January 3, 2019

The Honorable Larry Hogan
Governor
State of Maryland
Annapolis, MD 21401-1991

The Honorable Thomas V. Mike Miller, Jr.
President of the Senate
H-107 State House
Annapolis, MD 21401-1991

The Honorable Michael E. Busch
Speaker of the House
H-101 State House
Annapolis, MD 21401-1991

Re: Health-General Article, Section 13-1104(e), 2018 Cigarette Restitution Fund Program Cancer Report

Dear Governor Hogan, President Miller, and Speaker Busch:

Pursuant to Health-General Article, Section 13-1104(e), Annotated Code of Maryland, the Maryland Department of Health is directed to produce a biennial report on the cancers targeted under the Cigarette Restitution Fund Program's Cancer Prevention, Education, Screening, and Treatment Program. Enclosed is the Cigarette Restitution Fund Program Cancer Report for 2018. This report includes the most currently available Maryland data on cancer incidence and mortality for 2015 and highlights recommended public health interventions designed to reduce the impact of this disease on Maryland citizens.

The enclosed report reviews total cancers and the seven specific cancer sites targeted by the Cancer Prevention, Education, Screening, and Treatment Program: lung and bronchus, colon and rectum, female breast, prostate, oral, melanoma of the skin, and cervix. These cancers were selected based on proven interventions for prevention and early detection and treatment, or the magnitude of the impact on incidence and mortality.

Cancer prevention and control results from awareness and proactive behavior of all Marylanders. On behalf of the Maryland Department of Health, I appreciate your efforts to control cancer in the state. If you have questions about this report, please contact Webster Ye, Deputy Chief of Staff, Office of the Secretary, at 410-767-6480 or webster.ye@maryland.gov.

Sincerely,

Robert R. Neall
Secretary

Enclosure
cc: Sarah Albert, Department of Legislative Services, (MSAR #10379)

Maryland Department of Health

2018 Cancer Report

Cigarette Restitution Fund Program

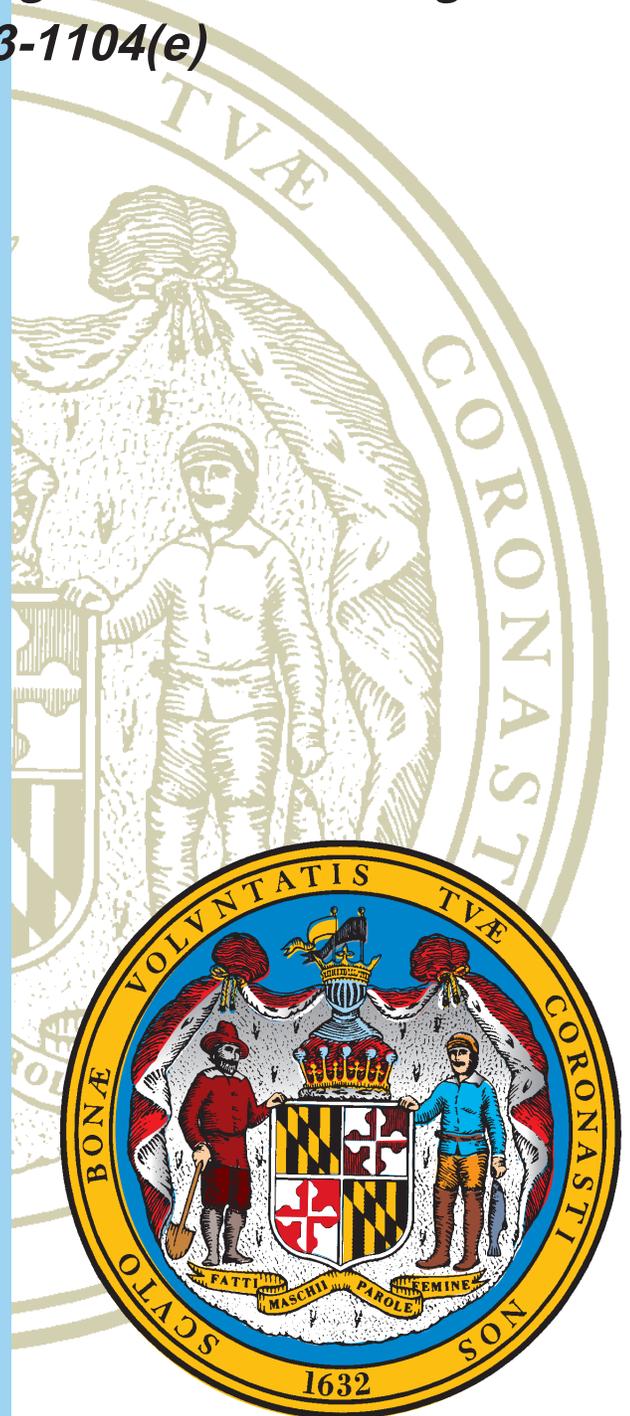*Cancer Prevention, Education, Screening and Treatment Program*

Health-General Article, Section 13-1104(e)

Larry Hogan
Governor
of Maryland

Boyd Rutherford
Lieutenant Governor
of Maryland

TqdgtvR."P gcm
Secretary
Maryland Department
of Health

January 2019

Maryland Department of Health

2018 Cancer Report

Cigarette Restitution Fund Program
Cancer Prevention, Education, Screening, and Treatment Program

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Director
Center for Cancer Prevention and Control

Acknowledgments

The Maryland Department of Health (MDH), Center for Cancer Prevention and Control (CCPC), is pleased to present the Cigarette Restitution Fund Program 2018 Cancer Report. Our hope is that individuals, groups, and agencies, such as local health departments, statewide academic health centers, community health coalitions, other community organizations, Marylanders, and policy makers, will benefit from this report.

We thank the following for their contributions to this document:

We thank all the individuals who contributed to the development and review of this document.

Dedication

We dedicate this report to all persons whose lives have been touched by cancer. We hope to illustrate the progress and challenges related to cancer prevention, diagnosis, and treatment.

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Glossary

- **Age-adjustment:** Age is the most important risk factor for the incidence of most cancers. However, cancer rates derived from populations that differ in underlying age distributions are not comparable. Age-adjustment is a statistical technique that allows for the comparison of rates among populations with different age distributions, by weighting the age-specific rates in each population to one standard population. Additional information on age-adjustment can be found on the following web sites:

  http://seer.cancer.gov/seerstat/tutorials/aarates/definition.html
  http://www.cdc.gov/nchs/data/statnt/statnt20.pdf

- **Annual percent change (APC):** A measure of the annual percent increase or decrease in cancer rates over time, which is used for analyzing trends. This measure assumes that cancer rates change at a constant percentage of the rate of the previous year. Rates that change at a constant percentage every year change linearly on a log scale. A more detailed description of the method can be found at:

  https://surveillance.cancer.gov/help/joinpoint/setting-parameters/advanced-tab/average-annual-percent-change-aapc

- **Ascertainment:** Refers to the quality assurance procedures that Maryland Cancer Registry (MCR) staff use to ensure completeness of cancer cases in the MCR database. These activities include: a review of disease indices from all reporting hospitals to identify possible missed cases; an evaluation of random samples of records from reporting facilities; and a review of death certificate data to identify cancer cases not previously reported.

- **Cancer:** A disease characterized by the uncontrolled, abnormal growth of cells in different parts of the body that can spread to other parts of the body.

- **Chemoprevention:** The use of drugs, vitamins, or other agents to try to reduce the risk of cancer or delay the development or recurrence of cancer.

- **Confidence interval (CI):** Describes the range of uncertainty around a point estimate (e.g., an incidence or mortality rate) and serves as an indicator of the precision or stability of a rate. CIs are useful in defining a range within which the typical rate for a geographic area can be expected to lie. Most CIs are, by convention, calculated at the 95% level, which means that 95% of hypothetically observed CIs generated will contain the true value of interest. The smaller the number of events upon which a rate is based, the wider the confidence interval will be.

- **Incidence:** The number of new cases of a given cancer or other event during a defined time period, usually one year. For the purposes of this report, cancer incidence refers to the number of new cases diagnosed during the individual calendar

year 2015. Cancer incidence data are also presented in aggregated form, as the average annual incidence for the 5-year period from 2011 through 2015.

- **International Classification of Diseases (ICD):** The ICD is the international standard diagnostic classification for all general epidemiological, health management, and clinical use. It is used to classify diseases and other health problems recorded on many types of health and vital records, including death certificates and health records.

- **International Classification of Diseases for Oncology (ICD-O):** The ICD-O is the classification system used by tumor or cancer registries to code the site and the histology of the cancer, usually from a pathology report.

- **Invasive cancer:** Cancer that has spread beyond the layer of cells where it first began and has grown into nearby tissues. It may still be considered local stage if it has not spread to other parts of the body. Stage data presented in this report involve a diagnosis of invasive cancer: local, regional, or distant. A diagnosis of *in situ* is non-invasive and is not included in the staging data, except for *in situ* bladder cancer for all sites cancer data.

- **Mortality:** The number of deaths during a defined time period, usually one year. For the purposes of this report, cancer mortality refers to the number of new cancer deaths during the individual calendar year 2015. Cancer mortality data are also presented in an aggregated form, as the average annual mortality for the 5-year period from 2011 through 2015.

- **Primary prevention:** Measures that can be taken that aim to prevent cancer before it has developed. Examples include the avoidance of carcinogens (e.g., cigarettes, tobacco), promoting a healthy lifestyle through exercise and diet, preventing the harmful effects of carcinogens (e.g., using sunscreen), and detecting and removing precancerous lesions (e.g., removing polyps in the colon).

- **Race bridging:** Refers to the process of making data collected using one set of race categories consistent with data collected using a different set of race categories. This consistency allows estimation and comparison of race-specific statistics at a given point in time or over a period of time. More specifically, race bridging is a method used to make systems sufficiently comparable to permit estimation and analysis of race-specific statistics. Race-bridging algorithms are generally applied to population data, which are used in this report for calculating rates and for describing race categories of Maryland population estimates (see Appendix D).

- **Rate:** An estimate of the burden of a given disease on a defined population at risk over a specified period of time. A crude rate is calculated by dividing the number of cases or deaths (events) by the population at risk during a given time period. Cancer incidence and mortality rates are usually presented per 100,000 population during a given time period. An incidence rate is the number of new cases during a specific period (usually one year) divided by the population at risk per 100,000 population. A

mortality rate is the number of deaths for a given period divided by the population at risk per 100,000 population. All rates presented in this report are age-adjusted to the 2000 U.S. standard population.

- **Region:** The following are the five regional categories in Maryland.

  <u>Baltimore Metropolitan Area</u>
  Anne Arundel, Baltimore City, Baltimore County, Carroll, Harford, and Howard Counties

  Note: The Baltimore Metropolitan Area does not include Baltimore City when used in Appendix G.

  <u>Eastern Shore Region</u>
  Caroline, Cecil, Dorchester, Kent, Queen Anne's, Somerset, Talbot, Wicomico, and Worcester Counties

  <u>National Capital Area</u>
  Montgomery and Prince George's Counties

  <u>Northwest Region</u>
  Allegany, Frederick, Garrett, and Washington Counties

  <u>Southern Region</u>
  Calvert, Charles, and St. Mary's Counties

- **Screening:** Checking for disease when there are no symptoms, resulting in detection of pre-cancer, cancer *in situ*, or cancer at an early stage.

- **Stage at diagnosis:** Cancer stage is the extent to which the cancer has spread from the organ of origin at the time of diagnosis. The stage information used in this report is based on the SEER Summary Stage Guidelines:

  1. *In situ*: The cancerous cells have not invaded the tissue basement membrane and there is no stromal invasion. *In situ* cancers are not considered malignant (with the exception of bladder cancers) and are not included in incidence rate calculations.
  2. **Local:** The tumor is confined to the organ of origin.
  3. **Regional:** The tumor has spread to adjacent organs or tissue. Regional lymph nodes may also be involved.
  4. **Distant:** The tumor has spread beyond the adjacent organs or tissues. Distant lymph nodes, organs, and/or tissues may also be involved.
  5. **Unstaged:** The stage of disease at diagnosis was unable to be classified (often due to insufficient information) or was not reported to the cancer registry.

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I.   Executive Summary

A. Introduction

This publication is the Cigarette Restitution Fund Program (CRFP) 2018 Cancer Report which is required biennially by Maryland law. The primary purpose of the report is to assist local health departments and local community health coalitions in planning and implementing comprehensive cancer prevention, education, screening, and treatment programs. The data and the "Public Health Intervention" recommendations are intended to guide local health departments, Statewide Academic Health Centers, community health coalitions, other community organizations, and policy makers as they decide how to allocate limited resources for maximum benefit, with the goal of reducing cancer mortality and eliminating racial disparities.

The CRFP was established in 2000 to provide for the distribution of funds received as a result of multi-state litigation against the tobacco industry and provided approximately $25 million in Fiscal Year 2018 to combat cancer. The CRFP statute established the Cancer Prevention, Education, Screening, and Treatment (CPEST) Program within the Maryland Department of Health (MDH), whose primary goal is to reduce mortality and morbidity rates for cancer and tobacco-related diseases in the State of Maryland.

The CRFP statute requires MDH to identify the types of cancers that may be targeted under the CPEST Program. In addition to overall cancers presented in this report, MDH has selected seven targeted cancers; each is presented individually. The seven targeted cancer sites are: lung and bronchus, colon and rectum, female breast, prostate, oral, melanoma of the skin, and cervix. These cancers have been targeted because they can be prevented (lung and bronchus and melanoma of the skin) or detected early and treated (colon and rectum, female breast, cervical, and oral), or are a major cause of cancer death (prostate).

Additionally, the CRFP statute requires Maryland jurisdictions to develop plans to: 1) eliminate the higher incidence and mortality rates of cancer in minority populations (as defined in the CRFP law as women or individuals of African, Hispanic, Native American, and Asian descent) and in rural areas, and 2) increase availability of and access to healthcare services for medically underserved populations and uninsured or underinsured individuals.

This 2018 Cancer Report includes information on cancer incidence, mortality, stage of disease at diagnosis, public health evidence for prevention and screening, recommended areas for public health intervention, and Maryland screening behaviors compared to Healthy People 2020 and the Maryland Comprehensive Cancer Control Plan targets for cancer prevention and screening. Further efforts to prevent and control cancer in Maryland can be found in the Maryland Comprehensive Cancer Control Plan (MCCCP) at https://phpa.health.maryland.gov/cancer/cancerplan/Pages/publications.aspx.

B. Major Highlights of the Report for the State of Maryland

1. Major findings for **all cancer sites**:

- In 2015, a total of 31,001 new cases of cancer were diagnosed in Maryland.
- From 2006 to 2015, the annual overall cancer incidence rates remained steady in Maryland, while the United States (U.S.) rates declined 1.3% per year. In 2015, the Maryland all sites cancer incidence rate was higher than the U.S. rate (449.3 vs. 429.5 per 100,000 population).
- In 2015, the incidence rate for all cancer sites among blacks in Maryland remained below the incidence rate for whites, continuing the trend seen beginning in 2011; rates increased for both blacks and whites for the period from 2011 to 2015.
- In 2015, a total of 10,568 Maryland residents died from cancer.
- From 2006 to 2015, the annual overall cancer mortality rates decreased slightly more in Maryland than in the U.S. (-1.9% vs. -1.4% per year). In 2015, the Maryland (all cancer sites) mortality rate was lower than the U.S. rate (155.1 vs. 158.7 per 100,000 population), which is better than the Healthy People 2020 target of 161.4 per 100,000 population.
- Blacks had higher all cancer sites mortality rates than whites from 2011 to 2015; the annual percent change decreased for both races.

2. Major findings for **lung and bronchus** cancer:

- Lung cancer is the leading cause of cancer death in both men and women in Maryland, accounting for 24.4% of all 10,568 cancer deaths in 2015.
- From 2011 to 2015, overall lung cancer incidence and mortality rates decreased in Maryland, and also declined for both whites and blacks after stratification by race.
- Tobacco use is the primary cause of lung cancer; smoking causes an estimated 80% of lung cancer deaths in the U.S.[1]
- Smoking rates among Maryland youth and adults continue to decline. In 2016, 13.7% of adults ages 18 years and older were current smokers. However, Maryland has not yet attained the Healthy People 2020 goal of reducing the percentage of adult smokers to 12.0%.

3. Major findings for **colon and rectum** (colorectal) cancer:

- Incidence and mortality rates for colorectal cancer declined in Maryland from 2011 to 2015. Over this time period, incidence rates had a greater decrease per year among Maryland whites compared to blacks, while mortality rates had a greater decrease among Maryland blacks than whites.
- Maryland has not yet surpassed the Healthy People 2020 target for up-to-date colorectal cancer screening (70.5%); in 2016, 69.8% of Maryland adults ages 50 years and older reported being up-to-date with colorectal cancer screening.

4. Major findings for **female breast** cancer:

- Breast cancer is the second leading cause of cancer death among women in Maryland after lung cancer.
- Incidence rates for female breast cancer increased from 2011 to 2015, with the incidence rate increasing at a greater rate per year among black females than white females.
- From 2011 to 2015, mortality rates for female breast cancer decreased for both black and white females; mortality rates for female breast cancer decreased at a greater rate per year among black females compared to white females (-1.2% vs. -0.3%, respectively).
- Maryland continues to meet the Healthy People 2020 target for mammography screening (81.1%); in 2016, 81.1% of Maryland women ages 50 to 74 years old reported having had a mammogram within the past two years.

5. Major findings for **prostate** cancer:

- Prostate cancer is the second leading cause of cancer death among men in Maryland after lung cancer.
- Overall, incidence rates for prostate cancer decreased from 2011 to 2015, while mortality rates for prostate cancer slightly increased during this 5-year period.
- Racial disparities in prostate cancer incidence and mortality were present, with the rates for black males remaining higher than for white males in the years 2011 to 2015.
- From 2011 to 2015, prostate cancer incidence rates decreased at a greater rate per year among white men compared to black men (-1.8% vs. -1.1%, respectively). During this 5-year period, mortality rates for prostate cancer increased for black men but decreased for white men.
- An increasing percentage of Maryland men discussed the advantages and disadvantages of prostate-specific antigen (PSA) testing from 2012 (28.5%) to 2016 (32.0%); the 2016 percentage was double the Healthy People 2020 target of 15.9%.

6. Major findings for **oral** cancer:

- From 2011 to 2015, oral cancer incidence rates in Maryland increased overall. Oral cancer incidence rates increased at a greater rate per year for blacks compared to whites (3.7% vs. 1.5%, respectively)
- From 2011 to 2015, oral cancer mortality rates decreased among blacks at a rate of 4.3% per year and increased among whites at a rate of 1.4% per year.
- Marylanders were below the Maryland Comprehensive Cancer Control Plan 2020 target of 26.7% for oral cancer screening; in 2016, 21.6% of Maryland adults reported having an oral cancer exam in the past year.

7. Major findings for **melanoma** skin cancer:

- Melanoma incidence rates in Maryland increased at a rate of 4.9% per year from 2011 to 2015. The annual incidence rate increased among both males and females. In 2015, males had incidence rates of melanoma that were 78.6% higher than females.
- According to the Centers for Disease Control and Prevention (CDC), age-adjusted melanoma incidence rates in the United States have been increasing steadily among both males and females, with this trend being largely driven by statistically significant increases among non-Hispanic white individuals ages 55 and older.
- From 2011 to 2015, overall melanoma mortality rates decreased among both males and females at a rate of 8.9% and 11.2% per year, respectively.
- In 2016, 66.0% of Maryland adults used at least one sun protective measure "always" or "nearly always," which is below the Healthy People 2020 target of 73.7%; however, this percentage excludes the 7.5% of Maryland adults who reported that they do not go out in the sun.

8. Major findings for **cervical** cancer:

- Cervical cancer incidence rates among Maryland women increased at a rate of 1.0% per year from 2011 to 2015, while mortality rates decreased at a rate of 3.0% per year during this same time period.
- Cervical cancer incidence rates decreased among black females but increased among white females.
- Mortality rates for cervical cancer decreased at similar rates among black and white women from 2011 to 2015.
- In 2016, 82.2% of Maryland women ages 21 to 65 years old had a Pap test within the past three years, below the Healthy People 2020 target of 93.0%.

C. **Major Changes to this Report from the 2016 Cancer Report**

- This report presents Maryland and U.S. incidence and mortality data for 2015 and 5-year aggregate data for 2011 to 2015.
- The Maryland mortality data for 2006, 2007, and 2012 to 2015 were obtained from the CDC Wide-ranging Online Data for Epidemiologic Research (CDC WONDER), National Center for Health Statistics (NCHS) Compressed Mortality File because data were unavailable from the Maryland Vital Statistics Administration in time for this publication. The Maryland mortality data for single years 2008, 2009, and 2010 were obtained from the Maryland Assessment Tool for Community Health (MATCH), where data were obtained from the Maryland Vital Statistics Administration, except for colorectal cancer, which was directly obtained from the Maryland Vital Statistics Administration.

II.   All Cancer Sites

Incidence (New Cases)

A total of 31,001 new cases of cancer diagnosed in 2015 in Maryland residents were reported to the Maryland Cancer Registry. The total age-adjusted cancer incidence rate for Maryland was 449.3 per 100,000 population (444.2-454.5, 95% CI) in 2015. The 2015 Maryland cancer incidence rate is statistically significantly higher than the 2015 U.S. Surveillance Epidemiology and End Results (SEER) rate of 429.5 per 100,000 population (428.2-430.8, 95% CI).

Mortality (Deaths)

Cancer is the second leading cause of death in Maryland, accounting for 22.4% of all deaths in 2015. A total of 10,568 Maryland residents died from cancer in 2015. The Maryland mortality rate for all cancer sites was 155.1 per 100,000 population (152.1-158.1, 95% CI) for 2015. This rate is statistically significantly lower than the 2015 U.S. mortality rate for all cancer sites of 158.7 per 100,000 population (158.3-159.1, 95% CI). Maryland ranks 31st highest among all states and the District of Columbia in total cancer mortality for the period from 2011 to 2015.

Table 1.
All Cancer Sites Incidence and Mortality Rates
by Gender and Race, Maryland (MD) and the United States, 2015

Incidence 2015	*Total*[*]	*Males*	*Females*	*Whites*	*Blacks*	*Other*
MD New Cases (count)	31,001	15,234	15,765	21,260	8,281	1,129
MD Incidence Rate	449.3	488.9	423.8	462.1	441.8	258.5
U.S. SEER Rate	429.5	462.8	408.8	438.7	433.3	284.7
Mortality 2015	*Total*	*Males*	*Females*	*Whites*	*Blacks*	*Other*
MD Deaths (count)	10,568	5,377	5,191	7,175	3,065	328
MD Mortality Rate	155.1	183.7	135.1	152.2	176.3	84.8
U.S. Mortality Rate	158.7	189.9	135.8	159.4	181.0	N/A

Rates are per 100,000 population and are age-adjusted to 2000 U.S. standard population

* Total also includes cases reported as transsexual, hermaphrodite, unknown gender, unknown race, and unknown county

Source: Maryland Cancer Registry

   U.S. SEER, SEER*Stat

   NCHS Compressed Mortality File in CDC WONDER, 2015

   U.S. SEER, Cancer Statistics Review

**Cancer Incidence Rates
All Cancer Sites
Maryland and U.S., 2006-2015**

Source: Maryland Cancer Registry
U.S. SEER, SEER*Stat
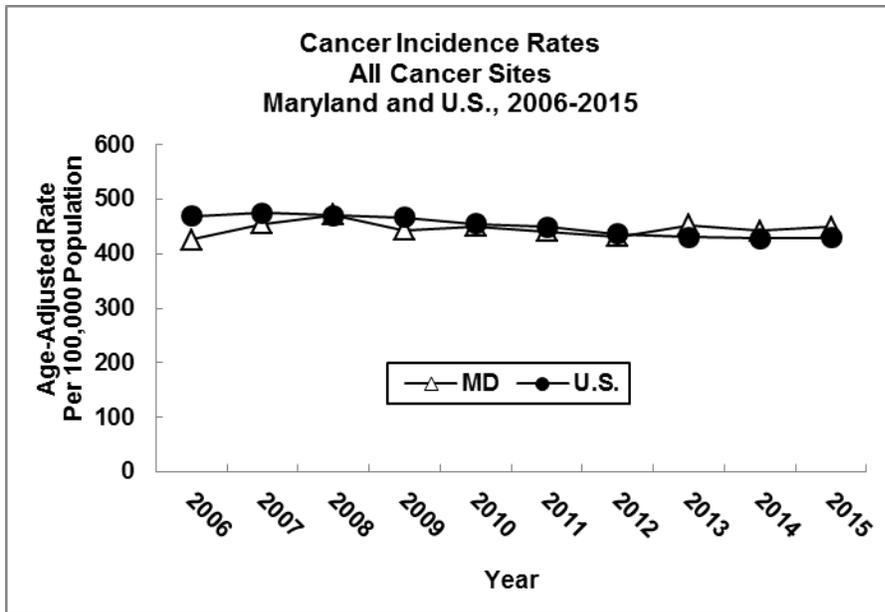
Maryland vs. U.S., All Cancer Sites Incidence Rates, All Age Groups

Although all cancer sites incidence rates declined in the U.S. over the 10-year period from 2006 to 2015, rates in Maryland remained steady. U.S. incidence rates for all cancer sites decreased at a rate of 1.3% per year.

See Appendix J, Table 1.

**Cancer Mortality Rates
All Cancer Sites
Maryland and U.S., 2006-2015**

Source: NCHS Compressed Mortality File in CDC WONDER, 2006-2007, 2012-2015 (MD)
Maryland Vital Statistics Administration from MATCH, 2008-2010 (MD)
Maryland Vital Statistics Administration, 2011 (MD)
NCHS Compressed Mortality File in CDC WONDER, 2006-2008 (U.S.)
U.S. SEER, Cancer Statistics Review, 2009-2015 (U.S.)
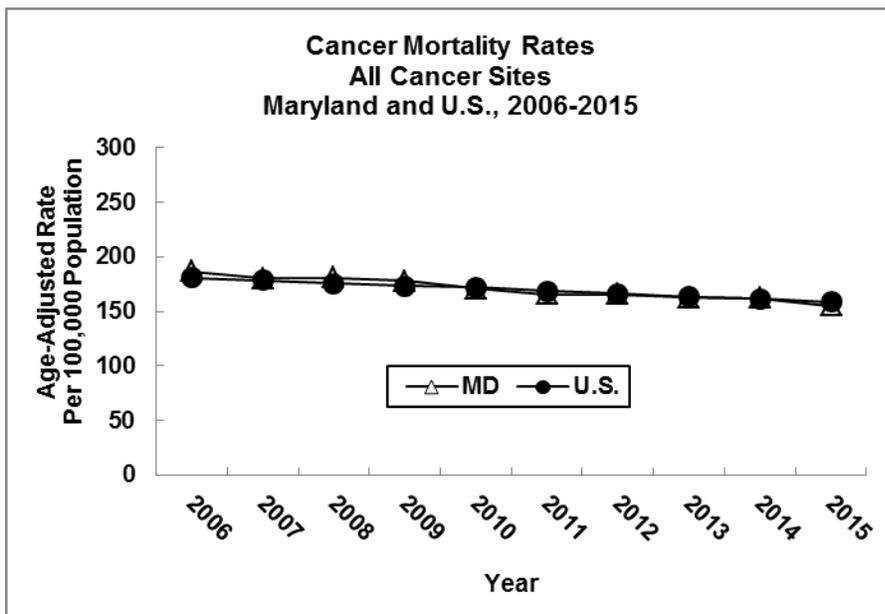
Maryland vs. U.S., All Cancer Sites Mortality Rates, All Age Groups

Maryland cancer mortality rates have declined since 2006. From 2006 to 2015, all cancer sites mortality rates in Maryland decreased at a rate of 1.9% per year, a greater decrease than the U.S. mortality rates, which decreased at a rate of 1.4% per year during the same time period.

See Appendix J, Table 2.

All Cancer Sites Incidence and Mortality Rates by Year of Diagnosis or Death, Maryland, 2011-2015

Age-Adjusted Rate Per 100,000 Population

Incidence: 440.7 (2011), 432.1 (2012), 452.2 (2013), 442.0 (2014), 449.3 (2015)

Mortality: 165.7 (2011), 165.7 (2012), 162.9 (2013), 161.8 (2014), 155.1 (2015)

Year of Diagnosis or Death

--□-- Incidence   —◇— Mortality

Source: Maryland Cancer Registry
NCHS Compressed Mortality File in CDC WONDER, 2012-2015
Maryland Vital Statistics Administration, 2011
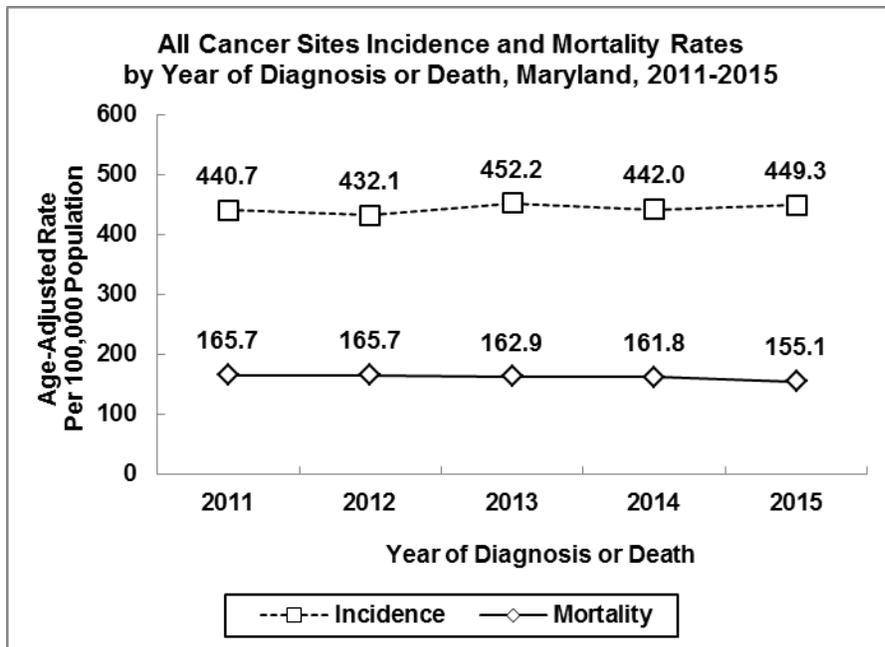
Incidence and Mortality Trends

In Maryland, the incidence rate for all cancer sites increased slightly at a rate of 0.6% per year from 2011 to 2015.

During this same timeframe, cancer mortality rates decreased at a rate of 1.5% per year.

See Appendix H, Tables 1 and 2.

All Cancer Sites Incidence Rates by Race Maryland, 2011-2015

Age-Adjusted Rate Per 100,000 Population

White: 444.1 (2011), 440.4 (2012), 461.8 (2013), 450.6 (2014), 462.1 (2015)

Black: 437.7 (2011), 425.9 (2012), 446.6 (2013), 443.6 (2014), 441.8 (2015)

Year of Diagnosis

—□— White   —■— Black

Source: Maryland Cancer Registry
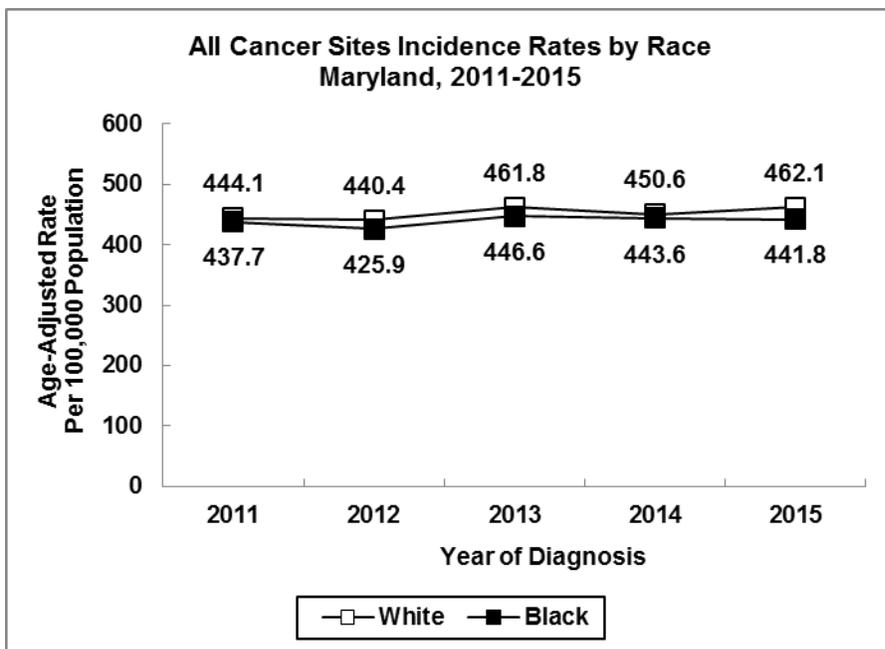
Incidence Trends by Race

From 2011 to 2015, the incidence rate for all cancer sites was lower among blacks compared to whites in Maryland. From 2011 to 2015, incidence rates for all cancer sites increased at a rate of 1.0% per year among whites and increased at a rate of 0.6% per year among blacks.

See Appendix H, Table 3.
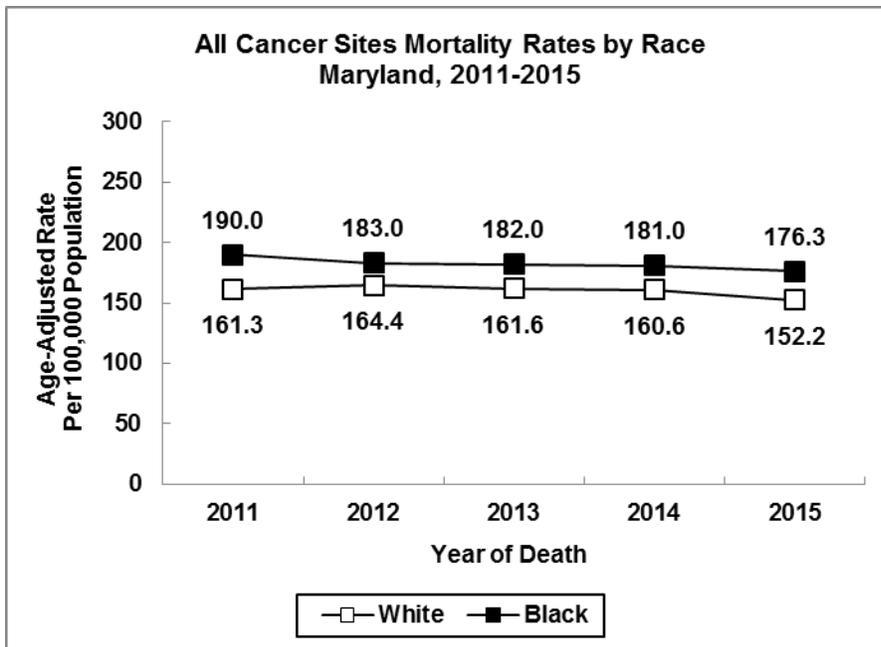
All Cancer Sites Mortality Rates by Race
Maryland, 2011-2015

Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2015
Maryland Vital Statistics Administration, 2011

All Cancer Sites by Stage at Diagnosis
Maryland, 2011-2015

Source: Maryland Cancer Registry
* In the 2015 and 2016 CRF Cancer Reports, the 2011 unstaged value was
incorrect due to a data copy error

Mortality Trends by Race

Both blacks and whites showed declines in cancer mortality from 2011 to 2015, with a decrease of 1.4% per year for whites and 1.6% per year for blacks.

Blacks have higher mortality rates for all cancer sites than whites.

See Appendix H, Table 5.

Stage at Diagnosis

Of all cancers diagnosed in Maryland in 2015, 44.9% were found at the local (early) stage, 20.8% at the regional stage, and 23.0% at the distant (late) stage. In 2015, 11.4% of all cancers were reported as unstaged in Maryland. Since 2011, the proportion of all cancers reported as unstaged decreased by 2.3% per year.*

See Appendix I, Table 1.

All Cancer Sites Mortality Rates
Maryland and U.S., 2015
Compared to Healthy People 2020 Target

	Age-Adjusted Rate Per 100,000 Population
HP 2020 Target	161.4
MD 2015	155.1
U.S. 2015	158.7
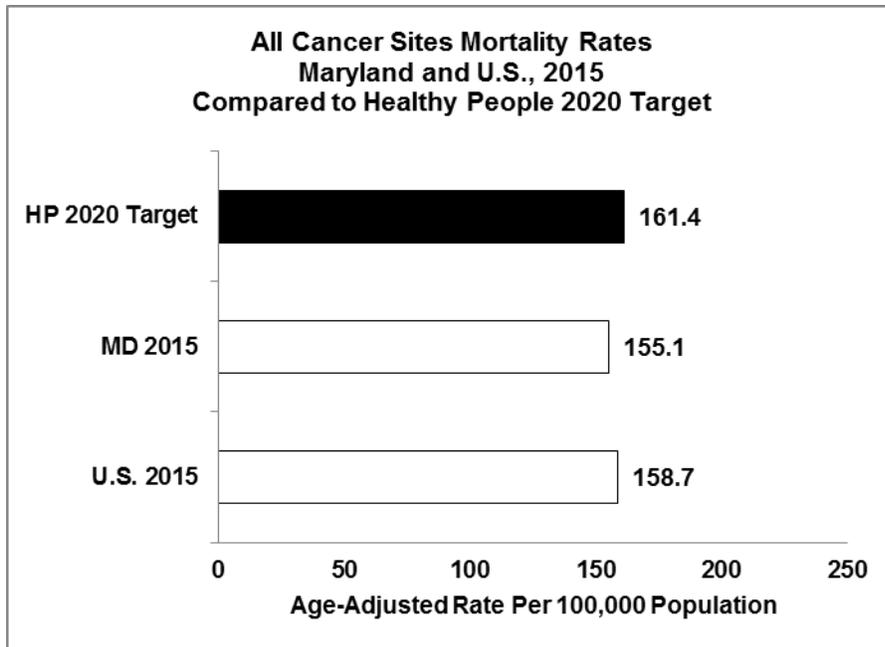
Mortality Rates Compared to Healthy People 2020 Target

In 2015, the mortality rate for all cancer sites in Maryland was 155.1 per 100,000 population, which was lower than the U.S. rate of 158.7 per 100,000 population and lower than the Healthy People 2020 target of 161.4 per 100,000 population.

Summary—Identification of Targeted Cancers

The cancers targeted under the Cigarette Restitution Fund in 2015 include: lung and bronchus, colon and rectum, prostate, female breast, cervical, oral, and melanoma of the skin. These cancers were chosen due to the capacity to prevent, detect early, and effectively treat these cancers, and due to the magnitude of their impact on incidence and mortality. The remaining sections of this report address these targeted cancers. The public health interventions to reduce the impact of these and other cancers among Marylanders are listed in the chart below.

Public Health Interventions for Targeted and Other Cancers
Prevention, including: • stopping tobacco use or not starting it; • being physically active; • eating a healthy diet; • limiting alcohol use; • staying at a healthy weight; • getting the human papillomavirus (HPV) vaccine as recommended; • protecting the skin from excessive sun and other sources of ultraviolet light exposure; and, • for men, discussing the potential risks and benefits of prostate cancer screening with their healthcare provider. Early detection (screening) and treatment of: • colorectal cancer; • female breast cancer; • cervical cancer; • lung cancer; and, • oral cancer.

Table 2.
Number of New Cancer Cases for All Cancer Sites by Jurisdiction, Gender, and Race, Maryland, 2015

| Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	31,001	15,234	15,765	21,260	8,281	1,129
Allegany	489	256	233	474	11	<6
Anne Arundel	2,957	1,480	1,477	2,512	352	67
Baltimore City	3,177	1,552	1,625	1,065	2,053	37
Baltimore County	5,024	2,434	2,590	3,836	1,039	129
Calvert	445	224	221	377	64	<6
Caroline	172	85	87	150	20	<6
Carroll	1,012	518	494	960	36	13
Cecil	653	340	313	612	36	<6
Charles	723	390	333	450	254	17
Dorchester	214	118	96	150	63	0
Frederick	1,342	651	691	1,196	108	27
Garrett	187	93	94	185	<6	0
Harford	1,562	791	771	1,357	172	28
Howard	1,339	639	700	971	223	133
Kent	157	74	83	128	27	<6
Montgomery	4,415	2,089	2,326	3,066	715	507
Prince George's	3,850	1,777	2,073	943	2,701	133
Queen Anne's	292	145	147	267	23	<6
Saint Mary's	517	272	244	444	59	11
Somerset	148	66	82	110	37	0
Talbot	292	154	138	262	29	0
Washington	822	403	419	770	45	6
Wicomico	635	329	306	501	125	<6
Worcester	453	247	206	402	49	<6

Total includes cases reported as transsexual, hermaphrodite, unknown gender, unknown race, and unknown county

<6 = Case counts of 1-5 are suppressed per MDH/MCR Data Use Policy

s = Case counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 3.
All Cancer Sites Age-Adjusted Incidence Rates* by Jurisdiction, Gender, and Race, Maryland, 2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	449.3	488.9	423.8	462.1	441.8	258.5
Allegany	495.7	541.6	471.4	507.0	**	**
Anne Arundel	468.1	512.1	439.2	481.0	415.8	295.2
Baltimore City	479.2	544.2	437.5	496.1	474.7	246.9
Baltimore County	488.9	536.5	459.2	508.0	473.9	256.7
Calvert	421.1	454.2	397.9	424.3	439.0	**
Caroline	436.3	442.5	431.6	446.3	362.3	**
Carroll	483.1	522.2	453.9	481.3	530.3	**
Cecil	556.7	613.2	514.5	559.5	552.7	**
Charles	454.1	558.8	380.2	484.9	432.7	221.3
Dorchester	450.8	508.1	406.0	413.8	573.9	0.0
Frederick	488.5	515.5	475.9	489.9	550.0	277.7
Garrett	429.1	445.3	411.0	428.6	**	0.0
Harford	515.2	568.5	476.1	515.9	555.7	286.6
Howard	397.2	412.6	387.9	422.6	412.2	245.4
Kent	487.2	492.9	489.6	461.2	607.0	**
Montgomery	371.2	389.9	361.5	375.2	388.6	268.3
Prince George's	405.6	431.6	393.1	380.6	412.4	248.8
Queen Anne's	467.3	474.5	469.1	470.4	464.1	**
Saint Mary's	440.7	479.8	405.6	456.4	348.5	**
Somerset	480.7	449.4	548.4	508.1	416.7	0.0
Talbot	448.5	509.0	401.7	450.8	445.5	0.0
Washington	438.2	453.3	434.8	444.7	404.6	**
Wicomico	555.2	628.6	505.1	587.6	482.7	**
Worcester	539.2	587.5	508.9	537.8	577.5	**

* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

** Rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 4.
All Cancer Sites and Age-Adjusted Incidence Rates*
Among Hispanics§ by Geographical Area in Maryland, 2015

Jurisdiction	Cases	Rate
Maryland	917	287.6
Allegany	<6	**
Anne Arundel	64	362.2
Baltimore City	58	458.6
Baltimore County	77	340.6
Calvert	<6	**
Caroline	<6	**
Carroll	16	566.3
Cecil	<6	**
Charles	9	**
Dorchester	<6	**
Frederick	34	251.9
Garrett	0	0.0
Harford	15	**
Howard	38	310.5
Kent	0	0.0
Montgomery	367	280.5
Prince George's	183	249.0
Queen Anne's	<6	**
St. Mary's	14	**
Somerset	<6	**
Talbot	<6	**
Washington	8	**
Wicomico	12	**
Worcester	<6	**
Region	**Cases**	**Rate**
Baltimore Metropolitan Area	268	354.9
Eastern Shore Region	28	276.3
National Capital Area	550	268.2
Northwest Region	45	259.4
Southern Region	26	219.9

* Rates are per 100,000 population and are age-adjusted to 2000 U.S. standard population

§ Case counts were prepared using MCR data and an algorithm to determine Hispanic ethnicity (See Appendix C, Section G)

<6 = Case counts of 1-5 are suppressed per DHMH/MCR Data Use Policy and Procedures

** Rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry

Table 5.
Number of Deaths for All Cancer Sites by Jurisdiction, Gender, and Race, Maryland, 2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	10,568	5,377	5,191	7,175	3,065	328
Allegany	185	88	97	179	<10	<10
Anne Arundel	953	516	437	801	130	22
Baltimore City	1,302	654	648	379	911	12
Baltimore County	1,789	882	907	1,377	382	30
Calvert	141	74	67	121	s	<10
Caroline	65	30	35	57	<10	<10
Carroll	314	158	156	299	s	<10
Cecil	214	110	104	200	s	<10
Charles	223	114	109	142	s	<10
Dorchester	91	46	45	70	s	<10
Frederick	399	199	200	359	s	<10
Garrett	75	46	29	73	<10	<10
Harford	482	259	223	422	s	<10
Howard	400	209	191	286	80	34
Kent	49	27	22	42	<10	<10
Montgomery	1,450	685	765	1,056	244	150
Prince George's	1,323	639	684	349	934	40
Queen Anne's	91	52	39	82	<10	<10
Saint Mary's	194	122	72	169	s	<10
Somerset	52	28	24	39	s	<10
Talbot	85	52	33	73	s	<10
Washington	297	158	139	280	s	<10
Wicomico	220	132	88	164	s	<10
Worcester	174	97	77	156	s	<10

<10 = Death counts of 0-9 are suppressed per MDH/CCPC Mortality Data Suppression Policy

s = Death counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 7.
Number of New Cancer Cases for All Cancer Sites by Jurisdiction, Gender, and Race, Maryland, 2011-2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	146,676	72,061	74,552	101,389	38,395	4,933
Allegany	2,447	1,240	1,207	2,343	89	11
Anne Arundel	14,001	6,940	7,057	11,917	1,672	290
Baltimore City	15,694	7,658	8,027	5,262	10,156	177
Baltimore County	23,725	11,559	12,154	18,251	4,792	536
Calvert	2,297	1,147	1,145	1,946	317	18
Caroline	924	489	435	774	138	6
Carroll	4,737	2,374	2,361	4,518	152	36
Cecil	2,912	1,511	1,401	2,733	148	24
Charles	3,284	1,715	1,567	2,074	1,099	71
Dorchester	1,124	597	527	838	280	<6
Frederick	5,754	2,778	2,974	5,129	444	119
Garrett	843	410	433	837	<6	<6
Harford	7,108	3,655	3,451	6,270	696	98
Howard	6,437	3,056	3,377	4,717	1,083	570
Kent	720	359	361	607	107	<6
Montgomery	21,453	10,057	11,393	15,080	3,362	2,258
Prince George's	17,544	8,385	9,146	4,680	11,910	566
Queen Anne's	1,373	721	652	1,268	98	<6
Saint Mary's	2,389	1,223	1,164	2,009	312	41
Somerset	734	405	329	538	187	<6
Talbot	1,409	741	668	1,253	141	<6
Washington	4,170	2,026	2,143	3,899	217	39
Wicomico	2,971	1,524	1,447	2,298	614	35
Worcester	2,035	1,105	930	1,778	238	9

Total includes cases reported as transsexual, hermaphrodite, unknown gender, unknown race, and unknown county

<6 = Case counts of 1-5 are suppressed per MDH/MCR Data Use Policy

s = Case counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 7.
Number of New Cancer Cases for All Cancer Sites by Jurisdiction, Gender, and Race, Maryland, 2011-2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	146,676	72,061	74,552	101,389	38,395	4,933
Allegany	2,447	1,240	1,207	2,343	89	11
Anne Arundel	14,001	6,940	7,057	11,917	1,672	290
Baltimore City	15,694	7,658	8,027	5,262	10,156	177
Baltimore County	23,725	11,559	12,154	18,251	4,792	536
Calvert	2,297	1,147	1,145	1,946	317	18
Caroline	924	489	435	774	138	6
Carroll	4,737	2,374	2,361	4,518	152	36
Cecil	2,912	1,511	1,401	2,733	148	24
Charles	3,284	1,715	1,567	2,074	1,099	71
Dorchester	1,124	597	527	838	280	<6
Frederick	5,754	2,778	2,974	5,129	444	119
Garrett	843	410	433	837	<6	<6
Harford	7,108	3,655	3,451	6,270	696	98
Howard	6,437	3,056	3,377	4,717	1,083	570
Kent	720	359	361	607	107	<6
Montgomery	21,453	10,057	11,393	15,080	3,362	2,258
Prince George's	17,544	8,385	9,146	4,680	11,910	566
Queen Anne's	1,373	721	652	1,268	98	<6
Saint Mary's	2,389	1,223	1,164	2,009	312	41
Somerset	734	405	329	538	187	<6
Talbot	1,409	741	668	1,253	141	<6
Washington	4,170	2,026	2,143	3,899	217	39
Wicomico	2,971	1,524	1,447	2,298	614	35
Worcester	2,035	1,105	930	1,778	238	9

Total includes cases reported as transsexual, hermaphrodite, unknown gender, unknown race, and unknown county

<6 = Case counts of 1-5 are suppressed per MDH/MCR Data Use Policy

s = Case counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 8.
All Cancer Sites Age-Adjusted Incidence Rates* by Jurisdiction, Gender, and Race, Maryland, 2011-2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	443.4	484.7	416.2	451.9	439.2	254.0
Allegany	487.0	525.5	472.8	488.4	598.8	**
Anne Arundel	459.9	498.9	435.2	470.1	420.3	261.7
Baltimore City	483.0	550.0	439.3	487.1	482.7	240.6
Baltimore County	476.7	526.0	444.1	488.5	476.2	249.0
Calvert	461.7	495.9	437.7	466.7	454.7	182.4
Caroline	475.2	541.7	424.3	467.9	516.9	**
Carroll	468.5	512.5	437.0	468.1	503.8	221.8
Cecil	508.0	557.9	471.3	509.2	516.2	284.5
Charles	434.9	508.2	380.4	455.9	409.5	221.7
Dorchester	491.8	556.4	441.9	487.0	523.8	**
Frederick	442.6	470.6	428.0	441.7	498.6	258.1
Garrett	403.4	416.1	397.4	403.2	**	**
Harford	490.8	551.7	446.9	495.0	497.5	232.3
Howard	405.9	423.2	397.5	423.7	440.6	257.5
Kent	457.8	482.0	447.7	452.8	492.1	**
Montgomery	377.5	396.1	368.1	378.9	393.3	264.7
Prince George's	397.1	439.5	371.0	387.4	396.8	234.9
Queen Anne's	437.1	477.2	404.4	441.5	432.1	**
Saint Mary's	425.1	447.5	406.3	430.2	397.4	229.4
Somerset	482.2	537.2	449.2	499.1	459.4	**
Talbot	440.8	488.9	404.5	441.0	406.2	**
Washington	463.2	480.8	460.7	466.9	426.8	320.0
Wicomico	530.3	597.4	484.4	538.6	517.8	214.7
Worcester	485.7	540.7	443.6	480.2	537.0	**

* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

** Rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 9.
Number of Deaths for All Cancer Sites by Jurisdiction, Gender, and Race, Maryland, 2011-2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	52,710	26,779	25,931	36,542	14,685	1,483
Allegany	889	474	415	865	s	<10
Anne Arundel	4,961	2,586	2,375	4,174	654	133
Baltimore City	7,104	3,575	3,529	2,397	4,645	62
Baltimore County	8,433	4,170	4,263	6,659	1,619	155
Calvert	781	406	375	657	s	<10
Caroline	354	181	173	308	s	<10
Carroll	1,623	825	798	1,569	s	<10
Cecil	1,031	557	474	976	s	<10
Charles	1,212	613	599	764	412	36
Dorchester	445	238	207	329	s	<10
Frederick	1,918	1,000	918	1,746	144	28
Garrett	325	184	141	322	<10	<10
Harford	2,355	1,258	1,097	2,111	219	25
Howard	1,839	928	911	1,362	332	145
Kent	260	135	125	222	s	<10
Montgomery	6,658	3,174	3,484	4,978	1,034	646
Prince George's	6,662	3,270	3,392	2,036	4,451	175
Queen Anne's	519	297	222	469	s	<10
Saint Mary's	968	552	416	829	126	13
Somerset	304	174	130	226	s	<10
Talbot	535	300	235	462	s	<10
Washington	1,589	816	773	1,518	57	14
Wicomico	1,134	613	521	859	261	14
Worcester	811	453	358	704	s	<10

<10 = Death counts of 0-9 are suppressed per MDH/CCPC Mortality Data Suppression Policy

s = Death counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 10.
All Cancer Sites Age-Adjusted Mortality Rates* by Jurisdiction, Gender, and Race, Maryland, 2011-2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	162.2	193.3	141.2	160.2	182.0	85.5
Allegany	169.2	206.0	143.7	171.0	**	**
Anne Arundel	169.2	202.1	146.3	168.1	182.9	137.8
Baltimore City	223.4	276.9	190.2	220.1	227.9	90.8
Baltimore County	162.9	193.0	142.8	163.8	174.0	83.0
Calvert	164.3	197.0	143.1	163.7	181.5	**
Caroline	181.8	211.7	160.7	184.7	176.2	**
Carroll	161.8	188.1	142.0	163.1	175.5	**
Cecil	187.9	224.4	159.9	188.8	192.3	**
Charles	174.2	204.7	152.8	173.2	181.1	118.4
Dorchester	190.6	233.2	160.6	182.0	219.2	**
Frederick	153.1	185.5	131.1	153.8	185.8	68.8
Garrett	148.1	184.9	117.2	147.7	**	**
Harford	167.4	208.9	139.5	169.0	179.2	65.4
Howard	127.5	149.2	113.7	130.5	158.3	75.8
Kent	152.0	180.5	131.7	150.0	172.2	**
Montgomery	117.9	133.7	108.1	120.6	134.0	83.2
Prince George's	163.9	195.5	144.6	173.0	164.0	83.3
Queen Anne's	168.4	212.8	133.5	167.0	202.7	**
Saint Mary's	182.6	222.2	148.6	187.3	171.7	**
Somerset	200.4	245.0	167.2	202.5	203.6	**
Talbot	153.5	195.8	121.9	145.8	218.9	**
Washington	172.9	202.6	152.5	175.3	143.7	**
Wicomico	200.7	255.1	162.2	196.4	226.5	**
Worcester	180.6	223.0	146.6	175.4	240.8	**

* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

** Rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data Suppression Policy

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Maryland All Sites Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2011-2015

Legend

- ■ >25% above U.S. rate
- ■ 10-25% above U.S. rate
- ■ Between 10% below and 10% above U.S. rate
- ■ 10-25% below U.S. rate
- ■ >25% below U.S. rate

Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 population.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 1.
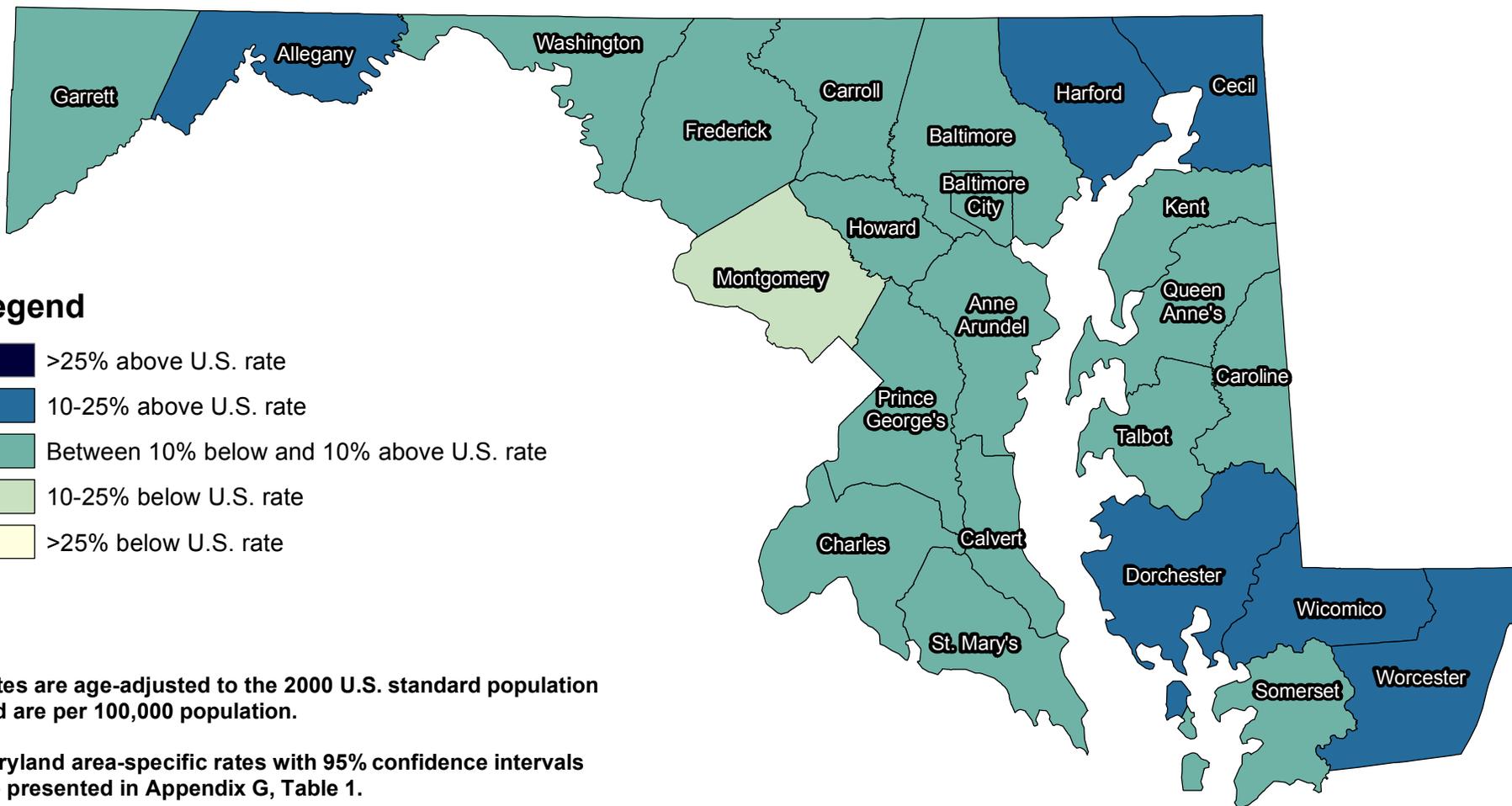
U.S. all sites cancer incidence rate, 2011-2015: 439.2 / 100,000

Maryland all sites cancer incidence rate, 2011-2015: 443.4 / 100,000

Sources: Maryland Cancer Registry
           U.S. SEER, SEER*Stat Database

Maryland All Sites Cancer Mortality Rates by Geographical Area: Comparison to U.S. Rate, 2011-2015

Garrett
Allegany
Washington
Carroll
Harford
Cecil
Frederick
Baltimore
Baltimore City
Kent
Howard
Montgomery
Queen Anne's
Anne Arundel
Caroline
Prince George's
Talbot
Charles
Calvert
Dorchester
Wicomico
St. Mary's
Worcester
Somerset

Legend

- >25% above U.S. rate
- 10-25% above U.S. rate
- Between 10% below and 10% above U.S. rate
- 10-25% below U.S. rate
- >25% below U.S. rate

Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 population.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 9.

U.S. all sites cancer mortality rate, 2011-2015: 163.5 / 100,000

Maryland all sites cancer mortality rate, 2011-2015: 162.2 / 100,000

Sources: NCHS Compressed Mortality File in CDC WONDER
            U.S. SEER, Cancer Statistics Review

24

III. Targeted Cancers

A. Lung and Bronchus Cancer

Incidence (New Cases)

There were 3,812 new cases of lung and bronchus cancer (collectively called lung cancer) reported among Maryland residents in 2015. The 2015 Maryland age-adjusted lung cancer incidence rate was 55.5 per 100,000 population (53.7-57.3, 95% CI), which is statistically significantly higher than the 2015 U.S. SEER lung cancer incidence rate of 51.8 per 100,000 population (51.4-52.3, 95% CI).

Mortality (Deaths)

There were 2,579 lung cancer deaths among Maryland residents in 2015. In 2015, lung cancer accounted for 24.4% of all cancer deaths in Maryland and was the leading cause of cancer death in both men and women. The 2015 age-adjusted lung cancer mortality rate was 37.6 per 100,000 population (36.1-39.1, 95% CI) in Maryland. This rate is statistically significantly lower than the 2015 U.S. mortality rate for lung and bronchus cancer of 40.6 per 100,000 population (40.4-40.8, 95% CI). Maryland had the 34th highest lung cancer mortality rate among the states and the District of Columbia for the period from 2011 to 2015.

Table 11.
Lung Cancer Incidence and Mortality Rates
by Gender and Race, Maryland (MD) and the United States, 2015

Incidence 2015	*Total**	*Males*	*Females*	*Whites*	*Blacks*	*Other*
MD New Cases (count)	3,812	1,878	1,934	2,815	896	90
MD Incidence Rate	55.5	62.3	50.4	59.7	51.0	22.2
U.S. SEER Rate	51.8	59.6	45.9	53.2	57.4	34.1
Mortality 2015	*Total*	*Males*	*Females*	*Whites*	*Blacks*	*Other*
MD Deaths (count)	2,579	1,335	1,244	1,817	690	72
MD Mortality Rate	37.6	44.9	32.2	38.2	39.7	18.1
U.S. Mortality Rate	40.6	49.8	33.6	41.5	42.2	N/A

Rates are per 100,000 population and are age-adjusted to 2000 U.S. standard population
* Total also includes cases reported as transsexual, hermaphrodite, unknown gender, unknown race, and unknown county
Source: Maryland Cancer Registry
U.S. SEER, SEER*Stat
NCHS Compressed Mortality File in CDC WONDER, 2015
U.S. SEER, Cancer Statistics Review

Lung Cancer Incidence and Mortality Rates by Year of Diagnosis or Death, Maryland, 2011-2015

Age-Adjusted Rate Per 100,000 Population

Year	Incidence	Mortality
2011	56.8	43.7
2012	56.4	43.5
2013	56.6	41.1
2014	55.8	41.3
2015	55.5	37.6

- - ⊡ - Incidence   —◇— Mortality

Source: Maryland Cancer Registry
NCHS Compressed Mortality File in CDC WONDER, 2012-2015
Maryland Vital Statistics Administration, 2011

*The 2011 Maryland lung cancer incidence rate was incorrectly reported as 56.9 in previous reports due to a rounding error. It has been corrected in this report.

Lung Cancer Incidence Rates by Race Maryland, 2011-2015

Age-Adjusted Rate Per 100,000 Population

Year	White	Black
2011	59.7	53.4
2012	58.6	55.9
2013	58.9	55.3
2014	57.6	56.7
2015	59.7	51.0

—☐— White   —■— Black

Source: Maryland Cancer Registry

Incidence and Mortality Trends

Lung cancer incidence rates in Maryland decreased at a rate of 0.6% per year from 2011 to 2015.*

Lung cancer mortality rates decreased at a rate of 3.5% per year from 2011 to 2015.

See Appendix H, Tables 1 and 2.

Incidence Trends by Race

From 2011 to 2015, lung cancer incidence rates for blacks decreased at a rate of 0.8% per year, compared to a decline of only 0.2% per year among whites.

See Appendix H, Table 3.
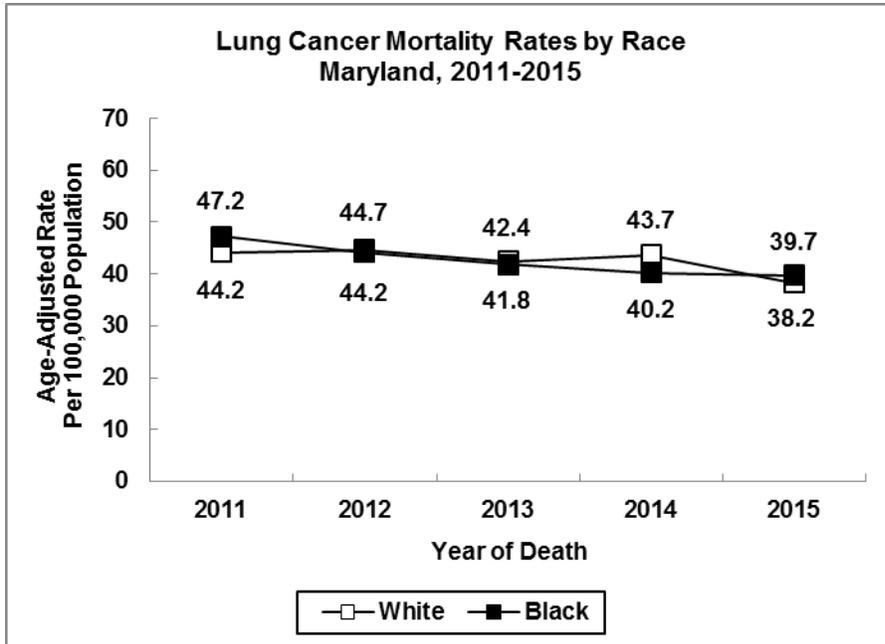
Lung Cancer Mortality Rates by Race
Maryland, 2011-2015

Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2015
        Maryland Vital Statistics Administration, 2011

Mortality Trends by Race

Lung cancer mortality rates are declining for both blacks and whites. From 2011 to 2015, rates decreased at a rate of 4.3% per year for blacks, and 3.1% per year for whites.

See Appendix H, Table 5.

Lung Cancer by Stage at Diagnosis
Maryland, 2011-2015
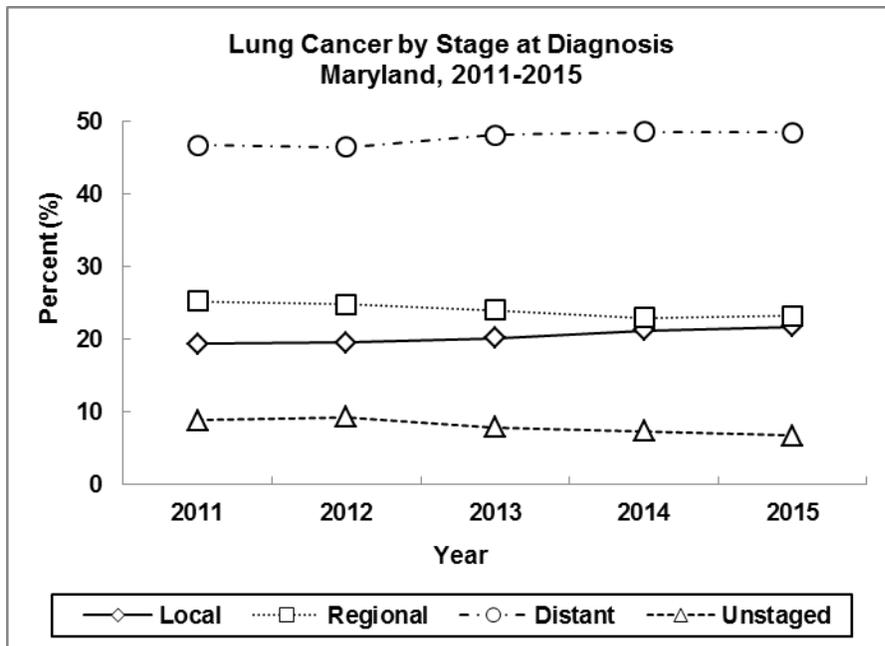
Source: Maryland Cancer Registry

Stage at Diagnosis

A higher proportion of lung cancer cases were diagnosed at the distant stage than at the local or regional stage. In 2015, 21.7% of lung cancer cases in Maryland were diagnosed at the local stage, 23.2% at the regional stage, and 48.5% at the distant stage. The proportion of lung cancers reported as unstaged declined 7.6% per year from 2011 to 2015.

See Appendix I, Table 2.

Current Smokers* Among Maryland Adults Ages 18 Years and Older, 2011-2016, Compared to Healthy People 2020 Target

Year	Percent (%)
2011	19.1%
2012	16.2%
2013	16.4%
2014	14.6%
2015	15.1%
2016	13.7%
HP 2020	12.0%

□ MD   ■ HP 2020
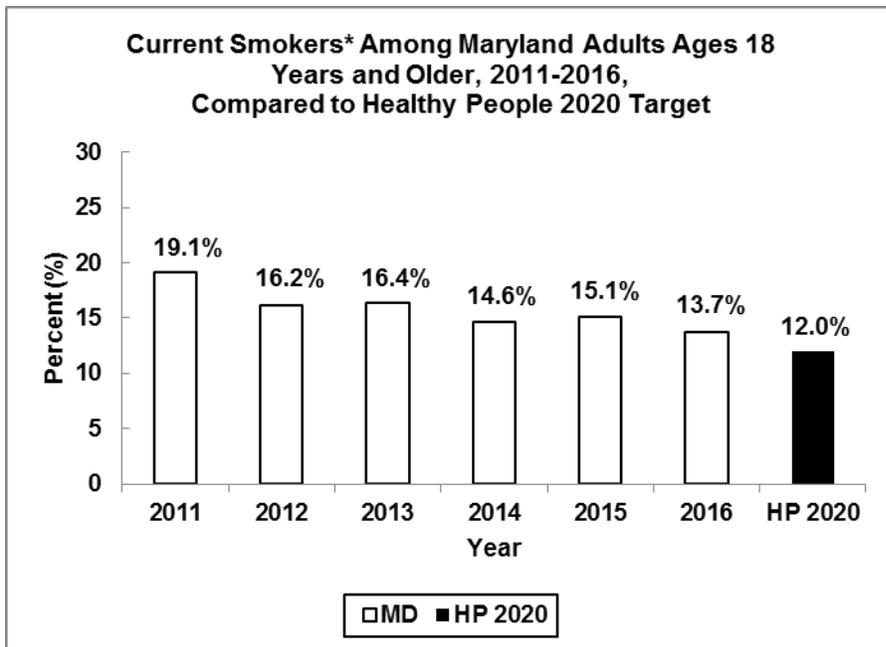
Source: Maryland BRFSS, 2011-2016
         Healthy People 2020, U.S. Department of Health and Human Services

*Current smoker is defined as a person who smokes cigarettes every day or some days

Smoking Prevalence Among Maryland Adults

One Healthy People 2020 target is to reduce the percentage of adults who are current smokers to 12.0%. Although Maryland has not yet attained this goal, the percentage of adult smokers has decreased from 19.1% in 2011 to 13.7% in 2016.

Current Use of Cigarettes* by Maryland Underage Youth in Grades 9 to 12, 2006-2016, Compared to Healthy People 2020 Target

Year	Percent (%)
2006	14.7%
2008	15.3%
2010	14.1%
2013**	11.9%
2014	8.7%
2016	8.2%
HP 2020	16.0%

□ MD   ■ HP 2020
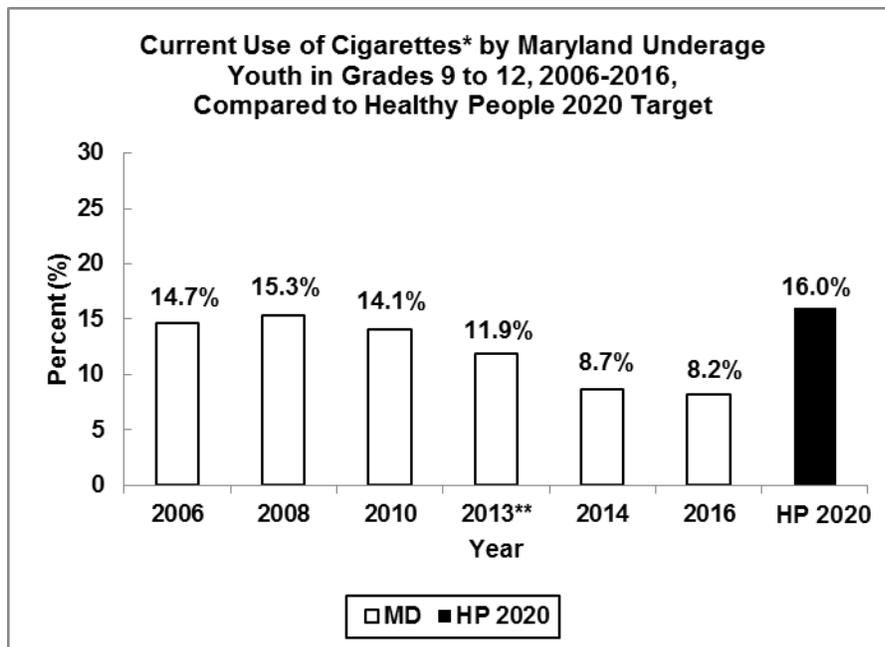
Source: Maryland Youth Tobacco Survey, 2006, 2008, 2010
         Maryland Youth Tobacco and Risk Behavior Survey, 2013, 2014, 2016
         Healthy People 2020, U.S. Department of Health and Human Services

*Current use of cigarettes is defined as smoking cigarettes on 1 or more days in the previous 30 days
**During the 2012-2013 school year, the Youth Tobacco Survey (YTS) merged with the Youth Risk Behavior Survey (YRBS) and data were collected in the fall of 2013

Cigarette Use by Maryland Youth

Another Healthy People 2020 target is to reduce the percentage of youth in grades 9 to 12 who have smoked cigarettes in the previous 30 days to 16.0%.

Since 2006, Maryland has met the Healthy People 2020 target for current cigarette use among high school students. In 2016, only 8.2% of Maryland youth in grades 9 to 12 reported smoking cigarettes in the previous 30 days.

Public Health Evidence (quoted from the National Cancer Institute PDQ®, 12/6/2017 and 6/16/2017, and the United States Preventive Services Task Force [USPSTF], 12/2013)

Prevention

Avoiding risk factors may help prevent cancer. The following are risk factors for lung cancer:
- Cigarette, cigar, and pipe smoking;
- Being exposed to secondhand tobacco smoke;
- Having a family history of lung cancer;
- HIV infection;
- Environmental risk factors:
  - Radiation exposure e.g., atomic bomb radiation, radiation therapy to the chest, imaging tests such as CT scans, and radon;
  - Workplace exposure e.g., asbestos, arsenic, chromium, nickel, beryllium, cadmium, tar, and soot;
  - Air pollution; and
- Taking beta carotene supplements, especially in heavy smokers.

Increasing protective factors may help prevent cancer. The following are protective factors for lung cancer:
- Not smoking;
- Quitting smoking;
- Lower exposure to workplace risk factors; and
- Lower exposure to radon.

It is not clear if the following decrease the risk of lung cancer:
- Diet; and
- Physical activity.

The following do not decrease the risk of lung cancer:
- Nonsmokers taking beta carotene supplements; and
- Taking vitamin E supplements.

Screening

Screening with low-dose spiral computed tomography (LDCT) scans has been shown to decrease the risk of dying from lung cancer in heavy smokers. LDCT scans were better than chest x-rays at finding early-stage lung cancer. Screening with LDCT also decreased the risk of dying from lung cancer in current and former heavy smokers. Current smokers whose LDCT scan result shows possible signs of cancer may be more likely to quit smoking.

The USPSTF recommends annual screening for lung cancer with LDCT in adults ages 55 to 80 years old who have a 30 pack-year* smoking history and currently smoke or have quit within the past 15 years. Screening should be discontinued once a person has not smoked for 15 years

or develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery.

Chest x-ray and sputum cytology are two screening tests that have been used to check for signs of lung cancer. Screening with chest x-ray, sputum cytology, or both of these tests does not decrease the risk of dying from lung cancer.

The risks of lung cancer screening include the following:
- False-negative test results can occur (the screening test results may appear to be normal even though lung cancer is present). A person who receives a false-negative test result may delay seeking medical care even if there are symptoms.
- False-positive test results can occur (the screening test results may appear to be abnormal even though no cancer is present). A false-positive test result can cause anxiety and is usually followed by more tests (such as biopsy), which also have risks. A biopsy to diagnose lung cancer can cause part of the lung to collapse. Sometimes surgery is needed to reinflate the lung. Harms from diagnostic tests may happen more often in patients who have medical problems caused by heavy or long-term smoking.
- Chest x-rays and LDCT scans expose the chest to radiation. Radiation exposure from chest x-rays and low-dose spiral LDCT scans may increase the risk of cancer. Younger people and people at low risk for lung cancer are more likely to develop lung cancer caused by radiation exposure.

Maryland Department of Health Medical Advisory Committee Public Health Intervention for Lung Cancer
- Annual screening for lung cancer with LDCT in adults ages 55 to 80 years old who have ≥ 30 pack-year smoking history and currently smoke or have quit within the past 15 years.   - Annual screening for lung cancer with LDCT in adults ages 50 to 80 years old who have a ≥ 20 pack-year smoking history and at least one additional risk factor, such as personal history of lung disease or cancer of the lung, head, neck or lymphoma, a first degree family history of lung cancer, or a documented exposure to radon, arsenic, asbestos, beryllium, cadmium, chromium, coal smoke/soot, diesel fumes, and silica.

Individuals should discuss risk factors for lung cancer, ways to prevent lung cancer, and screening tests with their healthcare provider.

* A pack-year is a way to measure the amount a person has smoked over a long period of time. It is calculated by multiplying the number of packs of cigarettes smoked per day by the number of years the person has smoked. For example, one pack year is equal to smoking one pack per day for one year, or two packs per day for half a year, and so on.

Note: For information on the Lung Cancer Prevention and Screening PDQ®, please see Appendix C.

Table 12.
Number of New Lung and Bronchus Cancer Cases by
Jurisdiction, Gender, and Race, Maryland, 2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	3,812	1,878	1,934	2,815	896	90
Allegany	94	42	52	94	0	0
Anne Arundel	399	189	210	361	31	7
Baltimore City	503	265	238	192	307	<6
Baltimore County	658	298	360	529	116	12
Calvert	49	21	28	42	s	<6
Caroline	22	12	10	22	0	0
Carroll	123	70	53	119	<6	0
Cecil	115	62	53	110	<6	0
Charles	71	41	30	55	s	<6
Dorchester	26	17	9	17	9	0
Frederick	137	75	62	126	s	<6
Garrett	25	16	9	s	<6	0
Harford	223	105	118	201	22	0
Howard	127	57	70	107	16	<6
Kent	15	<6	10	13	<6	0
Montgomery	362	173	189	275	38	44
Prince George's	406	196	210	119	271	13
Queen Anne's	41	20	21	37	<6	0
Saint Mary's	79	44	35	68	8	<6
Somerset	23	15	8	18	<6	0
Talbot	32	12	20	30	<6	0
Washington	104	44	60	101	<6	0
Wicomico	108	57	51	92	s	<6
Worcester	69	42	27	63	6	0

Total includes cases reported as transsexual, hermaphrodite, unknown gender, unknown race, and unknown county

<6 = Case counts of 1-5 are suppressed per MDH/MCR Data Use Policy

s = Case counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 13.
Lung and Bronchus Cancer Age-Adjusted Incidence Rates* by Jurisdiction, Gender, and Race, Maryland, 2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	55.5	62.3	50.4	59.7	51.0	22.2
Allegany	91.2	88.2	92.2	95.1	0.0	0.0
Anne Arundel	63.8	69.0	60.7	68.4	38.1	**
Baltimore City	76.9	97.4	63.0	88.1	73.5	**
Baltimore County	62.8	65.6	61.3	67.2	55.1	**
Calvert	46.4	40.9	50.0	47.0	**	**
Caroline	53.4	**	**	62.5	0.0	0.0
Carroll	59.0	75.6	44.6	59.9	**	0.0
Cecil	94.1	106.7	82.6	95.4	**	0.0
Charles	48.2	66.3	35.6	59.6	**	**
Dorchester	51.7	72.3	**	43.7	**	0.0
Frederick	49.9	63.1	39.5	50.7	**	**
Garrett	51.2	68.5	**	49.6	**	0.0
Harford	74.3	80.7	70.2	75.6	80.1	0.0
Howard	40.2	40.9	39.9	47.2	35.5	**
Kent	**	**	**	**	**	0.0
Montgomery	30.6	32.9	28.9	32.5	24.5	24.1
Prince George's	45.0	49.8	41.0	48.9	44.1	**
Queen Anne's	61.7	67.1	56.7	61.4	**	0.0
Saint Mary's	70.5	78.4	62.1	72.7	**	**
Somerset	72.6	**	**	78.7	**	0.0
Talbot	44.2	**	52.8	45.5	**	0.0
Washington	54.3	51.7	57.1	56.6	**	0.0
Wicomico	93.2	107.7	82.3	104.1	**	**
Worcester	71.5	97.1	51.2	71.3	**	0.0

* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

** Rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 14.
Number of Deaths for Lung and Bronchus Cancer by
Jurisdiction, Gender, and Race, Maryland, 2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	2,579	1,335	1,244	1,817	690	72
Allegany	52	24	28	s	<10	<10
Anne Arundel	265	148	117	237	s	<10
Baltimore City	378	198	180	s	257	<10
Baltimore County	456	237	219	359	s	<10
Calvert	35	12	23	31	<10	<10
Caroline	18	s	<10	17	<10	<10
Carroll	87	52	35	85	<10	<10
Cecil	72	36	36	69	<10	<10
Charles	52	25	27	40	s	<10
Dorchester	21	s	<10	18	<10	<10
Frederick	76	37	39	73	<10	<10
Garrett	21	11	10	20	<10	<10
Harford	127	66	61	108	s	<10
Howard	82	38	44	64	s	<10
Kent	12	<10	<10	s	<10	<10
Montgomery	272	123	149	201	40	31
Prince George's	274	128	146	79	185	10
Queen Anne's	22	s	<10	18	<10	<10
Saint Mary's	58	39	19	50	<10	<10
Somerset	17	s	<10	12	<10	<10
Talbot	18	s	<10	14	<10	<10
Washington	61	24	37	56	<10	<10
Wicomico	58	38	20	43	s	<10
Worcester	45	28	17	41	<10	<10

<10 = Death counts of 0-9 are suppressed per MDH/CCPC Mortality Data Suppression Policy

s = Death counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 15.
Lung and Bronchus Cancer Age-Adjusted Mortality Rates* by Jurisdiction, Gender, and Race, Maryland, 2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	37.6	44.9	32.2	38.2	39.7	18.1
Allegany	47.3	49.9	44.7	48.8	**	**
Anne Arundel	42.2	53.1	33.8	44.4	29.8	**
Baltimore City	59.1	74.7	48.2	56.1	61.8	**
Baltimore County	43.3	52.4	36.7	45.1	42.7	**
Calvert	34.5	**	42.9	36.2	**	**
Caroline	**	**	**	**	**	**
Carroll	39.5	52.8	27.9	39.9	**	**
Cecil	62.8	71.7	56.5	64.0	**	**
Charles	33.3	33.5	31.7	42.2	**	**
Dorchester	42.5	**	**	**	**	**
Frederick	28.2	30.5	26.3	29.8	**	**
Garrett	44.5	**	**	42.9	**	**
Harford	42.6	55.2	36.0	41.1	**	**
Howard	26.0	25.6	26.0	28.7	**	**
Kent	**	**	**	**	**	**
Montgomery	23.0	24.4	22.1	23.7	23.4	17.4
Prince George's	30.8	34.8	28.3	32.0	31.3	**
Queen Anne's	33.1	**	**	**	**	**
Saint Mary's	49.8	70.4	**	51.4	**	**
Somerset	**	**	**	**	**	**
Talbot	**	**	**	**	**	**
Washington	30.7	28.1	33.5	30.1	**	**
Wicomico	48.5	71.8	30.4	46.7	**	**
Worcester	48.0	70.3	**	46.6	**	**

* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

** Rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data Suppression Policy

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 16.
Number of New Lung and Bronchus Cancer Cases by Jurisdiction, Gender, and Race, Maryland, 2011-2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	18,369	9,103	9,251	13,372	4,503	438
Allegany	391	210	181	383	8	0
Anne Arundel	1,906	901	1,003	1,685	188	31
Baltimore City	2,553	1,314	1,236	882	1,651	19
Baltimore County	3,209	1,512	1,695	2,601	557	48
Calvert	286	133	151	245	35	<6
Caroline	161	93	68	145	16	0
Carroll	596	302	293	569	25	<6
Cecil	448	222	226	425	s	<6
Charles	394	215	178	292	93	6
Dorchester	164	88	76	124	s	<6
Frederick	608	312	296	563	35	7
Garrett	108	56	52	s	<6	0
Harford	994	503	491	889	96	9
Howard	629	303	326	499	82	46
Kent	85	40	45	72	13	0
Montgomery	1,767	842	924	1,307	232	207
Prince George's	1,827	904	920	610	1,164	43
Queen Anne's	195	105	90	179	s	<6
Saint Mary's	357	199	158	308	44	<6
Somerset	138	80	58	100	36	0
Talbot	169	74	95	156	13	0
Washington	610	293	317	571	30	6
Wicomico	439	216	223	363	73	<6
Worcester	308	172	136	276	30	<6

Total includes cases reported as transsexual, hermaphrodite, unknown gender, unknown race, and unknown county

<6 = Case counts of 1-5 are suppressed per MDH/MCR Data Use Policy

s = Case counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 17.
Lung and Bronchus Cancer Age-Adjusted Incidence Rates* by Jurisdiction, Gender, and Race, Maryland, 2011-2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	56.2	63.6	50.8	58.9	54.5	25.3
Allegany	74.6	88.6	63.3	75.7	**	0.0
Anne Arundel	64.2	68.4	61.4	66.8	53.1	38.4
Baltimore City	78.8	97.8	66.4	81.4	78.9	28.5
Baltimore County	63.7	69.7	59.4	66.8	59.9	26.2
Calvert	59.7	61.5	57.4	61.4	50.3	**
Caroline	80.4	106.2	61.8	84.5	60.5	0.0
Carroll	59.4	67.9	52.4	59.1	90.2	**
Cecil	78.4	83.8	74.3	78.8	83.7	**
Charles	54.3	67.7	44.4	63.2	41.2	**
Dorchester	68.6	79.5	60.4	67.6	78.0	**
Frederick	48.2	55.5	43.1	49.2	44.0	**
Garrett	48.1	54.5	43.9	48.1	**	0.0
Harford	69.8	80.5	62.5	70.6	75.6	**
Howard	42.8	45.9	40.9	46.6	39.5	23.0
Kent	50.8	52.2	50.4	48.8	**	0.0
Montgomery	31.9	35.0	29.6	32.8	30.6	26.1
Prince George's	43.8	50.7	38.6	51.3	41.4	20.0
Queen Anne's	62.2	71.6	53.6	62.2	**	**
Saint Mary's	65.9	77.2	56.4	68.1	57.7	**
Somerset	88.8	106.7	73.4	86.3	91.4	0.0
Talbot	48.2	45.7	50.6	49.9	**	0.0
Washington	66.8	70.7	64.6	66.6	68.1	**
Wicomico	77.2	85.7	70.9	82.0	62.4	**
Worcester	66.9	82.0	53.6	66.5	67.0	**

* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

** Rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 18.
Number of Deaths for Lung and Bronchus Cancer by Jurisdiction, Gender, and Race, Maryland, 2011-2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	13,436	6,985	6,451	9,706	3,424	306
Allegany	238	133	105	236	<10	<10
Anne Arundel	1,383	708	675	1,221	137	25
Baltimore City	1,945	1,028	917	665	1,261	19
Baltimore County	2,224	1,130	1,094	1,813	385	26
Calvert	214	100	114	187	s	<10
Caroline	124	68	56	112	s	<10
Carroll	437	242	195	422	s	<10
Cecil	329	167	162	318	s	<10
Charles	289	171	118	207	s	<10
Dorchester	136	79	57	104	s	<10
Frederick	446	226	220	411	s	<10
Garrett	84	51	33	83	<10	<10
Harford	670	365	305	600	s	<10
Howard	402	198	204	311	55	36
Kent	66	33	33	58	<10	<10
Montgomery	1,325	618	707	1,010	182	133
Prince George's	1,454	749	705	501	913	40
Queen Anne's	143	79	64	128	s	<10
Saint Mary's	278	172	106	237	s	<10
Somerset	112	61	51	80	s	<10
Talbot	129	64	65	111	s	<10
Washington	447	227	220	424	s	<10
Wicomico	312	173	139	250	s	<10
Worcester	249	143	106	217	s	<10

<10 = Death counts of 0-9 are suppressed per MDH/CCPC Mortality Data Suppression Policy

s = Death counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 19.
Lung and Bronchus Cancer Age-Adjusted Mortality Rates* by Jurisdiction, Gender, and Race, Maryland, 2011-2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	41.4	49.7	35.3	42.6	42.4	17.9
Allegany	45.1	57.2	35.8	46.2	**	**
Anne Arundel	47.0	54.4	41.6	48.6	40.0	30.3
Baltimore City	61.1	78.5	49.5	62.4	61.3	**
Baltimore County	43.6	52.2	37.2	45.7	42.0	15.5
Calvert	45.5	46.2	44.8	47.2	39.4	**
Caroline	61.6	77.1	49.4	65.3	**	**
Carroll	43.3	54.4	34.7	43.5	**	**
Cecil	59.5	67.6	53.6	61.1	**	**
Charles	40.8	54.6	30.0	46.1	33.8	**
Dorchester	56.6	74.8	43.1	55.9	62.9	**
Frederick	35.7	40.9	31.9	36.2	41.1	**
Garrett	38.3	52.6	28.0	38.2	**	**
Harford	47.6	60.5	38.6	48.1	50.1	**
Howard	28.4	31.6	26.3	30.4	26.3	18.2
Kent	38.2	41.4	35.8	38.7	**	**
Montgomery	23.8	25.9	22.2	24.9	24.2	17.0
Prince George's	35.7	43.9	30.3	42.2	33.4	19.1
Queen Anne's	45.7	54.5	38.4	44.8	**	**
Saint Mary's	52.3	68.2	38.0	53.3	51.7	**
Somerset	74.0	88.0	64.7	71.6	85.3	**
Talbot	37.6	41.0	35.4	36.2	**	**
Washington	48.8	56.3	44.4	49.1	55.3	**
Wicomico	54.6	69.7	43.0	56.1	50.4	**
Worcester	54.2	69.1	41.6	52.2	70.1	**

* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

** Rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data Suppression Policy

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Maryland Lung Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2011-2015

Legend

- >25% above U.S. rate
- 10-25% above U.S. rate
- Between 10% below and 10% above U.S. rate
- 10-25% below U.S. rate
- >25% below U.S. rate

Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 population.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 2.
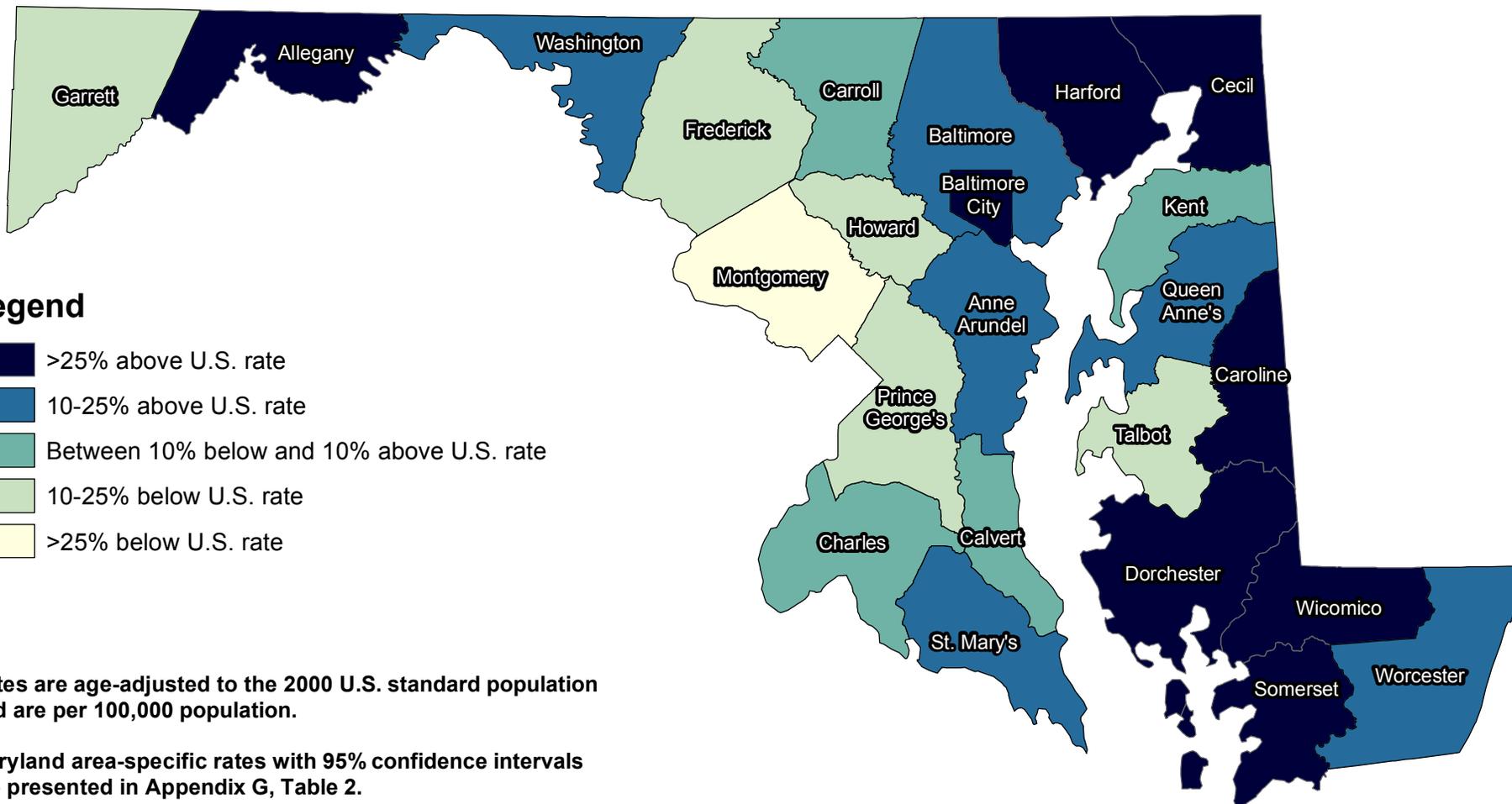
U.S. lung cancer incidence rate, 2011-2015: 54.6 / 100,000

Maryland lung cancer incidence rate, 2011-2015: 56.2 / 100,000

Sources: Maryland Cancer Registry
          U.S. SEER, SEER*Stat Database

Maryland Lung Cancer Mortality Rates by Geographical Area: Comparison to U.S. Rate, 2011-2015

Legend

- >25% above U.S. rate
- 10-25% above U.S. rate
- Between 10% below and 10% above U.S. rate
- 10-25% below U.S. rate
- >25% below U.S. rate

Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 population.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 10.
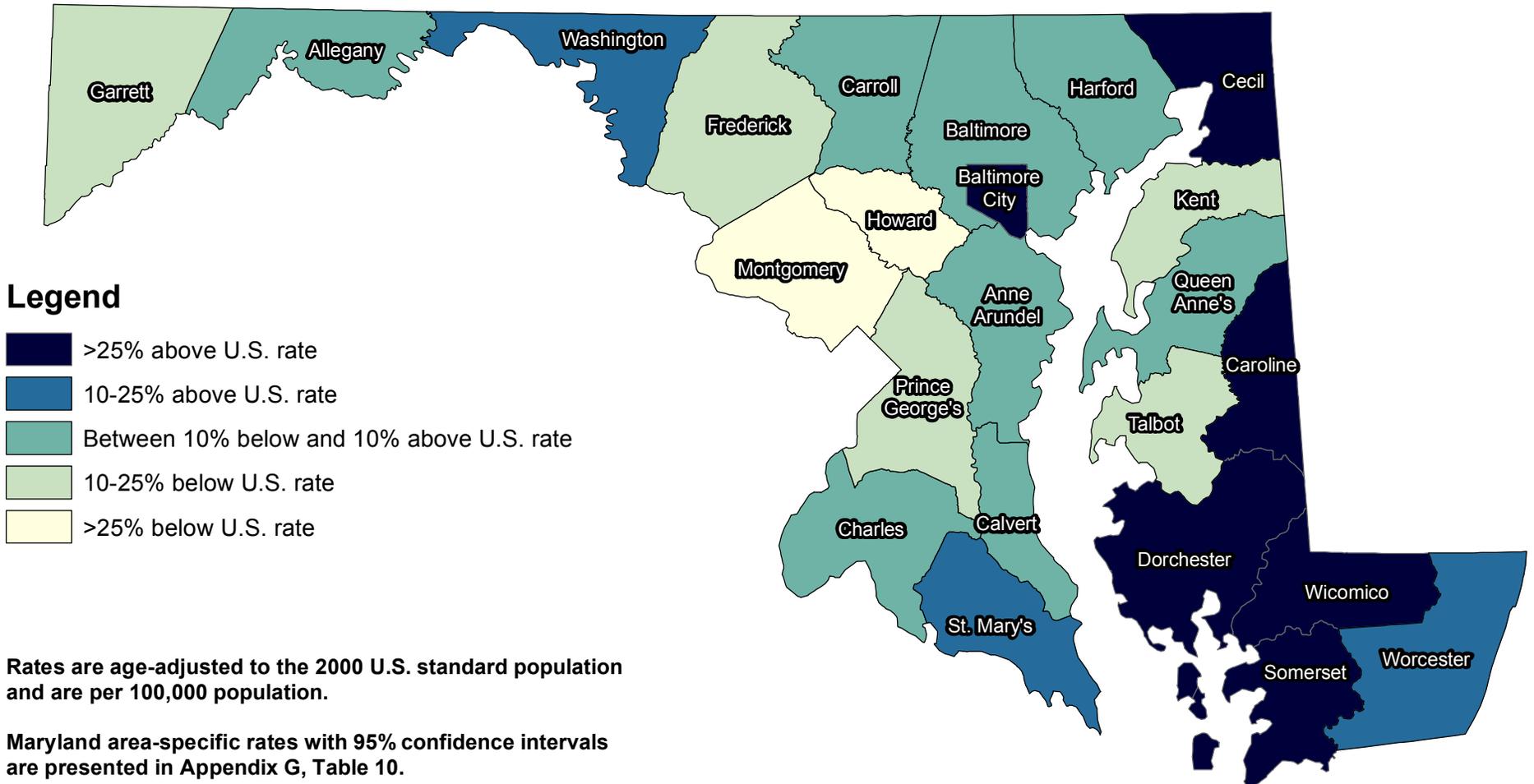
U.S. lung cancer mortality rate, 2011-2015: 43.4 / 100,000

Maryland lung cancer mortality rate, 2011-2015: 41.4 / 100,000

Sources: NCHS Compressed Mortality File in CDC WONDER
U.S. SEER, Cancer Statistics Review

B. Colon and Rectum Cancer

Incidence (New Cases)

In 2015, there were 2,444 new cases of cancer of the colon or rectum (called colorectal cancer) reported among Maryland residents. The age-adjusted colorectal cancer incidence rate in Maryland for 2015 was 35.9 per 100,000 population (34.5-37.4, 95% CI), which is statistically significantly lower than the 2015 U.S. SEER age-adjusted colorectal cancer incidence rate of 38.1 per 100,000 population (37.7-38.5, 95% CI).

Mortality (Deaths)

A total of 915 persons died of colorectal cancer in 2015 in Maryland. In 2015, colorectal cancer accounted for 8.7% of all cancer deaths and was the second leading cause of cancer death in Maryland. The age-adjusted colorectal cancer mortality rate in Maryland was 13.5 per 100,000 population (12.6-14.4, 95% CI). This rate is similar to the 2015 U.S. colorectal cancer mortality rate of 14.0 per 100,000 population (13.9-14.1, 95% CI). Maryland had the 27th highest colorectal cancer mortality rate among the states and the District of Columbia for the period from 2011 to 2015.

Table 20.
Colorectal Cancer Incidence and Mortality Rates
by Gender and Race, Maryland (MD) and the United States, 2015

Incidence 2015	Total*	Males	Females	Whites	Blacks	Other
MD New Cases (count)	2,444	1,227	1,217	1,597	710	104
MD Incidence Rate	35.9	40.5	32.3	35.1	39.1	23.5
U.S. SEER Rate	38.1	43.7	33.4	37.7	45.0	30.6
Mortality 2015	Total	Males	Females	Whites	Blacks	Other
MD Deaths (count)	915	460	455	603	290	22
MD Mortality Rate	13.5	15.7	11.8	12.8	17.3	5.4
U.S. Mortality Rate	14.0	16.0	11.8	13.7	18.6	N/A

Rates are per 100,000 population and are age-adjusted to 2000 U.S. standard population

* Total also includes cases reported as transsexual, hermaphrodite, unknown gender, unknown race, and unknown county

Source: Maryland Cancer Registry
U.S. SEER, SEER*Stat
NCHS Compressed Mortality File in CDC WONDER, 2015
U.S. SEER, Cancer Statistics Review

**Colorectal Cancer Incidence and Mortality Rates
by Year of Diagnosis or Death, Maryland, 2011-2015**

Year	Incidence	Mortality
2011	37.3	14.3
2012	35.8	14.9
2013	35.9	14.0
2014	37.3	14.4
2015	35.9	13.5

Age-Adjusted Rate Per 100,000 Population

Year of Diagnosis or Death

- -□- - Incidence   —◇— Mortality

Source: Maryland Cancer Registry
NCHS Compressed Mortality File in CDC WONDER, 2012-2015
Maryland Vital Statistics Administration, 2011
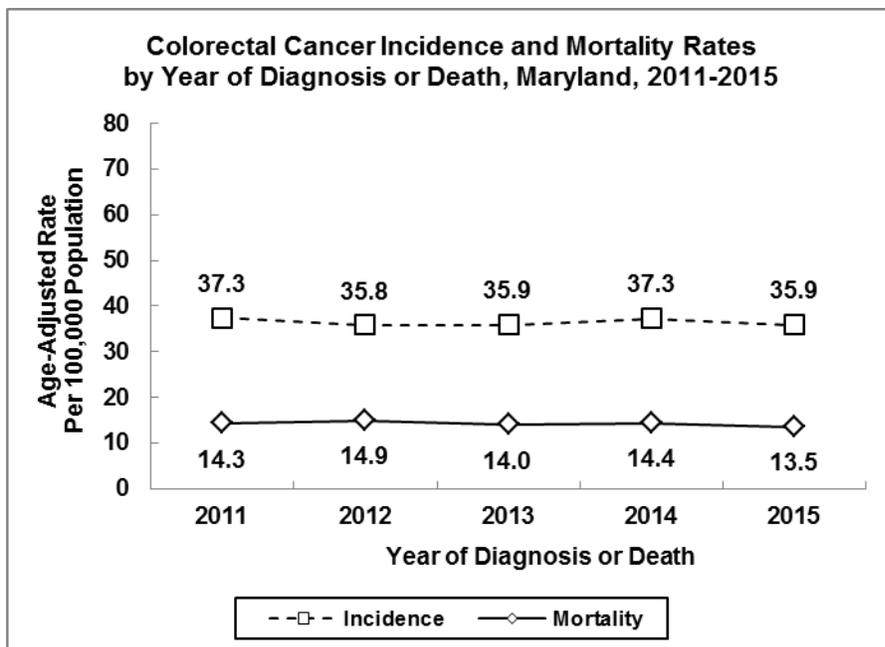
Incidence and Mortality Trends

Incidence rates for colorectal cancer have been declining in Maryland. From 2011 to 2015, incidence rates declined at a rate of 0.4% per year.

Colorectal cancer mortality rates declined at a rate of 1.5% per year from 2011 to 2015.

See Appendix H, Tables 1 and 2.

**Colorectal Cancer Incidence Rates by Race
Maryland, 2011-2015**

Year	White	Black
2011	36.6	39.9
2012	34.5	40.1
2013	34.1	41.3
2014	35.8	41.8
2015	35.1	39.1

Age-Adjusted Rate Per 100,000 Population

Year of Diagnosis

—□— White   —■— Black

Source: Maryland Cancer Registry
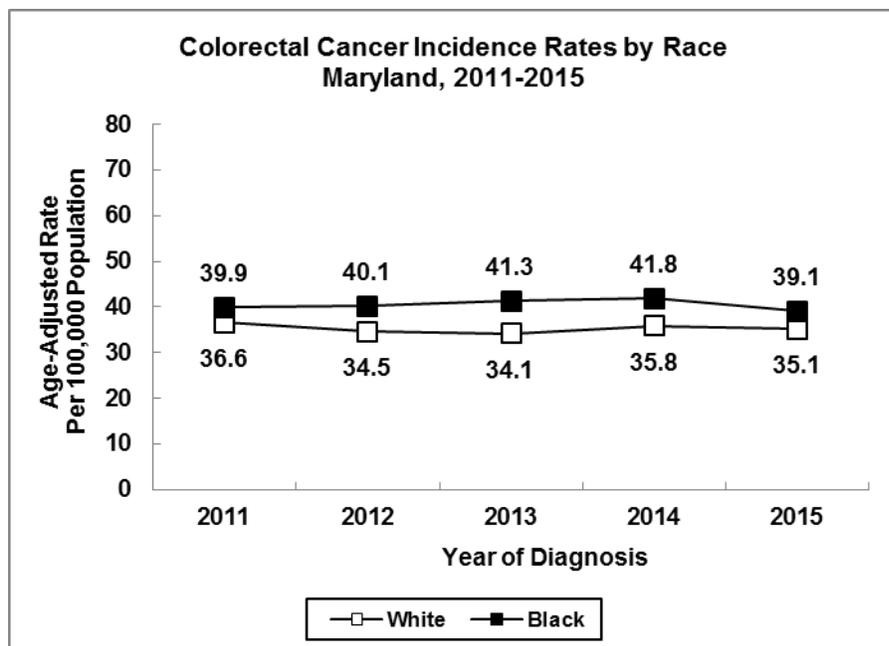
Incidence Trends by Race

From 2011 to 2015 colorectal cancer incidence rates remained steady for blacks and declined slightly, at a rate of 0.5% per year, for whites. In 2015, the incidence rate for colorectal cancer was 35.1 per 100,000 population for whites and 39.1 per 100,000 population for blacks in Maryland.

See Appendix H, Table 3.
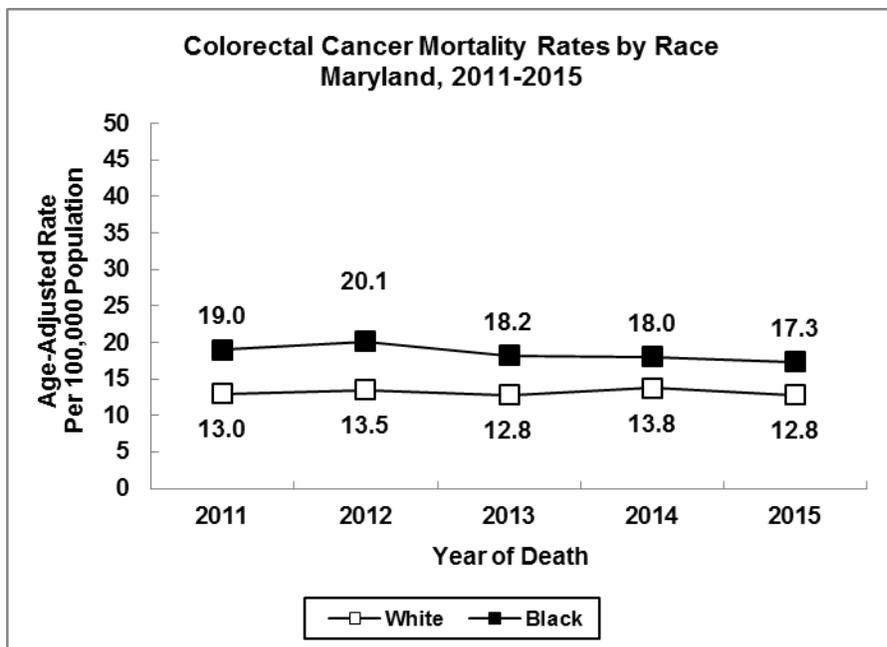
Colorectal Cancer Mortality Rates by Race
Maryland, 2011-2015

Mortality Trends by Race

From 2011 to 2015, colorectal cancer mortality rates declined at a rate of 0.1% per year for whites and a rate of 2.9% per year for blacks. In 2015, the age-adjusted colorectal cancer mortality rate was 17.3 per 100,000 for blacks and 12.8 per 100,000 for whites.

See Appendix H, Table 5.

Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2015
Maryland Vital Statistics Administration, 2011

Colorectal Cancer by Stage at Diagnosis
Maryland, 2011-2015
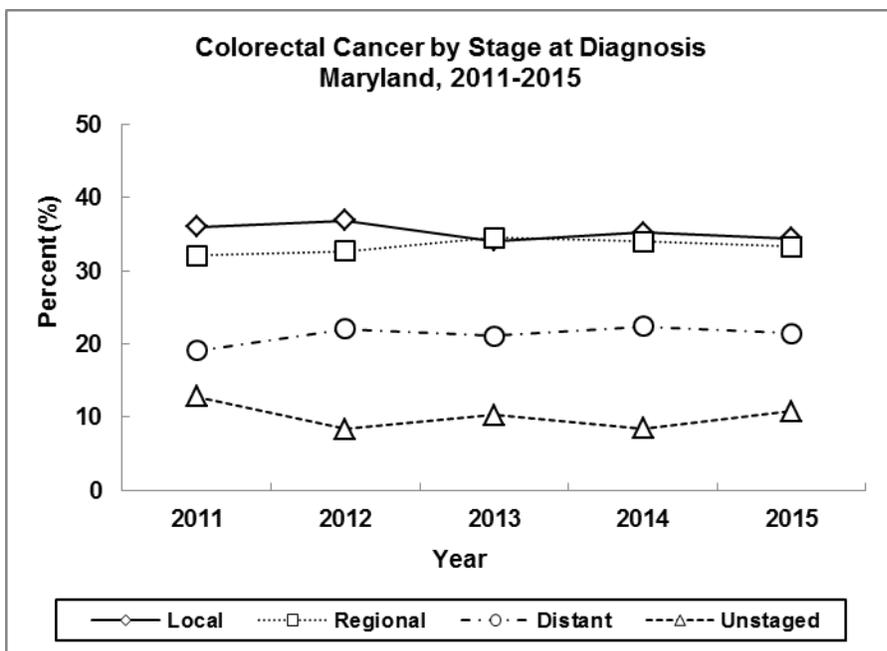
Stage at Diagnosis

In 2015, 34.4% of colorectal cancers diagnosed in Maryland were detected at the local stage, 33.3% at the regional stage, and 21.4% at the distant stage. In 2015, 10.8% of colorectal cancers diagnosed were reported as unstaged. The proportion of colorectal cancers reported as unstaged decreased 3.3% per year from 2011 to 2015.

See Appendix I, Table 3.

Source: Maryland Cancer Registry

Percentage of Maryland Adults Ages 50 Years and Older Who Have Had a Fecal Occult Blood Test within 1 Year, a Sigmoidoscopy within 5 Years, or a Colonoscopy within 10 Years, 2012-2016, Compared to Healthy People 2020 Target

Year	Percent
2012	71.4%
2014	72.0%
2016	69.8%
HP 2020	70.5%

☐ MD　■ HP 2020

Source: Maryland BRFSS 2012, 2014, 2016
Healthy People 2020, U.S. Department of Health and Human Services

* The guidelines for up-to-date colorectal cancer screening used for the Healthy People 2020 estimate are: persons aged 50 to 75 years old who have had a blood stool test in the past year, sigmoidoscopy in the past five years and blood stool test in the past three years, or a colonoscopy in the past 10 years

Up-to-Date Screening for Colorectal Cancer

The Healthy People 2020 target for colorectal cancer screening aims to increase the proportion of adults age 50 years and older who are screened based on recent guidelines to 70.5%.[*] The percent of Maryland adults ages 50 years and older who were up-to-date for colorectal cancer screening in 2016 (69.8%) was slightly below the Healthy People target of 70.5%.

Public Health Evidence (quoted from the National Cancer Institute PDQ®, 3/9/2018 and 2/23/2018; and the United States Preventive Services Task Force [USPSTF], 4/2016 and 6/2016)

Prevention

Avoiding risk factors may help prevent cancer. The following risk factors increase the risk of colorectal cancer:

- Age, as the risk increases after age 50;
- Race, as blacks have an increased risk of cancer and death from the cancer compared to other races;
- Family history of colorectal cancer;
- Personal history of previous colorectal cancer, high-risk adenomas, ovarian cancer, or inflammatory bowel disease such as ulcerative colitis or Crohn disease;
- Inherited risk such as familial adenomatous polyposis, or hereditary nonpolyposis colon cancer;
- Alcohol use;
- Cigarette smoking; and
- Obesity.

Increasing protective factors may help prevent cancer. The following protective factors decrease the risk of colorectal cancer:

- Regular physical activity.
- Taking aspirin, with the decrease in risk beginning 10 to 20 years after patients start taking aspirin. The USPSTF recommends initiating low-dose aspirin use for the primary prevention of cardiovascular disease and colorectal cancer in adults ages 50 to 59 years old who have a 10% or greater 10-year cardiovascular disease risk, are not at increased risk for bleeding, have a life expectancy of at least 10 years, and are willing to take low-dose aspirin daily for at least 10 years. The risks of aspirin use include an increased risk of stroke and bleeding in the stomach and intestines.
- Combination hormone replacement therapy (HRT) that includes both estrogen and progestin lowers the risk of invasive colorectal cancer in postmenopausal women. However, in women who take combination HRT and do develop colorectal cancer, the cancer is more likely to be advanced when diagnosed, and the risk of dying from colorectal cancer is not decreased. The possible harms of combination HRT include an increased risk of breast cancer, heart disease and blood clots.
- Removing colorectal polyps that are larger than one centimeter.

It is not clear if the following affect the risk of colorectal cancer:

- Nonsteroidal anti-inflammatory drugs (NSAIDs) other than aspirin;
- Calcium; and
- Diet.

The following factors do not affect the risk of colorectal cancer:

- HRT with estrogen only; and
- Statins.

Screening

Studies show that some screening tests for colorectal cancer help find cancer at an early stage and may decrease the number of deaths from the disease. Five types of tests are used to screen for colorectal cancer:

- Fecal occult blood test (guaiac FOBT or immunochemical FOBT/fecal immunochemical test [FIT]);
- Sigmoidoscopy;
- Colonoscopy;
- Virtual colonoscopy, or computed tomography colonography (CT colonography); and
- DNA stool test.

Study results have shown that digital rectal exams does not work as a screening method for colorectal cancer.

The risks for colorectal cancer screening include the following:

- False-negative tests results can occur (the screening test results may appear to be normal even though colorectal cancer is present). A person who receives a false-negative test result may delay seeking medical care even if there are symptoms.
- False-positive test results can occur (the screening test results may appear to be abnormal even though no cancer is present). A false-positive test result can cause anxiety and is usually followed by more tests (such as biopsy), which also have risks.
- Serious problems caused by colonoscopy are rare, but can include tears in the lining of the colon and bleeding. Sedation is used to decrease the discomfort from the procedure, and may cause heart and lung problems, such as irregular heartbeat, heart attack, or trouble breathing.
- There are fewer complications with a sigmoidoscopy than with a colonoscopy. Although tears in the lining of the colon and bleeding can occur, they are less common than with a colonoscopy. There is usually no sedation with sigmoidoscopy, lowering the risk of complications.
- Virtual colonoscopy has fewer possible physical harms than either colonoscopy or sigmoidoscopy. The harms of being exposed to radiation from x-rays used in virtual colonoscopy are not known. Virtual colonoscopy often finds problems with organs other than the colon, including the kidneys, chest, liver, ovaries, spleen, and pancreas. Some of these findings lead to more testing that may not improve the patient's health.
- The results of an FOBT or DNA stool test may appear to be abnormal even though no cancer is found. A positive test result may lead to more testing, including colonoscopy.

The USPSTF recommends screening for colorectal cancer starting at age 50 years old and continuing until age 75 years old. The decision to screen for colorectal cancer in adults ages 76 to 85 years old should be an individual one, taking into account the patient's overall health and prior screening history. Adults in the 76 to 85 year age group who have never been screened for colorectal cancer are more likely to benefit. Also, within this age group, screening would be most appropriate among adults who are healthy enough to undergo treatment if colorectal cancer is detected, and do not have comorbid conditions that would significantly limit their life expectancy. The risks and benefits of different screening methods vary. The screening strategies listed in the USPSTF Recommendation Statement are guaiac FOBT, FIT, multi-targeted stool DNA test, colonoscopy, CT colonography, flexible sigmoidoscopy, and flexible sigmoidoscopy with FIT.

The USPSTF found no head-to-head studies demonstrating that any of the screening strategies it considered are more effective than others, although the tests have varying levels of evidence supporting their effectiveness, as well as different strengths and limitations. Given the lack of evidence from head-to-head comparative trials that any of the screening strategies have a greater net benefit than others, clinicians should consider engaging patients in informed decision making about the screening strategy that would most likely result in completion, with high adherence over time, taking into consideration both the patient's preferences and local availability.

Maryland Department of Health Medical Advisory Committee Public Health Intervention for Colorectal Cancer
• Colorectal cancer screening is recommended for those ages 50 to 75 years old. Screening may begin earlier for individuals with certain risk factors for colorectal cancer. The decision to screen for colorectal cancer in adults above 75 years of age should be an individual one, taking into account the patient's overall health and prior screening history.

Individuals should discuss risk factors for colorectal cancer, ways to prevent colorectal cancer, and screening tests with their healthcare provider.

Note: For information on the Colorectal Cancer Prevention and Screening PDQ®, please see Appendix C.

Table 21.
Number of New Colon and Rectum Cancer Cases by
Jurisdiction, Gender, and Race, Maryland, 2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	2,444	1,227	1,217	1,597	710	104
Allegany	51	26	25	s	<6	<6
Anne Arundel	215	98	117	163	40	11
Baltimore City	248	131	117	84	155	<6
Baltimore County	393	191	202	288	90	14
Calvert	39	20	19	34	<6	0
Caroline	19	12	7	15	<6	0
Carroll	101	46	55	90	7	<6
Cecil	50	19	31	s	<6	0
Charles	58	26	32	31	s	<6
Dorchester	23	12	11	10	12	0
Frederick	94	54	40	82	7	<6
Garrett	16	10	6	16	0	0
Harford	120	61	59	100	17	<6
Howard	109	50	59	72	27	8
Kent	8	<6	<6	6	<6	0
Montgomery	350	182	168	221	73	40
Prince George's	310	150	160	80	214	11
Queen Anne's	24	13	11	22	<6	0
Saint Mary's	44	23	21	40	<6	0
Somerset	11	6	<6	11	0	0
Talbot	18	14	<6	16	<6	0
Washington	57	37	20	52	<6	<6
Wicomico	43	20	23	31	10	<6
Worcester	40	20	20	33	7	0

Total includes cases reported as transsexual, hermaphrodite, unknown gender, unknown race, and unknown county

<6 = Case counts of 1-5 are suppressed per MDH/MCR Data Use Policy

s = Case counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 22.
Colon and Rectum Cancer Age-Adjusted Incidence Rates* by Jurisdiction, Gender, and Race, Maryland, 2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	35.9	40.5	32.3	35.1	39.1	23.5
Allegany	53.1	59.2	51.8	54.7	**	**
Anne Arundel	34.7	34.5	35.0	32.5	47.3	**
Baltimore City	38.0	46.9	31.6	39.0	36.9	**
Baltimore County	37.3	42.6	32.8	36.4	43.5	**
Calvert	37.4	39.8	34.5	38.2	**	0.0
Caroline	52.6	**	**	**	**	0.0
Carroll	49.1	48.1	51.3	45.6	**	**
Cecil	46.0	36.4	54.0	47.9	**	0.0
Charles	37.2	35.6	37.1	34.3	39.9	**
Dorchester	50.5	**	**	**	**	0.0
Frederick	34.3	42.6	26.7	33.7	**	**
Garrett	32.8	**	**	33.2	0.0	0.0
Harford	40.8	46.6	36.1	38.6	64.9	**
Howard	31.6	32.7	31.1	31.2	47.4	**
Kent	**	**	**	**	**	0.0
Montgomery	29.5	34.1	25.6	27.1	40.4	21.0
Prince George's	33.6	37.6	31.0	33.0	33.8	23.4
Queen Anne's	44.9	**	**	45.2	**	0.0
Saint Mary's	37.3	40.5	33.8	41.2	**	0.0
Somerset	**	**	**	**	0.0	0.0
Talbot	28.4	**	**	29.3	**	0.0
Washington	31.2	45.2	19.9	30.4	**	**
Wicomico	39.1	42.1	38.0	36.7	**	**
Worcester	56.5	57.9	55.4	52.1	**	0.0

* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

** Rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 23.
Number of Deaths for Colon and Rectum Cancer by Jurisdiction, Gender, and Race, Maryland, 2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	915	460	455	603	290	22
Allegany	16	<10	<10	s	<10	<10
Anne Arundel	75	34	41	58	s	<10
Baltimore City	109	59	50	s	76	<10
Baltimore County	184	87	97	151	s	<10
Calvert	12	<10	<10	10	<10	<10
Caroline	<10	<10	<10	<10	<10	<10
Carroll	20	<10	s	s	<10	<10
Cecil	16	<10	s	14	<10	<10
Charles	23	s	<10	s	12	<10
Dorchester	<10	<10	<10	<10	<10	<10
Frederick	37	21	16	32	<10	<10
Garrett	<10	<10	<10	<10	<10	<10
Harford	45	24	21	41	<10	<10
Howard	45	25	20	24	s	<10
Kent	<10	<10	<10	<10	<10	<10
Montgomery	97	43	54	69	s	<10
Prince George's	116	60	56	s	89	<10
Queen Anne's	<10	<10	<10	<10	<10	<10
Saint Mary's	15	s	<10	14	<10	<10
Somerset	<10	<10	<10	<10	<10	<10
Talbot	<10	<10	<10	<10	<10	<10
Washington	29	s	<10	25	<10	<10
Wicomico	23	12	11	15	<10	<10
Worcester	16	<10	<10	s	<10	<10

<10 = Death counts of 0-9 are suppressed per MDH/CCPC Mortality Data Suppression Policy

s = Death counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 24.
Colon and Rectum Cancer Age-Adjusted Mortality Rates* by Jurisdiction, Gender, and Race, Maryland, 2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	13.5	15.7	11.8	12.8	17.3	5.4
Allegany	**	**	**	**	**	**
Anne Arundel	12.2	13.0	11.4	11.5	**	**
Baltimore City	17.6	24.4	13.3	15.0	19.3	**
Baltimore County	16.7	18.7	14.8	18.0	16.5	**
Calvert	**	**	**	**	**	**
Caroline	**	**	**	**	**	**
Carroll	9.6	**	**	10.0	**	**
Cecil	**	**	**	**	**	**
Charles	15.3	**	**	**	**	**
Dorchester	**	**	**	**	**	**
Frederick	13.9	18.6	**	13.1	**	**
Garrett	**	**	**	**	**	**
Harford	16.2	20.2	13.3	16.7	**	**
Howard	14.5	17.8	11.5	10.4	**	**
Kent	**	**	**	**	**	**
Montgomery	8.2	8.3	8.0	7.9	13.1	**
Prince George's	13.0	15.8	11.1	10.1	15.3	**
Queen Anne's	**	**	**	**	**	**
Saint Mary's	**	**	**	**	**	**
Somerset	**	**	**	**	**	**
Talbot	**	**	**	**	**	**
Washington	14.3	24.9	**	13.0	**	**
Wicomico	18.9	**	**	**	**	**
Worcester	**	**	**	**	**	**

* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

** Rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data Suppression Policy

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 25.
Number of New Colon and Rectum Cancer Cases by
Jurisdiction, Gender, and Race, Maryland, 2011-2015

Jurisdiction	Total	Gender		Race		
		Males	**Females**	**Whites**	**Blacks**	**Other**
Maryland	11,910	5,979	5,920	7,879	3,413	463
Allegany	232	114	118	224	s	<6
Anne Arundel	1,018	499	518	836	151	29
Baltimore City	1,393	675	717	448	916	18
Baltimore County	1,913	914	995	1,427	419	52
Calvert	179	100	79	145	33	0
Caroline	86	52	34	73	11	<6
Carroll	420	201	219	395	19	<6
Cecil	247	129	118	235	10	0
Charles	277	128	149	173	92	<6
Dorchester	106	56	50	70	33	<6
Frederick	470	262	207	411	37	17
Garrett	82	39	43	82	0	0
Harford	561	297	264	482	66	6
Howard	503	254	248	331	114	51
Kent	55	27	28	46	9	0
Montgomery	1,632	823	808	1,077	289	207
Prince George's	1,552	789	761	420	1,052	52
Queen Anne's	89	37	52	81	s	<6
Saint Mary's	184	108	76	160	21	<6
Somerset	73	40	33	59	s	<6
Talbot	93	53	40	85	8	0
Washington	336	168	168	310	20	6
Wicomico	221	112	109	156	57	6
Worcester	162	88	74	138	22	<6

Total includes cases reported as transsexual, hermaphrodite, unknown gender, unknown race, and unknown county

<6 = Case counts of 1-5 are suppressed per MDH/MCR Data Use Policy

s = Case counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 26.
Colon and Rectum Cancer Age-Adjusted Incidence Rates* by Jurisdiction, Gender, and Race, Maryland, 2011-2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	36.4	41.2	32.6	35.2	40.4	24.4
Allegany	46.4	50.1	44.0	47.0	**	**
Anne Arundel	34.1	37.4	31.8	33.7	38.7	26.2
Baltimore City	43.4	50.3	39.0	41.6	44.2	27.4
Baltimore County	37.9	42.2	34.3	36.9	42.7	25.3
Calvert	36.7	44.5	31.0	35.7	48.3	0.0
Caroline	45.8	58.3	33.2	46.4	**	**
Carroll	41.5	44.2	39.8	40.7	69.5	**
Cecil	44.3	49.3	40.4	44.9	**	0.0
Charles	37.2	36.6	36.7	38.4	33.5	**
Dorchester	49.2	56.7	43.9	43.9	60.0	**
Frederick	36.4	44.8	29.5	35.6	39.6	36.4
Garrett	38.8	39.8	37.0	39.1	0.0	0.0
Harford	39.7	47.2	33.6	38.8	51.7	**
Howard	32.7	36.4	29.9	30.4	47.8	23.4
Kent	35.9	36.9	37.0	34.3	**	0.0
Montgomery	28.9	32.8	25.6	27.1	35.3	24.5
Prince George's	36.3	43.0	31.5	35.3	36.7	23.3
Queen Anne's	29.4	25.7	32.6	28.8	**	**
Saint Mary's	32.6	38.5	26.6	34.3	25.5	**
Somerset	48.2	55.5	42.7	54.8	**	**
Talbot	29.4	36.4	23.4	30.7	**	0.0
Washington	37.3	40.7	34.1	36.7	42.1	**
Wicomico	40.0	44.7	36.6	36.7	50.2	**
Worcester	39.6	46.2	34.1	38.2	50.9	**

* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

** Rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 27.
Number of Deaths for Colon and Rectum Cancer by Jurisdiction, Gender, and Race, Maryland, 2011-2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	4,621	2,387	2,234	3,033	1,451	137
Allegany	80	49	31	79	<10	<10
Anne Arundel	384	203	181	300	74	10
Baltimore City	653	327	326	s	447	<10
Baltimore County	757	366	391	594	148	15
Calvert	67	35	32	57	s	<10
Caroline	31	18	13	28	<10	<10
Carroll	146	75	71	143	<10	<10
Cecil	84	42	42	77	<10	<10
Charles	127	65	62	68	s	<10
Dorchester	41	23	18	26	s	<10
Frederick	185	106	79	169	s	<10
Garrett	30	18	12	s	<10	<10
Harford	212	105	107	189	s	<10
Howard	150	79	71	94	40	16
Kent	21	s	s	17	<10	<10
Montgomery	518	254	264	373	88	57
Prince George's	664	353	311	180	471	13
Queen Anne's	30	18	12	26	<10	<10
Saint Mary's	74	50	24	62	s	<10
Somerset	19	s	<10	13	<10	<10
Talbot	28	16	12	24	<10	<10
Washington	160	81	79	153	<10	<10
Wicomico	102	54	48	75	s	<10
Worcester	58	29	29	55	<10	<10

<10 = Death counts of 0-9 are suppressed per MDH/CCPC Mortality Data Suppression Policy

s = Death counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 28.
Colon and Rectum Cancer Age-Adjusted Mortality Rates* by Jurisdiction, Gender, and Race, Maryland, 2011-2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	14.2	17.1	12.0	13.2	18.4	7.9
Allegany	15.2	22.0	10.2	15.6	**	**
Anne Arundel	13.1	16.0	11.0	12.3	20.1	**
Baltimore City	20.9	26.3	17.5	18.2	22.6	**
Baltimore County	14.3	16.9	12.2	14.2	16.2	**
Calvert	14.3	16.7	12.6	14.9	**	**
Caroline	15.9	**	**	16.6	**	**
Carroll	14.5	16.9	12.7	14.7	**	**
Cecil	15.4	15.7	15.0	14.8	**	**
Charles	17.9	19.6	16.1	15.6	23.0	**
Dorchester	18.4	24.2	**	15.1	**	**
Frederick	14.8	20.0	11.1	14.8	**	**
Garrett	13.4	**	**	13.1	**	**
Harford	15.5	18.4	13.4	15.5	18.7	**
Howard	10.3	12.2	9.0	8.6	19.6	**
Kent	13.8	**	**	**	**	**
Montgomery	9.1	10.6	8.0	8.8	11.9	7.6
Prince George's	16.3	20.1	13.4	15.2	17.7	**
Queen Anne's	10.0	**	**	9.5	**	**
Saint Mary's	13.3	18.1	8.7	13.4	**	**
Somerset	**	**	**	**	**	**
Talbot	8.1	**	**	7.3	**	**
Washington	17.2	19.7	15.0	17.5	**	**
Wicomico	17.8	22.3	15.0	16.8	23.7	**
Worcester	13.3	14.9	11.6	14.3	**	**

* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

** Rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data Suppression Policy

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Maryland Colorectal Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2011-2015

Legend

- >25% above U.S. rate
- 10-25% above U.S. rate
- Between 10% below and 10% above U.S. rate
- 10-25% below U.S. rate
- >25% below U.S. rate

Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 population.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 3.
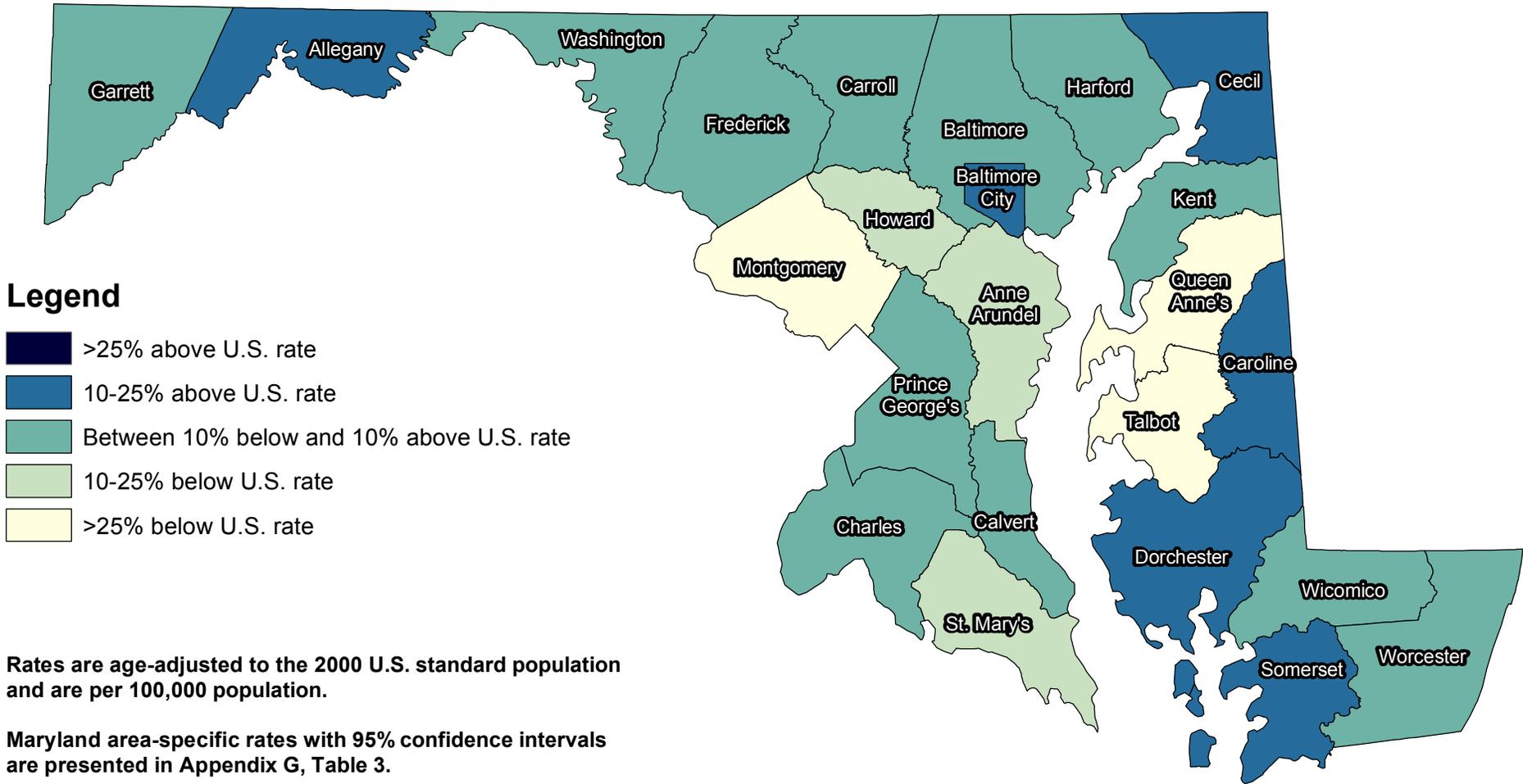
U.S. colorectal cancer incidence rate, 2011-2015: 39.4 / 100,000

Maryland colorectal cancer incidence rate, 2011-2015: 36.4 / 100,000

Sources: Maryland Cancer Registry
                  U.S. SEER, SEER*Stat Database

Maryland Colorectal Cancer Mortality Rates by Geographical Area: Comparison to U.S. Rate, 2011-2015

Legend

- ■ >25% above U.S. rate
- ■ 10-25% above U.S. rate
- ■ Between 10% below and 10% above U.S. rate
- ■ 10-25% below U.S. rate
- □ >25% below U.S. rate
- ▨ Suppressed

Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 population.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 11.

U.S. colorectal cancer mortality rate, 2011-2015: 14.5 / 100,000

Maryland colorectal cancer mortality rate, 2011-2015: 14.2 / 100,000

Sources: Maryland Cancer Registry
U.S. SEER, SEER*Stat Database

Note: Rates based on case counts of 1-19 are suppressed per MDH/CCPC Data Use Policy and Procedures.

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C. Female Breast Cancer

Incidence (New Cases)

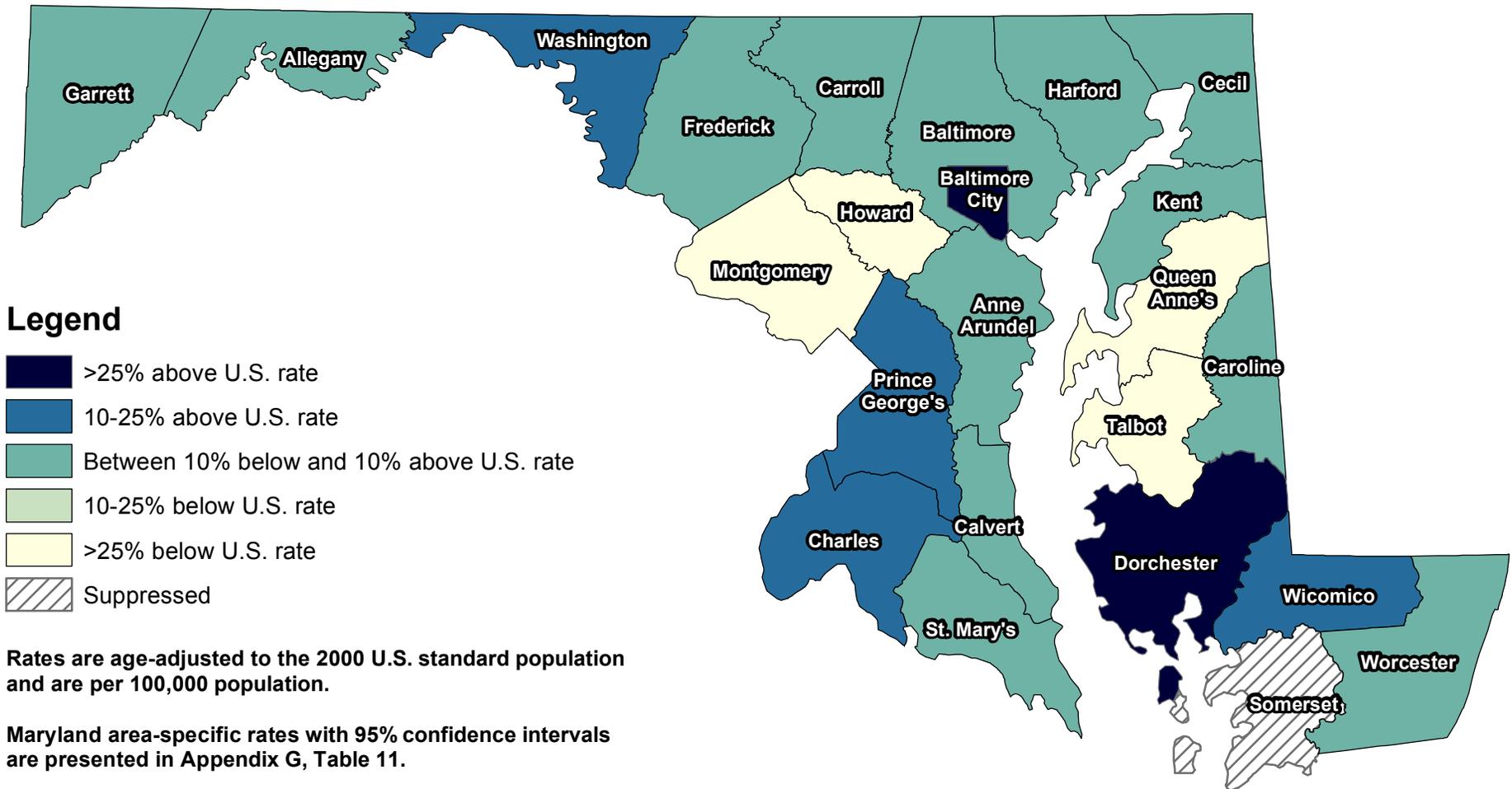In 2015, a total of 4,876 cases of breast cancer were reported among Maryland women. The 2015 age-adjusted incidence rate in Maryland was 131.4 per 100,000 women (127.6-135.2, 95% CI), which is statistically significantly higher than the 2015 U.S. SEER age-adjusted female breast cancer incidence rate of 126.5 per 100,000 women (125.6-127.5, 95% CI).

Mortality (Deaths)

In 2015, a total of 825 women died of breast cancer in Maryland. Female breast cancer accounted for 15.9% of cancer deaths among women and 7.8% of all cancer deaths in Maryland in 2015. Breast cancer is the second leading cause of cancer death among women in Maryland after lung cancer. The 2015 age-adjusted mortality rate for female breast cancer in Maryland was 21.7 per 100,000 women (20.2-23.2, 95% CI). This rate is statistically similar to the U.S. female breast cancer mortality rate of 20.3 per 100,000 women (20.1-20.5, 95% CI). Maryland had the eighth highest female breast cancer mortality rate among the states and the District of Columbia for the period from 2011 to 2015.

Table 29.
Female Breast Cancer Incidence and Mortality Rates
by Race, Maryland (MD) and the United States, 2015

Incidence 2015	Total*	Whites	Blacks	Other
MD New Cases (count)	4,876	3,158	1,433	225
MD Incidence Rate	131.4	133.4	130.6	89.3
U.S. SEER Rate	126.5	128.6	127.4	98.5
Mortality 2015	Total	Whites	Blacks	Other
MD Deaths (count)	825	525	283	17
MD Mortality Rate	21.7	20.5	26.5	**
U.S. Mortality Rate	20.3	19.8	27.6	N/A

Rates are per 100,000 women and are age-adjusted to 2000 U.S. standard population

* Total includes unknown race and unknown county

** MD mortality rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data
    Suppression Policy

Source: Maryland Cancer Registry
        U.S. SEER, SEER*Stat
        NCHS Compressed Mortality File in CDC WONDER, 2015
        U.S. SEER, Cancer Statistics Review

Female Breast Cancer Incidence and Mortality Rates by Year of Diagnosis or Death, Maryland, 2011-2015

Incidence: 126.6 (2011), 125.0 (2012), 134.6 (2013), 130.3 (2014), 131.4 (2015)

Mortality: 22.4 (2011), 23.7 (2012), 21.5 (2013), 22.9 (2014), 21.7 (2015)

Age-Adjusted Rate Per 100,000 Population

Year of Diagnosis or Death

- ·□· - Incidence   —◇— Mortality

Source: Maryland Cancer Registry
   NCHS Compressed Mortality File in CDC WONDER, 2012-2015
   Maryland Vital Statistics Administration, 2011
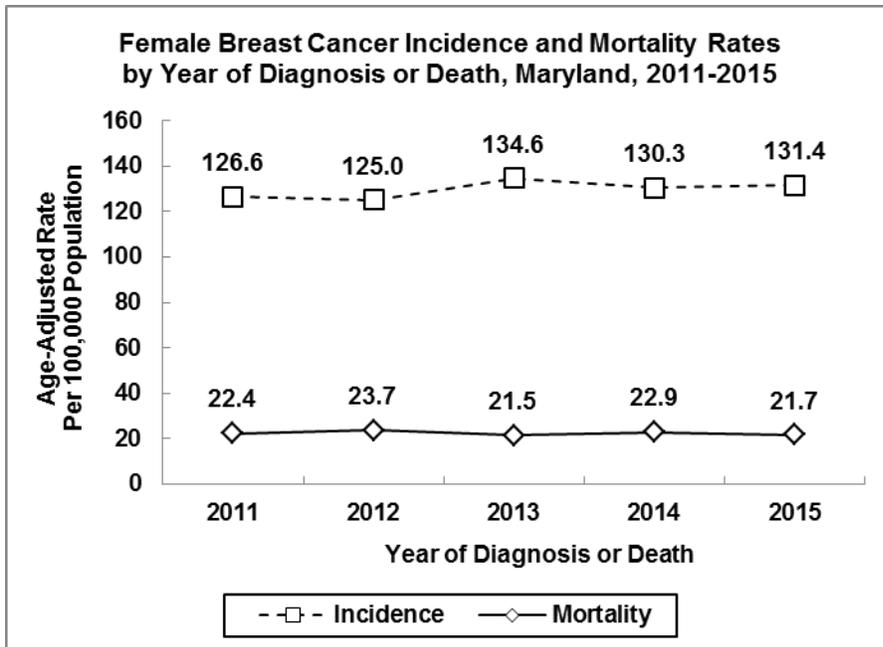
__Incidence and Mortality Trends__

From 2011 to 2015, incidence rates for female breast cancer increased in Maryland at a rate of 1.2% annually.

Breast cancer mortality rates for females decreased at a rate of 1.0% per year.

See Appendix H, Tables 1 and 2.

Female Breast Cancer Incidence Rates by Race Maryland, 2011-2015

White: 128.3 (2011), 126.9 (2012), 139.7 (2013), 132.8 (2014), 133.4 (2015)

Black: 124.0 (2011), 121.5 (2012), 134.8 (2013), 129.1 (2014), 130.6 (2015)

Age-Adjusted Rate Per 100,000 Population

Year of Diagnosis

—□— White   —■— Black

Source: Maryland Cancer Registry
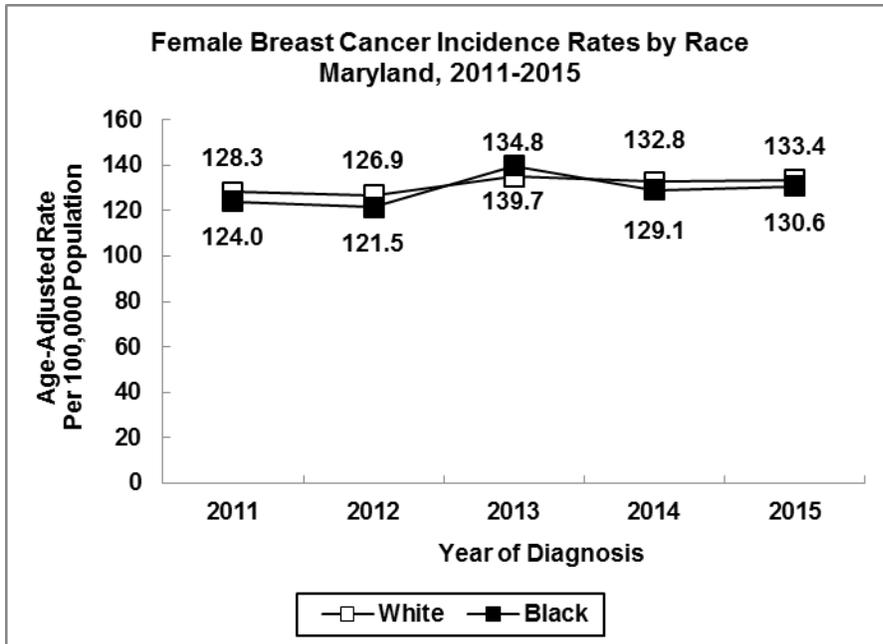
__Incidence Trends by Race__

Female breast cancer incidence rates increased among both blacks and whites in Maryland from 2011 to 2015. Incidence rates increased at a rate of 1.2% per year among white females and 1.7% per year among black females.

See Appendix H, Table 3.
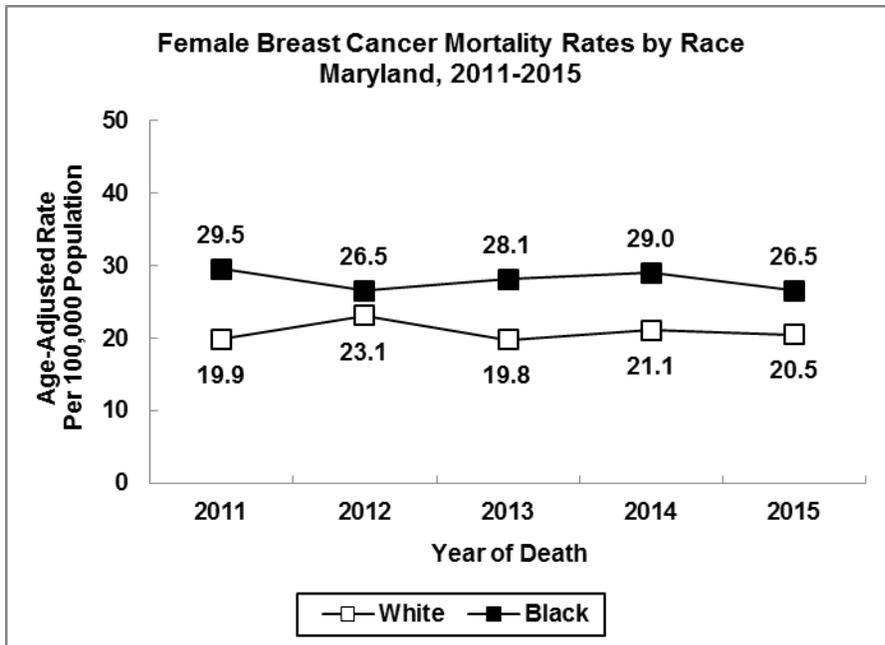
Female Breast Cancer Mortality Rates by Race
Maryland, 2011-2015

Mortality Trends by Race

Female breast cancer mortality rates decreased at different rates in blacks and whites from 2011 to 2015. The mortality rate in blacks decreased at a rate of 1.2% per year between 2011 and 2015 and decreased at a rate of 0.3% per year among whites during the same time period.

See Appendix H, Table 5.

Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2015
Maryland Vital Statistics Administration, 2011

Female Breast Cancer by Stage at Diagnosis
Maryland, 2011-2015
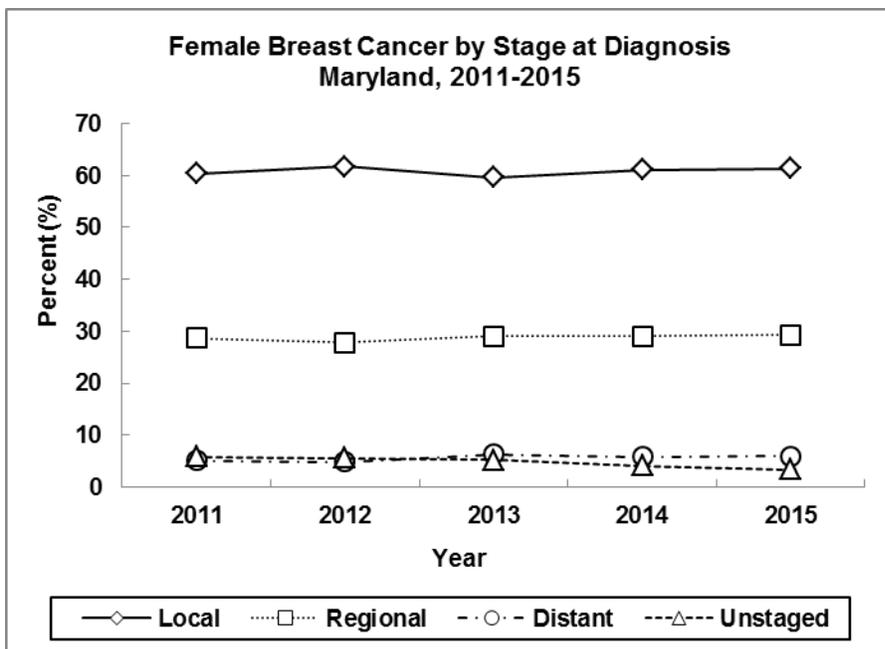
Stage at Diagnosis

In 2015, 61.4% of all female breast cancer cases in Maryland were diagnosed at the local stage, 29.3% were found at the regional stage, and 5.9% were diagnosed at the distant stage. The proportion of female breast cancers reported as unstaged in 2015 was 3.4%. Unstaged breast cancer diagnoses decreased 12.8% per year from 2011 to 2015.

See Appendix I, Table 4.

Source: Maryland Cancer Registry

Percentage of Maryland Women Ages 50 to 74 Years Old Who Had a Mammogram Within the Past 2 Years, 2012-2016, Compared to Healthy People 2020 Target

Year	Percent (%)
2012	83.8%
2014	83.4%
2016	81.1%
HP 2020	81.1%

Legend: □MD ■HP 2020
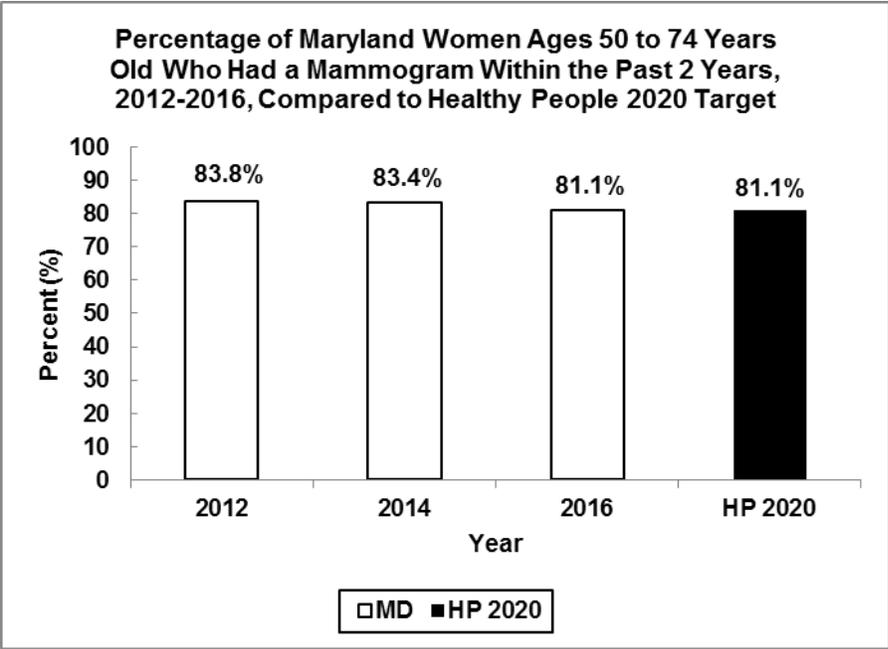
Breast Cancer Screening

The Healthy People 2020 target for the proportion of women who had a breast cancer screening based on the most recent guidelines is 81.1%. Maryland women have consistently met or surpassed the Healthy People 2020 target. In 2016, 81.1% of Maryland women ages 50 to 74 years reported receiving a mammogram within the past two years.

Source: Maryland BRFSS 2012, 2014, 2016
Healthy People 2020, U.S. Department of Health and Human Services

Public Health Evidence (quoted from the National Cancer Institute-PDQ® 10/19/2018 and 10/26/2018; the United States Preventive Services Task Force [USPSTF] 1/2016 and 9/2013)

Prevention

Avoiding risk factors may help prevent cancer. The following are risk factors for breast cancer:
- Older age;
- A personal history of invasive breast cancer, ductal carcinoma in situ, lobular carcinoma in situ, or a personal history of benign (noncancer) breast disease;
- A family history of breast cancer in a first-degree relative;
- Women who have inherited changes in the *BRCA1* and *BRCA2* genes or in certain other genes;
- Having dense breasts;
- Increased exposure of breast tissue to estrogen made in the body (e.g., early menstruation at age 11 or younger, starting menopause at a later age, becoming pregnant for the first time after age 35, or never becoming pregnant);
- Taking hormone therapy for symptoms of menopause (combination HRT/hormone therapy - estrogen combined with progestin);
- Radiation therapy to the breast or chest;
- Obesity; and
- Drinking alcohol.

Increasing protective factors may help prevent cancer. The following are protective factors for breast cancer:
- Less exposure of breast tissue to estrogen made by the body (e.g., having an early pregnancy, breast feeding).
- Taking estrogen-only hormone therapy after hysterectomy, selective estrogen receptor modulators (e.g., tamoxifen, raloxifene), or aromatase inhibitors (e.g., anastrozole, letrozole) and inactivators (e.g., exemestane). Even though these drugs may decrease the risk of breast cancer, they are also associated with side-effects and other risks.
- Risk-reducing mastectomy for women who have high risk of breast cancer.
- Ovarian ablation (treatments that stop or lower the amount of estrogen made by the ovaries).
- Exercising four or more hours a week.

It is not clear whether the following affect the risk of breast cancer:
- Hormonal contraceptives; and
- Environmental exposures (e.g., exposure to chemicals such as organochlorine).

The following have little or no effect on the risk of breast cancer:
- Having an abortion;
- Making diet changes such as eating less fat or more fruits and vegetables;
- Taking vitamins, including fenretinide (a type of vitamin A);
- Cigarette smoking, both active and passive (inhaling secondhand smoke);
- Using underarm deodorant or antiperspirant;
- Taking statins (cholesterol-lowering drugs);
- Taking bisphosphonates (drugs used to treat osteoporosis and hypercalcemia) by mouth or by intravenous infusion; and

- Working night shifts, which may change your circadian rhythm (physical, mental, and behavioral changes that are mainly affected by darkness and light in 24 hour cycles).

Screening

Mammography is the most common screening test for breast cancer. Women ages 50 to 69 years old who have screening mammograms have a lower chance of dying from breast cancer than women who do not have screening mammograms. Fewer women are dying of breast cancer in the United States, but it is not known whether the lower risk of dying is because the cancer was found early by screening or whether the treatments are better.

The harms of mammography include the following:
- False-positive test results can occur (the screening test results may appear to be abnormal even though no cancer is present). False-positive results can lead to more testing and may cause anxiety.
- False-negative test results can occur (the screening test results may appear to be normal even though breast cancer is present). A woman who has a false-negative test result may delay seeking medical care even if she has symptoms.
- Finding breast cancer may lead to breast cancer treatment and side effects, but it may not improve a woman's health or help her live longer.
- Mammography exposes the breast to low doses of radiation.
- There may be pain or discomfort during a mammogram.

Magnetic resonance imaging (MRI) may be used to screen women who have a high risk of breast cancer. Factors that put women at high risk include the following:
- Certain gene changes, such as changes in the *BRCA1* or *BRCA2* genes.
- A family history (first degree relative, such as a mother, daughter, or sister) with breast cancer.
- Certain genetic syndromes, such as Li-Fraumeni or Cowden syndrome.

An MRI is more likely than mammography to find a breast mass that is not cancer.

Whether a woman should be screened for breast cancer and the screening test to use depends on certain factors. Women with risk factors for breast cancer, such as certain changes in the *BRCA1* or *BRCA2* gene or certain genetic syndromes may be screened at a younger age and more often. Women who have had radiation treatment to the chest, especially at a young age, may start routine breast cancer screening at an earlier age. The benefits and risks of mammograms and MRIs for these women have not been studied.

The USPSTF recommends biennial screening mammography for women ages 50 to 74 years old. The decision to start screening mammography in women prior to age 50 years old should be an individual one. Women who place a higher value on the potential benefit than the potential harms may choose to begin biennial screening between the ages of 40 and 49 years old. For women who are at average risk for breast cancer, most of the benefit of mammography results from biennial screening during ages 50 to 74 years old. Of all of the age groups, women ages 60 to 69 years old are most likely to avoid breast cancer death through mammography screening. While screening mammography in women ages 40 to 49 years old may reduce the risk for breast cancer death, the number of deaths averted is smaller than that in older women and the number of false-positive results and unnecessary biopsies is larger. The balance of benefits and harms is likely to improve as

women move from their early to late 40s. In addition to false-positive results and unnecessary biopsies, all women undergoing regular screening mammography are at risk for the diagnosis and treatment of noninvasive and invasive breast cancer that would otherwise not have become a threat to their health, or even apparent, during their lifetime (known as "overdiagnosis"). Beginning mammography screening at a younger age and screening more frequently may increase the risk for overdiagnosis and subsequent overtreatment. Women with a parent, sibling, or child with breast cancer are at higher risk for breast cancer and thus may benefit more than average-risk women from beginning screening in their 40s. The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening mammography in women ages 75 years or older. The USPSTF concludes that the current evidence is insufficient to assess the benefits and harms of digital breast tomosynthesis (DBT) as a primary screening method for breast cancer. The USPSTF also concludes that the current evidence is insufficient to assess the balance of benefits and harms of adjunctive screening for breast cancer using breast ultrasonography, MRI, DBT, or other methods in women identified to have dense breasts on an otherwise negative screening mammogram.

Breast cancer screening has not been shown to benefit the following women:
- In elderly women who, if diagnosed with breast cancer through screening, will usually die of other causes.
- In women with an average risk of developing breast cancer who have screening mammography before age 40.
- In women who are not expected to live for a long time and have other diseases or conditions, as finding and treating early stage breast cancer may reduce their quality of life without helping them live longer.

Maryland Department of Health Medical Advisory Committee Public Health Intervention for Breast Cancer
For early detection of breast cancer: • Screen using mammography and clinical breast examination by a health professional annually for women ages 40 years and older.

Individuals should discuss risk factors for breast cancer, ways to prevent breast cancer, and screening tests with their healthcare provider.

Note: For information on the Breast Cancer Prevention and Screening PDQ®, please see Appendix C.

Table 30.
Number of New Female Breast Cancer Cases by Jurisdiction and Race, Maryland, 2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	4,876	3,158	1,433	225
Allegany	45	45	0	0
Anne Arundel	451	376	60	6
Baltimore City	451	144	296	6
Baltimore County	736	544	171	18
Calvert	79	65	14	0
Caroline	30	28	<6	0
Carroll	144	136	<6	<6
Cecil	79	73	6	0
Charles	116	66	45	<6
Dorchester	35	26	9	0
Frederick	213	188	19	<6
Garrett	30	30	0	0
Harford	229	197	28	<6
Howard	239	166	37	34
Kent	28	22	6	0
Montgomery	810	542	136	105
Prince George's	718	129	545	36
Queen Anne's	40	s	<6	0
Saint Mary's	68	56	10	<6
Somerset	28	21	7	0
Talbot	39	32	7	0
Washington	129	119	9	0
Wicomico	80	61	18	0
Worcester	55	50	<6	<6

Total includes cases reported as unknown race and unknown county

<6 = Case counts of 1-5 are suppressed per MDH/MCR Data Use Policy

s = Case counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 31.
Female Breast Cancer Age-Adjusted Incidence Rates* by Jurisdiction and Race, Maryland, 2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	131.4	133.4	130.6	89.3
Allegany	98.6	101.7	0.0	0.0
Anne Arundel	134.4	137.8	122.8	**
Baltimore City	121.6	132.9	115.6	**
Baltimore County	132.9	140.4	128.9	64.1
Calvert	137.1	135.5	**	0.0
Caroline	144.5	161.7	**	0.0
Carroll	133.0	131.9	**	**
Cecil	128.6	129.6	**	0.0
Charles	128.1	134.1	125.7	**
Dorchester	143.2	121.5	**	0.0
Frederick	146.2	146.4	186.9	**
Garrett	138.3	139.7	0.0	0.0
Harford	139.7	140.4	149.0	**
Howard	133.4	143.2	120.2	108.7
Kent	175.2	164.7	**	0.0
Montgomery	126.9	128.6	124.1	96.4
Prince George's	131.5	102.0	139.8	116.8
Queen Anne's	131.2	141.4	**	0.0
Saint Mary's	108.6	108.9	**	**
Somerset	185.5	190.9	**	0.0
Talbot	111.5	98.1	**	0.0
Washington	136.1	133.3	**	0.0
Wicomico	130.5	136.4	126.6	0.0
Worcester	139.5	140.1	**	**

* Rates are per 100,000 women and age-adjusted to 2000 U.S. standard population

** Rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 32.
Number of Deaths for Female Breast Cancer by Jurisdiction and Race, Maryland, 2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	825	525	283	17
Allegany	11	s	<10	<10
Anne Arundel	63	50	s	<10
Baltimore City	91	s	64	<10
Baltimore County	133	93	s	<10
Calvert	12	10	<10	<10
Caroline	<10	<10	<10	<10
Carroll	31	26	<10	<10
Cecil	12	11	<10	<10
Charles	17	<10	<10	<10
Dorchester	<10	<10	<10	<10
Frederick	40	31	<10	<10
Garrett	<10	<10	<10	<10
Harford	31	26	<10	<10
Howard	32	24	<10	<10
Kent	<10	<10	<10	<10
Montgomery	152	112	s	<10
Prince George's	119	s	93	<10
Queen Anne's	<10	<10	<10	<10
Saint Mary's	11	<10	<10	<10
Somerset	<10	<10	<10	<10
Talbot	<10	<10	<10	<10
Washington	25	s	<10	<10
Wicomico	12	10	<10	<10
Worcester	10	s	<10	<10

<10 = Death counts of 0-9 are suppressed per MDH/CCPC Mortality Data Suppression Policy

s = Death counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 33.
Female Breast Cancer Age-Adjusted Mortality
Rates* by Jurisdiction and Race, Maryland, 2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	21.7	20.5	26.5	**
Allegany	**	**	**	**
Anne Arundel	17.8	17.1	**	**
Baltimore City	25.3	22.4	26.6	**
Baltimore County	23.0	21.2	30.0	**
Calvert	**	**	**	**
Caroline	**	**	**	**
Carroll	28.1	25.2	**	**
Cecil	**	**	**	**
Charles	**	**	**	**
Dorchester	**	**	**	**
Frederick	28.3	24.7	**	**
Garrett	**	**	**	**
Harford	19.3	18.3	**	**
Howard	17.2	18.3	**	**
Kent	**	**	**	**
Montgomery	22.1	23.6	30.3	**
Prince George's	22.8	15.5	24.8	**
Queen Anne's	**	**	**	**
Saint Mary's	**	**	**	**
Somerset	**	**	**	**
Talbot	**	**	**	**
Washington	24.8	26.4	**	**
Wicomico	**	**	**	**
Worcester	**	**	**	**

* Rates are per 100,000 women and age-adjusted to 2000 U.S. standard population
** Rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data
Suppression Policy
Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 34.
Number of New Female Breast Cancer Cases by Jurisdiction and Race, Maryland, 2011-2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	23,249	15,366	6,643	967
Allegany	282	276	<6	<6
Anne Arundel	2,175	1,813	301	48
Baltimore City	2,227	714	1,467	28
Baltimore County	3,575	2,621	838	93
Calvert	398	345	s	<6
Caroline	131	108	s	<6
Carroll	696	669	15	9
Cecil	380	351	25	<6
Charles	532	307	207	15
Dorchester	149	113	36	0
Frederick	914	798	83	27
Garrett	112	s	0	<6
Harford	1,063	923	113	23
Howard	1,158	800	232	120
Kent	117	97	20	0
Montgomery	4,019	2,778	657	449
Prince George's	3,161	658	2,332	121
Queen Anne's	185	177	8	0
Saint Mary's	322	271	40	9
Somerset	82	60	22	0
Talbot	209	181	26	<6
Washington	625	590	27	7
Wicomico	406	324	73	6
Worcester	270	237	29	<6

Total includes cases reported as unknown race and unknown county

<6 = Case counts of 1-5 are suppressed per MDH/MCR Data Use Policy

s = Case counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 35.
Female Breast Cancer Age-Adjusted Incidence Rates* by Jurisdiction and Race, Maryland, 2011-2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	129.6	131.3	129.2	83.8
Allegany	114.0	114.6	**	**
Anne Arundel	132.5	135.4	128.1	63.0
Baltimore City	123.3	130.4	120.3	71.4
Baltimore County	134.7	137.2	135.4	74.3
Calvert	146.9	154.7	126.5	**
Caroline	127.2	123.4	156.0	**
Carroll	126.2	126.7	**	**
Cecil	126.8	125.1	167.8	**
Charles	124.5	127.7	124.9	**
Dorchester	125.8	127.9	125.7	0.0
Frederick	129.4	127.3	156.9	92.4
Garrett	105.0	104.5	0.0	**
Harford	135.1	135.8	134.7	90.1
Howard	131.3	134.2	153.8	94.2
Kent	146.1	146.2	153.4	0.0
Montgomery	129.8	131.9	126.6	89.1
Prince George's	124.9	105.8	130.1	86.0
Queen Anne's	113.7	119.9	**	0.0
Saint Mary's	109.3	112.1	97.3	**
Somerset	111.1	109.7	120.2	0.0
Talbot	129.5	127.8	141.7	**
Washington	135.0	135.1	107.0	**
Wicomico	137.5	145.9	114.8	**
Worcester	135.7	136.1	131.4	**

* Rates are per 100,000 women and age-adjusted to 2000 U.S. standard population

** Rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 36.
Number of Deaths for Female Breast Cancer by Jurisdiction and Race, Maryland, 2011-2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	4,112	2,610	1,400	102
Allegany	55	54	<10	<10
Anne Arundel	349	285	s	<10
Baltimore City	501	s	349	<10
Baltimore County	648	441	195	12
Calvert	69	55	s	<10
Caroline	s	15	<10	<10
Carroll	141	132	<10	<10
Cecil	62	60	<10	<10
Charles	100	56	s	<10
Dorchester	25	18	<10	<10
Frederick	151	133	s	<10
Garrett	25	s	<10	<10
Harford	180	154	s	<10
Howard	159	116	s	<10
Kent	26	20	<10	<10
Montgomery	586	425	119	42
Prince George's	627	135	475	17
Queen Anne's	31	29	<10	<10
Saint Mary's	66	56	s	<10
Somerset	<10	<10	<10	<10
Talbot	34	29	<10	<10
Washington	120	117	<10	<10
Wicomico	65	46	s	<10
Worcester	63	56	<10	<10

<10 = Death counts of 0-9 are suppressed per MDH/CCPC Mortality Data Suppression Policy

s = Death counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 37.
Female Breast Cancer Age-Adjusted Mortality Rates* by Jurisdiction and Race, Maryland, 2011-2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	22.4	20.9	27.9	9.1
Allegany	20.5	20.8	**	**
Anne Arundel	21.3	20.8	26.7	**
Baltimore City	27.4	25.1	28.8	**
Baltimore County	22.6	20.1	31.2	**
Calvert	24.9	23.6	**	**
Caroline	20.0	**	**	**
Carroll	25.0	24.4	**	**
Cecil	20.2	20.8	**	**
Charles	24.6	22.5	27.0	**
Dorchester	20.7	**	**	**
Frederick	21.9	21.6	**	**
Garrett	21.9	22.1	**	**
Harford	22.9	22.2	31.8	**
Howard	18.8	19.5	26.6	**
Kent	27.0	24.8	**	**
Montgomery	18.1	18.6	23.2	8.3
Prince George's	25.7	20.6	27.7	**
Queen Anne's	18.9	19.7	**	**
Saint Mary's	23.0	23.5	**	**
Somerset	**	**	**	**
Talbot	19.1	17.4	**	**
Washington	23.5	23.8	**	**
Wicomico	20.0	18.6	**	**
Worcester	27.9	28.8	**	**

* Rates are per 100,000 women and age-adjusted to 2000 U.S. standard population
** Rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data Suppression Policy
Source: CDC WONDER, 2011-2015, as of January 12, 2018

Maryland Female Breast Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2011-2015

Legend

- ■ >25% above U.S. rate
- ■ 10-25% above U.S. rate
- ■ Between 10% below and 10% above U.S. rate
- ■ 10-25% below U.S. rate
- ■ >25% below U.S. rate

Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 women.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 4.
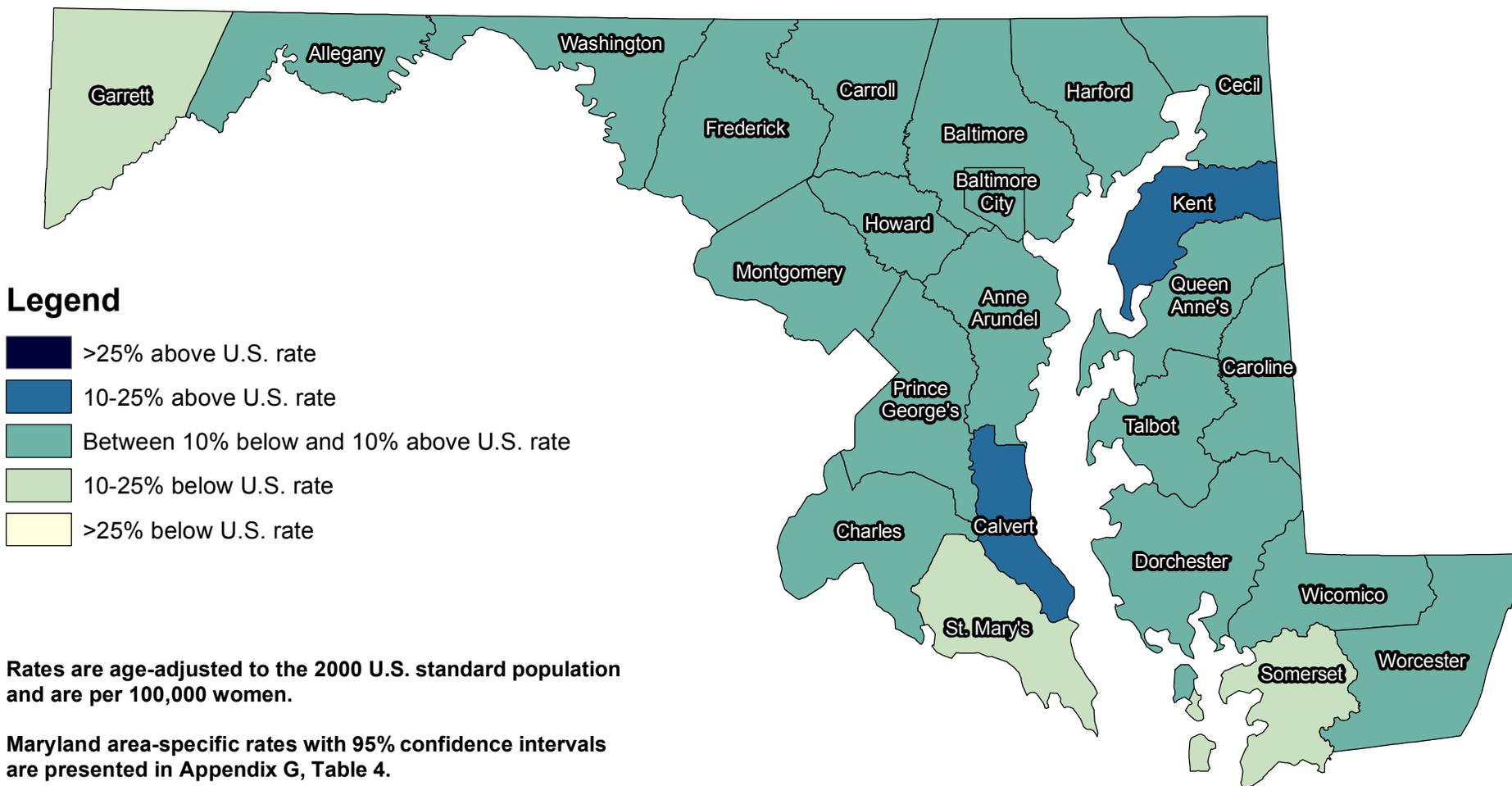
U.S. female breast cancer incidence rate, 2011-2015: 126.0 / 100,000

Maryland female breast cancer incidence rate, 2011-2015: 129.6 / 100,000

Sources: Maryland Cancer Registry
         U.S. SEER, SEER*Stat Database

Maryland Female Breast Cancer Mortality Rates by Geographical Area: Comparison to U.S. Rate, 2011-2015

Legend

- **>25% above U.S. rate**
- **10-25% above U.S. rate**
- **Between 10% below and 10% above U.S. rate**
- **10-25% below U.S. rate**
- **>25% below U.S. rate**
- **Suppressed**

Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 women.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 12.

U.S. female breast cancer mortality rate, 2011-2015: 20.9 / 100,000

Maryland female breast cancer mortality rate, 2011-2015: 22.4 / 100,000

Sources: Maryland Cancer Registry
U.S. SEER, SEER*Stat Database

Note: Rates based on case counts of 1-19 are suppressed per MDH/CCPC Data Use Policy and Procedures.

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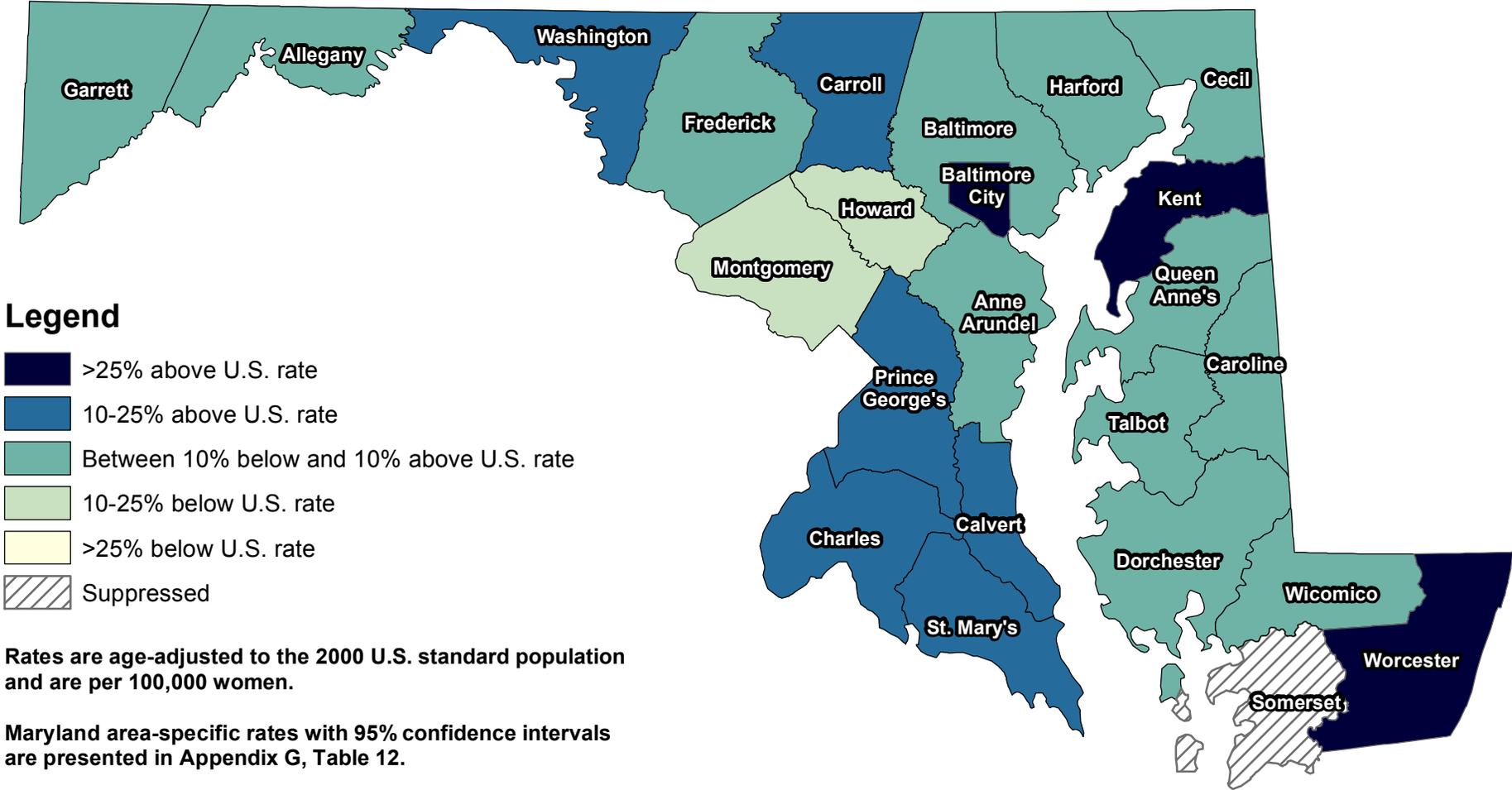
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D. Prostate Cancer

Incidence (New Cases)

In 2015, a total of 4,063 cases of prostate cancer were reported among men in Maryland. The age-adjusted prostate cancer incidence rate in Maryland for 2015 was 120.6 per 100,000 men (116.8-124.5, 95% CI), which is statistically significantly higher than the 2015 U.S. SEER age-adjusted prostate cancer incidence rate of 101.6 per 100,000 men (100.7-102.5, 95% CI).

Mortality (Deaths)

Prostate cancer is the second leading cause of cancer death among men in Maryland after lung cancer. In 2015, 556 men died of prostate cancer in Maryland, accounting for 5.3% of all cancer deaths and 10.3% of cancer deaths among men in Maryland. The 2015 age-adjusted mortality rate for prostate cancer in Maryland was 21.0 per 100,000 men (19.3-22.7, 95% CI). This rate is statistically significantly higher than the 2015 U.S. prostate cancer mortality rate of 18.9 per 100,000 men (18.7-19.1, 95% CI). Maryland had the 22nd highest prostate cancer mortality rate among the states and the District of Columbia for the period from 2011 to 2015.

Table 38.
Prostate Cancer Incidence and Mortality Rates
by Race, Maryland (MD) and the United States, 2015

Incidence 2015	Total[*]	Whites	Blacks	Other
MD New Cases (count)	4,063	2,293	1,577	144
MD Incidence Rate	120.6	98.5	188.4	71.5
U.S. SEER Rate	101.6	93.9	157.6	51.0
Mortality 2015	Total	Whites	Blacks	Other
MD Deaths (count)	556	324	215	17
MD Mortality Rate	21.0	16.8	38.3	**
U.S. Mortality Rate	18.9	17.7	37.5	N/A

Rates are per 100,000 men and are age-adjusted to 2000 U.S. standard population

* Total includes unknown race and unknown county

** MD mortality rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data
   Suppression Policy

Source: Maryland Cancer Registry
          U.S. SEER, SEER*Stat
          NCHS Compressed Mortality File in CDC WONDER, 2015
          U.S. SEER, Cancer Statistics Review

Prostate Cancer Incidence and Mortality Rates by Year of Diagnosis or Death, Maryland, 2011-2015

Age-Adjusted Rate Per 100,000 Population

Year	Incidence	Mortality
2011	131.7	20.2
2012	112.0	20.4
2013	124.5	19.1
2014	119.4	19.3
2015	120.6	21.0

Year of Diagnosis or Death

- -□- - Incidence   —◇— Mortality

Source: Maryland Cancer Registry
NCHS Compressed Mortality File in CDC WONDER, 2012-2015
Maryland Vital Statistics Administration, 2011
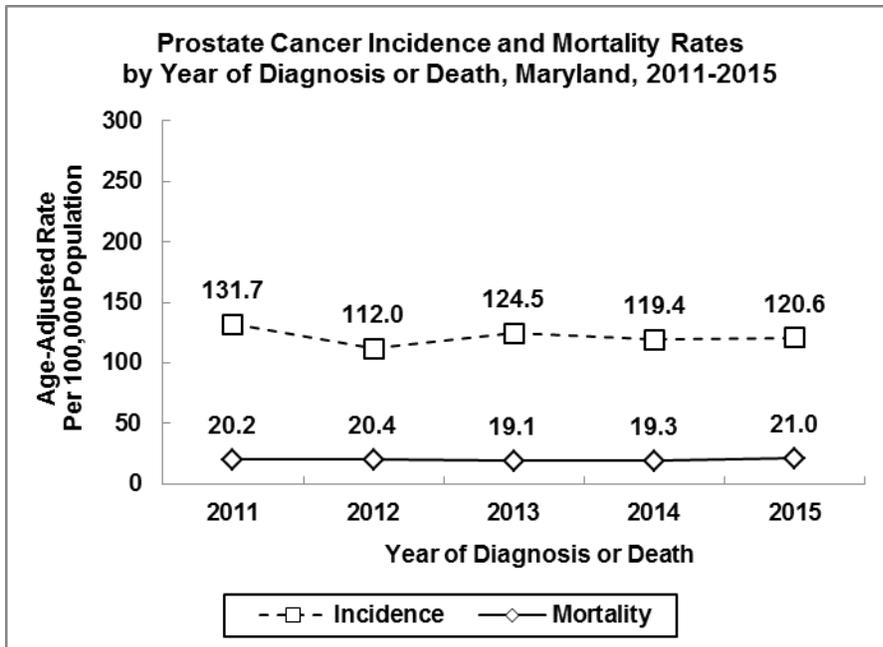
Incidence and Mortality Trends

The prostate cancer incidence rate in Maryland decreased at a rate of 1.1% per year from 2011 to 2015.

Prostate cancer mortality rates increased slightly from 2011 to 2015, with a yearly increase of 0.2%.

See Appendix H, Tables 1 and 2.

Prostate Cancer Incidence Rates by Race Maryland, 2011-2015

Age-Adjusted Rate Per 100,000 Population

Year	White	Black
2011	110.2	191.4
2012	97.5	159.7
2013	108.0	185.6
2014	101.3	184.5
2015	98.5	188.4

Year of Diagnosis

—□— White   —■— Black

Source: Maryland Cancer Registry
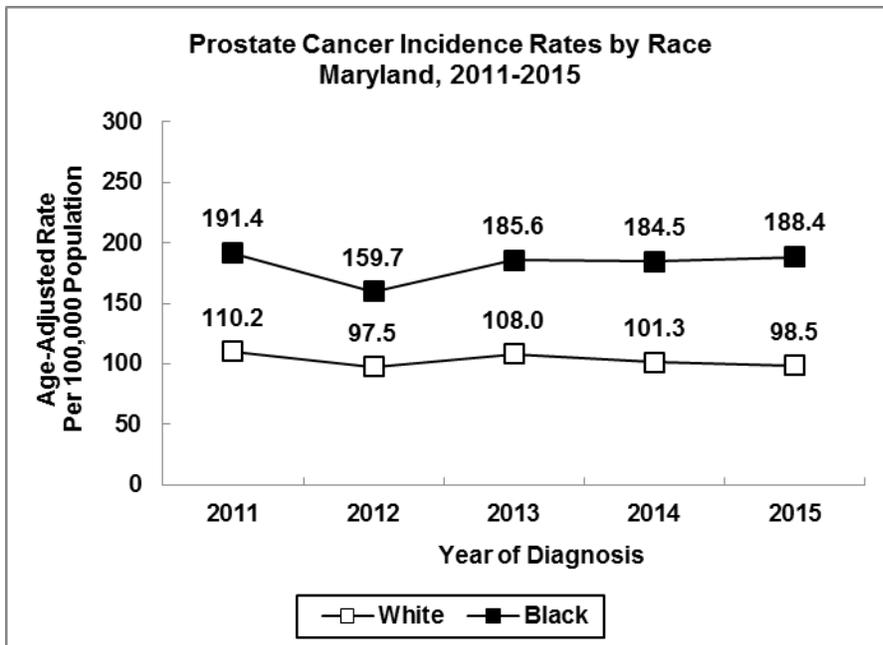
Incidence Trends by Race

From 2011 to 2015, black men consistently had higher prostate cancer incidence rates than white men.

During this 5-year period, incidence rates increased 1.1% per year among black men and decreased 1.8% per year among white men.
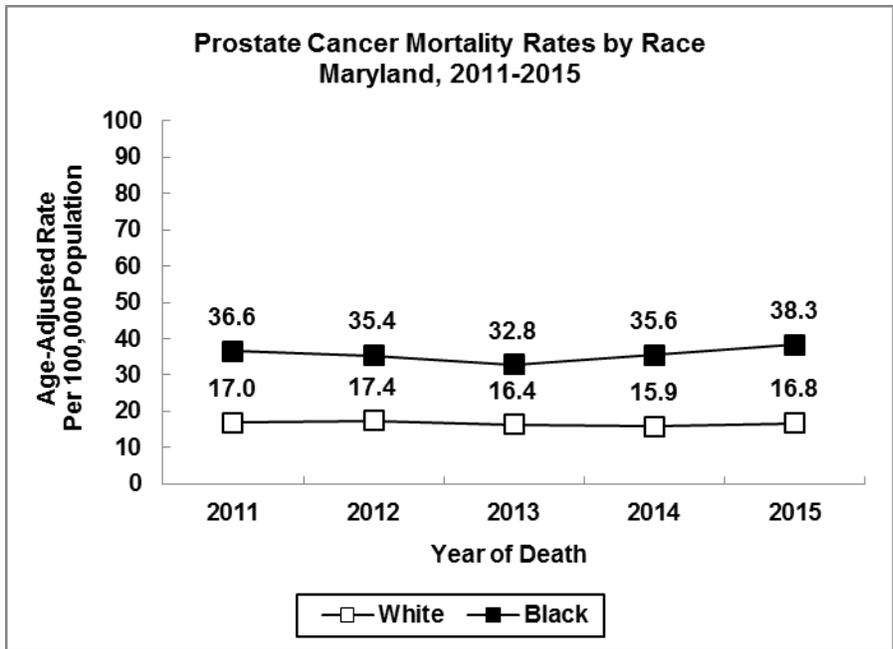
See Appendix H, Table 3.

Prostate Cancer Mortality Rates by Race
Maryland, 2011-2015

Age-Adjusted Rate Per 100,000 Population

Year	Black	White
2011	36.6	17.0
2012	35.4	17.4
2013	32.8	16.4
2014	35.6	15.9
2015	38.3	16.8

Year of Death

—□— White   —■— Black

Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2015
Maryland Vital Statistics Administration, 2011

Mortality Trends by Race

From 2011 to 2015, black men consistently had higher prostate cancer mortality rates than white men. In 2015, the prostate cancer mortality rate for black men was more than twice the rate for white men.

During this 5-year period, mortality rates increased 1.0% per year among black men and decreased 1.1% per year among white men.

See Appendix H, Table 5.

Prostate Cancer by Stage at Diagnosis
Maryland, 2011-2015

Percent (%)

Year

—◇— Local   ····□···· Regional   – ·○· – Distant   ---△--- Unstaged
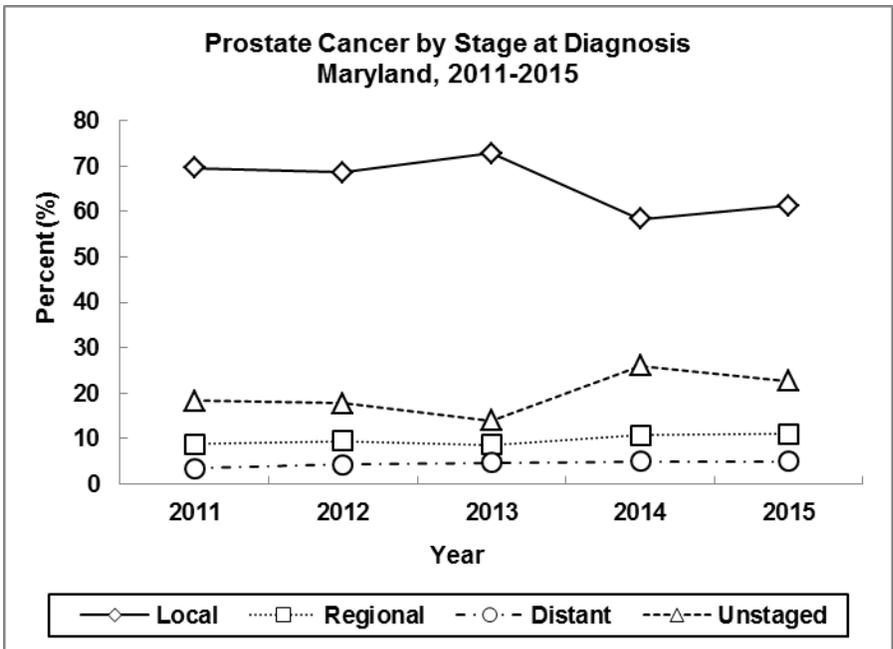
Source: Maryland Cancer Registry

Stage at Diagnosis

Of prostate cancers diagnosed in Maryland in 2015, most (61.3%) were detected at the local stage, 11.0% were found at the regional stage, and 5.0% were diagnosed at the distant stage. In 2015, 22.7% of prostate cancers were reported as unstaged.

See Appendix I, Table 5.

Percentage of Maryland Men Agse 40 Years and Older Who Have Ever Discussed the Advantages and Disadvantages of Prostate-Specific Antigen (PSA) Testing, 2012-2016, Compared to Healthy People 2020 Target

Year	Percent
2012	28.5%
2014	31.4%
2016	32.0%
HP 2020	15.9%

Legend: ☐ MD ■ HP 2020

Y-axis: Percent (%), X-axis: Year

Source: Maryland BRFSS 2012, 2014, 2016
Healthy People 2020, U.S. Department of Health and Human Services

Prostate-Specific Antigen Test

In 2016, almost one in three (32.0%) Maryland men ages 40 years and older reported that they had discussed both the advantages and the disadvantages of a PSA test with a healthcare provider. This surpasses the Healthy People 2020 target of 15.9%.

Public Health Evidence (quoted from the National Cancer Institute PDQ®, 9/8/2016 and 2/22/2018, and the United States Preventive Services Task Force [USPSTF], 5/2018)

Prevention

Avoiding risk factors may help prevent cancer. The following risk factors may increase the risk of prostate cancer:
- Age, as the chance of developing prostate cancer increases as men get older, especially after age 50;
- Family history of prostate cancer;
- Race, as prostate cancer occurs more often in black men than in white men;
- Hormones (dihydrotestosterone);
- Taking vitamin E alone;
- Taking 1 mg folic acid supplements; and
- A diet high in dairy foods and calcium may cause a small increase in the risk of prostate cancer.

Increasing protective factors may help prevent cancer. The following protective factors may decrease the risk of prostate cancer:
- A diet with enough folate.
- Taking finasteride or dutasteride has been shown to lower the risk for prostate cancer, but it is not known if these drugs lower the risk of death from prostate cancer. In a study, the men who took finasteride who did have prostate cancer had more aggressive tumors. The U.S. Food and Drug Administration has not approved these drugs for prostate cancer prevention.

The following have been proven not to affect the risk of prostate cancer, or their effects on prostate cancer risk are unknown:
- Taking selenium (a mineral) alone or selenium and vitamin E together.
- Decreasing fats or increasing fruits and vegetables in the diet.
- Regular use of multivitamins has not been proven to increase the risk of early or localized prostate cancer. However, a large study showed an increased risk of advanced prostate cancer among men who took multivitamins more than seven times a week.
- A diet high in lycopene.

Screening

There is no standard or routine screening test for prostate cancer, and screening tests for prostate cancer are under development. This includes studies to find ways to make PSA testing more accurate for early prostate cancer detection.

According to the USPSTF, for men ages 55 to 69 years old, the decision to undergo periodic PSA–based screening for prostate cancer should be an individual one. Before deciding whether to be screened, men should have an opportunity to discuss the potential benefits and harms of screening with their clinician and to incorporate their values and preferences in the decision. Screening offers a small potential benefit of reducing the chance of death from prostate cancer in some men. However, many men will experience potential harms of screening, including false-positive results that require additional testing and possible prostate biopsy; overdiagnosis and overtreatment; and

treatment complications, such as incontinence and erectile dysfunction. In determining whether this service is appropriate in individual cases, patients and clinicians should consider the balance of benefits and harms on the basis of family history, race/ethnicity, comorbid medical conditions, patient values about the benefits and harms of screening and treatment-specific outcomes, and other health needs. Clinicians should not screen men who do not express a preference for screening. The USPSTF recommends against PSA-based screening for prostate cancer in men ages 70 years and older.

Maryland Department of Health Medical Advisory Committee Public Health Intervention for Prostate Cancer
• The decision to be screened for prostate cancer should be an individual one involving shared decision-making. If a patient raises the issue of PSA screening, or the clinician believes his individual circumstances warrant consideration of PSA screening, the clinician should discuss with the patient the benefits and harms thoroughly so he can make an informed decision. The decision to start or continue PSA screening should reflect the patient's understanding of the possible benefits and expected harms and should respect his preferences.

Individuals should discuss risk factors for prostate cancer, ways to prevent prostate cancer, and screening tests with their healthcare provider.

Note: For information on the Prostate Cancer Prevention and Screening PDQ®, please see Appendix C.

Table 39.
Number of New Prostate Cancer Cases by Jurisdiction and Race, Maryland, 2015

Jurisdiction	Total	Race		
		Whites	**Blacks**	**Other**
Maryland	4,063	2,293	1,577	144
Allegany	66	61	<6	0
Anne Arundel	348	265	74	7
Baltimore City	406	91	305	7
Baltimore County	586	372	191	22
Calvert	62	47	15	0
Caroline	18	16	<6	0
Carroll	98	89	7	<6
Cecil	82	76	6	0
Charles	134	67	64	<6
Dorchester	19	10	9	0
Frederick	153	130	19	<6
Garrett	22	s	<6	0
Harford	194	151	38	<6
Howard	186	120	46	19
Kent	20	13	7	0
Montgomery	588	362	152	53
Prince George's	660	96	539	17
Queen Anne's	26	19	s	<6
Saint Mary's	50	42	8	0
Somerset	16	7	9	0
Talbot	31	27	<6	0
Washington	79	66	11	<6
Wicomico	72	46	25	0
Worcester	57	47	10	0

Total includes cases reported as unknown race and unknown county

<6 = Case counts of 1-5 are suppressed per MDH/MCR Data Use Policy

s = Case counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 40.
Prostate Cancer Age-Adjusted Incidence Rates*
by Jurisdiction and Race, Maryland, 2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	120.6	98.5	188.4	71.5
Allegany	131.9	128.5	**	0.0
Anne Arundel	109.8	98.1	193.7	**
Baltimore City	136.4	83.8	165.5	**
Baltimore County	120.7	101.7	200.4	93.5
Calvert	115.8	102.5	**	0.0
Caroline	86.6	91.6	**	0.0
Carroll	88.9	84.6	**	**
Cecil	133.3	131.9	**	0.0
Charles	182.6	151.6	252.4	**
Dorchester	74.9	**	**	0.0
Frederick	115.4	108.6	234.8	**
Garrett	101.4	96.5	**	0.0
Harford	123.7	108.8	231.9	**
Howard	105.2	94.8	179.9	77.6
Kent	137.4	**	**	0.0
Montgomery	101.1	89.2	187.3	59.9
Prince George's	149.3	79.6	184.0	62.9
Queen Anne's	77.4	61.9	**	**
Saint Mary's	81.8	81.1	**	0.0
Somerset	96.1	**	**	0.0
Talbot	98.3	96.5	**	0.0
Washington	81.1	72.0	**	**
Wicomico	127.7	110.6	205.2	0.0
Worcester	119.8	109.2	**	0.0

* Rates are per 100,000 men and age-adjusted to 2000 U.S. standard population

** Rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 41.
Number of Deaths for Prostate Cancer by Jurisdiction and Race, Maryland, 2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	556	324	215	17
Allegany	<10	<10	<10	<10
Anne Arundel	48	37	s	<10
Baltimore City	65	<10	55	<10
Baltimore County	90	63	s	<10
Calvert	<10	<10	<10	<10
Caroline	<10	<10	<10	<10
Carroll	<10	<10	<10	<10
Cecil	12	10	<10	<10
Charles	13	<10	<10	<10
Dorchester	<10	<10	<10	<10
Frederick	20	18	<10	<10
Garrett	<10	<10	<10	<10
Harford	20	16	<10	<10
Howard	22	15	<10	<10
Kent	<10	<10	<10	<10
Montgomery	83	57	15	11
Prince George's	84	s	69	<10
Queen Anne's	<10	<10	<10	<10
Saint Mary's	10	<10	<10	<10
Somerset	<10	<10	<10	<10
Talbot	<10	<10	<10	<10
Washington	14	13	<10	<10
Wicomico	12	<10	<10	<10
Worcester	13	10	<10	<10

<10 = Death counts of 0-9 are suppressed per MDH/CCPC Mortality Data Suppression Policy

s = Death counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 42.
Prostate Cancer Age-Adjusted Mortality Rates*
by Jurisdiction and Race, Maryland, 2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	21.0	16.8	38.3	**
Allegany	**	**	**	**
Anne Arundel	20.8	19.2	**	**
Baltimore City	27.9	**	39.8	**
Baltimore County	20.4	17.8	35.4	**
Calvert	**	**	**	**
Caroline	**	**	**	**
Carroll	**	**	**	**
Cecil	**	**	**	**
Charles	**	**	**	**
Dorchester	**	**	**	**
Frederick	18.7	**	**	**
Garrett	**	**	**	**
Harford	18.2	**	**	**
Howard	17.1	**	**	**
Kent	**	**	**	**
Montgomery	17.5	15.6	**	**
Prince George's	28.4	**	38.2	**
Queen Anne's	**	**	**	**
Saint Mary's	**	**	**	**
Somerset	**	**	**	**
Talbot	**	**	**	**
Washington	**	**	**	**
Wicomico	**	**	**	**
Worcester	**	**	**	**

* Rates are per 100,000 men and age-adjusted to 2000 U.S. standard population

** Rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data Suppression Policy

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 43.
Number of New Prostate Cancer Cases by Jurisdiction and Race, Maryland, 2011-2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	19,488	11,576	7,059	473
Allegany	257	235	17	<6
Anne Arundel	1,806	1,428	333	27
Baltimore City	1,998	473	1,488	18
Baltimore County	2,901	1,928	881	65
Calvert	291	231	54	<6
Caroline	116	84	29	<6
Carroll	575	532	29	<6
Cecil	363	341	20	<6
Charles	502	259	228	10
Dorchester	167	116	51	0
Frederick	643	542	82	10
Garrett	85	s	<6	0
Harford	910	749	148	8
Howard	855	598	198	44
Kent	106	81	24	0
Montgomery	2,923	1,888	680	202
Prince George's	2,957	479	2,354	62
Queen Anne's	170	147	s	<6
Saint Mary's	246	186	53	<6
Somerset	90	49	41	0
Talbot	195	170	25	0
Washington	424	369	47	6
Wicomico	405	269	126	<6
Worcester	262	207	53	0

Total includes cases reported as unknown race and unknown county

<6 = Case counts of 1-5 are suppressed per MDH/MCR Data Use Policy

s = Case counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 44.
Prostate Cancer Age-Adjusted Incidence Rates*
by Jurisdiction and Race, Maryland, 2011-2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	121.6	103.1	181.9	54.2
Allegany	103.3	99.5	156.4	**
Anne Arundel	118.8	110.3	183.6	55.3
Baltimore City	137.4	89.8	166.7	58.8
Baltimore County	123.5	106.6	203.2	67.9
Calvert	112.6	104.1	169.5	**
Caroline	117.6	98.5	233.6	**
Carroll	113.1	110.1	165.3	**
Cecil	124.4	125.0	126.9	**
Charles	138.1	112.0	191.3	**
Dorchester	142.5	128.1	196.6	0.0
Frederick	102.4	95.0	221.3	**
Garrett	78.9	78.4	**	0.0
Harford	122.8	114.7	211.1	**
Howard	105.2	99.8	183.3	43.0
Kent	136.0	120.4	236.8	0.0
Montgomery	107.7	96.9	184.7	51.8
Prince George's	143.4	82.5	172.9	56.7
Queen Anne's	102.2	96.2	194.5	**
Saint Mary's	83.5	74.8	138.4	**
Somerset	110.3	81.9	191.7	0.0
Talbot	120.6	118.4	151.8	0.0
Washington	94.1	87.6	213.2	**
Wicomico	148.5	128.1	226.0	**
Worcester	114.9	100.3	267.0	0.0

* Rates are per 100,000 men and age-adjusted to 2000 U.S. standard population

** Rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 45.
Number of Deaths for Prostate Cancer by Jurisdiction and Race, Maryland, 2011-2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	2,520	1,558	924	38
Allegany	34	32	<10	<10
Anne Arundel	214	172	s	<10
Baltimore City	360	s	273	<10
Baltimore County	368	275	s	<10
Calvert	48	36	s	<10
Caroline	10	<10	<10	<10
Carroll	49	45	<10	<10
Cecil	44	39	<10	<10
Charles	53	27	s	<10
Dorchester	20	14	<10	<10
Frederick	100	87	s	<10
Garrett	14	s	<10	<10
Harford	92	77	s	<10
Howard	93	64	s	<10
Kent	16	15	<10	<10
Montgomery	353	264	65	24
Prince George's	371	s	285	<10
Queen Anne's	29	27	<10	<10
Saint Mary's	43	32	s	<10
Somerset	10	<10	<10	<10
Talbot	35	26	<10	<10
Washington	63	59	<10	<10
Wicomico	53	37	s	<10
Worcester	48	31	s	<10

<10 = Death counts of 0-9 are suppressed per MDH/CCPC Mortality Data Suppression Policy

s = Death counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 46.
Prostate Cancer Age-Adjusted Mortality Rates*
by Jurisdiction and Race, Maryland, 2011-2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	20.0	16.7	35.7	5.7
Allegany	14.9	14.4	**	**
Anne Arundel	19.1	17.9	32.5	**
Baltimore City	31.2	18.7	40.5	**
Baltimore County	17.3	15.5	30.7	**
Calvert	28.4	24.6	**	**
Caroline	**	**	**	**
Carroll	12.5	12.1	**	**
Cecil	20.6	19.9	**	**
Charles	21.5	16.3	39.0	**
Dorchester	20.1	**	**	**
Frederick	20.7	19.8	**	**
Garrett	**	**	**	**
Harford	17.6	16.3	**	**
Howard	17.0	16.5	38.4	**
Kent	**	**	**	**
Montgomery	15.7	15.2	27.5	7.3
Prince George's	26.9	17.7	34.4	**
Queen Anne's	24.8	25.1	**	**
Saint Mary's	19.4	17.8	**	**
Somerset	**	**	**	**
Talbot	22.1	18.2	**	**
Washington	17.0	16.5	**	**
Wicomico	24.7	22.1	**	**
Worcester	22.9	16.4	**	**

* Rates are per 100,000 men and age-adjusted to 2000 U.S. standard population

** Rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data Suppression Policy

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Maryland Prostate Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2011-2015

Legend

- ■ >25% above U.S. rate
- ■ 10-25% above U.S. rate
- ■ Between 10% below and 10% above U.S. rate
- ■ 10-25% below U.S. rate
- ■ >25% below U.S. rate

Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 men.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 5.
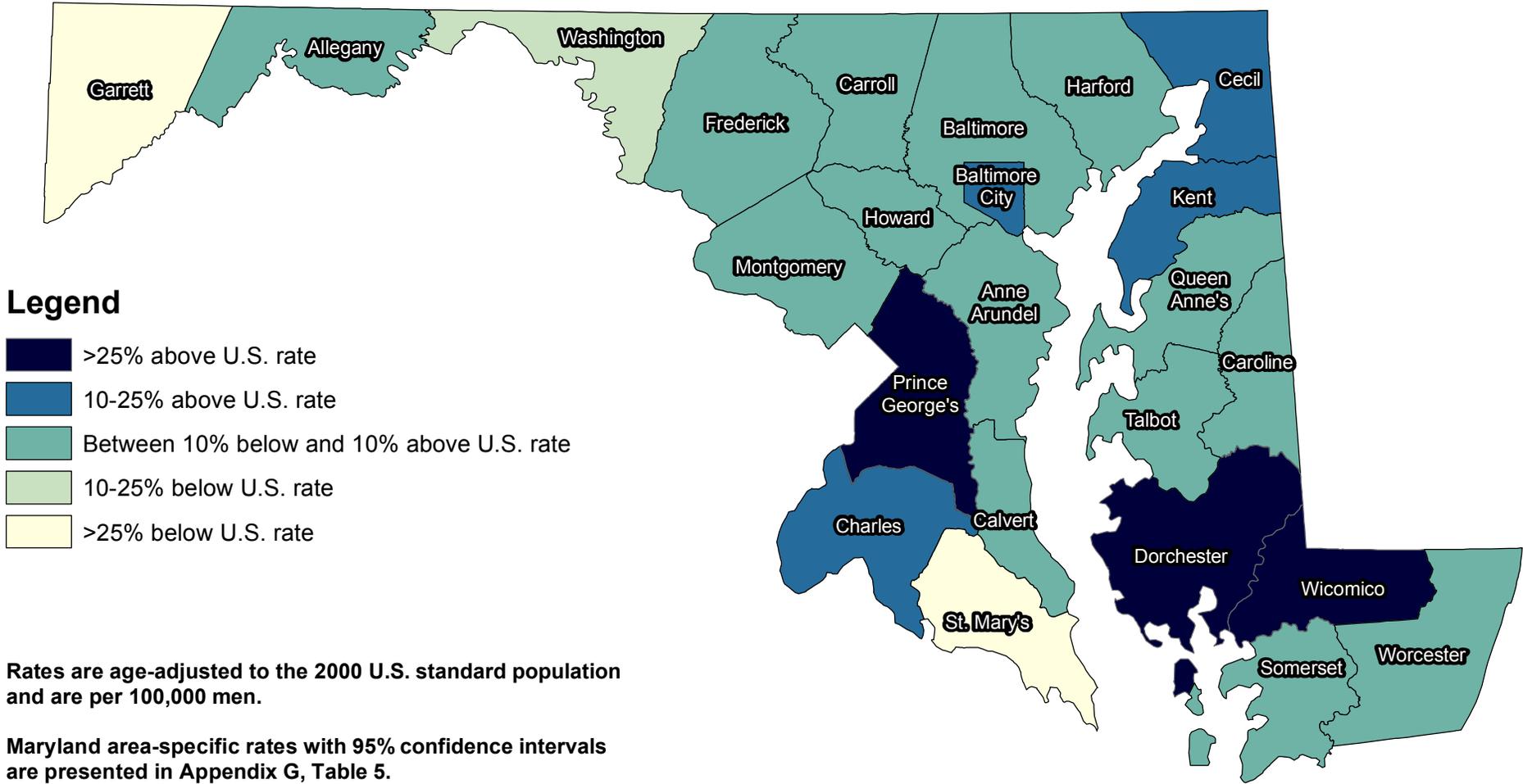
U.S. prostate cancer incidence rate, 2011-2015: 112.6 / 100,000

Maryland prostate cancer incidence rate, 2011-2015: 121.6 / 100,000

Sources: Maryland Cancer Registry
U.S. SEER, SEER*Stat Database

Maryland Prostate Cancer Mortality Rates by Geographical Area: Comparison to U.S. Rate, 2011-2015

Legend

- ■ >25% above U.S. rate
- ■ 10-25% above U.S. rate
- ■ Between 10% below and 10% above U.S. rate
- ■ 10-25% below U.S. rate
- ■ >25% below U.S. rate
- ▨ Suppressed
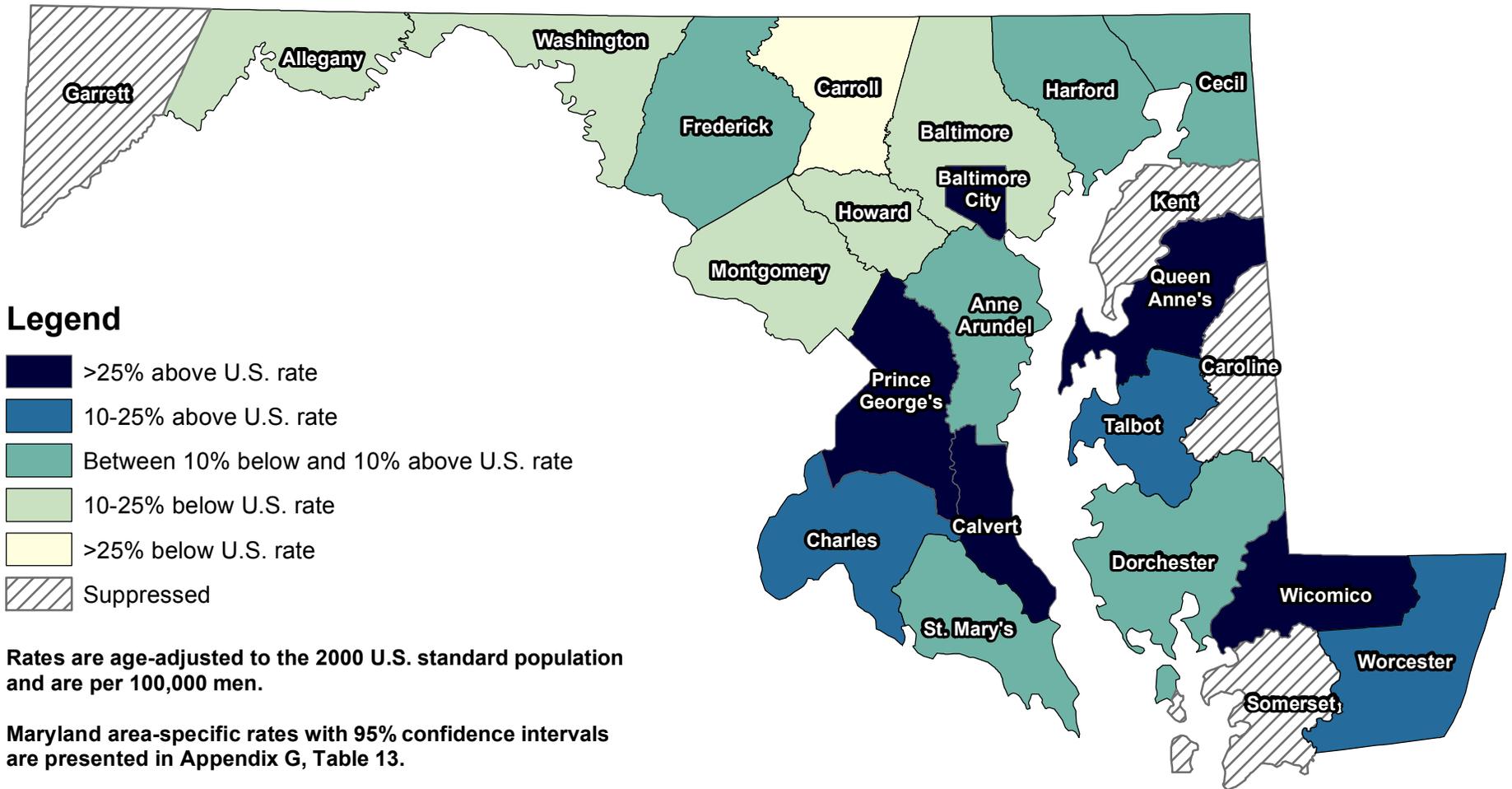
Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 men.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 13.

U.S. prostate cancer mortality rate, 2011-2015: 19.5 / 100,000

Maryland prostate cancer mortality rate, 2011-2015: 20.0 / 100,000

Sources: Maryland Cancer Registry
          U.S. SEER, SEER*Stat Database

Note: Rates based on case counts of 1-19 are suppressed per MDH/CCPC Data Use Policy and Procedures.

Map county labels: Garrett, Allegany, Washington, Carroll, Harford, Cecil, Frederick, Baltimore, Baltimore City, Kent, Howard, Queen Anne's, Montgomery, Anne Arundel, Caroline, Prince George's, Talbot, Charles, Calvert, Dorchester, Wicomico, St. Mary's, Somerset, Worcester

E. Oral Cancer

Incidence (New Cases)

In 2015, a total of 796 cases of cancer of the oral cavity and pharynx (called oral cancer) were reported in Maryland. The age-adjusted incidence rate for oral cancer in Maryland in 2015 was 11.1 per 100,000 population (10.3-11.9, 95% CI), which is not a statistically significant difference compared to the 2015 U.S. SEER age-adjusted oral cancer incidence rate of 11.4 per 100,000 population (11.1-11.6, 95% CI).

Mortality (Deaths)

In 2015, 155 persons in Maryland died of oral cancer. The 2015 age-adjusted mortality rate for oral cancer in Maryland was 2.2 per 100,000 population (1.9-2.5, 95% CI), accounting for 1.5% of Maryland cancer deaths in 2015. This rate is statistically similar to the 2015 U.S. oral cancer mortality rate of 2.5 per 100,000 population (2.5-2.6, 95% CI). Maryland had the 35th highest oral cancer mortality rate among the states and the District of Columbia for the period from 2011 to 2015.

Table 47.
Oral Cancer Incidence and Mortality Rates
by Gender and Race, Maryland (MD) and the United States, 2015

Incidence 2015	Total[*]	Males	Females	Whites	Blacks	Other
MD New Cases (count)	796	569	227	576	181	33
MD Incidence Rate	11.1	17.1	5.9	12.1	9.2	7.3
U.S. SEER Rate	11.4	17.1	6.3	12.0	8.7	7.8
Mortality 2015	Total	Males	Females	Whites	Blacks	Other
MD Deaths (count)	155	107	48	107	s	<10
MD Mortality Rate	2.2	3.5	1.3	2.3	2.3	**
U.S. Mortality Rate	2.5	3.9	1.4	2.5	2.6	N/A

Rates are per 100,000 population and are age-adjusted to 2000 U.S. standard population

* Total also includes cases reported as transsexual, hermaphrodite, unknown gender, unknown race, and unknown county

<10 = Death counts of 0-9 are suppressed per MDH/CCPC Mortality Data Suppression Policy

s = Counts are suppressed to prevent disclosure of data in other cell(s) based on Table 50

** MD mortality rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data Suppression Policy

Source: Maryland Cancer Registry
U.S. SEER, SEER*Stat
NCHS Compressed Mortality File in CDC WONDER, 2015
U.S. SEER, Cancer Statistics Review

Oral Cancer Incidence and Mortality Rates by Year of Diagnosis or Death, Maryland, 2011-2015

Age-Adjusted Rate Per 100,000 Population

Incidence: 10.2 (2011), 10.5 (2012), 10.8 (2013), 10.5 (2014), 11.1 (2015)

Mortality: 2.4 (2011), 2.1 (2012), 2.5 (2013), 2.3 (2014), 2.2 (2015)

Year of Diagnosis or Death

- - □ - - Incidence   —◇— Mortality

Source: Maryland Cancer Registry
NCHS Compressed Mortality File in CDC WONDER, 2012-2015
Maryland Vital Statistics Administration, 2011

Oral Cancer Incidence Rates by Race Maryland, 2011-2015

Age-Adjusted Rate Per 100,000 Population

White: 11.4 (2011), 11.7 (2012), 12.0 (2013), 12.1 (2014), 12.1 (2015)

Black: 7.3 (2011), 8.3 (2012), 7.7 (2013), 7.5 (2014), 9.2 (2015)

Year of Diagnosis

—□— White   —■— Black

Source: Maryland Cancer Registry

Incidence and Mortality Trends

The incidence of oral cancer in Maryland increased at a rate of 1.7% per year from 2011 to 2015.

Oral cancer mortality rates decreased from 2011 to 2015 at a rate of 0.8% annually.

See Appendix H, Tables 1 and 2.
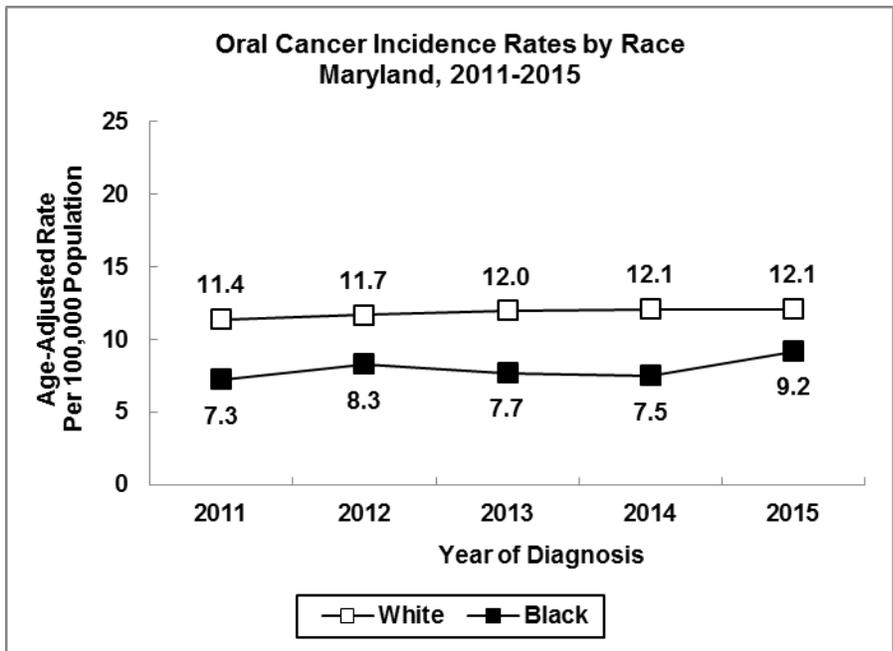
Incidence Trends by Race

Over the 5-year period from 2011 to 2015, oral cancer incidence rates in Maryland increased at a rate of 3.7% per year for blacks and 1.5% per year for whites.
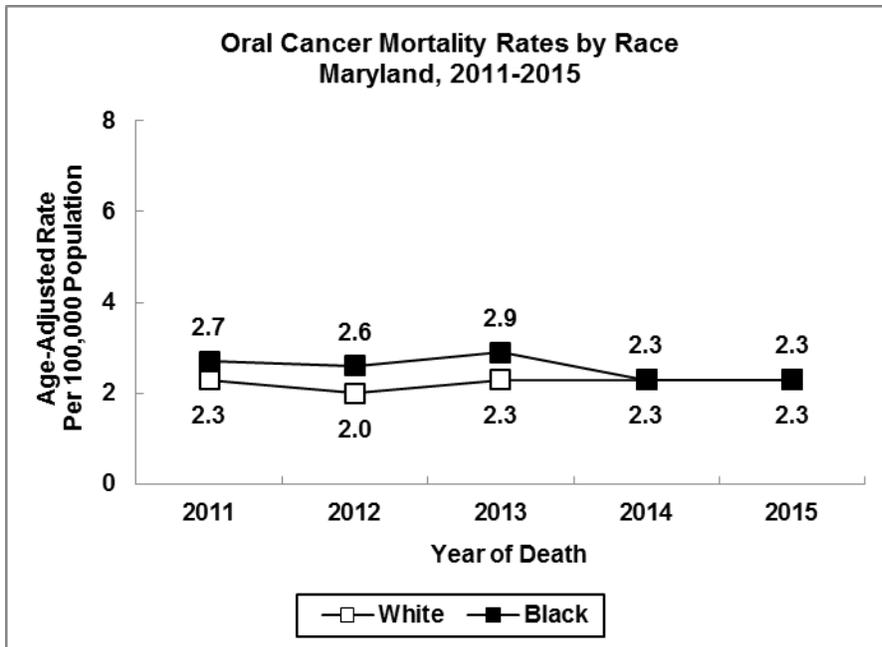
See Appendix H, Table 3.

Oral Cancer Mortality Rates by Race
Maryland, 2011-2015

Age-Adjusted Rate Per 100,000 Population

2.7 (2011), 2.6 (2012), 2.9 (2013), 2.3 (2014), 2.3 (2015)
2.3 (2011), 2.0 (2012), 2.3 (2013), 2.3 (2014), 2.3 (2015)

Year of Death

—□— White   —■— Black

Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2015
Maryland Vital Statistics Administration, 2011

Mortality Trends by Race

Over the 5-year period from 2011 to 2015, oral cancer mortality rates decreased at a rate of 4.3% per year for blacks and increased at a rate of 1.4% per year for whites. In 2014 and 2015, the age-adjusted oral cancer mortality rate in Maryland was 2.3 per 100,000 population for both blacks and whites.

See Appendix H, Table 5.

Oral Cancer by Stage at Diagnosis
Maryland, 2011-2015

Percent (%)

Year

—◇— Local   ····□···· Regional   – ·○· – Distant   ---△--- Unstaged
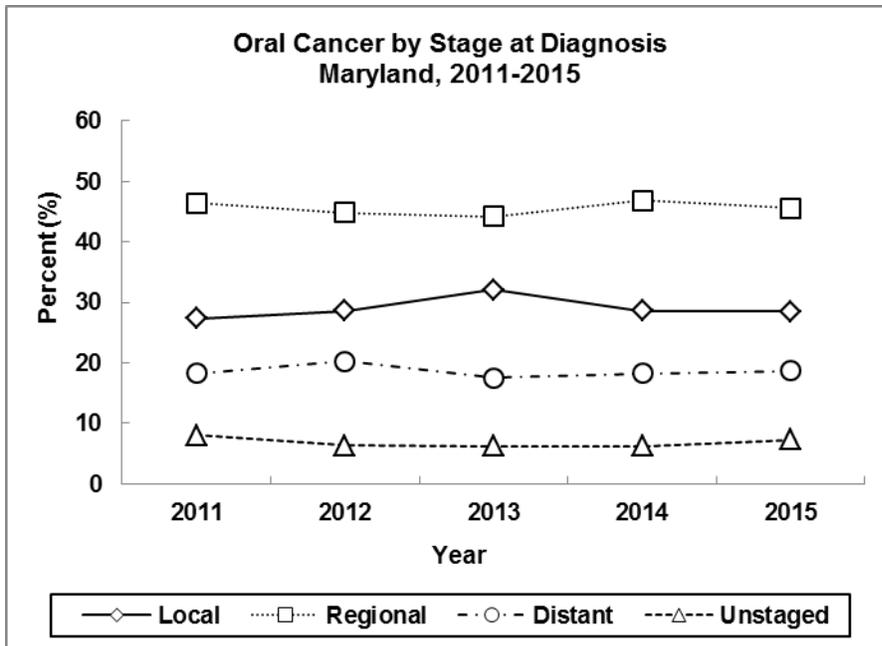
Source: Maryland Cancer Registry

Stage at Diagnosis

In 2015, 28.5% of oral cancers in Maryland were diagnosed at the local stage, 45.5% were diagnosed at the regional stage, and 18.7% were diagnosed at the distant stage. From 2011 to 2015, the proportion of oral cancers reported as unstaged gradually decreased at a rate of 2.0% per year.

See Appendix I, Table 6.

Percentage of Maryland Adults Ages 18 Years and Older Who Had an Oral Cancer Exam in the Past 12 Months, 2012-2016, Compared to Maryland 2020 Objective
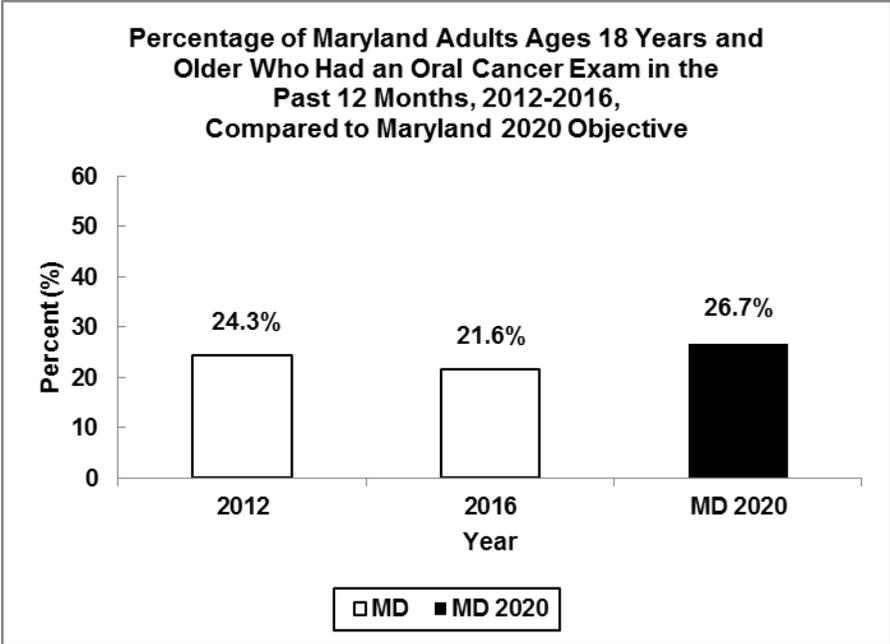
Source: Maryland BRFSS, 2012, 2016
         Maryland Comprehensive Cancer Control Plan, 2016-2020

Oral Cancer Screening

Although there is no current Healthy People 2020 target for oral cancer screening, the 2020 objective from the Maryland Comprehensive Cancer Control Plan is to increase the proportion of adults ages 18 years and older who report having an oral cancer screening examination in the past 12 months to 26.7%.

In 2012 and 2016, Maryland fell short of this target. In 2016, only 21.6% of Maryland adults reported that they had an oral cancer exam in the past year.

Public Health Evidence (quoted from the National Cancer Institute PDQ®, 7/20/2018, and the United States Preventive Services Task Force [USPSTF], 11/2013)

Prevention

Avoiding risk factors may help prevent cancer. The following are risk factors for oral cancer (cancer of the oral cavity and pharynx):
- Tobacco use;
- Alcohol use;
- Tobacco *and* alcohol use (the risk is higher in people who use both tobacco and alcohol than it is in people who only use tobacco or only alcohol);
- Betel quid or gutka (betel quid mixed with tobacco) chewing; and
- Personal history of head and neck cancer.

The following is a risk factor for oral cavity, and oropharyngeal cancer (cancer of the middle part of the pharynx):
- Being infected with certain types of human papillomavirus (HPV), especially HPV type 16.

The following are risk factors for nasopharyngeal cancer (cancer of the upper part of the pharynx):
- Being infected with Epstein-Barr virus;
- Drinking large amounts of alcohol on a regular basis;
- Having a family history of nasopharyngeal cancer; and
- Being Asian.

Increasing protective factors may help prevent cancer. The following is a protective factor for oral cancer:
- Quitting smoking.

It is not clear whether avoiding these risk factors will decrease the risk of oral cancer:
- Stopping alcohol use.
- Although getting an HPV vaccination greatly lessens the risk of oral HPV infection, it is not yet known whether getting an HPV vaccination at any age will decrease the risk of oropharyngeal cancer from HPV infection.

Screening

There are no standard or routine screening tests for oral cancer, and no studies have shown that screening for these cancers would decrease the risk of dying from this disease. A dentist or medical doctor may check the oral cavity during a routine check-up. The exam will include looking for lesions that may become cancerous. The USPSTF concluded that the current evidence is insufficient to assess the balance of benefits and harms of screening for oral cancer in asymptomatic adults.

Maryland Department of Health Medical Advisory Committee Public Health Interventions for Oral Cancer
• Avoidance or cessation of tobacco use.   • Eliminate chewing betel nut.

- Avoidance or reduction of alcohol consumption.
- Use of sunscreen lip balm to reduce sun exposure.
- A diet that includes a high proportion of fruits and vegetables.
- Opportunistic screening of adults for oral cancer during routine dental and medical visits; targeted screening in public health settings of adults at increased risk who are unlikely to have routine dental or medical care.

Individuals should discuss risk factors for oral cancer, ways to prevent oral cancer, and screening tests with their healthcare provider.

Note: For information on the Oral Cancer Prevention and Screening PDQ®, please see Appendix C.

Table 48.
Number of New Oral Cancer Cases by Jurisdiction, Gender, and Race, Maryland, 2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	796	569	227	576	181	33
Allegany	9	s	<6	9	0	0
Anne Arundel	92	71	21	83	8	0
Baltimore City	81	57	24	s	47	<6
Baltimore County	119	78	41	96	s	<6
Calvert	13	9	<6	9	<6	0
Caroline	7	s	<6	<6	<6	<6
Carroll	30	25	<6	30	0	0
Cecil	22	18	<6	19	<6	<6
Charles	23	19	<6	19	<6	0
Dorchester	<6	<6	0	<6	<6	0
Frederick	40	29	11	32	<6	<6
Garrett	<6	<6	<6	<6	0	0
Harford	29	22	7	25	<6	<6
Howard	35	24	11	20	9	6
Kent	10	6	<6	s	<6	0
Montgomery	109	67	42	80	13	15
Prince George's	81	52	29	25	51	<6
Queen Anne's	<6	<6	0	<6	0	0
Saint Mary's	26	21	<6	22	<6	<6
Somerset	<6	<6	0	<6	0	0
Talbot	9	7	<6	s	<6	0
Washington	17	15	<6	s	<6	0
Wicomico	19	16	<6	15	<6	0
Worcester	13	9	<6	10	<6	0

Total includes cases reported as transsexual, hermaphrodite, unknown gender, unknown race, and unknown county

<6 = Case counts of 1-5 are suppressed per MDH/MCR Data Use Policy

s = Case counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 49.
Oral Cancer Age-Adjusted Incidence Rates* by Jurisdiction,
Gender, and Race, Maryland, 2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	11.1	17.1	5.9	12.1	9.2	7.3
Allegany	**	**	**	**	0.0	0.0
Anne Arundel	13.5	22.1	6.0	14.8	**	0.0
Baltimore City	11.9	18.8	6.2	15.0	10.4	**
Baltimore County	11.2	16.4	6.8	12.6	10.6	**
Calvert	**	**	**	**	**	0.0
Caroline	**	**	**	**	**	**
Carroll	12.9	22.1	**	13.6	0.0	0.0
Cecil	17.1	27.0	**	15.3	**	**
Charles	13.2	23.1	**	18.3	**	0.0
Dorchester	**	**	0.0	**	**	0.0
Frederick	14.0	21.1	**	12.8	**	**
Garrett	**	**	**	**	0.0	0.0
Harford	8.6	13.7	**	8.8	**	**
Howard	9.8	13.9	**	7.9	**	**
Kent	**	**	**	**	**	0.0
Montgomery	9.5	13.4	6.4	10.3	**	**
Prince George's	8.2	11.3	5.3	9.4	7.6	**
Queen Anne's	**	**	0.0	**	0.0	0.0
Saint Mary's	22.2	34.3	**	22.4	**	**
Somerset	**	**	0.0	**	0.0	0.0
Talbot	**	**	**	**	**	0.0
Washington	8.5	**	**	8.5	**	0.0
Wicomico	15.4	27.7	**	**	**	0.0
Worcester	**	**	**	**	**	0.0

* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

** Rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 50.
Number of Deaths for Oral Cancer by Jurisdiction, Gender, and Race, Maryland, 2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	155	107	48	107	s	<10
Allegany	<10	<10	<10	<10	<10	<10
Anne Arundel	16	s	<10	s	<10	<10
Baltimore City	20	s	<10	<10	16	<10
Baltimore County	20	10	10	18	<10	<10
Calvert	<10	<10	<10	<10	<10	<10
Caroline	<10	<10	<10	<10	<10	<10
Carroll	<10	<10	<10	<10	<10	<10
Cecil	<10	<10	<10	<10	<10	<10
Charles	<10	<10	<10	<10	<10	<10
Dorchester	<10	<10	<10	<10	<10	<10
Frederick	<10	<10	<10	<10	<10	<10
Garrett	<10	<10	<10	<10	<10	<10
Harford	<10	<10	<10	<10	<10	<10
Howard	<10	<10	<10	<10	<10	<10
Kent	<10	<10	<10	<10	<10	<10
Montgomery	20	s	<10	16	<10	<10
Prince George's	22	s	<10	<10	15	<10
Queen Anne's	<10	<10	<10	<10	<10	<10
Saint Mary's	<10	<10	<10	<10	<10	<10
Somerset	<10	<10	<10	<10	<10	<10
Talbot	<10	<10	<10	<10	<10	<10
Washington	<10	<10	<10	<10	<10	<10
Wicomico	<10	<10	<10	<10	<10	<10
Worcester	<10	<10	<10	<10	<10	<10

<10 = Death counts of 0-9 are suppressed per MDH/CCPC Mortality Data Suppression Policy

s = Death counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 51.
Oral Cancer Age-Adjusted Mortality Rates* by Jurisdiction,
Gender, and Race, Maryland, 2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	2.2	3.5	1.3	2.3	2.3	**
Allegany	**	**	**	**	**	**
Anne Arundel	**	**	**	**	**	**
Baltimore City	3.1	**	**	**	**	**
Baltimore County	1.9	**	**	**	**	**
Calvert	**	**	**	**	**	**
Caroline	**	**	**	**	**	**
Carroll	**	**	**	**	**	**
Cecil	**	**	**	**	**	**
Charles	**	**	**	**	**	**
Dorchester	**	**	**	**	**	**
Frederick	**	**	**	**	**	**
Garrett	**	**	**	**	**	**
Harford	**	**	**	**	**	**
Howard	**	**	**	**	**	**
Kent	**	**	**	**	**	**
Montgomery	1.7	**	**	**	**	**
Prince George's	2.3	**	**	**	**	**
Queen Anne's	**	**	**	**	**	**
Saint Mary's	**	**	**	**	**	**
Somerset	**	**	**	**	**	**
Talbot	**	**	**	**	**	**
Washington	**	**	**	**	**	**
Wicomico	**	**	**	**	**	**
Worcester	**	**	**	**	**	**

* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

** Rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data Suppression Policy

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 52.
Number of New Oral Cancer Cases by Jurisdiction, Gender, and Race, Maryland, 2011-2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	3,637	2,555	1,082	2,736	732	143
Allegany	59	38	21	57	<6	0
Anne Arundel	392	282	110	354	29	<6
Baltimore City	415	290	125	162	248	<6
Baltimore County	546	370	176	458	80	6
Calvert	74	57	17	61	12	0
Caroline	29	26	<6	s	<6	<6
Carroll	129	98	31	s	<6	<6
Cecil	91	72	19	79	7	<6
Charles	82	62	20	60	20	<6
Dorchester	32	25	7	28	<6	0
Frederick	144	104	40	128	11	<6
Garrett	30	19	11	30	0	0
Harford	148	100	48	137	8	<6
Howard	167	109	58	126	22	17
Kent	26	14	12	24	<6	0
Montgomery	505	321	184	366	59	72
Prince George's	327	237	90	128	178	17
Queen Anne's	35	28	7	s	<6	0
Saint Mary's	85	58	27	70	12	<6
Somerset	20	16	<6	15	<6	0
Talbot	41	30	11	38	<6	0
Washington	104	83	21	101	<6	0
Wicomico	85	62	23	66	17	<6
Worcester	55	43	12	48	<6	<6

Total includes cases reported as transsexual, hermaphrodite, unknown gender, unknown race, and unknown county

<6 = Case counts of 1-5 are suppressed per MDH/MCR Data Use Policy

s = Case counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 53.
Oral Cancer Age-Adjusted Incidence Rates* by Jurisdiction, Gender, and Race, Maryland, 2011-2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	10.6	16.2	6.0	11.9	8.0	7.1
Allegany	12.4	16.2	8.1	12.5	**	0.0
Anne Arundel	12.4	19.0	6.8	13.5	6.8	**
Baltimore City	12.6	20.0	6.8	15.2	11.4	**
Baltimore County	10.7	16.2	6.2	12.1	7.9	**
Calvert	13.9	21.8	6.4	13.3	**	0.0
Caroline	15.0	30.0	**	16.4	**	**
Carroll	12.3	19.6	5.3	12.7	**	**
Cecil	14.5	22.1	6.9	13.5	**	**
Charles	10.4	15.7	5.2	12.1	7.1	**
Dorchester	15.5	27.5	**	18.1	**	0.0
Frederick	10.5	15.9	5.9	10.5	**	**
Garrett	14.6	20.9	**	14.7	0.0	0.0
Harford	9.5	13.4	6.0	10.2	**	**
Howard	9.8	13.4	6.7	10.6	7.8	7.8
Kent	15.2	**	**	16.7	**	0.0
Montgomery	8.9	12.4	6.1	9.2	6.6	8.3
Prince George's	7.2	11.8	3.6	10.4	5.8	7.1
Queen Anne's	9.9	16.6	**	10.5	**	0.0
Saint Mary's	14.5	19.6	9.4	14.4	**	**
Somerset	12.1	18.3	**	12.6	**	0.0
Talbot	13.6	20.4	**	14.6	**	0.0
Washington	11.0	18.4	4.3	11.6	**	0.0
Wicomico	14.7	23.5	7.2	15.5	13.0	**
Worcester	12.7	21.9	**	12.3	**	**

* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

** Rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 54.
Number of Deaths for Oral Cancer by Jurisdiction, Gender, and Race, Maryland, 2011-2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	760	530	230	517	220	23
Allegany	20	s	<10	s	<10	<10
Anne Arundel	78	63	15	65	s	<10
Baltimore City	123	78	45	s	86	<10
Baltimore County	99	64	35	80	s	<10
Calvert	11	<10	<10	<10	<10	<10
Caroline	<10	<10	<10	<10	<10	<10
Carroll	17	s	<10	s	<10	<10
Cecil	16	s	<10	13	<10	<10
Charles	22	s	<10	15	<10	<10
Dorchester	<10	<10	<10	<10	<10	<10
Frederick	20	s	<10	16	<10	<10
Garrett	<10	<10	<10	<10	<10	<10
Harford	25	s	<10	22	<10	<10
Howard	19	s	<10	16	<10	<10
Kent	<10	<10	<10	<10	<10	<10
Montgomery	84	55	29	62	<10	s
Prince George's	105	75	30	s	64	<10
Queen Anne's	10	<10	<10	<10	<10	<10
Saint Mary's	17	s	<10	16	<10	<10
Somerset	<10	<10	<10	<10	<10	<10
Talbot	10	<10	<10	<10	<10	<10
Washington	20	s	<10	s	<10	<10
Wicomico	26	s	<10	18	<10	<10
Worcester	11	<10	<10	10	<10	<10

<10 = Death counts of 0-9 are suppressed per MDH/CCPC Mortality Data Suppression Policy

s = Death counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 55.
Oral Cancer Age-Adjusted Mortality Rates* by Jurisdiction,
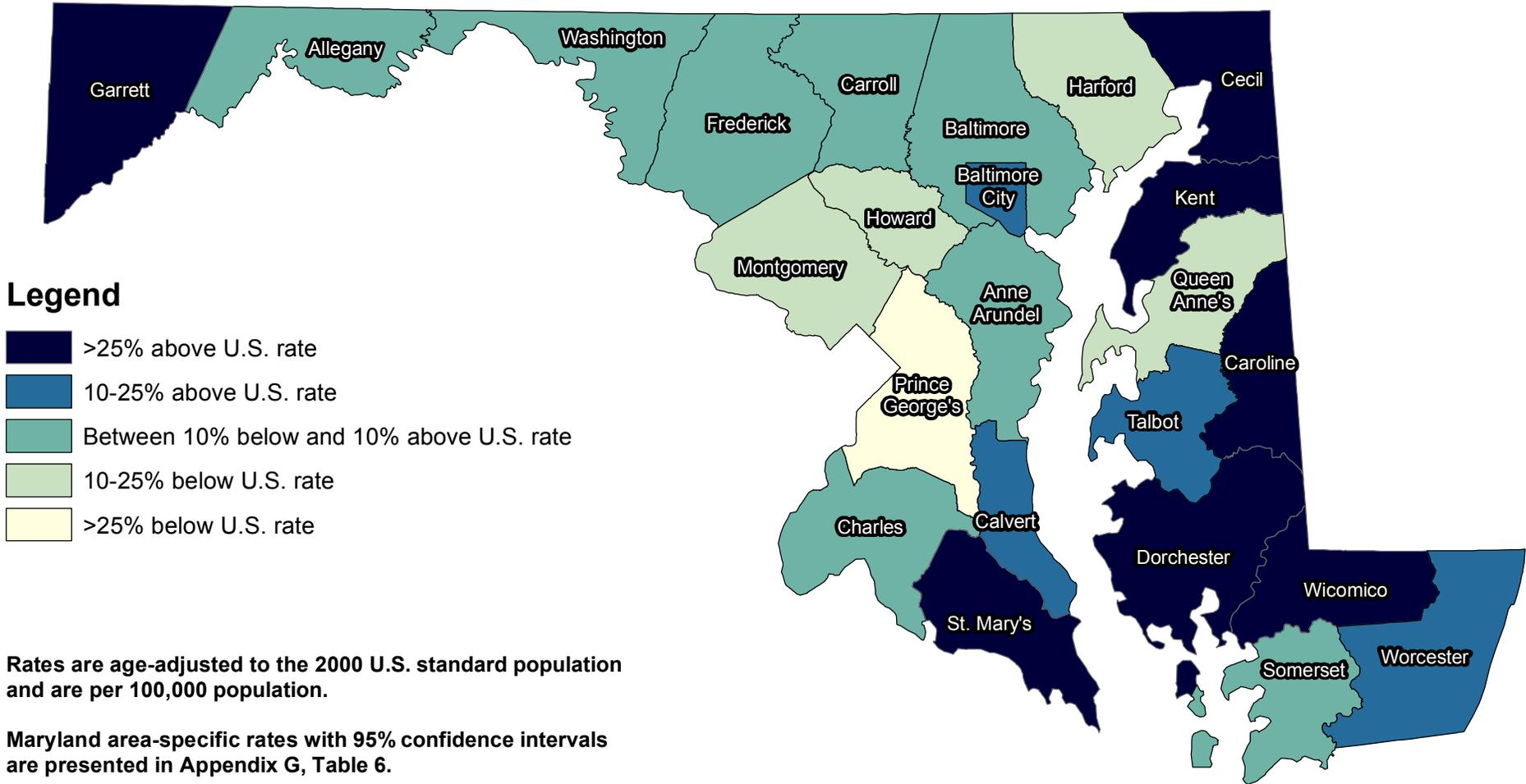**Gender, and Race, Maryland, 2011-2015**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	2.3	3.6	1.2	2.3	2.6	1.1
Allegany	3.9	**	**	4.1	**	**
Anne Arundel	2.5	4.5	**	2.5	**	**
Baltimore City	3.9	5.9	2.4	3.5	4.1	**
Baltimore County	1.9	3.0	1.1	2.0	**	**
Calvert	**	**	**	**	**	**
Caroline	**	**	**	**	**	**
Carroll	**	**	**	**	**	**
Cecil	**	**	**	**	**	**
Charles	3.2	**	**	**	**	**
Dorchester	**	**	**	**	**	**
Frederick	1.6	**	**	**	**	**
Garrett	**	**	**	**	**	**
Harford	1.6	**	**	1.7	**	**
Howard	**	**	**	**	**	**
Kent	**	**	**	**	**	**
Montgomery	1.5	2.1	0.9	1.5	**	**
Prince George's	2.5	4.1	1.4	3.3	2.4	**
Queen Anne's	**	**	**	**	**	**
Saint Mary's	**	**	**	**	**	**
Somerset	**	**	**	**	**	**
Talbot	**	**	**	**	**	**
Washington	2.2	**	**	2.3	**	**
Wicomico	4.6	8.9	**	**	**	**
Worcester	**	**	**	**	**	**

* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

** Rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data Suppression Policy

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Maryland Oral Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2011-2015

Legend

- >25% above U.S. rate
- 10-25% above U.S. rate
- Between 10% below and 10% above U.S. rate
- 10-25% below U.S. rate
- >25% below U.S. rate

Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 population.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 6.
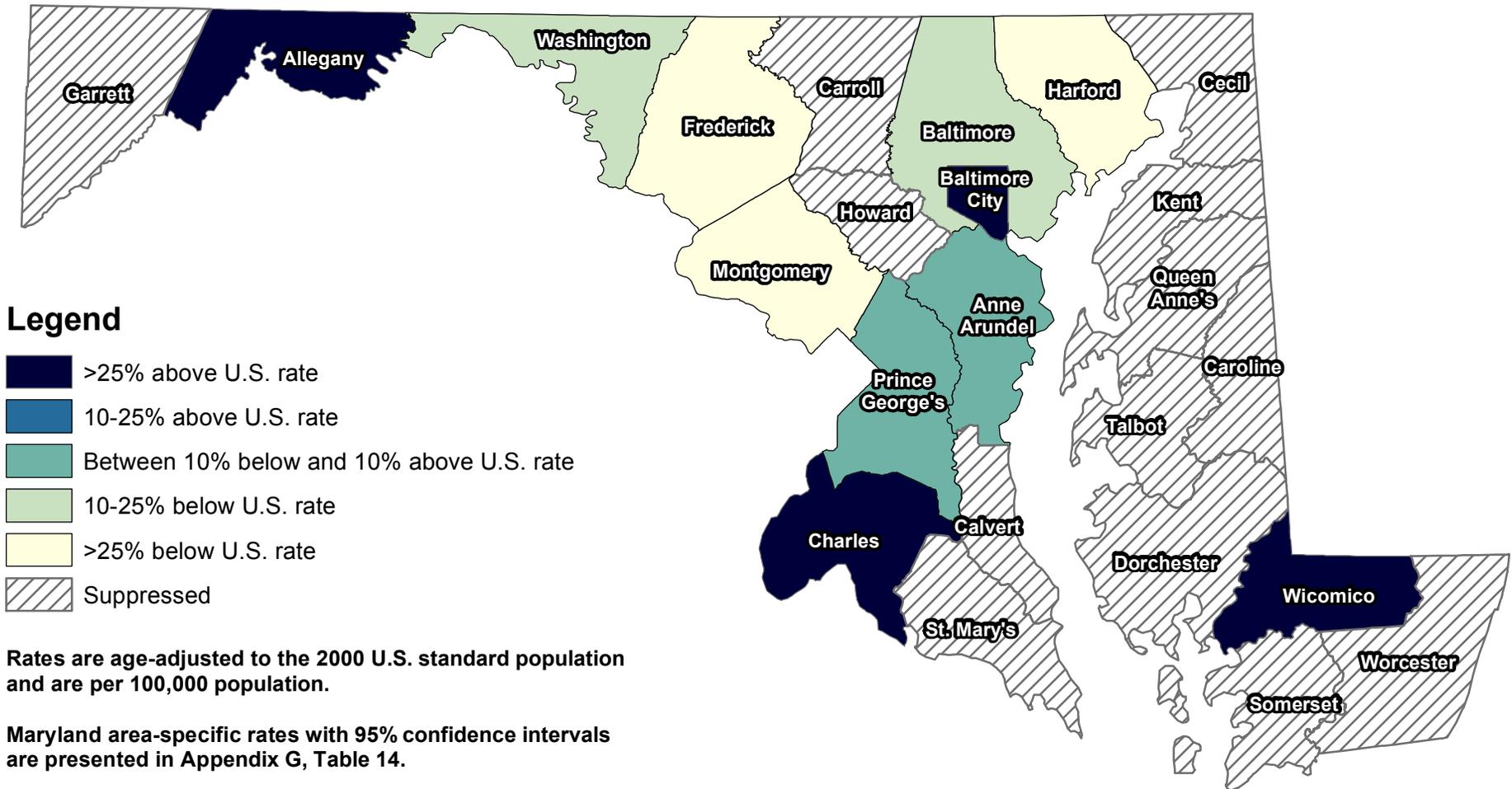
U.S. oral cancer incidence rate, 2011-2015: 11.3 / 100,000

Maryland oral cancer incidence rate, 2011-2015: 10.6 / 100,000

Sources: Maryland Cancer Registry
U.S. SEER, SEER*Stat Database

Maryland Oral Cancer Mortality Rates by Geographical Area: Comparison to U.S. Rate, 2011-2015

Legend

- ■ >25% above U.S. rate
- ■ 10-25% above U.S. rate
- ■ Between 10% below and 10% above U.S. rate
- ■ 10-25% below U.S. rate
- ■ >25% below U.S. rate
- ▨ Suppressed

Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 population.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 14.

U.S. oral cancer mortality rate, 2011-2015: 2.5 / 100,000

Maryland oral cancer mortality rate, 2011-2015: 2.3 / 100,000

Sources: Maryland Cancer Registry
U.S. SEER, SEER*Stat Database

Note: Rates based on case counts of 1-19 are suppressed per MDH/CCPC Data Use Policy and Procedures.

F. Melanoma of the Skin

There are three major types of skin cancer: basal cell carcinoma, squamous cell carcinoma, and melanoma. Basal cell and squamous cell carcinoma are the most common forms of skin cancer and are not reportable to the MCR. Melanoma is less frequent but is the most serious type of skin cancer and is reportable to the MCR.

Incidence (New Cases)

In 2015, a total of 1,715 cases of melanoma of the skin were reported in Maryland. The age-adjusted incidence rate for melanoma in 2015 was 25.5 per 100,000 population (24.3-26.8, 95% CI), which is statistically significantly higher than the 2015 U.S. SEER age-adjusted melanoma incidence rate of 23.8 per 100,000 population (23.5-24.1, 95% CI).

Mortality (Deaths)

In 2015, a total of 121 persons died of melanoma in Maryland. The 2015 age-adjusted mortality rate for melanoma in Maryland was 1.8 per 100,000 population (1.5-2.1, 95% CI). This rate is statistically significantly lower than the 2015 U.S. melanoma of the skin mortality rate of 2.4 per 100,000 population (2.4-2.5, 95% CI). Maryland had the 45th highest melanoma cancer mortality rate among the states and the District of Columbia for the period from 2011 to 2015.

Table 56.

Melanoma Incidence and Mortality Rates

by Gender and Race, Maryland (MD) and the United States, 2015

Incidence 2015	Total*	Males	Females	Whites	Blacks	Other
MD New Cases (count)	1,715	1,034	680	1,680	19	<6
MD Incidence Rate	25.5	34.3	19.2	37.9	1.2	**
U.S. SEER Rate	23.8	30.6	18.8	28.5	1.1	1.9
Mortality 2015	Total	Males	Females	Whites	Blacks	Other
MD Deaths (count)	121	80	41	112	<10	<10
MD Mortality Rate	1.8	2.8	1.1	2.5	**	**
U.S. Mortality Rate	2.4	3.6	1.5	2.8	0.3	N/A

Rates are per 100,000 population and are age-adjusted to 2000 U.S. standard population

* Total also includes cases reported as transsexual, hermaphrodite, unknown gender, unknown race, and unknown county
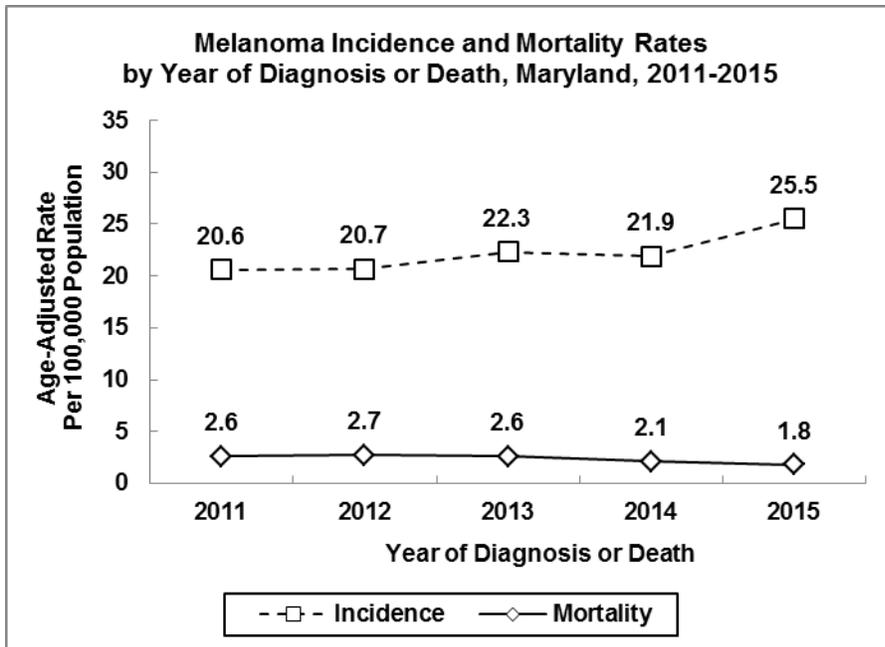
** MD incidence rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures; MD mortality rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data Suppression Policy

Source: Maryland Cancer Registry

U.S. SEER, SEER*Stat

NCHS Compressed Mortality File in CDC WONDER, 2015

U.S. SEER, Cancer Statistics Review

**Melanoma Incidence and Mortality Rates
by Year of Diagnosis or Death, Maryland, 2011-2015**

Age-Adjusted Rate Per 100,000 Population

	2011	2012	2013	2014	2015
Incidence	20.6	20.7	22.3	21.9	25.5
Mortality	2.6	2.7	2.6	2.1	1.8

Year of Diagnosis or Death
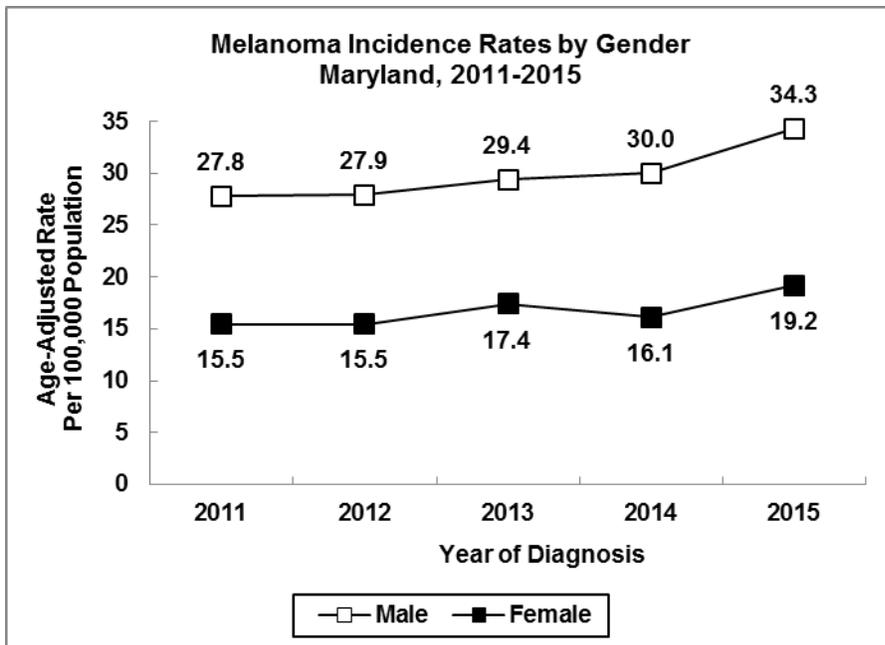
- -□- Incidence   —◇— Mortality

Incidence and Mortality Trends

Melanoma incidence rates in Maryland increased at a rate of 4.9% per year from 2011 to 2015.

Melanoma mortality rates decreased at a rate of 9.4% per year from 2011 to 2015.

See Appendix H, Tables 1 and 2.

**Melanoma Incidence Rates by Gender
Maryland, 2011-2015**

Age-Adjusted Rate Per 100,000 Population

|	2011	2012	2013	2014	2015
Male	27.8	27.9	29.4	30.0	34.3
Female	15.5	15.5	17.4	16.1	19.2

Year of Diagnosis

—□— Male   —■— Female

Incidence Trends by Gender

Over the 5-year period from 2011 to 2015, incidence rates increased at a rate of 5.1% per year among males and increased at a rate of 4.8% per year among females. In 2015, melanoma incidence rates were 78.6% higher among males than females in Maryland.

See Appendix H, Table 4.
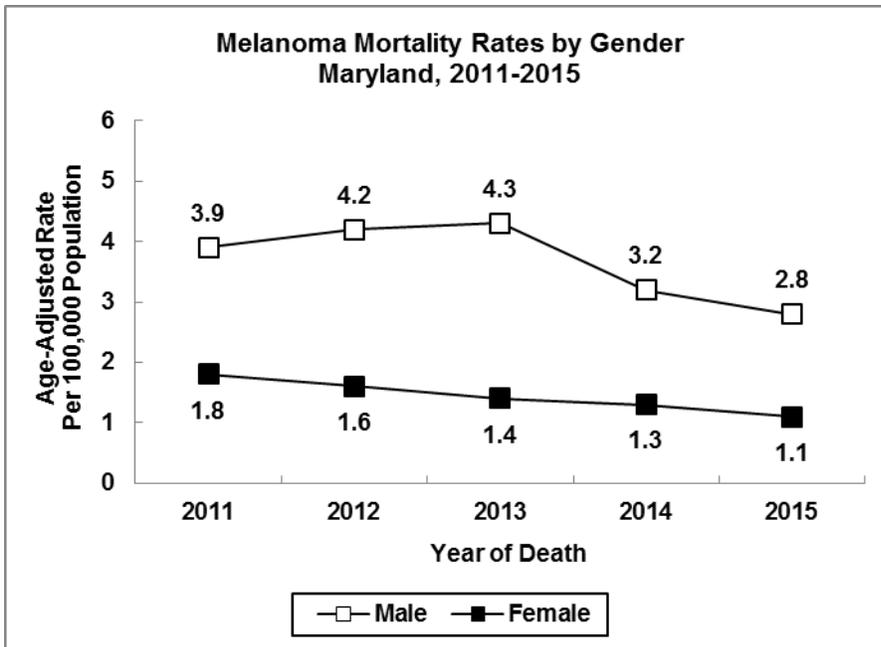
Melanoma Mortality Rates by Gender
Maryland, 2011-2015

Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2015
Maryland Vital Statistics Administration, 2011

Melanoma by Stage at Diagnosis
Maryland, 2011-2015

Source: Maryland Cancer Registry

Mortality Trends by Gender

Melanoma mortality rates in males decreased at a rate of 8.9% per year from 2011 to 2015. Female melanoma mortality rates also decreased at a rate of 11.2% per year in the same time period.

In 2015, melanoma mortality rates in Maryland were more than one and a half times higher among men, compared to women.

See Appendix H, Table 6.
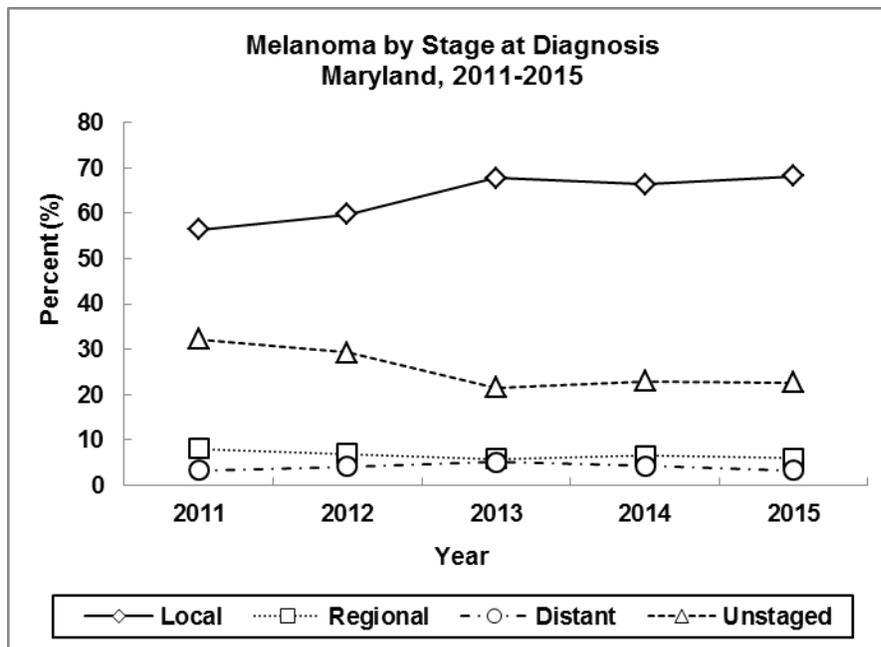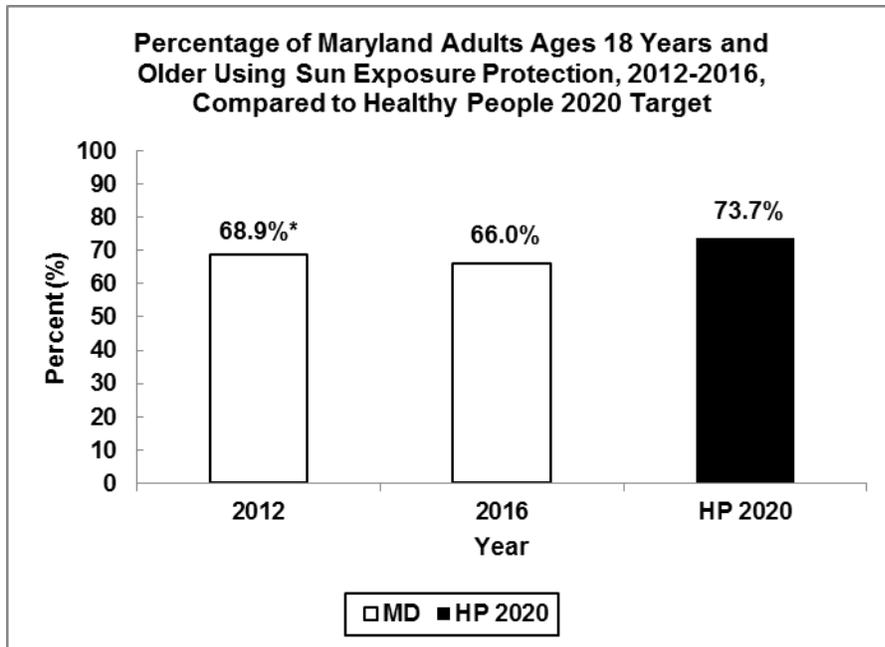
Stage at Diagnosis

During the 5-year period from 2011 to 2015, the percent of new melanoma cases diagnosed at the local stage increased 4.9% per year.

In 2015, 68.1% of all melanoma was diagnosed at the local stage, 6.0% was found at the regional stage, and 3.3% was found at the distant stage. The proportion of melanoma reported as unstaged was 22.6%.

See Appendix I, Table 7.

Sun Exposure Protection

The Healthy People 2020 target is to increase the percentage of persons age 18 years and older who follow sun exposure protective measures that may reduce the risk of skin cancer to 73.7%.[**]

In 2016, 66.0% of Maryland adults used at least one method of protection against sun exposure.[***] This number excludes adults who reported that they do not go out in the sun. From 2012 to 2016, there was a statistically significant increase in the percentage of Maryland adults who reported that they do not go out in the sun (2.4% and 7.5%, respectively).

Percentage of Maryland Adults Ages 18 Years and Older Using Sun Exposure Protection, 2012-2016, Compared to Healthy People 2020 Target

- 2012: 68.9%*
- 2016: 66.0%
- HP 2020: 73.7%

Legend: □ MD ■ HP 2020

Source: Maryland BRFSS 2012, 2016
Healthy People 2020, U.S. Department of Health and Human Services

* Due to an error in the data set, the 2012 estimate was incorrectly reported as 67.7% in previous CRF reports. It has been corrected in this version.

** The Healthy People 2020 estimate is based on adults who reported being very likely to perform the following protective measures: limit sun exposure, use sunscreen, or wear protective clothing.

*** The Maryland BRFSS 2012 and 2016 estimates are based on adults who reported "always" or "almost always" using one or more of the following measures: limiting exposure to the sun between 10 am and 4 pm, using sunscreen lotion with a sun protection factor (SPF) of 15 or higher when outdoors, wearing a hat when outdoors on a sunny day, and/or wearing protective clothing when outdoors on a sunny day. These estimates exclude adults who reported not going out in the sun.

Public Health Evidence (quoted from the National Cancer Institute PDQ®, 6/21/2017 and 2/23/2018; and the United States Preventive Services Task Force [USPSTF], 7/2016)

Prevention

Melanoma skin cancer is less common but more aggressive than the other two types of skin cancer, basal cell carcinoma and squamous cell carcinoma, which are known together as "nonmelanoma skin cancer".

Avoiding risk factors may help prevent cancer. The following are risk factors for nonmelanoma skin cancer:
- Being exposed to natural sunlight or artificial sunlight (such as from tanning beds) over long periods of time;
- Having a fair complexion, which includes the following:
  - Fair skin that freckles and burns easily, does not tan, or tans poorly;
  - Blue or green or other light-colored eyes;
  - Red or blond hair;
- Having actinic keratosis;
- Past treatment with radiation;
- Having a weakened immune system; and
- Being exposed to arsenic.

The following are risk factors for melanoma skin cancer:
- Having a fair complexion, which includes the following:
  - Fair skin that freckles and burns easily, does not tan, or tans poorly;
  - Blue or green or other light-colored eyes;
  - Red or blond hair;
- Being exposed to natural sunlight or artificial sunlight (such as from tanning beds) over long periods of time;
- Having a history of many blistering sunburns, especially as a child or teenager;
- Having several large or many small moles;
- Having a family history of unusual moles (atypical nevus syndrome);
- Having a family or personal history of melanoma; and
- Being white.

Although having a fair complexion is a risk factor for nonmelanoma and melanoma skin cancer, people of all skin colors can get skin cancer.

It is not known if the following lower the risk of nonmelanoma skin cancer:
- There have not been enough studies to prove that sunscreen use, avoiding sun exposure, and wearing protective clothing when outdoors decreases the risk of nonmelanoma skin cancer. However, skin experts suggest the following:
  - Using sunscreen that protects against UV radiation;
  - Not staying out in the sun for long periods of time, especially when the sun is at its strongest; and

o   Wearing long sleeve shirts, long pants, sun hats, and sunglasses, when outdoors.
- Taking the following chemopreventive agents: beta carotene, isotretinoin, selenium, celecoxib, alpha-difluoromethylornithine, nicotinamide (vitamin B3).

It is not known if the following lower the risk of melanoma:
- Sunscreen use; and
- Receiving counseling or information about protecting the skin from the sun.

Screening

The only widely proposed screening procedure for skin cancer is visual examination of the skin, including both self-examination and clinical examination. The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of visual skin examination by a clinician to screen for skin cancer in adults.

Public Health Interventions for Skin Cancer (From The Surgeon General's Call to Action to Prevent Skin Cancer)
- Wear protective clothing (e.g. long-sleeved shirts and long pants and skirts; clothes made from tightly woven fabric), a hat and sunglasses.   - Seek shade (use umbrellas and shelters).   - Avoid outdoor activities times of peak sunlight, which are during the midday hours of 10 a.m. to 4 p.m.   - Use sunscreen with an SPF of 15 or higher.   - Avoid indoor tanning and sunbathing.

Individuals should discuss risk factors for skin cancer, ways to prevent skin cancer, and screening tests with their healthcare provider.

Note: For information on the Skin Cancer Prevention and Screening PDQ®, please see Appendix C.

Table 57.
Number of New Melanoma Cases by Jurisdiction, Gender, and Race, Maryland, 2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	1,715	1,034	680	1,680	19	<6
Allegany	14	11	<6	14	0	0
Anne Arundel	244	149	95	242	<6	0
Baltimore City	65	34	31	s	<6	0
Baltimore County	347	211	136	342	<6	<6
Calvert	37	24	13	37	0	0
Caroline	10	<6	6	10	0	0
Carroll	78	49	29	77	0	0
Cecil	42	21	21	s	<6	0
Charles	25	15	10	23	<6	0
Dorchester	11	6	<6	11	0	0
Frederick	92	50	42	s	0	<6
Garrett	12	<6	7	12	0	0
Harford	124	79	45	118	<6	<6
Howard	90	52	38	87	<6	0
Kent	11	6	<6	11	0	0
Montgomery	211	136	75	205	<6	<6
Prince George's	50	27	23	47	<6	0
Queen Anne's	31	21	10	31	0	0
Saint Mary's	41	25	15	39	<6	0
Somerset	8	<6	s	8	0	0
Talbot	27	18	9	26	0	0
Washington	52	33	19	52	0	0
Wicomico	46	25	21	s	<6	0
Worcester	43	28	15	43	0	0

Total includes cases reported as transsexual, hermaphrodite, unknown gender, unknown race, and unknown county

<6 = Case counts of 1-5 are suppressed per MDH/MCR Data Use Policy

s = Case counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 58.
Melanoma Age-Adjusted Incidence Rates* by Jurisdiction, Gender, and Race, Maryland, 2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	25.5	34.3	19.2	37.9	1.2	**
Allegany	**	**	**	**	0.0	0.0
Anne Arundel	38.6	50.8	29.5	46.9	**	0.0
Baltimore City	9.9	12.8	8.3	29.3	**	0.0
Baltimore County	34.7	47.8	25.6	47.6	**	**
Calvert	38.3	50.6	**	45.3	0.0	0.0
Caroline	**	**	**	**	0.0	0.0
Carroll	39.5	51.3	29.5	40.9	0.0	0.0
Cecil	37.5	41.0	37.6	39.3	**	0.0
Charles	16.1	**	**	26.7	**	0.0
Dorchester	**	**	**	**	0.0	0.0
Frederick	33.8	38.2	30.2	38.3	0.0	**
Garrett	**	**	**	**	0.0	0.0
Harford	43.2	60.8	28.7	47.5	**	**
Howard	26.3	33.9	20.1	37.6	**	0.0
Kent	**	**	**	**	0.0	0.0
Montgomery	17.3	24.7	11.7	24.5	**	**
Prince George's	5.6	8.0	4.4	18.6	**	0.0
Queen Anne's	51.4	69.7	**	56.4	0.0	0.0
Saint Mary's	37.7	48.9	**	42.9	**	0.0
Somerset	**	**	**	**	0.0	0.0
Talbot	48.9	58.7	**	55.2	0.0	0.0
Washington	27.2	37.3	19.1	29.7	0.0	0.0
Wicomico	42.3	48.1	40.1	57.3	**	0.0
Worcester	54.7	72.7	**	63.0	0.0	0.0

* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

** Rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 59.
Number of Deaths for Melanoma by Jurisdiction, Gender, and Race, Maryland, 2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	121	80	41	112	<10	<10
Allegany	<10	<10	<10	<10	<10	<10
Anne Arundel	19	s	<10	18	<10	<10
Baltimore City	<10	<10	<10	<10	<10	<10
Baltimore County	15	s	<10	13	<10	<10
Calvert	<10	<10	<10	<10	<10	<10
Caroline	<10	<10	<10	<10	<10	<10
Carroll	<10	<10	<10	<10	<10	<10
Cecil	<10	<10	<10	<10	<10	<10
Charles	<10	<10	<10	<10	<10	<10
Dorchester	<10	<10	<10	<10	<10	<10
Frederick	<10	<10	<10	<10	<10	<10
Garrett	<10	<10	<10	<10	<10	<10
Harford	<10	<10	<10	<10	<10	<10
Howard	<10	<10	<10	<10	<10	<10
Kent	<10	<10	<10	<10	<10	<10
Montgomery	17	s	<10	14	<10	<10
Prince George's	10	<10	<10	<10	<10	<10
Queen Anne's	<10	<10	<10	<10	<10	<10
Saint Mary's	<10	<10	<10	<10	<10	<10
Somerset	<10	<10	<10	<10	<10	<10
Talbot	<10	<10	<10	<10	<10	<10
Washington	<10	<10	<10	<10	<10	<10
Wicomico	<10	<10	<10	<10	<10	<10
Worcester	<10	<10	<10	<10	<10	<10

<10 = Death counts of 0-9 are suppressed per MDH/CCPC Mortality Data Suppression Policy

s = Death counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 60.
Melanoma Age-Adjusted Mortality Rates* by Jurisdiction, Gender, and Race, Maryland, 2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	1.8	2.8	1.1	2.5	**	**
Allegany	**	**	**	**	**	**
Anne Arundel	**	**	**	**	**	**
Baltimore City	**	**	**	**	**	**
Baltimore County	**	**	**	**	**	**
Calvert	**	**	**	**	**	**
Caroline	**	**	**	**	**	**
Carroll	**	**	**	**	**	**
Cecil	**	**	**	**	**	**
Charles	**	**	**	**	**	**
Dorchester	**	**	**	**	**	**
Frederick	**	**	**	**	**	**
Garrett	**	**	**	**	**	**
Harford	**	**	**	**	**	**
Howard	**	**	**	**	**	**
Kent	**	**	**	**	**	**
Montgomery	**	**	**	**	**	**
Prince George's	**	**	**	**	**	**
Queen Anne's	**	**	**	**	**	**
Saint Mary's	**	**	**	**	**	**
Somerset	**	**	**	**	**	**
Talbot	**	**	**	**	**	**
Washington	**	**	**	**	**	**
Wicomico	**	**	**	**	**	**
Worcester	**	**	**	**	**	**

* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

** Rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data Suppression Policy

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 61.
Number of New Melanoma Cases by Jurisdiction, Gender, and Race, Maryland, 2011-2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	7,233	4,327	2,903	7,020	84	25
Allegany	91	58	33	91	0	0
Anne Arundel	981	581	400	961	<6	<6
Baltimore City	317	174	143	301	11	0
Baltimore County	1,418	871	547	1,390	14	<6
Calvert	148	80	68	146	<6	0
Caroline	43	24	19	43	0	0
Carroll	315	188	127	307	<6	0
Cecil	174	93	81	171	<6	0
Charles	147	102	45	139	6	0
Dorchester	36	20	16	36	0	0
Frederick	331	192	139	328	0	<6
Garrett	38	17	21	s	0	<6
Harford	483	303	179	470	<6	<6
Howard	400	218	181	387	<6	<6
Kent	34	17	17	34	0	0
Montgomery	1,058	659	399	1,006	9	11
Prince George's	262	158	104	235	21	<6
Queen Anne's	123	77	46	123	0	0
Saint Mary's	166	96	69	162	<6	0
Somerset	35	17	18	35	0	0
Talbot	83	50	33	80	0	0
Washington	192	118	74	190	<6	0
Wicomico	163	84	79	161	<6	0
Worcester	168	113	55	165	0	<6

Total includes cases reported as transsexual, hermaphrodite, unknown gender, unknown race, and unknown county

<6 = Case counts of 1-5 are suppressed per MDH/MCR Data Use Policy

s = Case counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 62.
Melanoma Age-Adjusted Incidence Rates* by Jurisdiction, Gender, and Race, Maryland, 2011-2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	22.3	30.0	16.7	32.2	1.0	1.3
Allegany	18.9	25.6	14.6	20.1	0.0	0.0
Anne Arundel	32.5	42.5	25.3	38.5	**	**
Baltimore City	9.7	13.0	7.7	27.3	**	0.0
Baltimore County	29.0	40.6	20.9	38.7	**	**
Calvert	31.4	36.8	27.8	36.7	**	0.0
Caroline	23.0	28.3	19.2	27.1	0.0	0.0
Carroll	33.4	43.2	25.8	34.2	**	0.0
Cecil	31.1	35.3	28.7	32.8	**	0.0
Charles	20.0	32.0	11.1	32.2	**	0.0
Dorchester	16.3	17.1	16.0	21.9	0.0	0.0
Frederick	25.4	31.3	20.7	28.4	0.0	**
Garrett	19.7	19.4	20.0	19.5	0.0	**
Harford	34.5	47.3	24.2	38.6	**	**
Howard	24.7	30.0	20.9	34.4	**	**
Kent	21.2	20.7	21.1	24.8	0.0	0.0
Montgomery	18.4	26.0	13.0	25.2	**	**
Prince George's	6.4	9.6	4.3	19.3	0.7	**
Queen Anne's	39.9	51.8	30.2	43.7	0.0	0.0
Saint Mary's	30.2	35.6	25.3	35.3	**	0.0
Somerset	24.0	23.6	27.3	34.5	0.0	0.0
Talbot	30.2	37.0	24.5	33.4	0.0	0.0
Washington	22.1	28.9	17.2	23.8	**	0.0
Wicomico	29.7	34.0	28.0	39.2	**	0.0
Worcester	43.4	59.4	29.9	49.3	0.0	**

* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

** Rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 63.
Number of Deaths for Melanoma by Jurisdiction, Gender, and Race, Maryland, 2011-2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	749	489	260	709	s	<10
Allegany	14	<10	<10	s	<10	<10
Anne Arundel	91	64	27	86	<10	<10
Baltimore City	52	35	17	47	<10	<10
Baltimore County	135	87	48	129	<10	<10
Calvert	<10	<10	<10	<10	<10	<10
Caroline	<10	<10	<10	<10	<10	<10
Carroll	36	24	12	35	<10	<10
Cecil	23	s	<10	s	<10	<10
Charles	12	<10	<10	s	<10	<10
Dorchester	<10	<10	<10	<10	<10	<10
Frederick	25	14	11	s	<10	<10
Garrett	<10	<10	<10	<10	<10	<10
Harford	36	26	10	s	<10	<10
Howard	25	s	<10	23	<10	<10
Kent	<10	<10	<10	<10	<10	<10
Montgomery	110	64	46	104	<10	<10
Prince George's	62	40	22	48	s	<10
Queen Anne's	13	<10	<10	s	<10	<10
Saint Mary's	13	s	<10	s	<10	<10
Somerset	<10	<10	<10	<10	<10	<10
Talbot	11	<10	<10	s	<10	<10
Washington	27	15	12	s	<10	<10
Wicomico	21	s	<10	s	<10	<10
Worcester	18	s	<10	s	<10	<10

<10 = Death counts of 0-9 are suppressed per MDH/CCPC Mortality Data Suppression Policy

s = Death counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 64.
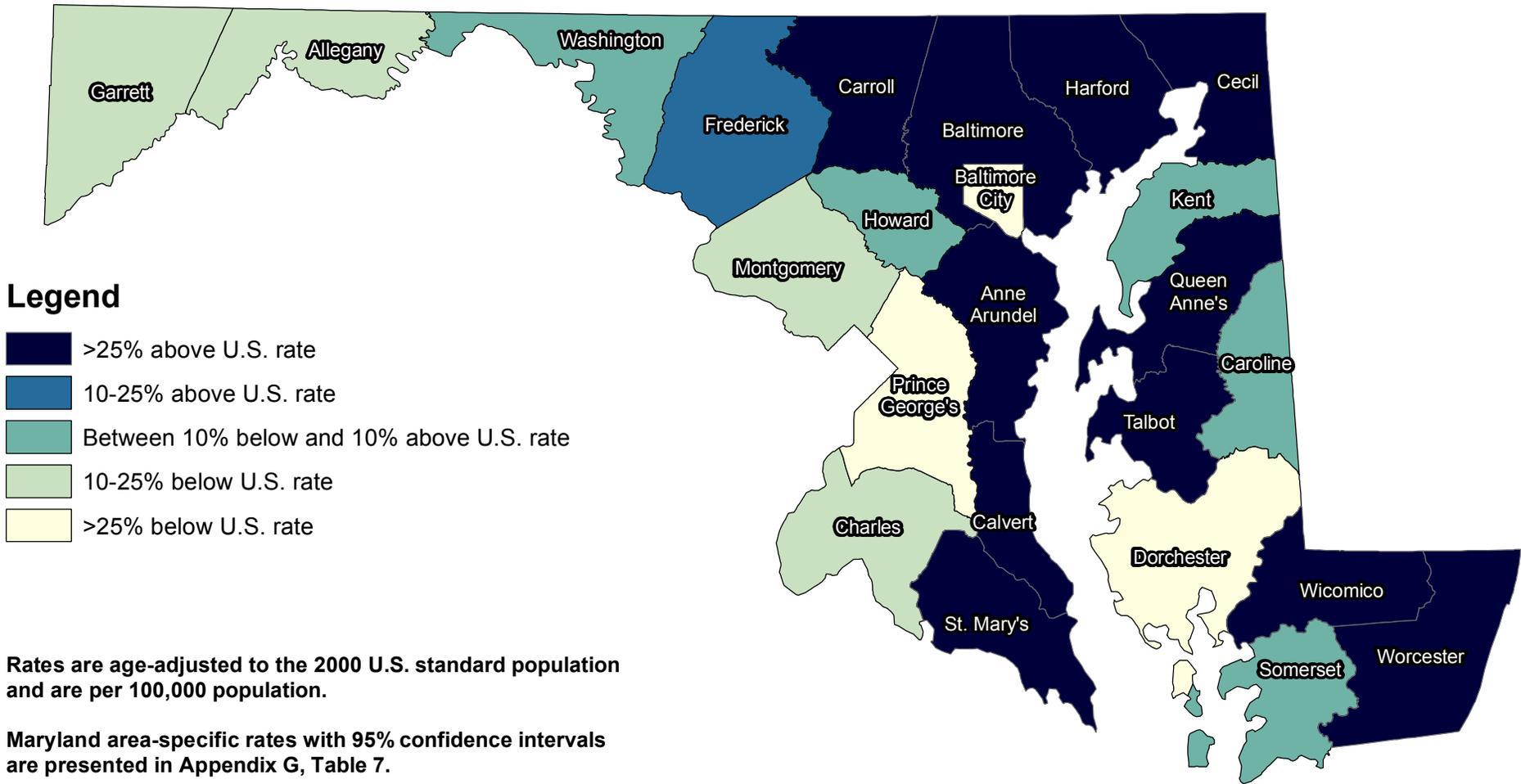## Melanoma Age-Adjusted Mortality Rates* by Jurisdiction, Gender, and Race, Maryland, 2011-2015

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	2.3	3.6	1.4	3.2	0.4	**
Allegany	**	**	**	**	**	**
Anne Arundel	3.1	4.9	1.6	3.4	**	**
Baltimore City	1.6	2.8	**	4.4	**	**
Baltimore County	2.7	4.2	1.7	3.4	**	**
Calvert	**	**	**	**	**	**
Caroline	**	**	**	**	**	**
Carroll	3.8	5.6	**	3.9	**	**
Cecil	4.9	**	**	5.2	**	**
Charles	**	**	**	**	**	**
Dorchester	**	**	**	**	**	**
Frederick	2.1	**	**	2.3	**	**
Garrett	**	**	**	**	**	**
Harford	2.5	4.3	**	2.8	**	**
Howard	1.7	**	**	2.2	**	**
Kent	**	**	**	**	**	**
Montgomery	1.9	2.7	1.4	2.5	**	**
Prince George's	1.6	2.6	0.9	4.2	**	**
Queen Anne's	**	**	**	**	**	**
Saint Mary's	**	**	**	**	**	**
Somerset	**	**	**	**	**	**
Talbot	**	**	**	**	**	**
Washington	3.0	**	**	3.2	**	**
Wicomico	3.8	**	**	4.7	**	**
Worcester	**	**	**	**	**	**

* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

** Rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data Suppression Policy

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Maryland Melanoma Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2011-2015
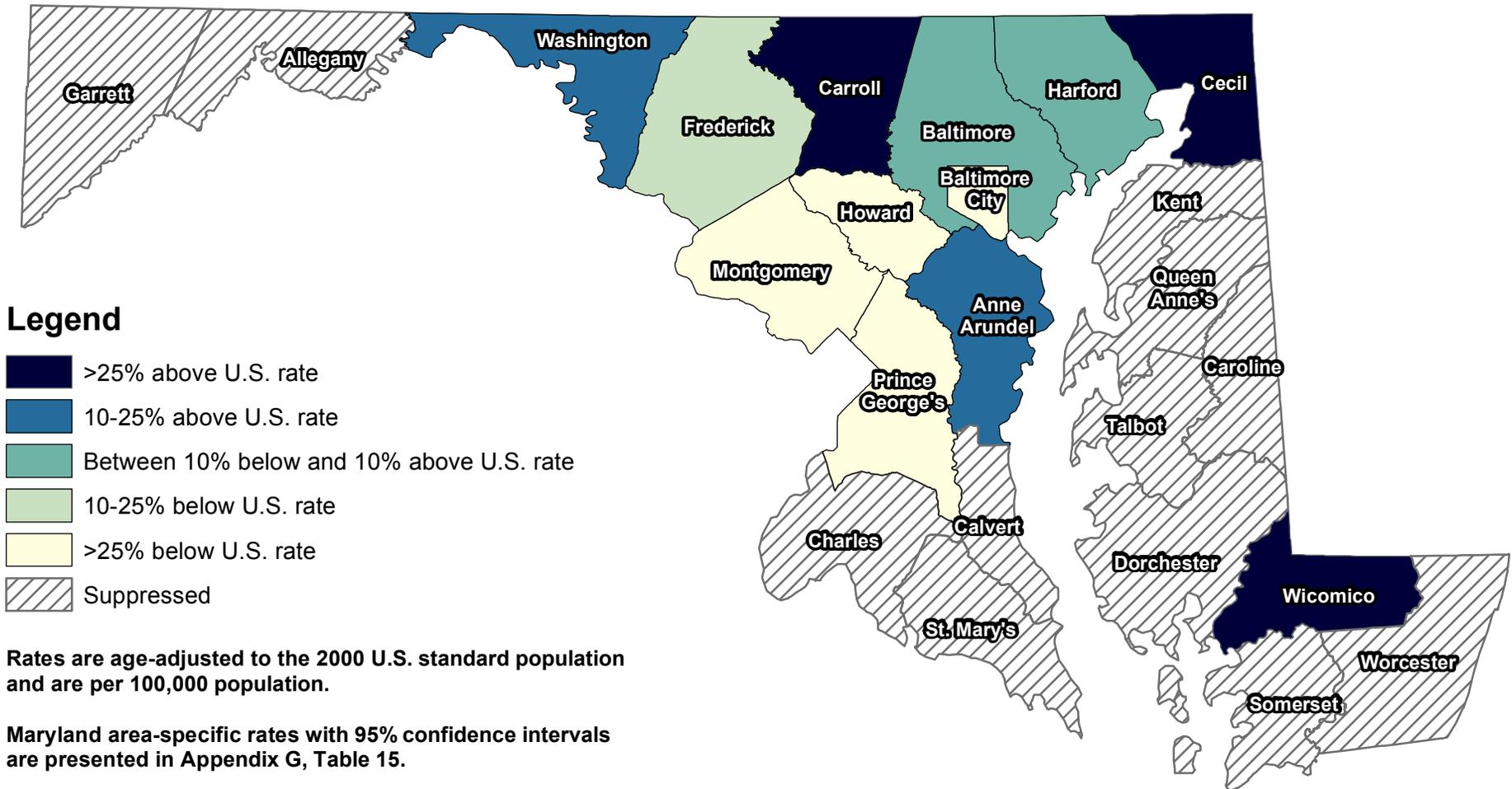

Legend

■ (dark navy)	>25% above U.S. rate
■ (blue)	10-25% above U.S. rate
■ (teal)	Between 10% below and 10% above U.S. rate
■ (light green)	10-25% below U.S. rate
■ (pale yellow)	>25% below U.S. rate

Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 population.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 7.

U.S. melanoma cancer incidence rate, 2011-2015: 22.8 / 100,000

Maryland melanoma cancer incidence rate, 2011-2015: 22.3 / 100,000

Sources: Maryland Cancer Registry
**   U.S. SEER, SEER*Stat Database**

Maryland Melanoma Cancer Mortality Rates by Geographical Area: Comparison to U.S. Rate, 2011-2015

Legend

- >25% above U.S. rate
- 10-25% above U.S. rate
- Between 10% below and 10% above U.S. rate
- 10-25% below U.S. rate
- >25% below U.S. rate
- Suppressed

Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 population.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 15.

U.S. melanoma cancer mortality rate, 2011-2015: 2.6 / 100,000

Maryland melanoma cancer mortality rate, 2011-2015: 2.3 / 100,000

Sources: Maryland Cancer Registry
          U.S. SEER, SEER*Stat Database

Note: Rates based on case counts of 1-19 are suppressed per MDH/CCPC Data Use Policy and Procedures.

G. Cervical Cancer

Incidence (New Cases)

A total of 228 cases of cervical cancer among women in Maryland were reported in 2015. The age-adjusted incidence rate for cervical cancer in Maryland in 2015 was 6.7 per 100,000 women (5.9-7.7, 95% CI), which is not statistically significantly different than the 2015 U.S. SEER age-adjusted cervical cancer incidence rate of 7.5 per 100,000 women (7.2-7.7, 95% CI).

Mortality (Deaths)

In 2015, a total of 69 women died of cervical cancer in Maryland. The age-adjusted cervical cancer mortality rate in Maryland in 2015 was 1.9 per 100,000 women (1.5-2.3, 95% CI). This rate is statistically similar to the 2015 U.S. cervical cancer mortality rate of 2.3 per 100,000 women (2.2-2.3, 95% CI). Maryland had the 33rd highest cervical cancer mortality rate among the states and the District of Columbia for the period from 2011 to 2015.

Table 65.
Cervical Cancer Incidence and Mortality Rates
by Race, Maryland (MD) and the United States, 2015

Incidence 2015	Total*	Whites	Blacks	Other
MD New Cases (count)	228	129	78	12
MD Incidence Rate	6.7	6.4	7.1	**
U.S. SEER Rate	7.5	7.6	7.7	6.0
Mortality 2015	Total	Whites	Blacks	Other
MD Deaths (count)	69	s	33	<10
MD Mortality Rate	1.9	1.5	3.0	**
U.S. Mortality Rate	2.3	2.2	3.3	N/A

Rates are per 100,000 women and are age-adjusted to 2000 U.S. standard population

* Total includes unknown race and unknown county

<10 = Death counts of 0-9 are suppressed per MDH/CCPC Mortality Data Suppression Policy

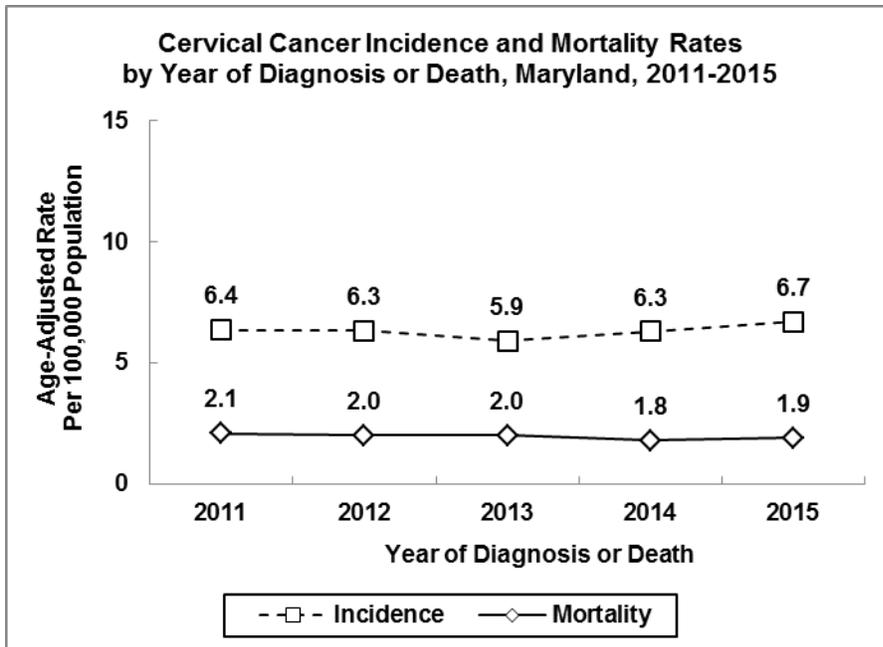s = Counts are suppressed to prevent disclosure of data in other cell(s) based on Table 68

** MD incidence rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures; MD mortality rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data Suppression Policy

Source: Maryland Cancer Registry
U.S. SEER, SEER*Stat
NCHS Compressed Mortality File in CDC WONDER, 2015
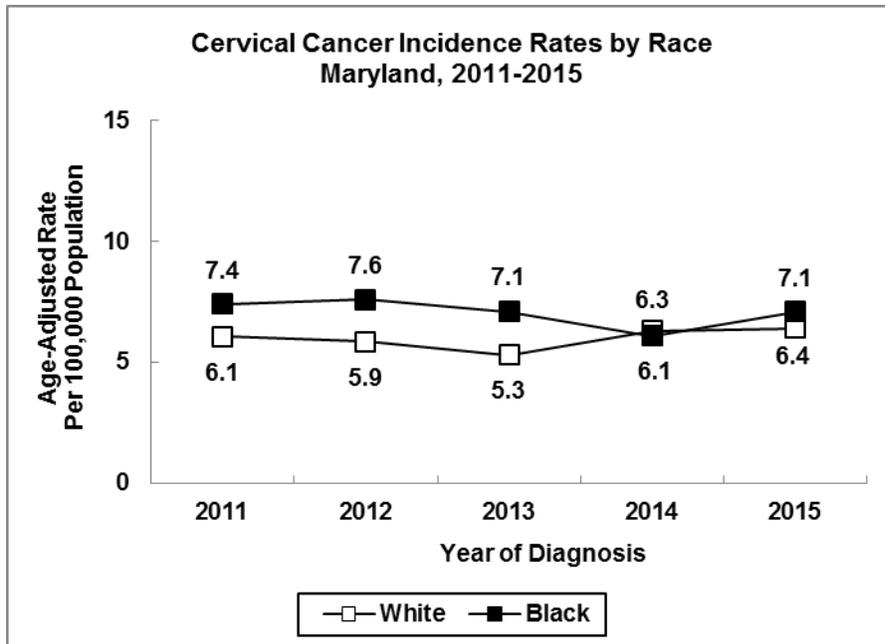U.S. SEER, Cancer Statistics Review

Cervical Cancer Incidence and Mortality Rates by Year of Diagnosis or Death, Maryland, 2011-2015

Year	Incidence	Mortality
2011	6.4	2.1
2012	6.3	2.0
2013	5.9	2.0
2014	6.3	1.8
2015	6.7	1.9

Age-Adjusted Rate Per 100,000 Population

Source: Maryland Cancer Registry
NCHS Compressed Mortality File in CDC WONDER, 2012-2015
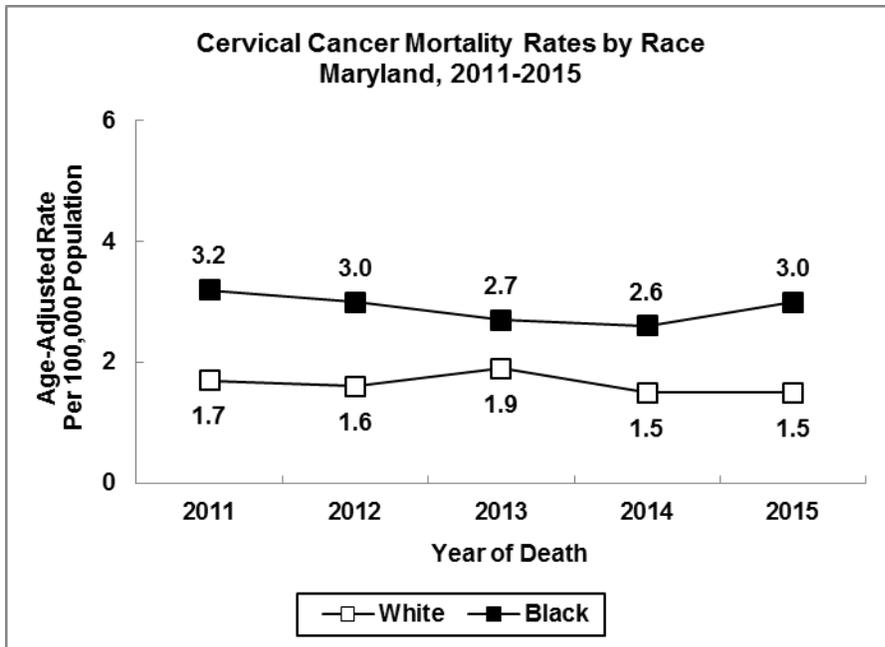Maryland Vital Statistics Administration, 2011

Incidence and Mortality Trends

Cervical cancer incidence rates among Maryland women increased at a rate of 0.9% per year from 2011 to 2015.

Cervical cancer mortality rates decreased at a rate of 3.0% per year from 2011 to 2015.

See Appendix H, Tables 1 and 2.

Cervical Cancer Incidence Rates by Race Maryland, 2011-2015

Year	White	Black
2011	6.1	7.4
2012	5.9	7.6
2013	5.3	7.1
2014	6.1	6.3
2015	6.4	7.1

Age-Adjusted Rate Per 100,000 Population

Source: Maryland Cancer Registry

Incidence Trends by Race

From 2011 to 2015, cervical cancer incidence rates among black females decreased at a rate of 3.0% per year and increased at a rate of 1.6% per year among white females.

See Appendix H, Table 3.

Cervical Cancer Mortality Rates by Race
Maryland, 2011-2015

Mortality Trends by Race

From 2011 to 2015, mortality rates decreased at a rate of 2.7% per year for black females and decreased at a rate of 3.1% per year for white females.
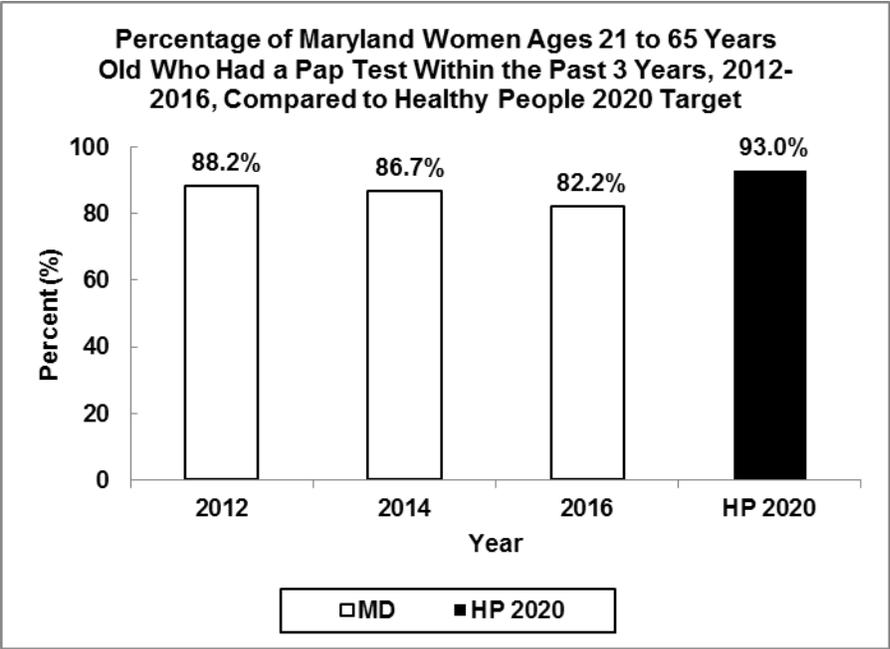
See Appendix H, Table 5.

Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2015
Maryland Vital Statistics Administration, 2011

Cervical Cancer by Stage at Diagnosis
Maryland, 2011-2015
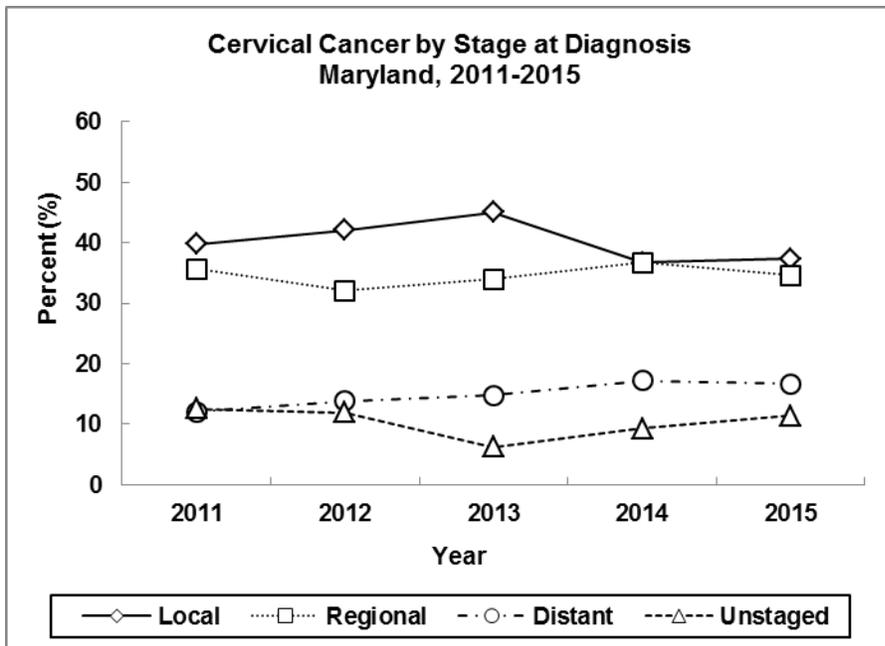
Stage at Diagnosis

In 2015, 37.3% of all cervical cancer cases in Maryland were diagnosed at the local stage, 34.6% were diagnosed at the regional stage, and 16.7% were found at the distant stage. The proportion of cervical cancer cases reported as unstaged increased in 2015 to 11.4%.

See Appendix I, Table 8.

Source: Maryland Cancer Registry

Percentage of Maryland Women Ages 21 to 65 Years Old Who Had a Pap Test Within the Past 3 Years, 2012-2016, Compared to Healthy People 2020 Target

Year	Percent (%)
2012	88.2%
2014	86.7%
2016	82.2%
HP 2020	93.0%

Legend: □ MD   ■ HP 2020

Source: Maryland BRFSS 2012, 2014, 2016
Healthy People 2020, U.S. Department of Health and Human Services

Cervical Cancer Screening

One Healthy People 2020 target for cervical cancer is to increase the percentage of women who have had a cervical cancer screening test based on the most recent guidelines to 93.0%.

In 2016, 82.2% of Maryland women ages 21 to 65 years, old reported they had a Pap test within the past three years.

Public Health Evidence (quoted from the National Cancer Institute PDQ®, 9/21/2017 and 4/14/2016; the Advisory Committee on Immunization Practices [ACIP] 12/16/2016; and the United States Preventive Services Task Force [USPSTF], 8/2018)

Prevention

Avoiding risk factors may help prevent cancer. The following are risk factors for cervical cancer:
- HPV infection, especially HPV types 16 and 18. Most of the time, the body's immune system can fight the HPV infection before cancer forms. Only a very small number of women infected with HPV develop cervical cancer.
- Being exposed to a drug called diethylstilbestrol while in the mother's womb.

In women who are infected with HPV, there are other risk factors that add to the increased risk of cervical cancer:
- Giving birth to many children (seven or more full-term pregnancies).
- Using oral contraceptives, also known as "the Pill", for a long time. Women who used oral contraceptives for five to nine years have a risk of cervical cancer that is three times greater than that of women who have never used oral contraceptives. The risk is four times greater after 10 or more years of use.
- Smoking cigarettes or breathing in secondhand smoke.

The following increase the risk of HPV infection:
- Having a weakened immune system.
- Being sexually active before age 18 or have had more six or more sexual partners.

Increasing protective factors may help prevent cancer. The following protective factors decrease the risk of cervical cancer:
- Avoiding sexual activity.
- Using barrier protection (e.g., condom or diaphragm) during sexual activity.
- Getting a vaccine that protects against HPV infection greatly reduces the risk of cervical cancer, although these vaccines do not protect women who are already infected with HPV. Protection against HPV infection lasts for 6 to 8 years. It is not known if the protection lasts longer. Harms of HPV vaccines include dizziness, feeling faint, headache, fever, and redness, tenderness, or warmth at the place of injection. Allergic reactions are rare.

The ACIP recommends routine HPV vaccination at ages 11 or 12 years old. Vaccination can be given starting at age 9. ACIP also recommends vaccination for females through age 26 and for males through age 21 who were not adequately vaccinated previously. Males ages 22 through 26 years old may be vaccinated.

Screening

Regular screening of women between the ages of 21 and 65 years old with the Pap test (or Pap smear) decreases their chance of dying from cervical cancer. When both the HPV test and Pap test are done using cells from the sample removed during a Pap test, it is called a Pap/HPV co-test. An

HPV DNA test may be used without a Pap test for cervical cancer screening in women ages 25 years and older. Screening women ages 30 and older with both the Pap test and the HPV test every five years finds more cervical changes that can lead to cancer than screening with the Pap test alone. Screening with both the Pap test and the HPV test lowers the number of cases of cervical cancer.

The USPSTF recommends screening for cervical cancer every three years with cervical cytology (Pap test) alone in women ages 21 to 29 years old. For women ages 30 to 65 years old, the USPSTF recommends screening every three years with cervical cytology alone, every five years with high-risk HPV (hrHPV) testing alone, or every five years with hrHPV testing in combination with cytology (co-testing). The USPSTF recommends against screening for cervical cancer in women older than 65 years who have had adequate prior screening and are not otherwise at high risk for cervical cancer. The USPSTF recommends against screening for cervical cancer in women younger than 21 years, and also recommends against screening for cervical cancer in women who have had a hysterectomy with removal of the cervix and do not have a history of high-grade precancerous lesion (i.e., cervical intraepithelial neoplasia grade two or three) or cervical cancer.

The risks of cervical cancer screening include the following:
- Unnecessary follow-tests may be done. In women younger than 21 years, screening with the Pap test may show changes in the cells of the cervix that are not cancer. This may lead to unnecessary follow-up tests and possibly treatment. Women in this age group have a very low risk of cervical cancer and it is likely that any abnormal cells will go away on their own.
- False-negative test results can occur (the screening test results may appear to be normal even though cervical cancer is present). A woman who receives a false-negative test result may delay seeking medical care even if she has symptoms.
- False-positive test results can occur (the screening test results may appear to be abnormal even though no cancer is present). This can cause anxiety and may lead to more tests and procedures (e.g., colposcopy), which also have risks. The HPV test finds many infections that will not lead to cervical dysplasia or cervical cancer, especially in women younger than 30 years. When both the Pap test and the HPV test are done, false-positive test results are more common.

Public Health Interventions for Cervical Cancer (USPSTF and ACIP)

- For women ages 21 to 29 years old, screen for cervical cancer every three years with cervical cytology alone.
- For women ages 30 to 65 years old, screen every three years with cervical cytology alone, every five years with high-risk human papillomavirus (hrHPV) testing alone, or every five years with hrHPV testing in combination with cytology (co-testing).
- Obtain HPV vaccination according to ACIP recommendations.

Individuals should discuss risk factors for cervical cancer, ways to prevent cervical cancer, and screening tests with their healthcare provider.

Note: For information on the Cervical Cancer Prevention and Screening PDQ®, please see Appendix C.

Table 66.
Number of New Cervical Cancer Cases by
Jurisdiction and Race, Maryland, 2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	228	129	78	12
Allegany	<6	<6	0	0
Anne Arundel	15	11	<6	0
Baltimore City	44	11	31	0
Baltimore County	35	27	7	0
Calvert	<6	<6	0	0
Caroline	<6	<6	0	0
Carroll	<6	<6	0	0
Cecil	6	6	0	0
Charles	<6	<6	<6	0
Dorchester	<6	<6	0	0
Frederick	<6	<6	<6	0
Garrett	<6	<6	0	0
Harford	10	s	<6	<6
Howard	<6	<6	0	<6
Kent	0	0	0	0
Montgomery	41	24	8	8
Prince George's	30	9	18	<6
Queen Anne's	<6	<6	0	0
Saint Mary's	<6	<6	<6	0
Somerset	<6	<6	<6	0
Talbot	0	0	0	0
Washington	7	s	<6	0
Wicomico	<6	<6	<6	0
Worcester	<6	<6	0	0

Total includes cases reported as unknown race and unknown county

<6 = Case counts of 1-5 are suppressed per MDH/MCR Data Use Policy

s = Case counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 67.
Cervical Cancer Age-Adjusted Incidence Rates*
by Jurisdiction and Race, Maryland, 2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	6.7	6.4	7.1	**
Allegany	**	**	0.0	0.0
Anne Arundel	**	**	**	0.0
Baltimore City	12.6	**	12.8	0.0
Baltimore County	7.0	8.5	**	0.0
Calvert	**	**	0.0	0.0
Caroline	**	**	0.0	0.0
Carroll	**	**	0.0	0.0
Cecil	**	**	0.0	0.0
Charles	**	**	**	0.0
Dorchester	**	**	0.0	0.0
Frederick	**	**	**	0.0
Garrett	**	**	0.0	0.0
Harford	**	**	**	**
Howard	**	**	0.0	**
Kent	0.0	0.0	0.0	0.0
Montgomery	6.7	6.1	**	**
Prince George's	6.1	**	5.0	**
Queen Anne's	**	**	0.0	0.0
Saint Mary's	**	**	**	0.0
Somerset	**	**	**	0.0
Talbot	0.0	0.0	0.0	0.0
Washington	**	**	**	0.0
Wicomico	**	**	**	0.0
Worcester	**	**	0.0	0.0

* Rates are per 100,000 women and age-adjusted to 2000 U.S. standard population

** Rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 68.
Number of Deaths for Cervical Cancer by
Jurisdiction and Race, Maryland, 2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	69	s	33	<10
Allegany	<10	<10	<10	<10
Anne Arundel	<10	<10	<10	<10
Baltimore City	19	<10	11	<10
Baltimore County	10	<10	<10	<10
Calvert	<10	<10	<10	<10
Caroline	<10	<10	<10	<10
Carroll	<10	<10	<10	<10
Cecil	<10	<10	<10	<10
Charles	<10	<10	<10	<10
Dorchester	<10	<10	<10	<10
Frederick	<10	<10	<10	<10
Garrett	<10	<10	<10	<10
Harford	<10	<10	<10	<10
Howard	<10	<10	<10	<10
Kent	<10	<10	<10	<10
Montgomery	<10	<10	<10	<10
Prince George's	16	<10	12	<10
Queen Anne's	<10	<10	<10	<10
Saint Mary's	<10	<10	<10	<10
Somerset	<10	<10	<10	<10
Talbot	<10	<10	<10	<10
Washington	<10	<10	<10	<10
Wicomico	<10	<10	<10	<10
Worcester	<10	<10	<10	<10

<10 = Death counts of 0-9 are suppressed per MDH/CCPC Mortality Data Suppression Policy

s = Death counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: CDC WONDER 2011-2015, as of January 12, 2018

Table 69.
Cervical Cancer Age-Adjusted Mortality Rates*
by Jurisdiction and Race, Maryland, 2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	1.9	1.5	3.0	**
Allegany	**	**	**	**
Anne Arundel	**	**	**	**
Baltimore City	**	**	**	**
Baltimore County	**	**	**	**
Calvert	**	**	**	**
Caroline	**	**	**	**
Carroll	**	**	**	**
Cecil	**	**	**	**
Charles	**	**	**	**
Dorchester	**	**	**	**
Frederick	**	**	**	**
Garrett	**	**	**	**
Harford	**	**	**	**
Howard	**	**	**	**
Kent	**	**	**	**
Montgomery	**	**	**	**
Prince George's	**	**	**	**
Queen Anne's	**	**	**	**
Saint Mary's	**	**	**	**
Somerset	**	**	**	**
Talbot	**	**	**	**
Washington	**	**	**	**
Wicomico	**	**	**	**
Worcester	**	**	**	**

* Rates are per 100,000 women and age-adjusted to 2000 U.S. standard population
** Rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data Suppression Policy
Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 70.
Number of New Cervical Cancer Cases by
Jurisdiction and Race, Maryland, 2011-2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	1,040	597	355	55
Allegany	20	18	<6	0
Anne Arundel	92	76	13	0
Baltimore City	177	45	122	6
Baltimore County	153	97	47	7
Calvert	13	s	<6	0
Caroline	<6	<6	0	0
Carroll	17	17	0	0
Cecil	17	s	<6	<6
Charles	19	10	7	<6
Dorchester	8	<6	<6	0
Frederick	33	28	<6	<6
Garrett	<6	<6	0	0
Harford	34	28	<6	<6
Howard	39	25	6	6
Kent	<6	<6	<6	0
Montgomery	156	85	37	24
Prince George's	147	40	91	6
Queen Anne's	7	7	0	0
Saint Mary's	19	11	s	<6
Somerset	<6	<6	<6	0
Talbot	<6	<6	0	0
Washington	36	s	<6	0
Wicomico	19	15	<6	0
Worcester	14	s	<6	0

Total includes cases reported as unknown race and unknown county

<6 = Case counts of 1-5 are suppressed per MDH/MCR Data Use Policy

s = Case counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 71.
Cervical Cancer Age-Adjusted Incidence Rates*
by Jurisdiction and Race, Maryland, 2011-2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	6.3	6.0	7.1	5.0
Allegany	10.2	9.0	**	0.0
Anne Arundel	6.4	6.7	**	0.0
Baltimore City	10.2	8.8	10.4	**
Baltimore County	6.4	6.2	7.8	**
Calvert	**	**	**	0.0
Caroline	**	**	0.0	0.0
Carroll	3.3	3.4	0.0	0.0
Cecil	6.2	**	**	**
Charles	4.5	**	**	**
Dorchester	**	**	**	0.0
Frederick	5.1	5.1	**	**
Garrett	**	**	0.0	0.0
Harford	5.0	5.0	**	**
Howard	4.6	4.9	**	**
Kent	**	**	**	0.0
Montgomery	5.3	4.5	7.0	5.0
Prince George's	6.2	7.4	5.6	0.0
Queen Anne's	**	**	0.0	0.0
Saint Mary's	6.5	**	**	**
Somerset	**	**	**	0.0
Talbot	**	**	0.0	0.0
Washington	10.0	10.9	**	0.0
Wicomico	7.4	**	**	0.0
Worcester	11.4	**	**	0.0

* Rates are per 100,000 women and age-adjusted to 2000 U.S. standard population

** Rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry, SEER*Stat static data as of January 03, 2018

Table 72.
Number of Deaths for Cervical Cancer by
Jurisdiction and Race, Maryland, 2011-2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	344	182	146	16
Allegany	<10	<10	<10	<10
Anne Arundel	32	25	<10	<10
Baltimore City	75	s	50	<10
Baltimore County	51	31	s	<10
Calvert	<10	<10	<10	<10
Caroline	<10	<10	<10	<10
Carroll	<10	<10	<10	<10
Cecil	<10	<10	<10	<10
Charles	<10	<10	<10	<10
Dorchester	<10	<10	<10	<10
Frederick	<10	<10	<10	<10
Garrett	<10	<10	<10	<10
Harford	13	<10	<10	<10
Howard	<10	<10	<10	<10
Kent	<10	<10	<10	<10
Montgomery	35	19	s	<10
Prince George's	64	s	48	<10
Queen Anne's	<10	<10	<10	<10
Saint Mary's	<10	<10	<10	<10
Somerset	<10	<10	<10	<10
Talbot	<10	<10	<10	<10
Washington	13	s	<10	<10
Wicomico	<10	<10	<10	<10
Worcester	<10	<10	<10	<10

<10 = Death counts of 0-9 are suppressed per MDH/CCPC Mortality Data Suppression Policy

s = Death counts are suppressed to prevent disclosure of data in other cell(s) (See Appendix C for methods)

Source: CDC WONDER, 2011-2015, as of January 12, 2018

Table 73.
Cervical Cancer Age-Adjusted Mortality Rates*
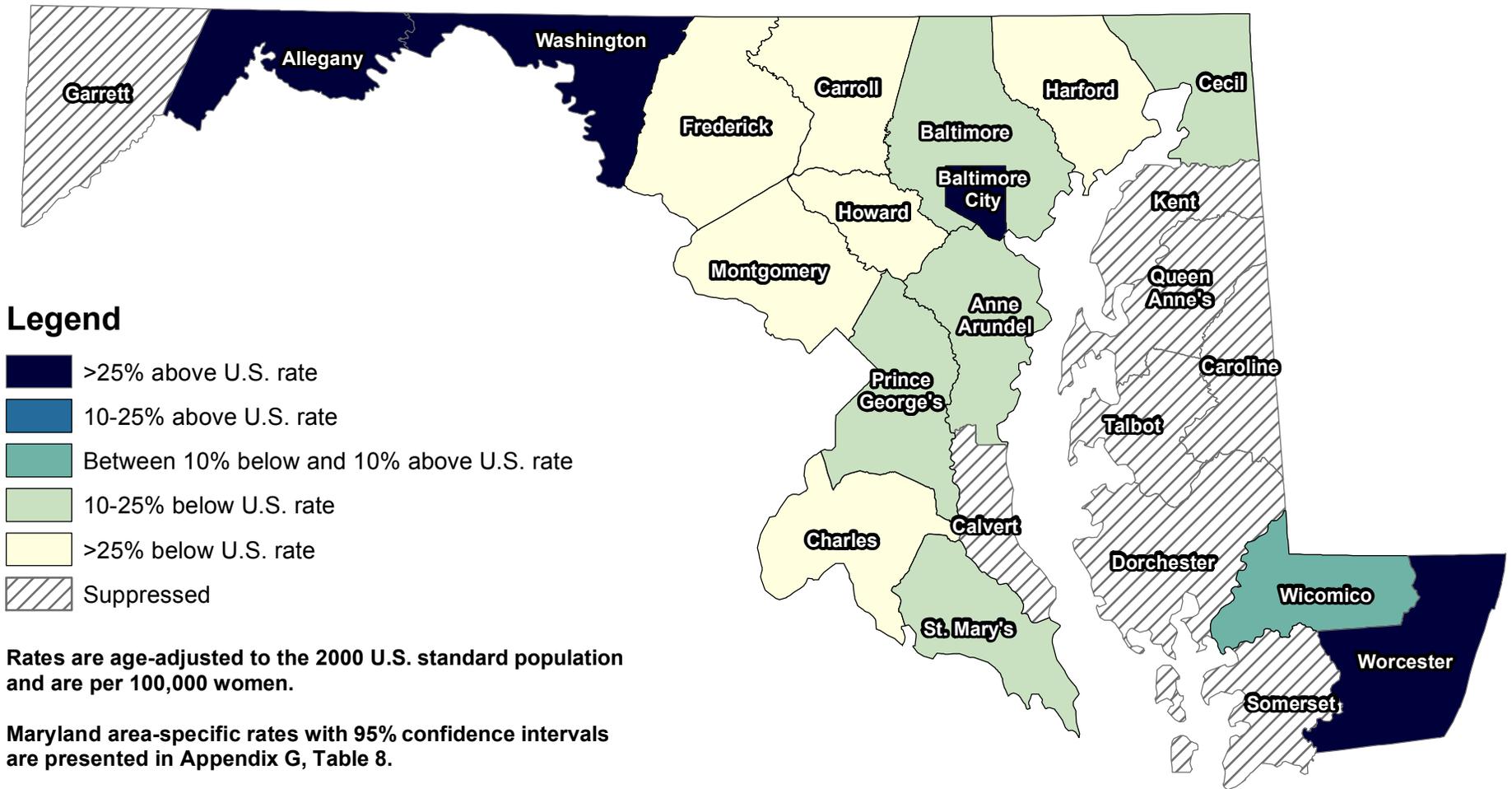# by Jurisdiction and Race, Maryland, 2011-2015

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	2.0	1.7	2.9	**
Allegany	**	**	**	**
Anne Arundel	2.2	2.2	**	**
Baltimore City	4.3	4.2	4.2	**
Baltimore County	1.9	1.7	**	**
Calvert	**	**	**	**
Caroline	**	**	**	**
Carroll	**	**	**	**
Cecil	**	**	**	**
Charles	**	**	**	**
Dorchester	**	**	**	**
Frederick	**	**	**	**
Garrett	**	**	**	**
Harford	**	**	**	**
Howard	**	**	**	**
Kent	**	**	**	**
Montgomery	1.1	**	**	**
Prince George's	2.7	**	2.9	**
Queen Anne's	**	**	**	**
Saint Mary's	**	**	**	**
Somerset	**	**	**	**
Talbot	**	**	**	**
Washington	**	**	**	**
Wicomico	**	**	**	**
Worcester	**	**	**	**

* Rates are per 100,000 women and age-adjusted to 2000 U.S. standard population
** Rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data Suppression Policy
Source: CDC WONDER, 2011-2015, as of January 12, 2018

Maryland Cervical Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2011-2015

Legend

- ▮ >25% above U.S. rate
- ▮ 10-25% above U.S. rate
- ▮ Between 10% below and 10% above U.S. rate
- ▮ 10-25% below U.S. rate
- ▢ >25% below U.S. rate
- ▨ Suppressed

Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 women.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 8.

U.S. cervical cancer incidence rate, 2011-2015: 7.4 / 100,000

Maryland cervical cancer incidence rate, 2011-2015: 6.3 / 100,000

Sources: Maryland Cancer Registry
           U.S. SEER, SEER*Stat Database

Note: Rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures.

Map labels: Garrett, Allegany, Washington, Frederick, Carroll, Baltimore, Harford, Cecil, Baltimore City, Howard, Kent, Montgomery, Queen Anne's, Anne Arundel, Caroline, Prince George's, Talbot, Charles, Calvert, Dorchester, Wicomico, St. Mary's, Somerset, Worcester

Maryland Cervical Cancer Mortality Rates by Geographical Area: Comparison to U.S. Rate, 2011-2015

Legend

- ■ >25% above U.S. rate
- ■ 10-25% above U.S. rate
- ■ Between 10% below and 10% above U.S. rate
- ■ 10-25% below U.S. rate
- ■ >25% below U.S. rate
- ▨ Suppressed

Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 women.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 16.
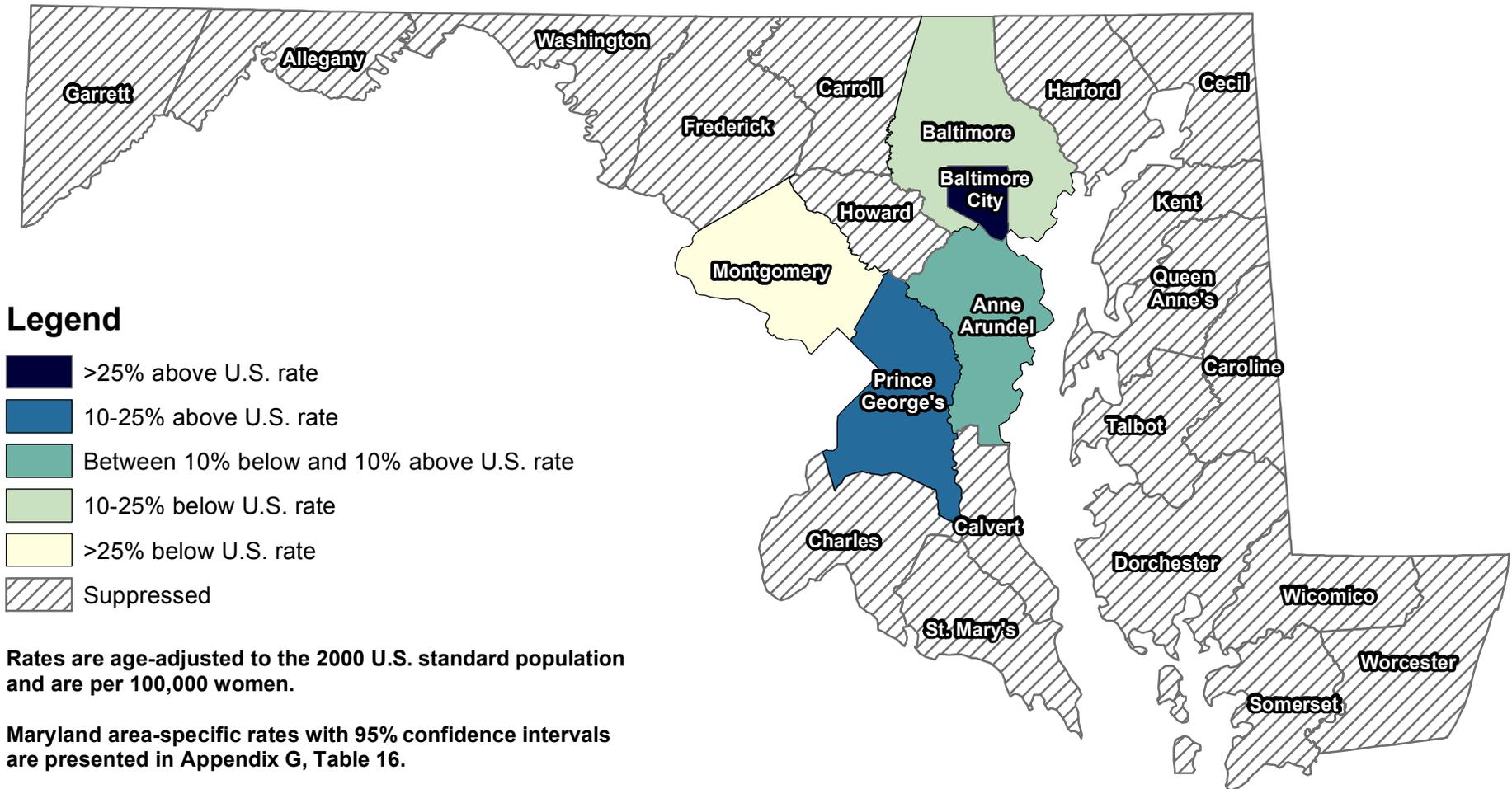
U.S. cervical cancer mortality rate, 2011-2015: 2.3 / 100,000

Maryland cervical cancer mortality rate, 2011-2015: 2.0 / 100,000

Sources: Maryland Cancer Registry
                   U.S. SEER, SEER*Stat Database

Note: Rates based on case counts of 1-19 are suppressed per MDH/CCPC Data Use Policy and Procedures.

Appendix A

Cigarette Restitution Fund
Cancer Report Requirements

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Cigarette Restitution Fund Cancer Report Requirements

The Maryland General Assembly established the Cigarette Restitution Fund (CRF) to provide for the distribution of funds from the tobacco settlement (House Bill 1425, Chapter 17 of the Acts of 2000 and Senate Bill 896, Chapter 18 of the Acts of 2000). The law created the Tobacco Use Prevention and Cessation Program and the Cancer Prevention, Education, Screening and Treatment Program, and provides parameters on how the funds may be spent. Maryland's Health General Article § 13-1104 requires the Maryland Department of Health (MDH) to conduct a baseline cancer study (2000) as well as cancer studies at least every other year thereafter.

The law requires that the study include:

(1) The number and percentage of individuals who have each targeted cancer, both Statewide and in each county;
(2) The number and percentage of individuals within each minority population who have each targeted cancer, both Statewide and in each county;
(3) The mortality rate for each targeted cancer, both Statewide and in each county;
(4) The mortality rate for the different minority populations for each targeted cancer, both Statewide and in each county;
(5) The number of identifiable cancers with a high incidence in the State for which there are effective methods of prevention and early detection, and treatment after detection;
(6) Any aspect of targeted and non-targeted cancers that MDH seeks to measure; and
(7) Any other factor that MDH determines to be important for measuring rates of cancer in the State or for evaluating whether the program meets its objectives.

This information is provided in this Cancer Report as follows:

Required Component of the Cancer Report	Location of Information in this Report
1. Number and percentage of individuals having each targeted cancer, both Statewide and in each jurisdiction.	Tables 1, 2, 3, 4, 7, 8, 11, 12, 13, 16, 17, 20, 21, 22, 25, 26, 29, 30, 31, 34, 35, 38, 39, 40, 43, 44, 47, 48, 49, 52, 53, 56, 57, 58, 61, 62, 65, 66, 67, 70, 71
2. Number and percentage of individuals within each minority population having each targeted cancer, both Statewide and in each jurisdiction.	Same as above.
3. Mortality rate for each targeted cancer, both Statewide and in each jurisdiction.	Tables 1, 5, 6, 9, 10, 11, 14, 15, 18, 19, 20, 23, 24, 27, 28, 29, 32, 33, 36, 37, 38, 41, 42, 45, 46, 47, 50, 51, 54, 55, 56, 59, 60, 63, 64, 65, 68, 69, 72, 73
4. Mortality rate for the different minority populations for each targeted cancer, both Statewide and in each county.	Same as above.
5. Number of identifiable cancers with a high incidence in the State for which there are effective methods of prevention and early detection, and treatment after detection.	High incidence and effective prevention: Lung cancer: Tables 11, 12, 13, 16, 17 High incidence and effective detection: Colorectal and breast cancer: Tables 20, 21, 22, 25, 26, 29, 30, 31, 34, 35

6. Other aspects of targeted and non-targeted cancers that MDH seeks to measure.	For all cancer sites and for each targeted cancer, the report: 1. Compares Maryland incidence and mortality rates to that of the U.S. 2. Delineates incidence and mortality trends by race. 3. Shows 5-year mortality trends and 5-year combined data. 4. Presents 5-year incidence trends and 5-year combined data. 5. Tracks stage of disease at diagnosis over a 5-year period. 6. Lists appropriate objective(s) and target(s) showing trend data for each targeted cancer and identifies Maryland's progress in meeting the respective objective(s). 7. Describes the evidence for screening, primary prevention, and chemoprevention for each targeted cancer, based on current scientific literature. 8. Describes the recommended public health intervention for each targeted cancer based on the evidence referenced above. This information is located throughout the report.
7. Other factors that MDH determines to be important for measuring rates of cancer in the State or for evaluating whether the program meets its objectives.	Same as above.

Appendix B

Cancer Report Format

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Cancer Report Format

1. Selection of Targeted Cancers

Under the Cigarette Restitution Fund (CRF) Program, Cancer Prevention, Education, Screening, and Treatment (CPEST) Program, the Maryland Department of Health (MDH) targets seven cancer sites: lung and bronchus, colon and rectum, female breast, prostate, oral, melanoma of the skin, and cervix. These cancers are targeted because they can be prevented or detected early and treated, or are a major cause of cancer death.

2. Report Format

Information provided in this report focuses on all cancer sites reported in Maryland and the seven specific cancer sites targeted by the CPEST Program. The main body of the 2018 CRF Cancer Report focuses on the most recent data (2015 and 5-year combined data for the period 2011 to 2015).

Section I of the 2018 CRF Cancer Report is an Executive Summary, including an introduction to the report, highlights of major findings for each cancer, and a brief description of major changes to this report from the last (2016) CRF Cancer Report.

Section II of the report describes overall cancer incidence and mortality in Maryland for all cancer sites combined. This section includes graphs comparing long-term trends (2006 to 2015) in overall cancer incidence and mortality rates for Maryland and the U.S.; 5-year incidence and mortality trends (2011 to 2015) for all cancer sites (overall and by race); and trends in stage for all cancers diagnosed in Maryland (2011 to 2015).

Section III presents cancer incidence and mortality data for the seven cancers targeted under the CRF Program. Each chapter includes a comparison of the Maryland 2015 incidence and mortality rates (with 95% confidence intervals [95% CI]) and U.S. rates in the overview text and table. Maryland mortality rankings among the 50 states and the District of Columbia, based on 5-year mortality rates, are also described. Graphics are included in each chapter to depict the following: trends in cancer incidence and Maryland mortality rates for the 5-year period 2011-2015; 5-year trends in cancer incidence and mortality rates by race (gender used for melanoma); 5-year trends in cancer stage at time of diagnosis; and prevalence of cancer screening and cancer-risk behaviors in Maryland compared to Healthy People 2020 targets or Maryland Comprehensive Cancer Control Plan 2016-2020 targets. Public health evidence and recommended areas for public health intervention are also described for each targeted cancer. The number of new cancer cases, number of cancer deaths, and age-adjusted cancer incidence and mortality rates for each cancer are tabulated by gender (for lung and bronchus, colon and rectum, oral, and melanoma of the skin only), race (except for melanoma of the skin), and jurisdiction for 2015 and for the 5-year period from 2011 to 2015. All rates are age-adjusted to the 2000 U.S. standard population. Maps included in each cancer chapter display Maryland incidence and mortality rates compared to corresponding U.S. rates for the combined years 2011 to 2015, by geographical area (see Appendix G for map data).

Appendix A describes the legal basis for the Cancer Report and includes a table addressing each required component and its location in this report. Appendix C describes the sources of data used to prepare the 2018 Cancer Report and specific data considerations (e.g., data confidentiality and statistical methods). Maryland population estimates for 2015, by race and gender, are presented in Appendix D. The population data in these tables can be used as denominators for calculating crude incidence and mortality rates. Appendix E depicts the 2000 U.S. standard population organized by age groupings. Appendix F contains a listing of International Classification of Diseases for Oncology (ICD-O-3) codes for incidence, along with corresponding ICD-10 codes for mortality for the cancer sites included in the report. Appendix G presents age-adjusted incidence and mortality rates with 95% CIs, by Maryland geographical area (state, region, and county). Appendix H tables display trends in cancer incidence and mortality rates, by cancer site and race (gender used for melanoma), over the 5-year period (2011 to 2015). Appendix I tables show the distribution of cancer stage at diagnosis for all cancer sites and the targeted cancers, by year, from 2011 to 2015. Appendix J tables depict trends in incidence and mortality rates for all cancer sites from 2006 to 2015 in Maryland and the U.S.

Appendix C

Cancer Data Sources, References, and Data Considerations

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2018 Cigarette Restitution Fund (CRF) Cancer Report
Sources, References, and Data Considerations

I. DATA SOURCES

Data and information presented in the 2018 Cigarette Restitution Fund (CRF) Cancer Report were obtained from a variety of sources, including:
- Maryland Department of Health (MDH)
  - Center for Cancer Prevention and Control (CCPC)
  - Center for Chronic Disease Prevention and Control
  - Center for Tobacco Prevention and Control
  - Vital Statistics Administration
  - Maryland Assessment Tool for Community Health (MATCH)
- National Cancer Institute (NCI, part of the National Institutes of Health)
- Centers for Disease Control and Prevention (CDC)

These sources and the types of information provided for the 2018 CRF Cancer Report are described in the following sections.

A. Cancer Incidence and Stage Data

1. Maryland Cancer Registry

The Maryland Cancer Registry (MCR), CCPC, MDH, is the source for all Maryland-specific cancer incidence and cancer stage data used in this report. The MCR is a computerized data system that collects and consolidates reports of all new cases of reportable cancers (excluding non-genital squamous cell or basal cell skin cancer) that are diagnosed and/or treated in Maryland and reported to the MCR. Incidence rates used in this report were calculated using cases reported to the MCR as of January 3, 2018, for the diagnosis year 2015.

The Maryland cancer reporting law and regulations mandate the collection of cancer information from Maryland-licensed hospitals, radiation therapy centers, diagnostic pathology laboratories, freestanding ambulatory care facilities, surgical centers, and physicians whose non-hospitalized cancer patients are not otherwise reported. The MCR has also signed the North American Association of Central Cancer Registries' (NAACCR) National Interstate Data Exchange Agreement and receives abstracts from 31 other states/ jurisdictions, including Alabama, Alaska, Arkansas, California, Colorado, Delaware, Florida, Georgia, Idaho, Louisiana, Massachusetts, Michigan, Mississippi, Montana, Nebraska, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Vermont, Virginia, West Virginia, Wisconsin, and the District of Columbia. Information on Maryland residents diagnosed and/or treated for cancer in these jurisdictions is included in this report.

Note: The 2006 case counts for Montgomery and Prince George's counties are underreported by approximately 8% and 6%, respectively, for all cancer sites combined due to a delay in case reporting. Cancers reported to the MCR after the annual cutoff date are not included in the MCR's official Maryland case counts and rates. The case undercounts resulted in slightly lower than actual age-adjusted incidence rates for Montgomery and Prince George's counties.

2. Surveillance, Epidemiology, and End Results Program

The Surveillance, Epidemiology, and End Results (SEER) Program, managed by the NCI, is an authoritative source of information on cancer incidence, stage, and survival in the U.S.

The SEER Program, which began in 1973 and provides incidence rates representative of the U.S., collects, analyzes, and publishes cancer incidence and survival data from population-based cancer registries participating in the program. Since 2000, SEER incidence data has been collected from 18 SEER registries throughout the U.S. (SEER 18 registry database) and covers approximately 28% of the U.S. population. The SEER Program includes select geographic areas based on their ability to operate and maintain a high quality population-based cancer reporting system and for their epidemiologically significant population subgroups. The population covered by SEER is comparable to the general U.S. population with regards to measures of poverty and education; however, it is also selectively more urban and has a higher proportion of foreign-born persons than the general U.S. population.

SEER 18 incidence data are used in this report to compare national data with the most recent Maryland incidence data (2011-2015), as they provide the broadest population coverage currently available. All SEER incidence rates were obtained by the MCR from SEER*Stat (version 8.3.4), a statistical software tool for the analysis of SEER and other cancer-related databases. Additional information about SEER can be found at http://www.seer.cancer.gov.

The Maryland population estimates for 2015 presented in Appendix D were also obtained from SEER*Stat.

B. Cancer Mortality Data

Maryland mortality data for 2015 and the 5-year aggregate data (2011 to 2015) were acquired from CDC Wide-ranging Online Data for Epidemiologic Research (CDC WONDER), an interactive online public health database developed by the CDC, which features statistics for U.S. and Maryland resident health events. CDC WONDER is an easy-to-use, web-based system that makes information from CDC available to public health professionals and the public at large. Public-use data sets about mortality (deaths), cancer incidence, HIV and AIDS, tuberculosis, natality (births), census data, and many other topics are available for query, and the requested data are readily summarized and analyzed. CDC WONDER can be accessed at https://wonder.cdc.gov/.

Maryland mortality single year data for 2006 to 2007 and 2012 to 2014, and the 5-year aggregate data (2011 to 2015), presented in this report were obtained from the National Center for Health Statistics (NCHS) Compressed Mortality Files (CMF) accessed using CDC WONDER. The NCHS CMF is a county-level national mortality and population database spanning the years 1979 to 2016. The number of deaths, crude death rates, and age-adjusted death rates can be obtained by place of residence (total U.S., state, and county), age group, race, gender, year of death, and underlying cause of death (based on International Classification of Diseases [ICD] code or group of codes). Mortality data for the individual years 2006 to 2007 and 2012 to 2014 for Maryland and 2006 to 2008 for the U.S. were obtained from the 1999-2014 CMF using ICD Tenth Revision (ICD-10) codes. The U.S. mortality rates for single year 2015 and 5-year aggregate data (2011 to 2015) were obtained from SEER, Cancer Statistics Review (CSR), which are provided by NCHS.

Maryland mortality data for 2011 were obtained from the Maryland Vital Statistics Administration. Maryland mortality single year data for 2008 through 2010, with the exception of colorectal cancer (CRC), are from MATCH; whereas, CRC mortality data were obtained directly from the Maryland Vital Statistics Administration due to the different definition of CRC in MATCH, which includes anal cancer. No longer accessible or in use, MATCH was an interactive online database sponsored by the MDH Cancer and Chronic Disease Bureau, Center for Chronic Disease Prevention and Control, which featured statistics for Maryland resident health events. County level births, deaths, population estimates, and hospitalizations could be obtained through a query of the MATCH online database. The official annual reports from the Maryland Vital Statistics Administration can be obtained online at https://health.maryland.gov/vsa/Pages/reports.aspx. Note: The definition of lung and bronchus cancer in MATCH included the trachea. Comparisons can still be made between the different data sources for lung and bronchus cancer mortality due to the small number of deaths due to cancer of the trachea.

C. Behavioral and Risk Factor Data

The data on the prevalence of cancer screening and prevalence of various risk factors for cancer (e.g., smoking) in Maryland are obtained from several different sources, as described below.

1. Maryland Behavioral Risk Factor Surveillance System

The Maryland Behavioral Risk Factor Surveillance System (BRFSS) is used as a source of data on the prevalence of cancer screening (e.g., mammograms) and cancer risk behaviors (e.g., tobacco use) in Maryland. The BRFSS is an annual telephone survey conducted on a random sample of Maryland adult residents and is managed by the Center for Chronic Disease Prevention and Control, Cancer and Chronic Disease Bureau at MDH. This survey provided risk behavior and cancer screening information for this report. Maryland data results can be accessed at http://www.marylandbrfss.org, and

Maryland and state-aggregated national data on health risk behavior can also be obtained from the CDC BRFSS website at http://www.cdc.gov/brfss.

2. Maryland Youth Tobacco Survey (MYTS)

Data from the Maryland Youth Tobacco Survey (MYTS) are used to monitor trends in tobacco use (as a risk factor for lung cancer) by Maryland youth. The MYTS is administered to gather information regarding attitudes, usage, and exposure to tobacco products among public middle and high school students statewide and within each of Maryland's 23 counties and Baltimore City. Survey results are also used in apportioning Local Tobacco Use Prevention and Cessation grants among Maryland's 24 major political subdivisions. To date, the MYTS was conducted in 2000, 2002, 2006, 2008, and 2010.

3. Maryland Youth Risk Behavior Survey (YRBS)

The Maryland YRBS is part of the CDC's Youth Risk Behavior Surveillance System (YRBSS) developed in 1990 to monitor behaviors affecting morbidity (disease) and mortality (death) among high school youth. The YRBSS tracks several priority health risk behaviors among youth, as well as behaviors that support health. The 2013, 2014, and 2016 Maryland YRBS were administered in the spring of 2013, the fall of 2014, and the fall of 2016, respectively, to students in a representative sample of Maryland public high school classrooms. In 2013, a total of 53,785 students in 184 public high schools in Maryland completed the survey. In 2014, a total of 56,717 students in 183 public high schools in Maryland completed the survey. In 2016, a total of 52,408 students in 184 public high schools in Maryland completed the survey. The results are representative of all students in grades 9 to 12. To date, the Maryland YRBS was conducted in 2007, 2009, 2011, 2013, 2014, and 2016. Maryland data results for 2013, 2014, and 2016 can be accessed at https://phpa.health.maryland.gov/ccdpc/Reports/Pages/YRBS-Main.aspx.

4. Healthy People (HP) 2020

Healthy People (HP) 2020 is a collaboration of local and national governmental agencies and private organizations that have developed prevention-oriented national objectives to improve the health of Americans. The HP initiative is under the Office of Disease Prevention and Health Promotion at the U.S. Department of Health and Human Services (DHHS). The overarching HP 2020 goal for cancer prevention is to "reduce the number of new cases as well as the illness, disability, and death caused by cancer." To achieve this goal, measurable objectives related to cancer screening and cancer risk behaviors were established, each with a specific quantitative target, and several of these targets are used as benchmarks by which Maryland's progress can be measured. The HP 2020 objectives were released in late 2010 and additional information can be found at http://www.healthypeople.gov.

5. Maryland Comprehensive Cancer Control Plan (MCCCP), 2016-2020

The MCCCP contains goals and set targets to be met by the State by the end of a 5-year period (2016 to 2020), which serve as a guide for health professionals who are involved in planning, directing, implementing, evaluating, or performing research on cancer control in Maryland.

The MCCCP, 2016-2020 was the coordinated effort of 83 State stakeholders and several MDH offices and centers, with the aim to develop a cancer resource for individuals, healthcare providers, and organizations.

The MCCCP is directed by CCPC, MDH, with broad input from a partnership of public and private stakeholders. Additional information can be found at https://phpa.health.maryland.gov/cancer/cancerplan/Pages/publications.aspx.

II. REFERENCES USED FOR PUBLIC HEALTH EVIDENCE AND PUBLIC HEALTH INTERVENTION SECTIONS

A. National Cancer Institute (NCI) Physician Data Query (PDQ®)

The PDQ® is NCI's comprehensive source of cancer information. The prevention and screening sections from this source are intended as a resource to inform and assist clinicians who care for cancer patients, and does not provide formal guidelines or recommendations for making healthcare decisions. Where appropriate, prevention or screening recommendations from the United States Preventive Services Task Force (USPSTF) or other professional medical/scientific bodies are included in the individual cancer chapters.

Information provided in the individual cancer chapters under the section "Public Health Evidence" was taken primarily from the NCI PDQ® - Patient Version website. Links to the Health Professional version of the NCI PDQ® are available below. Contents of the PDQ® are often quoted verbatim and sometimes paraphrased. PDQ® definitions are included in the Glossary.

The PDQ® Editorial Boards are responsible for producing and maintaining comprehensive, evidence-based cancer information summaries, and are comprised of experts in cancer-related specialties. There are six Editorial Boards, including one for screening and prevention. Each PDQ® Editorial Board is supported by a corresponding Editorial Advisory Board that reviews the PDQ® cancer information summaries on a regular basis and makes recommendations for changes to be considered by the corresponding core Editorial Board.

More information about NCI PDQ® can be accessed at:

<u>PDQ®</u>

http://www.cancer.gov/cancertopics/pdq

<u>Levels of Evidence</u>

http://www.cancer.gov/publications/pdq/levels-evidence/screening-prevention

<u>Prevention and Screening</u>

http://www.cancer.gov/cancertopics/pdq/prevention
http://www.cancer.gov/cancertopics/pdq/screening

<u>Lung Cancer</u>
Patient Version
PDQ® Screening and Prevention Editorial Board. PDQ Lung Cancer Prevention. Bethesda, MD: National Cancer Institute. Updated 12/06/2017. Available at https://www.cancer.gov/types/lung/patient/lung-prevention-pdq. Accessed 11/02/2018. [PMID: 26389497]

PDQ® Screening and Prevention Editorial Board. PDQ Lung Cancer Screening. Bethesda, MD: National Cancer Institute. Updated 06/16/2017. Available at https://www.cancer.gov/types/lung/patient/lung-screening-pdq. Accessed 11/02/2018. [PMID: 26389428]

Health Professional Version
Prevention – available at https://www.cancer.gov/types/lung/hp/lung-prevention-pdq

Screening – available https://www.cancer.gov/types/lung/hp/lung-screening-pdq

<u>Colorectal Cancer</u>
Patient Version
PDQ® Screening and Prevention Editorial Board. PDQ Colorectal Cancer Prevention. Bethesda, MD: National Cancer Institute. Updated 03/09/2018. Available at https://www.cancer.gov/types/colorectal/patient/colorectal-prevention-pdq. Accessed 11/02/2018. [PMID: 26389376]

PDQ® Screening and Prevention Editorial Board. PDQ Colorectal Cancer Screening. Bethesda, MD: National Cancer Institute. Updated 02/23/2018. Available at https://www.cancer.gov/types/colorectal/patient/colorectal-screening-pdq. Accessed 11/02/2018. [PMID: 26389230]

Health Professional Version
Prevention – available at https://www.cancer.gov/types/colorectal/hp/colorectal-prevention-pdq

Screening – available at https://www.cancer.gov/types/colorectal/hp/colorectal-screening-pdq

<u>Female Breast Cancer</u>
Patient Version
PDQ® Screening and Prevention Editorial Board. PDQ Breast Cancer Prevention. Bethesda, MD: National Cancer Institute. Updated 10/19/2018. Available at https://www.cancer.gov/types/breast/patient/breast-prevention-pdq. Accessed 11/02/2018. [PMID: 26389410]

PDQ® Screening and Prevention Editorial Board. PDQ Breast Cancer Screening. Bethesda, MD: National Cancer Institute. Updated 10/26/2018. Available at https://www.cancer.gov/types/breast/patient/breast-screening-pdq. Accessed 11/02/2018. [PMID: 26389160]

Health Professional Version
Prevention – available at https://www.cancer.gov/types/breast/hp/breast-prevention-pdq

Screening – available at https://www.cancer.gov/types/breast/hp/breast-screening-pdq

<u>Prostate Cancer</u>
Patient Version
PDQ® Screening and Prevention Editorial Board. PDQ Prostate Cancer Prevention. Bethesda, MD: National Cancer Institute. Updated 09/08/2016. Available at https://www.cancer.gov/types/prostate/patient/prostate-prevention-pdq. Accessed 11/02/2018. [PMID: 26389260]

PDQ® Screening and Prevention Editorial Board. PDQ Prostate Cancer Screening. Bethesda, MD: National Cancer Institute. Updated 02/22/2018. Available at https://www.cancer.gov/types/prostate/patient/prostate-screening-pdq. Accessed 11/02/2018. [PMID: 26389306]

Health Professional Version
Prevention – available at https://www.cancer.gov/types/prostate/hp/prostate-prevention-pdq

Screening – available at https://www.cancer.gov/types/prostate/hp/prostate-screening-pdq

<u>Oral Cancer</u>
Patient Version
PDQ® Screening and Prevention Editorial Board. PDQ Oral Cavity, Pharyngeal, and Laryngeal Cancer Prevention. Bethesda, MD: National Cancer Institute. Updated 07/20/2018. Available at https://www.cancer.gov/types/head-and-neck/patient/oral-prevention-pdq. Accessed 11/02/2018. [PMID: 26389257]

PDQ® Screening and Prevention Editorial Board. PDQ Oral Cavity, Pharyngeal, and Laryngeal Cancer Screening. Bethesda, MD: National Cancer Institute. Updated 07/20/2018. Available at https://www.cancer.gov/types/head-and-neck/patient/oral-screening-pdq. Accessed 11/02/2018. [PMID: 26389441]

Health Professional Version
Prevention – available at https://www.cancer.gov/types/head-and-neck/hp/oral-prevention-pdq

Screening – available at https://www.cancer.gov/types/head-and-neck/hp/oral-screening-pdq

Skin Cancer
Patient Version
PDQ® Screening and Prevention Editorial Board. PDQ Skin Cancer Prevention. Bethesda, MD: National Cancer Institute. Updated 06/21/2017. Available at https://www.cancer.gov/types/skin/patient/skin-prevention-pdq. Accessed 11/02/2018. [PMID: 26389434]

PDQ® Screening and Prevention Editorial Board. PDQ Skin Cancer Screening. Bethesda, MD: National Cancer Institute. Updated 02/23/2018. Available at https://www.cancer.gov/types/skin/patient/skin-screening-pdq. Accessed 11/02/2018. [PMID: 26389182]

Health Professional Version
Prevention – available at https://www.cancer.gov/types/skin/hp/skin-prevention-pdq

Screening – available at https://www.cancer.gov/types/skin/hp/skin-screening-pdq

Cervical Cancer
Patient Version
PDQ® Screening and Prevention Editorial Board. PDQ Cervical Cancer Prevention. Bethesda, MD: National Cancer Institute. Updated 09/21/2017. Available at https://www.cancer.gov/types/cervical/patient/cervical-prevention-pdq. Accessed 11/02/2018. [PMID: 26389339]

PDQ® Screening and Prevention Editorial Board. PDQ Cervical Cancer Screening. Bethesda, MD: National Cancer Institute. Updated 04/14/2016. Available at https://www.cancer.gov/types/cervical/patient/cervical-screening-pdq. Accessed 11/02/2018. [PMID: 26389215]

Health Professional Version
Prevention – available at https://www.cancer.gov/types/cervical/hp/cervical-prevention-pdq

Screening – available at https://www.cancer.gov/types/cervical/hp/cervical-screening-pdq

B. Maryland Department of Health Center for Cancer Prevention and Control Medical Advisory Committees

The Center for Cancer Prevention and Control convened six Medical Advisory Committees to formulate guidelines for lung, breast, cervical, colorectal, oral, and prostate cancer screening, diagnosis, and treatment. All guidelines are located at: http://phpa.dhmh.maryland.gov/cancer/Pages/resources.aspx

C. Additional Medical Literature

The USPSTF recommendations are used throughout the report and the contents of the USPSTF Recommendation Statements are often quoted verbatim and sometimes paraphrased. For additional information, the website is http://www.uspreventiveservicestaskforce.org.

Lung Cancer
Final Update Summary: Lung Cancer: Screening. U.S. Preventive Services Task Force. July 2015. https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/lung-cancer-screening. Accessed September 14, 2018.

Colorectal Cancer
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Final Update Summary: Breast Cancer: Medications for Risk Reduction. U.S. Preventive Services Task Force. September 2016. https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/breast-cancer-medications-for-risk-reduction. Accessed September 14, 2018.

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Oral Cancer

Final Update Summary: Oral Cancer: Screening. U.S. Preventive Services Task Force. September 2016. https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/oral-cancer-screening1. Accessed September 4, 2018.

Skin Cancer

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III. DATA CONSIDERATIONS

A. Data Confidentiality

MDH regards all individual data reported to, and received and processed by, the MCR as confidential. Data are secured from unauthorized access and disclosure. The MCR manages and releases cancer information in accordance with the laws and regulations established by the State of Maryland, as set forth in the Annotated Code of Maryland, Health-General Article, §§18-203 – 204 and §4-101 et seq., and Code of Maryland Regulations, COMAR 10.14.01 Cancer Registry.

Because incidence data and mortality data come from different sources, separate suppression procedures are employed for release of non-confidential data. For the number of cancer cases collected by the MCR and for incidence rates calculated using case and population data, the following protocols apply: To ensure patient confidentiality and to comply with the *MCR Data Use Manual and Procedures* (July 2016; https://phpa.health.maryland.gov/cancer/Pages/mcr_data.aspx), cells with counts of 1-5 cases are suppressed and presented as "<6." Complementary suppression of case counts in additional cell(s) is used, denoted by "s," to prevent back-calculation of numbers in those cells with primary suppression. Age-adjusted incidence rates based on counts of 15 or fewer (non-zero) are presented with asterisks (**) because the rates are unstable and do not provide reliable information.

Mortality data for this report are from CDC WONDER. ICD-10 codes listed in Appendix F of this report were used for identifying the type of cancer for extraction. Data obtained from CDC WONDER are subject to CDC data use restrictions, which differ slightly from those of the *MDH/MCR Data Use Policy* used for incidence data. To ensure that individual identity is protected in the use and re-release of mortality data from CDC WONDER, and that reliable mortality rates are presented in this and other CCPC publications, the CCPC developed the *Mortality Data Suppression Policy* (October 2012). In accordance with this policy, the following protocols are applied to mortality data in this report: Death counts of 0-9 are suppressed and denoted by "<10." Complementary suppression of death counts in additional cell(s) is used, as denoted by the letter "s," to prevent back-calculation of numbers in cells with primary suppression. Age-adjusted mortality rates based on counts of less than 20 (i.e., 0-19 deaths) are presented with asterisks (denoted by ** symbol) because the rates are unstable and do not provide reliable information. This threshold is more stringent than the criteria used in the *MDH/MCR Data Use Policy* for incidence rate suppression.

B. Gender

Gender is reported to the MCR as: a) male; b) female; c) hermaphrodite; d) transsexual; and e) unknown (not stated), but numbers and rates for only males and females are provided in this report. As a result, the totals shown in the count for number of cancer cases may not equal the sum of males and females because of cases in the other gender categories.

C. County

County is reported to the MCR as the jurisdiction of residence for each cancer case (i.e., one of the 24 jurisdictions in Maryland) or is categorized as unknown. As a result, the totals shown in the count for number of cancer cases may not equal the sum of the cancer cases across all 24 jurisdictions because of cases with unknown county.

D. Rate Analysis

Individual year incidence rates for 2015 were calculated using Maryland resident cancer cases diagnosed from January 1 through December 31 of that year, and reported to the MCR as of January 3, 2018. The individual year mortality data (2015) consist of deaths that occurred between January 1 and December 31 of that year. Multiple year incidence rates presented were calculated for 5-year rates using MCR 2011-2015 data. Corresponding mortality rates were extracted from CDC WONDER, as 5-year combined data from 2011 to 2015.

Age-adjustment, also called age-standardization, is a tool used to control for different and changing age distributions of populations in the U.S., states, regions, and counties, and to enable meaningful comparisons of rates over time and across these populations. Age-adjusted rates do not include cancer cases for which age has not been reported. Incidence and mortality rates in this report were calculated and age-adjusted using the 2000 U.S. standard population. Additional information on age-adjustment can be found at http://www.cdc.gov/nchs/data/statnt/statnt20.pdf.

The annual percent change (APC) is calculated for incidence and mortality trends and for tracking incidence and mortality rates by race and gender over time. See the Glossary for the definition of APC.

E. Confidence Intervals and Statistical Significance

Age-adjusted rates for specific geographic areas (e.g., U.S., states, regions, and counties) can be compared to determine whether differences in incidence or mortality exist between these areas. It is important to note however, that incidence and mortality rates, particularly those based on small numbers of events (cases or deaths) or small population sizes, can be highly variable from year to year. In these instances, two unadjusted rates cannot be compared side-by-side to determine whether they are statistically significantly different.

A confidence interval is used to describe the range of uncertainty around a point estimate (e.g., an incidence or mortality rate) and serves as an indicator of the precision or stability of a rate. Confidence intervals are useful in defining a range within which the typical rate for a geographic area can be expected to lie. Most confidence intervals are, by convention, calculated at the 95% level, which means that 95% of hypothetically observed confidence intervals generated will contain the true value of interest. The

smaller the number of events upon which a rate is based, the wider the confidence interval will be.

Confidence intervals for incidence and mortality rates are included in this report to facilitate comparisons between rates, such as the comparison of Maryland rates to U.S. rates. Confidence intervals for Maryland and SEER 18 incidence rates, provided by the MCR, are calculated from the SEER*Stat software. Confidence intervals for Maryland mortality rates were generated using CDC WONDER, and confidence intervals for U.S. mortality rates were queried using SEER's Cancer Query System. The following formula can be used to approximate the 95% confidence interval for age-adjusted rates:

Lower limit = $R - [1.96 (R / \sqrt{n})]$

Upper limit = $R + [1.96 (R / \sqrt{n})]$

where R = age-adjusted cancer incidence or mortality rate and n = number of events (cancer cases or deaths).

When the confidence intervals around two rates (e.g., state and U.S. rates) do not overlap, it can be stated that there is a statistically significant difference between the rates. For example, Maryland's 2015 lung cancer incidence rate was 55.5 per 100,000, with a 95% confidence interval of 53.7-57.3. The 2015 U.S. SEER age-adjusted lung cancer incidence rate was 51.8 per 100,000 population, with a 95% confidence interval of 51.4-52.3. Since these confidence intervals do not overlap, the two rates are considered to be statistically significantly different (i.e., the difference between these rates is more than that expected by chance).

If the two confidence intervals overlap and if the rate for one area is included in the confidence interval of the other rate, then there is not a statistically significant difference between the rates. However, when there is overlap in the confidence intervals for two rates, and the rate for the comparison area is not included in the interval for the rate of interest, the two rates may or may not be statistically significantly different. In this situation, statistical testing methods described by NAACCR, Cancer in North America (May 2010) are used in this report to determine whether the differences between the two rates are statistically significant. An approximate confidence interval for the rate ratio of two age-adjusted rates can be calculated using the following formula:

$$(R_1 / R_2)^{1 \pm z / x}$$

where R_1 and R_2 are the age-adjusted rates being compared;
SE_1 and SE_2 are the standard errors for the respective rates;
$z = 1.96$ for 95% confidence intervals; and
$x = (R_1 - R_2) / \sqrt{(SE_1^2 + SE_2^2)}$

If the confidence interval for the rate ratio includes the value of one, then the two rates are not statistically significantly different (i.e., p-value greater than 0.05).

In this report, when two rates are not statistically significantly different, they are described as being "similar."

F. National Comparison Data

Maryland (Statewide) and county incidence and mortality rates are compared to U.S. SEER 18 incidence rates and U.S. mortality rates from NCHS (see Sections I.A and I.B).

Data used for Maryland cancer mortality ranking by cancer site are from SEER Cancer Statistics Review (CSR), which are based on NCHS mortality data. Maryland's mortality ranking among the 50 states and the District of Columbia for all cancer sites combined and for specific targeted cancers is based on a 5-year average (2011-2015) of age-adjusted rates. Because mortality rates describe the cancer burden better than incidence rates, only Maryland rankings for mortality are presented for each targeted cancer.

Maps included with this data display comparisons of Maryland incidence and mortality rates by geographical area to U.S. rates. For both incidence and mortality rate maps, the 5-year (2011-2015) U.S. rate was used as a basis for comparison with rates for Maryland jurisdictions (counties and regions). A ramp is used for grouping Maryland data into categories in reference to U.S. rates. The ramp groups data into five divisions: >25% above U.S. rate; 10-25% above U.S. rate; between 10% below and 10% above U.S. rate; 10-25% below U.S. rate; and >25% below U.S. rate. Note that 10-25% includes 10% and 25%, but less than 10% and more than 25% do not include the endpoints of the range.

G. Race and Hispanic Ethnicity

The MCR began requiring submission of more detailed data on race and ethnicity in August 1998. Incidence data provided by the MCR include the following race categories: white, black, other, and unknown (not stated), regardless of Hispanic ethnicity. The "Other" race category includes cases reported as American Indian or Alaskan Native, Asian or Pacific Islander, and any other race category, except those cases with unknown or missing race. However, only white, black, and other races are included in the Cancer Report, with the "Other" race category only including American Indian or Alaska Native and Asian or Pacific Islander cases. This change is to match how CDC WONDER reports race for mortality data (see below). The MCR uses the NCI's SEER*Stat software to compile incidence data.

Hispanic ethnicity is captured in a separate data field. Data presented in Table 4 are derived using the NAACCR Hispanic Identification Algorithm. This algorithm uses a combination of NAACCR variables to classify cases as Hispanic. In Table 4, "Hispanic" includes people reported to the MCR as Spanish/Hispanic origin plus those with "derived" Hispanic origin. The derivation is an algorithm based on the person having a Hispanic surname (last or maiden name) and their country of birth, race, and sex.

Mortality data (death counts and rates) in this report were obtained from the NCHS CMF in CDC WONDER, SEER CSR, and the Maryland Vital Statistics Administration. Race

data in the CMF are based on information collected on death certificates. CDC WONDER reports race in four categories (white, black, Asian or Pacific Islander, and Native American or Alaska Native). NCHS, in collaboration with the Census Bureau, developed a race-bridging methodology for assigning multiple-race groups to single-race categories. The category of "Other" races in this report includes the American Indian or Alaska Native race category and the Asian or Pacific Islander race category. The Maryland Vital Statistics Administration reports race in the same four categories as CDC WONDER, along with an additional category "All Other Races." To keep rates comparable between incidence and mortality, death counts and mortality rates are only shown for white, black, and "Other" (i.e., Asian or Pacific Islander and Native American or Alaskan Native). "All Other Races" are not shown due to the small number of deaths in these categories, but they are included in the total death counts and mortality rates. U.S. mortality data from SEER CSR are reported with only two race categories (white and black). As a result, single year 2015 and 5-year aggregate data (2011 to 2015) obtained from SEER CSR only report U.S. mortality for whites and blacks.

H. Healthy People 2020 Targets

In the CRF Cancer Report, quantitative HP 2020 targets are compared to Maryland data related to cancer risk behaviors and adherence to cancer screening recommendations (see Section I.C.4). Specifically, HP 2020 targets are compared to data from the Maryland BRFSS. The data from these Maryland surveys are weighted to the age, race, and gender of the Maryland population and, unlike the national data that serve as the basis for HP 2020 targets, Maryland BRFSS data are not age-adjusted to the 2000 U.S. standard population.

The target-setting method used for the HP 2020 objective for sun exposure protection was a 10% improvement from the national baseline in 2008 using data from the National Health Interview Survey (NHIS). The questions used to define sun exposure protective measures used by NHIS slightly differed from the questions used by the Maryland BRFSS, although the information gathered by both surveys are similar. Therefore, one could use the sun exposure protection data from the Maryland BRFSS as a form of comparison to the HP 2020, however, interpretations should remain cautious due to the different measures used for data gathering.

I. Appendices

Please refer to additional appendices for:
- Cigarette Restitution Fund Cancer Report Requirements (Appendix A)
- Cancer Report Format (Appendix B)
- Maryland Population Estimates, 2015 (Appendix D)
- U.S. Standard Population, 2000 (Appendix E)
- Definitions of International Classification of Diseases (ICD) Codes Used for Cancer Incidence and Mortality (Appendix F)
- Maryland Cancer Incidence and Mortality Rates by Geographical Area, 2011-2015 (Appendix G)

- Trends in Cancer Incidence and Mortality Rates in Maryland by Cancer Site, Race or Gender, and Year, 2011-2015 (Appendix H)
- Trends in Cancer Stage of Disease at Diagnosis in Maryland by Cancer Site and Year, 2011-2015 (Appendix I)
- Trends in All Cancer Sites Incidence and Mortality Rates in Maryland and U.S. by Year, 2006-2015 (Appendix J)

Appendix D

Maryland Population Estimates, 2015

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Maryland Population Estimates by Jurisdiction, 2015

Jurisdiction	Total All Genders	Total Males	Total Females	Total Whites	White Males	White Females	Total Blacks	Black Males	Black Females
Maryland	**6,006,401**	**2,911,085**	**3,095,316**	**3,652,546**	**1,805,508**	**1,847,038**	**1,890,111**	**883,085**	**1,007,026**
Baltimore Metropolitan Area	**2,748,503**	**1,325,000**	**1,423,503**	**1,719,514**	**845,775**	**873,739**	**845,896**	**390,495**	**455,401**
Anne Arundel County	564,195	279,642	284,553	434,931	216,945	217,986	100,505	49,191	51,314
Baltimore City	621,849	293,073	328,776	200,530	100,103	100,427	398,678	181,939	216,739
Baltimore County	831,128	393,542	437,586	531,484	255,740	275,744	241,489	109,206	132,283
Carroll County	167,627	82,794	84,833	156,999	77,384	79,615	6,660	3,602	3,058
Harford County	250,290	122,484	127,806	204,442	100,592	103,850	35,854	17,236	18,618
Howard County	313,414	153,465	159,949	191,128	95,011	96,117	62,710	29,321	33,389
Eastern Shore Region	**453,226**	**221,357**	**231,869**	**361,801**	**176,837**	**184,964**	**80,434**	**39,267**	**41,167**
Caroline County	32,579	15,955	16,624	26,806	13,204	13,602	4,977	2,329	2,648
Cecil County	102,382	50,877	51,505	92,446	45,931	46,515	7,898	4,010	3,888
Dorchester County	32,384	15,447	16,937	22,252	10,769	11,483	9,538	4,416	5,122
Kent County	19,787	9,472	10,315	16,333	7,847	8,486	3,163	1,494	1,669
Queen Anne's County	48,904	24,211	24,693	44,290	21,890	22,400	3,637	1,858	1,779
Somerset County	25,768	13,832	11,936	14,109	7,249	6,860	11,237	6,363	4,874
Talbot County	37,512	17,796	19,716	31,560	15,013	16,547	5,177	2,424	2,753
Wicomico County	102,370	48,764	53,606	70,885	33,918	36,967	27,411	12,896	14,515
Worcester County	51,540	25,003	26,537	43,120	21,016	22,104	7,396	3,477	3,919
National Capital Area	**1,949,651**	**939,538**	**1,010,113**	**902,790**	**451,219**	**451,571**	**810,418**	**375,297**	**435,121**
Montgomery County	1,040,116	501,294	538,822	653,973	320,374	333,599	207,600	96,493	111,107
Prince George's County	909,535	438,244	471,291	248,817	130,845	117,972	602,818	278,804	324,014
Northwest Region	**496,895**	**249,704**	**247,191**	**427,643**	**211,473**	**216,170**	**50,390**	**29,168**	**21,222**
Allegany County	72,528	37,752	34,776	65,137	32,445	32,692	6,390	4,833	1,557
Frederick County	245,322	121,170	124,152	205,818	101,581	104,237	25,489	12,823	12,666
Garrett County	29,460	14,667	14,793	28,846	14,349	14,497	406	256	150
Washington County	149,585	76,115	73,470	127,842	63,098	64,744	18,105	11,256	6,849
Southern Region	**358,126**	**175,486**	**182,640**	**240,798**	**120,204**	**120,594**	**102,973**	**48,858**	**54,115**
Calvert County	90,595	44,710	45,885	75,472	37,529	37,943	12,663	6,097	6,566
Charles County	156,118	75,226	80,892	75,559	37,547	38,012	72,893	34,223	38,670
St. Mary's County	111,413	55,550	55,863	89,767	45,128	44,639	17,417	8,538	8,879

Source: Maryland Cancer Registry, SEER*Stat static data as of January 3, 2018

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Appendix E

U.S. Standard Population, 2000

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2000 U.S. Standard Population

Age Group	2000 Population
Less than 01 years	3,794,901
01-04 years	15,191,619
05-09 years	19,919,840
10-14 years	20,056,779
15-19 years	19,819,518
20-24 years	18,257,225
25-29 years	17,722,067
30-34 years	19,511,370
35-39 years	22,179,956
40-44 years	22,479,229
45-49 years	19,805,793
50-54 years	17,224,359
55-59 years	13,307,234
60-64 years	10,654,272
65-69 years	9,409,940
70-74 years	8,725,574
75-79 years	7,414,559
80-84 years	4,900,234
85+ years	4,259,173
Total	**274,633,642**

Source: National Cancer Institute, SEER, 2000

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Appendix F

Definitions of International Classification of Diseases (ICD) Codes Used for Cancer Incidence and Mortality

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International Classification of Diseases for Oncology, 3rd Edition (ICD-O-3) Codes Used for Cancer Incidence and International Classification of Diseases, 10th Revision (ICD-10) Codes Used for Cancer Mortality

Cancer Site	Incidence (ICD-O-3)		Mortality (ICD-10)
	Topography (Site)	Histology	
All Cancer Sites	C00.0-C80.9	Includes all invasive cancers of all sites, except basal and squamous cell skin cancers, and includes *in situ* cancer of the urinary bladder	C00-C97, D09.0
Lung and Bronchus	C34.0-C34.9	Excludes codes 9050-9055, 9140, and 9590-9989	C34
Colon and Rectum	C18.0-C20.9, C26.0	Excludes codes 9050-9055, 9140, and 9590-9989	C18-C20, C26.0
Female Breast	C50.0-C50.9 (female only)	Excludes codes 9050-9055, 9140, and 9590-9989	C50 (female only)
Prostate	C61.9	Excludes codes 9050-9055, 9140, and 9590-9990	C61
Oral Cavity and Pharynx	C00.0-C14.8	Excludes codes 9050-9055, 9140, and 9590-9989	C00-C14
Melanoma of the Skin	C44.0-C44.9	Includes only codes 8720-8790	C43
Cervix	C53.0-C53.9	Excludes codes 9050-9055, 9140, and 9590-9989	C53

Note: Most cancer mortality (ICD-10) codes are similar to cancer incidence (ICD-O-3) topography (site) codes

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Appendix G

**Maryland Cancer Incidence and Mortality Rates
by Geographical Area, 2011-2015**

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Appendix G

Table 1. All Cancer Sites Incidence
Age-Adjusted Incidence Rates
by Geographical Area, Maryland, 2011-2015

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	**443.4**	**441.0**	**445.7**
Northwest Region	**453.7**	**445.9**	**461.7**
Allegany	487.0	467.3	507.3
Frederick	442.6	430.9	454.5
Garrett	403.4	375.5	432.9
Washington	463.2	449.0	477.7
Baltimore Metropolitan Area ^	**464.0**	**460.1**	**467.9**
Anne Arundel	459.9	452.2	467.8
Baltimore City	483.0	475.2	490.8
Baltimore County	476.7	470.5	483.0
Carroll	468.5	454.9	482.4
Harford	490.8	479.2	502.7
Howard	405.9	395.7	416.3
National Capital Area	**385.8**	**381.9**	**389.8**
Montgomery	377.5	372.3	382.7
Prince George's	397.1	391.0	403.3
Southern Region	**438.6**	**428.7**	**448.6**
Calvert	461.7	442.2	481.7
Charles	434.9	419.6	450.6
St. Mary's	425.1	407.8	443.0
Eastern Shore Region	**485.0**	**476.8**	**493.3**
Caroline	475.2	444.4	507.7
Cecil	508.0	489.1	527.4
Dorchester	491.8	462.3	522.8
Kent	457.8	422.2	496.0
Queen Anne's	437.1	413.6	461.7
Somerset	482.2	447.3	519.3
Talbot	440.8	416.2	466.7
Wicomico	530.3	511.0	550.3
Worcester	485.7	463.2	509.2

* Rates are per 100,000 population and are age-adjusted to 2000 U.S. standard population

^ Area rate does not include Baltimore City

Source: Maryland Cancer Registry

Appendix G

Table 2. Lung and Bronchus Cancer Incidence
Age-Adjusted Incidence Rates
by Geographical Area, Maryland, 2011-2015

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	**56.2**	**55.4**	**57.0**
Northwest Region	**58.5**	**55.7**	**61.3**
Allegany	74.6	67.3	82.6
Frederick	48.2	44.3	52.3
Garrett	48.1	39.3	58.6
Washington	66.8	61.5	72.4
Baltimore Metropolitan Area ^	**61.3**	**59.9**	**62.7**
Anne Arundel	64.2	61.3	67.2
Baltimore City	78.8	75.7	82.0
Baltimore County	63.7	61.4	66.0
Carroll	59.4	54.6	64.5
Harford	69.8	65.5	74.4
Howard	42.8	39.4	46.4
National Capital Area	**37.0**	**35.8**	**38.3**
Montgomery	31.9	30.4	33.5
Prince George's	43.8	41.7	45.9
Southern Region	**59.4**	**55.7**	**63.2**
Calvert	59.7	52.8	67.3
Charles	54.3	48.9	60.2
St. Mary's	65.9	59.1	73.3
Eastern Shore Region	**69.5**	**66.5**	**72.6**
Caroline	80.4	68.3	94.2
Cecil	78.4	71.1	86.3
Dorchester	68.6	58.3	80.3
Kent	50.8	40.1	64.0
Queen Anne's	62.2	53.6	71.9
Somerset	88.8	74.4	105.4
Talbot	48.2	41.1	56.5
Wicomico	77.2	70.0	84.9
Worcester	66.9	59.3	75.3

* Rates are per 100,000 population and are age-adjusted to 2000 U.S. standard population

^ Area rate does not include Baltimore City

Source: Maryland Cancer Registry

Appendix G

Table 3. Colorectal Cancer Incidence
Age-Adjusted Incidence Rates
by Geographical Area, Maryland, 2011-2015

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	**36.4**	**35.8**	**37.1**
Northwest Region	**38.5**	**36.2**	**40.8**
Allegany	46.4	40.5	53.1
Frederick	36.4	33.1	40.0
Garrett	38.8	30.7	48.8
Washington	37.3	33.3	41.5
Baltimore Metropolitan Area ^	**36.8**	**35.7**	**37.9**
Anne Arundel	34.1	32.0	36.3
Baltimore City	43.4	41.1	45.8
Baltimore County	37.9	36.2	39.7
Carroll	41.5	37.5	45.8
Harford	39.7	36.4	43.2
Howard	32.7	29.8	35.8
National Capital Area	**32.1**	**31.0**	**33.3**
Montgomery	28.9	27.5	30.4
Prince George's	36.3	34.5	38.3
Southern Region	**35.6**	**32.8**	**38.5**
Calvert	36.7	31.3	42.7
Charles	37.2	32.8	42.0
St. Mary's	32.6	28.0	37.8
Eastern Shore Region	**39.4**	**37.1**	**41.8**
Caroline	45.8	36.4	56.9
Cecil	44.3	38.8	50.4
Dorchester	49.2	39.9	60.1
Kent	35.9	26.3	48.3
Queen Anne's	29.4	23.5	36.5
Somerset	48.2	37.6	61.0
Talbot	29.4	23.4	36.8
Wicomico	40.0	34.7	45.7
Worcester	39.6	33.3	47.0

* Rates are per 100,000 population and are age-adjusted to 2000 U.S. standard population

^ Area rate does not include Baltimore City

Source: Maryland Cancer Registry

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Table 4. Female Breast Cancer Incidence
Age-Adjusted Incidence Rates
by Geographical Area, Maryland, 2011-2015

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	**129.6**	**127.9**	**131.4**
Northwest Region	**127.8**	**122.0**	**133.7**
Allegany	114.0	100.2	129.3
Frederick	129.4	121.0	138.3
Garrett	105.0	85.6	128.0
Washington	135.0	124.4	146.4
Baltimore Metropolitan Area ^	**133.2**	**130.3**	**136.1**
Anne Arundel	132.5	126.8	138.3
Baltimore City	123.3	118.1	128.7
Baltimore County	134.7	130.2	139.4
Carroll	126.2	116.7	136.2
Harford	135.1	126.9	143.7
Howard	131.3	123.7	139.3
National Capital Area	**127.6**	**124.6**	**130.7**
Montgomery	129.8	125.7	134.0
Prince George's	124.9	120.4	129.4
Southern Region	**126.0**	**119.0**	**133.4**
Calvert	146.9	132.4	162.6
Charles	124.5	113.9	135.9
St. Mary's	109.3	97.5	122.2
Eastern Shore Region	**129.0**	**123.1**	**135.2**
Caroline	127.2	105.8	151.8
Cecil	126.8	114.1	140.6
Dorchester	125.8	105.3	149.3
Kent	146.1	118.2	179.4
Queen Anne's	113.7	97.4	132.1
Somerset	111.1	87.0	140.2
Talbot	129.5	110.9	150.7
Wicomico	137.5	124.0	152.1
Worcester	135.7	118.3	155.1

* Rates are per 100,000 women and are age-adjusted to 2000 U.S. standard population

^ Area rate does not include Baltimore City

Source: Maryland Cancer Registry

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Table 5. Prostate Cancer Incidence
Age-Adjusted Incidence Rates
by Geographical Area, Maryland, 2011-2015

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	**121.6**	**119.8**	**123.3**
Northwest Region	**97.6**	**92.5**	**103.0**
Allegany	103.3	91.0	117.0
Frederick	102.4	94.3	111.0
Garrett	78.9	62.6	98.7
Washington	94.1	85.2	103.7
Baltimore Metropolitan Area ^	**118.7**	**115.9**	**121.6**
Anne Arundel	118.8	113.2	124.6
Baltimore City	137.4	131.3	143.8
Baltimore County	123.5	118.9	128.2
Carroll	113.1	103.7	123.2
Harford	122.8	114.7	131.4
Howard	105.2	97.9	112.9
National Capital Area	**122.8**	**119.5**	**126.1**
Montgomery	107.7	103.7	111.8
Prince George's	143.4	137.9	148.9
Southern Region	**113.3**	**106.2**	**120.8**
Calvert	112.6	99.3	127.3
Charles	138.1	125.5	151.6
St. Mary's	83.5	73.1	95.0
Eastern Shore Region	**124.9**	**119.2**	**130.8**
Caroline	117.6	96.6	142.1
Cecil	124.4	111.3	138.6
Dorchester	142.5	121.4	166.7
Kent	136.0	110.9	166.2
Queen Anne's	102.2	87.1	119.6
Somerset	110.3	88.3	136.6
Talbot	120.6	103.7	140.0
Wicomico	148.5	134.0	164.1
Worcester	114.9	101.2	130.3

* Rates are per 100,000 men and are age-adjusted to 2000 U.S. standard population

^ Area rate does not include Baltimore City

Source: Maryland Cancer Registry

Table 6. Oral Cancer Incidence
Age-Adjusted Incidence Rates
by Geographical Area, Maryland, 2011-2015

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	**10.6**	**10.3**	**11.0**
Northwest Region	**11.1**	**10.0**	**12.4**
Allegany	12.4	9.3	16.2
Frederick	10.5	8.8	12.5
Garrett	14.6	9.7	21.3
Washington	11.0	9.0	13.4
Baltimore Metropolitan Area ^	**11.0**	**10.5**	**11.7**
Anne Arundel	12.4	11.2	13.8
Baltimore City	12.6	11.4	13.9
Baltimore County	10.7	9.8	11.7
Carroll	12.3	10.2	14.7
Harford	9.5	8.0	11.2
Howard	9.8	8.3	11.5
National Capital Area	**8.1**	**7.6**	**8.7**
Montgomery	8.9	8.1	9.7
Prince George's	7.2	6.4	8.1
Southern Region	**12.6**	**11.0**	**14.3**
Calvert	13.9	10.8	17.6
Charles	10.4	8.2	13.0
St. Mary's	14.5	11.5	18.0
Eastern Shore Region	**13.8**	**12.5**	**15.3**
Caroline	15.0	9.9	21.8
Cecil	14.5	11.6	18.0
Dorchester	15.5	10.3	22.5
Kent	15.2	9.8	23.2
Queen Anne's	9.9	6.9	14.1
Somerset	12.1	7.3	19.2
Talbot	13.6	9.4	19.4
Wicomico	14.7	11.7	18.4
Worcester	12.7	9.4	16.9

* Rates are per 100,000 population and are age-adjusted to 2000 U.S. standard population

^ Area rate does not include Baltimore City

Source: Maryland Cancer Registry

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Table 7. Melanoma Incidence
Age-Adjusted Incidence Rates
by Geographical Area, Maryland, 2011-2015

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	**22.3**	**21.7**	**22.8**
Northwest Region	**23.0**	**21.2**	**24.9**
Allegany	18.9	15.1	23.4
Frederick	25.4	22.6	28.3
Garrett	19.7	13.7	27.6
Washington	22.1	19.1	25.6
Baltimore Metropolitan Area ^	**30.4**	**29.4**	**31.5**
Anne Arundel	32.5	30.4	34.6
Baltimore City	9.7	8.7	10.9
Baltimore County	29.0	27.5	30.6
Carroll	33.4	29.7	37.4
Harford	34.5	31.4	37.8
Howard	24.7	22.3	27.4
National Capital Area	**13.2**	**12.4**	**13.9**
Montgomery	18.4	17.3	19.6
Prince George's	6.4	5.6	7.2
Southern Region	**26.2**	**23.8**	**28.8**
Calvert	31.4	26.4	37.1
Charles	20.0	16.8	23.6
St. Mary's	30.2	25.7	35.3
Eastern Shore Region	**30.9**	**28.8**	**33.1**
Caroline	23.0	16.5	31.3
Cecil	31.1	26.5	36.3
Dorchester	16.3	11.2	23.1
Kent	21.2	14.0	31.2
Queen Anne's	39.9	33.0	48.0
Somerset	24.0	16.6	33.8
Talbot	30.2	23.2	38.8
Wicomico	29.7	25.2	34.8
Worcester	43.4	36.5	51.4

* Rates are per 100,000 population and are age-adjusted to 2000 U.S. standard population

^ Area rate does not include Baltimore City

Source: Maryland Cancer Registry

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Table 8. Cervical Cancer Incidence
Age-Adjusted Incidence Rates
by Geographical Area, Maryland, 2011-2015

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	**6.3**	**5.9**	**6.7**
Northwest Region	**7.1**	**5.7**	**8.8**
Allegany	10.2	6.0	16.2
Frederick	5.1	3.5	7.2
Garrett	**	**	**
Washington	10.0	7.0	14.0
Baltimore Metropolitan Area ^	**5.7**	**5.1**	**6.4**
Anne Arundel	6.4	5.1	7.9
Baltimore City	10.2	8.7	11.9
Baltimore County	6.4	5.4	7.5
Carroll	3.3	1.9	5.4
Harford	5.0	3.4	7.1
Howard	4.6	3.3	6.4
National Capital Area	**5.7**	**5.1**	**6.4**
Montgomery	5.3	4.5	6.3
Prince George's	6.2	5.2	7.3
Southern Region	**5.3**	**3.9**	**7.0**
Calvert	**	**	**
Charles	4.5	2.7	7.2
St. Mary's	6.5	3.9	10.3
Eastern Shore Region	**6.7**	**5.2**	**8.4**
Caroline	**	**	**
Cecil	6.2	3.6	10.1
Dorchester	**	**	**
Kent	**	**	**
Queen Anne's	**	**	**
Somerset	**	**	**
Talbot	**	**	**
Wicomico	7.4	4.4	11.7
Worcester	**	**	**

* Rates are per 100,000 women and are age-adjusted to 2000 U.S. standard population

** Rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy

^ Area rate does not include Baltimore City

Source: Maryland Cancer Registry

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Table 9. All Cancer Sites Mortality
Age-Adjusted Mortality Rates
by Geographical Area, Maryland, 2011-2015

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	**162.2**	**160.8**	**163.6**
Northwest Region	**161.4**	**156.8**	**166.1**
Allegany	169.2	157.9	180.5
Frederick	153.1	146.1	160.2
Garrett	148.1	131.8	164.5
Washington	172.9	164.3	181.5
Baltimore Metropolitan Area ^	**159.9**	**157.6**	**162.2**
Anne Arundel	169.2	164.3	174.0
Baltimore City	223.4	218.1	228.7
Baltimore County	162.9	159.4	166.5
Carroll	161.8	153.8	169.8
Harford	167.4	160.5	174.3
Howard	127.5	121.5	133.5
National Capital Area	**137.7**	**135.3**	**140.1**
Montgomery	117.9	115.0	120.8
Prince George's	163.9	159.9	168.0
Southern Region	**174.1**	**167.7**	**180.6**
Calvert	164.3	152.5	176.2
Charles	174.2	164.0	184.4
St. Mary's	182.6	170.9	194.4
Eastern Shore Region	**181.2**	**176.3**	**186.2**
Caroline	181.8	162.6	201.1
Cecil	187.9	176.1	199.6
Dorchester	190.6	172.5	208.7
Kent	152.0	132.6	171.5
Queen Anne's	168.4	153.6	183.1
Somerset	200.4	177.6	223.1
Talbot	153.5	139.9	167.1
Wicomico	200.7	188.9	212.6
Worcester	180.6	167.6	193.6

* Rates are per 100,000 population and are age-adjusted to 2000 U.S. standard population

^ Area rate does not include Baltimore City

Source: CDC WONDER, 2011-2015, as of April 9, 2018

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Table 10. Lung and Bronchus Cancer Mortality
Age-Adjusted Mortality Rates
by Geographical Area, Maryland, 2011-2015

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	**41.4**	**40.6**	**42.1**
Northwest Region	**41.6**	**39.3**	**44.0**
Allegany	45.1	39.3	50.9
Frederick	35.7	32.3	39.1
Garrett	38.3	30.5	47.6
Washington	48.8	44.2	53.4
Baltimore Metropolitan Area ^	**42.7**	**41.5**	**43.9**
Anne Arundel	47.0	44.5	49.5
Baltimore City	61.1	58.3	63.9
Baltimore County	43.6	41.7	45.4
Carroll	43.3	39.2	47.4
Harford	47.6	43.9	51.3
Howard	28.4	25.5	31.2
National Capital Area	**28.8**	**27.7**	**29.9**
Montgomery	23.8	22.5	25.1
Prince George's	35.7	33.8	37.6
Southern Region	**45.7**	**42.4**	**49.0**
Calvert	45.5	39.2	51.7
Charles	40.8	35.9	45.7
St. Mary's	52.3	46.0	58.6
Eastern Shore Region	**53.0**	**50.4**	**55.6**
Caroline	61.6	50.6	72.7
Cecil	59.5	52.9	66.0
Dorchester	56.6	47.0	66.2
Kent	38.2	29.4	48.9
Queen Anne's	45.7	38.0	53.3
Somerset	74.0	60.1	87.9
Talbot	37.6	31.0	44.3
Wicomico	54.6	48.4	60.7
Worcester	54.2	47.2	61.1

* Rates are per 100,000 population and are age-adjusted to 2000 U.S. standard population

^ Area rate does not include Baltimore City

Source: CDC WONDER, 2011-2015, as of April 9, 2018

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Table 11. Colorectal Cancer Mortality
Age-Adjusted Mortality Rates
by Geographical Area, Maryland, 2011-2015

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	**14.2**	**13.8**	**14.6**
Northwest Region	**15.5**	**14.0**	**16.9**
Allegany	15.2	12.0	19.0
Frederick	14.8	12.6	17.0
Garrett	13.4	9.0	19.2
Washington	17.2	14.5	19.9
Baltimore Metropolitan Area ^	**13.7**	**13.0**	**14.3**
Anne Arundel	13.1	11.8	14.5
Baltimore City	20.9	19.3	22.5
Baltimore County	14.3	13.3	15.3
Carroll	14.5	12.1	16.9
Harford	15.5	13.4	17.7
Howard	10.3	8.6	12.1
National Capital Area	**12.2**	**11.5**	**12.9**
Montgomery	9.1	8.3	9.9
Prince George's	16.3	15.0	17.6
Southern Region	**15.4**	**13.5**	**17.3**
Calvert	14.3	11.0	18.3
Charles	17.9	14.6	21.1
St. Mary's	13.3	10.4	16.8
Eastern Shore Region	**14.0**	**12.6**	**15.4**
Caroline	15.9	10.7	22.7
Cecil	15.4	12.2	19.1
Dorchester	18.4	13.0	25.2
Kent	13.8	8.0	22.1
Queen Anne's	10.0	6.7	14.3
Somerset	**	**	**
Talbot	8.1	5.3	11.8
Wicomico	17.8	14.3	21.3
Worcester	13.3	10.0	17.4

* Rates are per 100,000 women and are age-adjusted to 2000 U.S. standard population

** Rates based on death counts of 0-19 deaths are suppressed per MDH/CCPC Mortality Data Suppression Policy

^ Area rate does not include Baltimore City

Source: CDC WONDER, 2011-2015, as of April 9, 2018

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Table 12. Female Breast Cancer Mortality
Age-Adjusted Mortality Rates
by Geographical Area, Maryland, 2011-2015

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	**22.4**	**21.7**	**23.1**
Northwest Region	**22.1**	**19.7**	**24.5**
Allegany	20.5	15.1	27.1
Frederick	21.9	18.3	25.5
Garrett	21.9	14.0	32.6
Washington	23.5	19.2	27.9
Baltimore Metropolitan Area ^	**22.0**	**20.9**	**23.1**
Anne Arundel	21.3	19.0	23.5
Baltimore City	27.4	24.9	29.8
Baltimore County	22.6	20.8	24.5
Carroll	25.0	20.8	29.3
Harford	22.9	19.5	26.3
Howard	18.8	15.8	21.8
National Capital Area	**21.5**	**20.2**	**22.7**
Montgomery	18.1	16.6	19.6
Prince George's	25.7	23.7	27.8
Southern Region	**24.2**	**21.0**	**27.4**
Calvert	24.9	19.3	31.7
Charles	24.6	19.7	29.5
St. Mary's	23.0	17.7	29.4
Eastern Shore Region	**21.0**	**18.7**	**23.4**
Caroline	20.0	11.9	31.7
Cecil	20.2	15.4	25.9
Dorchester	20.7	13.1	31.0
Kent	27.0	17.3	40.2
Queen Anne's	18.9	12.8	27.0
Somerset	**	**	**
Talbot	19.1	12.9	27.2
Wicomico	20.0	15.4	25.6
Worcester	27.9	20.9	36.6

* Rates are per 100,000 women and are age-adjusted to 2000 U.S. standard population

** Rates based on death counts of 0-19 deaths are suppressed per MDH/CCPC Mortality Data Suppression Policy

^ Area rate does not include Baltimore City

Source: CDC WONDER, 2011-2015, as of April 9, 2018

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Table 13. Prostate Cancer Mortality
Age-Adjusted Mortality Rates
by Geographical Area, Maryland, 2011-2015

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	**20.0**	**19.2**	**20.8**
Northwest Region	**18.0**	**15.6**	**20.5**
Allegany	14.9	10.4	20.9
Frederick	20.7	16.5	24.8
Garrett	**	**	**
Washington	17.0	13.0	21.8
Baltimore Metropolitan Area ^	**17.2**	**16.0**	**18.4**
Anne Arundel	19.1	16.5	21.8
Baltimore City	31.2	27.9	34.5
Baltimore County	17.3	15.6	19.1
Carroll	12.5	9.2	16.7
Harford	17.6	14.1	21.7
Howard	17.0	13.6	20.9
National Capital Area	**19.9**	**18.4**	**21.4**
Montgomery	15.7	14.0	17.3
Prince George's	26.9	24.0	29.8
Southern Region	**22.8**	**18.9**	**26.7**
Calvert	28.4	20.7	38.0
Charles	21.5	15.7	28.6
St. Mary's	19.4	13.9	26.3
Eastern Shore Region	**21.8**	**19.2**	**24.5**
Caroline	**	**	**
Cecil	20.6	14.7	28.0
Dorchester	20.1	12.1	31.4
Kent	**	**	**
Queen Anne's	24.8	16.5	35.9
Somerset	**	**	**
Talbot	22.1	15.3	30.8
Wicomico	24.7	18.5	32.4
Worcester	22.9	16.9	30.5

* Rates are per 100,000 women and are age-adjusted to 2000 U.S. standard population

** Rates based on death counts of 0-19 deaths are suppressed per MDH/CCPC Mortality Data Suppression Policy

^ Area rate does not include Baltimore City

Source: CDC WONDER, 2011-2015, as of April 9, 2018

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Table 14. Oral Cancer Mortality
Age-Adjusted Mortality Rates
by Geographical Area, Maryland, 2011-2015

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	**2.3**	**2.1**	**2.5**
Northwest Region	**2.2**	**1.7**	**2.9**
Allegany	3.9	2.3	6.0
Frederick	1.6	1.0	2.6
Garrett	**	**	**
Washington	2.2	1.3	3.4
Baltimore Metropolitan Area ^	**1.9**	**1.7**	**2.2**
Anne Arundel	2.5	2.0	3.2
Baltimore City	3.9	3.2	4.6
Baltimore County	1.9	1.6	2.3
Carroll	**	**	**
Harford	1.6	1.1	2.4
Howard	**	**	**
National Capital Area	**1.9**	**1.6**	**2.2**
Montgomery	1.5	1.2	1.8
Prince George's	2.5	2.0	3.0
Southern Region	**2.8**	**2.1**	**3.7**
Calvert	**	**	**
Charles	3.2	1.9	4.9
St. Mary's	**	**	**
Eastern Shore Region	**3.1**	**2.5**	**3.8**
Caroline	**	**	**
Cecil	**	**	**
Dorchester	**	**	**
Kent	**	**	**
Queen Anne's	**	**	**
Somerset	**	**	**
Talbot	**	**	**
Wicomico	4.6	3.0	6.8
Worcester	**	**	**

* Rates are per 100,000 women and are age-adjusted to 2000 U.S. standard population

** Rates based on death counts of 0-19 deaths are suppressed per MDH/CCPC Mortality Data Suppression Policy

^ Area rate does not include Baltimore City

Source: CDC WONDER, 2011-2015, as of April 9, 2018

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Table 15. Melanoma Mortality
Age-Adjusted Mortality Rates
by Geographical Area, Maryland, 2011-2015

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	**2.3**	**2.2**	**2.5**
Northwest Region	**2.4**	**1.9**	**3.1**
Allegany	**	**	**
Frederick	2.1	1.3	3.1
Garrett	**	**	**
Washington	3.0	1.9	4.4
Baltimore Metropolitan Area ^	**2.7**	**2.4**	**3.0**
Anne Arundel	3.1	2.5	3.8
Baltimore City	1.6	1.2	2.2
Baltimore County	2.7	2.3	3.2
Carroll	3.8	2.7	5.4
Harford	2.5	1.7	3.5
Howard	1.7	1.1	2.5
National Capital Area	**1.8**	**1.5**	**2.1**
Montgomery	1.9	1.5	2.3
Prince George's	1.6	1.2	2.1
Southern Region	**2.1**	**1.4**	**2.9**
Calvert	**	**	**
Charles	**	**	**
St. Mary's	**	**	**
Eastern Shore Region	**3.6**	**2.9**	**4.4**
Caroline	**	**	**
Cecil	4.9	3.0	7.4
Dorchester	**	**	**
Kent	**	**	**
Queen Anne's	**	**	**
Somerset	**	**	**
Talbot	**	**	**
Wicomico	3.8	2.3	5.8
Worcester	**	**	**

* Rates are per 100,000 women and are age-adjusted to 2000 U.S. standard population

** Rates based on death counts of 0-19 deaths are suppressed per MDH/CCPC Mortality Data Suppression Policy

^ Area rate does not include Baltimore City

Source: CDC WONDER, 2011-2015, as of April 9, 2018

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Table 16. Cervical Cancer Mortality
Age-Adjusted Mortality Rates
by Geographical Area, Maryland, 2011-2015

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	**2.0**	**1.8**	**2.2**
Northwest Region	**1.9**	**1.2**	**2.7**
Allegany	**	**	**
Frederick	**	**	**
Garrett	**	**	**
Washington	**	**	**
Baltimore Metropolitan Area ^	**1.7**	**1.4**	**2.1**
Anne Arundel	2.2	1.5	3.1
Baltimore City	4.3	3.4	5.5
Baltimore County	1.9	1.4	2.5
Carroll	**	**	**
Harford	**	**	**
Howard	**	**	**
National Capital Area	**1.8**	**1.4**	**2.2**
Montgomery	1.1	0.8	1.5
Prince George's	2.7	2.1	3.4
Southern Region	**	**	**
Calvert	**	**	**
Charles	**	**	**
St. Mary's	**	**	**
Eastern Shore Region	**1.7**	**1.1**	**2.6**
Caroline	**	**	**
Cecil	**	**	**
Dorchester	**	**	**
Kent	**	**	**
Queen Anne's	**	**	**
Somerset	**	**	**
Talbot	**	**	**
Wicomico	**	**	**
Worcester	**	**	**

* Rates are per 100,000 women and are age-adjusted to 2000 U.S. standard population

** Rates based on death counts of 0-19 deaths are suppressed per MDH/CCPC Mortality Data Suppression Policy

^ Area rate does not include Baltimore City

Source: CDC WONDER, 2011-2015, as of April 9, 2018

Appendix H

**Trends in Cancer Incidence and Mortality Rates in Maryland
by Cancer Site, Race or Gender, and Year, 2011-2015**

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Appendix H. Trends in Cancer Incidence and Mortality Rates in Maryland by Cancer Site, Race or Gender, and Year, 2011-2015

Table 1. Cancer Incidence Rates by Cancer Site and Year
Maryland, 2011-2015

Cancer Site	2011	2012	2013	2014	2015	APC 2011-2015	MD Trend
All Cancer Sites	440.7	432.1	452.2	442.0	449.3	0.6%	↑
Lung	56.8	56.4	56.6	55.8	55.5	-0.6%	↓
Colorectal	37.3	35.8	35.9	37.3	35.9	-0.4%	↓
Female Breast	126.6	125.0	134.6	130.3	131.4	1.2%	↑
Prostate	131.7	112.0	124.5	119.4	120.6	-1.1%	↓
Oral	10.2	10.5	10.8	10.5	11.1	1.7%	↑
Melanoma	20.6	20.7	22.3	21.9	25.5	4.9%	↑
Cervical	6.4	6.3	5.9	6.3	6.7	0.9%	↑

Rates are age-adjusted to 2000 U.S. standard population

APC = Annual Percent Change (%)

Source: Maryland Cancer Registry

Table 2. Cancer Mortality Rates by Cancer Site and Year
Maryland, 2011-2015

Cancer Site	2011	2012	2013	2014	2015	APC 2011-2015	MD Trend
All Cancer Sites	165.7	165.7	162.9	161.8	155.1	-1.5%	↓
Lung	43.7	43.5	41.1	41.3	37.6	-3.5%	↓
Colorectal	14.3	14.9	14.0	14.4	13.5	-1.5%	↓
Female Breast	22.4	23.7	21.5	22.9	21.7	-1.0%	↓
Prostate	20.2	20.4	19.1	19.3	21.0	0.2%	↑
Oral	2.4	2.1	2.5	2.3	2.2	-0.8%	↓
Melanoma	2.6	2.7	2.6	2.1	1.8	-9.4%	↓
Cervical	2.1	2.0	2.0	1.8	1.9	-3.0%	↓

Rates are age-adjusted to 2000 U.S. standard population

APC = Annual Percent Change (%)

Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2015

Maryland Vital Statistics Administration, 2011

Appendix H. Trends in Cancer Incidence and Mortality Rates in Maryland by Cancer Site, Race or Gender, and Year, 2011-2015

Table 3. Cancer Incidence Rates by Race and Year
Maryland, 2011-2015

Cancer Site	Race	2011	2012	2013	2014	2015	APC 2011-2015
All Cancer Sites	White	444.1	440.4	461.8	450.6	462.1	1.0%
	Black	437.7	425.9	446.6	443.6	441.8	0.6%
Lung	White	59.7	58.5	58.9	57.6	59.7	-0.2%
	Black	53.4	55.9	55.3	56.7	51.0	-0.8%
Colorectal	White	36.6	34.5	34.1	35.8	35.1	-0.5%
	Black	39.9	40.1	41.3	41.8	39.1	0.0%
Female Breast	White	128.3	126.9	134.8	132.8	133.4	1.2%
	Black	124.0	121.5	139.7	129.1	130.6	1.7%
Prostate	White	110.2	97.5	108.0	101.3	98.5	-1.8%
	Black	191.4	159.7	185.6	184.5	188.4	1.1%
Oral	White	11.4	11.7	12.0	12.1	12.1	1.5%
	Black	7.3	8.3	7.7	7.5	9.2	3.7%
Cervix	White	6.1	5.9	5.3	6.3	6.4	1.6%
	Black	7.4	7.6	7.1	6.1	7.1	-3.0%

Rates are age-adjusted to 2000 U.S. standard population

APC = Annual Percent Change (%)

Source: Maryland Cancer Registry

Table 4. Melanoma Incidence Rates by Gender and Year
Maryland, 2011-2015

Cancer Site	Gender	2011	2012	2013	2014	2015	APC 2011-2015
Melanoma	Male	27.8	27.9	29.4	30.0	34.3	5.1%
	Female	15.5	15.5	17.4	16.1	19.2	4.8%

Rates are age-adjusted to 2000 U.S. standard population

APC = Annual Percent Change (%)

Source: Maryland Cancer Registry

Appendix H. Trends in Cancer Incidence and Mortality Rates in Maryland by Cancer Site, Race or Gender, and Year, 2011-2015

Table 5. Mortality Rates by Race and Year
Maryland, 2011-2015

Cancer Site	Race	2011	2012	2013	2014	2015	APC 2011-2015
All Cancer Sites	White	161.3	164.4	161.6	160.6	152.2	-1.4%
	Black	190.0	183.0	182.0	181.0	176.3	-1.6%
Lung	White	44.2	44.7	42.4	43.7	38.2	-3.1%
	Black	47.2	44.2	41.8	40.2	39.7	-4.3%
Colorectal	White	13.0	13.5	12.8	13.8	12.8	-0.1%
	Black	19.0	20.1	18.2	18.0	17.3	-2.9%
Female Breast	White	19.9	23.1	19.8	21.1	20.5	-0.3%
	Black	29.5	26.5	28.1	29.0	26.5	-1.2%
Prostate	White	17.0	17.4	16.4	15.9	16.8	-1.1%
	Black	36.6	35.4	32.8	35.6	38.3	1.0%
Oral	White	2.3	2.0	2.3	2.3	2.3	1.4%
	Black	2.7	2.6	2.9	2.3	2.3	-4.3%
Cervix	White	1.7	1.6	1.9	1.5	1.5	-3.1%
	Black	3.2	3.0	2.7	2.6	3.0	-2.7%

Rates are age-adjusted to 2000 U.S. standard population

APC = Annual Percent Change (%)

Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2015

Maryland Vital Statistics Administration, 2011

Table 6. Melanoma Mortality Rates by Gender and Year
Maryland, 2011-2015

Cancer Site	Gender	2011	2012	2013	2014	2015	APC 2011-2015
Melanoma	Male	3.9	4.2	4.3	3.2	2.8	-8.9%
	Female	1.8	1.6	1.4	1.3	1.1	-11.2%

Rates are age-adjusted to 2000 U.S. standard population

APC = Annual Percent Change (%)

Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2015

Maryland Vital Statistics Administration, 2011

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Appendix I

Trends in Cancer Stage of Disease at Diagnosis in Maryland by Cancer Site and Year, 2011-2015

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Appendix I

Table 1. All Cancer Sites
Distribution of Cancer Stage at Diagnosis by Year
Maryland, 2011-2015

Stage	2011	2012	2013	2014	2015
	%	%	%	%	%
Local	44.6%	45.1%	45.9%	44.0%	44.9%
Regional	20.6%	20.3%	20.3%	20.8%	20.8%
Distant	22.0%	22.6%	23.3%	23.1%	23.0%
Unstaged	12.8%	12.0%	10.6%	12.0%	11.4%

Source: Maryland Cancer Registry

Table 2. Lung Cancer
Distribution of Cancer Stage at Diagnosis by Year
Maryland, 2011-2015

Stage	2011	2012	2013	2014	2015
	%	%	%	%	%
Local	19.3%	19.5%	20.1%	21.2%	21.7%
Regional	25.2%	24.8%	24.0%	22.9%	23.2%
Distant	46.7%	46.5%	48.1%	48.6%	48.5%
Unstaged	8.8%	9.3%	7.8%	7.3%	6.7%

Source: Maryland Cancer Registry

Table 3. Colorectal Cancer
Distribution of Cancer Stage at Diagnosis by Year
Maryland, 2011-2015

Stage	2011	2012	2013	2014	2015
	%	%	%	%	%
Local	36.0%	36.9%	34.1%	35.2%	34.4%
Regional	32.1%	32.7%	34.5%	34.0%	33.3%
Distant	19.1%	22.1%	21.1%	22.4%	21.4%
Unstaged	12.8%	8.3%	10.3%	8.4%	10.8%

Source: Maryland Cancer Registry

Appendix I

Table 4. Female Breast Cancer
Distribution of Cancer Stage at Diagnosis by Year
Maryland, 2011-2015

Stage	2011	2012	2013	2014	2015
	%	%	%	%	%
Local	60.4%	61.8%	59.6%	61.1%	61.4%
Regional	28.7%	27.8%	29.0%	29.0%	29.3%
Distant	5.1%	4.9%	6.3%	5.8%	5.9%
Unstaged	5.8%	5.6%	5.2%	4.1%	3.4%

Source: Maryland Cancer Registry

Table 5. Prostate Cancer
Distribution of Cancer Stage at Diagnosis by Year
Maryland, 2011-2015

Stage	2011	2012	2013	2014	2015
	%	%	%	%	%
Local	69.5%	68.5%	72.8%	58.3%	61.3%
Regional	8.8%	9.5%	8.6%	10.7%	11.0%
Distant	3.5%	4.3%	4.7%	5.0%	5.0%
Unstaged	18.3%	17.7%	14.0%	26.0%	22.7%

Source: Maryland Cancer Registry

Table 6. Oral Cancer
Distribution of Cancer Stage at Diagnosis by Year
Maryland, 2011-2015

Stage	2011	2012	2013	2014	2015
	%	%	%	%	%
Local	27.3%	28.6%	32.1%	28.6%	28.5%
Regional	46.4%	44.8%	44.2%	46.8%	45.5%
Distant	18.2%	20.3%	17.5%	18.3%	18.7%
Unstaged	8.1%	6.3%	6.2%	6.3%	7.3%

Source: Maryland Cancer Registry

Appendix I

Table 7. Melanoma
Distribution of Cancer Stage at Diagnosis by Year
Maryland, 2011-2015

Stage	2011	2012	2013	2014	2015
	%	%	%	%	%
Local	56.4%	59.8%	67.7%	66.3%	68.1%
Regional	8.1%	6.9%	5.8%	6.5%	6.0%
Distant	3.3%	4.1%	5.1%	4.3%	3.3%
Unstaged	32.2%	29.2%	21.5%	22.9%	22.6%

Source: Maryland Cancer Registry

Table 8. Cervical Cancer
Distribution of Cancer Stage at Diagnosis by Year
Maryland, 2011-2015

Stage	2011	2012	2013	2014	2015
	%	%	%	%	%
Local	39.7%	42.1%	45.0%	36.7%	37.3%
Regional	35.7%	32.1%	33.9%	36.7%	34.6%
Distant	12.1%	13.9%	14.8%	17.2%	16.7%
Unstaged	12.6%	12.0%	6.3%	9.3%	11.4%

Source: Maryland Cancer Registry

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Appendix J

Trends in All Cancer Sites Incidence and Mortality Rates in Maryland and U.S. by Year, 2006-2015

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Appendix J. Trends in All Cancer Sites Incidence and Mortality Rates in Maryland and U.S. by Year, 2006-2015

Table 1: All Cancer Sites Incidence Rates by Year
Maryland and U.S., 2006-2015

	2006†	2007	2008	2009	2010	2011	2012	2013	2014	2015	APC 2006-2015	Trend
Maryland	426.3	455.3	470.8	443.7	449.8	440.7	432.1	452.2	442.0	449.3	0.0%	N/A
U.S.	468.2	474.6	468.5	464.8	451.9	443.7	436.7	431.0	428.6	429.5	-1.3%	↓

† Reported 2006 Maryland incidence rates are lower than actual due to case underreporting for Montgomery and Prince George's counties (See Appendix C, Section I.A.1.)

Rates are age-adjusted to 2000 U.S. standard population

APC = Annual Percent Change (%)

Sources: Maryland Cancer Registry

       U.S. SEER, SEER*Stat Database

Table 2: All Cancer Sites Mortality Rates by Year
Maryland and U.S., 2006-2015

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	APC 2006-2015	Trend
Maryland	186.7	180.4	180.6	177.7	170.9	165.7	165.7	162.9	161.8	155.1	-1.9%	↓
U.S.	180.7	178.4	175.3	173.1	171.8	168.7	166.4	163.0	161.3	158.7	-1.4%	↓

Rates are age-adjusted to 2000 U.S. standard population

APC = Annual Percent Change (%)

Sources: NCHS Compressed Mortality File in CDC WONDER, 2006-2007, 2012-2015 (MD)

       Maryland Vital Statistics Administration from MATCH, 2008-2010 (MD)

       Maryland Vital Statistics Administration, 2011 (MD)

       NCHS Compressed Mortality File in CDC WONDER, 2006-2008 (U.S.)

       U.S. SEER, Cancer Statistics Review, 2009-2016 (U.S.)

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