1	16.3	^	Monongalia	4.9	2.5	8.7	14
Braxton	12.9	3.5	32.4	4	Monroe	4.4	0.1	21.3	^
Brooke	10.9	3.5	25.0	5	Morgan	0.0	0.0		0
Cabell	8.2	4.7	13.1	17	Nicholas	4.5	0.8	13.9	^
Calhoun	13.5	1.6	46.6	^	Ohio	5.9	2.0	13.2	6
Clay	16.2	3.3	46.0	^	Pendleton	6.3	0.2	34.5	^
Doddridge	3.7	0.1	24.0	^	Pleasants	0.0	0.0		0
Fayette	5.3	1.7	12.1	5	Pocahontas	6.4	0.2	32.3	^
Gilmer	2.6	0.1	22.3	^	Preston	2.4	0.3	8.8	^
Grant	9.4	1.1	31.6	^	Putnam	3.7	1.2	8.8	5
Greenbrier	5.9	1.6	14.6	4	Raleigh	7.5	4.1	12.6	14
Hampshire	14.2	6.0	28.4	8	Randolph	4.5	0.9	12.9	^
Hancock	2.1	0.2	8.8	^	Ritchie	5.3	0.1	27.0	^
Hardy	3.9	0.1	19.6	^	Roane	11.3	2.3	31.4	^
Harrison	6.2	2.8	11.7	9	Summers	0.0	0.0		0
Jackson	3.5	0.4	11.8	^	Taylor	3.8	0.4	15.2	^
Jefferson	3.7	1.2	8.9	5	Tucker	0.0	0.0		0
Kanawha	3.4	1.9	5.6	16	Tyler	0.0	0.0		0
Lewis	17.7	6.8	37.0	7	Upshur	1.8	0.0	9.9	^
Lincoln	4.5	0.5	15.6	^	Wayne	3.0	0.6	9.1	^
Logan	10.5	4.5	20.6	8	Webster	11.2	1.3	39.1	^
Marion	4.7	1.7	10.2	6	Wetzel	14.6	3.9	35.7	4
Marshall	8.6	3.1	18.7	6	Wirt	18.9	2.3	64.3	^
Mason	6.9	1.7	17.7	4	Wood	6.2	3.2	10.9	12
McDowell	1.1	0.0	9.3	^	Wyoming	6.6	1.4	18.8	^

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

Testis - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016



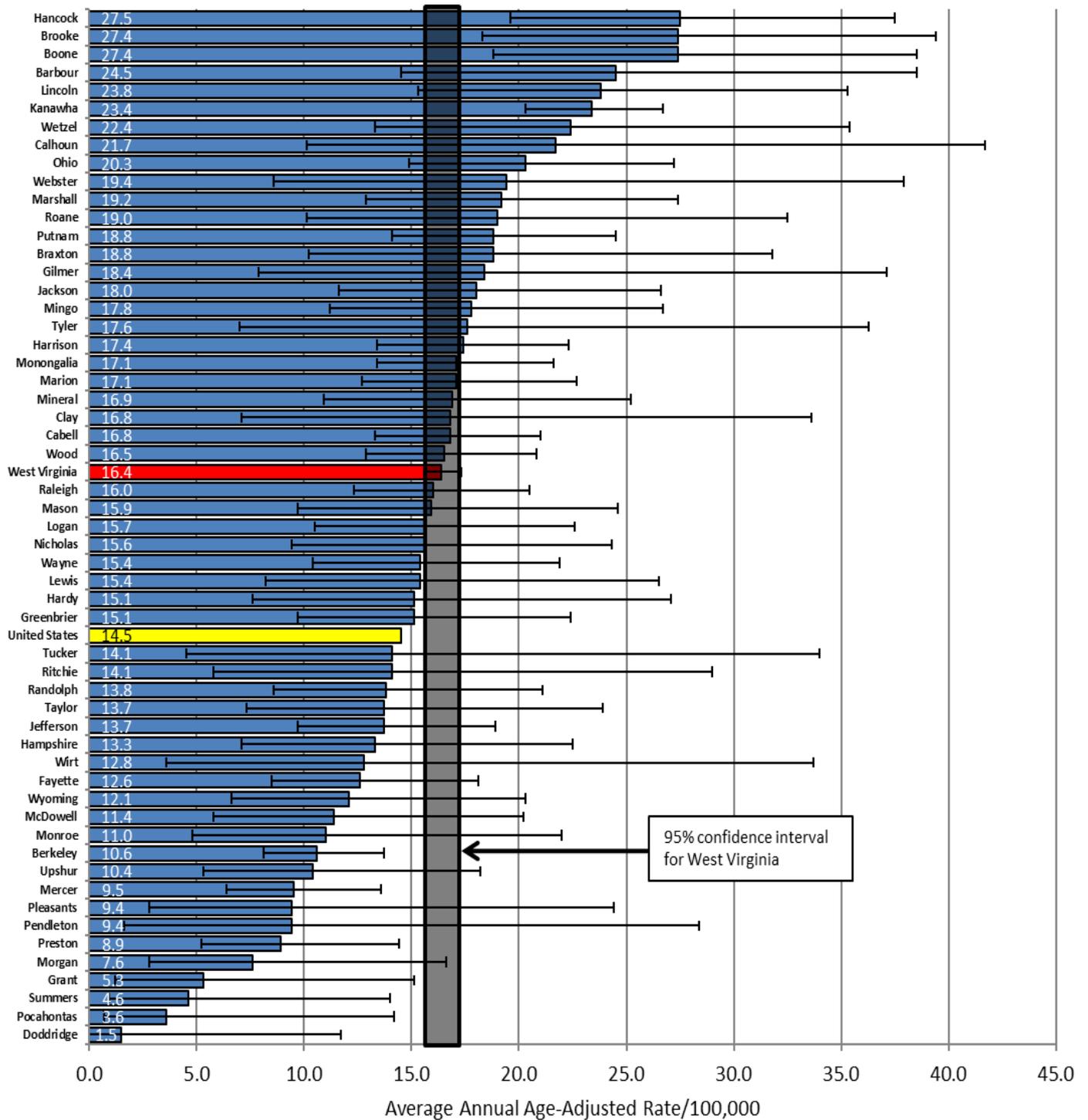
Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Thyroid - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	16.4	15.6	17.3	1,651	Mercer	9.5	6.4	13.6	34
Barbour	24.5	14.5	38.5	20	Mineral	16.9	10.9	25.2	27
Berkeley	10.6	8.1	13.7	62	Mingo	17.8	11.2	26.7	25
Boone	27.4	18.8	38.5	36	Monongalia	17.1	13.4	21.6	80
Braxton	18.8	10.2	31.8	16	Monroe	11.0	4.8	22.0	10
Brooke	27.4	18.3	39.4	34	Morgan	7.6	2.8	16.6	7
Cabell	16.8	13.3	21.0	83	Nicholas	15.6	9.4	24.3	22
Calhoun	21.7	10.1	41.7	12	Ohio	20.3	14.9	27.2	52
Clay	16.8	7.1	33.6	9	Pendleton	9.4	1.6	28.4	^
Doddridge	1.5	0.0	11.7	^	Pleasants	9.4	2.8	24.4	5
Fayette	12.6	8.5	18.1	33	Pocahontas	3.6	0.7	14.2	^
Gilmer	18.4	7.9	37.1	8	Preston	8.9	5.2	14.4	19
Grant	5.3	1.2	15.1	4	Putnam	18.8	14.1	24.5	59
Greenbrier	15.1	9.7	22.4	28	Raleigh	16.0	12.3	20.5	70
Hampshire	13.3	7.1	22.5	14	Randolph	13.8	8.6	21.1	23
Hancock	27.5	19.6	37.5	46	Ritchie	14.1	5.8	29.0	8
Hardy	15.1	7.6	27.1	13	Roane	19.0	10.1	32.5	15
Harrison	17.4	13.4	22.3	69	Summers	4.6	0.9	14.0	^
Jackson	18.0	11.6	26.6	27	Taylor	13.7	7.3	23.9	14
Jefferson	13.7	9.7	18.9	40	Tucker	14.1	4.5	34.0	5
Kanawha	23.4	20.3	26.7	233	Tyler	17.6	7.0	36.3	8
Lewis	15.4	8.2	26.5	14	Upshur	10.4	5.3	18.2	13
Lincoln	23.8	15.3	35.3	26	Wayne	15.4	10.4	21.9	33
Logan	15.7	10.5	22.6	33	Webster	19.4	8.6	37.9	9
Marion	17.1	12.7	22.7	54	Wetzel	22.4	13.3	35.4	21
Marshall	19.2	12.9	27.4	34	Wirt	12.8	3.6	33.7	5
Mason	15.9	9.7	24.6	22	Wood	16.5	12.9	20.8	78
McDowell	11.4	5.8	20.2	13	Wyoming	12.1	6.6	20.3	16

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

Thyroid - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016

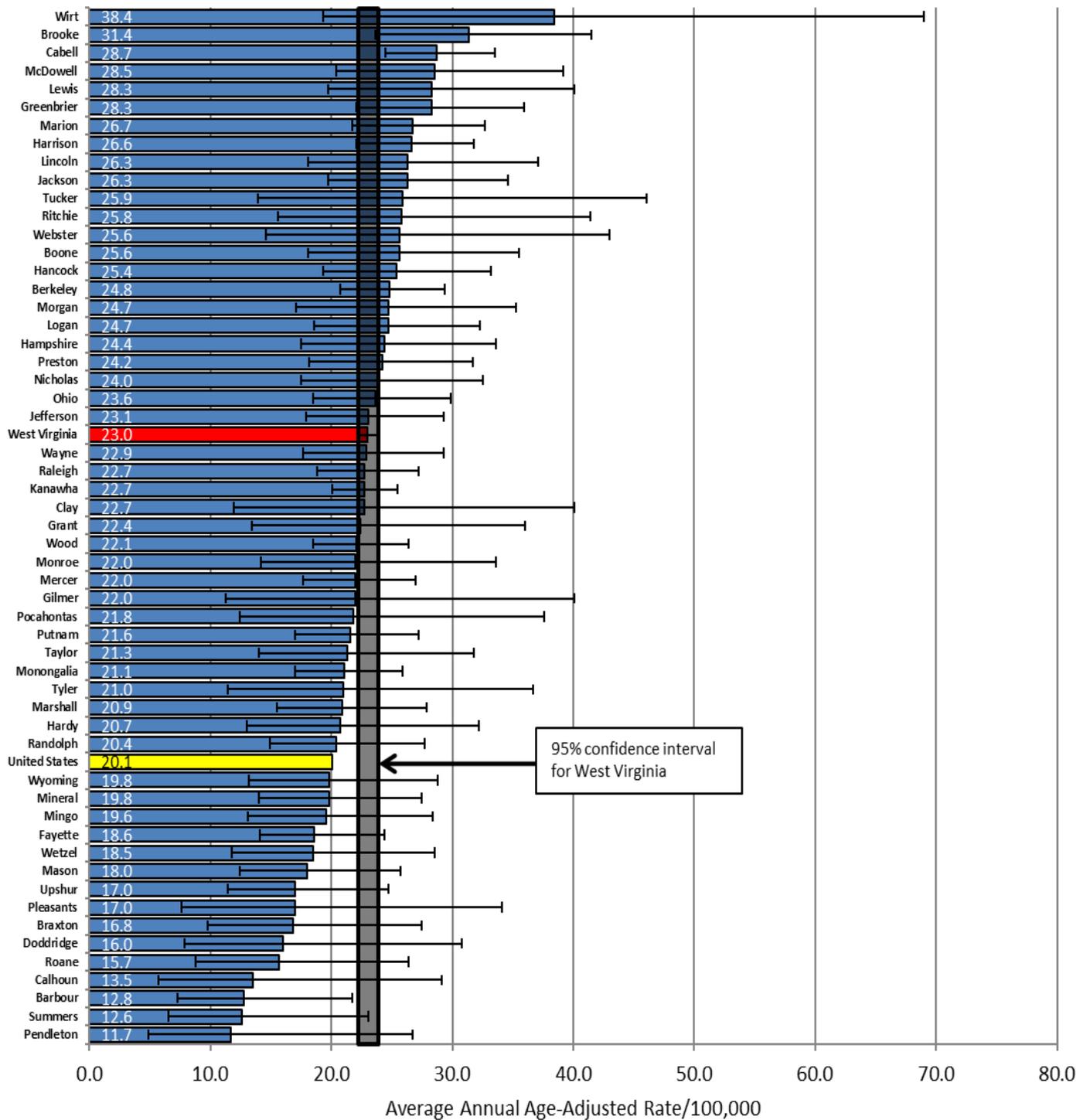


Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.

**Urinary Bladder - Average Annual Age-Adjusted Cancer Incidence Rates (per 100,000),
95% Confidence Intervals, and 5-Year Counts by County, West Virginia, 2012-2016**

County	Rate	Lower CI	Upper CI	5-yr Count	County	Rate	Lower CI	Upper CI	5-yr Count
West Virginia	23.0	22.2	23.9	2,904	Mercer	22.0	17.7	27.0	98
Barbour	12.8	7.3	21.7	16	Mineral	19.8	14.0	27.5	39
Berkeley	24.8	20.7	29.4	142	Mingo	19.6	13.1	28.4	30
Boone	25.6	18.1	35.5	39	Monongalia	21.1	17.0	25.9	96
Braxton	16.8	9.8	27.5	18	Monroe	22.0	14.2	33.6	26
Brooke	31.4	23.6	41.5	58	Morgan	24.7	17.1	35.3	35
Cabell	28.7	24.5	33.5	175	Nicholas	24.0	17.5	32.5	46
Calhoun	13.5	5.7	29.1	8	Ohio	23.6	18.5	29.9	79
Clay	22.7	11.9	40.1	13	Pendleton	11.7	4.9	26.7	8
Doddridge	16.0	7.9	30.8	11	Pleasants	17.0	7.6	34.1	9
Fayette	18.6	14.1	24.4	58	Pocahontas	21.8	12.4	37.6	16
Gilmer	22.0	11.3	40.1	12	Preston	24.2	18.2	31.7	57
Grant	22.4	13.4	36.0	21	Putnam	21.6	17.0	27.2	78
Greenbrier	28.3	22.1	35.9	76	Raleigh	22.7	18.8	27.2	125
Hampshire	24.4	17.5	33.6	43	Randolph	20.4	14.9	27.7	46
Hancock	25.4	19.3	33.2	61	Ritchie	25.8	15.6	41.4	20
Hardy	20.7	13.0	32.2	23	Roane	15.7	8.8	26.4	17
Harrison	26.6	22.1	31.8	128	Summers	12.6	6.5	23.1	13
Jackson	26.3	19.7	34.6	55	Taylor	21.3	14.0	31.8	27
Jefferson	23.1	17.9	29.3	72	Tucker	25.9	13.9	46.1	15
Kanawha	22.7	20.1	25.5	304	Tyler	21.0	11.4	36.7	14
Lewis	28.3	19.7	40.1	35	Upshur	17.0	11.4	24.7	30
Lincoln	26.3	18.1	37.1	36	Wayne	22.9	17.7	29.3	69
Logan	24.7	18.6	32.3	57	Webster	25.6	14.6	43.0	17
Marion	26.7	21.7	32.7	102	Wetzel	18.5	11.8	28.5	24
Marshall	20.9	15.5	27.9	52	Wirt	38.4	19.3	69.0	12
Mason	18.0	12.4	25.7	35	Wood	22.1	18.5	26.4	134
McDowell	28.5	20.4	39.2	43	Wyoming	19.8	13.2	28.8	31

Urinary Bladder - Average Annual Age-Adjusted Cancer Incidence Rates and 95% Confidence Intervals by County, West Virginia, 2012-2016



Sources: West Virginia rates provided by the West Virginia Cancer Registry; United States rates provided by United States Cancer Statistics: 1999-2016 Incidence and Mortality Web-based Report. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; June 2019. Available at www.cdc.gov/uscs.